MINES BRANCH

DEPARTMENT OF MINES

OTTAWA, CANADA

THE CANADIAN MINERAL INDUSTRY IN 1930

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		Article Number	
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.
	Silver	(13)	Eardley-Wilmot & Buisson,A.
	Titanium	(14)	Robinson,A.H.A.
	Zinc	(15)	Buisson,A.
	Radium-Bearing Minerals	(15A)	Spence,H.S.
II NON-METALS:	Arsenic	(16)	Robinson,A.H.A.
	Asbestos	(17)	Wilson,A.W.G.
	Barite	(18)	Spence,H.S.
	Bituminous Sands	(19)	Ells,S.C.
	Chromite	(20)	Spence,H.S.
	Corundum	(21)	Eardley-Wilmot,V.L.
	Diatomite	(22)	Eardley-Wilmot,V.L.
	Feldspar	(23)	Spence,H.S.
	Fluorspar	(24)	Spence,H.S.
	Garnet	(25)	Eardley-Wilmot,V.L.
	Graphite	(26)	Spence,H.S.
	Grindstones	(27)	Eardley-Wilmot,V.L.
	Gypsum	(28)	Cole,L.H.
	Iron Oxide	(29)	Wait,E.H.
	Lithium	(30)	Spence, H.S.
	Magnesite	(31)	Frechette,H.
	Mica	(32)	Spence, H.S.
	Phosphate	(33)	Spence, H.S.
	Pyrites	(34)	Wilson, A.W.G.
	Salt	(35)	Cole, L.H.
	Silica	(36)	Cole, L.H.
	Sodium Sulphate	(37)	Cole, L.H.
	Talc & Soapstone	(38)	Spence, H.S.
	Volcanic Dust	(39)	Eardley-Wilmot,V.L.
III STRUCTURAL MATERIALS:	Cement	(40)	Buisson,A.
	Granite	(41)	Cole, L.H.
	Kaolin (China Clay & Ball Clay)	(42)	Frechette,H.
	Lime	(43)	Goudge,M.F.
	Limestone (General)	(44)	Goudge,M.F.
	Limestone for building purposes	(45)	Goudge,M.F.
	Marble	(46)	Goudge,M.F.
	Whiting substitutes	(47)	Goudge,M.F.
V FUELS:	Coal	(48)	Buisson,A.& Strong,R.A.
	Coke	(49)	Buisson,A.& Strong,R.A.
	Natural Gas	(50)	Wait,E.H.
	Oil Shale	(51)	Swinnerton,A.A.
	Peat	(52)	Buisson,A.
	Petroleum	(53)	Wait, E.H.

NOTE: The figures of production are preliminary figures, as published by the Dominion Bureau of Statistics.
The figures of 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, New York.

ANTIMONY IN 1930

Production:

No antimony ore, concentrates, or antimony regulus was produced in 1930.

The silver-lead-bismuth bullion obtained as a by-product in the treatment of the silver-cobalt-nickel arsenic ores at Deloro, Ontario, contain 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.

Exports:

Nil.

Imports:

Metallic antimony or regulus 1,303,560 lb. valued at $87,027. Salts of antimony 21,146 lb. valued at $3,691.

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 and 1927.

Small amounts of refined antimony as well as antimony ores have been produced intermittently for a number of years in the Maritime Provinces.

Important Developments and Prospective Producing Localities:

The old Lake George property in New Brunswick was taken over in 1927 by the Canadian International Corporation, 1472 Sherbrooke St.W., Montreal, which company through its subsidiary the Antimony Smelting & Refining Co., Ltd., planned to start active mining operations in 1929, but no work was done during the last two years. The only property operated in 1930 was the old Lawrence mine which has been under development since September 1928 by the Lake George Mines, Ltd., under management of A. D. Taylor, M.P.

General Situation, Market Conditions, etc.:

Antimony is dependent for its market upon general industrial activity and especially upon automobile manufacture. The price of antimony in 1930 averaged 7.667 cents per pound, as against 8.96 cents in 1929.

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.

The imports into the United States, which is the largest consuming country were about 15 per cent lower than in 1929 when they amounted to 13,500 tons.

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BISMUTH IN 1930

Production:

Refined bismuth was produced in Canada for the first time in 1928. No metallic bismuth was made in 1930. The production reported below includes the bismuth contained in silver-lead-bismuth bullion exported for treatment in foreign smelters.

1930 ---	12,732	lb.	valued	at	$ 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:

Metallic bismuth 2,273 lb. valued at $2,330.

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 of northern Ontario and since December 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 and Market Conditions, etc.:

The price of bismuth at New York in ton lots for the first three months of the year was $1.70 a pound. The price dropped to $1.35 for April and May and down to $1.00 in June at which level it remained until December when it increased to $1.25 a pound.

For many years the American price has been uniformly the European price, plus duty. On this basis, the price is maintained a little below the European parity, plus duty.

Most of the bismuth production is used to manufacture pharmaceutical products, although a certain 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.

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CADMIUM IN 1930

Production:

Cadmium was produced for the first time in 1928.

1930 ---		lb.	valued at	$394,800
1929 ---	773,976	"	"	" 675,294
1928 ---	491,894	"	"	" 341,374

Exports:

Cadmium is exported chiefly to Europe with small amounts to the Orient.

Imports:

None recorded.

Ores Mined and Producing Localities:

Cadmium is not mined as an ore, but is a by-product from the production of zinc, and, in some cases, of lead, as cadmium is contained in most zinc ores and in some lead ores, although in both cases the amount is very small.

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

Important Developments and Prospective Producing Localities:

The Hudson Bay Mining & Smelting Company have erected a zinc refinery at Flin Flon, northern Manitoba which started operating in the latter part of 1930. This plant is now producing small quantities of cadmium residues in the form of cadmium sponge. It has been reported that two new zinc refineries will eventually be erected in eastern Canada—one by the Consolidated Mining & Smelting Company in association with Ventures Ltd., and the other by the Noranda Mines Ltd., in association with the British Metals Corporation Ltd., and the Nichols Copper Co., of the United States. It is possible that these plants may eventually produce cadmium residues, and erect the necessary recovery plants should market conditions justify such a course.

General Situation, Market Conditions, etc.:

The possibilities of increased production of cadmium are great, but the market is rather restricted. However, the market during the last three years has been buoyant, owing to the fact that the use of this metal for plating purposes has developed rapidly. Moreover, cadmium is being employed by colour makers to a greater extent 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% pure and better, and as a sulphide.

The price has been characterized in past years by some remarkable fluctuations. In January 1930, the price was 80 to 90 cents, then dropped to 70 to 75 cents in May, and remained at 70 cents to the end of the year. The American product is protected by a duty of 15 cents per pound.

The world's production is estimated at 2,000 tons in 1929 and 1,400 tons in 1928. 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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COBALT IN 1930

Production:

The production in 1930 was estimated at 604,163 lb. valued at $1,144,007 including metal alloys and chemical compounds.

Exports:

Metallic cobalt, cobalt alloys, etc. valued at $1,319,870.

Imports:

Cobalt ores	nil
Colours, metallic viz., oxides of cobalt, tin and copper.....	191,625 lb. valued at $58,314.

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 unpayable is now being mined profitably, 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, 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.:

Canada at present furnishes about one-half the world's cobalt requirements; the source of the remainder being chiefly cobaltiferous copper ores from Belgian Congo. Though the inducements now offered by buyers of colablt ores are sufficient to cause a certain amount of ore to be mined for cobalt alone, it is doubtful whether, in view of the gradual contraction of the profitably workable silver reserves in the mines, the present rate of output of cobalt can be maintained indefinitely. The output in 1930 fell considerably below that of 1929.

Quotations for cobalt metal and oxide in 1930 were:-

$2.50 per lb. for metal (shot) and
$2.10 " " " black oxide, f.o.b. Canadian works.

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COPPER IN 1930

Production:

1930 ---	151,678	tons	valued at	$39,990,226.
1929 ---	124,060	"	"	43,415,251.
1928 ---	101,348	"	"	28,598,249.

Exports:

Copper in ore, matte, blister, pigs, etc., $31,354,544.

Imports:

Copper in blocks, pigs, scrap, bars, etc., $8,594,289.

Ores Mined and Producing Localities:

About one-third of the output was derived from the low-grade chalcopurite ores of British Columbia, all of which require concentration before smelting. The remainder came from the nickeliferous pyrrhotite-chalcopyrite ores of the Sudbury district, Ontario; the chalcopyrite-sphalerite ores of Rouyn and adjoining areas, Quebec; with a small amount of copper concentrates from the treatment of cupriferous pyrites of Eustis, Quebec, which are shipped to United States smelters.

Important Developments and Prospective Producing Localities:

In Nova Scotia a little amount of exploration work was done at the Coxheath copper mine and also at the Sterling copper-lead-zinc mine, both on Cape Breton island. The new mill of the Sterling was completed in the early summer and operated only a short time.

In Western Quebec, large bodies of copper-zinc ore have been developed at the Horne (Noranda), Waite, Amulet, Aldermac and Abana mines; a few other promising small properties have also been actively explored in this same area.

The Noranda smelter which started production in 1927 is now treating at the rate of over 2,000 tons of ore and concentrates a day. The second reverberatory furnace and additional converters were put into operation in December 1929, after the new crushing unit connected with number 4 shaft of the Horne mine had been completed. The capacity of the smelter was thus increased to 35,000 tons of blister copper a year. The new 200-ton unit of the concentrator was completed in August, bringing the capacity up to 1,000 tons a day. Development work on the 1500-foot level of the Horne has so far been very encouraging and diamond drilling has recently revealed the existence of very rich ore at a depth of about 1,700 feet. Important discoveries of gold ore have been made and Noranda is now a large producer of gold as well as of copper. A 300-ton mill of Amulet was completed in May and operated until the early fall. The very low price of copper and zinc necessitated a cessation of operations for the present. The Aldermac is considering the erection of a 500-ton mill. The ore contains in addition to copper high percentages of iron pyrites which will find a ready market as a substitute for sulphur in the manufacture of sulphite pulp paper.

An important discovery of copper ore was made in 1929 near Lake Opemiska, north of Amos, and development of these showings was proceeded with during 1930 by Ventures, Ltd.

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

(Over)

In Ontario, the intensive development campaign carried on these last few years by the International Nickel Company and to a lesser degree by the Falconbridge Nickel Mines, Ltd. has resulted not only in a great increase of higher grade ore, but also, in the case of International Nickel, has proven the existence of large deposits of nickel ore with high contents in copper and metals of the platinum group.

International Nickel's very large program of expansion in mining, smelting and refining is now nearing completion. The new concentrator will handle 8,000 tons of ore daily, but the bulk of the ore will be fed crude to the smelter. The copper and nickel will be 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 43,000 tons of electrolytic nickel and 18,000 tons of nickel in oxide.

The smelter of Falconbridge Nickel Mines Ltd. was blown in early in 1930 and operated until October when both the mine and smelter were closed down to permit the refinery at Kristiansand, Norway to catch up with production. During this period the smelter was enlarged from a daily capacity of 250 tons to 500 tons of ore.

The Eugene Phillips Electrical Works at Brockville are using refined copper obtained from Copper Cliff.

In Northern Manitoba, the first 1000-ton unit of the 3000-ton concentrator of Hudson Bay Mining and Smelting Co. start operations in August. The company's copper smelter which has a capacity of 15,000 tons of blister copper a year, started producing in November, as well as the new zinc refinery, which was completed about the same time. The 1800-ton concentrator of the Sherritt-Gordon will be completed early in 1931 and milling is expected to start by March 1931. Development during the year at both the Flin Flon and Sherritt-Gordon mines has considerably increased the ore reserves.

The Mandy mine, situated a few miles east of the Flin Flon was under development during the year and was expected to be shipping ore by the end of 1930.

In British Columbia, the Anyox mines and smelter of Granby Consolidated Mining, Smelting & Power Co. were operated at full capacity throughout the year. The company's Copper Mountain mine and concentrator at Allenby ceased operations in November, due to the low price of copper. This property is at present under examination by officials of the Consolidated Mining & Smelting Company.

The Britannia mine and 6000-ton mill was operated to full capacity up to January 1931 at which date curtailment of output was started. The Planet mine and concentrator near Merritt was in operation for part of the year.

The equipment of the copper refinery at Trail is being dismantled and shipped to Ontario Refining Company at Copper Cliff so that for the present Canadian refined copper will be produced only in eastern Canada.

In the Northwest Territories, an important discovery of bornite was made north of Great Bear lake by Dominion Explorers, Ltd. and a number of copper showings were located between Great Bear lake and the mouth of Coppermine river by Northern Aerial Exploration Company.

General Situation, Market Conditions, etc.;

The price of copper was maintained at 18 cents from April 1929 to April 1930 in the face of increasing stock of blister and refined copper. The price broke in April to 14 cents, then slumped gradually to an average of 9.6 cents for October. Curtailment of production caused a slight improvement in the price which averaged 10.3 cents for December.

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GOLD IN 1930

Production:

1930 --- 2,107,073 oz. valued at $43,557,063
1929 --- 1,928,308 " " " 39,861,663

Exports:

Gold bearing quartz, dust & bullion valued at	$22,312,605
Gold coins (Canadian)	750
" " (Foreign)	18,004,160

Imports:

Coins.....valued at		$38,369,019
Bullion in bars, etc.....	" "	693,090
Gold fringe	" "	18,543
Manufactures of gold	" "	66,669
Articles of gold and silver	" "	1,146,319

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 nearly 83 per cent of the output. British Columbia, which is the second gold-producing province, derives a small part of its output from placers, the remainder from gold-quartz veins worked exclusively for their gold-silver content, and as a by-product of the working of base metal sulphide ores, notably low-grade copper ores and silver-lead-zinc ores. Quebec now has an important gold production obtained from gold-copper sulphide ores, and also a smaller amount contained in lead, zinc and copper concentrates exported for treatment. Lode gold is recovered from auriferous quartz veins in Manitoba and Nova Scotia. The Yukon output is mainly placer gold.

Important Developments and Prospective Producing Localities:

Ontario. Production in the Porcupine camp again fell off in 1930, due to the destruction by fire of the Dome mill late in 1929; but increased production from Kirkland Lake more than made up the deficiency. The new 1500-ton Dome mill went into operation on October 28, 1930. McIntyre's new 2000-ton mill is expected to start operating early in 1931. Hollinger is now milling about 4,600 tons a day; as against an average of 4,268 tons a day in 1929. Coniarum workings have reached a depth of 2,500 feet. Other producing mines at Porcupine in 1930 were Vipond, March Gold, Porcupine United and West Dome Lake, though the last ceased production during the year.

At Kirkland Lake, both production and ore reserves were greatly increased. Lake Shore increased its milling capacity from 1,400 to 2,200 tons daily and the depth of its workings to 2,400 feet. Teck-Hughes is increasing its milling capacity to 1,250 tons daily and has completed a new shaft to a depth of 3,600 feet. Wright-Hargreaves is now milling about 700 tons of ore a day; its main shaft is 2,400 feet deep; and it resumed dividends during the year. Sylvanite increased its tonnage milled to 250 daily; sunk its main shaft to 2,000 feet; and paid its first dividend during the year. Kirkland Lake Gold's workings are now 4,200 feet deep; the deepest mine workings in Canada, those at McIntyre being 4,150. Barry-Hollinger produced throughout the year.

In northwestern Ontario, the Howey 500-ton mill started producing in April and at the end of the year a 50-ton mill was set up on the Minto mine in Michipicoten district.

Indications are that the gold production of Ontario, which increased over $3,000,000 in 1930 over 1929 will show a further large increase in 1931.

(over)

British Columbia. The gold output of the Premier mine continues to decline; but increased production is reported from the Pioneer gold mine in the Bridge River district, and two newgold-quartz mines the Reno, in the Nelson mining division and the Union in the Grand Forks division became productive during the year. The Nickel Plate mine also continued to produce; and there was a small increase in the production of placer gold. So that gold production on the whole in British Columbia (about 25% of it by-product gold from base-metal ores) was slightly greater in 1930 than in 1929.

Quebec. There was a considerable increase in the gold output of Noranda copper mines and in addition two gold quartz mines, the Siscoe and the Granada-Rouyn, successfully operated small mills, the Granada-Rouyn having started milling during the year.

Manitoba. Central Manitoba mines operated continuously and Flin Flon commenced producing in November. It is expecte that the latter will be capable of producing about 80,000 ounces of gold annually. The erection of small mills on the Gem Lake and San Antonio gold quartz mines in southwestern Manitoba is being considered.

Yukon. The gold output, practically all placer gold, increased in 1930.

Nova Scotia. Little active interest in gold-mining was in evidence in 1930.

General Situation, Market Conditions, etc.:

The outlook for the Dominion as a whole is that gold production will continue to increase in 1931.

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IRON ORE IN 1930

Production:

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

Exports:

Mostly bog ores for gas purification and titanium ores.

Imports:

	Tons	Value
Newfoundland	583,834	$1,053,020
United States	867,344	2,103,170
Sweden	34,251	168,000
Total	1,485,429	$3,324,190

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. 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 exceptional 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. No Canadian ore is now being used in Canadian furnaces, however, and there is no indication of any change in this situation in the immediate future.

It is of interest to note that the Ontario Department of Mines has recently announced its intention of diamond-drilling certain occurrences of siderite (and limonite) on the Mattagami river in northern Ontario, near the new Onakawana lignite field, to ascertain their extent and quality.

The Department of Mines, Ottawa, has published various reports on the iron ores of Canada, including "Iron Ore Occurrences in Canada" in two volumes (Mines Branch Rept. No. 217) and "The Iron Ores of Canada" (Geol Surv., Series No. 3).

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LEAD IN 1930

Production:

1930 --- 166,534 tons valued at $13,109,451
1929 --- 163,261 " " " 16,544,248

Exports:

	Quantity		Value
Lead in ores, etc.....	26,323,200	lb.	$1,258,272
Lead in pigs & refined lead.....	205,432,600	"	7,015,308

Imports:

Lead in pigs, blocks, bars, etc., valued at $756,933.

Ores Mined and Producing Localities:

The greater part of the lead produced in Canada comes from the Sullivan lead-zinc mine at Kimberley, the ores being treated in the refinery at Tadanac, B.C. Considerable production is obtained from numerous silver-lead and silver-lead-zinc mines in the Kootenay districts and other parts of British Columbia. The Yukon output is from silver-lead ore from the Mayo district; that of Ontario is derived from galena at the Galetta mine in Carleton county; and Quebec's output is lead concentrates from the Notre-Dame-des-Anges lead-zinc mine.

Important Developments and Prospective Producing Localities:

The Consolidated Mining & Smelting Co. have enlarged the capacity of their electrolytic lead refinery at Tadanac, B.C., to 425 tons per day; they have also converted the concentrating plant at Trail into a custom mill. They are now able to treat the whole output of their Sullivan mine at the Kimberley concentrator, the capacity of which is 6,000 tons per day, as well as all custom ores offering, and no longer find it necessary to sell any part of their output as lead concentrates or bullion.

The opening up of a large body of high grade milling lead-zinc ore at the Monarch mine, near Field, B.C., was followed by completion in November 1929 of a 300-ton concentrator, which continued in operation until the early fall of 1930. Development work in 1930 added considerably to the known ore reserves. The cessation of operations was due to the drop in price of silver, lead and zinc. The concentrates produced have been shipped to the United States.

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 Quebec, development work was carried on, as in recent years, by the Federal Lead & Zinc Company, on their property in Gaspe' peninsula.

In Nova Scotia, the British Metal (Canada) Corporation have continued the development of the Stirling copper-lead-zinc property in Cape Breton and completed in the early summer the new 250-ton concentrator, which was in operation only for a short time.

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General Situation, Market Conditions, etc.:

The average price of lead at Montreal in 1930 was 5.517 cents per pound as against 6.68 cents in 1929. The average price of lead at New York started at 6.25 cents for January and gradually declined to 5.10 cents for November and December.

Despite unfavourable conditions the world's production of lead in 1930 amounted to approximately 1,830,000 tons, which figure was only 5 per cent below the record-breaking tonnage of 1,935,000 tons in 1929.

The Department of Mines, Ottawa, has recently published the following report, "Lead & Zinc Deposits in Canada" (Geol.Surv., Economic Series No.8).

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MANGANESE IN 1930

Production:

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.

In 1930 244 tons of manganese ore valued at $1,356 were shipped to steel works from a mine in Albert county, New Brunswick. Shipments for experimental purposes were also made from a property in Lunenburg county, Nova Scotia, and from Birch Island, British Columbia.

Exports:

Nil.

Imports:

Manganese oxide 98,778 tons valued at $992,485.

Ores Mined and Producing Localities:

The manganese ores which have been mined in eastern Canada are pyrolusite, manganite, psilomelane, and bog manganese. These 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, Albert county and 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.

No present producing localities.

Important Developments & Prospective Producing Localities:

Nothing to report.

General Situation, Market Conditions, etc.:

The price of manganese ore at North Atlantic ports was for 47 per cent manganese, Cuban, 25 cents per unit from August to December 1930; for chemical grades 82 to 87 per cent MnO_2, the price was $60 per ton 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.

Issued by the Mines Branch,
Department of Mines, Ottawa.
February 1931. (A.B.)

MOLYBDENUM IN 1930

Production:

Nil.

Exports:

Nil.

Imports:

Nil.

Ores Mined and Producing Localities:

There was no production in 1930 other than trial shipments from Alice Arm, British Columbia, described below.

Important Developments and Prospective Producing Localities:

The Molybdenite Reduction Co.'s mine south of Amos, Abitibi county, Quebec, was further prospected under option by the Hollinger Consolidated Gold Mines Ltd. The 150-foot shaft was extended to 250 feet where a new level was established with over 1,000 feet of drifting and cross-cutting. About 2,000 feet of drifts and cross-cuts have also been driven on the 150-foot level. The ore occurs in a number of parallel east-west and a few cross veins in granite and schist. The veins of the 150-foot level were encountered on the 250-foot level but these were somewhat narrower and a little more faulted than above. The Hollinger Company dropped their option at the end of June 1930, but hardly enough work was done on the lower level to arrive at a definite conclusion. The ore on the veins is lenticular, good ore exists on the faces of drifts on the 150-foot level, and only one of the three known vein systems as exposed on the surface has been prospected underground. The possibility of there being a fair tonnage of commercial ore is therefore quite encouraging.

The Dalhousie Mining Co.Ltd., Victoria, B.C., continued prospecting their Alice Arm property, Skeena Mining division, B.C., which is situated at Tidewater. A cross-cut 100 feet below the old workings encountered 6 veins of quartz-molybdenite, which varied from one foot to 4 feet in width and carrying about an average of 1.5 per cent molybdenite. As a result of over 500 feet of drifting and cross-cutting, the company is well satisfied with the work to date and contemplate erecting a mill in the near future. In the meantime, several tons of ore have been sent to Ottawa for concentration tests.

Further prospecting by the Dominion Mineral Development Co., Vancouver, B.C., on their property at Iago on the Kettle Valley Railway, B.C., revealed more quartz-molybdenite veins lower down the mountain and closer to the railway track than the original discovery.

Some favourable reports have been sent in by engineers who recently examined the molybdenite property 4 miles southwest of Endako on the Skeena river in north central British Columbia.

General Situation and Market Conditions, etc.:

According to the United States reports, the molybdenum industry withstood the business depression remarkably well. By far the bulk of the production was used in steel manufacture. The actual consumption of molybdenum was only slightly lower than in 1929 and greater than in any other year. Since the 1930 production of steel dropped 27 per cent, it is evident that the production of molybdenum alloy steels increased relatively in

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proportion to other steels. A substantial outlet has recently been developed in the acid resisting nickel-molybdenum-iron alloys containing as much as 20 per cent molybdenum. 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. Recent tests by the U.S. War Department have shown that molybdenum can be economically substituted for tungsten in high-speed tools. Up till now, this metal has not been considered a serious competitor of tungsten for this purpose.

The Climax Molybdenum Co., Colorado, the world's largest producer, erected a new 5000-ton crushing plant. A number of new mines and prospects were active in Colorado, Nevada and Washington, as well as prospecting on the Wrangel deposits in Alaska.

The United States 1930 production amounted to about 3,084 tons of molybdenite concentrates containing 1,850 tons of metallic molybdenum. This was about 100 tons of this metal less than in 1929, but 185 tons greater than in 1928.

Molybdenum is usually introduced into the steels as calcium molybdate, the price of which was reduced towards the end of the year from 95 to 85 cents per pound of molybdenum contained. 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. Prices of 85 per cent molybdenite concentrates are 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 Br.Rep. No.592).

Issued by Mines Branch,
Department of Mines, Ottawa.
February 1931. (V.L.E-W.)

NICKEL IN 1930

Production:

1930 -- 51,884 tons valued at $24,455,133
1929 -- 55,138 " " " 27,115,461

Exports:

	Quantity	Value
Nickel in matte..	22,445 tons	$8,142,794
Fine nickel.....	21,561 "	11,262,512
Nickel oxides....	1,867 "	1,100,018
	45,873 "	$20,505,324

Imports:

Nickel in bars,rods,sheets,etc.,valued at $2,966,905.

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 at 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 2% copper. In the largest individual ore-body, the Frood, which has been only partly explored as yet, over 125,000,000 tons of ore has already been outlined.

Production and developed reserves in the Sudbury district are entirely in the hands of two companies, International Nickel Co. and Falconbridge Nickel Co. of which the first is much the larger, being in a position to mine, concentrate and smelt 8,000 tons of ore a day while the capacity of the Falconbridge Company's plant is between 300 and 400 tons a day. Five mines are being operated in the district, Frood, Creighton, Levack, and Garson by International Nickel and the Falconbridge mine by 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 in 1924 by International Nickel is now almost completed, at a cost of about $50,000,000. The Frood mine has been equipped to produce 8,000 tons of ore a day from the lower levels and is now actually producing about 4,000 tons a day. The concentrator, of 8,000 tons daily capacity, is in operation as well as the new 5000-ton smelter at Copper Cliff. This last together with the old Coniston plant will give a total smelting capacity of 8,000 tons of ore or concentrate daily; equal, with the mill to handling about 13,000 tons of mine ore daily. The new electrolytic copper refinery at Copper Cliff, with an initial annual capacity of 120,000 tons of refined copper, started producing in July. At present the old Copper Cliff smelter is being re-modelled for the separation of the copper and nickel in the smelter matte, an operation formerly carried out at the nickel refinery at Port Colborne, so that henceforward it will not be necessary to return blister copper to Copper Cliff for refining as is done at present. International Nickel Company will shortly be in a position to turn out some 140,000,000 pounds of nickel and 200,000,000 or more

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pounds of copper annually.

Falconbridge Nickel Company's smelter was blown in early in the year, but was shut down and overhauled during the last quarter, the capacity being increased to 350 to 400 tons a day. The matte produced is sent to the company's refinery at Kristiansand, Norway.

General Situation, Market Conditions, etc.:

Owing to the world wide business depression, Canada's output of nickel, which constitutes over 85% of that of the world, was slightly lower in 1930 than in 1929. Prices however remained unchanged. With a return to prosperity the output can now be immediately increased to a point far beyond anything reached heretofore and sufficiently large to supply any probable world demand for some years to come.

Issued by the Mines Branch,
Department of Mines, Ottawa,
February 1931, (A.H.A.R.).

PLATINUM GROUP OF METALS IN 1930

Production:

	Quantity	Value
Platinum.....	34,013 oz.	$1,542,761
Palladium,rhodium,etc.	34,063 "	895,040

Exports:

	Quantity	Value
Platinum in concentrates.....	19,835 oz.	$1,610,945
Platinum scrap.....	285 "	15,653

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

Imports:

Platinum retorts, crucibles, wire and other metallic products, valued at $122,851.

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 high values in these metals.

The Acton refinery located at Acton, near London, England, and owned by the International Nickel Company, is a new and 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, beginning in 1930, this refinery was substantially enlarged during the year.

General Situation, Market Conditions, etc.:

Canada ranks third in importance, as a source of metals of the platinum group, after Russia and Colombia. The recent discoveries of platinum in the Transvaal are of great importance and it is believed that South Africa will, in time, be the largest producer in the world.

Refined platinum, which began the year 1929 at $70 an ounce, showed quite a gradual decline with a closing price at the end of the year of $61 an ounce. The decline continued in 1930 until the low of $27 an ounce was reached in September. On September 22nd the price advanced, as a result of an agreement amongst producers, to $32 wholesale, at which price it remained for the remainder of the year.

Issued by the Mines Branch,
Department of Mines, Ottawa,
February 1931, (A.B.).

SILVER IN 1930

Production:

1930 -- 26,435,935 oz. valued at $10,086,367
1929 -- 23,143,261 " " " 12,264,308

Exports:

	Quantity	Value
Silver in ore, concentrates, etc.	8,473,189 oz.	$3,401,340
Silver bullion.....	15,778,755 "	6,180,412

Imports:

Unmanufactured silver bullion.....	$610,634
Sterling and other silver.....	199,123

Ores Mined and Producing Localities:

British Columbia is the leading silver producing province in the Dominion. In this province the silver was obtained in 1930 mainly as a by-product from the treatment of lead-zinc ores from the Sullivan mine at Kimberley; the Monarch mine, near Field; the mines on Wallace Mountain, near Beaverdell, and the Prosperity mine, near Stewart, where occasionally the ores run as high as several thousand ounces of silver per ton; from the silver-gold bearing pyrites of the Premier mine, near Stewart; from the low-grade copper ores of Britannia mine, near Vancouver; Copper Mountain mine, near Princeton; and the Granby Company's mine, near Anyox.

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

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

In Ontario, the production was 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 Sudbury.

In Quebec, the production was mainly obtained as a by-product from the treatment of the copper and copper-zinc ores of the Rouyn area.

In Nova Scotia, silver was derived from the gold quartz ores in Guysborough county.

Important Developments and Prospective Producing Localities:

Yukon Territory: The Mayo district showed an increase in production. The situation at the Wernecke mine has been seriously affected by the decline in the price of silver and unless unforeseen discoveries are made all the available high-grade ore will be mined and milled within a year. The mill and other facilities will then be removed to the Silver King group where as far as is now known there is sufficient ore for an additional year and a half milling operations.

British Columbia: The Sullivan and Premier mines slightly increased their production of silver and the high-grade silver mines on Wallace Mountain made their customary contribution. The Monarch mine, which started milling operations in December 1929, operated up to November 1930. The bulk of the increase in production came from the Prosperity-Porter-Idaho property, near Stewart. This is a new producer which has been developed by the Premier Gold Mining Company.

Manitoba: The Hudson Bay Mining & Smelting Company completed its copper smelter and zinc refinery in August. The Sherritt-Gordon concentrator was not completed till the spring of 1931. The ores mined by these two companies are very low in silver but nevertheless they will contribute substantially to the silver production of Manitoba.

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Ontario: The mines of Cobalt and adjoining areas have held up remarkably well under the unprecedented low price of silver.

The International Nickel Company have erected a silver refinery which recovers the silver in the residues obtained in the new copper refinery.

Quebec: The Tetreault mill near Notre-Dame-des-Anges was closed down in December 1929 and was not operated during 1930. Noranda has increased its output.

General Situation and Market Conditions:

The price of silver dropped steadily from 46 cents an ounce in January 1930 to about 30 cents in December 1930, and has recently reached the extreme low of 27 cents. The average price for the year being 38.15 cents as against 53.0 cents for 1929.

In Canada this caused the closing down of nearly all the smaller producers of lead-zinc-copper, which in the past largely depended on the silver content of their ores for profits or for existence.

There is an ever increasing supply of huge silver stocks derived from demonetized coin from Great Britain, France and other European countries, but principally India and Indo-China. The supply of old silver thrown on the market in 1930 by this means was about 71 million (about 65 million in 1929) ounces, of which 29 million were by the Indian Government. The present low prices are attributed to these silver sales of existing stocks and to decreased purchases by governments and to a much lesser extent to high production compared to normal buying.

India and China have always been the world's dumping ground for silver. Importations into China have, however, increased steadily from 42 million ounces in 1924 to 137 million in 1929, but those of India have decreased from 108 million to 82 million ounces during the same period. During the past year China has suffered from civil war, crop failures, etc., consequently, silver came out of hiding from its millions of inhabitants and flowed to Shanghai for safe keeping. Chinese stocks have, therefore, more than doubled in the past two years and are now about 220 million ounces. This, and the low value of the metal has seriously depreciated her individual purchasing power.

India is probably at present the most serious menace, for there is always the fear that just as soon as the price of the metal recovers slightly, she will dump more of her stocks on the market and cause further depression. Unfortunately, her stocks are not diminishing; in December 1929 they were 1,080 million ounces, but in September 1930 they were 1,217 million ounces. In March 1930 she imposed an import duty equivalent to 9 cents per ounce. If China, the only remaining large consumer of silver, were to adopt the gold standard, it is impossible to forecast the result.

The estimated world production of silver fell from almost 262 million ounces in 1929 to about 244 million in 1930.

Some relief would undoubtedly come with improved conditions in China. Many plans have been suggested such as the stabilizing of silver through a fixed price by government sales (50 cents); return of silver coinage and increased use in the arts and crafts.

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February 1931 (A.B. & V.L.E-W.)

TITANIUM IN 1930

Production:

In 1930, 412 tons of ilmenite valued at $1,239 were shipped from the Baie St. Paul district, Quebec, to the United States.

Exports:

See above statement.

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 rapidly becoming of great importance, but the amount of titanium ore used in it is small as 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 the chief factor in the industry in Europe and Commercial Pigments Co. of Baltimore.

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 been erected however.

It is also of interest to note that one of the largest industrial corporations in the United States, not heretofore interested in titanium, had a representative investigating titanium deposits in eastern Canada during the past summer.

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 and Norway. A potential source of cheap ilmenite is the waste sludge obtained in the purification of bauxite for the production of aluminum.

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

Issued by the Mines Branch,
Department of Mines, Ottawa,
February 1931, (A.H.A.R.).

TITANIUM IN 1950

Production:

In 1950, 412 tons of ilmenite valued at $1,259 were shipped from the Baie St. Paul district, Quebec, to the United States.

Exports:

See above statement.

Imports:

Not separately recorded.

Ores Mined and Producing Localities:

Ilmenite, carrying from 15 to 35% 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 had 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 greatest use of titanium at the present time is in pigments; next, in ferro-alloys, chiefly ferro-carbon-titanium, for use in the metallurgy of iron and steel. The titanium pigment industry is rapidly becoming of great importance, but the amount of titanium ore used in it is small as 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 the chief factor in the industry in Europe and Commercial Pigments Co., of Baltimore.

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 been erected however.

It is also of interest to note that one of the largest industrial corporations in the United States, not heretofore interested in titanium, had a representative investigating titanium deposits in eastern Canada during the past summer.

The published price quotations for ilmenite are nominal so far as Canadian producers are concerned. The world's chief sources of supply are now Travancore, India and Norway. A potential source of cheap ilmenite is the waste slime obtained in the purification of bauxite for the production of aluminum.

The Department of Mines, Ottawa, has published the following report: "Titanium", (Mines Branch Report No. 579).

Issued by the Mines Branch,
Department of Mines, Ottawa,
February 1951, (A.H.A.R.).

ZINC IN 1930

Production:

1930 --- 133,833 tons valued at $ 9,635,957
1929 --- 98,634 " " " 10,626,778

Exports:

	Quantity		Value
Zinc ore (zinc content of).....	23,482	tons	$1,014,915
Metallic zinc	75,482	"	5,146,215
Zinc scrap, dross & ashes.....	2,404	"	92,651

Imports:

Spelter.....	930	"	90,270
Zinc sheets & plates, blocks, etc.	4,560	"	572,448
Other imports.....			1,865,746

Ores Mined and Producing Localities:

Almost all the zinc produced in Canada during 1930 came from the Consolidated Mining & Smelting Co.'s plant at Trail, B.C. which secured its ore, in the form of concentrates, from the company's Sullivan mine at Kimberley, and, to a smaller extent, from the independent mines in the Kootenay district, B.C. Zinc concentrates were also produced at Notre-Dame-des-Anges in Quebec, and at the Errington mine near Sudbury, Ontario.

Important Developments and Prospective Producing Localities:

In British Columbia, the Consolidated Mining & Smelting Company further increased 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 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.

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

The St.Eugene mill at Moyie, having completed its purpose, that of treating the old mill tailings, was dismantled in the early summer.

The mines of the Slocan district were mostly idle throughout the year.

In Manitoba, the Hudson Bay Mining & Smelting Company completed their concentrator and the zinc refinery in the fall and the first shipments of refined zinc were made early in December.

The Sherritt-Gordon expects to have its new concentrator in operation in the spring of 1931, but operations will be confined as much as possible to producing copper concentrates, until the price of zinc shows some improvement.

In Ontario, the Treadwell Yukon Co.Ltd. carried on extensive development at the Errington mine, in the Sudbury basin. The concentrator was closed down in November due to the collapse of the metal market, and also to the fact that the mill being a pilot one, had about answered its purpose.

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In western Quebec, the Amulet concentrator was in operation for a few months and the other potential producers in this district confined their operations to development work.

The property of Lyall & Beidelman in Gaspe peninsula was again under development.

In Nova Scotia, the Stirling new mill operated only a short time.

The proposed construction of zinc refineries in eastern Canada by the Consolidated Mining & Smelting Co. 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 1930 was 4.556 cents per pound as against 6.87 cents in 1929.

It has been estimated that the world's production of zinc for 1930 will approximate 1,565,000 tons as against 1,620,000 tons in 1929. 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.

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February 1931. (A.B.)

RADIUM-BEARING MINERALS

Production:

Nil.

Exports:

Nil.

Imports:

Nil.

Ores Mined and Producing Localities:

Nil.

Important Developments and Prospective Producing Localities:

Small amounts of radioactive minerals have been found in pegmatite dykes worked for either mica or feldspar in Ontario and Quebec. Practically all of these occurrences have proved of no possible commercial value, the minerals being either too low in radium content to be considered as a source of the element or being present in only mineralogically-interesting amounts.

In 1929, however, development was started on an occurrence of uraninite in a pegmatite dyke near Wilberforce, in Haliburton county, Ont., and this work disclosed a vein-like deposit containing large crystals and small nodules of uraninite scattered through a gangue of calcite and fluorite. A car-load shipment of the ore was sent to the Mines Branch Ore Dressing laboratories for test late in 1929, and this test gave a recovery of 4.56 pounds of uraninite, equivalent to 2.56 pounds of uranium oxide (U_3O_8), per ton. Further development work upon the property was commenced by the owners, the Ontario Radium Corporation, in March 1931, in the hope of proving up a commercial ore-body.

Interest was shown during 1930 in a discovery of uraninite in a pegmatite dyke in the Pointe du Bois district, in southeastern Manitoba. Further development work is required to determine the possible importance of this deposit, which also carries tantalite. The owners are Winnipeg River Tin Mines, Ltd.

By far the most important discovery of radium-bearing mineral yet made in Canada is that made in 1930 on the claims of Eldorado Gold Mines, Ltd., at the east end of Great Bear lake, N. W. T. Samples sent to the Mines Branch proved to be massive pitchblende, carrying up to 84 per cent uranium oxide, equivalent to 213 milligrams of radium per ton. The samples are stated to have been taken from two veins, which have been traced for several hundred feet and range from 2 to 6 inches in width. Active prospecting of the area is to be undertaken by the owners during 1931, and it is expected that a shipment of ore will be brought out before next winter. Should the season's work succeed in proving up an adequate tonnage, it is hoped that Canada may soon produce radium on a commercial scale.

A report (Memorandum Series No.48) on the Great Bear lake material has recently been published by the Mines Branch. A description of the Wilberforce deposit, including a report on the ore-dressing tests run in the Mines Branch laboratories and a review of the general world radium situation, is contained in a recently-published Mines Branch report (No.719). Copies of these reports may be obtained by application to the Director, Mines Branch, Ottawa.

Issued by the Mines Branch,
Department of Mines, Ottawa.
April 1931. (H.S.S.)

ARSENIC IN 1930

Production:

1930: 2,262 tons of white arsenic(As_2O_3) valued at $129,5[illegible]
1929: 2,615 " " " " " " " 171,[illegible]

Exports:

1930: 1,168 tons valued at $ 86,825
1929: 1,584 " " " 123,398

Imports:

White arsenic.....	12,160	lb. valued at $	749
Arsenic, sulphide of...	25,118	" " "	2,208
Arsenate of soda.....	2,968	" " "	315
Arsenate of lead.....	655,619	" " "	36,211

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, Ont., who also manufacture arsenical insecticides, from arsenical silver-cobalt-nickel ores from Cobalt and surrounding districts in northern Ontario. There is also a certain amount of recoverable arsenic contained in silver-cobalt residues exported for treatment and the Nickel Plate gold mine at Hedley, B.C. exports arsenical gold concentrates to the American Smelting and Refining Co.'s smelter at Tacoma, Washington, for the recovery of gold and arsen Occasional shipments of arsenical concentrates have also been mad in the past by gold mines in Nova Scotia to European treatment plants. Production of arsenic in Canada decreased in 1930.

Important Developments and Prospective Producing Localities:

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

General Situation, Market Conditions, etc.:

Arsenic is usually recovered in the form of white arseni (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.

The price of white arsenic remained steady throughout the year at 4 cents per pound, a price that is believed to be very little above the average cost of production. 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 550 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" (Geol.Surv. Economic Series No. 4).

Issued by the Mines Branch,
Department of Mines, Ottawa,
February 1931. (A.H.A.R.)

ASBESTOS IN 1930

Production:

1930 — 242,112 tons valued at $ 8,390,163
1929 — 306,055 " " " 13,172,581

Exports:

	Tons	Value
Asbestos - - - - - - - - - - - - -	104,262	$6,441,939
Asbestos sand and waste - - -	131,238	2,011,318
Manufactures of asbestos - - -		199,783
		$8,653,040

Imports:

Asbestos packing - - - - - - - -	87	82,111
Asbestos in any form other than crude - - - - - - - - -		791,739
		$ 873,850

Mines Mined and Producing Localities:

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

Important Developments and Prospective Producing Localities:

Attempts to develop prospects in other parts of Quebec and in Ontario have not been successful owing to the small size of the veins encountered in development work. Recent discoveries reported from Northern Manitoba do not exhibit veins of a commercial grade of fibre.

Several inactive properties between Thetford Mines and East Broughton were acquired by two of the larger companies in 1927, so that virtually all the known asbestos-bearing ground from Black Lake to East Broughton is now held by four companies.

One new mill was erected at Thetford in 1928.

General Situation, Market Conditions, etc.:

The industrial depression which began late in 1929 affected the asbestos industry through decreased sales and a lowering of prices. The industrial situation in the United States, the chief market for Canadian asbestos, seriously affected sales and production of Canadian companies. This situation was further aggravated by the development of keen competition among Canadian producers themselves, particularly in the marketing of the longer grades of fibre, which usually are high priced. Rhodesian producers, marketing most of their long-fibre production in Europe, were not affected to so great an extent as were the Canadian producers, and the decline in production was not so marked. In Russia preparations were in progress to greatly increase their output, and large offerings of crude long fibre stock, at prices varying from 25% to 35% below prevalent market prices in the United States had the effect of further disorganizing the industry. 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 African industry are reducing the proportion of world sales of long fibre which falls to Canadian producers.

Issued by the Mines Branch,
Department of Mines, Ottawa.
February 1931. (A.W.G.W.)

BARITE IN 1930

Production:

1930: 66 tons ground barite valued at $1,484
1929: 105 " " " " " 2,341

Exports:

Not separately classified in trade records, but probably nil

Imports:

Imports of ground barite into Canada were as follows:

	1930		1929	
	Tons	Value	Tons	Value
From Great Britain	33	$ 388	67	$ 1,317
" United States	845	18,627	1,257	28,294
" Germany	1,048	16,504	1,322	22,467
" Other countries	23	426	---	---
Total	1,949	$35,945	2,646	$52,078

Ores Mined and Producing Localities:

As in 1929, production was confined to a single deposit at Lake Ainslie, Nova Scotia, worked by a Halifax paint firm to supply its own requirements.

Important Developments and Prospective Producing Localities:

No developments in connection with other known barite deposits in Canada are reported. A discovery of barite on Lake Minnietaki, near Sioux Lookout, Ont., was announced during the year, but no details are available.

General Situation, Market Conditions, etc.:

Consumption of barite in the United States is reported to have taken a great drop in 1930 over the figure of the previous year. Imports during the first nine months of 1930 totalled only 26,000 tons, as against 85,000 tons in 1929, and reflect the general inactivity in the consuming industries. The price of crude ore dropped from $9 per ton in January to $6.50 per ton later in the year; ground, water-floated barite, however, remained constant at $23 per ton.

Barite enters the United States under a tariff of $7.50 per ton for the ground product and $4 per ton for crude. This tariff is considered too low by the domestic producers, but is sufficient to effectually dispose of any possibility of Canadian barite, crude or ground, entering the U. S. market.

The known deposits of barite in eastern Canada are all of vein type and much of the ore is of the hard, crystalline type, more suited to barium chemicals manufacture than for grinding. Domestic requirements at the present time are almost entirely for ground barite and are met chiefly by soft Missouri ore.

There should, however, be opportunity for the manufacture in Canada of lithopone, large quantities of which are consumed by the paint, rubber and oil cloth trades, and of which there is no present domestic production. Lithopone imports into Canada in 1929 totalled 9,704 tons, valued at $852,079. About two-thirds of the American production of crude barite ore is employed in lithopone manufacture. Barium chemicals, also, are constantly finding wider application. Barium carbonate, in particular, is now widely used as an addition to clay to prevent scumming in bricks. All of the domestic supply of barium chemicals is imported.

Considerable tonnages of ground barite are now used in drilling oil wells, where it serves to overcome gas pressures by increasing the weight of the mud column in the hole. Enquiries have reached the Mines Branch during 1930 as to the possibility of Canada supplying ground barite for this purpose.

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

Issued by Mines Branch,
Department of Mines, Ottawa.
February 1931 (H.S.S.).

BITUMINOUS SAND IN 1930

Production:

There is no established commercial production of bituminous sand in Canada as yet. Prior to 1927, approximately 2,000 tons had been shipped for use in connection with laboratory investigations and 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 of roads and walks.

During 1930 approximately 14,500 gallons of separated bitumen were shipped by Dr. K. A. Clark, involving consumption of approximately 1,150 tons of bituminous sand. Approximately 8,400 gallons of separated bitumen was shipped by R. C. Fitzsimmons of the International Bitumen Company, involving consumption of upwards of 840 tons of bituminous sand.

Total production of bituminous sand from the McMurray area in 1930 would thus be approximately 2,782 tons.

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 the 26th base lines in the Province of Alberta. Occasional shipments of bituminous sand, largely for demonstration purposes, have been made from Sec. 32, Tp. 88, R.8; Sec. 14, Tp. 89, R.9; Sec. 8, Tp. 89, R.9 and Sec. 24, Tp. 95, R. 11.

Important Developments and Prospective Producing Localities:

Up to the present time, principal activity has been directed toward field exploration, demonstration work, and laborator studies. Results of investigations by the Department of Mines will be found in Summary Reports of the Mines Branch and in several separate reports, such as "Bituminous Sands of Northern Alberta" by S.C.Ells, 1926 (Rep. No.632), and "Use of Alberta Bituminous Sands for surfacing of Highways" by S.C.Ells, 1927 (Rep. No.684).

Laboratory and demonstration work by Department of Mines has included: (a) Analyses of representative samples of bituminous sand and of separated bitumen. (b) Investigation of distillation and separation methods designed for recovery of hydrocarbons, and work on sulphur compounds in the different fractions. (c) Development and demonstration of a drilling system suitable for core drilling through bituminous sand. (d) Construction of demonstration wearing surfaces for streets and highways.

(over)

General Situation and Market Conditions:

During 1930, small experimental plants for the separation of bitumen from bituminous sand were operated in the McMurray area by Dr. K. A. Clark of the Scientific and Industrial Research Council of the Province of Alberta, and Mr. R. C. Fitzsimmons of the International Bitumen Co.,Ltd. Each plant produced several hundredsof barrels of bitumen and demonstrated the ease with which separation may be effected. On May 3rd, 1930, regulations were established by Order-in-Council for the disposal of bituminous sand rights, the property of the Crown in the Province of Alberta. In accordance with these regulations, extensive bituminous sand areas were reserved on May 23rd, 1930, for Mr. Max W. Ball, and subsequently on June 10th,1930, areas of equal extent were reserved for Mr. W. P. Hinton. Conditions under which the above reserves were granted provide that active development must be commenced within a stated period, and it is anticipated that preliminary operations will be undertaken during 1931. Meanwhile, until production and transportation costs are determined, more definitely, it will be impossible to estimate the extent to which Alberta bituminous sand and various derived hydrocarbons may ultimately displace imported material of a similar class.

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Department of Mines, Ottawa.
February 1931. (S.C.E.)

CHROMITE IN 1930

Production:

No production of chromite was reported in 1930, while in the proceding year 126 tons of chromite ore were shipped to the smelter at Trail,B.C.,with a view to finding an efficient method of concentration. In 1923, 3,558 tons of 48 per cent Cr_2O_3 concentrates,valued at $52,650 were produced.

Exports:

There were no exports of chromite in 1930.

Imports:

The imports of chrome ore are not separately recorded. During 1930,the following were imported:bichromite of soda, 1,971,720 lb.,valued at $142,041; bichromite of potash 80,340 lb. valued at $7,383; chrome firebrick valued at $73,761.

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 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 has been actively explored by its 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 has been sunk to a depth of 350 feet on one of the most promising zones, and a considerable amount of underground development has been completed.

Promising indications of chromite are also 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 war-time production,(36,725 tons, valued at $499,682 in 1917), to nil, 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.

Over half of the world's supply of chromite is now derived from Rhodesia, which produced about 293,109 tons in 1929. The remainder is obtained chiefly from New Caledonia, Cuba, Greece, Anatolia, Russia and the Transvaal.

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Department of Mines,Ottawa.
February 1931. (H.S.S.)

CORUNDUM IN 1930

Production:

No corundum has been produced since 1921, when shipments amounted to 403 tons of graded grain valued at $55,965.

Exports:

None.

Imports:

Not recorded -- approximately 50 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.

General Situation and Market Conditions, etc.:

The competition from artificial abrasives has been the main cause of the decline in consumption. During the last few years, however, natural corundum has been used for the manufactur of the artificial abrasive, oxide of aluminium, the corundum for which is at present obtained from South Africa. In 1928, there w a decline in this use, as this method was abandoned by the Canad manufacturer and is now employed by only one in the United State During the year, 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 manufacturerused about one ton during the year. The United States consumption is between 2,000 and 3,000 tons annually of which about 50 per cent is for abrasive wheels, 30 per cent for lens and optical glass grinding and 10 per cent for the artificial abrasive. The demand for the optical trade has slightly increased, for which purpose it is now mainly used in Canada. All the Canadian imports are South African, ground and re exported by United States crushing mills.

The consumption of corundum in the United States proportionately decreased in 1930 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 than corundum, has a better life.

The average price of crude South African crystal corundum is about $54.00 per ton f.o.b. United States ports; graded grain at crushing mills 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 Rep. No. 675).

Issued by Mines Branch,
Department of Mines, Ottawa,
February 1931. (V.L.E-W.).

DIATOMITE IN 1930

Production:

The production in 1930 was 630 tons while shipments were 554 tons valued at $13,247; in 1929 the shipments were 429 tons valued at $10,330.

Exports:

None recorded, but about half the eastern material produced was exported to the United States for final treatment.

Imports:

The recorded imports amounted to 329 tons valued at $12,004 but the greater portion of the material comes in under miscellaneous items or as partially made up products and probably now totals over 6,000 tons.

Producing Localities:

The International Diatomite Industries Ltd., Montreal a Canadian reorganization of the Oxford Tripoli Sales Co., continued mining from their deposits at New Annan, south of Tatamagouche in northeastern Nova Scotia where the material calcined and then shipped to the Oxford Tripoli Sales Co. plant at Haverstraw, N.Y., for final treatment. They also shipped calcined material from their deposits at Little River, Digby Neck, N.S. There was a small shipment of about 10 tons from near Bracebridge in the Muskoka district of Ontario for use in the manufacture of insulation bricks. The B. C. Refractories Ltd. continued mining from their deposits at Quesnel, B.C., shipping their raw product to their Vancouver plant.

Important Developments and Prospective Producing Localities:

The erection of a treatment plant and production of the International Diatomite Industries Ltd. at Digby Neck, N.S., was of interest. Their shipments included some car lots of calcined aggregate for insulation light weight concrete and is the first of its kind ever made in Canada. They also acquired several other deposits including that of Pollet lake in southern New Brunswick and several more deposits in northern Nova Scotia.

The Diatomite Products Ltd., Toronto, have almost completed the erection of their treatment plant at Martins Siding, Muskoka, Ont., and production is expected before the summer of 1931. The Diatomite Syndicate, Huntsville, Muskoka, Ont., are also contemplating the erection of a plant. The discovery of more large deposits of diatomite south of Quesnel, B.C., and the building of a Government road into the "big bend" deposits 10 miles north of Quesnel, have renewed interests in that district where by far the largest known deposits in the Dominion occur.

(over)

General Situation, Market Conditions, etc.:

The uses are mainly divided into filter medium; insulators against heat, cold and sound; for abrasive purposes such as metal polishes and powders; and in fillers for paint, rubbers, etc. Its demand as an addition agent to concrete continues to grow, for which purpose probably about 1,000 tons were used in Canada in 1930.

The most outstanding industrial development during the year in the United States was the use of diatomite as one of the principal ingredients in asphaltum battery boxes, one United States firm alone using 25,000 tons for that purpose. Two or three Canadian battery box manufacturers have also recently started using diatomite. Another development of interest is the production by some Canadian firms of diatomite insulation bricks and insulation tiles. There is a large home market for these products which have hitherto been imported.

About 85 per cent of the diatomite used in Canada is imported, all from the United States, the greater part of this material is produced by the Johns-Manville Co., New York (Celite Products Co.) from their deposits at Lompoc, California. The production of Canadian diatomite has been steadily increasing for the past 5 years. Over 100 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 Canadian diatomite.

The present price in Canada varies from $30 to $35 per ton for concrete admixture; $40 to $50 for insulation and filtration; $100 or over in small lots for material suitable for polishes; 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).

Issued by the Mines Branch,
Department of Mines, Ottawa,
February, 1931. (V.L.E-W.)

FELDSPAR IN 1930

Production:
1930 - 27,423 tons valued at $237,383.
1929 - 37,527 " " " 340,471

Exports:
1930 - 21,183 tons crude spar valued at $165,482
1929 - 29,896 " " " " " 242,915

The bulk of the exports was consigned to grinding plants in the United States. Under the new 1930 Tariff Act, crude feldspar entering the United States is now dutiable at $1 per ton; ground spar is taxed 30 per cent ad valorem.

Imports:
1930 - 2,695 tons ground spar valued at $44,142
1929 - 3,955 " " " " " 65,997.

Ores Mined and Producing Localities:

Feldspar mined in Canada is of the potash variety, known as othoclase or microcline. Soda feldspar (albite) is known to occur, but there is little demand for this variety. There is a small production, however, of a soda-rich feldspar, used in scouring-soap manufactures, from a mine in Aylwin township, Que.

The principal producing localities in 1930 were the Hybla, Perth, and Verona areas, in Ontario, and the Buckingham area in Quebec. Selected feldspar from the Buckingham district is in high demand for dental purposes. The Richardson mine, near Verona, Ont., was reopened in 1928 and continued in operation during 1930.

Important Developments and Prospective Producing Localities:

No important new properties were opened up during the year. Representatives of a large American spar milling consolidation have been active in examining and proving up prospects, with a view to taking over properties that would ensure an adequate supply for their grinding plants. This company worked the large Derry mine in the Buckingham district under lease during 1930.

General Situation, Market Conditions, etc.:

Production of feldspar in 1930 was lower by 10,104 tons than in the previous year, and was 17,381 tons lower than the 1924 figure which was the highest, both in tonnage and value, in the history of the industry.

The Frontenac Floor and Wall Tile Company, at Kingston, Ont. continued to grind feldspar, both for its own use and for the domestic trade; the capacity of the plant was doubled during 1928 by the installation of a second grinding unit. During the year, the new grinding mill of the Canadian Flint and Spar Company, at Buckingham, Que., came into operation. This mill is of the most modern type, and is designed to supply ground feldspar of every grade used in the ceramic industries. Crushed spar for stucco purposes will also be produced as well as crushed quartz.

Establishment of additional grinding plants in the United States has resulted in over-capacity, and consequent competition has brought about progressively lower prices for ground spar. About 12 per cent of the total United States consumption of crude spar is Canadian. A glass plant at Oshawa, designed to manufacture glass from mine-run feldspar, is a new development. This plant came into active production in 1930, and it is stated that large quantities of feldspar will be used.

The price level for crude Canadian feldspar in 1930 was around $7.50 for the best grade, f.o.b. cars.

The Department of Mines, Ottawa, has published the following report: "Feldspar in Canada" (Mines Branch Rep. No.401.)

Issued by Mines Branch,
Department of Mines, Ottawa,
February 1931. (H.S.S.)

FLUORSPAR IN 1930

Production:

1930	-	80	tons valued at	$ 1,240
1929	-	17,870	" " "	268,120

Exports:

No exports of fluorspar in 1929 or 1930.

Imports:

1930	-	12,652	tons fluorspar, valued at $160,995
		5	" hydro-fluosilicic acid, valued at $1,353
1929	-	12,092	" fluorspar, valued at $159,798
		36	" hydro-fluosilicic acid valued at $4,706.

Ores Mined and Producing Localities:

Canadian fluorspar occurs both as lump and gravel spar. The deposits vary in the type of mineral they carry; at some mines the fluorspar occurs in massive crystalline form, and can be cobbed of impurities; in others, the spar is in the form of a loose sand or gravel, from which the associated minerals can be removed only by concentration.

Important Developments and Prospective Producing Localities:

Consequent on an active demand for fluorspar during the war, a number of mines were opened up in the Madoc district, Ontario. A few of these developed into important producers, but most of them remained small prospects; all of them were idle for some years till 1929 when a small production was reported. Shipments from this district have been exclusively run-of-mine ore. Recent reports state that a company has taken over some of the more promising deposits and intends to erect a concentrator, which will also treat custom ore from other properties.

The Rock Candy mine, of the Consolidated Mining and Smelting Company, near Grand Forks, B.C., was idle during the year, and no shipments were made. The ore contains silica, and it is necessary to concentrate it to make a commercial product.

General Situation, Market Conditions, etc.:

The eastern deposits of fluorspar are relatively small and expensive to work, and operators find it difficult to compete with foreign supplies. Export to the United States was discouraged by the 1922 tariff, which imposed a duty of $5 a ton on fluorite; this duty was increased during 1928 to $8.40 per long ton. In the United States market, also, Canadian fluorite can hardly meet the competition of cheap European and South African mineral.

Gravel fluorspar, not less than 85 per cent CaF_2 and not over 5 per cent SiO_2 was quoted at $17.25 per ton, f.o.b. American mines at the end of the year.

The 50 per cent increase in the tariff, aimed chiefly at English gravel spar, running not over 93 per cent calcium fluoride, is having an influence on American importations of this class of fluorspar, there having been a material falling off in imports during 1929 and 1930. Improved methods of flotation concentration for high-grade acid spar are reported to have led to an important increase in the American production of this grade during the last two years.

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

Issued by Mines Branch,
Department of Mines, Ottawa,
February 1931. (H,S.S.)

GARNET IN 1930

Production:

No production since 1923 when 1,250 tons valued at $100,000 were shipped. In 1924, 360 tons of garnet from stock on hand were shipped.

Exports:

Nil.

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 carried out early in the year by the Labelle Nickel and Garnet Co. of Montreal on their garnet deposit at Labelle, Que., 100 miles north of Montreal. Further prospecting was also carried out January and February 1930 by the Langlade Garnet Ltd., Quebec (late Langlade Garnet Syndicate) at Langlade, Baudin township, Abitibi county, Quebec, when about 10 tons of ore were mined for concentration tests. The erection of a treatment plant is still being considered.

General Situation and Market Conditions:

About 75 per cent of the world's production is used for making abrasive coated papers and cloths and the balance for glass surfacing. About 8 years ago, garnet coated papers largely took the place of sand and emery papers in the wood working industries, but during the past two or three 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 glass grinding and bevelling industries for which purposes there was a further increase in demand in 1930.

The world's best garnet continues to be obtained from mines in New York State, but their 1930 production was only about half that of two years ago. On the other hand, the production of fines for glass surfacing almost equalled that of the high grade garnet used for abrasive papers. The total United States production for 1930 is estimated to be about 5,500 tons, a few hundred tons less than 1929, but the value was considerably less since 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, to the substitution of garnet by artificial abrasives, and to the consolidation of 8 of the principal United States sandpaper manufacturers into 4.

During the year, the Carborundum Co. took over the Abrasives Ltd., Brantford, Ont., the only Canadian abrasive coated paper manufacturer. Later the Brantford plant was absorbed by the Canadian Durex Abrasives Ltd., Toronto, who remodelled the Brantford plant and started production on February 1, 1931.

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,
February 1931, (V.L.E-W.).

GRAPHITE IN 1930

Production:

1930:	1,610 tons	valued at	$100,322
1929:	1,461 "	" "	103,174

Exports:

1930:	2,417 tons	valued at	$127,291
1929:	1,582 "	" "	88,647

Imports:

Graphite imports, including crucibles, were valued at $116,233 as against $155,770 in 1929.

Ores Mined and Producing Localities:

The Canadian graphite production has been derived from mines and mills situated in the Perth, Bancroft and Calabogie districts in Ontario, and in the Buckingham, Guenette, and St. Remi districts in Quebec. During 1929, the mill of the Black Donald mine at Calabogie, Ont., the only remaining active operator in the province, was rebuilt on a larger and more modern scale. In Quebec, the only operator continued to be the Canadian Graphite Corporation, at Guenette: this company reports that it intends closing down its mine and mill for lack of a market.

Important Developments and Prospective Producing Localities:

During 1929, a new company - Western Canada Graphite Ltd.—of Vancouver, announced plans for developing a graphite deposit at Mussel Inlet, on the mainland coast, but it is understood that nothing was done in 1930.

General Situation, Market Conditions, etc.:

The graphite industry on the American continent shared in the general business depression during 1930. Decreased demand and foreign competition have practically killed graphite mining, both in the United States and Canada. Efforts by American operators to have the 1922 tariff on imported graphite raised met with practically no success, the new duties being very little higher than the old ones.

Madagascar flake was quoted at 6-8 cents per pound, New York, at the close of the year.

Formerly, high-grade graphite - crystalline lump and flake - was in great demand for the manufacture of graphite crucibles. Before the war, about 55 per cent of the graphite consumed in the United States was estimated to be used in crucibles. Due to the growing adoption of oil-fired and electric furnaces for the melting of metals, as well as to improvements in the technique of manufacture and the addition of strengthening materials, such as carborundum, to the crucible mixtures, the life of crucibles is now many times what it was some years ago. As a result, many American crucible manufacturers have either gone out of business or are working at very reduced capacity. At the present time, it is reported that probably not much over 10 per cent of the graphite consumed in the United States is employed in crucibles.

Most of the crucible graphite used is produced in Madagascar, which has now attained a controlling position over the world supply. It seems very doubtful whether the Canadian flake graphite industry can hope, under present conditions, to become re-established in the face of Madagascar competition. All graphite crucibles used in Canada are imported from Great Britain or the United States.

The Department of Mines, Ottawa, has published the following report: "Graphite", (Mines Branch report No. 511) by H. S. Spence.

Issued by the Mines Branch,
Department of Mines, Ottawa.
February 1931. (H.S.S.)

GRINDSTONES PULPSTONES AND SCYTHESTONES IN 1930

Production:

1930: 850 tons valued at $ 57,799
1929: 1,947 " " " 106,354

Exports:

1930: exports valued at $11,674
1929: exports valued at $36,690

Imports:

1930: imports (mostly pulpstones) valued at $241,570
1929: " " " " " 448,382

Producing Localities:

During 1930 there were only two producing companies in the Maritimes. The Read Company were the only producers of grindstones. Their production, which was only about a quarter of that of 1929, was maintained from their New Bandon quarry in northern New Brunswick, the Stonehave quarry being closed down. They also produce good quality pulpstones from the sandstone beds just above low tide at Folly Point, Beaumont in the south, the stones being dressed at their Dorchester plant from which their production increased about 50 per cent over 1929. There was a considerable decrease in the pulpstone production by the Miramichi Company from their quarry at Quarryville, near Newcastle, N. B. By far the largest pulpstone production was maintained by the J. A. & C. H. McDonald Ltd., Vancouver, B. C., from their quarry on Newcastle Island opposite Nanaimo on Vancouver Island, B. C., the product from which is mainly used by local mills. The total 1930 pulpstone production was 594 tons valued at $45,675 against 544 tons valued at $59,606 in 1929. The 1930 grindstone production of 234 tons was only one-fifth of that of 1929.

Important Developments and Prospective Producing Localities:

There are in the Maritime provinces at least 60 or 70 quarries from which grindstones have been furnished, almost all of which are now idle because of present market conditions. Interest is now almost entirely confined to the pulpstone business.

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 and it is expected that the Canadian output in 1931 will be still further decreased. The price of Canadian natural grindstones is under $40 per ton and over $100 per ton for pulpstones.

There is a steadily increasing demand for good pulpstones and over half a million dollars worth are used annually in the 60 Canadian pulp mills. Only about 10 per cent of the stones used in

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Canadian mills are produced in Canada. The use of Canadian pulpstones, however, proportionately decreased in 1930 since there was a curtailment of pulp and paper output and also there was a general decrease in the 1930 United States pulpstone production.

The stones for the modern pulp mills are now mainly of the large magazine type. The increased rate of spped calls for a more exacting and durable wheel than used in former years. 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, so that it made an appreciable headway during 1930. It is now being made in Canada by one concern. The demand for pulpstones varies according to the production of newsprint and should, therefore, show a gradual increase in 1931.

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.
February 1931. (V.L.E-W.)

GYPSUM IN 1930

Production:

1930:	1,040,883	tons	valued at	$2,772,584
1929:	1,211,689	"	"	3,345,696

Exports:

1930:	726,662	tons	valued at	$ 990,659
1929:	901,383	"	"	1,223,985

Imports:

1930:	17,725	tons	valued at	$ 222,066
1929:	17,765	"	"	213,392

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 wall board, 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 the largest producer of gypsum in Canada, followed by Ontario, New Brunswick, Manitoba and British Columbia.

Important Development and Prospective Producing Localities:

There were a number of important developments in the industry during the year.

The Western Gypsum Products Ltd., completed a two-kettle calcining plant on the outskirts of Winnipeg, Man., as well as a wallboard plant capable of producing 80,000 feet per day. This company, under license aggeement, makes various special products controlled under United States Gypsum Company's patents, but markets them under its own registered trade name, "Western". The crude gypsum for this plant is obtained from its own mine recently opened up at Amaranth, Man., 40 miles north of Portage la Prairie, and 110 miles by rail from Winnipeg.

The Gypsum, Lime and Alabastine, Canada,Ltd., commenced operations in June, at their new mill at Calgary, Alberta, in which in time a full line of gypsum products will be manufactured. At present they are obtaining crude gypsum from their quarries at Falkland, B.C., but later hope to open up deposits at Wardner, B.C., on the Crow's Nest Pass line of the Canadian Pacific railway.

The month of August witnessed the sale of the Albert Manufacturing Company of Hillsborough, N.B. to the Canadian Gypsum Company of Windsor, N.S., a subsidiary of the United States Gypsum Company of Chicago, Ill. The former company was established in 1854 and had therefore been in continuous operation for over 75 years. The new management has added a modern board plant to the present equipment.

While no new properties were opened up in Canada during the year, with the exception of the Amaranth deposit in Manitoba, there has been considerable activity throughout the country, and the propsects are bright that some of those deposits, more favourably situated with respect to transportation and markets, may become producers during 1931 if industrial conditions warrant. There are a number of localities in both Nova Scotia and New Brunswick where gypsum deposits of good grade can still be found.

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Extensive deposits are known in northern Ontario and with the extension of the Temiskaming and Northern Ontario railway now under construction to James Bay, these deposits may become producers.

Interest is also being shown in the gypsum areas adjacent to the operating deposits south of Hamilton, Ont., but to date no new properties have been opened. The deposits in Alberta, although situated at a distance from markets and railway transportation, are of good grade. There are also several other known deposits in British Columbia which may be operated when conditions warrant their exploitation.

General Situation and Market Conditions:

The use of gypsum in the building trades is making rapid strides because of its lightness, durability, fire-resisting, insulating and acoustic properties, and tiles, wallboards, blocks and special insulating and acoustic plasters are being developed. Since the gypsum industry is so closely dependent on the construction activity in the country the decrease of 20 per cent in the building contracts awarded in Canada during the year is at once reflected in the production of gypsum. With the larger proportion of the production of gypsum in Canada being shipped to the United States in the crude state for manufacture into gypsum products, industrial conditions in that country also have an important bearing on the industry.

One gratifying feature of the industry in Canada is the rapidly increasing export trade in gypsum products that is being developed, and one of the Canadian companies is already exporting their products to over 30 different countries and are reputed to be the largest gypsum products exporters in America. This export trade has tended to stabilize the industry and may in part be the reason why the production did not fall as low as would have naturally been expected from the big decrease in building contracts.

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

The Department of Mines has published the following report: "Gypsum in Canada" (Mines Br.Rep. No.714).

Industry of

Issued by the Mines Branch,
Department of Mines, Ottawa.

February 1931. (L.H.C.)

IRON OXIDE MINERAL PIGMENTS IN 1930

Production:
1930 --- 6,596 tons valued at $ 83,873
1929 --- 6,518 " " " 115,932

Exports:
Iron oxides, ochres, etc., 417 tons valued at $32,798.

Imports:
Ochrey earths, oxides, etc., 5,805 tons valued at $772,927.

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 smaller production since 1923 came from a deposit near St. Anne de Beaupré. This latter deposit was exhausted in 1930, at which time the plant was removed to a new deposit near Les Forges. Production has also been reported in past years from Lynch township, Labelle county and Iberville township, Saguenay county. A small production from British Columbia has been reported since 1923.

Important Developments and Prospective Producing Localities:

There has been no outstanding developments in the mineral pigment industry during the year 1930 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, where in 1929 and 1930, the Quebec Bureau of Mines located and sampled several deposits of ochre and iron oxide in the townships of Tadousac Bergeronnes and Escoumains, Saguenay county. The most important of these deposits examined is located in Range I, Bergeronnes township where the bed of oxide is two to three feet thick.

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.
February 1931. (E.H.W.)

LITHIUM MINERALS IN 1930

Production:

Various small shipments of spodumene and lepidolite have been reported since 1925, but there has been no active production during 1930.

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 in the Customs returns.

Ores Mined and Producing Localities:

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

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. has 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 does not appear to have been active during 1930.

Important Developments and Prospective Producing Localities:

While the district above mentioned is still in the prospect stage, it is worthy to note that the Silver Leaf is the first property in Canada 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 there is little question that this deposit could be made to yield moderate tonnages of lepidolite and spodumene, as well as, perhaps, amblygonite.

Outside of occurrences of mineralogical interest only, there is only one other district in Canada in which lithium minerals are known to occur, namely Wakefield township, Quebec, where the Leduc mine was worked in the past for tourmaline and carries 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.

The principal use of lepidolite is in the glass industry, where it is employed in the ground state as an ingredient of heat-resistant, flint and opal glasses. The lithia content of lepidolite is usually too low for it to serve as a raw material in the manufacture of lithia salts and chemicals. For the latter purpose, spodumene and amblygonite are generally used. The amount of such salts used is, however, distinctly limited and does not appear to be increasing materially, despite the known large deposits of lithium ores in the United States.

Issued by the Mines Branch,
Department of Mines, Ottawa.
February 1931, (H.S.S.)

MAGNESITE IN 1930

Production:

Calcined and dead-burned magnesite:
1930: 13,336 tons valued at $336,162
1929: 18,809 " " " 491,170

Exports:

Calcined and dead-burned magnesite:
1930: 1,851 tons valued at $ 48,536
1929: 5,279 " " " 125,613

Imports:

Magnesite.....	1,442 tons	valued at	$ 27,256
Magnesia pipe covering..	-- "	"	297,513
Magnesite firebrick.....	-- "	"	270,180
		Total	$594,947

Products & Producing Localities:

Magnesite is sold by producers in three forms:- crude magnesite, caustic calcined magnesia, and dead-burned magnesite.

Practically all the Canadian production is from the townships of Grenville and Harrington in Argenteuil county, Quebec.

Several hydromagnesite deposits have been worked to some extent in British Columbia during recent years.

Important Developments and Prospective Producing Localities:

The only known magnesite deposits of proved commercial value in Eastern Canada are situated within a small area in the two townships of Quebec mentioned above.

Hydromagnesite occurs in fairly large deposits in several parts of British Columbia. This material though somewhat similar in composition to hard rock magnesite is powdery in form and requires a different method of treatment to prepare it for the market.

General Situation and Market Conditions, Etc.:

During the war Canadian magnesite commanded a ready market in the United States at a high price; but, later, with the discovery of deposits in that country, the reappearance of European magnesite on the market, and the imposing of duty by the American Government, the demand for the Canadian product fell. The present production is confined largely to caustic calcined magnesia, dead-burned magnesite and prepared magnesite refractories.

The Department of Mines, Ottawa, has published the following report. "The Magnesite Deposits of Grenville District, Quebec" (Geol. Surv., Memoir No. 98).

Issued by the Mines Branch,
Department of Mines, Ottawa.
February 1931. (H.F.)

MICA IN 1930

Production:

The production by classes is indicated below:

	1930		1929	
Rough cobbed	44,330 lb.	$ 1,140	---	$ ---
Thumb trimmed	10,146 lb.	8,445	97,331 lb.	17,131
Splittings	77,530 lb.	35,601	22,750 lb.	13,732
Scrap.....	2,391,022 lb.	51,970	7,986,878 lb.	87,686
	2,523,028 lb.	$97,156	8,106,959 lb.	$118,549

Exports:

Exports of mica, including trimmed sheet, mica plate, splittings and scrap, were valued at $86,537 in 1930 as against $213,059 in 1929.

Note: The apparent discrepancy between production and export figures is due to the fact that the former do not cover the large quantities of splittings and also scrap mica made by mica dealers from the cobbed and trimmed products. Indian mica, also, may be imported by dealers and re-exported, chiefly in the form of splittings.

Imports:

Mica imports were valued at $102,775 in 1930, as against $169,018 in 1929.

Ores Mined and Producing Localities:

Practically all of the mica produced in Canada is of the amber variety (phlogopite). Mica is marketed in the rough-cobbed state, as trimmed sheet, splittings, scrap, and ground mica. Trimming and splitting is done by hand.

Mica is produced almost exclusively from mines in the Ottawa region of Ontario and Quebec. The Quebec deposits lie 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. Only a very small number of existing mines were operated, and production was confined to two or three properties.

The operations for white mica conducted during 1926-27 in the Fort Grahame district, on the Finlay river, British Columbia, resulted in a small output, but were not considered sufficiently encouraging and have been suspended. Some work is reported to have been done during 1929 on white mica occurrences near Tete Jaune, B. C., but there is no record of any shipments.

Important Developments and Prospective Producing Localities:

A mica-grinding plant was erected during the year by Messrs. Blackburn Bros. at their mine in Templeton township, Que., and 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 a large part of the year. Sheet mica, especially the larger sizes, was difficult to sell, the slackened demand being caused, in part at least, by the stocks coming on the London market for Madagascar, Africa, and other sources. These supplies show evidence of increasing, in which case Canadian producers may find continued difficulty in disposing of their larger sizes.

Scrap mica sales, for the production of ground mica, decreased by almost 540 tons, and over $33,500 in value.

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

1 x 1 inches	20 cents per lb.	2 x 3 inches	40 cents per lb.
1 x 2 "	25 " " "	2 x 4 "	55 " " "
1 x 3 "	35 " " "	3 x 5 "	90 " " "

The Department of Mines, Ottawa, has published the following report: "Mica: ~~its occurrences and uses~~" (Mines Branch report No. 701).

Issued by the Mines Branch,
Department of Mines, Ottawa,
February 1931. (H.S.S.)

PHOSPHATE IN 1930

Production:

1930:	40	tons valued at $	760.
1929:	1,185	" " "	15,685.

Exports:

1930:	phosphate rock	nil	tons valued at $	nil.
1929:	" "	52	" " "	1,408.

Imports:

1930:	47,206	tons valued at $	297,522.
1929:	18,192	" " "	114,471.

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. Most of the output was taken by the Electric Reduction Company, at Buckingham, Quebec, and is presumed to have gone into phosphorus.

Important Developments and Prospective Producing Localities:

In 1926-27, 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 has been mined near Crow's Nest and converted into triple superphosphate. Tests of this material have been conducted in the Prairie Provinces, with the collaboration of the provincial Agricultural Departments and the Canadian Pacific railway. The results are reported as satisfactory and the Company has added a large complete fertilizer unit to its Trail plant: this will have a 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.

Due to the operations of the Consolidated Mining and Smelting Company, at Trail, B. C., and of the recently-completed plant of Canadian Industries, at Beloeil, Que., the domestic production of phosphatic fertilizers is expected to show a very material increase in the immediate future.

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 Atlandic seaboard at a lower price than the same grade of Florida phosphate.

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.
February 1931. (H.S.S.)

PYRITES IN 1930

Production:

At the present time the only pyrites produced in Canada is obtained as a by-product from the treatment of sulphide ores containing copper and small amounts of precious metals. The total production in 1929 was 76,581 tons, containing approximately 38,200 tons of sulphur; in 1930 the production was 53,453 tons containing approximately 29,690 tons of sulphur. The production in 1929 was valued at $399,327; in 1930 the value was $234,942.

Imports:

A very small quantity of pyrites is believed to have been imported into Ontario from New York state, but no official records as to the quantity imported are available.

Exports:

Virtually all the by-product pyrites reported as being produced is exported. In addition a very small tonnage of ore, recovered from a mine that had been in operation some years ago was exported. The total exports in 1929 were 77,258 tons and 53,593 tons in 1930. In 1929 the exports were valued at $407,812 and in 1930 at $236,587.

Ores Mined and Producing Localities:

By-product pyrites is produced at the Eustis mine, Quebec, and at the Britannia Mine in British Columbia. Small tonnages are also produced in the Rouyn area.

Important Developments and Prospective Producing Localities:

Prior to and during the war years a large tonnage of pyrites was mined in the territory east of Lake Superior and north of Sault Ste.Marie. During the last year renewed interest has been manifested in the deposits of this territory. The Canadian Pyrites,Limited are drilling properties near Hawk Junction on the Algoma Central railway. Exploratory work was also in progress on the properties formerly belonging to the Rand Consolidated Mines,Limited, now controlled by the Irsugo Consolidated Mines,Limited.

General Situation and Market Conditions,etc.:

The prospect of increased costs for sulphur appears to have stimulated renewed interest in pyrites prospects in certain parts of Ontario. The development of the Freeman process of flash roasting, especially designed for the treatment of by-product flotation fines from the treatment of copper ores also opens up prospective markets for this class of material, which at present is difficult to market and much of which has to be discarded.

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Department of Mines,Ottawa.
February 1931. (A.W.G.W.)

SALT IN 1930

Production:

1930:	268,851	tons valued at	$1,681,217
1929:	330,264	" " "	1,578,086

Exports:

1930:	8,758	tons valued at	$74,397
1929:	9,359	" " "	70,762

Imports:

1930:	128,385	tons valued at	$660,903
1929:	176,566	" " "	936,820

Ores Mined and Producing Localities:

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

During the year 1930, salt was produced in southern Ontario, and at Malagash, Nova Scotia, Ontario salt is obtained from brine wells, while Malagash salt is recovered by minin rock salt, and by recovery by evaporation from brines produced by the 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. The possibility of utilizing this occurrence is still being investigated.

At a lake near Senlac, Sask., salt brine was discovered a few years ago and a small production made in 1919. The property has since been idle, but interested parties have been examining this locality with a view to drilling.

At Neepawa, Manitoba, a well drilled a number of years ago encountered a salt brine at depth, and negotiations are now pending with a view to future development.

In a well drilled for oil near Gautreau, N.B., south of Moncton, extensive beds of rock salt were encountered between 1300 and 1800 feet. A second well drilled encountered 890 feet of salt formation, some of the beds being over 150 feet thick. So far these beds have remained unexploited, but further prospecting is being carried on to determine their extent, and it is probable that this district will become a producer in the near future.

In Nova Scotia, at the Malagash deposit, active production has been maintained, and better shipping facilities and the operation of their 3-pan evaporating plant has greatly improved the position of the company. The successful operation of the Malagash deposit has greatly stimulated the prospecting for salt in the Maritime Provinces.

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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. While the production decreased during the year the industry is in a sound condition, and taken over a period of years the market for salt in Canada is steadily increasing. There are many factors which govern the amount of salt produced. For example, during the past year, the demand for caustic soda has been such that every pound produced was immediately marketed, and more could readily have been sold if available. Since, however, in the manufacture of caustic soda from salt, a definite quantity of chlorine or hydrochloric acid is also produced, the amount of caustic soda produced is contingent on the market available for these other commodities. The market for these during the past year being quiet, the production of caustic soda was in consequence curtailed.

An interesting development of the industry is the increasing number of pulp and paper mills which have either installed or contemplate installing plants at their mills for the manufacture of caustic soda and chlorine for use in the preparation and bleaching of their pulp. This will naturally increase the consumption of crude salt from Canadian deposits, since it will tend to replace the large and steadily increasing importation of these commodities for this purpose.

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 ten years the only producing district was in Ontario which is unfavorably 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 decreased catch during 1930 curtailed the demand for salt, such condition is 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 used on gravel highways to decrease, if not to eliminate dust, 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 soda 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,
February, 1931. (L.H.C.)

SILICA IN 1930

Production:

1930:	40,496	tons of silica sand	valued at	$117,181.
	224,236	tons of quartz	" "	358,442.
	3,606,000	silica bricks	" "	158,633.
1929:	54,326	tons of silica sand	valued at	163,284
	211,623	tons of quartz	" "	398,243.
	3,951,000	silica bricks	" "	173,581.

Exports:

None recorded.

Imports:

1930:	5,040	tons of silex	valued at	$111,473.
	3,878	tons of flint, etc.	" "	37,811.
	164,349	tons of silica sand	" "	352,796.
		silica brick	" "	315,039.
1929:	3,995	tons of silex	valued at	79,653.
	3,595	tons of flint, etc.	" "	39,272.
	233,963	tons of silica sand	" "	490,558.
		silica brick	" "	330,592.

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., 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 brick 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 water-floated material 250 mesh or finer.

Quartz is produced in Quebec and Ontario; and quartzite is quarried in Nova Scotia, Quebec, Ontario, and British Columbia. Silica sand is obtained from Nova Scotia, Quebec and Manitoba.

Important Developments and Prospective Producing Localities:

The mill formerly owned by the Canada Glass Products Ltd. at East Templeton, Que., which was closed down in May 1929, was re opened in 1930 and has been in continuous operation since then under the name of the Ottawa Silica Supply Co. This company is producing silica sand of different grades for the glass industry, steel foundries, and for sand blast, etc.

At Guigues, Que., 12 miles north of Ville Marie, on the east side of Lake Temiskaming, a deposit of silica sand has been opened up and approximately 400 tons shipped during the year. This sand was supplied to steel foundries, for sand blast, and to water filtration plants.

During the year, a modern and up-to-date mill for fine grinding of non-metallics was opened at Buckingham, Que. It is proposed in this plant to produce silex for the ceramic industry and for the paint trade as one of its products.

The silica sand deposits on Black island, Lake Winnipeg, Man., were operated on a substantial scale. The sand is employed in the manufacture of glass bottles, etc., by the Mid West Glass Co. at Winnipeg, Man. At present the sand is used in the crude state but it is hoped that a washing, screening and drying plant will shortly be installed.

There are numerous deposits of silica throughout Canada which might be suitable for commercial production whenever the market warrants. The situation of these deposits with respect to the markets is at present an important factor

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General Situation, Market Conditions, etc.:

In the use of silica for a flux, the smelters endeavor 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 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.

Issued by the Mines Branch,
Department of Mines, Ottawa.
February 1931. (L.H.C.)

The Department of Mines has published the following reports:

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

NATURAL SODIUM SULPHATE IN 1930

(Glauber's Salt and Salt Cake)

Production:

1930 - 31,571 tons valued at $293,847.
1929 - 5,018 tons valued at 64,112.

Exports:

There was an appreciable portion of the Canadian production exported during the year to various points in the United States, but since the exports were made by only two companies, the figures are not available for publication.

Imports:

748 tons of Glauber's salt valued at $ 9,664.
24,554 tons of salt cake valued at 395,236.
15,275 tons of nitre cake valued at 219,173.

Ores Mined and Producing Localities:

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

Production was all from the province of Saskatchewan, the main shippers being the Natural Sodium Products, Ltd., Dunkirk, Sask.; the Horseshoe Lake Mining Co., Ormiston, Sask.; the Sodium Corporation, Alsask, Sask.; the Whiteshore Salts and Chemicals Ltd., North Battleford, Sask.; and the Sodium Sulphate Refining Co., Fusilier, Sask.

Important Developments and Prospective Producing Localities:

An important development during the year was the opening up of the deposit on Horseshoe lake near Ormiston, Sask., where the Horseshoe Lake Mining and Development Company have erected a large and modern plant for the dehydrating of the hydrous sodium salts, to produce salt cake. This plant commenced operations in June 1930, and its product is shipped to Copper Cliff Ont., where it is treated with sulphuric acid to make acid sodium sulphate (nitre cake), an essential flux used in the separation of copper and nickel.

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. It is encouraging to note that 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 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.

General Situation and Market Conditions, etc.:

The large increase in the output of anhydrous sodium sulphate (salt cake) from the deposits in western Canada is attributable to two causes - shipments to the International Nickel Co. at Copper Cliff, Ont., and an increased consumption of the natural product by sulphate-pulp mills.

During 1929, 80,872 tons of nitre cake were imported into Canada wholly for use in nickel refining. To prepare this amount in Canada, using anhydrous salts from the western provinces, would require an output of over 45,000 tons from the deposits. Since that deposit which is supplying Copper Cliff did not commence

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shipments until June 1930, the whole requirements of the refinery ere not supplied last year, but during 1931 a greatly increased roduction for this purpose may be anticipated.

According to the statistics of the Pulp and Paper industry for 1929 (the last available), 44,882 tons of salt cake ere consumed in Canada for the manufacture of sulphate pulp. Some of this was supplied from Canadian sources, and it is expected that during 1931, the proportion of Canadian material used ill be greatly increased.

It would appear, therefore, that this industry, based n the natural deposits of western Canada, has at last been placed n a sound basis and that as the years go on the production will teadily 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 Rep. No. 646).

Issued by the Mines Branch,
Department of Mines, Ottawa.
February 1931. (L.H.C.)

TALC AND SOAPSTONE IN 1930

Production:

1930:	11,841	tons of ground talc valued at	$136,048.
		Block soapstone " "	50,168.
1929:	15,509	tons of ground talc valued at	181,222.
		Block soapstone " "	47,986.

Exports:

1930:	8,512	tons of ground talc valued at	$ 98,855.
1929:	11,399	" " " " " "	139,096.

Imports:

1930:	4,799	tons valued at	$ 85,779.
1929:	5,516	" " "	109,675.

Ores Mined and Producing Localities:

Most of the talc produced is ground at mills situated at or near the mines, and is marketed as ground talc of three grades, according to fineness. Powdered talc is produced at Madoc, Ontario, where there are two mines and mills in operation. 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'Arch material is a rather impure talc, which finds employment in the roofing trade. The Keefers talc is of a superior grade, and has been successfully employed inpaper, soap and paints; a small mill exists on this property and some shipments have been made to coast points.

Soapstone was produced for the first time in 1922, the material being taken out in 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 Soapstone also occurs near Vermilion bay, Lake of the Woods region, Ont., where a plant was installed in 1926 for the production of cut soapstone: this plant has been idle for several years. A company formed some years ago to develop a soapstone deposit at Wabigoon, Lake of the Woods region, Ontario, has not yet commenced operations.

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 Toront syndicate was incorporated in 1927 for the purpose of mining this mate ial for lava purposes. It is understood that western interests have now taken over the holdings, and are planning to develop them.

Reports were current during the year that active development of a soapstone deposit in the Lake of the Woods region was to be under taken in the near future by Port Arthur interests.

General Situation, Market Conditions, etc.:

There was little change in the general tone of the talc industry during 1929.

It is satisfactory to note that the production of block soapstone in Canada is increasing. Canadian kraft-paper mills have importe considerable quantities of soapstone blocks or bricks for lining their smelting furnaces from American and Norwegian sources. The delivered cost of this stone, which is subject to import duty, is high, and it is very desirable that a domestic supply should be developed. The Quebec and western Ontario deposits show promise of being able to furnish a large output of stone comparable in all respects to the American and Scandinavian soapstone.

The commercial utilization of the soapstone dust from the sawing benches at the Quebec quarries has been considered, and a small grinding mill to treat quarry waste and make roofing, foundry, and othe grades of talc was installed by the Quebec operators in 1929, but has not been in active operation.

The Department of Mines, Ottawa, has published the following reports "Talc and Soapstone" (Mines Branch Rep.No.583), and "Talc Deposits of Canada", (Geol.Surv. Economic Series No. 2).

Issued by the Mines Branch,
Department of Mines, Ottawa.
February 1931. (H.S.S.)

VOLCANIC DUST IN 1930

Production:

1930 --- 326 tons valued at $6,520
1929 --- 300 " " " 6,000

Exports:

Not separately recorded.

Imports:

Included under pumice, pumice stone, lava and calcareous tufa, valued at $36,089 against $35,955 in 1929. United States exports of volcanic dust into Canada increased in 1930.

Ores Mined and Producing Localities:

Volcanic dust beds up to 30 feet thick are being worked by the Van-Kel Cleansers,Ltd.,Swift Current,Sask., from deposits near Waldeck, a few miles east of Swift Current. The Old Sol Manufacturing Co., Winnipeg,Man. did not produce from their deposit adjoining the Van-Kel to the west.

Important Developments and Prospective Producing Localities:

Although it was late in the year before the Swift Current producer started marketing their products, nevertheless, they record a slight increase over 1929. The local material is being successfully used as a concrete admixture, and as a cleanser is gradually making headway against strong foreign competition. It is stated that certain difficulties in the manufacture of a wall finish similar to calcimine, has now been overcome and good sales are predicted along this line in 1931.

A small syndicate was formed during the year to develop a compact volcanic dust deposit owned by G. G. Groome at Williams lake, central British Columbia. A road was made into this property and some development work was done including the erection of a shute and ore bunkers. Tests made by a Vancouver firm indicate that certain portions of the deposit have good "fullers earth" properties in the bleaching of lard and mineral oil reclamation. Some production is expected during 1931.

General Situation, Market Conditions, etc.:

Volcanic dust is mainly used in the manufacture of cleansers, scouring powders, and abrasive soaps, 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. There is a large output from Kansas and Nebraska in the United States and all producers report an increase during the year which is expected to continue in 1931. Several producers of lump pumice are successfully utilizing their fines, particularly in cement and acoustic plasters. The total United States output is now about 65,000 tons annually and their exports into Canada increased in 1930.

The Department of Mines,Ottawa, has published the following report: "Siliceous Abrasives" (Mines Branch Rep.No.673).

Issued by the Mines Branch,
Department of Mines,Ottawa.
March 1931. (V.L.E-W.)

CEMENT IN 1930

Production:

1930 -	11,032,539	bbls.	valued	at	$17,818,451
1929 -	12,284,081	"	"	"	19,337,235

Exports:

1930 -	198,736	"	"	"	212,071
1929 -	234,111	"	"	"	252,955

Imports:

Portland and hydraulic or water lime 143,436 bbls. valued at $569,848 as against 55,980 bbls. valued at $189,169 in 1929. Cement n.o.p. and manufacture of, valued at $34,672 as against $64,942 in 1929.

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:

The Canada Cement Co. took over, during 1929, the plant of National Cement Co. located in Montreal East so that now the Canada Cement Co. have a virtual monopoly of the cement production in Quebec and Ontario.

The cement industry is open to much expansion in the whole of Canada, with the exception of Prince Edward Island and Saskatchewan. The raw materials are plentiful and further expansion is simply a question of markets and trade conditions.

General Situation, Market Conditions, etc.:

The production of cement in 1930 was about 79 per cent of the total capacity of the milling plants. The production in 1929 was about 82 per cent of the total capacity, being the highest ever reported, the next highest production having been obtained in 1928 and amounted to 73 per cent of the total capacity. The average selling price per barrel, f.o.b. plant was as follows:

	1929	1930
Quebec.....	$1.38	$1.44
Ontario.....	1.43	1.47
Manitoba.....	2.35	2.32
Alberta	2.19	2.18
British Columbia.....	2.18	2.21

Issued by the Mines Branch,
Department of Mines, Ottawa,
February 1931. (A. B.)

GRANITE IN 1930

(Building, Monumental and Crushed)

Production:
1930 --- 1,652,353 tons valued at $3,145,116
1929 --- 1,390,492 " " " 2,655,008.

Exports:
1930 --- 1,768 tons valued at $21,913 (included with marble).
1929 --- not separately listed, and included with marble totalling 2,467 tons valued at $23,189.

Imports:
1930 --- $267,449
1929 --- 270,051

Ores Mined and Producing Localities:

The stone quarried in this industry consists of granite and other igneous rocks used for building decoration, monumental and 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 and for permanent ballasting of railway road beds. The provinces of Quebec, Ontario and British Columbia are the big producers for this purpose.

The province of Quebec is probably the biggest producer 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 curb stones, while Ontario also produces these products.

An interesting and important development in this industry in recent years is the production from one quarry at Guenette, Quebec, of granite press rolls. These consist of granite cylinders up to 30 inches in diameter and from 25 to 30 feet long with a 6 inch hole through the centre for a shaft, and these are used in the wet end of the paper machine in the paper mills. The granite has to be of a fine grain and even texture and so far only one quarry has been operated in which blocks of sufficient size and of required texture could be obtained. Heretofore, all the granite press rolls used in this country were imported from either the United States or Europe, but since the Guenette quarry was opened up, they have been able to supply the greater part of the demand.

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Granite for monumental purposes is produced in the Maritime provinces as well as in Quebec, Ontario and British Columbia, and this material finds a steady local market. Recently a quarry has been opened up near Cranbrook, B. C., and it is hoped that in 1931 this quarry will find a good market for its stone for monumental purposes in the prairie provinces.

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.:

The granite industry during the past year has shown a good increase in spite of the general depression. There is an appreciable amount of granite imported from the United States and Europe for monumental purposes, but it is possible that in time this importation will be replaced by Canadian material. Like many other products, the demand for 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 granites.

The grey granites of the Stanstead and other areas in the province of Quebec are finding a steady and increasing demand for building purposes, and its utilization for the whole of the exterior stone work on the new head office building of the Sun Life Assurance Company at Montreal will prove a good advertisement for the stone from these areas.

The Canadian granites are suitable for all the purposes for which granite is used and with consistent advertising 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.

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March 1931. (L. H. C.)

KAOLIN (CHINA CLAY) AND BALL CLAY, 1930.

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:

1930 - Clays unmanufactured	9,683	cwt.	valued at	$	5,900
1929 - " "	16,379	"	" "		6,640

Imports:

1930 - China clay	462,245	cwt.	valued at	278,757
1929 - " "	497,571	"	" "	292,980

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. Remi 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.

A deposit of high grade, white-burning clay associated with fireclay on the Mattagami river, Ontario, is reported by the owners to be of large extent. (See Geol. Surv. Summary Report, 1926, Part C., p. 16; article by W. S. Dyer in Can. Min. and Met. Bulletin, April 1928; and also Annual Report of the Ontario Dept. of Mines, Vol. XXXVIII, Part IV, 1929).

A deposit of white-burning clay occurs on Punk Island, Lake Winnipeg, Manitoba, but it is small in amount and would be difficult to mine.

Ball clay has been reported only from southern Saskatchewan where there are evidently extensive occurrences of it about 60 miles to the south of Moose Jaw.

Near Williams Lake, B. C., is a deposit referred to in the report of the Minister of Mines of B. C., 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.

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LIME IN 1930

Production:

The production of lime in Canada during 1930 was as follows:

Quicklime	429,072	tons valued at	$ 3,276,393
Hydrated lime	78,783	" " "	887,858
Total --	507,855		$ 4,164,251

Exports:

During 1930 hydrated lime to the extent of 22,364 tons valued at $444,728 was exported. The countries purchasing this lime were the United States, the Phillipines, Guatemala, St. Pierre Miquelon, Newfoundland and British Honduras.

Imports:

In 1930 Canada imported 8,110 tons of lime valued at $4,822 from the United States. These figures were supplied by the United States Bureau of Foreign & Domestic Commerce. No imports were received from other countries.

Products and Producing Localities:

Lime is manufactured in every province of Canada except Prince Edward Island, although the Saskatchewan production (from dolomite boulders) is very small and irregular. Both high-calcium and magnesian limes are produced in Nova Scotia, New Brunswick, Ontario and Manitoba, but in Quebec, Alberta and British Columbia only high-calcium limes are produced at present.

The products marketed are quicklime and hydrated lime. Quicklime is sold both in lump and pulverized form. The lump lime is sold in barrels and in bulk; the pulverized quicklime is marketed in 70-pound, multi-walled bags. Hydrated lime has many advantages over quicklime for both chemical and construction purposes and the tendency is continually toward marketing a greater proportion of the lime in the hydrated form. Hydrated lime is sold in 50-pound multi-walled bags.

Of the total production Ontario accounted for 50% of the quicklime and 62% of the hydrated lime; Quebec 27% of the quicklime and 14% of the hydrated lime.

Forty-six companies operating 53 plants were engaged in lime production during the year under review.

Important Developments and Prospective Producing Localities;

In 1930 Gypsum, Lime and Alabastine, Canada, Ltd. installed a McGann-Sobek mixed-feed, continuous-discharge kiln at its Milton, Ontario plant. Although mixed-feed kilns have been used for a number of years by several Canadian companies producing lime for their own use, this is the first mixed-feed kiln to be installed bya Canadian company producing lime for sale.

During the year under review two lime plants changed ownership— Petrie Lime Products, Ltd. acquired the plant and property of Western Lime Products, Ltd. on Texada Island, B.C., and National Lime, Ltd. purchased at sheriff's sale the property and equipment of National Lime Corporation, St. Marc des Carrieres, Quebec. No new lime plants were established during the year but there are several in prospect for 1931. Owing to the abundance of high-grade limestone in Canada there are numerous prospective producing localities.

General Situation, Market Conditions, etc.:

In common with most other industries the lime industry

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during 1930 experienced a falling off in business, production dropping about 24 per cent. The outlook for the future, however, is satisfactory, due to the key position which the lime industry occupies in relation to the chemical, metallurgical and general manufacturing industries of the country. About 65 per cent of the total lime production is at present consumed in the manufacture of other commodities, whereas 25 years ago these uses accounted for but a very minor part of the production — the major part of the output being used for structural purposes.

The average price of quicklime in 1930 for all Canada was $7.63 per ton, and of hydrated lime $11.27 per ton. There are wide variations from these prices in certain parts of the country. These averages show a substantial drop compared with the average prices obtained in 1929, which were $8.11 and $12.84 respectively.

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February 1931. (M.F.G.)

LIMESTONE (GENERAL) IN 1930

Production:

The 1930 production of limestone for chemical, metallurgical and agricultural purposes and for crushed stone and rubble but excluding that used for building and ornamental stone, lime and cement was 4,480,291 tons valued at $6,292,192 at the points of production.

Exports:

Comparatively small tonnages of limestone, chiefly for use in sugar refineries and for agricultural purposes, were exported to the United States. No separate record of exports is maintained.

Imports:

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. No separate record of imports is kept.

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 parts of the province, have been utilized from time to time for various purposes.

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

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 the above.

Important Developments and Prospective Producing Localities:

The abundance of limestone in Canada suitable for a great variety of uses renders the prospective producing localities far too numerous to list. There have been no outstanding developments during 1930.

General Situation, Market Conditions, etc.:

The realization that in her vast resources of limestone of varied types Canada possesses an asset of great value, is becoming more widespread each year. Limestone surpasses any mineral, metallic or non-metallic, in the number and diversity of its uses and is indispensable to our modern industrial system. During 1929 more than 12,250,000 tons of limestone was raised from Canadian quarries which when fabricated into its primary products such as lime, cement and stone for various purposes had an initial selling value in excess of $33,800,000. The quantity raised in 1930 falls short of this record amount owing to the general slackening in industrial activity, but there is no reason to doubt that this peak production will be far exceeded in the not distant future.

Issued by the Mines Branch,
Department of Mines, Ottawa.
February 1931. (M.F.C.)

LIMESTONE (BUILDING STONE) IN 1930

Production:

Production of limestone for building purposes from Canadian quarries reached a new high level in 1930 when 91,971 tons valued at $1,514,848 was marketed. This is an increase of 3% in quantity and 46% in value over the production of 1929. The above has reference solely to dimension stone sold either in the rough block or by producers, dressed and carved in their own plants, and does not include the value of the work performed on Canadian building stone by cut-stone contractors throughout the country who purchase the rough stone blocks from the quarries. Rubble-stone is not included. The large increase in value is due not to an increase in price but to a much larger proportion of the output being marketed as dressed and carved stone than was the case in 1929.

Exports:

Exports are almost negligible and no separate record is kept.

Imports:

The large imports of limestone for building purposes are not recorded separately by the Department of National Revenue but are classed in with sandstone and other rocks excepting marble and granite. Under this classification stone to the value of $488,311 was imported from the United States and to the value of $19,750 from Europe, during 1930. The great proportion of this was limestone.

Products and Producing Localities:

The principal quarries producing dimension stone are located near Queenston, Ontario (1 operator), at St.Marc des Carrieres, Quebec (4 operators), and at Garson, Manitoba (3 operators). Small quantities of building stone are extracted at a number of points within 15 miles of Montreal, at Hull, Quebec, and in the vicinities of Ottawa and Kingston, Ontario.

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

Important Developments and Prospective Producing Localities:

Developments during 1930 were in the nature of preparation for an increase in production during the coming year. An important development favourable to the industry is seen in the fact that the mills of some of the principal cut-stone contractors are now specially equipped to fabricate Canadian limestone, whereas formerly practically all these mills were equipped to work with the softer imported limestones and were at a disadvantage with Canadian material.

Excepting on properties in the vicinity of those now producing, especially at Queenston and Garson where very large reserves are indicated, it is not likely that many deposits of limestone suitable for cut-stone work will be found in Canada. Thin-bedded limestones suitable for rubble and rock-face ashlar are plentiful, but the cut-stone industry requires heavily bedded limestones free from cracks, capable of being machined and possessing in addition, a good appearance and a high resistance to weathering agencies; deposits possessing all these qualifications are not common.

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General Situation, Market Conditions, etc.:

The general situation at present holds forth considerable promise. The production of Canadian limestone for building purposes reached a new high level during 1930 despite the drop of about 27% in the value of building construction as compared with 1929. Imports of limestone fell off sharply during this same period and thus the gain in Canadian production was apparently at the expense of the imported stone, indicating that the intrinsic value of the domestic products is being more widely realized.

The price range of rough mill blocks f.o.b. quarries is between 50 cents and $1.00 per cubic foot depending upon size and grade.

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Department of Mines, Ottawa.
February 1931 (M.F.G.)

MARBLE IN 1930

roduction:

The production of Canadian marble during 1930 amounted to 9,408 tons valued at $780,090 which is the highest value yet recorded for marble produced within the Dominion. Marble for interior decoration purposes marketed by the producers accounted for ,974 tons and $701,845 of the value of this total production. arble sold for other purposes such as terrazzo, stucco dash and rtificial stone makes up the balance.

Exports:

No separate record of exports of marble is maintained by the Department of National Revenue. The combined total of marble and granite exported in 1930 was 1,768 tons valued at $21,913.

Imports:

During the year under review, marble valued at $678,491 was imported. A very large proportion of this was in rough blocks and unpolished slabs; the sawing and polishing being done at various marble mills throughout the country. The major portion of these imports were supplied by the United States, Italy, France and Belgium, in the order named.

Products and Producing Localities:

From the standpoint of value, the marble quarried for the ornamentation of buildings far exceeds that for other purposes, but for tonnage of output, the marble marketed in the form of terrazzo chips, stucco dash, chicken grit, whiting substitute and artificial stone takes precedence.

The principal centre of marble production in Canada is at Phillipsburg, Quebec, where Wallace Sandstone Quarries,Ltd. is producing a variety of handsome, clouded-grey marbles, and some which are lined and tinted with various colours. A large marble mill is operated in conjunction with the quarry.

The Winnitoba Marble Co. is marketing a beautiful mottled gold-and-buff marble from a deposit on the Inwood branch of the Canadian National Railways about 100 miles north of Winnipeg.

Manitoba Marble Co. and Hudson Bay Marble and Granite Co. quarried small amounts of pink marble and mottled brownish red marble respectively from their properties on the Hudson Bay railway north of The Pas, Manitoba.

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.

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.

Important Developments and Prospective Producing Localities:

The major developments in connexion with the opening up of new marble deposits took place in Manitoba.

The Winnitoba Marble Co., Winnipeg, was incorporated in 1930 and commenced production from an apparently extensive deposit. The products of this company have already been used in several buildings in western Canada.

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The Manitoba Marble Co., in addition to quarrying a small quantity of pink marble from its property at Mile 40 on the Hudson Bay railroad north of The Pas, further investigated a deposit of serpentine marble near Hole river on the east shore of Lake Winnipeg.

There are throughout Canada many deposits of crystalline limestone and serpentine, tinted and figured in a singularly beautiful fashion. Many of them have never been investigated, others have been opened up to a depth of only a few feet. The recent large increase in use of marble in Canada coupled with the prospects of an increasing demand in the future, has awakened interest in the domestic deposits and a number are now being examined with a view to development.

General Situation, Market Conditions, etc.:

The increase in value of the annual production of Canadian marble for interior decoration purposes from $550 in 1918 to $701,845 in 1930, is very encouraging and shows that a substantial demand for the domestic products has been created. Grey marbles form by far the greater proportion of the output and it is only within the past three years that the more highly coloured and ornamental varieties have appeared on the market although there have been attempts in the past to market them. The present demand for highly coloured marbles favours the development of this type.

The market for Canadian marble is almost wholly confined to the Dominion. The market for some of the foreign marbles is world wide, and the prices of these marbles, to a large extent, fix the prices for the domestic marbles. Naturally prices vary according to quality and rareness of colouring. Some of the foreign marbles are selling in Montreal at $12.00 per cubic foot in rough blocks, others as low as $3.75.

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February 1931. (M.F.G.)

WHITING SUBSTITUTE IN 1930

Production:

Only one company —Pulverized Products Limited, Montreal— manufactured whiting substitute in Canada during 1930.

Exports:

Nil.

Imports:

No separate record is kept of imports of whiting substitute but a survey conducted by the Mines Branch, Ottawa, showed that about 7,000 tons was imported during 1929. This is in addition to imports of chalk whiting which during 1930 amounted to 12,928 tons valued at $146,785.

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 a 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 has 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. Prices of whiting in eastern Canada during 1930 varied from $14.00 to $21.00 per ton depending on fineness and quality. Prices of whiting substitute varied from $12.00 to $16.00 on the same basis, in packages in carload lots f.o.b. plant. The principal markets are in Toronto and Montreal.

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COAL IN 1930

Production:

The production of coal in Canada in 1930 was 14,878,728 tons valued at $53,287,813, consisting of:-

Bituminous	10,824,291	tons	valued at	$41,881,046
Sub-bituminous ...	603,358	"	"	1,705,328
Lignite	3,451,079	"	"	9,801,439

Exports:

1930	624,512	tons	valued at	$3,345,998
1929	842,972	"	"	4,375,328

Imports:

The imports of coal entered for consumption in 1930 amounted to 18,772,721 tons and consisted of: 17,323,818 tons from the United States; 1,144,861 tons from Great Britain; and 304,042 tons from other countries.

Coal Mined and Producing Localities:

Nova Scotia, New Brunswick, British Columbia and Yukon Territory produce bituminous coal only; Saskatchewan produced lignite; and Alberta produces bituminous, sub-bituminous and lignite coals.

Important Developments and Prospective Producing Localities:

The re-examination of deposits of lignite, in what is now known as the Moose River basin, south of James Bay, was carried on by the Department of Mines of Ontario during the summer of 1930. To date a very large area of lignite has been delimited by diamond drilling. The quantity in sight is estimated at 150,000,000 tons and the grade from tests so far made is similar to the southern Saskatchewan lignite. A further extension of the Cochrane-James Bay Railway was completed in the summer of 1930, passing through the lignite field and terminating near Mike Island, about 45 miles from Moose Factory. A plant for carbonizing Souris Valley lignites and briquetting the resulting coke is in operation in Saskatchewan. Deposits of lignites have been opened at Willow Creek and at Wallace, Alberta. Unification of the two major coal mining operations on Vancouver Island has been effective since September 1928. A number of undeveloped areas are known in Alberta, British Columbia and Yukon, but commercial conditions do not warrant development at present.

General Situation and Market Conditions:

The provinces formerly entirely dependent on supplies of coal from the United States are gradually substituting fuels from other sources. The last few years have witnessed an increased use of Maritime coal in Quebec, and some Alberta coal was brought into Ontario. The importations and the use of substitute fuels, such as cokes, have materially reduced the consumption of Pennsylvania anthracites.

In Nova Scotia the general scheme of increasing electrification in the Cape Breton Collieries was maintained. A new power plant was completed in May, utilizing refuse coal in pulverized form.

Retrenchment in the manufacturing spheres in Upper Canada early in 1930 reacted immediately on the Nova Scotia coal industry causing cancellation of many booking orders.

In British Columbia the large decrease in the price of California crude petroleum has been the undoing of the coal mining industry of the province and the outlook is very depressing.

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COKE IN 1930

Production:

Coke (by-product and gas)	1930	2,354,026	tons
	1929	2,677,581	"

Exports:

1930 -	29,801	tons valued at	$217,587
1929 -	25,208	" " "	$189,247

Imports:

1930 -	1,061,040	tons valued at	$5,611,897
1929 -	1,226,853	" " "	$6,659,514

Producing Localities:

Coke is produced chiefly by the treatment of bituminous coal; a small production is also obtained from the distillation of petroleum.

Coke is now produced in every province of the Dominion with the single exception of Prince Edward Island. Saskatchewan and Alberta produce only petroleum coke.

Important Developments and Prospective Producing Localities:

During 1930 Quebec City remodelled its gas plant, installed Woodall-Duckham retorts and are now producing gas coke.

During the year 1928 a new plant capable of treating 1,200 tons of coal per day came into operation in Montreal. This plant was erected by the Koppers Company in conjunction with the Montreal Light, Heat and Power Company and the output is designed principally for domestic consumption.

The Halifax gas works during that year remodelled their existing plant in order to produce a better grade of domestic coke. An interesting feature of this plant is the provision for using Canadian coal.

The Steel Company of Canada, Hamilton, Ontario, remodelled their coke sizing plant and are at present selling part of their output for domestic use.

In all probability coke plants will be established in the near future in Ontario at Port Stanley and at Fort William.

General Situation, Market Conditions, etc.:

Activity in the coke market is evidenced by a greater demand for metallurgical coke and by an increasing use of coke for domestic heating.

The expanding consumption of both oven coke and gas coke for domestic heating has greatly lessened the dependence of the central provinces on American anthracite.

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NATURAL GAS IN 1930

Production:

1930 - 29,104,570 M. cubic feet valued at $9,635,704
1929 - 28,378,462 M. " " " " 9,977,124

Exports:

Not given.

Imports:

No natural gas has been imported, though the supply at Niagara Falls, Ont., has been increased by the importation of 151,671 M. cubic feet of manufactured gas valued at $96,763 as against 132,942 M. cubic feet valued at $85,338 in 1929.

Producing Localities:

The chief producing localities in Alberta are the Viking field supplying Edmonton, and the Foremost and Turner Valley fields feeding the pipe lines to Calgary. The greatly increased activity in drilling for oil in the Turner Valley field has resulted in large supplies of gas becoming available for Calgary. Good wells have also been brought in at Foremost.

In Ontario, the chief fields are in Haldimand, Kent, Welland, Norfolk and Lambton counties. Over 30 productive wells were drilled during the year in the Brant Indian Reserve, Tuscarora township, Brant county, the production from which will augment the supply to Brantford and other towns in that neighbourhood.

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 province of Quebec, three wells were drilled near Lanoraie, Joliette county, and all three struck a flow of gas at around 200 ft. The first two were capped while the third was being drilled to greater depth in the expectation of getting a commercial supply of gas. Towards the end of the year, considerable interest was being taken by outside interests in the natural gas possibilities in the area south of the St.Lawrence in the counties of Richelieu and St.Hyacinthe, and it is expected that exploratory drilling will be undertaken during 1931.

In Ontario, considerable expansion and development of the gas fields took place during 1930. New pipe lines were laid, old lines replaced or enlarged and a programme of expansion laid out for 1931. The two largest distributors and producers of natural gas in Ontario took steps during 1930 to obtain a supply of artificial gas which will be mixed with the natural supply and so augment and extend the present supply for many years.

Alberta wells supplied 69% of the natural gas production in Canada during 1930. This came principally from the Turner Valley field and to a lesser extent from the Foremost, Viking and other fields. Unfortunately, there is still a considerable wastage of natural gas in Alberta although much research has and is being done by scientific bodies looking towards the solution of this problem of natural gas wastage. A successful attempt was made during the year to conserve some of the gas which is going to waste, by forcing it under pressure into the depleted sands of the Bow Island field and thus storing it for future use. However, this will take care of only a small proportion of the natural gas that is going to waste. Other methods of conservation of and use for the waste gas, are being exploited, and the National Research Council is working on the problem at the present time. One successful experiment has produced benzine and alcohol from Turner Valley natural gas, in sufficient quantities to suggest commercial possibilities along this line.

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During the year, the Rogers-Imperial well was re-opened in preparation for supplying gas to Montana, a distance of 7 miles. In Saskatchewan, several companies were seeking the franchise to supply Regina and Saskatoon and other towns with a supply of natural gas. The fields from which it is proposed to obtain this supply are the Kinsella-Wainwright and Turner Valley in Alberta, and the Bowdoin field in Montana.

General Situation, Market Conditions, etc.:

There is an increased demand for natural gas by both domestic and industrial users and there is a tendency today toward long distance transmission of natural gas under high pressure. In Ontario, in particular, expansion and improvements that were carried out were greater in 1930 than for the past several years. The conservation of natural gas is being maintained by closer attention to upkeep and cleaning out of wells and the supply of natural gas is being extended for many years by the arrangements being made by the two largest producers in Ontario for mixing artificial and natural gas and extending their transmission lines to greater distances from the source of supply.

In Alberta, there are ample reserves of gas and with more industries and population in the west, the consumption of natural gas could be increased many fold. Eventually also it is hoped to find new uses for which natural gas can be put and thus overcome the wastage that is inevitable under present conditions.

The Department of Mines, Ottawa, has published the following report: "Oil & Gas in Western Canada" (Geol.Surv. Economic Series No.5) and "Petroleum and Natural Gas Resources of Canada" in two volumes (Mines Branch Rep. No.291).

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OIL SHALE IN 1930

Production:

200 - 300 tons (estimated).

Exports:

Nil.

Imports:

None recorded.

Producing Localities:

None.

Important Developments and Prospective Producing Localities:

The Maritime Eduction Co. of Rosevale, N.B. went bankrupt during the year and title to the plant and mining lease is now held by the National Funding Co. who hope to obtain enough capital to start operations in the spring. The plant of the Torbanite Products Ltd. at New Glasgow, N.S. after having made a few runs last summer was largely destroyed by fire last October and it is stated by the officials of the company that they intend rebuilding in the coming spring.

The Canadian Torbanite & By-Products Ltd. a subsidiary of the Oil & Nitrates Ltd. (Mr. H.C.E.Spence) have built a small experimental plant at McLellan Brook, about 5 miles from New Glasgow, at which some experimental work has been done. A press report states that British interests are arranging for the construction of a plant at this point capable of treating 1,000 tons of shale per day.

Nova Scotia. The principal recognized occurrences of oil shales (and certain sub-varieties) 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.
4. Prospective large scale work:- Provision is being made in the Fuel Research Laboratories for trying out on a technical scale the more promising of the processes for distilling oil shales, using temporary retorts constructed according to different designs. Pressure cracking stills will also be erected and with this equipment, processes for treating the shale oils will be investigated.

The Department of Mines, Ottawa, has published several reports on the oil shale industry.

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February 1931 (A.A.S.)

PEAT IN 1930

Production:

2,847 tons valued at $10,932.

Exports:

None.

Imports:

None.

Peat Bogs Worked:

The only peat manufacturing operations carried on during 1930 were those of the Hydro Peat Company, located on a bog near St. Hyacinthe, Quebec. According to information, the mechanical features of the process lived up to expectations. Considerable part of the product produced was sold locally.

The Department of Mines peat manufacturing plant at Alfred, Ontario, was not operated in 1929 and 1930, 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 1760.74 tons of peat fuel, 756.42 tons of peat humus, and 28.43 tons of peat screenings were sold from the Alfred plant.

The reports of the investigations are contained in the Summary Reports of the Mines Branch. The most recent special reports on peat are publications No. 641, "The Manufacture and Uses of Peat", and publication No. 614, "Facts About Peat".

Important Developments and Prospective Producing Localities:

Two small plants for the manufacture of peat litter were constructed in 1929. One of these is situated on a 150-acre bog a few miles from St. Stephen, N.B., and the other on a 100-acre bog near New Westminster, B.C.

There are a large number of peat bogs scattered over Central and Eastern Canada, containing material suitable for the manufacture of fuel, and many of these were 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 fuel is practically confined to those localities where wood is used. It is still in demand for open fireplaces.

The Department of Mines, Ottawa, has published numerous reports on Peat, amongst which are "Facts About Peat" (Mines Br. Rep. No.614) and "Peat, its Manufacture and Uses" (Mines Br. Rep. No.641).

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PETROLEUM IN 1930

Production:

1930 ---	1,492,471 bbl.	valued at	$4,953,885
1929 ---	1,120,693 "	" "	3,790,497

Exports:

Oil, petroleum, crude.....	19,259,585	gal.	valued at	$881,452
Oil, coal & kerosene, refined.	1,460,676	"	" "	138,455
Oil, gasoline & naphtha	7,256,557	"	" "	1,226,561
Oil, mineral, n.o.p.	315,779	"	" "	120,231
Wax, mineral.....	16,958	cwt.	" "	74,933

Imports:

1930 ---	Petroleum and its products		valued at	$65,800,224
1929 ---	" " "	"	"	76,886,930

Producing Localities:

The chief producing area is the Turner Valley field in Alberta, which area has produced the major part of the Canadian production since 1925. In 1930, Turner Valley produced 1,364,584 bbl. of naphtha and crude oil, as compared with 951,645 bbl. in 1929. Some 25 new producing wells were brought in during the year in Alberta. Other producing fields in Alberta are the Wainwright-Ribstone, Skiff and Red Coulee.

Prior to 1925, the Western Ontario oil field was the only producing locality in Canada of any importance, but in that year, with the bringing in of the Turner Valley wells, Alberta took the lead and has maintained it since that date. Ontario's chief produc. field is the Petrolia and Oil Springs area, which has been producin oil since 1861. The original discovery of oil in Canada was at th present village of Oil Springs in Lambton county. The Bothwell and Mosa townships fields are also important producers.

In New Brunswick, the producing area is confined to the Stoney Creek field about 9 miles southeast of Moncton. The wells, which number about 23, are pumped as the occasion demands. The production is relatively small, and does not vary much from year to yea In 1930, the production was 6758 bbl.

In Manitoba, Saskatchewan, and British Columbia, a few wel were being drilled in 1930, but no production was recorded.

Important Developments and Prospective Producing Localities:

Turner Valley continued to show the expansion, development and drilling activity that has been taking place in the last three years. The output from the Alberta wells averaged about 97,000 bbl. per month during the first six months of 1930 and the majority of this production is from wells in the Turner Valley field. A smaller production is being secured from the Wainwright-Ribstone field. The Red Coulee field was the scene of considerable drilling at the beginning of the year, and although five wells were producers in 1930, interest in the field was not so marked at the end of the year.

Several outside companies have secured extensive acreage in various fields in Alberta and are planning on active exploration and development for 1931. New refineries at Winnipeg, Wainwright and Coutts are also proposed, which will refine both Canadian and American crude oil.

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General Situation, etc.:

The year 1930 marked the peak of production in Canada and with the developments planned for 1931 in Alberta this maximum of production may reasonably be expected to be surpassed in the present year. The search for other major oil areas in Alberta continues unabated, and it is the opinion of several authorities that there are other commercial oil areas that will equal, if not surpass, the Turner Valley field.

In western Ontario, the small but continued decrease in production, with the exception of 1927, has been attributed to the natural decline of the field, which is over sixty years old, and to the final removal of the bounty on petroleum in 1925.

The Department of Mines, Ottawa, has published the following report: "Oil & Gas in Western Canada (Geol.Surv. Series No.5) and "Petroleum and Natural Gas Resources of Canada" (Mines Br. Rep.No.29, 2 vols.).

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