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DEPARTMENT OF MINES

OTTAWA, CANADA

THE CANADIAN MINERAL INDUSTRY IN 1932

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MINES BRANCH
DEPARTMENT OF MINES

THE CANADIAN MINERAL INDUSTRY DURING 1932

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	Product	Article Number	Author
I METALS:	Antimony	(1)	Buisson, A.
	Bismuth	(2)	Buisson, A.
	Cadmium	(3)	Buisson, A.
	Cobalt	(4)	Robinson, A.H.A.
	Copper	(5)	Buisson, A.
	Gold	(6)	Robinson, A.H.A.
	Iron Ore	(7)	Robinson, A.H.A.
	Lead	(8)	Buisson, A.
	Manganese	(9)	Buisson, A.
	Molybdenum	(10)	Eardley-Wilmot, V.L.
	Nickel	(11)	Robinson, A.H.A.
	Platinum	(12)	Buisson, A.
	Radium	(13)	Spence, H.S.
	Selenium	(14)	Buisson, A.
	Silver	(15)	Buisson, A.
	Titanium	(16)	Robinson, A.H.A.
	Zinc	(17)	Buisson, A.
II NON-METALS:	Arsenic	(18)	Robinson, A.H.A.
	Asbestos	(19)	Wilson, A.W.G.
	Barite	(20)	Spence, H.S.
	Bituminous Sands	(21)	Ells, S.C.
	Chromite	(22)	Spence, H.S.
	Corundum	(23)	Eardley-Wilmot, V.L.
	Diatomite	(24)	Eardley-Wilmot, V.L.
	Feldspar	(25)	Spence, H.S.
	Fluorspar	(26)	Spence, H.S.
	Garnet	(27)	Eardley-Wilmot, V.L.
	Graphite	(28)	Spence, H.S.
	Grindstones	(29)	Eardley-Wilmot, V.L.
	Gypsum	(30)	Cole, L.H.
	Iron Oxide	(31)	Wait, E.H.
	Lithium	(32)	Spence, H.S.
	Magnesite	(33)	Frechette, H.
	Mica	(34)	Spence, H.S.
	Moulding Sands	(35)	Freeman, C.H.
	Phosphate	(36)	Spence, H.S.
	Pyrites	(37)	Wilson, A.W.G.
	Salt	(38)	Cole, L.H.
	Silica	(39)	Cole, L.H.
	Sodium Sulphate	(40)	Cole, L.H.
	Talc & Soapstone	(41)	Spence, H.S.
	Volcanic Dust	(42)	Eardley-Wilmot, V.L.
III STRUCTURAL MATERIALS:	Cement	(43)	Buisson, A.
	Granite	(44)	Cole, L.H.
	Kaolin (China Clay & Ball Clay)	(45)	Frechette, H.
	Lime	(46)	Goudge, M.F.
	Limestone (General)	(47)	Goudge, M.F.
	Limestone (Structural)	(48)	Goudge, M.F.
	Marble	(49)	Goudge, M.F.
	Whiting Substitutes	(50)	Goudge, M.F.
IV FUELS:	Coal	(51)	Buisson, A. & Haanel, B.F.
	Coke	(52)	Buisson, A. & Strong, R.A.
	Natural Gas	(53)	Wait, E.H.
	Oil Shale	(54)	Swinnerton, A.A.
	Peat	(55)	Buisson, A. & Haanel, B.F.
	Petroleum	(56)	Wait, E.H.

NOTE: The figures of production are preliminary figures, as published by the Dominion Bureau of Statistics. Imports and exports are taken from the "Trade of Canada", Dominion Bureau of Statistics, and cover the calendar year. The market quotations are obtained chiefly from the Engineering & Mining Journal, N. Y.

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ANTIMONY IN 1932

Production:

No antimony ore, concentrates, or antimony regulus was produced in 1932.

Exports:

None recorded.

Imports:

Metallic antimony	1932:	631,204	lb.	valued at	$37,180
	1931:	919,724	"	"	56,458
Antimony salts	1932:	51,144	"	"	6,955
	1931:	49,195	"	"	3,245

Ores Mined and Producing Localities:

No antimony ores or refined antimony have been produced since 1917 when shipments of 361 tons of ore valued at $22,000 were made. Small experimental shipments were made in 1925, 1926, 1927 and 1931. Small amounts of refined antimony as well as antimony ores were, previous to 1917, produced intermittently for a number of years in the Maritime Provinces.

The silver-lead-bismuth bullion obtained as a by-product in the treatment of the silver-cobalt-nickel arsenic ores at Deloro, Ontario, contains small quantities of antimony but the bullion is exported to the United States for further treatment.

The Consolidated Mining & Smelting Co. produce some impure antimony as a by-product in connexion with their silver refining operations at Trail, B. C. However, it is being allowed to accumulate at the smelter until the necessary equipment for treating it is installed.

Important Developments and Prospective Producing Localities:

The old Lawrence mine which has been intermittently under development since September 1928 by the Lake George Mines, Ltd., under management of A. D. Taylor, M.L.A., was not operated in 1932.

General Situation, Market Conditions, etc.:

Antimony is dependent for its market upon general industrial activity and especially upon automobile manufacture, because it is used largely in alloys for storage-battery plates, bearing and babbit metals, solder, rubber goods, and paints and fixtures. The price of antimony in 1932 averaged 5.592 cents per pound, as against 6.720 cents in 1931.

While Bolivia and Mexico are important producers of antimony, the bulk of the production comes from China and market conditions are more or less governed by the existing conditions in that country.

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BISMUTH IN 1932

Production:-

Refined bismuth was produced in Canada for the first time in 1928. The production reported below includes metallic bismuth produced at Trail, B. C., and the bismuth contained in silver-lead-bismuth bullion produced at Deloro, Ontario, and exported for treatment in foreign smelters. No metallic bismuth was made in 1930.

1932:	16,855	lb.	valued at	$ 6,409
1931:	118,207	"	"	" 157,650
1930:	12,732	"	"	" 6,366
1929:	194,329	"	"	" 307,114
1928:	14,002	"	"	" 5,067

Exports:

The exports of bismuth are not recorded separately, although most, if not all, of the Canadian production is believed to be exported.

Imports:

1932:	5	lb.	valued at	$ 9
1931:	125	"	"	" 50

Ores Mined and Producing Localities:

No bismuth ore as such has ever been mined in Canada, although a small amount of bismuth has been obtained as a by-product annually in the treatment of the silver ores from northern Ontario and, since 1928, from the lead-zinc ores of British Columbia.

In Ontario, the Deloro Smelting & Refining Co., of Deloro, from the treatment of the silver-cobalt-nickel-arsenical ores of Cobalt and adjoining areas, obtain an impure bismuth and also a lead bullion which contains bismuth, as well as some gold and silver. This bullion is exported to the United States for refining.

In British Columbia, the Consolidated Mining & Smelting Co. of Canada completed, in the latter part of 1928, a plant for the electrolytic treatment of bismuth residues obtained from the electrolytic treatment of lead bullion.

Important Developments and Prospective Producing Localities:

Nothing to report.

General Situation, Market Conditions, etc.:

The price of bismuth at New York in ton lots in 1932 remained fixed at 85 cents per pound throughout the year.

For many years the American price has been maintained a little below the European parity, plus duty.

Most of the bismuth imported is used to manufacture pharmaceutical products; a small proportion is used in the making of so-called fusible alloys.

As the consumption of bismuth is still relatively small and the uses limited in number, any slight fluctuation in production would have a noticeable effect on the price of this commodity.

Issued by the Mines Branch,
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CADMIUM IN 1932

Production:

1932 - valued at $ 26,824
1931 - " " 180,958
1930 - " " 337,871

(Quantities are not being published by the Dominion Bureau of Statistics).

Exports:

None recorded. Canadian production of cadmium is believed to be exported chiefly to Europe with small amounts to the Orient.

Imports:

None recorded.

Ores Mined and Producing Localities:

Cadmium is obtained as a by-product in the production of zinc, and in some cases of lead, being present in small amounts in most zinc ores and in some lead ores.

The cadmium recovery plant of the Consolidated Mining and Smelting Co., at Tadanac, B.C., first started production early in 1928 and has been treating the residues from the zinc refinery.

The zinc refinery of the Hudson Bay Mining & Smelting Co., at Flin Flon, northern Manitoba, which started operating in the latter part of 1930, is now producing small quantities of cadmium residues in the form of cadmium sponge.

Important Developments and Prospective Producing Localities:

No new development.

General Situation, Market Conditions, etc.:

The possibilities of increased world production of cadmium are great, but the market is rather restricted. During the last few years the market has been more buoyant, owing to the fact that the use of this metal for plating purposes has developed rapidly. Cadmium is being employed by colour makers to a greater extent than formerly owing to the increased use of "Cadmopone". It is also used in the manufacture of fusible alloys, as an ingredient of special amalgams, and salts of cadmium find application in the arts, medicine, dyeing, etc.

Cadmium is marketed mainly in metallic form 99.5 per cent pure and better, and as a sulphide. The price has been characterized in past years by some remarkable fluctuations but remained fixed at 55 cents per pound throughout 1931 and 1932. The American product is protected by a duty of 15 cents per pound.

The world's production is estimated at 1,000 tons in 1931, as against 2,000 tons in 1930 and 1,800 tons in 1929. The chief producers are: The Anaconda Company in the United States; the Electrolytic Zinc Co. of Australia; the Consolidated Mining & Smelting Co. of Canada, and the American Geische A.G., in Upper Silesia.

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March, 1933. (A.B.)

COBALT IN 1932

Production:

1932 - 490,631 lb. valued at $589,062
1931 - 521,051 " " " 651,179

Exports:

Metallic cobalt, cobalt alloys, etc., valued at $589,334 in 1932 as against $735,225 in 1931.

Imports:

Cobalt ores	nil	nil.
Oxide of cobalt, tin, and copper, n.o.p....	171,886 lb.	valued at $47,203

Ores Mined and Producing Localities:

All the cobalt produced in Canada comes from the silver-cobalt-arsenic mines at Cobalt, Gowganda, and South Lorrain in northern Ontario. Formerly, it was all obtained as a by-product of the working of these mines primarily for silver, but recently with the depletion of the richer silver-bearing portions of the deposits, the fall in the price of silver, and increased demand for cobalt, considerable amounts of silver-free and low-silver cobalt ore that was formerly left in the mines as unprofitable was mined, to a considerable extent by lessees. These cobalt ores are in part exported as such, in part treated in Canada. The only Canadian company producing cobalt metal, oxides, and salts, etc., is the Deloro Smelting and Refining Company Ltd., with works at Deloro, Ontario.

The nickel-copper ores of Sudbury, Ontario, are also known to carry small amounts of cobalt (about 0.1%), but neither company returns nor Government records show any production from this source.

Important Developments and Prospective Producing Localities:

None.

General Situation, Market Conditions, etc.:

The price of cobalt 97 to 99 per cent grade, at New York in 1932, remained steady at $2.50 per pound. This price has ruled for the last three years.

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COPPER IN 1932

Production:

1932:	123,839	tons	valued at	$15,294,022
1931:	146,152	"	"	24,114,065
1930:	151,739	"	"	37,948,359

Exports:

	Pounds	Value
Copper fine, in ore, matte, blister copper, in bars, etc..	266,770,600	$16,071,444
Wire and cable, and other manufactures.....	---	160,184
		$16,231,628

Imports:

Copper in bars, rods, blocks, pigs, ingots, scrap, tubing and wire.....	2,376,392	$317,498
Copper mfrs., crude precipitate of, anodes, sub-acetate, sulphate and rollers.....	---	582,401
		$899,899

Ores Mined and Producing Localities:

About 21 per cent of the output was derived from the low-grade copper ores of British Columbia, all of which require concentration before smelting; 21 per cent came from the copper-zinc ores of northern Manitoba; 31 per cent came from the nickel-copper ores of the Sudbury district, Ontario; the copper-zinc ores of Rouyn and adjoining areas, Quebec, with also a small amount of copper concentrates from the treatment of cupriferous pyrites of Eustis, Quebec, which are shipped to United States smelters, contributed 27 per cent of the total production.

Important Developments and Prospective Producing Localities:

Development work on the bottom or 2500-foot level of the Horne has proven a massive sulphide orebody with a maximum width of 600 feet and a length of over 600 feet with good values in gold and copper. This enormous mass lies in the same zone as the "H" orebody and together they constitute one of the largest masses of sulphides found on this continent. Important discoveries of gold ore have also been made and Noranda is now a large producer of gold as well as of copper. Two new 500-ton units have recently been added to the concentrator, bringing the capacity up to 2,000 tons of ore a day. The smelter, which started production in 1927, is now operating at the rate of over 2,000 tons of ore and concentrates a day and has a capacity of 50,000 tons of anode copper a year.

Large bodies of copper-zinc ores at the Waite, Amulet, and Abana, and of copper-pyrites ores at the Aldermac are awaiting improved market conditions. In the fall of 1931, the Aldermac completed the erection of their 500-ton mill, the first unit (250 tons) of which started operations in December. Both mine and mill were closed early in 1932. The ore contains in addition to copper high percentages of iron pyrites, which it is hoped will find a market in the sulphite pulp industry.

The copper refinery of the Canadian Copper Refiners, Ltd., with a capacity of 75,000 tons a year was completed early in January 1931. This refinery is handling anode copper of Noranda Mines, Ltd., and blister from the Hudson Bay Mining & Smelting Company. The Canada Wire & Cable Company, completed in 1931, the erecting of a copper manufacturing plant adjacent to the new refinery at Montreal East, and operated throughout 1932.

In Ontario, the International Nickel's very large program of extension of the plants for mining, smelting and refining reached completion in 1931. The new concentrator can handle

8,000 tons of ore daily; the bulk of the charge fed to the smelter is crude ore. The copper and nickel are now separated at the new smelter, the copper going to the new copper refinery at Copper Cliff with a capacity of 120,000 tons of refined copper a year, and the nickel to the enlarged nickel refinery at Port Colborne with an annual capacity of over 45,000 tons of electrolytic nickel and 13,500 tons of nickel in oxide.

The smelter of Falconbridge Nickel Mines, Ltd. was blown in early in 1930 and has since been enlarged from a daily capacity of 250 tons to 450 tons of ore. The smelter operated throughout 1932 at full capacity. A new 250-ton concentrator and a sintering plant started in 1932 were put in operation in April, 1933. The Eugene Phillips Electrical Works are using refined copper obtained from Copper Cliff at their manufacturing plant at Brockville.

In northern Manitoba, the capacity of the concentrator of Hudson Bay Mining & Smelting Company was increased to 4,000 tons of ore a day. The company's copper smelter, completed in the early fall of 1930, is producing at the rate of about 21,000 tons of blister copper per year.

The first unit of the Sherritt-Gordon concentrator was completed early in 1931. This so-called 600-ton unit has treated close on to 900 tons of ore per day. The mine and mill were closed down in May 1931, owing to the condition of the copper market

The Mandy mine, situated a few miles east of the Flin Flon, was under development in 1930, but was idle during 1931 and 1932.

In British Columbia, the Anyox mines and smelter of Granby Consolidated Mining, Smelting & Power Company were operated throughout the year. The company's Copper Mountain mine and concentrator at Allenby ceased operations in November 1930, due to the low price of copper. The Britannia mine and 6000-ton mill were operated to full capacity up to January 1931, at which date curtailment of output was started. At the end of 1932, production was on a basis of approximately 10 per cent of capacity. Owing to the new American tariff of 4 cents per pound on copper, the copper thereafter produced at Britannia, when sold, must be marketed abroad and arrangements for such disposal of the product have been perfected. The company continued in 1932 the extension of its main haulage tunnel on the 4100-foot level at Britannia Beach, to reach ore shown by deep diamond drilling.

The copper refinery at Trail has been idle for several years.

In the Northwest Territories, exploration with interesting results was continued on the discoveries of bornite and other copper occurrences that had been made in 1930, north and northeast of Great Bear Lake.

General Situation, Market Conditions, etc.:

The price of copper in 1932 was 7.06 cents per pound in January and steadily declined to a minimum of 4.813 cents in December. The average for the year was 5.555 cents as against 8.116 cents in 1931 and 12.982 cents in 1930.

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GOLD IN 1932

Production:

1932:	3,050,581 oz.	valued at	$63,061,103
1931:	2,693,892 "	" "	55,687,688

Exports:

Gold-bearing quartz, dust, nuggets, etc.	valued	at	$ 3,925,729
Gold coins (Canadian).....	"	"	500
Gold coins (foreign).....	"	"	9,424,6915
Gold bullion.....	"	"	51,400,220

Imports:

Coins.....	"	"	$854,908
Bullion in bars, etc.....	"	"	264,863
Manufactures of gold.....	"	"	19,189
Gold fringe.....	"	"	6,371
Articles of gold and silver.....	"	"	420,782

Ores Mined and Producing Localities:

The chief source of the gold produced in Canada is the gold-bearing quartz deposits of the Porcupine and Kirkland Lake districts in Ontario, which are responsible for the greatest part of the output. In Quebec, which is now the second largest producing province, the chief source of gold is the rich copper-gold ores of Noranda mine, with smaller contributions from gold-quartz mines. In British Columbia the output is chiefly from essentially gold-silver mines, with smaller amounts from base-metal mines and from placers. Manitoba's output is chiefly derived from copper-zinc-gold ores supplemented by considerable amounts from straight gold-quartz mines. Gold is also recovered from gold-quartz deposits in Nova Scotia and from placers in Yukon.

Important Developments and Prospective Producing Localities:

Canada's gold production in 1932 was about 13.2 per cent greater than that of 1931, increases being shown in all parts of the Dominion except Yukon and Alberta. The six largest producing mines in the order of their importance are the Lake Shore, Hollinger, Noranda, Teck-Hughes, McIntyre, and Dome.

Ontario contributed nearly three-quarters of the total output, Kirkland Lake being the most productive area followed by Porcupine. Both these camps increased their output in 1932, as did also those in northwestern Ontario. During the year new 150-ton mills came into production on the Moss and Ashley mines. Among old properties that again became productive in 1932 were Toburn, formerly Tough-Oakes Burnside, in Kirkland Lake, and Buffalo-Ankerite, formerly Ankerite, in Porcupine. Gold discoveries made in the Swayze area, in the Sudbury district, in 1931, were actively prospected in 1932, with promising results. In January 1933, mining machinery was taken into the Kenty property preparatory to the sinking of two exploratory shafts about 1,800 feet apart, which are to be sunk to a depth of 500 feet and connected with each other by underground levels. A mining plant was also taken into the Halcrow-Swayze mine in the early months of 1933. At Central Patricia mines, in the Crow River area, Patricia district, where a shaft was sunk 500 feet and some 33,155 tons of $13.81 ore developed before work was suspended in 1930, it is reported that work will be resumed and a mill of 50 to 75 tons daily capacity will be erected in 1933.

In Quebec, now the second largest gold producing province, contributing about 13 per cent of the total of the Dominion, the Horne gold-copper mine at Noranda continued to be by far the largest producer. The output of the Horne was increased during 1932 and further increases are forecast for 1933. Increased production was also reported by the Siscoe and Granada gold-quartz mines. A small mill was brought into production on the O'Brien property in Cadillac township, and Treadwell-Yukon also erected a small mill on their property in Pascalis. An 800-ton mill on the Beattie mine in Duparquet township will likely commence operations before the middle of 1933. There are also several other gold prospects in an advanced stage of development.

In British Columbia, which produced about 6.5 per cent of Canada's gold in 1932, the Premier mine continued to be the chief producer, followed by the Pioneer mine in the Bridge River district, which promises to become British Columbia's chief gold producer in 1933. At the Bralorne mine, also in Bridge River district, production commenced in February, in a 100-ton mill, and continued throughout the rest of the year. At the Reno mine in the Nelson district, production ceased when the mill was destroyed by fire on February 25, 1932, and was not resumed until early in 1933; the old Motherlode mill having been acquired in the meantime and rehabilitated for the treatment of about 100 tons a day of Reno ore. There was also considerable activity in investigating the possibilities of a number of other old camps in the Cariboo, Sheep Creek, Skeena, and Boundary districts. In the Cariboo district, a mill that is now reported to be treating about 40 tons of ore a day, was put in operation on Cariboo Gold Quartz mine early in 1933; and in Skeena district a 25-ton flotation mill was reported as being erected on the Surf Point mine in March, 1933. Increased activity in British Columbia's placer mines resulted in an increase of 2,371 ounces in the output of alluvial gold in 1932 over that of 1931.

Manitoba in 1932 produced about 4 per cent of the Dominion's output of gold, the chief contributor being the Flin Flon copper-zinc mine of the Hudson Bay Mining and Smelting Company. The Central Manitoba mine operated throughout the year, and in May the 150-ton mill on the San Antonio came into operation. A small mill was in operation on Herb Lake; and production was also reported from several other small properties. During the year there was considerable activity at Island Lake, where gold was discovered in 1931 and at God's Lake, where it was found in July, 1932. Mining plant and equipment for a 50-ton mill were assembled at Norway House, by Ventures Ltd., to be taken in to their properties at Island Lake during the winter of 1932-33. Also some heavy machinery including a 75-ton ball mill, were taken in to the Oro Grande property, in central Manitoba, during the first quarter of 1933.

Yukon's contribution of 1 per cent of Canada's total production in 1932 was chiefly from placers, the output from which was smaller than in 1931.

In Alberta, about 111 ounces of gold was recovered from the sands of the Saskatchewan river. The dredge of the McLeod River Mining Corporation, which was to have commenced operations on McLeod river during the year, is reported to have broken down and will not be ready to produce until the season of 1933.

In Nova Scotia, less than 1,000 ounces of gold was recovered from the working of gold-quartz lodes.

General Situation, Market Conditions, etc.:

Contemplated increases in productive capacity of several of the presently producing mines, and the approach to the productive stage of a number of properties now under development, presage increased gold production in Canada in 1933, though possible this increase will not be as great as that attained in 1932.

The Department of Mines, Ottawa, has published the following reports:- "Gold in Canada", (Mines Branch Report No. 730, now out of print); "Gold Occurrences of Canada - Summary Account", (Geological Survey Economic Series No. 10).

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IRON ORE IN 1932

Production:

Ore for iron-making has not been mined in Canada for a number of years.

Exports:

Mostly bog ores for gas purification.

Imports:

	Tons	Value
Newfoundland ...	Nil	Nil
United States ...	59,449	$146,763
Sweden ...	8,118	37,600
Total ...	67,567	$184,363

Ores Mined and Producing Localities:

The three iron-making centres in Canada are:- Sydney, Nova Scotia, on the Atlantic coast, and Hamilton and Sault Ste. Marie in the inland province of Ontario. A merchant furnace making pig iron is also operated intermittently at Port Colborne, Ontario. The Sydney furnaces procure almost all their ore from their own mines at Wabana, Newfoundland, but do, however, often import also from Europe or North Africa small amounts of special ores for mixing for the production of certain special grades of pig iron. All the United States ore imported is used in the Ontario furnaces, which depend entirely on the United States Lake Superior region for their supply.

Important Developments and Prospective Producing Localities:

There are no large known bodies of high-grade iron ore in Canada that could be made tributary to Canadian furnaces. There are, however, two very large partly developed, but unequipped deposits of low-grade ore in Ontario. The Algoma Steel Corporation's New Helen mine in the Michipicoten district has proved reserves variously estimated at 60,000,000 to 80,000,000 tons of low-grade rather sulphury iron carbonate that requires roasting to fit it for use in the blast furnace. A similar ore was formerly worked by the same company at their Magpie mine, also in the Michipicoten district, but this is not at present profitable. In the Sudbury district, Moose Mountain Ltd. have developed some 33,000,000 tons of proved and probable ore consisting of low-grade siliceous magnetite carrying in its natural state about 35% of iron. For a number of years it was attempted to work the Moose Mountain ore by a process of magnetic separation and sintering, but in spite of the exceptionally high-grade of the finished product it was found impossible to bring costs down to the point where a profit could be made in competition with available natural ores. Consequently, the attempt was abandoned and the large and costly plant dismantled.

General Situation, Market Conditions, etc.:

Three Canadian provinces, British Columbia, Ontario and Quebec, offer bounties on the production of pig iron from local ores, but no Canadian ore is now being used in Canadian furnaces. All Canadian furnaces operated at only a small fraction of their capacity in 1932.

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LEAD IN 1932

Production:

1932 -	127,975	tons valued at	$ 5,409,758
1931 -	133,671	" " "	7,260,183
1930 -	166,447	" " "	13,102,635

Exports:

	Quantity	Value
	Lb.	$
Lead in ores, etc.	3,713,300	148,518
Lead in pigs, and refined lead	213,990,700	3,269,121

Imports:

Lead in all forms, valued at $1,921,226.

Ores Mined and Producing Localities:

The greatest part of the lead produced in Canada comes from the Sullivan lead-zinc mine at Kimberley, where concentrates are produced that are treated in the refinery at Tadanac, B.C. Considerable production is obtained during prosperous times from numerous silver-lead and silver-lead-zinc mines in the Kootenay district and other parts of British Columbia. The Yukon output is from silver-lead ore from the Mayo district; that of Ontario was derived from galena at the Galetta mine in Carleton county; and Quebec's output was lead concentrates from the Notre-Dame-des-Anges lead-zinc mine; the Galetta and Notre-Dame-des-Anges mines have both suspended operations.

Important Developments and Prospective Producing Localities:

In British Columbia, the Sullivan mine and the 6000-ton a day concentrator at Kimberley of the Consolidated Mining and Smelting Company were operated on the basis of 20 days a month. Despite this curtailment improved metallurgical methods of treatment increased the recovery to the extent that the 1932 production was about 9.8 per cent higher than in 1931. The electrolytic lead refinery at Trail has a capacity of 475 tons of refined lead a day, or 170,000 tons a year.

The Monarch mine, near Field, with important ore reserves and a 300-ton concentrator has been idle for the last two years.

There are in British Columbia several promising mines equipped with up-to-date milling plants, which are only awaiting better market conditions to resume operations. There are also properties such as the Reeves-McDonald at the Pend d'Oreille river, the Ferguson at the Ingenika river, and the Emerald in the Sibola area, which have not as yet been brought to the producing stage and which are potential producers.

In Nova Scotia, the British Metal (Canada) Corporation did not operate during 1932. The company has been developing the Stirling copper-lead-zinc property in Cape Breton and had completed in the early summer of 1930 the new 250-ton concentrator, which was in operation only for a short time.

General Situation, Market Conditions, etc.:

The average price of pig lead at Montreal in 1932 was 3.511 cents per pound as against 4.168 cents in 1931. The average price of pig lead at New York was 3.180 cents as against 4.243 cents in 1931.

Despite unfavourable conditions the world's production of lead in 1932 amounted to approximately 1,292,000 tons as against 1,544,400 tons in 1931, which figures are much below the record-breaking tonnage of 1,935,000 tons in 1929.

The Department of Mines, Ottawa, has recently published the following report: "Lead and Zinc Deposits in Canada" (Geological Survey, Economic Series No. 8).

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Department of Mines, Ottawa.
March, 1933. (A.B.)

MANGANESE IN 1932

Production:

1932 - None reported.
1931 - 117 tons valued at $2,893.

The production of manganese ore in Canada has been small and irregular and has been confined mainly to Nova Scotia and New Brunswick, with occasional shipments from British Columbia.

Exports:

100 tons valued at $1,920.

Imports:

Manganese oxide 1,512 tons valued at $87,644.

Ores Mined and Producing Localities:

The manganese ores which have been mined in eastern Canada are pyrolusite, manganite, psilomelane, and bog manganese. These, with the exception of the bog manganese, were mostly ores with a high manganese content and fairly free from deleterious constituents. They were obtained mainly from New Ross in Lunenburg county, Loch Lomond, Cape Breton Island, and Aylesford, Kings county, all in Nova Scotia; from Dawson Settlement Bog and from Turtle Creek, Albert county, and from Markhamville, Kings county, both in New Brunswick.

In British Columbia, the first shipment was made from a bog manganese deposit located near Kaslo, Ainsworth mining division. Shipments have also been made from deposits near Cowichan Lake, Vancouver Island; these latter shipments are a mixture of secondary oxides, principally pyrolusite, psilomelane and magnetite.

Important Developments and Prospective Producing Localities:

No new development in 1932.

At the Turtle Creek manganese deposit in Albert county, New Brunswick, a few hundred tons of ore were mined and stored during the spring of 1931, but no shipments made.

General Situation, Market Conditions, etc.:

The price of manganese ore at North Atlantic ports for 46 to 48 per cent manganese, Brazilian, per unit, dropped from 23 cents in January to 18 cents in July at which price it remained to the end of the year; for chemical grades 80 per cent MnO_2, the price was $50 to $60 throughout the year.

The United States Tariff Act of 1930 provided for a continuance of the duty of 22.4 cents per unit on manganese ores down to 10 per cent of metallic manganese.

From the producers standpoint, according to the Engineering and Mining Journal, the international situation went from bad to worse, due mostly to the heavy exports from Russia by the Soviet Ore Trust and also to the large production from British India, the Gold Coast in Africa and Brazil.

The Department of Mines, Ottawa, has recently published the following report: "Manganese Deposits of Canada," (Geological Survey, Economic Series No. 12).

Issued by the Mines Branch,
Department of Mines, Ottawa.
March, 1933. (A.B.)

MOLYBDENUM IN 1932

Production:
Nil.

Exports:
Nil.

Imports:
14,219 pounds of calcium molybdate valued at $5,365 for use in the manufacture of alloy steels.

Ores Mined and Producing Localities:

There was no production in 1932 other than a trial shipment from Bagot township, Renfrew county, Ontario.

Important Developments and Prospective Producing Localities:

There was no further work done on the Molybdenite Reduction Company's property south of Amos, Abitibi county, Quebec.

The Dalhousie Mining Co.Ltd., Victoria, B.C. early in 1931 closed down operations on their Alice Arm property, Skeena Mining Division, B.C.

The Phoenix Molybdenite Corporation, Ltd., of Toronto, have been prospecting their Bagot property in Renfrew county, Ontario. Cross stringers of fairly high grade molybdenite ore were encountered. Mining machinery was moved on to the property from the old Renfrew Molybdenum Mines, Ltd., of Mount St. Patrick, in Brougham township, Ont. Twelve tons of partly selected ore, running about 5.0 per cent MoS_2 were shipped in the fall of 1931 to the Mines Branch, Ottawa, for testing. Good results were obtained indicating an 85.0 per cent MoS_2 concentrate and a recovery of 94 per cent. About half a ton of the concentrates was shipped to Montreal and exported during that year.

General Situation, Market Conditions, etc.:

Molybdenum is chiefly used in combination with other alloying metals, particularly nickel, chromium and vanadium. Chrome-molybdenum steel is said to be superior to chrome-vanadium steel for aeroplane fusilage tubing. Straight carbon-molybdenum steels possess advantages that far offset the slight cost of the alloy addition. A substantial outlet has recently been developed in the acid resisting nickel-molybdenum-iron alloys containing as much as 20 per cent molybdenum. The increased use of molybdenum in cast iron was probably the most important commercial development of the former metal in the United States. Recent tests by the United States War Department have shown that molybdenum can be economically substituted for tungsten in high-speed tools, equal benefits being obtained by using slightly under one third the proportion of molybdenum to that of tungsten. Molybdenum has not been hitherto considered a serious competitor of tungsten for this purpose, and greater use of the former metal in tool steels is predicted. A considerable amount of molybdenum wire and sheet is used in the radio industry. A new development in the chemical field is the use of molybdenum oxide as a catalyst in connection with the hydrogenation of oils. The pure metal has recently been employed as an insert in connection with the placing of carbide tips on cutting tools.

The general markets were reflected in a lessened demand for molybdenum in the chemical, electrical, radio and other industries in which this metal is used.

The uses of molybdenum for various purposes is however growing more rapidly in Europe than in the United States. This increased demand is shown by the exports from the United States which in 1930-31 were about 30 per cent of the domestic (U.S.) production, but the ratio of export to domestic consumption is now (1932-33) 3 to 1, a reversal of two years ago.

The Climax Molybdenum Co., Colorado, who furnish 75 per cent of the world output claim to have huge reserves of ore, but it is a low grade ore containing less than 1 per cent MoS_2. They produced 944 tons of the metal in 1932 and were milling at the rate of 44,000 tons of ore per month for the first 8 months but decreased to about a quarter that amount up to the end of the year. The Molybdenum Corporation of America, at Questa, New Mexico, is the next largest producer. The average ore being treated in their new mill runs over 5.0 per cent MoS_2.

The United States produces about 90 per cent of the world's total molybdenum, Norway about 7 per cent and the remaining 3 per cent comes from Australia, Korea, Russia and French Morocco. The Knaben molybdenite mine was the only Norway producer in 1932 with an output of 330 short tons of concentrates against 200 tons in 1931.

Molybdenum is usually introduced into the steels as calcium molybdate, the price of which was reduced towards the end of 1930 from 95 to 85 cents per pound of molybdenum contained and has remained unchanged. The use of ferromolybdenum as an addition agent is said to be on the increase but the price remained steady at $1.00 per pound of contained molybdenum. The price of 85 per cent molybdenite concentrates is about 40 cents per pound of contained molybdenite.

The Department of Mines, Ottawa, has published the following report: "Molybdenum; metallurgy and uses; and the occurrence, mining and concentration of its ores" (Mines Branch Report No.592 (1925).

Issued by the Mines Branch,
Department of Mines, Ottawa,
March, 1933. (V.L.E-W.)

Addenda

The United States 1932 production amounted to 2,616 short tons of molybdenite concentrates (from 363,400 tons of ore) averaging 85.21 per cent MoS_2 and containing 1337.5 tons of metallic molybdenum, against 1566.4 tons of the metal in 1931. The estimated value of the shipments of concentrates was 50 cents per pound of contained molybdenum.

NICKEL IN 1932

Production:

1932:	15,164	tons	valued at	$ 7,179,862
1931:	32,833	"	"	" 15,267,453

Exports:

Nickel in matte	7,585	tons	valued at	$2,757,713
Nickel, fine	7,583	"	"	" 4,022,748
Nickel oxides	869	"	"	" 503,503

Imports:

Nickel in bars, rods, sheets, etc., valued at $1,253,925

Ores Mined and Producing Localities:

Nickel produced in Canada has its source almost entirely in the nickel-copper ores of the Sudbury district in Ontario, though there is also a small amount recovered as a by-product from the silver-cobalt-nickel ores of the Cobalt district. The known reserves of nickel ore around Sudbury are by far the largest in the world, being now estimated at well over 200,000,000 tons, carrying perhaps, on the average, about 3% nickel and 2% copper though the grade varies greatly in different mines. Ore from Creighton mine, for example, carries about 5% nickel, while some of the ore in the lower levels of the Frood mine carries as much as 20% copper. The largest individual ore-body, that of the Frood, has been only partly explored as yet, but over 125,000,000 tons of ore are already indicated.

Production and developed reserves in the Sudbury district are entirely in the hands of two companies, International Nickel Company and Falconbridge Nickel Company. The first is much the larger, being in a position to mine, concentrate and smelt 8,000 tons of ore a day; the capacity of the Falconbridge Company's plant is 450 tons per day. Five mines in the district are equipped for large scale operations:- Frood, Creighton, Levack, Garson of International Nickel, and the Falconbridge Mine of the Falconbridge Company. In addition to smaller mines, International Nickel also has three large mines in reserve, viz., Crean Hill, Murray, and Stobie.

Important Developments:

The program of expansion commenced by International Nickel in 1924, which involved the expenditure of some $55,000,000 was completed in 1931, and that company is now in a position to supply some 140,000,000 pounds of nickel and 200,000,000 or more pounds of copper as soon as the market demands it.

General Situation, Market Conditions, etc.:

Due to the continuation of the general depression in trade, the International Nickel Company's plant was operated at only about 20% of its capacity during the year. The much smaller plant of the Falconbridge Company, however, was operated to full capacity in 1932, and a market was found for all the nickel and copper produced. Toward the end of the year a concentrating mill and sintering plant, which will add about 50% to Falconbridge's metal producing capacity was added to its equipment and it is reported that the company's refining plant in Norway is now being enlarged to take care of the increased output.

Any general improvement in the demand for nickel depends on increased industrial activity, especially in the iron and steel trades.

Issued by the Mines Branch,
Department of Mines, Ottawa,
March, 1933. (A.H.A.R.)

PLATINUM GROUP METALS IN 1932

Production:

	Quantity	Value
Platinum	27,206 oz.	$1,093,885
Palladium, rhodium, etc...	37,497 "	897,587

Exports:

Platinum in concentrates..	14,570 oz.	$1,155,705
Platinum scrap	50 "	2,374

Note: Precious metals in copper-nickel matte exported are not included.

Imports:

Platinum retorts, crucibles, sheet, wire and other metallic products, valued at $38,408 as against $54,428 in 1931.

Ores Mined and Producing Localities:

With the exception of a few ounces of platinum obtained from the black sands of British Columbia, and a small production obtained as an impure residue in the refining of gold at Trail, B.C., all the Canadian platinum and allied metals are obtained from the treatment of the Sudbury nickel-copper matte.

Important Developments and Prospective Producing Localities:

The successful development of the Frood and Frood Extension copper-nickel mines near Sudbury has added considerably to the Canadian production of metals of the platinum group, as the ores of these mines contain a notable amount of these metals.

The Acton refinery located at Acton, England, and owned by the International Nickel Company is an efficient plant designed to treat precious metal residues. In order to provide refining capacity for the large output of platinum metals from the Frood mine, this refinery has been enlarged to a capacity of 300,000 ounces per year of platinum group metals.

General Situation, Market Conditions, etc.:

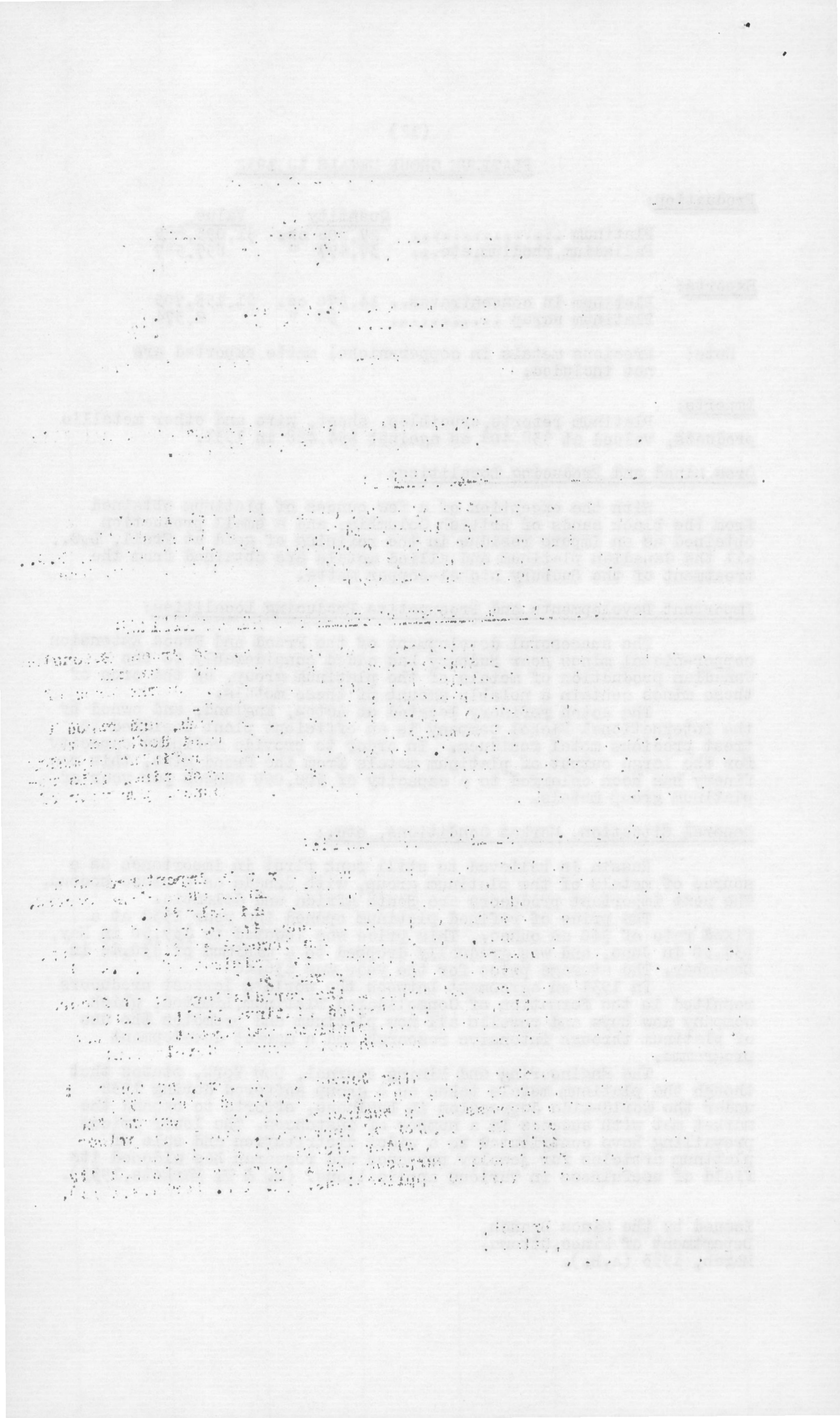
Russia is believed to still rank first in importance as a source of metals of the platinum group, with Canada as a close second. The next important producers are South Africa and Colombia.

The price of refined platinum opened the year 1932 at a fixed rate of $40 an ounce. This price was lowered to $39.50 in May, $37.50 in June, and was gradually dropped to a minimum of $30.46 in December. The average price for the year was $36.46

In 1931 an agreement between the world's largest producers resulted in the formation of Consolidated Platinum, Limited, which company now buys and resells all new platinum and promotes the use of platinum through intensive research and a market development programme.

The Engineering and Mining Journal, New York, states that though the platinum metals taken as a group suffered during 1932 under the world-wide depression in business, efforts to expand the market met with success in a number of instances. The lower prices prevailing have contributed to a wider distribution and sale of platinum articles for jewelry purposes and research has widened its field of usefulness in various applications. (M. & M. Markets, 1933).

Issued by the Mines Branch,
Department of Mines, Ottawa.
March, 1933 (A.B.).



RADIUM-BEARING MINERALS IN 1932

Production:

About 35 tons of high-grade pitchblende ore was mined by Eldorado Gold Mines Ltd., at LaBine Point, Great Bear Lake, N.W.T., and shipped out by water, via Great Bear and Mackenzie rivers, to rail at Waterways, Alberta, and thence to the Company's new refinery at Port Hope, Ont.

Exports:

Nil.

Imports:

Salts of radium for medical and scientific purposes have been imported from time to time. The annual values of these importations for the last five years have been:

1928 - $17,597	1931 - $207,735
1929 - 40,687	1932 - 45,108
1930 - 46,012	

Ores Mined and Producing Localities:

The Great Bear Lake pitchblende deposits were the only source of mined ore in 1932. In addition to the shipments from the Eldorado property at LaBine Point, a small quantity of ore is reported to have been mined from a discovery on the claims of Bear Exploration and Radium, near Contact Lake, about 8 miles southeast of the above, where similar pitchblende-silver mineralization has been found.

Important Developments and Prospective Producing Localities:

Great Bear Lake: Prospecting continued active in the Great Bear Lake field during the year, and several additional discoveries of pitchblende were reported from the Echo Bay district. Further exploration of these reported discoveries will be required before their possible economic importance can be estimated.

Eldorado Gold Mines, Ltd. conducted active exploration and development work on their LaBine Point ground, most of which work was designed to prove up the extent of the No.2 vein. A 375-foot tunnel was driven to intercept this vein at a point about 100 feet below its most easterly outcrop, and up to March, 1933, over 450 feet of drift had been run east and west on the vein at this level. Cross-cuts at 50-foot intervals are reported to have disclosed pitchblende mineralization, similar to that at surface, over the entire length of the drift. The vein has now been proved for a length of over 1550 feet. The Company shipped in a complete small mining plant (the first in the field) during the year, including Diesel engines and compressor, as well as supplies of gas and oil from the Fort Norman wells on the Mackenzie river, 300 miles distant.

Ontario: Operations at the uraninite property of International Radium and Resources, Ltd., (formerly Ontario Radium Corporation), near Wilberforce, in Cardiff township, Ontario, were continued during the early part of the year, but were suspended in June. A shaft was sunk above the workings to connect with the main tunnel driven to crosscut the veins, upon which several raises were put up and drifts run. The new mill was completed in March, and treated a small tonnage of ore. Recoveries proved to be low, much of the uraninite being lost in the table tailings; this was stated to be due to the tendency of the uraninite to slime.

Surface prospecting on the Richardson lots, adjoining the above property to the east, showed that the veins continue across these lots.

Canada Radium Mines Ltd. undertook active development on their property at Cheddar, near Wilberforce, installed a power plant, and sank a 125-foot shaft, from which cross-cutting of an extensive system of parallel veins, believed to carry radioactive minerals, is projected.

General Situation, Market Conditions, etc.:

The year saw the establishment of the Eldorado Company's radium refinery at Port Hope, Ont., the only plant of its kind in the British Empire. Installation of the necessary equipment for an initial small production was completed by the end of the year, and operations commenced early in January 1933. The 20 tons of pitchblende shipped from Great Bear Lake in 1931, together with the 35 tons sent out this year, will provide sufficient raw material to keep the plant running until further shipments are received in 1933. A yield of somewhere around one gram of radium per ten tons of ore treated is anticipated. The investigation of methods of treatment of the ore, carried out by the Division of Ore Dressing and Metallurgy of the Mines Branch during the year, showed that the radium content of the ore can be recovered by a modified process of extraction that is expected materially to cut down the time and cost of treatment, as compared with processes hitherto used in commercial radium production from ores of lower grade and different composition.

The Department of Mines, Ottawa, has published the following reports dealing with radium-bearing minerals in Canada:

The Wilberforce Radium occurrences (Mines Branch Report No. 719, Investigations of Mineral Resources in 1929).

The Pitchblende and Silver Discoveries at Great Bear Lake, Northwest Territories, (Mines Branch Report No.727-3, Investigations of Mineral Resources, 1931).

Great Bear Lake - Coppermine River Area, MacKenzie District, N.W.T. (Geological Survey Summary Report, 1931, Pt.C.).

Rare-Element Minerals in Canada (Geological Survey, Economic Series No. 7).

Issued by the Mines Branch,
Department of Mines, Ottawa.
April, 1933. (H.S.S.)

SELENIUM IN 1932

Production:

1932 - None reported.
1931 - 21,500 lb. valued at $40,850.

Exports:

Not given separately.

Imports:

None recorded.

Ores Mined and Producing Localities:

Selenium, although fairly widely distributed, is not very abundant in nature. It is found occasionally associated with sulphur and more frequently accompanies the sulphides of heavy metals in the form of selenides. It is recovered from the slime or residue produced in the refining of copper.

It was produced for the first time in Canada in 1931 at the new copper refinery of the Ontario Refining Company, at Copper Cliff, Ontario.

It also occurs in the slime produced at the new copper refinery of the Canadian Copper Refiners,Ltd., at Montreal East, Quebec, but this latter company have not as yet undertaken the recovery of the metal; they are however storing the residues for future treatment.

Important Developments and Prospective Producing Localities:

Nothing to report.

General Situation, Market Conditions,etc.:

The nominal price for selenium, 99.5% pure, was $1.80 to $2.00 per pound throughout 1931 and 1932.

Canada is now in a position to produce selenium in notable quantities but the output is at present restricted to a narrow market.

Further research as to new uses will, no doubt, create a wider market for this relatively new commercial product.

The chief use at present is in the glass industry, both as a colouring agent, and to neutralize objectionable colours; a large potential market should exist in the rubber compounding industry; the most important development is probably the photo-electric cell or electric eye which is finding many industrial applications; these selenium cells also play an important part in television.

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Department of Mines, Ottawa.
March, 1933. (A.B.)

SILVER IN 1932

Production:

1932: 18,356,393 oz. valued at $5,813,769
1931: 20,562,247 " " " 6,141,943

Exports:

	Quantity	Value
Silver in ore and concentrates..	3,488,094 oz.	$ 982,652
Silver bullion.....	13,504,060 "	3,978,438

Imports:

Unmanufactured silver bullion...	---	$585,788
Sterling and other silver.....	---	94,108
Silver coin.....	---	nil

Ores Mined and Producing Localities:

In Nova Scotia, a very small quantity of silver is derived from the gold quartz ores in Guysborough county.

In Quebec, the production is mainly obtained as a by-product from the treatment of the gold and copper ores of the Rouyn and adjoining areas in western Quebec.

In Ontario, the production is mostly obtained from the silver-cobalt-nickel arsenical ores of Cobalt, Gowganda, and South Lorrain; from the gold ores of Porcupine, Kirkland Lake and a few other less important areas; and as a by-product from the treatment of the nickel-copper ores of the Sudbury district.

In Manitoba, silver is derived from the copper-zinc ores of the Flin Flon and Sherritt-Gordon mines in northern Manitoba and from the gold-silver ores of eastern Manitoba.

British Columbia is the leading silver producing province in the Dominion. In this province the silver is obtained mainly as a by-product from the treatment of lead-zinc ores from the Sullivan mine in the East Kootenay district. Important contributions are also made from the mines on Wallace Mountain, near Beaverdell; from the silver-gold-bearing pyrites of the Premier mine, near Stewart; from the low-grade copper ores of Britannia mine, near Vancouver, and of the Granby Company's mines near Anyox.

The Yukon production is derived from the argentiferous lead ores from the Mayo district.

Important Developments and Prospective Producing Localities:

Quebec: Development work at the Noranda mine during 1932 has more than doubled the known ore reserves. These ores have the following approximate silver content: siliceous gold ores, 0.29 oz. per ton; concentrating sulphide ore 0.36 oz. per ton; and direct smelting sulphide ore 0.90 oz. per ton.

Ontario: The silver mines of Cobalt and adjoining areas are showing a gradual falling off in production, which is accentuated under the unprecedented low price of silver. The new silver refinery of the International Nickel Company contributed substantially to the amount of refined silver produced, but the output dropped in proportion with the curtailment in the smelting of nickel-copper ores.

Manitoba: The Hudson Bay Mining & Smelting Company completed its copper smelter and zinc refinery in August 1930, and the Sherritt-Gordon concentrator was completed in the spring of 1931. The completion of these plants has resulted in a production of 1,036,479 ounces in 1932 as against 836,547 ounces in 1931, and 94,653 ounces in 1930.

British Columbia: The output showed a decline of 9.5 per cent from that of 1931. The Sullivan and Premier mines were

forced to curtail to some extent. The curtailment of operations at the copper mines also contributed substantially to the decline.

Yukon Territory: Production was about 5 per cent lower than in 1931, but unless new discoveries are made and improvement is shown in the price of silver a noticeable decline is in the offing.

Northwest Territories: Important discoveries of silver-bearing ores were made during the summer of 1931 in the vicinity of Echo Bay, Great Bear Lake. Some of the ore is very high grade, while the balance will require concentration before shipment. Prospecting and development work was carried on during 1932 on several properties with encouraging results. A small trial shipment of high-grade silver ore was made during the year. The B.E.A.R. Company plan on installing in 1933 a small pilot mill.

General Situation, Market Conditions, etc.:

The price of silver in New York was the lowest on record being an average of 27.892 cents an ounce compared with 28.70 cents in 1931, 38.15 cents in 1930 and 53.0 cents in 1929. The highest and lowest quotations during 1932 were 31 cents in February and 24½ cents in December. The course of the silver market in 1932, states the London Mining Journal, disappointed many sanguine hopes. The basic reason for the failure of a recovery in prices was the lack of demand from India and China. The failure of these speculative efforts appears to have left large stocks on hand in London and in the United States at the close of the year, the existence of which is not a favourable influence in considering prospects of improvement, at any rate in the early part of 1933. The London Mining Journal further estimates the world's production of virgin silver at 161,000,000 ounces as against 194,000,000 ounces in 1931. The supplies of secondary silver, as estimated by Messrs. Handy and Harman, were 46,600,000 ounces as against 68,500,000 ounces in 1931. Thus there was a total supply of 207,200,000 ounces as against 262,300,000 ounces in 1931.

The accumulation of known stocks reaches the enormous total of 1,118,000,000 ounces, in addition to which considerable amounts appear to be held in private hands.

Until the volume of trade, internal and external, in India and China, recovers substantially, there is no particular reason to assume that the demand from these sources will expand, even if it does not further contract, (London Mining Journal, Feb. 11, 1933).

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Department of Mines, Ottawa,
March, 1933. (A.B.)

TITANIUM IN 1932

Production:

1932 - (None reported).
1931 - 1,509 tons valued at $10,261.

Exports:

1932 - (None reported).
1931 - 1,509 tons valued at $10,261.

Imports:

Not separately recorded.

Ores Mined and Producing Localities:

Ilmenite carrying from 18 to 25% titanium occurs in large bodies at Ivry in Terrebonne county, and at St.Urbain in Charlevoix county, Quebec, and occasionally small quantities are mined and shipped from these places for export to the United States. Small shipments have also been made to England for experimental purposes. Most of that exported to the United States has been used for the manufacture of ferro-titanium at Niagara Falls, N.Y. Ilmenite shipped from the General Electric Company's mine at St.Urbain has gone to the same company's works at Lynn, Mass., and, as it is rutile-bearing, it is presumably for its rutile content that it has been mined. The General Electric Company's deposit at St.Urbain is the only known deposit of rutile of commercial grade in Canada.

Important Developments and Prospective Producing Localities:

None.

General Situation, Market Conditions, etc.:

By far the largest use of titanium at the present time is in pigments; next, in ferro-alloys, chiefly ferro-titanium, for use in the metallurgy of iron and steel. The titanium-pigment industry is one of considerable importance, but the amount of titanium ore used in it is small compared with supplies available in many parts of the world. Two companies produce titanium pigments in the United States; The Titanium Pigment Co. of New York, which is also chief factor in the industry in Europe and the Commercial Pigments Corp. of Baltimore. The Vanadium Corp. of America is also reported to have entered the titanium pigments field, through a subsidiary, the Southern Mineral Products Corp., with a plant in Virginia, built in 1931.

Canada has at present no titanium industry but a Canadian company, Titanium Ltd., has secured control of the Ivry ilmenite deposits for the purpose of utilizing material from them in the manufacture of titanium-white. No plant has yet been erected in Canada, however.

The published price quotations for ilmenite are nominal so far as Canadian producers are concerned. The world's chief sources of supply are now British India, Senegal, and Norway.

The Department of Mines, Ottawa, has published the following report: "Titanium", (Mines Branch report No.579, which report is now out of print).

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Department of Mines, Ottawa.
March, 1933. (A.H.A.R.)

ZINC IN 1932

Production:

1932:	86,142	tons	valued at	$4,144,454
1931:	118,623	"	"	6,059,249
1930:	133,822	"	"	9,635,166

Exports:

	Quantity	Value
Zinc ore (zinc content of)...	nil	nil
Metallic zinc.....	87,661 tons	$3,852,990
Zinc scrap, dross and ashes..	414 "	9,522

Imports:

Zinc in all forms.....	---	$1,517,562

Ores Mined and Producing Localities:

Over 75 per cent of the zinc produced in Canada during 1932 came from the Sullivan lead-zinc mine near Kimberley, B. C. The balance of the production was obtained from the Flin Flon copper-zinc mine at Flin Flon, Manitoba.

Important Developments and Prospective Producing Localities:

No new development in 1932.

In British Columbia, the Consolidated Mining & Smelting Company further increased during 1930 the capacity of their zinc plant at Trail by the completion of a new slag-fuming plant which recovers the zinc formerly lost in the slag from the lead furnaces. In addition to the current slag production, there is a large quantity of slag from former operations stored and awaiting re-treatment. A large addition known as the zinc re-treatment plant was also completed in 1930 and herein are treated the mixed oxides of lead and zinc. These additions have increased the capacity of the works to a total of about 400 tons of zinc a day, or 145,000 tons a year.

The Monarch mine, near Field, has been idle for the last two years. Development work at this property had increased considerably the known ore reserves. The mill, which started operations in November 1929, was in continuous operation until October 1930, and contributed a substantial tonnage of concentrates all of which went to the United States.

The mines of the Slocan district were nearly all idle throughout the year; there were no new developments of importance during the year.

In Manitoba, the Hudson Bay Mining & Smelting Company completed their concentrator and the zinc refinery in the fall of 1930 and the first shipment of refined zinc was made early in December of that year. The plants have been operated at full capacity during the last two years.

The Sherritt-Gordon had its new concentrator in operation in the spring of 1931, but operations were confined as much as possible to producing copper concentrates, until the price of zinc shows some improvement. The mine and mill were closed down in May 1932.

In Ontario, the Treadwell Yukon Co. Ltd. which had carried on for several years extensive development at the Errington mine, in the Sudbury basin, ceased all operations in December 1931. The concentrator was closed down in November 1930 due to the collapse of the metal market, and also to the fact that the pilot mill had answered its purpose.

In western Quebec, the Amulet concentrator was in operation for a few months in 1930 but did not operate in 1931 or 1932.

The property of Lyall & Boidelman in Gaspé peninsula was again under development.

In Nova Scotia, the Stirling new mill completed in 1930 operated only a short time and has been idle since the fall of 1930.

The proposed construction of zinc refineries in eastern Canada by the Consolidated Mining & Smelting Company and by Noranda Mines Ltd., has been postponed indefinitely due to the low price and surplus world production of zinc at the present time. These proposed plants would provide the Sherritt-Gordon, Errington, Noranda, Waite, Amulet, Abana and others with a market for their zinc concentrates.

General Situation, Market Conditions, etc.:

The average price of zinc at Montreal for 1932 was 3.724 cents per pound as against 3.961 cents in 1931. The St. Louis price was 2.876 cents as against 3.64 cents in 1931.

It has been estimated that the world's production of zinc for 1932 approximated 871,000 tons as against 1,116,000 tons in 1931, and 1,558,000 tons in 1930. Canada in 1930 became the fourth largest producer of slab zinc, contributing about 8 per cent of the total and surpassing both France and Germany.

The Department of Mines, Ottawa, has recently published the following report:

"Zinc and Lead Deposits of Canada", (Geological Survey, Economic Series No. 8).

Issued by the Mines Branch,
Department of Mines, Ottawa,
March, 1933. (A.B.)

ARSENIC IN 1932

Production:

1932 - valued at $ 99,008
1931 - " " 135,170

Exports:

1932 - 1,788,600 lb. valued at $ 65,287
1931 - 3,092,500 " " " 116,044

Imports:

White arsenic	425,995	lb.	valued at	$16,694
Arsenic, sulphide of	111,106	"	" "	4,277
Arsenate of soda	5,603	"	" "	1,159
Arsenate of lead	830,120	"	" "	80,488
Arsenate of lime	521,546	"	" "	27,852

Ores Mined and Producing Localities:

All the white arsenic at present produced in Canada is made by the Deloro Smelting and Refining Co.Ltd., at Deloro, Ontario, who also manufacture arsenical insecticides, from arsenical silver-cobalt-nickel ores from Cobalt and surrounding districts in northern Ontario. Export of arsenical concentrates from the Nickel Plate mine at Hedley, British Columbia, ceased with the closing down of that mine in 1930.

Important Developments and Prospective Producing Localities:

Deposits of mispickel, in places associated with more or less gold, are known at a number of localities in Nova Scotia, Ontario, and British Columbia, but at the present time there is no inducement to attempt their exploitation.

General Situation, Market Conditions, etc.

Arsenic is usually recovered in the form of white arsenic (As_2O_3) in America, chiefly as a by-product in the smelting and refining of other ores and metals. Its chief use is in the manufacture of insecticides, weed-killers, glass, and cattle dips. Arsenic compounds are also used to some extent as pigments for various purposes; as antiseptics and preservatives; as medicines; and for other minor purposes.

To meet commercial requirements it must be white in colour and contain not less than 99 per cent as As_2O_3. It should have about the fineness of flour and not be lumpy. As supplied in carload lots to insecticide manufacturers, etc., it is usually packed in barrels containing about 600 pounds each; for the retail trade it is put up in packages of from 1 to 10 pounds weight.

The Department of Mines, Ottawa, has published the following report: "Arsenic Bearing Deposits in Canada", (Geological Survey Economic Series No.4).

Issued by the Mines Branch,
Department of Mines, Ottawa.
March, 1933. (A.H.A.R.)

ASBESTOS IN 1932

Production:

1932 - 122,977 tons valued at $3,039,721.
1931 - 164,296 " " " 4,812,886.

Exports:

	Tons	Value
Asbestos	42,661	$2,115,140
Asbestos sand and waste	69,769	986,095
Manufactures of asbestos		75,517
		$3,176,752

Imports:

Asbestos packing	55	$52,733
Asbestos in any form other than crude		421,364
		$474,097

Ores Mined and Producing Localities:

Canadian asbestos, which is of the chrysotile or serpentine variety, is all obtained from the Eastern Townships, Quebec.

Important Developments:

No new asbestos properties were reported as opening during the year. One of the most important developments of the year has been the preparation and issue of specifications for the Quebec standard testing machine for use in the Asbestos industry, through the work of the Associate Committee on Asbestos, a Sub-Committee of the National Research Council.

General Situation and Market Conditions:

The general industrial depression which began late in 1929 still continued to affect the asbestos industry through decreases in sales and a lowering of prices. In 1932 the quantity of asbestos producers shipped was 25% less than in the previous year, the value showing a decrease of 36.8%; this production was 49% less in quantity and 64% less in value than the production of 1930. There has also been a corresponding decline in exports. The situation in the United States, the chief market for Canadian asbestos continues to seriously affect sales and production of the Canadian companies; the position is further aggravated by the development of keen competition with foreign producers. Canada still maintains her position as the world's principal producer of asbestos, but the revival of the Russian industry and the expansion of the Rhodesian industry are reducing the proportion of world sales of long and spinning fibres which falls to Canadian producers; this is particularly true in the markets of Europe where sales of Canadian fibre have seriously declined. It is to be noted that adverse conditions have caused Canadian mills to materially improve their commercial practices; one of the most important happenings of the previous year was the establishment of a uniform standard classification to designate and name, or mark, each quality of fibre produced by Quebec mines. The use of this uniform classification will undoubtedly tend to improve the trade relations which exist between producers and purchasers of asbestos products.

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Department of Mines, Ottawa,
March, 1933. (A.W.G.W.)

BARIUM IN 1932

Production:

1932 - (None reported)
1931 - 16 tons valued at $363

Exports:

Not separately classified in trade records, but probably nil.

Imports:

1932 - 1,292 tons valued at $22,989.
1931 - 1,686 " " " 32,712.

Ores Mined and Producing Localities:

None. In 1931, as for a number of years previously, production was confined to a single deposit at Lake Ainslie, Nova Scotia, operated by an old-established paint firm to supply its own requirements.

Important Developments and Prospective Producing Localities:

The most important development during the year was the re-organization of the old, and long-inactive, Premier Langmuir Mines,Ltd.,with mine and mill on Night Hawk river, in the Porcupine district, northern Ontario. The new company bears the name Canada Night Hawk Mines Ltd. During the latter part of the year, a programme of underground development was undertaken on its deposit, and its mill on the property was rehabilitated and improved grinding and separating equipment installed. It is hoped that commercial production will be attained in 1933.

Prospecting was also conducted on several surface showings of barite in the Perth district, Lanark county, Ontario, but nothing of probable commercial importance was found, the veins being narrow and the barite off-colour and often contaminated by mineral impurities. A small trial shipment was made from one of the properties to a grinding plant in Montreal.

In Nova Scotia, some interest was shown in the possibilities of producing barite for export, and several tons of sample material from various properties in the Lake Ainslie district,Cape Breton, were sent to the Mines Branch for test. No further developments as the result of this work were reported.

General Situation, Market Conditions, etc.:

Production of barite in Canada has been negligible for many years. While a number of deposits are known, chiefly in Ontario, Nova Scotia and British Columbia, mining and grinding costs plus freight rates to domestic consuming centres have combined to render profitable production problematical in the face of high-grade imported material from the United States and Germany. In addition, the ore of certain of the known larger and higher-grade deposits, particularly in Ontario, is of the hard, crystalline variety, that does not find as high favour with many of the consuming industries as the soft type, such as is produced in Missouri. Many of the deposits, also, carry ore that requires concentrating to make a marketable product, while in others, the barite is off-colour.

Much of the interest shown in this mineral during the last few years has been prompted by enquiries from Trinidad as to the possibility of a Canadian supply of barite for use in oil-drilling. Trinidad imports a considerable tonnage of German barite

for this purpose, the powdered mineral serving to increase the gravity of the mud column in the hole and thus to overcome gas pressures. To meet the competition of German barite in the Trinidad market, the Canadian product would have to be furnished at an estimated laid-down cost of around $21 per long ton. Specifications call for a fineness of minus 200 mesh with a barium sulphate content of not under 90 per cent.

No lithopone or barium chemicals, for which barite serves as the raw material, are manufactured in Canada, although imports of such products are considerable. (The 1932 imports were valued at $585,609 and included 16,110,700 lb. of lithopone, valued at $585,148, and 4,162 lb. of barium peroxide, valued at $461.)

Canadian barite is effectively barred from the United States market by the tariff of $4 per ton on crude ore and $7.50 per ton on the ground product.

As an index of the approximate market value of barite, 1932 quotations in the United States were $6 to $7 per ton for the best grades of crude ore (minimum 95 per cent barium sulphate), and $23 per ton for prime bleached and floated powder.

The Department of Mines, Ottawa, has published the following report on barite; "Barium and Strontium in Canada", (Mines Branch Report No.570).

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March, 1933. (H.S.S.)

BITUMINOUS SAND IN 1932

Production:

Production of bituminous sand and separated bitumen in Canada is, as yet, unimportant. Prior to 1927, approximately 2,000 tons had been shipped for use in connection with laboratory investigations and for demonstration purposes. During 1927 further shipments aggregating upwards of 3,000 tons were used for demonstration purposes at Edmonton and at Jasper, Alberta, chiefly for surfacing roads and walks. Shipments in 1929 were 1,036 tons and in 1930, 792 tons, all of which was used for surfacing roads and walks.

During 1931 approximately 6,700 gallons of separated bitumen -- involving consumption of approximately 525 tons of bituminous sand -- was produced by R. C. Fitzsimmons, International Bitumen Company. In addition, the McMurray Oil and Asphaltum Company shipped 1,015 tons of bituminous sand valued at $4,060, and in 1932, 343 tons valued at $1,372.

Exports:

It is altogether unlikely that foreign export of bituminous sand, or various hydrocarbons which may be derived therefrom, will be possible for some years.

Imports:

Nil.

Producing Localities:

The deposit of bituminous sand extends along the Athabaska river and certain of its tributaries between the 23rd and 26th base lines, Province of Alberta. Shipments have been made from Sec. 32, Tp. 88, R. 8; Sec. 14, Tp. 89, R. 9; Sec. 8, Tp. 89, R. 9; Sec. 24, Tp. 95, R. 11 and Sec. 1, Tp. 97, R. 11.

Important Developments and Prospective Producing Localities:

Up to the present time principal activity has been directed toward field exploration, demonstration work, and laboratory studies. Results of investigations by the Department of Mines will be found in Summary Reports of the Mines Branch and in several separate reports by S. C. Ells, such as "Bituminous Sands of Northern Alberta", 1926, (Report No. 632), "Use of Alberta Bituminous Sand for Surfacing of Highways", (Report No. 684), and "Estimated Cost of Producing Solid and Liquid Hydrocarbons from Bituminous Sand", (Report No. 727, pp. 140-145).

Laboratory and demonstration work by the Department of Mines has included: (a) Analyses of representative samples of bituminous sand and separated bitumens; investigation of distillation and separation methods designed for recovery of hydrocarbons. (b) Construction of demonstration surfaces at Edmonton and at Jasper, Alberta. This has involved opening up quarries near McMurray and the designing, construction and operation of commercial heating and mixing plants. (c) Development and demonstration of a drilling system suitable for core drilling bituminous sand. (d) Laboratory scale tests on amenability of separated bitumen to hydrogenation. (e) Blowing and weathering tests on separated bitumen.

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Department of Mines, Ottawa,
March, 1933. (S.C.E.).

CHROMITE IN 1932

Production:

1932 - 54 tons valued at $750.

Until 1932 no commercial production of chromite in Canada had been reported since 1923, when 3,558 tons of 48 per cent Cr_2O_3 concentrates, valued at $52,650, were sold. This production came from the Coleraine district, Eastern Townships, Quebec, from which the small 1932 shipment also was derived.

Exports:

Nil.

Imports:

The imports of chrome ore are not separately recorded. Some ore is imported for use in the iron, steel, and paint industries During 1932, the following chromium products were imported: bichromate of soda 2,193,478 lb., valued at $128,717; bichromate of potash 130,978 lb., valued at $12,586; chrome firebrick, valued at $9,848.

Ores Mined and Producing Localities:

The principal chromite deposits are situated in the Coleraine district, Quebec, and are regarded as capable of producing large quantities of low-grade ore.

Important Developments and Prospective Producing Localities:

In 1928, a discovery of chromite was reported in the Obonga Lake region, in Ontario, 26 miles south of Collins station, on the Canadian National Railway. The deposit was actively explored by the owners, Consolidated Chromium Corporation, during 1930, and five chromite-bearing zones are reported to have been found. The chromite occurs in vein-like bodies, in which the grade of ore ranges from 12 to 36 per cent chromite. This content indicates that the ore is too low grade to be shipped without concentrating. A shaft was sunk to a depth of 350 feet on one of the most promising zones, and a considerable amount of underground development was completed. This company has since gone into liquidation. A recent (1933) press report states that its properties have been acquired by a new incorporation - Chromium Alloys Company, Ltd.

Promising indications of chromite are reported to have been disclosed by diamond-drilling operations on copper-nickel deposits in the Shebandowan Lake region, Ontario.

General Situation, Market Conditions, etc.:

Competition of cheaply produced, higher-grade ore in foreign countries has reduced Canadian production, which in 1917, in war time, was 36,725 tons, valued at $499,682, to nil in 1923 to 1931, notwithstanding the fact that the world consumption of chromite has more than doubled since 1914. This increased consumption is due to the development of high-grade alloy steels, the growing use of chromite refractories, and the wider use of chromium plating in the automobile industry.

Nearly half of the world's supply of chromite is derived from Rhodesia, which produced 89,974 short tons in 1931. The remainder is obtained chiefly from New Caledonia, India, Cuba, Greece, Jugoslavia, Russia, and the Transvaal.

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Department of Mines, Ottawa.
March, 1933. (H.S.S.)

CORUNDUM IN 1932

Production:

1921 - 403 tons graded grain valued at $55,965.
No production since.

Exports:

Nil.

Imports:

Not recorded — approximately 40 tons of grain.

Ores Mined and Producing Localities:

Nil.

Important Developments and Prospective Producing Localities:

Corundum is found near Craigmont, Ontario, and several mines have been operated in the past. The Madawaska Minerals Ltd. of Toronto, who are primarily engaged in prospecting for beryl near Quadville, Lyndoch township, Renfrew county, Ontario, took out a few hundred pounds of hand-picked corundum as samples from near Craigmont.

General Situation, Market Conditions, etc.:

The competition from artificial abrasives has been the main cause of the decline in consumption. For the past ten years, however, natural corundum has been used for the manufacture of the artificial abrasives, oxide of aluminium, the corundum for which is obtained from South Africa. In 1928, there was a decline in this use, as this method was abandoned by the Canadian manufacturer and is now employed by only one in the United States, who now uses about 125 tons annually. During 1930, this latter company, the General Abrasive Co., Niagara Falls, N.Y., erected an aluminous abrasive plant at Niagara Falls, Ont., under the name of Lionite Abrasives, Ltd., but so far no corundum has been used in their Canadian plant. One Canadian grinding wheel manufacturer used about ½ a ton from Craigmont during the year. Before the depression the United States consumption was normally between 2,000 and 3,000 tons annually of which about 50 per cent was for abrasive wheels, 30 per cent for lens and optical glass grinding, and under 10 per cent for artificial abrasives. The demand from the optical trade has proportionately very slightly increased, for which purpose corundum is now almost entirely used in Canada. All the Canadian imports are South African, ground and exported by United States crushing mills. Reports from these mills indicate that sales were mainly from 1931 stocks and they only imported 189 short tons valued at $8,258 against 639 tons in 1931. The South African total sales of crystal, boulder, and grain corundum were 362 short tons against 1,129 tons in the previous year.

Apart from the business depression, the consumption of corundum in the United States proportionately decreased in 1932, due to the development of the high-speed wheel, particularly for snagging purposes in which at the high speeds the artificial abrasive, being tougher and freer cutting then corundum, has a better life.

The average price of crude South African crystal corundum is $58.00 per ton f.o.b. United States ports; graded grain at crushing mills is about $125.00 per ton.

The Department of Mines, Ottawa, has published the following report: "Abrasives: Products of Canada, Part II — Corundum and Diamond" (Mines Branch Report No.675).

Issued by the Mines Branch,
Department of Mines, Ottawa.
March, 1933. (V.L.E-W.)

DIATOMITE IN 1932

Production:

1932 - 1,496 tons valued at $29,509
1931 - 1,610 " " " 32,789

Exports:

About 95 per cent of the shipments were exported to the United States.

Imports:

Recorded imports 100 tons valued at $2,944. The greater portion of the imports of this material is recorded under miscellaneous items or as partially made up products; it now totals about 4,000 tons.

Producing Localities:

The International Diatomite Industries Ltd.,Montreal, a Canadian reorganization of the Oxford Tripoli Sales Co.,continuously operated their deposits at New Annan, south of Tatamagouche in northeastern Nova Scotia where the material is calcined and pulverized. They also shipped 4 or 5 car lots of calcined material from their deposits at Little River, Digby Neck, N.S. There was a small shipment of 11 tons by the Dominion Diatomite Ltd., Novar, in the Muskoka district of Ontario, some of which was for experimental purposes. The B.C.Refractories Ltd. continued mining on a small scale from their deposits at Quesnel,B.C. sending their raw product to their Vancouver plant from which about 2 car lots were shipped.

Important Developments and Prospective Producing Localities:

The International Diatomite Industries Ltd. control the more important known deposits in Nova Scotia and in New Brunswick. Operations were carried on at full capacity throughout the year at their calcining plant and deposits near New Annan, 10 miles south of Tatamagouche. Although production was greater, the tonnage of their 1932 sales was about 10 per cent below that of the previous year. Their three fold increase in production in 1931 over 1930 is largely attributed to the suitability of the calcined material as one of the chief ingredients used in the manufacture of a certain popular type of battery box, for which the bulk of their shipments went to the United States. For this purpose the New Annan diatomite at present ranks foremost on this continent, having amongst other good qualities an exceptionally low manganese content of 0.005 per cent and under. The Digby Neck deposits were only operated periodically, the shipments, though small, were almost double those of 1931. Trouble was encountered early in the year due to the wet material, but a system was installed, with appreciable success, whereby some of the water was mechanically pressed out before calcining. Reconstruction plans to improve the plant and increase its capacity are under way.

The Diatomite Products Ltd.,Toronto,intermittently carried on with the erection of the large and up to date treatment plant near the railway track at Martin Siding, Muskoka,Ont. It is expected that construction work will soon be completed and that they will be producing before the summer of 1933. The storage dam beside the mill is capable of holding about 20,000 tons of wet sludge. This has been filled by means of pumping the liquid diatomite mud through an 8 inch wooden pipe line from their deposit in Slocombe lake, a little over a mile to the northwest.

The Dominion Diatomite Co. (late Diatomite Syndicate) Huntsville, Muskoka, Ont. erected in 1931 a treatment plant at their deposit 5 miles west of Novar. They ran intermittently early in the year and shipped 11 tons, but have been closed down since the summer.

Some prospecting work was done by the Air-Lite Silica,Ltd. (late Spence Lake Diatomite Ltd.) on their deposit near Muskoka Falls,Ont.

Owing to the business depression, only about a car lot of diatomite was mined by the B.C.Refractories,Ltd. from their deposit north of Quesnel, B.C. About a car lot was sold locally as a concrete admixture and another car lot was shipped east for insulation brick manufacture. These diatomite deposits near Quesnel are the largest known in the Dominion and the product is suitable for all purposes except filtration. Recent tests by the Fisheries Experimental Station, Prince Rupert, B.C. have shown that the Quesnel diatomite possesses good decolorizing properties.

The Coast Quarries Ltd. of Vancouver,B.C. have acquired the Trout Lake and Burnaby lake diatomite deposits in and near Vancouver. About a ton of the latter material was shipped during December to the Ore Dressing Laboratories,Ottawa, for calcination and separation tests.

General Situation, Market Conditions,etc.:

The uses are mainly as a filter medium; as insulators against heat, cold and sound; for abrasive purposes such as metal polishes and powders; in fillers for paint, hard rubber; as an absorbent; as a carrier for catalysts, etc. The demand for diatomite as an addition agent to concrete, which was quite active two or three years ago considerably diminished in 1931. This however is largely due to business conditions. During that year about 300 tons or 8 per cent were used for this purpose in Canada. Filtering consumed 2,300 tons or 62 per cent, and insulation 750 tons or 20 per cent of the total used. During 1932 the total diatomite consumed in Canada increased about 10 per cent.

The use of diatomite as one of the principal ingredients in asphaltum battery boxes is still popular and the increased production of the Nova Scotia material is almost entirely due to this outlet. Several Canadian battery box manufacturers are now using diatomite with good results. Another development of interest is the manufacture by some Canadian firms of insulation bricks and insulation bricks and insulation tiles. There is a large potential market within the Dominion for diatomite insulation products.

Approximately 95 per cent of the diatomite used in Canada is imported, 85 per cent being from the United States. By far the greater part of this material is produced by the Johns-Manville Co., New York (Celite Products Co.) from their deposits at Lompoc, California. There are now about 12 producers in the United States and their 1932 shipments are estimated at about 82,000 tons or 10 per cent less than in 1931. In 1930 shipments were about 125,000 tons.

The production of Canadian diatomite has been steadily increasing for the 6 years up to 1931 and it is expected that the 1933 output will constitute a record. Almost 150 deposits are known throughout the Dominion and her present consumption of imported material and far greater potential consumption, should act as a stimulant for future producers of best quality Canadian diatomite.

The present price in Canada varies from $25 to $35 per ton for concrete admixture; $35 to $75 for insulation and filtration; up to $200 in small lots for material suitable for polishes; imported insulation bricks vary from $110 to $140 per 1000 according to grade and density.

The Department of Mines,Ottawa, has published the following report: "Diatomite: Its Occurrence,Preparation and Uses" (Mines Branch Report No.691. Out of print but a new edition is expected to be published during the year.)

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March,1933. (V.L.E-W.)

FELDSPAR IN 1932.

Production:

1932 -	6,921	tons	valued at	$ 81,107
1931 -	18,343	"	" "	186,961

Exports:

1932 -	2,017	tons	valued at	$ 15,465
1931 -	10,975	"	" "	88,913

Imports:

1932 -	1,487	tons	valued at	$ 24,875
1931 -	1,877	"	" "	37,297

In addition to feldspar imported in the ground state by various consuming industries, a small tonnage of crude spar is also imported by grinders for use in blending with the domestic product, in order to meet special requirements.

Ores Mined and Producing Localities:

Feldspar mined in Canada is principally the high-potash variety, known as microcline. There has been a small production, however, of a soda-rich feldspar, used in scouring-soap compounds, from a mine in Aylwin township, Que., and domestic mills use a small tonnage for blending purposes. The principal producing districts in 1932 were the Perth area, in Ontario, and the Buckingham area in Quebec. A proportion of the best grade spar mined in the Buckingham district is utilized for dental purposes.

Important Developments and Prospective Producing Localities:

There were no new developments of consequence during 1932, and no important new properties were opened up.

General Situation, Market Conditions, etc.:

Production of feldspar in 1932 suffered a very heavy decline, being only about 38 per cent of the 1931 output and the lowest in thirty years. Only two or three properties were actively worked during the year, the total output being divided about equally between Ontario and Quebec.

Both of the two domestic grinding mills, that of Frontenac Floor and Wall Tile Company, at Kingston, Ont., and that of Canadian Flint and Spar Co. at Buckingham, Que., were in operation throughout the year.

The price level for No.1 grade crude spar averaged about $6 (nominal) per ton for the year. Ground spar sold at around $16 per ton.

Changes in the industry in recent years have resulted in most of the production now being derived from a few major operators. It has become increasingly difficult for small, independent operators to market their product with the grinding mills, owing to the poor grade of material often shipped as a result of ignorance of the high standard of purity now demanded and the consequent preference of grinding interests to draw their supplies from large, dependable operators or to operate their own mines.

Practically the whole of the exports of Canadian feldspar finds a market in the United States, most of it being consigned to grinding mills at Rochester, N.Y. The duty on crude spar entering the United States, which, under the 1930 Tariff Act, was set at $1 per ton, was reduced in 1931 to 50 cents per ton. Ground spar is taxed 30 per cent ad valorem.

The Department of Mines, Ottawa, has recently published a new report "Feldspar" (Mines Branch Report No.731, 1932.)

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Department of Mines, Ottawa.
March, 1933. (H.S.S.)

FLUORSPAR IN 1932

Production:

1932 - 32 tons, valued at $464
1931 - 40 " " " 620

Exports:

None recorded.

Imports:

1932 - 1,009 tons, valued at $22,965
1931 - 3,215 " " " 31,257

(In addition 10 tons of hydrofluosilicic acid valued at $1,901 were imported as against 13 tons valued at $3,264 in 1931.)

Ores Mined and Producing Localities:

The only localities where fluorspar has ever been produced on an important scale are the Madoc district, Ontario, and near Grand Forks, B.C. A number of properties were opened up in the Madoc area during the war, but only desultory mining has been conducted in recent years and production has amounted to only a few tons. The 32 tons reported as mined in 1932 came from one of the Madoc properties.

The Rock Candy mine of the Consolidated Mining and Smelting Company near Grand Forks, B.C., contains the largest known deposit of fluorite in Canada. The mine is operated intermittently, the last occasion being in 1929, when nearly 18,000 tons were produced.

Important Developments and Prospective Producing Localities:

None.

General Situation, Market Conditions, etc.:

The principal use for fluorspar is as a flux in the metallurgical and ceramic industries. About 80 per cent of the production is used in open-hearth steel making, and the present depressed state of the steel industry has caused a corresponding decline in fluorspar consumption. The foundry, glass and enamel industries consume the bulk of the remainder, while the mineral is also used in the manufacture of hydrofluoric and hydrofluosilicic acids. Fluorspar is added to the charge in cement plants recovering potash, in order to facilitate the volatilization of potassium salts.

Prices in the United States market of the various industrial grades of fluorspar at the end of the year were as follows:

Domestic per net ton: 85% CaF_2 and not over 5% SiO_2 washed gravel $12; No.2 lump $14; ground fluorspar 95 to 98% CaF_2 and not over 2½% SiO_2 $30 to $34.

Foreign per gross ton: 85% CaF_2-5% SiO_2 gravel $18.50 to $19, duty paid Atlantic ports.

Fluorspar entering the United States pays an import duty of $8.40 per long ton.

The Department of Mines, Ottawa, has published the following report:"Fluorspar Deposits of Canada", (Geological Survey of Canada, Economic Series No. 6, (1929).

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Department of Mines, Ottawa.
March, 1933. (H.S.S.)

GARNET IN 1932

Production:

1925 - to date no production except trial shipments.
1924 - 360 tons shipped from stock.
1923 - 1,250 " valued at $100,000.

Exports:

Nil. Samples only.

Imports:

Not separately recorded, but probably about 50 tons.

Ores Mined and Producing Localities:

Practically the whole of the Canadian abrasive garnet output up to the present has been obtained from the deposit of the Bancroft Mines Syndicate, situated some 18 miles east of Bancroft, Ontario.

Important Developments and Producing Localities:

A small amount of prospecting work was intermittently carried out by the Labelle Nickel & Garnet Co. of Montreal on their garnet deposit at Labelle, Que., 100 miles north of Montreal. They shipped 100 tons of crude ore to the United States for experimental purposes.

During December 1931, a two ton sample of ore from River Valley, northwest of North Bay, Ontario, was shipped to the Mines Branch Ore Testing Laboratories, Ottawa, for concentration tests. The ore consists of about 25 to 30 per cent garnet of good quality in the form of crystals, ranging from half an inch to 4 inches in diameter, which occur in a wide zone of mica schist. No difficulty was experienced in treating the ore by ordinary gravity methods. A 30 per cent recovery was obtained as garnet concentrates. The coarse sizes were not quite up to standard but the finer sizes possess good general abrasive qualities. Exploratory work is being continued. During the first three months of the year the Nordemac Abrasives Ltd. drove a crosscut at the bottom of the 32-foot shaft sunk in 1931, but no work has been done since March. The ore occurs as a 30 foot band of garnetiferous horneblende schist which outcrops on the sea shore at Chegoggin point, Yarmouth county, Nova Scotia.

General Situation and Market Conditions:

About 85 per cent of the world's production is used for making abrasive coated papers and cloths and almost all the balance for glass surfacing. Garnet is not used as loose grain for polishing wheels. A very small quantity is employed in grinding wheels of low temperature bonds only, such as in a few of those used for glass cutting. Attempts have been made from time to time to use inferior garnet, or waste products from concentration, for the sand-blasting of soft metals, but do not appear to have met with success in competition with silica sand. About 9 years ago, garnet coated papers largely took the place of sand and emery papers in the wood working industries, but during the past few years the artificial abrasive coated papers have increasingly made inroads into the garnet paper production. In many instances garnet cloth has been entirely replaced by the artificial aluminous abrasive cloth. The finer grades have been successfully employed in the United States glass grinding and bevelling industries for which purposes the peak in the demand was reached in 1930. In the past two years, there was a decrease in this use owing to the closing down of some glass plants as well as to the substitution of fine sand to save expense, also to the return of the use of emery.

The world's best garnet continued to be obtained from mines in New York state, but they were only operated half time in 1932 and sales were 25 per cent below the previous year. Fines for glass surfacing are mainly supplied by a producer in New Hampshire. The total United States production (three producers) for 1932 is estimated to be about 1,500 tons and sales about 2,000 tons against 2,946 tons valued at $193,015 sold in 1931. The value of the high grade is about $85 per ton against $40 - $50 per ton for the glass surfacing fines. There has been a steady drop in United States production since the peak year of 9,000 tons in 1923.

The decrease in garnet consumption was due to the general depression. The gradually increasing substitution of artificial abrasives for garnet during the past eight years was considerably slowed up in 1932 owing mainly to purchasers using the cheaper garnet because of poor business.

There are two sand paper manufacturers in Canada. The Canadian Durex Abrasives, with a plant at Brantford, are now making a full line of products consisting of almost 100 different types of coated papers and cloths, of which about 20 are garnet. As they have no crushing or sizing plant, all the abrasive grain is imported in the graded forms. The Canada Sandpapers, Ltd., Preston, Ont., started production in July 1931. Their annual consumption of garnet grain is at present about 50 tons.

The Department of Mines, Ottawa, has published the following report: "Abrasives: Products of Canada, Technology and Application, Part III - Garnet", (Mines Branch Report No. 677).

Issued by the Mines Branch,
Department of Mines, Ottawa.
March, 1933. (V.L.E-W)

GRAPHITE IN 1932

Production:

1932 - 346 tons valued at $18,483
1931 - 548 " " " 32,149

Exports:

1932 - 907 tons valued at $41,146
1931 - 951 " " " 44,606

Imports:

Graphite imports, including crucibles, were valued at $102,343 in 1932, as against $116,852 in 1931.

Ores Mined and Producing Localities:

At one time Canada had a small but fairly active graphite industry, with a number of concentrating and refining mills engaged in the production of flake graphite for the crucible trade. The deposits and mills were situated in the Bancroft and Perth districts in Ontario, and in the Buckingham, Guenette, and St.Remi districts in Quebec. All of these plants have been forced to discontinue operations, owing to the competition in the world market, of more cheaply mined, foreign graphite.

A single deposit of an exceptional grade of graphite, unsuitable for crucibles, but in high demand for lubricants and foundry work, has been operated for many years near Calabogie,Ont., by the Black Donald Graphite Company, and this concern is the only producer at the present time.

Important Developments and Prospective Producing Localities:

The discovery of an apparently large graphite deposit near Glendale, Cape Breton, Nova Scotia, was reported during the summer of 1931. Some interest was shown in 1932 in the commercial possibilities of the amorphous graphite deposits in the vicinity of Saint John, New Brunswick, but no active development was undertaken.

General Situation, Market Conditions, etc.:

The graphite industry on the American continent continued in a depressed state during 1932, producers finding it impossible to operate in competition with imported material — chiefly from Madagascar and Ceylon. The crucible and foundry trades, also, have been working at very much reduced capacity, and more graphite is being offered than these trades can possibly absorb. In addition, the life of crucibles is now many times what it used to be, owing to improvements in the technique of manufacture and to the addition to the mixtures of strengthening materials, as well as to the growing adoption of oil-fired and electric furnaces for the melting of metals.

As already stated, the graphite produced at Calabogie,Ont., is not of a grade suitable for crucibles,and it is, and always has been, utilized chiefly in lubricants and foundry work, for which purposes it is admirably adapted on account of its high quality.

Madagascar and Ceylon now hold a controlling position over the world graphite supply, and it is considered out of the question that the Canadian flake industry can hope, under present conditions, to become re-established in the face of competition from these sources. All graphite crucibles used in Canada are imported either from Great Britain or the United States.

The Department of Mines,Ottawa,has published the following report: "Graphite" (Mines Branch Report No.511,1920).

Issued by the Mines Branch,
Department of Mines,Ottawa.
March,1933. (H.S.S.)

GRINDSTONES, PULPSTONES AND SCYTHESTONES IN 1932

Production:

1932- 316 tons valued at $14,795 (official returns incomplete)
1931 -621 " " " 38,103

Exports:

1932- exports valued at $ 7,541
1931- " " " 10,776

Imports:

1932- imports (mostly pulpstones) valued at $ 87,483
1931- " " " " " 118,998

Producing Localities:

The Read Stone Company was the only Maritime producer of grindstones but no pulpstones were produced or sold from Eastern Canada. Their grindstone production which was exactly the same as in 1931, was obtained partly from freshly quarried rock from their deposits on Quarry Island, Pictou county, N.S. These crude blocks as well as old blocks from Woodpoint and Quarryville,N.B., were shipped to their Stonehaven,N.B.plant to be made into finished grindstones. The Stonehaven quarry in northern New Brunswick remained closed down. The Miramichi Company, Quarryville, near Newcastle, N.B. did not operate. Pulpstones were produced by J.A. & C.H. McDonald,Ltd., Vancouver, from their quarry on Newcastle Island opposite Nanaimo on Vancouver Island, British Columbia, but their production was only a third of that of the previous year. Part of the output was used by local mills and the remainder was exported to Finland.

The Read Stone Co. and A.E.Smith, Shediac,N.B. produced a total of about 80 tons of scythestone material,a third of which was in the form of finished stones sold in Canada and the remainder as crude blocks exported to a United States sythestone manufacturer.

Important Developments and Prospective Producing Localities:

No important developments.

General Situation and Market Conditions,etc.:

The demand for all but the largest sized grindstones is very limited, owing to the increasing use of artificial stones and to foreign competition. The price of Canadian natural grindstones is $40 per ton and about $80 per ton for pulpstones.

There has always been a demand for good pulpstones and about half a million dollars worth are normally used annually in the 50 Canadian pulp mills. Less than 1 per cent of the stones used in Canadian mills are now produced in Canada. The sales of Canadian pulpstones, however, proportionately decreased in 1932 since there was a curtailment of pulp and paper output and many of the pulp mills were closed down or operating part time, also keen competition caused severe price cutting and guarantees have become so strict that many types of stones cannot live up to them. The United States pulpstone production of about 1,200 tons was about 30 per cent less than in 1931. There were six producers, the greatest output being, as in former years, from the Opekiska district in West Virginia.

The stones for the modern pulp mills are now mainly of the large magazine type. The new artificial pulpstone made of silicon carbide segments is gradually but surely replacing the natural stone. Recent improvements in the manufacture of this stone have practically eliminated all its former disadvantages, and it is expected that it will make appreciable headway in future years. It

has for the past four years been made in Canada by one concern and over 100 stones are now in use in Canadian mills. During the year another manufacturer offered a fused alumina segmental stone of somewhat similar design. These have not yet been assembled in Canada, but a few are being used in Canadian mills.

The Department of Mines, Ottawa, has published the following report: "Abrasives: Products of Canada, Part I - Siliceous Abrasives" (Mines Branch Report No. 673).

Issued by the Mines Branch,
Department of Mines, Ottawa.
March, 1933. (V.L.E-W.)

GYPSUM IN 1932

Production:

1932:	438;629	tons	valued at	$1;080;379
1931:	863,752	"	"	2,111,517

Exports:

1932:	373;113	tons	valued at	$484;226
1931:	621,851	"	"	792,150

Imports:

1932:	1,610	tons	valued at	$35;980
1931:	11,692	"	"	138,483

Ores Mined and Producing Localities:

The materials produced are the hydrous calcium sulphate, commonly known as gypsum, the partly dehydrated material known as plaster of Paris or wall plaster, and the anhydrous calcium sulphate known as anhydrite. Gypsum is marketed in the crude lump form, ground, as 'land plaster' and 'terra alba', or ground and calcined as plaster of Paris and wall plaster. An increasing proportion of the calcined material each year enters into the manufacture of wallboard, gypsum blocks, insulating material, acoustic plaster, etc. Anhydrite is used mainly as a fertilizer for the peanut crop in the southern Atlantic states.

Nova Scotia is still the largest producer of gypsum in Canada, followed by New Brunswick, Ontario, Manitoba and British Columbia.

Important Developments and Prospective Producing Localities:

On account of the falling off of the building industry both in the United States and Canada, the gypsum industry was very quiet throughout the whole year.

The several large companies operating in Canada carried on under reduced production, still maintaining, however, intensive research work with a view to developing new products, and promising results in a number of lines have been obtained.

One interesting development arising from this applied research has resulted in the building of a number of small sized dwelling houses, of wood frame construction, using gypsum products for fire protection and insulation. Such buildings have been very satisfactory, being fire resistant on account of the gypsum covering, and with the gypsum insulation great economies can be made in the installation and operation of the heating units necessary to make them comfortable. Such a development should find a wide application in many parts of Canada where wood is the usual material for construction.

One new property was opened up during the year, namely the gypsum deposit in the vicinity of Petitcodiac, New Brunswick, and shipments of a high grade of white rock were made to Montreal by rail.

No other properties were opened up during the year and prospecting for new gypsum properties has been practically at a standstill. The companies at present operating, however, have in a number of cases been carrying out extensive drilling and prospecting operations with a view to determining the exact extent of their present holdings in order to assure themselves of an adequate supply of material when the demand again increases. There are a number of localities in the Maritimes where gypsum deposits of good grade can still be found, and the ones most favourably situated with respect to transportation and markets will eventually become producers as conditions warrant.

Extensive deposits are known in northern Ontario and with the extension of the Temiskaming and Northern Ontario railway to Moosonee, these deposits may in time become producers.

The deposits in Alberta, although situated at a distance from markets and railway transportation, are of good grade. There are also several known deposits in British Columbia which may be operated when conditions warrant their exploitation.

General Situation and Market Conditions:

The use of gypsum products in the building trades has made rapid strides in past years because of its lightness, durability, fire-resisting, insulating and acoustic properties, and tiles, wallboards, blocks, and special insulating and acoustic plasters have been developed. As the gypsum industry is so closely dependent on the construction activity in the country, the decrease of 58 per cent in the value of building contracts awarded in Canada during the year as compared with 1931 is at once reflected in the production of gypsum. With the larger proportion of the crude gypsum quarried in Canada being shipped to the United States for manufacture into gypsum products, industrial conditions in that country also have an important bearing on the industry.

The industry on the whole is in good condition, and is looking forward with confidence to the future.

The Department of Mines, Ottawa, has published the following reports:

"The Gypsum Industry of Canada",
(Mines Branch Report No. 714),
"Anhydrite in Canada",
(Mines Branch Report No. 732).

Issued by the Mines Branch,
Department of Mines, Ottawa,
March, 1933. (L.H.C.)

IRON OXIDE MINERAL PIGMENTS IN 1932

Production:

1932 - 5,240 tons valued at $46,161
1931 - 5,520 " " " 49,205

Exports:

Iron oxides, ochres, etc., 785 tons valued at $55,306.

Imports:

Ochrey earths, oxides, etc., 3,571 tons valued at $657,930.

Ores Mined and Producing Localities:

Materials produced under this heading include:- ochreous iron oxide sold uncalcined for the purification of illuminating gas; ochreous iron oxide, calcined, called metallic oxide, used in the manufacture of paint; umber, uncalcined and calcined; and sienna calcined and uncalcined.

The major part of the production has, for many years, come from near Three Rivers, Quebec, while a small production since 1923 came from a deposit near St. Anne de Beaupré, east of Quebec City. This latter deposit was exhausted in 1930, at which time the plant was removed to a new deposit near Les Forges, about 10 miles northwest of Three Rivers. Production has also been reported in past years from Lynch township, Labelle county and Iberville township, Saguenay county. A small production of iron oxide from British Columbia has been reported since 1923.

Important Developments and Prospective Producing Localities:

There has been no outstanding development in the mineral pigments industry during the year 1932 and the production figure has remained practically constant for several years past.

The present producing localities have met the requirements of the domestic pigment trade for the cheaper grades for many years past but there are other prospective producing localities, particularly in the low lying ground bordering the lower St. Lawrence Gulf. In 1929 and 1930, the Quebec Bureau of Mines systematically sampled two deposits of iron oxide in Saguenay county. One of these lies in Bergeronnes township, while the other is in Iberville township, near the mouth of the Little Romaine river. Both of these deposits had been worked previously, in a small way, for a pigment to be used in making paper and for paint for local use. The Little Romaine ochre deposit is the larger and has a Fe_2O_3 content of 86 per cent, while the Bergeronnes deposit averages 91 per cent Fe_2O_3. The ochre at both deposits does not form a continuous band but occurs in pockets separated from one another.

There are several known deposits of ochre in Alberta and British Columbia, some of which have commercial possibilities. Due to their present inaccessibility and also to the limited market, very little use has been made of them. A small deposit near the Banff-Windermere highway in British Columbia, has been utilized to a limited extent for paint making.

General Situation, Market Conditions, etc.:

The demand within the country for these products is fair. Most of the higher grade oxides, ochres, and umbers used in the paint trade are imported from Europe, and, even in the case of some of the cheaper grades, European oxides compete with the domestic products due to the fact that the former do not require calcining to produce the desired colour.

Issued by the Mines Branch,
Department of Mines, Ottawa.
March, 1933. (E.H.W.)

LITHIUM MINERALS IN 1932

Production:

A few small shipments of spodumene and lepidolite from deposits in southeastern Manitoba have been reported since 1925, but there has been no active production for several years past.

Exports:

The six tons produced in 1925 were exported to England for a special test to determine whether the material was suitable for the recovery of lithia salts. In 1928 a trial shipment is stated to have been made to Italy.

Imports:

Lithia salts are not recorded separately.

Ores Mined and Producing Localities:

The principal lithium ores of commerce are spodumene, amblygonite and lepidolite.

The only locality at which lithium ores have been produced in Canada lies about 100 miles northeast of Winnipeg, Man., where the Silver Leaf Mining Co., in 1925, opened up a property about 10 miles northeast of Pointe-du-Bois. The principal minerals found in this deposit are lepidolite, spodumene, and montebrasite(a variety of amblygonite). The Company has not been active in recent years, and its deposits are reported to have been taken over in 1931 by a Winnipeg syndicate (Mineral Reduction Processes Ltd.), interested in the recovery of lithium, etc., from ores of this type.

Important Developments and Prospective Producing Localities:

The above mentioned district is still in the prospect stage, and the Silver Leaf is the first and only property from which actual shipment of lithium minerals has been made. Sufficient work has been done on the Silver Leaf property to indicate the existence of a considerable ore body, and it is probable that this deposit could be made to yield moderate tonnages of lepidolite and spodumene, as well as, perhaps, some amblygonite.

Outside of occurrences of mineralogical interest only, there is only one other deposit in Canada in which lithium minerals are known to occur, namely the Leduc mine, in Wakefield township, Quebec, worked years ago for tourmaline, and carrying lepidolite crystals up to 2 feet in diameter.

General Situation, Market Conditions, etc.:

There is no present market in Canada for lithium ores; so, unless an extraction plant for the recovery of lithia salts is erected, any production will have to find a market either in the United States or Europe. The American market is at present adequately supplied from the large deposits in South Dakota and California.

The principal use of lepidolite, as such, is in the glass industry, as an ingredient of heat-resistant, flint and opal glasses. The lithia content of lepidolite is too low for it to serve as a raw material in the manufacture of lithia salts and chemicals by ordinary chemical treatment. For the latter purpose, spodumene and amblygonite are generally used. The development in Germany, however, of a noval volatilization process, whereby lithia mica is decomposed by heating with potassium sulphate, has resulted in a considerable industry being built up in that country, the products made being metallic lithium (used in various alloys and for de-gassing copper) and lithium salts. The lithia mica used in the

above process is believed to be the mineral zinnwaldite, which occurs in considerable amount in the tin deposits of Saxony and Czechoslovakia.

During 1930-31, intermittent experimental work was conducted in a plant at Winnipeg designed for the recovery of lithia, potash, etc. from the ores of the Pointe-du-Bois region. Extraction was to be effected by volatilization, using an oil-fired furnace, with recovery in a washing chamber, followed by tank-evaporation. No production was reported, and the plant is understood to have been closed down.

A report containing a section on the lithium deposits of Manitoba (Memoir No.169) was published by the Geological Survey, Department of Mines of Canada, in 1932.

Issued by the Mines Branch,
Department of Mines, Ottawa.
March, 1933. (H.S.S.)

MAGNESITE IN 1932

Production:

No magnesite, within the strict meaning of the term, is being produced in Canada at the present time. A magnesian dolomite which, when properly processed, can be used in place of magnesite for many purposes, is being produced by two companies in Quebec.

Exports:

Products made from magnesian dolomite are exported chiefly to Great Britain and the United States.

Imports:

	Tons	Value
Magnesite, caustic and dead burned	1,065	$28,626
Magnesia pipe covering		64,924
Magnesite refractory brick		71,077

Products and Producing Localities:

At Kilmar, Argenteuil county, Quebec, magnesian dolomite is being quarried and processed. It is marketed in the caustic and in the dead-burned state and also as a finely ground refractory cement.

Important Developments and Prospective Producing Localities:

The known resources of magnesite in Canada were greatly increased in 1932 by the discovery of large deposits in the vicinity of Cranbrook, southeastern British Columbia. One of these deposits is near the headwaters of Perry Creek, about 25 miles from railway transportation; the other, discovered by C.E.Cairnes of the Geological Survey, is 3 miles by road from the railway at Marysville. These deposits are reported to be of similar character. They contain an exceptionally low percentage of lime, but a rather high percentage of silica - chip samples of the better grade material from the Marysville deposit containing 4.5% of the latter impurity.

Hydromagnesite is known to occur in old lake bottoms north of Clinton, British Columbia, in the territory served by the Pacific Great Eastern railway.

General Situation and Market Conditions, etc.:

The deposits of magnesian dolomite in Argenteuil county, Quebec, are ample to supply domestic requirements and to support a large export trade. The economic value of the British Columbia deposits has not yet been thoroughly investigated.

The recent trend in the making of magnesite and magnesian dolomite products has been chiefly toward the production of highly refractory materials such as are used for the lining of the bottoms of steel furnaces. Finely ground, refractory cement is also a recent product. Caustic-calcined magnesia was formerly much in demand as a stucco material, but very little is now used for this purpose; it is, however, being used for the construction of floors and for floor tiles.

The Department of Mines, Ottawa, has published a report "The Magnesite Deposits of Grenville District, Quebec", (Geological Survey Memoir No.98).

Issued by the Mines Branch,
Department of Mines, Ottawa.
March, 1933 (M.F.G.)

MICA IN 1932

Production:

	1932 Lb.	1932 Value	1931 Lb.	1931 Value
Rough cobbed	Nil	Nil	Nil	Nil
Thumb-trimmed	2,019	$1,254	49,835	$5,717
Splittings	3,350	2,014	37,475	14,398
Scrap	612,980	3,560	2,589,918	33,951
	618,349	$6,828	2,677,228	$54,066

Mica is marketed in various forms, including rough-cobbed, thumb-trimmed, splittings, scrap, mica plate and mica powder. The production by classes is shown above.

Exports:

1932 - $31,113 1931 - $51,497

Exports of mica include thumb-trimmed, rough-cobbed, splittings, mica plate and scrap.

Imports:

1932 - $71,749. 1931 - $92,294.

Ores Mined and Producing Localities:

Practically all of the mica produced in Canada is of the amber variety (plogopite). White mica (muscovite) exists, and small amounts have been mined in the past in Quebec, Ontario, and British Columbia; cost of production, however, proved too high for profitable operation of the deposits.

Mica is produced almost exclusively from mines in the Ottawa region of Ontario and Quebec. The Quebec deposits lie principally between the Lievre and Gatineau rivers, and the Ontario deposits in the Perth-Kingston district. The mine of the General Electric Company, near Sydenham, Ont., was one of the world's most important mica mines: it has been closed down for some years. Production for some years past has been confined to two or three properties.

Important Developments and Prospective Producing Localities:

A mica-grinding plant was erected in 1930 by Messrs. Blackburn Bros. at their mine in Templeton township, Que., and has produced a small tonnage of dry-ground mica for the roofing and rubber trades.

General Situation, Market Conditions, etc.:

The market for Canadian mica continued dull throughout the year. Sheet mica, especially the larger sizes, was difficult to sell, the slackened demand being caused, in part at least, by stocks coming on the London market from Madagascar, Africa, and other sources.

Scrap mica sales, for the production of ground mica, showed a heavy decrease from 1931.

Prices of mica are subject to considerable fluctuations. The following figures, however, give an approximate indication of the ruling prices for trimmed Canadian amber mica at the close of the year:

1 x 1 inches	15 cents	per lb.	2 x 3 inches	40 cents	per lb.
1 x 2 "	20 "	" "	2 x 4 "	55 "	" "
1 x 3 "	30 "	" "	3 x 5 "	90 "	" "

The Department of Mines, Ottawa, has published the following report: "Mica" (Mines Branch Report No. 701.)

Issued by the Mines Branch,
Department of Mines, Ottawa.
March, 1933. (H.S.S.)

MOULDING SANDS IN 1932 FOR USE IN FERROUS AND NON-FERROUS FOUNDRIES

Production:

1932: Figures not yet available.
1931: 13,881 tons valued at $9,940

Small quantities not entered in production statistics, have been produced by foundries for their own use from near by deposits or by small operators, such as farmers for local foundries.

Exports:

Nil.

For a period of approximately 25 years, considerable moulding sand was shipped from the vicinity of Ruthven and Leamington, Ontario, to United States points including Cleveland, Toledo and Detroit, being sold in competition with American sands. This exportation discontinued about 1906 due to depletion of deposits.

Imports:

The greater amount of moulding sand consumed in Canada is imported, chiefly from the United States. No definite record of the amounts imported is available since there is no single customs classification covering this item. It is estimated that 75 per cent of our consumption is imported. Moulding sands as well as other sands and gravels, and sands, silica, for glass and carborundum manufacture and for use in steel foundries, enter Canada duty free.

Producing Localities:

Every province, with the exception of New Brunswick and Prince Edward Island, is producing commercially. At one time there was a small production in Kent and Westmorland counties near Moncton in New Brunswick. Near Charlottetown, Prince Edward Island, local sand has found a limited application.

In Nova Scotia, deposits are being worked or have been worked in the following counties, viz.:- Colchester, Cumberland, Hants, Inverness, Kings and Pictou.

In Quebec, deposits are being worked or have been worked in the following counties, viz.:- Argenteuil, L'Assomption, Missisquoi, Portneuf and St. Hyacinthe.

Ontario is the leading province in this industry with the greatest development in Welland and Wentworth counties from Niagara Falls to and around Hamilton. Deposits also are being worked or have been worked in the following counties, viz.:- Brant, Bruce, Durham, Essex, Kent, Leeds, Lennox and Addington, Middlesex, Norfolk, Peterborough, Prince Edward, Stormont, and Thunder Bay district.

In Manitoba, deposits are being worked at Melbourne, and Mile 80 (Wye) on the Greater Winnipeg Water District Railway.

In the following provinces in the places enumerated some foundries are using local supplies, viz.:- Saskatchewan - Humboldt, Moose Jaw, Prince Albert, Regina and Saskatoon; Alberta - Calgary, Edmonton, Lethbridge and Medicine Hat; British Columbia - Cranbrook, Kamloops, Nanaimo, Penticton and Victoria.

Important Developments and Prospective Producing Localities:

The Mines Branch completed in 1931 the field work covering present known deposits of moulding sands and certain other sands in Canada which may ultimately be used as moulding sands. The outstanding feature of the investigation is the large number of deposits supplying the requirements of local foundries only. Some of the products of some of these deposits should find a wider market. It is also apparent that there are other places suitable for prospecting. Recently a grade of sand preferably suitable for medium to heavy weight castings has been obtained from Edmonton, Alberta.

General Situation, Market Conditions, etc.:

The general situation at present offers hope for considerable improvement. An increasing number of foundries are realizing the fact that Canada possesses deposits of moulding sand which can be utilized in their plants. Very few foundry men are aware that local supplies have been used so extensively. No doubt if some of these deposits are better exploited, the amount of foreign sands used will be reduced. Due to the cheapness of the commodity and high freight charges, the use of any particular sand is confined to a limited area.

The industry gives only seasonal occupation as the foundries usually receive their supplies in the summer and autumn months.

Issued by the Mines Branch,
Department of Mines, Ottawa,
March, 1933. (C.H.F.)

PHOSPHATE IN 1932

Production:

1932: 1,316 tons valued at $12,333
1931: None reported.
The 1932 production was obtained from Quebec.

Exports:

Nil.

Imports:

1932: 65,533 tons valued at $346,907
1931: 141,722 " " " 619,079

Ores Mined and Producing Localities:

Most of the small production of phosphate in Canada for the last ten or fifteen years has consisted of apatite recovered from old waste dumps or secured during mining operations for mica in the Ontario-Quebec mica-phosphate fields. The output is taken principally by the Electric Reduction Company, at Buckingham, Que., and is used for the manufacture of phosphorus.

During 1931-32, some of the old apatite workings near High Falls, on the Lièvre river, Quebec, where active mining for the mineral was conducted about forty years ago, were re-opened, and a small tonnage was taken out for shipment to Buckingham.

Important Developments and Prospective Producing Localities:

Between 1926 and 1930, the Consolidated Mining and Smelting Company undertook an investigation of low-grade sedimentary phosphate beds in the Crow's Nest district, British Columbia, in order to determine whether the material could be concentrated to serve as raw material for the manufacture of superphosphate. A large number of claims were taken up, and phosphate rock was mined at several points near Crow's Nest. The rock proved difficult to concentrate, however, and mining was discontinued. Supplies of ore are now obtained from higher-grade deposits in Idaho and Montana. The Company has recently added a large complete fertilizer unit to its Trail plant: this will have a rated capacity of nearly 300 tons per diem of phosphatic fertilizer. By making triple, instead of ordinary superphosphate, the freight costs on the fertilizer are very materially reduced.

General Situation, Market Conditions, etc.:

There is little of interest to Canada in the general world phosphate situation. The American domestic production of sedimentary phosphate is being faced with competition from the northern Africa deposits, and it is reported that Moroccan phosphate has been sold on the Atlantic seaboard at a lower price than the same grade of Florida phosphate. A cargo of Russian phosphate, also, was landed at Baltimore in 1932, the material being apatite concentrates obtained by flotation treatment of nephelite-apatite rock, vast tonnages of which are under development in the Kola peninsula, in northern Russia. Canadian imports in 1932 were derived both from Florida and Morocco.

Occasional enquiries reach the Mines Branch from the United States and Europe regarding available supplies of apatite, but there is no indication that a serious demand for this class of phosphate is imminent, the price apparently being an obstacle.

The Department of Mines, Ottawa, has published the following report: "Phosphate in Canada", (Mines Branch Report No. 396).

Issued by the Mines Branch,
Department of Mines, Ottawa,
March, 1933. (H.S.S.)

PYRITES IN 1932

Production:

1932 - Ore containing 53,172 tons of sulphur, valued at $470,014.
1931 - Ore containing 50,107 tons of sulphur, valued at $429,457.

Exports:

1932 - Ore containing 17,455 tons of sulphur, valued at $89,568.
1931 - Ore containing 26,613 tons of sulphur, valued at $139,814.

Imports:

None recorded.
One Ontario firm imports a small quantity of pyrites from New York state for use in an acid plant.

Ores Mined and Producing Localities:

By-product pyrites was produced at the Eustis and Aldermac mines in Quebec, and at the Britannia mine in British Columbia.

Important Developments and Prospective Producing Localities:

There have been no important new developments during the year. The Freeman flash roasting plant installed in the St.Lawrence mill of the Consolidated Paper Corporation,Ltd.,in Three Rivers, Quebec, has been operated intermittently but successfully during the year for the production of sulphur dioxide gas for use in the absorption plant of the sulphite mill.

General Situation and Market Conditions:

There is no general market in Canada for lump pyrites, although one acid plant still imports a small tonnage annually. While the Freeman process of flash roasting,especially designed for the treatment of by-product flotation fines recovered in the treatment of copper ores, opens a prospective market for this class of ore, still it is not to be assumed that the mining of pyrites will be stimulated. Ample supplies of pyrites fines are already available at strategic points to care for any demand which may arise in the immediate future.

Issued by the Mines Branch,
Department of Mines, Ottawa,
March, 1933. (A.W.G.W.)

SALT IN 1932

Production:

1932 -	263,543	tons	valued at	$1,947,551
1931 -	259,047	"	"	1,904,149

Exports:

1932 -	5,627	tons	valued at	$ 36,248
1931 -	6,125	"	"	55,110

Imports:

1932 -	102,033	tons	valued at	$ 595,954
1931 -	130,895	"	"	751,938

Ores Mined and Producing Localities:

Common salt (sodium chloride) is obtained in two forms, in solution in a brine from which the salt is extracted by evaporation, and in lump or solid form by direct mining.

During the year 1932, salt was produced in southern Ontario, at Malagash, Nova Scotia, Neepawa, Manitoba, and from Simpson, Saskatchewan. Ontario salt is obtained from brine wells, as is also the salt produced in Manitoba and Saskatchewan, and Malagash salt is recovered by mining rock salt as well as recovery by evaporation from brines produced by leaching of salt from the waste piles of the mine.

Important Developments and Prospective Producing Localities:

At Waterways, Alberta, the Alberta government, through the Alberta and Great Waterways railway, in 1928, encountered salt formations at depths of 670 feet to 883 feet. This occurrence in time may be commercially exploited.

At Simpson, Saskatchewan, the Simpson Oil and Gas Company's well on L.S.D.2, Sec.9, Tp.29, Range 25, west of the 2nd meridian, from a depth of 3,435 feet furnished brine from which a small quantity of salt was produced in an experimental evaporation, and plans are now being formulated to erect a commercial sized open pan unit to be ready for operation early in 1933.

At Neepawa, Manitoba, a well drilled a number of years ago encountered a salt brine at depth, and during the past year two grainer pans were erected and a production of commercial salt was made which found a ready local market.

There were no new developments in the Ontario salt field during the year. The Kincardine Salt Co. (owned by the Canadian Industries Ltd.) was closed down but the shut down was said to be only temporary pending changed conditions.

In a well drilled for oil near Gautreau, New Brunswick, south of Moncton, extensive beds of rock salt were encountered a number of years ago, between 1300 and 1800 feet. A second well penetrated 890 feet of salt formation, some of the salt beds being 150 feet thick. So far these beds have remained unexploited, but further prospecting may be carried on to determine their extent, and it is probable that this district will become a producer when conditions warrant.

Near Amherst, Cumberland county, Nova Scotia, a well put down by the Imperial Oil Company, in a search for oil and gas encountered 3,200 feet of alternating beds of salt, anhydrite, dolomite, limestone and shale, the salt constituting 45 per cent of the whole. The first salt bed was penetrated at a depth of 920 feet from the surface and one of the salt beds had a thickness of over 480 feet and ran over 90 per cent sodium chloride in the crude sample. The apparent great thickness of salt formation in this locality may possibly be due to the steep angle of pitch of the beds.

In Nova Scotia, at the Malagash deposit, active production has been maintained, and the successful operation of this deposit has greatly stimulated the prospecting for salt in the Maritime Provinces.

General Situation, Market Conditions, etc.:

The production, except for small exports, is sold in Canada, principally to the dairy, meat-curing, fisheries, and chemical industries, and as table salt for household use. The production showed a 2 per cent increase during the past year over 1931, and taken for a period of years, the market for salt in Canada is steadily increasing, and the industry is in a sound condition.

A large tonnage of salt is still imported duty free for use in the fisheries. This is due to the fact that until the past fifteen years the only producing district was in Ontario, which is unfavourably situated with respect to the market offered by the Atlantic and Pacific coast fisheries. The production from Malagash has materially aided the fishing industry in the Maritime Provinces; and while the demand for salt has, in recent years, been curtailed, such a condition is probably only temporary. Until, however, a deposit on the west coast of Canada is found and exploited, the Pacific coast fisheries will be dependent, to a large extent, on imported salt and considerable importations of salt can therefore be expected.

Experiments have been carried on in Nova Scotia for the past few years to determine the effect of salt with a mixture of clay as a surface veneer on gravel highways in order to decrease if not to entirely eliminate the dust nuisance, and if the producers of salt are successful in proving its value for such a purpose, a greatly increased tonnage will result.

An increasing demand for salt for the chemical industries may reasonably be expected, since at present, with the exception of caustic soda, soda ash, sodium sulphate, and sodium acid sulphate, practically all of the sodium products used in Canada are imported.

The Department of Mines, Ottawa, has published the following report: "Salt Industry of Canada" (Mines Branch Report No.716).

Issued by the Mines Branch,
Department of Mines, Ottawa.
March, 1933. (L.H.C.)

SILICA IN 1932

Production:

1932 -	171,900	(tons of silica sand valued at	$263,208
	"	" quartz " ")	
	93,000	" silica bricks " "	4,303
1931 -	195,724	(tons of silica sand valued at	303,158
	"	" quartz " ")	
	900,000	silica bricks " "	35,746

Exports:

None recorded.

Imports:

1932 -	61,186	tons of silex valued at	$167,997
	1,926	" " flint " "	16,075
	59,176	" " silica sand "	162,869
	---	silica bricks "	122,952
1931 -	6,358	tons of silex valued at	$141,818
	2,616	" " flint " "	23,653
	107,712	" " silica sand "	235,191
	---	silica bricks "	234,909

Ores Mined and Producing Localities:

The materials produced in this industry are:- Quartz for smelter flux and ferro-silicon; Quartzite for ferro-silicon and silica brick; Silica sand for the manufacture of glass, carborundum, etc. for sand blasting and for use in the steel foundries; Silex, the finely pulverized silica used in ceramics and the paint industry.

Quartz and quartzite in sizes from 2 to 6 inches are used in the manufacture of ferro-silicon and as a smelter flux. For silica bricks it is crushed to about 8 mesh.

Silica sand is prepared from a friable sandstone by crushing, washing, drying, and screening, to recover all material between the 20 and 100 meshes.

Silex is the washed sand or pure quartz crushed and ground in some form of ball mill, then either air or water-floated to recover the fine flour. The ceramic industry requires 150 mesh or finer while the paint trade requires air-floated material 250 mesh or finer.

Quartz is produced in Quebec and Ontario; and quartzite is quarried in Nova Scotia, Quebec, Ontario, Manitoba, and British Columbia. Silica sand is obtained from Nova Scotia, Quebec, and Manitoba, and silex is prepared at one plant in the province of Quebec.

Important Developments and Prospective Producing Localities:

The Ottawa Silica and Sandstone Company, Templeton, Quebec, is producing sand of different grades for the glass industry, steel foundries, and for sand blast, etc.

The Canadian Kaolin Silica Products, Ltd., has during the past year brought their property at Lac Remi, Quebec, into production and have made several shipments of silica sand to the glass companies and others in the Montreal district.

The American Cyanamid Company of Niagara Falls, Ontario, have recently installed a plant for the manufacture of sodium silicate and have purchased a trial shipment of Canadian silica sand. If this proves successful it will mean a new outlet for this material as this is the first plant for the manufacture of silicate of soda to be erected in Canada.

The silica sand deposits on Black island, Lake Winnipeg, Manitoba, were operated on an increased scale. The sand is employed in the manufacture of glass bottles, etc., by the Mid West Glass Co., at Winnipeg, Manitoba and also by the Dominion Glass Co., at Redcliff, Alberta. At present the snnd is partially washed by the method employed for its recovery, but it is hoped that a washing, drying, and screening plant will in time be installed.

There are numerous deposits of silica throughout Canada, which might be suitable for commercial production whenever the market warrants. Interests in these deposits during the past year has been quite active, and commercial interests have spent considerable money in examining a number of the more important occurrences with a view to determining their commercial possibilities. There location with respect to transportation and markets is an important factor.

General Situation, Market Conditions, etc.:

In the use of silica for a flux, the smelters endeavour to obtain their material from the nearest possible source, and in many cases they prefer a siliceous ore containing small values in the precious metals. For the manufacture of ferro-silicon and silica brick, the market for the finished product limits the quantity of silica required. The demand for silica sand of a high grade is large and, if it were not for the large quantities of Belgian sand being brought into Montreal as ballast at a comparatively low cost, there would be an opportunity for a number of sand plants in Canada, provided sand sufficiently low in iron could be produced. An encouraging feature of the industry is the increasing use of Canadian sand for sand blasting and the prospects are promising for a still further use of Canadian material for this purpose. The market for silica sand and silex is steadily increasing and the prospects for the Canadian producers are bright.

The Department of Mines has published the following reports:

Silica in Canada, Part I, Eastern Canada (Mines Branch Report No.555).
Silica in Canada, Part II, Western Canada (Mines Branch Report No.686).

Issued by the Mines Branch,
Department of Mines, Ottawa.
March, 1933. (L.H.C.)

NATURAL SODIUM SULPHATE IN 1932
(Glauber's Salt and Salt Cake)

Production:

1932 - Shipments valued at $271,736
1931 - " " " 421,097

Exports:

An appreciable proportion of the Canadian production was exported during the year to various points in the United States, but as the exports were made by less than three companies, the figures are not available for publication.

Imports:

1932 -	903	tons of	Glauber's salt	valued at	$ 11,027
	4,433	" "	salt cake	" "	51,925
	824	" "	nitre cake	" "	16,432
1931 -	1,000	" "	Glauber's salt	" "	$ 10,838
	8,661	" "	salt cake	" "	97,215
	14,258	" "	nitre cake	" "	175,648

Ores Mined and Producing Localities:

The material mined is either hydrated sodium sulphate, known as Glauber's salt, or anhydrous sodium sulphate, known to the trade as salt cake. It occurs as crystals or in the form of saturated brines in many lakes throughout western Canada.

Production was all from the province of Saskatchewan, the principal producers being the Natural Sodium Products, Ltd., Dunkirk, Sask.; the Sodium Corporation, Alsask, Sask., and the Whiteshore Salts and Chemicals, Ltd., North Battleford, Sask.

Important Developments and Prospective Producing Localities:

Experimental work at the pilot plant of the Canadian Salines, Ltd., at Palo, Sask., operating on material from Whiteshore lake, continued through the year, but the plant is now closed down pending an improvement in the market.

The Natural Sodium Products, Ltd., at Dunkirk, Sask., completed the installation of a second drier and are now in a position to increase their production materially when conditions warrant.

The Horseshoe Lake Mining Company's plant at Ormiston, Sask. is still closed down, pending the renewal of the demand for their material for the metallurgical work at Copper Cliff, Ontario.

Developments are now under way to exploit and operate the large deposit at Ingebright, Sask., utilizing a new process of drying the salts, and if these plans materialize, this deposit should be a producer during 1933.

The investigation of the deposits in western Canada by the Mines Branch, Department of Mines, has proven up tonnages of hydrous sodium and magnesium salts in excess of 120,000,000 tons. The nature of the salts is such that a vast amount of research and experimental work in semi-commercial and commercial plants has been necessary to devise proper methods of harvesting and drying the salts. Rapid advances have been made by the pioneers in the industry, and the prospects for the future are decidedly promising. There are many deposits in the Prairie Provinces and in British Columbia which can produce sodium sulphate, but on account of high freight rates to the markets, only those close to railroads can be considered as possible producers at present.

It is decidedly encouraging to note the progress made in this industry in the past 12 years. The investigation of these deposits was started by the Mines Branch in 1921. At the present time there are four plants which are capable of producing 250 tons of dried salts per day, the equivalent of 60,000 tons of new freight per year, and the development of these sodium sulphate deposits has been one of the major factors that has made possible the erection of the plant for separating nickel from copper at Copper Cliff, Ont.

General Situation and Market Conditions:

There was a considerable decrease in the production of natural sodium sulphate during the past year owing to the reduced demand from the paper trade and to the closing down of the plant at Copper Cliff, Ont.

It is probable, as time goes on, that the product from these western deposits will gradually find an extended market as the by-product material from the manufacture of hydrochloric acid is each year decreasing in volume due to the manufacture of hydrochloric acid synthetically.

It would appear, that the development of the natural sodium sulphate deposits of western Canada, has at last been placed on a sound basis, and that as years go on the production will steadily increase and prove a valuable asset to the mineral industry of the country.

The Department of Mines, Ottawa, has published the following report: "Sodium Sulphate of Western Canada" (Mines Branch Report No.646.)

Issued by the Mines Branch,
Department of Mines, Ottawa.
March, 1933. (L.H.C.)

TALC AND SOAPSTONE IN 1932

Production:

1932 -	12,103	tons of ground talc valued at	$112,287
		Block soapstone " "	46,751
1931 -	11,806	tons of ground talc " "	122,644
		Block soapstone " "	34,439

Exports:

1932 -	7,806	tons of ground talc valued at	$85,790
1931 -	7,851	" " " " " "	83,765

Imports:

1932 -	1,900	tons valued at	$49,774
1931 -	2,670	" " "	49,452.

Ores Mined and Producing Localities:

Most of the talc produced is ground at mills situated at or near the mines, and is marketed as three grades, according to fineness. Powdered talc is produced chiefly at Madoc, Ontario, where two mines and two mills have been in operation for a number of years. There has also been an intermittent production from deposits near Victoria, Vancouver Island, and near Keefers and D'Arcy, in British Columbia. The Victoria and D'Arcy material is a rather impure talc, which finds employment chiefly in the roofing trade. The Keefers talc is of a superior grade, and has been successfully employed in paper, soap and paints.

Soapstone was produced for the first time in 1922, the material being sawn into block form and consigned to kraft paper mills for furnace linings; this stone came from a deposit at Robertson, Quebec. Other deposits have since been opened up in the same district by the original operators, whose present source of stone is a large quarry at Broughton.

In Ontario, soapstone occurs near Vermilion bay, Lake of the Woods region, where a plant was installed in 1926 for the production of cut soapstone; this plant has been idle since 1928. A company was also formed some ten years ago to develop a soapstone deposit at Wabigoon, Lake of the Woods region, but never came into operation. Soapstone is stated to be of fairly widespread occurrence in the Port Arthur - Kenora region.

Important Developments and Prospective Producing Localities:

Deposits of high-grade massive talc (steatite) occur near Vermilion Summit, on the Alberta-British Columbia divide, and a syndicate was incorporated in 1927 for the purpose of mining this material for lava purposes. It is understood that western interests have since taken over certain of the holdings, and are planning to develop them. Diamond-drilling on one group of claims carrying an unusual black talc was conducted in 1930.

In British Columbia, soapstone of a quality suitable for furnace linings was reported during the year from near Hope, the deposit lying close to the tracks of the Kettle Valley railway. Tests of the stone, made in Pacific coast kraft mills, are stated by the B. C. Bureau of Mines to have demonstrated its suitability for furnace work.

General Situation, Market Conditions, etc.:

There was little change in the general tone of the talc industry during 1932.

Small tonnages of the soapstone dust from the sawing benches at the Quebec quarries have been marketed, and a grinding mill to treat quarry waste and make roofing, foundry, and other grades of talc was installed in 1929.

The Department of Mines, Ottawa, has published the following reports:

"Talc and Soapstone" (Mines Branch Report No.583).

"Talc Deposits of Canada", (Geol.Surv, Economic Series No.2).

Issued by the Mines Branch,
Department of Mines, Ottawa.
March, 1933. (H.S.S.)

VOLCANIC DUST IN 1932

Production:

1932: 180 tons valued at $3,600
1931: 128 " " " 2,560

Exports:

Not separately recorded.

Imports:

Included under pumice, pumice stone, lava and calcareous tufa, valued at $22,391 against $34,542 in 1931. United States exports of volcanic dust into Canada remained steady.

Ores Mined and Producing Localities:

Volcanic dust beds up to 30 feet thick and situated near Waldeck, a few miles east of Swift Current, are being worked by the Van-Kel Cleansers, Ltd., Swift Current, Sask.

Important Developments and Prospective Producing Localities:

The material of the Swift Current producer is being successfully used as a cold water calcimine; as a cleanser; as a glass and metal polish; as a hand cleanser; and as a sweeping compound. These products are gradually making headway against strong foreign competition.

General Situation, Market Conditions, etc.:

Volcanic dust is mainly used in the manufacture of cleansers, scouring powders, abrasive soaps, and for glass bevelling, but latterly in the United States there has been an increasing demand for its use as an admixture in cement and plasters and more recently as a road surfacing material and to a small extent as an insecticide carrier. There is a large output from Kansas and Nebraska in the United States and most of the producers report an increase during the year. Some producers of lump pumice, mainly in California, are successfully utilizing their fines, particularly in cement and acoustic plasters. The total United States output for 1932 is estimated at 70,000 tons, which constitutes a record.

The University of Saskatchewan have been experimenting with volcanic dust as a ceramic glaze and results so far have been very successful.

The Department of Mines, Ottawa, has published the following report:-

"Siliceous Abrasives",
(Mines Branch Report No. 673).

Issued by the Mines Branch,
Department of Mines, Ottawa.
March, 1933. (V.L.E.-W.)

CEMENT IN 1932

Production (sales):

1932 -	4,498,721 bbls.	valued at	$ 6,930,721
1931 -	10,161,658 "	" "	15,826,243
1930 -	11,032,538 "	" "	17,713,067

Exports:

1932 -	53,333 bbls.	valued at	$ 38,921
1931 -	114,064 "	" "	124,267
1930 -	198,736 "	" "	212,071

Imports:

Portland and hydraulic or water lime 21,351 bbls. valued at $58,092 as against 38,392 bbls. valued at $143,491 in 1931. Cement n.o.p. and manufactures of, valued at $6,883 as against $13,243 in 1931.

Materials Used and Producing Localities:

The chief raw materials used in the manufacture of cement are limestone and clay. The chief product is Portland cement for the production of which there are 12 operating plants having an aggregate rated annual capacity of about 14 million barrels. The large excess capacity over production is due to the fact that plants were built to take care of an anticipated demand which has not materialized. In the east the plants are operated throughout the year at a percentage of the rated capacity, while in the west the plants are operated to capacity and only part of the year, owing to the extreme cold weather.

If business justified such a course all plants could operate throughout the year because most plants are now equipped with stock houses sufficient to take care of the natural contraction of sales during the winter season.

In addition to the plants manufacturing Portland cement, there is one plant in Nova Scotia capable of making cement from blast furnace slag and one in Manitoba making puzzolan or natural rock cement.

Important Developments and Prospective Producing Localities:

No new development in 1932.

General Situation, Market Conditions, etc.:

The production of cement in 1932 was about 32 per cent of the total rated capacity (approximately 14,000,000) of the milling plants, as against 73 per cent in 1931, and 79 per cent in 1930, and 82 per cent in 1929, this latter the highest ever reported. The average selling price per barrel, f.o.b. plant was as follows:

	1929	1930	1931	1932
Quebec	$1.38	$1.44	$1.44	$1.43
Ontario	1.43	1.47	1.41	1.43
Manitoba	2.35	2.32	2.33	2.27
Alberta	2.19	2.18	2.05	2.06
British Columbia	2.18	2.21	2.03	2.12

Issued by the Mines Branch,
Department of Mines, Ottawa.
March, 1933. (A.B.)



GRANITE IN 1932
(Building, Monumental and Crushed)

Production:

1932 - 398,025 tons valued at $1,037,851
1931 - 1,190,887 " " " 2,763,050

Exports:

1932 - 2,133 tons valued at $ 41,172
1931 - 2,938 " " " 52,058
These data also include exports of marble.

Imports:

1932 - valued at $136,372
1931 - " " 169,093

Ores Mined and Producing Localities:

The stone quarried in this industry consists of granite and other related igneous rocks used for building, decorative, monumental or constructional purposes. Producing properties are situated in a number of localities in the provinces of Nova Scotia, New Brunswick, Quebec, Ontario and British Columbia.

Important Developments and Prospective Producing Localities:

A large proportion of the granite production in Canada enters into the construction of foundations for highways, for permanent ballasting of railway road beds and for heavy aggregate in large concrete construction. The provinces of Quebec, Ontario and British Columbia are the big producers for these purposes.

The province of Quebec furnishes the largest proportion of granite for building purposes, the Stanstead, Scotstown and St.Sebastien districts being the biggest producers of this class of stone. Quebec province is also a large producer of granite paving blocks, and Ontario also produces these products. An interesting development in the industry during 1931 in several of the districts in the province of Quebec was the large number of small operations that were commenced, principally for the preparation of curbstones. The falling off during that year of building operations dealing with public or institutional structures seriously curtailed the operations of many of the bigger granite producers, and in consequence they were, in many cases, obliged to release a large proportion of their regular employees. These men, rather than be idle, leased or worked on a royalty basis, small areas of granite for the production of curbstone. In this way, working with hand derricks and drills, and with trucks or teams, the men, working in groups of two or more, according to the size of operations, were at least able to make a bare living wage. This condition of affairs was well illustrated in the Stanstead area, where in 1930, there were 14 firms operating, while in 1931, there were at least 40 different operators. In 1932 conditions again changed with the further falling off in the demand for curbstones, and many even of these small operations were completely closed down, and the bigger companies worked with still further reduced staffs. Until the building industry shows a marked improvement, an early recovery in the granite industry is not likely.

Granite for monumental purposes is produced in the Maritime provinces as well as in Quebec, Ontario, and British Columbia and this material finds a small but steady market. At the same time there is still an appreciable amount of foreign stone principally black, being imported for this use and a quarry of similar material in Canada would find a ready market for its product.

With the large extent of country in Canada underlain by granite, the prospects of finding deposits of stone suitable for the several uses are decidedly promising.

General Situation, Market Conditions, etc.:

Granite is employed for building construction mainly in the larger buildings such as public and semi-public structures and institutions. With the further falling off during the past year of building generally throughout Canada, the demand for dimensioned granite has naturally decreased.

There was an appreciable amount of granite imported from the United States and Europe for monumental purposes, but prospecting for similar material in Canada is brisk, and it is possible that in time this importation will be replaced by Canadian material. Like many other products the demand for a certain class of stone for monumental purposes varies, so that one type of stone which may have a steady market for a number of years, will in time be completely superseded by an altogether different type. At the present time the so-called black granite seems to be in most demand for monuments, with a consequent falling off in the requests for red granite.

While there is an apparent falling off in the demand for coloured granites for monumental purposes, there is a growing market for these types of stone in the form of thin polished slabs for trim for buildings in which the main colour scheme needs some contrasting colour to relieve it.

The grey granites of the Stanstead and other areas in the province of Quebec are increasing in popularity for building purposes, and its utilization for the whole of the exterior stonework on the new head-office building of the Sun Life Assurance Company at Montreal is proving a good advertisement for the stone from these areas.

Canadian granites are suitable for all them purposes for which granite is used, and with consistent advertizing to enable the Canadian products to become better and more widely known, there is no reason why this industry should not have a promising future.

Issued by the Mines Branch,
Department of Mines, Ottawa.
February, 1933. (L.H.C.)

KAOLIN (CHINA CLAY) AND BALL CLAY IN 1932

Production:

There has been no production of china clay since 1923, though small shipments were made to the Mines Branch for testing purposes in 1927 and 1928.

Small shipments of crude ball clay have been made from time to time, but no regular productions maintained.

Exports:

1932:	Clay unmanufactured	3,031	cwt.	valued at	$ 895
1931:	" "	8,015	"	" "	4,161

Imports:

1932:	China clay	346,270	cwt.	valued at	$154,125
1931:	" "	366,926	"	" "	192,516

No data covering the importation of ball clays are available.

Products and Producing Localities:

The only place where china clay has been produced commercially in Canada is at St. Romi d'Amherst, in Quebec.

Ball clay has been shipped from the vicinity of Readlyn and Willows in southern Saskatchewan to pottery manufacturers in Ontario and the United States. So far, only crude unwashed clay has been shipped.

Important Developments and Prospective Producing Localities:

The occurrence of china clay has been reported from only a few sections of Canada.

Deposits of high-grade, white-burning clays occur on the Mattagami, Abitibi, and Missinabi Rivers in northern Ontario, (see Geological Survey Summary Report, 1926, Part C, p. 16; article by W. S. Dyer, Can. Min. and Met. Bulletin, April, 1928; Annual Report Ontario Department of Mines, Vol. XXXVIII, Part IV, 1929, and Vol. XXXIX, Part IV, 1930).

A deposit of white-burning clay occurs on Punk Island, Lake Winnipeg, Manitoba, (Mines Branch Report No. 690, p. 25).

Ball clays of good colour and high strength occur in extensive deposits in southern Saskatchewan about 60 miles south of Moose Jaw, (Mines Branch Report No. 468; Geological Survey Summary Report, 1930, Part B, p. 31; American Ceramic Society Journal,1929, p. 360).

Near Williams Lake, British Columbia, is a deposit referred to in the report of the Minister of Mines of British Columbia, 1926, as consisting of "Silicate of Alumina". This material, if not a true kaolin, is closely allied to it. Some trial shipments have been made to Vancouver and were used as a fireclay.

General Situation, Market Conditions, etc.:

There is a large steady demand for various grades of china clays in Canada, for use in the manufacture of paper, rubber, and porcelain.

Ball clay is used in the manufacture of porcelain. While the market in Canada is not large, there are good prospects of developing a profitable export market in the United States.

Issued by the Mines Branch,
Department of Mines, Ottawa,
March, 1933. (H.F.)

LIME IN 1932

Production:

Quicklime	267,856 tons	valued at	$1,914,626
Hydrated lime	52,382 "	" "	479,022

Exports:

9,333 tons valued at $188,329 (Principally hydrated lime — to the United States.)

Imports:

922 tons valued at $12,562 (All from the United States. This information, which is subject to revision, was supplied by the U.S. Bureau of Foreign and Domestic Commerce.)

Products and Producing Localities:

Lime is manufactured in every province of Canada except Prince Edward Island; in Saskatchewan production (from dolomite boulders) is very small and is not continuous. Both high-calcium and magnesian limes are produced in Nova Scotia, New Brunswick, Ontario, and Manitoba; but only high-calcium limes in Quebec, Alberta and British Columbia.

The products marketed are quicklime and hydrated lime. Quicklime is sold in lumps and in a finely pulverized condition; lump lime is sold in bulk and in barrels; pulverized lime is marketed in 70-pound multi-walled bags. Hydrated lime, a specially prepared slaked lime in the form of a very fine powder is sold in 50-pound multi-walled bags. At present about 16 per cent of the total lime produced is sold in the hydrated form.

Ontario lime plants account for 53 per cent of the entire Canadian production of quicklime and for 45 per cent of the hydrated lime. Quebec comes next with 29 per cent of the quicklime and 32 per cent of the hydrated lime.

Important Developments and Prospective Producing Localities:

Two new companies dealing in lime and limestone products were incorporated during 1932. They are Montreal Lime Co.Ltd., St.Marc des Carrieres,Quebec;and Sun Lime Products,Ltd.,Winnipeg,Man.

General Situation, Market Conditions, etc.:

Conditions in the lime industry followed the general industrial trend in 1932. Production dropped 7 per cent as compared with that of 1931 and the average unit prices of lime throughout Canada were at the lowest points they have been for many years—lump lime averaged $7.15 per ton, and hydrated lime $9.15 per ton, f.o.b. plants. The low prices and restricted markets have resulted in more attention being paid to cheaper methods of lime production and the possibilities of mixed-feed kilns are receiving considerable attention.

An interesting feature of the past few years has been the rapid increase in the percentage of the total lime production utilized in the processing or manufacturing of other commodities. At the present time approximately 70 per cent of the total production is used for what may be termed chemical purposes. Owing to the great variety of industries which it serves, the lime industry can rightly be termed one of the key industries of the country. Lime used for structural purposes now comprises but 16 per cent of the total output, whereas this market once consumed almost the entire production of the industry.

Issued by the Mines Branch,
Department of Mines,Ottawa.
March,1933. (M.F.G.)

LIMESTONE (GENERAL) IN 1932

Production:

1932 - 3,850,000 tons valued at $2,875,000.

These production data refer only to limestone used for crushed stone, rubble, chemical, metallurgical and agricultural purposes. Limestone used for building and ornamental stone, lime and cement is not included.

Exports:

Not separately recorded.

Comparatively small tonnages of limestone, chiefly for use in sugar refineries and for agricultural purposes, were exported to the United States.

Imports:

Not separately recorded.

Large tonnages of limestone for blast-furnace flux are imported from the United States and Newfoundland. Some of the pulp mills in northern Ontario import their limestone requirements from Michigan. These importations are due not to any lack of suitable limestone in Canada but to the fact that the foreign limestone can be obtained more cheaply owing to its more favourable location with respect to certain consuming centres.

Products and Producing Localities:

Every province of Canada except Prince Edward Island contains large deposits of limestone suitable for a wide variety of uses. In Saskatchewan the main deposits are not yet accessible but the dolomite boulders, so plentiful in many part of the province, have been utilized from time to time for various purposes. The chief products vary in the different provinces. In Ontario, Quebec and Manitoba the major portion of the output is converted into crushed stone for use as railroad ballast, road metal and concrete aggregate. In Nova Scotia and British Columbia the chief product is flux stone, and in New Brunswick agricultural limestone. The cement, lime and building stone industries utilize large quantities of limestone but their requirements are not included in above.

Ontario leads the Dominion in limestone production, providing as it does more than half of the total output; Quebec comes next with more than one-third of the total production.

Important Developments and Prospective Producing Localities:

As a direct result of research work conducted in the laboratories of the Mines Branch a new limestone-using industry is shortly to be established in Canada, namely an industry that will produce rock wool — a highly efficient insulating material. Mines Branch investigations have resulted in the discovery of limestone of suitable composition in Ontario and rock wool of very high quality has been produced therefrom during experimental work.

The prospective development of the beet sugar industry in western Canada is of interest to producers of high-calcium limestone in that part of the Dominion, as approximately 700 pounds of limestone is required for the refining of one ton of beet sugar by the carbonation process.

General Situation, Market Conditions, etc.:

The value of Canada's diversified resources of limestone to the industrial life of the country becomes apparent when it is realized that in 1932 approximately 5,700,000 tons of limestone was quarried for all purposes. The peak production in 1929 amounted to nearly 13,000,000 tons. Approximately 180 quarries are operated for the production of limestone.

The Department of Mines has issued several preliminary reports dealing with limestone and its utilization.

Issued by the Mines Branch,
Department of Mines, Ottawa.
March, 1933. (M.F.G.)

LIMESTONE (STRUCTURAL) IN 1932

Production:

1932 - 40,500 tons valued at $ 463,000
1931 - 88,311 " " " 1,349,650

Includes dimension stone marketed either in rough or finished state by the primary producers only, and does not include the value of work done on domestic building limestone in cut-stone contractors' plants.

Exports:

Not separately recorded. Exports are very small.

Imports:

1932 - $ 35,716
1931 - 184,132

Includes the value of all types of building stone except marble and granite, but the major portion of the imports is limestone.

Products and Producing Localities:

The principal quarries producing dimension stone are located at St.Marc des Carrieres, Quebec (4 operators), near Queenston, Ontario (1 operator), and at Garson, Manitoba (3 operators). Small quarries are operated near Montreal, Quebec City, and Hull in the Province of Quebec; and in the vicinities of Ottawa and Kingston in Ontario.

The products consist of stone in all stages of manufacture from the mill-block to elaborately carved material for ornamental purposes used on both interiors and exteriors of buildings. Waste material is utilized for crushed stone, rubble, flagging, chemical and metallurgical purposes and for lime manufacture. The tonnage and value of the waste products are not included in data on production.

Important Developments and Prospective Producing Localities:

Simcoe Marble and Stone Quarries,Ltd.,are investigating the possibility of marketing interior decorative stone from their property at Longford,Ontario. A trial shipment of mill blocks has been sent to Toronto. The stone is given the trade name of "Rama Mottled Dove". It is a finely granular, grey, magnesian limestone faintly mottled and lined with semi-translucent calcite.

General Situation, Market Conditions, etc.:

A rapid development has taken place within the past few years in the quarries producing limestone for building purposes,and the present productive capacity of the quarries is ample to supply the entire Canadian demand for building stone for both exteriors and interiors of buildings. Coincident with this development imports of building limestone from the United States have steadily declined.

Prices of stone in the mill block, f.o.b. quarry, range from 50 cents to $1.00 per cubic foot depending on size of block and grade of the stone.

The Department of Mines,Ottawa,has the following report in press,"Canadian Limestones for Building Purposes".(Mines Branch Report No.733).

Issued by the Mines Branch,
Department of Mines,Ottawa.
March,1933. (M.F.G.)

MARBLE IN 1932

Production:

1932 - 11,424 tons valued at $247,480
1931 - 20,442 " " " 668,713

Exports:

1932 - 2,133 tons valued at $41,172
1931 - 2,938 " " " 52,058
These data also include exports of granite.

Imports:

1932 - valued at $ 88,824
1931 - " " 339,025

Marble is imported chiefly in the form of mill blocks and unpolished slabs,- the sawing and polishing being done in various mills throughout Canada. The main portion of the imports are supplied by the United States, Italy, Belgium, France and Great Britain.

Products and Producing Localities:

Marble quarried for the purpose of sawing into slabs for the ornamentation of buildings ranks first in value but it is exceeded in tonnage by that sold for the purpose of making terrazzo chips, stucco dash, whiting substitute and artificial stone.

The principal centre of marble production in Canada is at Phillipsburg, Quebec, where Wallace Sandstone Quarries,Ltd.,is producing handsome, clouded-grey marbles, some of which are lined and tinted with various colours. A large marble mill is operated in conjunction with the quarry. The limestone quarried for dimension stone at St.Marc des Carrieres, Quebec, takes a good polish and yields a dark brownish grey marble, and a small proportion of the output is thus utilized.

At Bancroft,Ontario,Maple Leaf Marble Quarries is producing several varieties of beautiful marble, the most striking of which is a clouded-grey breccia in which the bonding material is a chocolate-brown calcite. At St.Albert,Ontario, a lustrous black marble, which has had a favourable reception from the marble trade, is being quarried by Silvertone Black Marble Quarries.

The Winnitoba Marble Co.,Winnipeg, is producing two beautiful varieties of marble from the quarry on the Inwood branch of the Canadian National Railways, 100 miles north of Winnipeg. One of these marbles is a mottled gold-and-buff, the other is a mottled deep red.

Canadian Marble and Granite Works,Ltd. operate a marble quarry and mill at La Blanche station on the Lardeau branch of the Canadian Pacific Railway, 8 miles north of Kootenay lake British Columbia. This quarry yields white and bluish grey marble.

Important Developments and Prospective Producing Localities:

The principal development during 1932 was the production on a commercial scale of black marble from the property of Silvertone Black Marble Quarries at St.Albert,Ontario.

Shipments of bluish-green serpentine were made from the deposit owned by the Manitoba Marble Co. near Hole River on the east shore of Lake Winnipeg.

There are throughout Canada many deposits of serpentine and of metamorphosed limestone tinted and figured in a singularly beautiful fashion. The majority of the deposits have never been investigated, others have been opened up to a depth of only a few feet. The increasing demand for marble in Canada has awakened interest in the domestic deposits and a number are being investigated with a view to development.

General Situation, Market Conditions, etc.:

The market in Canada is almost entirely for interior decorative marble. Very little marble is used as exterior building stone although there are marbles available that would be entirely satisfactory for the latter purpose. Grey marbles form the greatest proportion of the output but a number of highly coloured varieties have come on the market within the past few years, and the colour range of available Canadian marbles is steadily being widened.

The market for Canadian marble is at present almost wholly domestic. The market for many of the foreign marbles is world wide and the prices of these marbles, to a very large extent determine the prices for the domestic marbles. Prices depend on the quality and rareness of colouring.

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March, 1933. (M.F.G.)

WHITING SUBSTITUTE IN 1932

Production:

No production figures can be published as only two companies produced whiting substitute during 1932.

Exports:

Nil.

Imports:

No separate record is kept.

Products and Producing Localities:

Plants for manufacturing whiting substitute are established in Halifax, Montreal and Winnipeg. Whiting substitute is, as the name implies, a substitute for whiting. It is merely finely pulverized white marble, limestone, calcite or fresh-water marl. The pulverized product is white and of a fineness exceeding 200 mesh; some grades are ground so fine as to pass 325 mesh.

Important Developments and Prospective Producing Localities:

Several companies and individuals are investigating the possibilities of producing whiting substitute from marl and limestone deposits in various parts of Canada, and doubtless in the near future the entire Canadian requirements of this material will be produced within the Dominion. Each deposit of white marl and of white limestone free from impurities is a potential source of whiting substitute and such occur in every province except Prince Edward Island.

Closely related in uses to whiting and whiting substitute are precipitated chalk and by-product precipitated chalk. The former is manufactured by re-carbonating milk-of-lime made from high-calcium quicklime. By-product precipitated chalk is obtained in the process of manufacturing caustic soda. Neither precipitated chalk nor by-product precipitated chalk are produced in Canada although the raw materials for each are available. The extent of the domestic market for these two latter products has not been ascertained.

General Situation, Market Conditions, etc.:

During recent years improved and cheaper methods of pulverizing and classifying the finely pulverized material have enabled whiting substitute to compete on a very favourable price basis with European chalk whiting and it is steadily finding an increased market largely at the expense of the latter commodity.

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Department of Mines, Ottawa.
March, 1933. (M.F.G.)

COAL IN 1932

Production:

The production of coal in Canada in 1932 was 11,723,411 tons valued at $37,045,272 consisting of:-

Bituminous	7,712,114 tons	valued at	$28,021,296
Sub-bituminous	560,902 "	" "	1,330,316
Lignite	3,450,395 "	" "	7,693,660

Exports:

1932 - 285,487 tons valued at $1,433,036
1931 - 359,853 " " " 1,909,922

Imports:

Coal entered for consumption:-

	1932		1931	
From the United States...	10,177,780	tons	12,068,211	tons
" Great Britain	1,727,716	"	987,442	"
" other countries.....	53,541	"	65,354	"
	11,959,037	"	13,121,007	"

Coal Mined and Producing Localities:

The provinces of Nova Scotia and New Brunswick and the Yukon Territory produce only bituminous coal. The coal produced in the province of British Columbia is all bituminous, with exception of a small quantity which is classified as lignitic. The production of coal in the province of Alberta includes bituminous, sub-bituminous and lignite coals, while the provinces of Saskatchewan and Manitoba produce only lignite coal.

Important Developments and Prospective Producing Localities:

On the Onakawana lignite of northern Ontario, of which over 150 million tons are estimated to exist, research work is being continued by the Ontario Research Foundation and the Fuel Research Laboratories of the Mines Branch, Department of Mines, with a view to determining methods for its preparation and industrial use. This fuel is of low grade, but the large tonnage available places it in a unique and important position as being the only coal deposit of economic value found in the province of Ontario. The value of this coal area as mentioned in the 1931 report has been enhanced by the completion of the Cochrane-James Bay Railway, an extension of the T. & N. O., which passes through the lignite field and terminates at Moose Factory. Deposits of lignite coals have also been developed at Willow Creek and at Wallace, Alberta.

In the province of Saskatchewan the mining of lignite by the stripping and open-cut method is the principal development. On account of the low cost of mining according to this method, and the assistance rendered by Federal railway subventions, Saskatchewan lignite is finding a steadily increasing market in Winnipeg for industrial as well as for domestic purposes. A new process for briquetting the carbonized residue produced at the carbonizing and briquetting plant of the Western Dominion Collieries, near Bienfait, was introduced in 1931, but this plant, because of the competition of other coals, has been completely closed down.

During 1932 one of the larger companies, the Granby Consolidated Mining & Smelting Company, which had maintained the Cassidy mine in a productive order for several years, finally abandoned the mine after it had been completely worked out.

Labour trouble developed at the collieries in the Princeton district for two weeks during December, necessitating the closing down of the Tulameen and Pleasant Valley collieries. While work was resumed at the Tulameen colliery, the other colliery was still idle at the end of 1932.

Early in 1933, the Consolidated Mining & Smelting Company withdrew their contract for the supply of coke from the Crow's Nest Collieries and are now securing their coke from the International Coal & Coke Company of Coleman, Alberta, at a reduced price.

During 1932 there were two new coal-mining operations started in the vicinity of Princeton, one by the Red Triangle Coal Company and the other by the Bromley Vale Colliery. There was also a new colliery opened up near Telkwa by the Lake Kathlyn Anthracite Company. These three new mines are still in the prospecting stage.

The activity at various silver and radium properties in the Great Bear Lake district, may soon bring about the development of the lignite deposits, which are located on the shore of Great Bear lake.

General Situation and Market Conditions:

The Dominion Fuel Board reports that under the assistance provided by the Federal Government toward extending the markets for coal mined in the Maritimes and in the Western Provinces, 1,130,371 tons were moved in the year under review into areas where Canadian coal is ordinarily at a disadvantage in competing with foreign coal.

There were no new developments in the Maritime Provinces during 1932. New power plants, in which refuse coal in the pulverized form is used for raising steam, were erected in 1930 near Sydney, Nova Scotia and near Minto, New Brunswick. The industrial retrenchment, which was instituted early in 1930, has been reacting seriously on the Nova Scotia coal industries.

According to the Chief Inspector of Mines for the British Columbia Department of Mines:

"The use of fuel oil, produced from duty free imported crude oil, continues to be the chief competitor of coal in British Columbia and is displacing over 1,000,000 tons of British Columbia coal annually. The increasing use of automatic coal stokers in a range of sizes to suit dwelling houses, apartment houses, hotels, and small industrial plants has demonstrated that coal, properly used, is an efficient fuel and considerably less costly than oil and it is confidently expected that such installations will do much to regain the ground lost by coal."

Large scale coking tests carried out at the Fuel Research Laboratories of the Mines Branch, Department of Mines, and at the plant of the Montreal Coke and Manufacturing Company, on washed Princess and Waterford coals mined by the Dominion Coal Company, have demonstrated that when washed, these coals will stand indefinite storage without heating and can be used as a blend, up to 35 per cent, with American coals now being used by the Montreal Coke and Manufacturing Company, without affecting the quality of the coke produced. This has opened up a market of about 150,000 tons for the manufacture of coke in the Montreal Coke and Manufacturing Company's plant.

In 1930 similar tests were conducted on Michel coal obtained from the Crow's Nest Pass Coal Company by the engineers of the Division of Fuels and Fuel Testing of the Mines Branch, Department of Mines, in the experimental coke oven plant at the Fuel Research Laboratories, and in the gas plant of the Winnipeg Electric Company, Winnipeg. One thousand tons of this coal were coked in the latter plant, and as a result of these tests the gas plant of the Winnipeg Electric Company used during 1931 a quantity of Michel coal equivalent to 40 per cent of its total requirements. All of this coal was formerly purchased from the United States. It is expected that in the near future 100 per cent Canadian coal will be used in that plant.

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COKE IN 1932

Production:

1932: 1,640,737 tons
1931: 1,832,700 "

Petroleum coke production is not included in the above data.

Exports:

1932: 25,987 tons valued at $277,141
1931: 37,038 " " " 454,153

No data available as to kinds of coke exported.

Imports:

1932: 648,079 tons valued at $3,162,709
1931: 685,068 " " " 3,712,508

Petroleum coke is included in the above import data.

Producing Localities:

Coke was produced from coal in coke and gas plants in all provinces except Prince Edward Island and Saskatchewan.

Petroleum coke was produced at petroleum refineries in the provinces of Nova Scotia, Ontario, Manitoba, Saskatchewan and Alberta.

Important Developments and Prospective Producing Localities:

In British Columbia, the Fernie coke ovens of the Crow's Nest Pass Coal Company were shut down in September 1932, and thereafter all the company's coke was produced at the Michel ovens.

Early in 1933 the Consolidated Mining and Smelting Company of Trail, B. C., withdrew their contract for a supply of coke from the Crow's Nest Pass Company and entered into a three year contract with the International Coal and Coke Company of Coleman, Alberta, for all their coke requirements. The Coleman coke ovens had been idle for a number of years so that additions and betterments to its coke plant were necessary.

An important development during 1932 in the gas and coke industry was the completion at Vancouver, B. C., of a new plant for the manufacture of gas and domestic coke by the British Columbia Electric Railway Company. This plant consists of 24 ovens arranged in four beds of six ovens, each oven holding over four tons of coal. The rated capacity of the plant is 170 tons of coal per day and 3,000,000 cubic feet of 465 BTU gas, based on a 14-hour charging schedule. This plant is being extended by the addition of another twelve ovens of similar design and the foundations for this work were laid during the year. The company to whom the contract for building the plant was let, is the Gas Chamber and Coke Ovens Limited of Great Britain.

General Situation, Market Conditions, etc.:

The expanding production of both oven coke and gas coke for domestic heating has greatly lessened the dependence of the central province on American anthracite, and in the case of British Columbia on imported petroleum.

Issued by the Mines Branch,
Department of Mines, Ottawa,
March, 1933. (A.B. & R.A.S.)

NATURAL GAS IN 1932

Production:

1932 - 23,875,978 M.cubic feet valued at $8,682,505
1931 - 25,874,723 " " " " " 9,026,754

Exports:

Not recorded.

Imports:

1932 - 120,840 M.cubic feet valued at $ 91,234

Producing Localities:

Alberta continues to be the leading producing area in Canada, accounting for 67 per cent of the total Canadian production in 1932. The Alberta production comes chiefly from the Turner Valley field, where the wet gas is first stripped of its naphtha content and the gas, after scrubbing, is piped into Calgary, Lethbridge and intermediary points. The Viking field supplies Edmonton and district; the Medicine Hat field, the oldest in the province, supplies the industrial and domestic requirements of Medicine Hat. A small field at Brooks supplies that town with their requirements.

In Ontario, the chief gas fields are located in Essex, Kent, Norfolk, Haldimand, Lambton and Welland counties. The Kent or Tilbury field has been the most important and lies mainly in Tilbury East township, but extends into the adjacent townships of Romney and Raleigh. A new field which has been opened up quite extensively in the past two years is located in the Brant Indian Reserve, Tuscarora township, Brant county.

In New Brunswick, a small gas field near Moncton supplies that city with natural gas for domestic and industrial purposes; the gas is also piped into Hillsboro.

Important Developments and Prospective Producing Localities:

In the old established fields of New Brunswick and Ontario, there has been no outstanding developments during the year. A certain amount of new drilling necessary for replacement and maintenance was undertaken.

In Quebec, most of the important companies who were doing exploratory drilling for gas in 1931 and 1932, on the south shore of the St.Lawrence chiefly in Yamaska and Ste.Hyacinthe counties, have given up their leases due to negative results. One hole was reported drilled to over 6,000 feet before being abandoned. Considerable geological data, however, was obtained from this deep test and it is reported that on the basis of this information another test well will be drilled in 1933.

In Alberta during 1932, the Provincial Government put into effect legislation restricting the output of gas from the Turner Valley field to 200 million cubic feet a day. The Turner Valley Gas Conservation Board was appointed to carry out these gas conservation measures, their duties would consist of restricting wastage and making field tests and they would also have the power to set the flow of each well. If it was found necessary, they might still further reduce the gas output from the Valley to 100 million cubic feet. The Board would also endeavour to bring about a voluntary pooling plan among all the producing companies in Turner Valley.

Outside Turner Valley field several new wells came in during the year. In the Viking field, the largest gas well in this field, was brought in. In the Kinsella field two new commercial wells came in and these are to be held in reserve. New wells were also

brought in in the Brooks and Medicine Hat fields. A large flow of gas was struck in a test well drilled east of Mirror Landing on the Athabasca river. However, on drilling deeper this gas flow was cut off by water; a second well is being drilled in this area.

General Situation, Market Conditions, etc.:

The natural gas industry, like others, has been affected by the depression, but perhaps not to as great an extent due to the fact that natural gas is an essential commodity for many industries and homes. Due to the slowing down of industry, the industrial consumption has fallen off, as might be expected, and, due to the mild winters of recent years, the domestic consumption has not been as great as when colder weather prevails. However, the industry has become firmly established in those areas in and adjacent to the present producing fields, and it is reasonable to expect that when financial and industrial conditions improve, the industry will continue to expand. In Ontario, the number of domestic consumers is reported as steadily increasing. New industrial uses for natural gas are being found, which will eventually result in an increased demand. Improvements which have been effected in the transmission of natural gas under high pressure for long distances, will tend to widen and extend the present areas of consumption and may even enable natural gas to compete in centres situated at considerable distance from the source of supply and which up to now have depended on fuels other than natural gas.

The Department of Mines, Ottawa, has published the following reports:-

"Oil and Gas in Western Canada", (Geological Survey Economic Series No.5)

"Oil and Gas in Eastern Canada", (Geological Survey Economic Series No.9)

"Petroleum and Natural Gas Resources of Canada",
Vol.I, 'Technology and Exploitation'
Vol.II, 'Occurrence of Petroleum and Natural Gas in Canada' (Mines Branch Report No.291).

Issued by the Mines Branch,
Department of Mines, Ottawa,
March, 1933. (E.H.W.)

OIL SHALE IN 1932

Production:

Nil.

Exports:

Nil.

Imports:

None recorded.

Producing Localities:

None.

Important Developments and Prospective Producing Localities:

No change during 1932.

The Maritime Eduction Co. of Rosevale, New Brunswick, went into bankruptcy during 1930, and title to the plant and mining lease became vested in the National Funding Co., who hoped to obtain enough capital to start operations in the spring of 1931; they were not successful and the plant is idle. The plant of the Torbanite Products, Ltd. at New Glasgow, Nova Scotia, after making a few runs, was nearly destroyed by fire in October, 1930. The Canadian Torbanite and By-Products, Ltd., a subsidiary of the Oil and Nitrates, Ltd., have built a small experimental plant at McLellan Brook, about 5 miles from New Glasgow, at which some experimental work has been done.

Nova Scotia. The principal known occurrences of oil shales are found in Pictou and Antigonish counties. Of these the deposits in Pictou county are the most promising.

New Brunswick. In Albert and Westmorland counties there is a large aggregate tonnage of oil shale which may yet form the basis of a prosperous industry.

General Situation, Market Conditions, etc.:

Until quite recently, activity has been chiefly confined to field exploration and laboratory investigations. Laboratory work by the Department of Mines has included:-

1. Determination of petroleum content of representative samples from various localities.
2. Determination of important factors affecting the recovery of crude petroleum by destructive distillation and the character of the petroleum recovered.
3. Investigation of the processes designed for the distillation of oil shales.

The Department of Mines, Ottawa, has published several reports on the oil shale industry amongst which are the following:

"Report on Oil Shale from Pictou, N.S., and Port Daniel, Bonaventure County, Quebec." "Investigation of Fuels and Fuel Testing, 1930-31" (in press).

"A World Survey of Recent Oil Shale Developments (1932)", by A.A. Swinnerton, Memorandum Series No. 53.

"Pritchard Process for the Distillation of Oil Shale," pp. 106-120 of Report No. 689, "Investigations of Fuels, 1926".

"Canadian Shale Oil and Bitumen from Bituminous Sands as Sources of Gasoline, etc.", pp. 121-132 of report No. 689, "Investigations of Fuels, 1926".

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Department of Mines, Ottawa.
March, 1933. (A.A.S.)

PEAT IN 1932

Production:

1932 - 3,248 tons valued at $7,593
1931 - 1,674 " " " 7,033

Exports:

Nil.

Imports:

	Tons	Value
1932 -	302	$5,227
1931 (Apr.1 to Dec.31)	397	5,114

Peat Bogs Worked:

The only peat manufacturing operations carried on in Quebec during 1932 were those of the Hydro Peat Company, located on a bog near St.Hyacinthe. According to information supplied by the operators, the mechanical features of the process lived up to expectations. A considerable part of the product produced was sold locally.

The manufacturing plant at Alfred, Ontario, has not been operated since 1929, owing to difficulties which developed in connection with the ownership of the property. The only operations conducted at this plant were those involved in selling the stock of peat fuel on hand. During 1929 approximately 1,706.74 tons of peat fuel, 756.42 tons of peat humus, and 28.43 tons of peat screenings were sold from the Alfred plant.

In British Columbia considerable quantities of peat moss were produced during 1932 by the Western Peat Company, New Westminster.

Important Developments and Prospective Producing Localities:

At the present time considerable interest is being taken in the possibility of producing peat litter and peat insulation blocks and sheets from Canadian moss peat.

It has been reported that a small peat plant has been started in Edmonton by Carlson & Son for the purpose of manufacturing insulation material. The raw material will be obtained from the bogs in the district. The project is understood to be an experimental one, subject to expansion.

There are a large number of peat bogs scattered over Central and Eastern Canada, containing material suitable for the manufacture of fuel or of insulating materials and litter and many of these favourably situated with respect to possible markets.

General Situation, Market Conditions, etc.:

Owing to the large number of moderately priced substitute fuels on the market, the market for peat is practically confined to those localities where wood is used. It is still in small demand for open fireplaces.

The Department of Mines, Ottawa, has published numerous reports on Peat, amongst which are the following:

"Facts about Peat" (Mines Branch Report No.614).
"Peat, Its Manufacture and Uses" (Mines Branch Report No.641).

Issued by the Mines Branch,
Department of Mines, Ottawa.
March, 1933. (A.B.)

PETROLEUM IN 1932

Production:

1932:	1,049,253 bbls.	valued at	$3,000,886
1931:	1,542,573 "	" "	4,211,674

Exports:

	Quantity		Value
Petroleum (crude).....	7,297,332	gals.	$244,613
Coal oil.....	884,623	"	116,897
Gasoline.....	4,209,436	"	585,790
Mineral oil.....	7,922,816	"	276,015
Mineral wax.....	23,855	cwt.	66,144
			$1,289,459

Imports:

Petroleum.....	967,616,700	gals.	$29,466,912
Kerosene, fuel & illuminating oils.....	33,745,162	"	991,991
Lubricating oils.....	11,602,919	"	3,028,022
Gasoline & other oils..	101,783,364	"	9,114,455
Asphaltum & other petroleum products.....	---		871,490
			$43,472,870

Producing Localities:

The province of Alberta is the leading producing area in Canada. The chief product is naphtha which is derived from the wet gas of the Turner Valley field. Light crude oil also is obtained from Turner Valley and Red Coulee Fields, while heavy crude is produced in the Wainwright field. Other oil fields in Alberta which have produced crude oil in commercial quantities are the Ribstone and Skiff fields.

Ontario's chief oil field is the Petrolia-Oil Springs area, which has been in production since 1861. The Bothwell and Moza township fields are also important producers.

In New Brunswick, the producing area is confined to the Stoney Creek field, about 9 miles south-east of Moncton. The New Brunswick production is relatively small, compared to the Alberta and Ontario figures, but remains fairly constant from year to year.

In Manitoba, Saskatchewan and British Columbia, several wells have been drilled which have given small quantities of oil, but no commercial production has as yet been obtained.

Near Fort Norman, on the McKenzie River, Northwest Territories, two wells which had been drilled to production several years ago, but which had remained capped, were reopened in 1932 to supply fuel oil and gasoline for mining operations in the Great Bear Lake field.

Important Developments and Prospective Producing Localities:

The production of crude naphtha in the Turner Valley field of Alberta reached a peak in the month of December 1930, but during the first six months of 1931, production steadily fell off, notwithstanding a rapidly increasing use of gas necessary for its production. In July 1931 the production of naphtha fell sharply due to lack of commercial demand, but continued at a fairly uniform rate from August 1931 to April 1932. From May 1932 to the end of the year, the production again declined due no doubt in part to the conservation measures of the Turner Valley Gas Conservation Board, which limited the output of all the wells in the valley to 200,000,000 cubic feet per day.

Several wells were being drilled in Turner Valley during 1932, and four were brought in as producers, two of which getting a flow of light crude oil, while the other two were classed as naphtha wells. In the Red Coulee field, a new oil well was brought in towards the end of the year. Two wells were being drilled in the Mirror Landing field along the Athabasca river in northern Alberta

and a well was started at Waterton Lake, near the site of the original discovery well which was drilled about 1901, and which struck crude oil, but was later abandoned.

A new well was started in the Twin River field, southern Alberta, and close to the well drilled in 1931 in the same area, and which obtained some oil and gas. In the Monarch field, drilling was resumed at the well which had been started the previous year.

The erection of an extraction plant was begun in the Turner Valley field by the leading producer, which will enable considerably more naphtha to be extracted from the wet gas, than is now being obtained by the separators at the wells.

Two new refineries were erected during the year in Alberta at Calgary and Fabyan, and a third is under construction in Edmonton. An extension to the refinery at Coutts was also made during the year, and a small refinery was completed at Regina, Saskatchewan.

In Ontario a strike of oil was made towards the end of the year in a well located about 5 miles south of Chatham, in Raleigh township. This was considered a gas field and the oil strike opens up interesting possibilities for a new oil field. In the Dawn township gas field, three crude oil wells were brought in, and here also there are possibilities for an important new oil field. A certain amount of new drilling was carried out in the older established fields but no important developments are reported. A new refinery at Amherstburg started operations during the year.

In the province of Quebec, two new refineries, which had been under construction at Montreal East, started operations. Several shipments of Russian crude oil were received at the port of Montreal during 1932 for refining at the Montreal plants.

In British Columbia, the erection of the first unit of a large new refinery at Burrard Inlet, near Vancouver, was commenced, and the expansion of the existing refinery at Ioco was undertaken.

General Situation, Market Conditions, etc.:

The year 1932 showed that refinery operations have been well maintained and the steady flow into Canada of crude oil for refining purposes was maintained at practically the same rate as in 1931. Canada still is dependent on outside sources for her crude oil requirements but there is a marked tendency in the last few years towards replacing imported gasoline with domestic production based on imported crude and this is evidenced in the new refinery construction of the last year or two.

Unsettled market conditions in the oil industry in general still prevail, due largely to overproduction and consequent low crude prices in most of the largest oil producing areas of the world. Canada, being only a relatively small producer, has in consequence not been as greatly affected, and being a large importer of crude, the prevailing low prices for crude oil have been of benefit to the consumer of gasoline and oil products in Canada.

The Department of Mines, Ottawa, has published the following reports:-

"Oil and Gas in Western Canada",
(Geological Survey Series No. 5),
"Oil and Gas in Eastern Canada",
(Geological Survey Series No. 9), and,
"Petroleum and Natural Gas Resources of Canada",
Volume I - 'Technology and Exploitation',
" II - 'Occurrence of Petroleum and Natural Gas in Canada',
(Mines Branch report No. 291).

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