

RD 82 // 8C 21 ana.

MAY 9 1930

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THE CANADIAN MINERAL INDUSTRY IN 1929

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MINES BRANCH  
DEPARTMENT OF MINES

THE CANADIAN MINERAL INDUSTRY DURING 1929

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Production:

No antimony ore, concentrates, or antimony regulus was produced in 1929.

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:

1929:- Metallic antimony or regulus 1,746,525 lb. valued at \$147,643. Salts of antimony 58,829 lb. valued at \$8,703.

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 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; no work was done during the year. The only property operated in 1929 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.:

The price of antimony in 1929 averaged 8.96 cents per pound for the year. The price was 9 7/8 cents in January but gradually declined to 8 1/2 cents at the end of the year. Following upon a similar unspectacular decline in 1928, the absence of major flurries in 1929 was particularly remarkable. 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, appear to have been substantially larger in 1929 than they have been in most previous years. They amounted to about 13,500 tons in 1929 as against 11,400 in 1928, 12,400 in 1927, and 14,700 in 1926.

BISMUTH IN 1929

Production:

1929	---	194,392 lb. valued at \$220,335
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 2,701 lb. valued at \$4,932.

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 lead-zinc ores of British Columbia.

Important Developments and Prospective Producing Localities:

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.

General Situation and Market Conditions, etc.:

The price of bismuth at New York in ton lots for the last six months has been \$1.70 per 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.

CADMIUM IN 1929Production:

Cadmium was produced in Canada for the first time in 1928.

1929	---	773,976 lb.	valued at	\$696,579
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 new 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 Hydson Bay Mining & Smelting Company are erecting a zinc refinery at Flin Flon, northern Manitoba which is expected to start operating in the latter part of 1930. 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 if 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 two 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 by some remarkable fluctuations. In 1928 it increased to a maximum of about 90 cents per pound. The London price which was 4s. 3d. in January 1929 declined quite gradually to 3s. 11d. at the end of the year. The New York price was 90 to 95 cents in January but declined 80 to 85 cents in December. The American product is protected by a duty of 15 cents per pound.

The world's production in 1928 was estimated at 1,100 tons. 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.

COBALT IN 1929

Production:

1929 - estimated as 929,415 lb. valued at \$1,801,915, including metal alloys and chemical compounds.

Exports:

Metallic cobalt.....	315,700 lb.	valued at	\$608,444
Cobalt alloys.....	56,520 "	" "	242,358
Cobalt oxides and salts..	236,873 "	" "	450,870
Cobalt ore.....	379,300 "	" "	484,491

Imports:

Cobalt ore.....	Nil		Nil
Colours, metallic viz., oxides of cobalt, tin and copper.....	288,694 "	" "	124,748

Ores Mined and Producing Localities:

Practically all the cobalt produced in Canada is a by-product of the silver mining industry and is obtained by treating arsenical silver-cobalt-nickel residues from the Cobalt, South Lorrain, and Gowganda silver camps.

In addition to by-product cobalt a certain amount of low-silver high-cobalt ore is mined primarily for its cobalt content. This high cobalt ore is smeltered separately. The Deloro Smelting & Refining Company of Deloro, Ont., is the only company in America producing cobalt metal, oxides and salts.

Canadian nickel ores contain small amounts of cobalt and Canadian made nickel as marketed is said to carry on the average 0.5 per cent cobalt. Mond nickel is practically cobalt free but no figures are available showing the recovery of cobalt from nickel ores treated by the Mond process.

Important Developments and Prospective Producing Localities:

None.

General Situation, Market Conditions, etc.:

Canada still supplies practically half the world's requirements of cobalt, the remainder coming chiefly from the Belgian Congo. With the gradual depletion of Ontario's silver-cobalt mines and the present low price of silver, Canadian production of this metal will probably be still maintained owing to the active demand for cobalt and the better terms now being offered by the smelters to the miners of cobalt ores.

The chief use of metallic cobalt is as a constituent of the cobalt-chromium alloy, stellite, and cobalt-iron alloy used for permanent magnets. The oxide is used largely in the ceramic industry. A new tungsten-carbon-cobalt alloy developed in the research laboratories of the General Electric Company and said to possess some very remarkable properties has recently been put on the market under the trade name Carboloy.

Quotations for cobalt metal and oxide were steady throughout the year at:

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

COPPER IN 1929

Production: 1929 --- 124,054 tons valued at \$43,411,036  
 1928 --- 101,348 " " " 28,598,249

Exports: Copper in ore, matte, blister or pigs \$37,399,996.

Imports: Copper in blocks, pigs, scrap, bars, etc., \$17,272,791.

Ores Mined and Producing Localities:

Most of the output was derived from the low grade chalcopryrite ores of British Columbia, all of which require concentration before smelting. The remainder came from the nickeliferous pyrrhotite-chalcopryrite ores of the Sudbury district, Ontario; the chalcopryrite-sphalerite ores of Rouyn and adjoining areas, Quebec; with a small amount of copper concentrates from the treatment of cuprififerous pyrites of Eustis, Quebec, which are shipped to United States smelters. The concentrates from Copper Mountain near Princeton, B.C., which were formerly shipped to Tacoma are again being treated under contract at Trail, B.C.

Important Developments and Prospective Producing Localities:

Large bodies of copper-zinc ore have been developed at the Horne, Amulet, Waite and Aldermac mines in western Quebec; a few other promising prospects are being actively explored in the same area. The Noranda smelter which started production in 1927 is now treating about 1,800 tons of ore per day. An important discovery of copper ore has recently been made near Lake Opemiska, 40 miles west of Lake Chibougamau, Quebec.

The developments recently carried on at the Frood and the Frood Extension mines of the International Nickel Company of Canada, have added considerably to the copper as well as the nickel ore reserves of the Sudbury region. The Company is making important extensions to the milling, smelting and refining equipment at Copper Cliff. The new concentrator will have a daily capacity of 8,000 tons and the new smelter, 5,000 tons of ore or concentrate. The copper refinery being erected at Copper Cliff by the Ontario Copper Refining Company will be completed in the fall of 1930 and will have an annual capacity of 120,000 tons. The Noranda Mines Ltd. are proceeding with the construction of a copper refinery in Montreal East.

The smelter of Falconbridge Nickel Mines Ltd. was blown in February 5, 1930, and has an initial daily capacity of 250 tons of ore. The ore is said to average 2.97% nickel and 0.97% copper. The matte will be refined at Kristiansand, Norway.

In northern Manitoba, the spur line from Mile 6 of the Hudson Bay railway to the Flin Flon mine was completed in 1928. Erection of a 2000-ton mill and a smelter having a capacity of 1250 tons of blister copper per month is progressing rapidly and should be completed by the end of 1930. The railway has been extended to the Sherritt Gordon property, 42 miles northeast of Flin Flon, where a large body of copper-zinc ore has been opened up and a 1500-ton concentrator is expected to be in operation here in the fall of 1930. The Mandy mine on Athapapuskow lake, reopened in 1928, was further developed in 1929.

In British Columbia the only developments of importance took place in the vicinity of Nimpkish lake, north Vancouver island, particularly at the Kinman copper-zinc deposit.

General Situation, Market Conditions, etc.:

Improved methods of concentration and metallurgical treatment have somewhat offset the curtailment of operations caused by the recent low price of copper. The price, which in April 1928 was about 14 cents, rose steadily to 24 cents in March 1929, receding to 19½ cents in April since which time the price has been maintained at 17.775 cents f.o.b. refinery.

GOLD IN 1929

Production:

1929	---	1,927,295	oz.	valued at	\$39,840,722
1928	---	1,590,592	"	"	39,082,005

Exports:

Gold bearing quartz, dust, nuggets, and bullion, from the mines valued at \$29,995,983; gold coin, (Canadian) valued at \$25 and (Foreign) valued at \$29,252,140; and gold bullion (Canadian) valued at \$409,577.

Imports:

Coins valued at \$2,856,947 and bullion in bars, blocks, etc., unmanufactured valued at \$889,541. Gold fringe and gold bullion \$37,401; manufactures of gold \$78,939. (Articles of gold and silver in which the two metals are not valued separately \$1,559,078).

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 more than 83 per cent of the output. British Columbia, which is the second gold-producing province, derives a small part of its output from placers and some from gold-quartz veins worked exclusively for their gold-silver content, but the greater part is won 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 a considerable gold production obtained from high-grade 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:

During the year the Kirkland Lake mines increased their output very considerably over that of 1928; but the Porcupine area again showed a decrease, which can be attributed mostly to the lower grade of ore and the decrease in quantity milled at the Hollinger mine and to the destruction by fire of the Dome mill at the end of October. Less gold was also produced in British Columbia than in 1928; but increases are reported from Quebec, Yukon, Manitoba, and Nova Scotia. Noranda mine in Quebec will probably show greatly increased output in 1930, while the new 500-ton mill at the Howie mine will add to Ontario's production. The erection of small new mills is being considered or is under way on several properties viz.— at the Minto and Grace mines at Michipicoten; the Moss mine near Port Arthur; and the Green-Stabell in Quebec.

Considerable interest is being taken in a new gold-milling process that is being tried out at the McIntyre-Porcupine, which it is hoped will result in lowering operating costs.

IRON ORE IN 1929.

Production:

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

Exports:

Iron ore, 3,859 tons valued at \$19,461.

Imports:

From Newfoundland.....	743,713	tons valued at \$	743,736
Europe or North Africa.	63,594	" " "	283,290
United States.....	1,640,500	" " "	3,999,239

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 district 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 being used in Canadian furnaces, however, and there seems little likelihood that any will be until available foreign ores reach a higher price than they command at present.

Considerable publicity has been given, during the past year, to a new process for the production of iron and steel, called the Musso process, which it is claimed will make possible the profitable working of low-grade Canadian iron ores.

LEAD IN 1929.Production:

1929	---	162,975 tons valued at	\$16,514,057
1928	---	168,973 " " "	15,553,231

Exports:

Lead in ores, etc...	15,276,800 lb. valued at	\$ 1,047,441
Lead in pigs & re-		
finned lead.....	228,374,100 " " "	10,053,402
	244,350,900 " " "	\$11,100,843

Imports:

Lead in pigs and blocks, bars, sheets, etc., valued at \$1,003,048.

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 has been increased from 4,000 tons to 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 of a 300-ton mill, the production from which is being shipped to the United States.

The outstanding developments of the year were at the Reeves-McDonald mine at the Pen d'Oreille river; the Ferguson mine at the Ingenika river and the Owen Lake property south of Houston, Omineca district; and the Emerald group in the Sibola district. None of these properties have as yet been brought to the producing stage.

Development work was carried on by the Federal Lead & Zinc Co. on their property in Gaspé peninsula, Que.

The British Metal (Canada) Corporation have under development the Stirling lead-zinc property in Cape Breton, N. S.

General Situation and Market Conditions, etc.:

The average price of lead at Montreal in 1929 was 6.678 cents per pound as against 6.06 cents in 1928. Although the price of lead in New York averaged only about  $\frac{1}{2}$  cent higher in 1929 than in 1928 it showed much fluctuation in the early part of the year, due to the short lived Mexican revolution, which brought the price of lead up to a maximum of 7.87 cents in April. This rise was almost immediately followed by a sharp decline to 7 cents by the end of April. The price has since gradually dropped to an average of 6.25 cents for December.

The outstanding event of the year was a record high world's estimated production of 1,930,000 tons.

MOLYBDENUM IN 1929

Production:

Seventeen tons of 85 per cent molybdenum sulphide concentrates.

Exports:

Nil.

Imports:

Nil.

Ores Mined and Producing Localities:

The Molybdenite Reduction Company operating south of Amos, Abitibi county, Quebec, completed their flotation concentrator during the spring and operated for the balance of the year, except for minor shut downs. The ore treated probably averaged about one per cent molybdenite; the recovery being over 90 per cent. Drifting and cross-cutting at the bottom of the 150-foot shaft has exposed eight major veins. Towards the end of the year the Hollinger Consolidated Gold Mines Ltd. took a working option on the property and now have full control.

The Moss mine at Quyon, Quebec, was idle.

Important Developments and Prospective Producing Localities:

The Dalhousie Mining Company, Limited, Victoria, B. C., started development work on the Alice Arm molybdenite property east of Anyox, in the Skeena Mining Division, B. C., at the close of the year. This is one of the most promising molybdenite deposits in British Columbia and during the war it furnished the largest production from the province.

The Dominion Mineral Development Company, Vancouver, have been doing development work during the year on a series of quartz-molybdenite veins in the Coquihalla area, near Iago, on the Kettle Valley railway, B.C.

General Situation and Market Conditions, etc.:

During the year molybdenum has rapidly come into increased favour as an alloying element in the steel industry. It has been successfully introduced into nickel-chromium steels, high speed tool steels, in combination with tungsten, as well as into castings, cast iron and steel rolls. The pure metal is used in radio tubes and grid wires; and chrome-molybdenum-steel tubing because of its welding properties is being used in aeroplane construction.

The molybdenum is added to the steel principally in the form of calcium molybdate. The Superior Alloys Limited at Sault Ste. Marie, Ont., are adding to their plant a unit which will make calcium molybdate and they will therefore be in the market for Canadian molybdenite.

The price of 85% molybdenite concentrates is nominal at 48 to 50 cents per pound.

NICKEL IN 1929Production:

1929	---	55,138 tons valued at \$27,115,443
1928	---	48,378 " " " 22,318,907

Exports:

Nickel in ore,matte,or speiss..	296,307 cwt. valued at \$4,501,389
Fine nickel .....	684,082 " " " 17,544,513
Nickel oxides .....	116,009 " " " 3,489,782
	1,096,398 " " " \$25,535,684

Imports:

Nickel in bars, rods, sheets, etc., valued at \$4,490,265.

Ores Mined and Producing Localities:

The nickel is obtained almost entirely from nickeliferous pyrrhotite-chalcopyrite ores of the Sudbury district, Ontario. The ores average about 3% nickel and 2% copper although they vary from mine to mine. At the Creighton, owned by the International Nickel Company and the richest now being worked, the nickel content is about 5%; while in the lower levels of the Frood deposit, which is also owned by the International Nickel Co., diamond-drill holes have cut ore carrying about the average nickel content but running as high as 20% in copper. The proven ore reserve below the 1400-foot level of the Frood mine is reported by the company as amounting to 134,673,000 tons of which 43,562,000 is high grade ore. The average grade of this ore is 2.39% nickel and 3.62% copper, or a total of 6.01%. Over 10 million tons of high grade ore were added to the Frood reserves as a result of development work in the lower levels completed during the year 1929. Recent work on the 2800-foot level is showing much greater widths and evidence of extension along the strike.

A small amount of nickel is also obtained as a by-product from the silver-cobalt-nickel ores of the Cobalt district.

Important Developments and Prospective Producing Localities:

The outstanding development in Canadian mining in 1929 was the progress made by International Nickel towards completion of the great undertaking now under way at Sudbury. It is reported that at the Frood mine the underground workings are being added to at the rate of a mile a month and the effect of the high copper content of the Frood ore is already shown by increases in the company copper output, which now runs about 10,000,000 lb. a month. The capacity of the concentrator originally planned to treat 4,000 tons of ore per day is now being built to handle 8,000 tons daily. The greater part of the construction now under way should be finished in 1930.

The first electrolytic unit of the Port Colborne refinery was put into operation in 1926. A second and a third unit were put into operation in 1928 and a fourth in February 1929. Three new units, each of a monthly capacity of 1,200,000 pounds, were contemplated in 1929 and two of these units are now in operation. The completed new plant will have an annual capacity of 43,200 tons of electrolytic nickel, 18,000 tons of nickel in oxide and 60,000 tons of blister copper.

Falconbridge Nickel Mines report that 1,367,000 tons of ore are now developed and that the 250-ton smelter will be in operation early in 1930. The matte will be further treated at the company's refinery at Kristiansand, Norway.

General Situation, Market Conditions, etc.:

Production increased steadily during the year. Prices throughout the year were: ingot 35 cents, shot 36 cents, and electrolytic 35 cents.

The world's consumption of primary nickel in all forms reached a total of 68,000 tons, exceeding that of 1928 by 16% and the peak of the war period by 29%.

PLATINUM GROUP OF METALS IN 1929

Production:

1929 - Platinum.....	12,839 cz.	valued @	\$	741,790
Palladium, rho-				
dium, etc..	13,717 "	"	"	<u>319,881</u>
				\$ 1,061,671

Exports:

1929 - Platinum in				
concentra-				
tes.....	2,798 "	"	"	\$ 220,200
Platinum,				
scrap.....	112 "	"	"	<u>5,319</u>
				\$ 225,519

Precious metals in copper-nickel matte not included.

Imports:

1929 - Platinum retorts, crucibles, wire and other metallic products, valued at \$211,906.

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 Traill, 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 will add considerably to the Canadian production of metals of the platinum group, as the ores of these mines are reported to 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 is now being substantially enlarged.

General Situation, Market Conditions, etc.:

Canada ranks third in importance, as a source of metals of the platinum group, after Russia and Columbia. The recent discoveries of platinum in the Transvaal are of great importance and although only about 5,000 ounces were produced in 1926, double this amount was produced in 1927. The production of Colombia is estimated at 60,000 ounces and that of Russia possibly a little higher.

Refined platinum, which began the year at \$70 an ounce, showed quite a gradual decline with a closing price at the end of the year of \$61 an ounce.

Production continues at a rate beyond the capacity of the market to absorb it. Apparently the market is seeking its economic level and present indications are that platinum has not yet touched bottom.

A.B. February 1930

SILVER IN 1929

Production: 1929 — 23,180,155 oz. valued at \$12,283,859  
 1928 — 21,936,407 " " " 12,761,725

Exports: Silver in ore,  
 concentrates, etc.. 7,058,275 oz. valued at \$3,736,204  
 Silver bullion.....14,879,770 " " " 8,022,917

Imports: Unmanufactured silver bullion 958,312  
 Sterling and other silver 400,125

Ores Mined and Producing Localities:

British Columbia is the leading silver-producing province with 10,110,352 oz., over 50% came from the Sullivan lead-zinc mine at Kimberley and 25% from the silver-gold bearing pyrites of the Premier mine in the Portland Canal district. Other notable producers are the Granby Company's copper mines at Anyox; the Noble Five lead-zinc mine at Sandon; the Britannia copper mine near Vancouver; the Duthie lead-zinc mine on the Skeena river and the McAllister at Sandon, the latter being the only straight silver mine in the province. The remainder is obtained from lead-zinc ores of the Kootenays and of Wallace Mountain district at Beaverdell.

The Yukon production of 3,312,674 oz. was chiefly from the argentiferous lead-zinc as well as from the native silver and silver minerals of the Mayo district.

About 85% of Ontario's production, 8,943,914 oz., was from the silver and cobalt-nickel-silver ores of Cobalt, Gowganda, and South Lorrain. The principal producers were the M. J. O'Brien and Nipissing mines at Cobalt; the Miller Lake O'Brien and Castle-Tretheway in Gowganda and the Keeley in South Lorrain.

Almost 65% of Quebec's output of 810,539 oz. was obtained from the British Metals lead-zinc mine at Tetreault, the remainder was from the copper ores of the Rouyn area.

Important Developments and Prospective Producing Localities:

British Columbia. The recently increased capacity of the Sullivan concentrator should show a further improvement in the Consolidated Company's silver output. The Base Metals' Monarch mine at Field started production in December handling up to 350 tons of 1.5 ounce ore per day. Important developments are under way on the silver-bearing lead-zinc-copper ore bodies of the Taku region in the far north.

In Ontario, increased activity by the various operators has disclosed new veins of high grade ore in several of the mines notably the Buffalo, the McKinley-Darragh, the Cobalt Contact, the Miller Lake O'Brien and the Morrison. During the year the Huronian Mining & Finance Co. Ltd. was incorporated to absorb all the Canadian interests of the Huronian Belt Mining Co., including the Keeley, Vipond and Pioneer Mining Corporation. The Castle-Tretheway merged with the Capitol Silver.

Although the silver content of the Sudbury ores is small, nevertheless owing to the large tonnages treated, the 1930 output of the International Nickel should be around half a million ounces.

Quebec. Noranda will appreciably increase its output in the near future, but the British Metals closed down the Tetreault mine in December.

General Situation and Market Conditions:

The price dropped steadily from 57.02 cents in January to 48.47 cents in December, the average being 53.0 cents against 58.18 cents in 1928. Early in 1930 it reached a low record of 41 cents and is still dropping. This is largely due to the gradual elimination of silver as currency by many countries, particularly India. Recently India placed on an import duty of 10 cents per ounce. The world's production, appears to be increasing while at the same time the released silver from coinage, amounting to over 50 million ounces in 1929, is being steadily dumped on the market. Neither China nor India is expected to maintain the high rate of consumption of the last two years.

In Canada some of the producers in the Ontario silver camps are at present forced to curtail production or store their silver. Most of the smaller silver-lead-zinc mines of British Columbia were closed down at the end of the year.

TITANIUM IN 1929

Production:

In 1929, 2,453 tons of ilmenite valued at \$7,359 were shipped from Quebec to Niagara Falls, N. Y., and Lynn, Mass.

Exports:

As above stated.

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.:

The chief uses of titanium are in the manufacture of paint pigments, ferro-alloys, etc., the first of which is rapidly expanding and is now probably the most important. Control of the world's titanium pigment industry at present appears to be almost entirely in the hands of the National Lead Company of New York, which owns a 75% interest in Titanium Pigment Co. Inc. operating in the United States, and is recently reported to have purchased control of the Titan Company of Norway and of the Société Industriale de Titane of France, and also to have concluded agreements to manufacture and sell titanium pigments in Germany and other European countries.

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 yet however.

The published price quotations for ilmenite are nominal so far as Canadian producers are concerned as there is no general demand and practically all the larger users control their own sources of supply.

ZINC IN 1929Production:

1929	---	98,107 tons valued at \$10,570,007
1928	---	92,324 " " " 10,143,050

Exports:

Zinc ore (zinc content of)..	12,869 tons valued at	\$1,415,725
Metallic zinc.....	67,543 " " "	7,031,645
Zinc scrap, dross & ashes...	3,819 " " "	262,719
	<u>84,231</u>	<u>8,710,089</u>

Imports:

Spelter.....	1,329 " " "	\$ 165,566
Zinc sheets & plates, blocks, etc.....	5,316 " " "	787,432
Other imports.....	---- " " "	<u>1,581,096</u>
		<u>\$2,534,094</u>

Ores Mined and Producing Localities:

Almost all the zinc produced in Canada came from the Consolidated Mining & Smelting Co.'s plant at Trail, 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:

The Consolidated Mining & Smelting Co.'s plant at Trail, B. C., made a further increase in production in 1929 and further expansion has brought the capacity of the smelter up to 375 tons of zinc per day.

Developments at the Flin Flon and Sherritt-Gordon in northern Manitoba, and in the vicinity of Chelmsford in the Sudbury district, Ontario, make it altogether likely that both Manitoba and Ontario will, in a few years' time, become important zinc-producing provinces. Quebec's output of zinc will be materially increased in the future by the recovery of zinc from the mixed copper-zinc ores which occur in the Rouyn district.

Development work was done during the year on the lead-zinc deposits of Gaspé, Quebec, but there was no actual production. Vigorous exploration of the Stirling deposits in Cape Breton, N. S., also was made by the British Metal Corporation (Canada) Ltd.

The Hudson Bay Mining & Smelting Co. will complete in 1930 a zinc refinery at Flin Flon, Manitoba, with a capacity of 25,000 tons of bar zinc per year, to treat the company's zinc concentrates.

Announcement has been made of the proposed construction of zinc refineries in eastern Canada by the Consolidated Mining & Smelting Co., and by the Noranda Mines Ltd. These plants will 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 1929 was 6.87 cents per pound as against 7.14 cents in 1928, and the demand was good throughout the year. It has been estimated that the world's production of zinc for 1929 will approximate 1,620,000 tons, being an increase of about 2% over that of 1928. A further increase in production for 1930 is expected. In Canada the fluctuations in the market during 1929 have had no apparent effect on the consumption of zinc and Canadian users are buying as usual.

ARSENIC IN 1929Production:

1929	2,615	tons of white arsenic( $As_2O_3$ )	valued at \$171,320.
1928	2,716	" " " " "	" " 193,052.

Exports:

1929	1,584	tons valued at \$123,398.
1928	1,597	" " " 122,106.

Imports:

White arsenic.....	123,224 lb. valued at	\$ 5,341
Arsenic, sulphide of...	18,295 " " "	1,865
Arseniate, bi-arseniate and stannate of soda.	1,456	156
Arsenate of lead.....	846,017	98,179
		<u>\$105,541</u>

Ores Mined and Producing Localities:

All the white arsenic 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; 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 arsenic. Occasional shipments of arsenical concentrates have also been made in the past by gold mines in Nova Scotia to European treatment plants.

Important Developments and Prospective Producing Localities:

Deposits of mispickel, in places associated with more or less gold, are known at a number of localities in Nova Scotia, Ontario, and British Columbia, but at 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 arsenic ( $As_2O_3$ ) in America, chiefly as a by-product in the smelting and refining of other ores and metals. Its chief use is in the manufacture of insecticides, weed-killers, glass, and cattle dips. Arsenic compounds are also used to some extent as pigments for various purposes; as antiseptics and preservatives; as medicines; and for other minor purposes.

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  $As_2O_3$ . 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.

ASBESTOS IN 1929Production:

1929 — 306,055 tons valued at \$13,172,581  
 1928 — 273,033 " " " 11,238,360

Exports:

	Tons	Value
Asbestos - - - - -	143,725	\$10,127,208
Asbestos sand and waste - -	148,305	2,507,474
Manufacture of asbestos - -	---	113,952
		<u>\$12,748,634</u>

Imports:

Asbestos packing - - - - -	114	\$116,207
Asbestos in any form other than crude - - - - -		897,229
		<u>\$1,013,436</u>

Ores Mined and Producing Localities:

Canadian asbestos, which is of the chrysotile or serpentine variety, is practically 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.

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

One new mill has been erected at Thetford. Production from a high grade area now under development will possibly augment the supply of long fibre from Canada in 1930.

General Situation, Market Conditions, etc.:

The demand for Canadian fibre in the longer grades, No. 1 Crude, No. 2 Crude, and spinning fibres was greater than the producers could meet. Manufacturers were therefore forced to supplement with African and Russian fibres for textile purposes. Lower grades continued to be produced and used to a slightly greater extent than previously. Towards the end of the year the demand for spinning grades decreased in sympathy with the falling off in the demand for motor cars, and because the increased use of moulded brake linings is decreasing the demand for spinning fibres.

With the exception of one company which had recently over-hauled its quarrying and milling equipment the year was not a profitable one to the producers.

Increased costs over earlier years still prevailed at some open pits on account of the effect of unfavourable weather conditions. Working ground which contained only a low percentage of fibre that would mill out, principally short fibre stocks, was responsible for decreased earnings and one large operator had to handle a large tonnage of barren rock.

South African and Rhodesian fibres are becoming more serious competitors and in the manufacture of certain articles have displaced Canadian products.

BARITE IN 1929Production:

1929	105 tons ground barite valued at \$2,341
1928	127 " " " " " 2,847

Exports:

Not separately classified in trade records, but probably nil.

Imports:

Imports of ground barite into Canada were as follows:

	1929		1928	
	Tons	\$	Tons	\$
From Great Britain	67	1,317	108	2,336
" United States	1,257	28,294	1,330	31,750
" Germany	1,322	22,467	1,385	23,842
" Netherlands	---	---	55	782
	<u>2,646</u>	<u>52,078</u>	<u>2,878</u>	<u>58,710</u>

Ores Mined and Producing Localities:

As in 1928, 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.

General Situation, Market Conditions, etc.:

Canada imports most of her barite requirements from the United States, the product being chiefly ground Missouri barite.

Prices have remained fairly steady during the year. The tariff of \$7.50 per ton on ground barite, and \$4.00 per ton on crude, entering the United States, is considered too low by American producers and is a matter of some concern to the operators, who are faced with the prospect of increasing imports of European barite, particularly crude, as well as of barium compounds.

Imports of crude barite into the United States during the first nine months of 1929 were greater by 2,534 tons than the total imports for 1928. The duties levied are, however, sufficient to effectually shut out Canadian barite, both crude and ground, and there seems little immediate hope for any successful development of our known resources of high-grade barite.

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.

## BITUMINOUS SAND IN 1929

### 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 1928 were 94 tons, and 1929, 1,036 tons, all of which was used for surfacing of roads and walks.

### Exports:

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

### Imports:

Nil.

### Producing Localities:

The deposit of bituminous sand extends along the Athabaska river and certain of its tributaries between the 23rd and 26th base lines 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 laboratory studies. Results of investigations by the Department of Mines will be found in:

Report No. 632, "Bituminous Sands of Northern Alberta," by S. C. Ells (1926).

Report No. 684, "Use of Alberta Bituminous Sands for Surfacing of Highways," by S. C. Ells (1927).

Laboratory and demonstration work by Department of Mines has included:

(a) Analyses of representative samples of bituminous sand and of separate 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.

### General Situation and Market Conditions:

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 materials of a similar class.

## CHROMITE IN 1929

### Production:

No production of chromite was reported in 1929, or in the preceding year. In 1923, 3,558 tons of 48 per cent  $\text{Cr}_2\text{O}_3$  concentrates, valued at \$52,650 was produced.

### Exports:

There were no exports of chromite in 1929.

### Imports:

The imports of chrome ore are not separately recorded. During 1929, the following were imported: bichromate of soda, 1,795,129 lb., valued at \$127,828; bichromate of potash 167,965 lb., valued at \$14,955; chrome steel 3,511 tons valued at \$220,890; chrome firebrick valued at \$101,302.

### 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 Ontario, 26 miles south of Collins station, on the Canadian National railway and about 120 miles east of Sioux Lookout. Little is yet known regarding the size and richness of the deposit, which is now being investigated by a development company. It is reported, however, that the chromite occurs in veins, ranging up to 2 feet in width, and carrying ore of an average content of 34 per cent  $\text{Cr}_2\text{O}_3$ . The ore will require concentration to make it of marketable grade.

### General Situation, Market Conditions, etc.:

Economic considerations, the chief of which is the competition of cheaply produced higher-grade ore in foreign countries, have 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 220,000 tons in 1928. The remainder is obtained chiefly from New Caledonia, Cuba, Greece, Russia and the Transvaal.

CORUNDUM IN 1929

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 100 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, Market Conditions, etc.:

The competition from artificial abrasives has been the main cause of the decline in production. During the last few years, however, natural corundum has been used for the manufacture of the artificial abrasive, oxide of aluminium, the corundum for which is at present obtained from South Africa. In 1928 there was a decline in this use, as this method was abandoned by the Canadian manufacturer and is now employed by only one in the United States. The United States consumption is between 2,000 and 3,000 tons annually of which about 50 per cent is for abrasive wheels, 35 per cent for lens and optical glass grinding and 15 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 concerns.

V.L.E-W. March 1930.

DIATOMITE IN 1929

Production:

1929	--	429 tons	valued at	\$10,330
1928	--	368 "	" " "	8,960

Exports:

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

Imports:

The recorded imports amounted to 1,193 tons valued at \$40,539 but the greater portion of the material comes in under miscellaneous items or as partially made up products and probably now totals over 5,000 tons.

Producing Localities:

Diatomite is mined by the Oxford Tripoli Sales Company from their deposits at New Annan, south of Tatamagouch in north-eastern Nova Scotia, where the material is calcined and then shipped to their plant at Haverstraw, N.Y., for final treatment. The B.C. Refractories Ltd. continued mining from their deposits at Quesnel, B. C., shipping the raw product to their Vancouver plant.

Important Developments and Prospective Producing Localities:

The Oxford Tripoli Sales Company absorbed the Scotia Diatom Products Company and took over their plant and deposits at Digby Neck, N.S. They also acquired several other deposits including that of Pollet Lake in southern New Brunswick. The Oxford Company re-organized under the name of the International Diatomite Industries, Ltd., Montreal. The Diatomite Products Ltd., Toronto, are erecting a treatment plant at Martin's Siding, Muskoka, Ontario. The material dredged from the ponds will be conveyed by line  $1\frac{1}{2}$  miles to settling-tanks at the siding. They expect to be producing by August 1930. Until recently all the material from Quesnel has been used as a concrete admixture, but latterly some substantial shipments have been made for house insulation purposes. The company intends to manufacture diatomite insulation bricks in the near future.

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, rubber, 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 1929. Another growing use is its application in the manufacture of battery boxes. If the present indications are fulfilled the value of the 1930 Canadian output should constitute a record since the industry started in 1895.

All of the diatomite imported into Canada comes from the United States. The greater part of this is produced by the Celite Products Co., Los Angeles, Cal., which during the latter part of 1928 merged with the Johns-Manville Co., of New York. There are about 15 other producers most of which report an increase in production over 1928.

The present price in Canada varies from \$30 to \$35 per ton for concrete admixtures and up to \$150 and over per ton in small lots for material suitable for polishes.

### FELDSPAR IN 1929

Production:

1929	--	37,353	tons	valued	at	\$343,149
1928	--	31,897	"	"	"	284,942

Exports:

1929	--	29,896	tons	crude	spar	valued	at	\$242,915
1928	--	28,101	"	"	"	"	"	230,945

The bulk of the exports was consigned to grinding plants in the United States. Crude spar enters the United States duty free, while ground spar is taxed 30 per cent ad valorem. The proposed new U.S. tariff, will make crude spar dutiable at \$1.50 per ton.

Imports:

1929	--	3,955	tons	ground	spar	valued	at	\$65,997
1928	--	3,171	"	"	"	"	"	53,818

Ores Mined and Producing Localities:

Feldspar mined in Canada is of the potash variety, known as orthoclase 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 1929 were the Hybla, Perth, and Verona areas, in Ontario, and the Buckingham area in Quebec. The last named came to the fore in 1921, when development work proved up several bodies of exceptionally good feldspar. Previous to 1921, Ontario furnished practically the entire production. Selected feldspar from Buckingham is in high demand for dental purposes. The Richardson mine, near Verona, Ont., was reopened in 1928 and continued in operation during 1929.

Important Developments and Prospective Producing Localities:

No important new properties were opened up during the year. Representatives of a large American spar milling consolidation were however, active in examining and proving up prospects, with a view to taking over properties that would ensure an adequate supply for their grinding plants.

General Situation, Market Conditions, etc.:

Production of feldspar in 1929 was greater by more than 5,400 tons than in the previous year, but was 7,541 tons lower than the 1924 figure which was the highest, both in tonnage and value, in the history of the industry.

The Frontenac Floor & Wall Tile Company, at Kingston, supplied the only domestic production of ground feldspar; the capacity of the plant was doubled during 1928 by the installation of a second grinding unit. Plans were made late in the year for the erection of a new grinding mill, to be located at Buckingham, Que. The company concerned is to be known as the Canadian Flint and Spar Co. and work on the plant is expected to commence early in 1930. It is also expected that another feldspar mill may be built in 1930 at Brockville, Ont. by American interests.

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. While not absolutely dependent on Canadian feldspar, United States grinders find in Canada an important source of high-grade spar, and about 12 per cent of the total consumption of crude spar is Canadian.

The glass plant at Oshawa, designed to manufacture glass from mine-run feldspar, is a new development. This plant is expected to come 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 1929 remained at around \$8.50 for the best grade, f.o.b. cars.

FLUORSPAR IN 1929Production:

1929	17,870 tons valued at \$46,648
1928	None

Exports:

No exports of fluorspar in 1928 or 1929.

Imports:

1929	12,092 tons fluorspar valued at \$159,798
	36 " hydro-fluosilicic acid valued at \$4706
1928	14,362 " fluorspar valued at \$153,046
	6 " hydro-fluosilicic acid valued at \$1646

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 cobbled 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.

The Rock Candy mine, of the Consolidated Mining and Smelting Company, near Grand Forks, B.C., was operated during the year, several thousand tons being shipped to Trail. 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 \$6.40 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  $\text{CaF}_2$  and not over 5 per cent  $\text{SiO}_2$  was quoted at \$18 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 1928 and 1929. 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.

## GARNET IN 1929

### 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:

Some trenching and diamond drilling have been carried out by the Labelle Nickel and Garnet Co. of Montreal on a garnet deposit at Labelle, Que., 100 miles north of Montreal. A few camp buildings were erected in 1928 but the erection of the treatment plant has not as yet materialized. Further prospecting was also carried out by the Montauban Exploration Syndicate (late Langlade Garnet Syndicate) at Langlade, Baudin township, Abitibi county, Quebec, and the erection of a treatment plant is still being considered.

### General Situation and Market Conditions:

Ninety per cent of the world's production is used for making abrasive papers and cloths. Garnet paper has largely taken the place of sand and emery papers, particularly in the wood-working industries, although during the year artificial abrasive coated papers have made further inroads into the garnet paper production, and in several instances garnet cloth has in turn been replaced by cloth open-coated with the aluminous abrasive. Coated papers are manufactured in Canada by Abrasives Ltd., Brantford, Ontario, a subsidiary of the American Glue Company. The material as received is in the form of a semi-graded concentrate that brings from \$70 to \$85 per ton according to quality. The finer grades have been successfully employed in the glass grinding and bevelling industries for which purposes there was an increase in demand in 1929.

The world's best garnet is at present obtained from mines in New York state the annual production of which two or three years ago was over 8,000 tons, but fell to under 6,000 tons in 1928.

During the year under review one of the three New York producers closed down. There was one other producer in New Hampshire besides the Ford Motor Company's mine which is used only for their glass surfacing.

Although most of the coated paper manufacturers report a slight decrease in the demand for garnet, the United States garnet producers appear to have slightly increased their output over that of 1928.

GRAPHITE IN 1929Production:

1929	1,461 tons valued at \$103,174
1928	1,097 " " " 57,041

Exports:

1,582 tons valued at \$88,647

Imports:

Graphite imports, including crucibles, were valued at \$155,770.

Ores Mined and Producing Localities:

The mines and mills are 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 active operator in the province, burnt down the previous winter, was rebuilt on a larger and more modern scale. In Quebec, the only operator continued to be the Canadian Graphite Corporation, at Guenette.

Important Developments and Prospective Producing Localities:

During the year, a new company - Western Canada Graphite, Ltd. - of Vancouver, announced plans for developing a graphite deposit at Mussel Inlet, on the mainland coast.

General Situation, Market Conditions, etc.:

There was little change in the general graphite situation in 1929. No. 1 flake was quoted at around 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 apparently 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.

H.S.S. February 1930.

GRINDSTONES AND PULPSTONES IN 1929

Production:

1929	1,737 tons valued at \$103,624
1928	1,855 " " " 100,960

Exports:

1929	exports valued at \$36,690
1928	" " " 28,747

Imports:

1929	imports (mostly pulpstones) valued at \$448,382
1928	" " " 653,390

Producing Localities:

During 1929 there were only two producing companies in the Maritimes. The Read Company are the largest producers of grindstones from their New Bandon quarry in northern New Brunswick, the Stonehaven 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. By far the largest pulpstone production is now maintained by the Mirmichi Company from their quarry at Quarryville, near Newcastle, N.B. Both concerns increased their pulpstone output in 1929 which totalled 544 tons, valued at almost \$60,000. This is a record production of these stones from the Maritimes since they were first produced in 1892.

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:

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 1930 will be greatly 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 Canadian mills are produced in Canada.

The stones for the modern pulp mills are now mainly of the large magazine type. The increased rate of speed calls for a more exacting and durable wheel than used in former years. The new artificial pulpstone made of silicon carbide segments is very gradually but surely replacing the natural stone. 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. The main factor to Canadian producers is the high quality of natural pulpstones demanded; Canadian stones are rather too soft and not always uniform.

Production:

1929	1,211,383 tons valued at \$3,338,859
1928	1,246,368 " " " \$3,743,648

Exports:

1929	901,383 tons valued at \$1,223,985
1928	832,768 " " " \$1,381,933

Imports:

1929	17,765 tons valued at \$213,392
1928	11,917 " " " \$190,241

Ores Mined and Producing Localities:

The materials produced are the hydrous calcium sulphate, commonly known as gypsum, and the partly dehydrated material known as plaster of Paris or wall plaster. It 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, etc.

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

Important Developments and Prospective Producing Localities:

During the year construction of a modern mill for the manufacture of gypsum products in Winnipeg was begun by the Western Gypsum Products Ltd. who are planning to obtain their raw product from a deposit situated about 30 miles south of Gypsumville, Manitoba. The mill is expected to be in operation in the near future.

The Gypsum, Lime and Alabastine, Canada, Ltd. (formerly the Canada Gypsum & Alabastine Ltd.) announced the erection of a mill at Calgary, Alberta, in which a full line of gypsum products will in time be manufactured. They intend, at present, to obtain their supply of gypsum from Falkland, B.C., but later will open up their deposits at Wardner, B.C., on the Crow's Nest Pass line of the Canadian Pacific railway.

There is also considerable activity in Nova Scotia and New Brunswick in the gypsum industry. The recent decision of the United States Government in maintaining crude gypsum on the free list should help the industry in these provinces materially.

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.

General Situation and Market Conditions:

The use of gypsum in the building trade 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. The continued activity in the building trade throughout the whole of Canada, finds reflection in the demand for gypsum building material and in consequence the future of the gypsum industry in Canada is most encouraging.

IRON OXIDE MINERAL PIGMENTS IN 1929

Production:

1929	6,518 tons valued at \$115,932
1928	5,414 " " " 111,198

Exports:

Iron oxides, ochres, etc., 1,113 tons, valued at \$42,554

Imports: Ochrey earths, oxides, etc., 3,683 tons, valued at \$790,654.

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 has come from a deposit near St. Anne de Beaupre. Production has also been reported in past years from Lynch township, Labelle county, and Iberville township, Saguenay county. Some production has been reported from British Columbia since 1923.

Important Developments and Prospective Producing Localities:

There has been no outstanding developments in the mineral pigment industry during the year 1929 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 and although undoubtedly there are other prospective producing localities, particularly in the low lying ground bordering the lower St. Lawrence Gulf, no special effort has been made to locate them.

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.

EHW. March 1930.

Production:

Various small shipments of spodumene and lepidolite have been reported since 1925, but there has been no active production during 1929.

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 1929.

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 important tonnages of lepidolite and spodumene, as well as, perhaps, of 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 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.

MAGNESITE IN 1929

Production:

1929 - 18,701 tons of calcined and dead-burned magnesite  
valued at \$491,170.  
1928 - 13,195 tons, valued at \$346,990.

Exports:

1929 - 5,279 tons valued at \$125,613  
1928 - 1,837 " " " 44,101

Imports:

Magnesite.....	125 tons valued at	\$ 4,423
Magnesia.....	2,126,689 lbs. " "	76,680
Magnesia pipe covering.		259,080
Magnesite firebrick....		256,635

Products and 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 in 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 and dead-burned magnesite.

H.F. March 1930.

MICA IN 1929Production:

The production by class is indicated below:-

	<u>1 9 2 9</u>		<u>1 9 2 8</u>	
Rough cobbed.....	--	--	--	--
Thumb trimmed....	97,373 lb.	\$ 17,233	91,662 lb.	\$16,887
Splittings.....	22,750 "	13,732	25,367 "	14,974
Scrap.....	8,286,978 "	88,886	7,202,795 "	55,307
	<u>8,407,101</u>	<u>\$119,851</u>	<u>7,319,824</u>	<u>\$87,168</u>

Exports:

Exports of mica, including trimmed sheet, mica plate, splittings and scrap, were valued at \$213,059 in 1929 as against \$175,761 in 1928.

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 \$169,018.

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 mainly 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, is one of the world's most important mica mines. 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 the year on white mica occurrences near Tete Jaune, B.C.

Important Developments and Prospective Producing Localities:

None.

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 of high grade sheet coming on the London market from 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, increased 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 indication 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 "	60 " " "
1 x 3 "	35 " " "	3 x 5 "	\$1.00 per lb.

PHOSPHATE IN 1929

Production:

1929	--	1,185 tons valued at \$15,685
1928	--	641 " " " 8,276

Exports:

1929	phosphate rock 52 tons valued at \$1,408
1928	" " -- " 44

Imports:

1929	--	18,192 tons valued at \$114,741
1928	--	10,388 " " " 68,266

Ores Mined and Producing Localities:

Most of the small production of phosphate in Canada for the last ten or fifteen years 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 a small amount of phosphate rock was 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 commenced the addition of a complete fertilizer unit to its Trail plant. By making triple, instead of ordinary superphosphate, the freight costs on the fertilizer are very materially reduced.

General Situation, Market Conditions, etc.:

There is little of interest to Canada in the general world phosphate situation. The American domestic production of sedimentary phosphate is being faced with competition from the northern Africa deposits, and it is reported that Moroccan phosphate has been sold on the Atlantic seaboard at a lower price than the same grade of Florida phosphate.

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.

H.S.S. February 1930.

SALT IN 1929Production:

1929	---	330,264 tons valued at	\$1,578,086
1928	---	299,445 " " "	1,495,971

Exports:

1929	---	9,359 " " "	\$ 70,762
1928	---	2,930 " " "	36,399

Imports:

1929	---	176,566 " " "	\$ 936,820
1928	---	189,026 " " "	1,122,968

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 1929, salt was produced in southern Ontario, and in the Malagash salt district, Nova Scotia. Ontario salt is obtained from brine wells, while Malagash salt is recovered by mining rock salt, and by recovery by evaporation from brines produced by the leaching of salt from the waste piles from the mine.

Important Developments and Prospective Producing Localities:

At Waterways, Alberta, the Alberta government, through the Alberta & Great Waterways railway, in 1928 encountered salt formations at depths of 670 feet to 883 feet. The possibility of utilizing this salt 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 recently with a view to drilling.

At Neepawa, Man., drilling a well salt brine was encountered at depth, and if, on further testing, the flow of this brine remains fairly constant it is possible that a recovery plant will be erected since a company has been recently organized for its exploitation.

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.

In Nova Scotia, at the Malagash deposit, production has been increased by better shipping facilities and the installation of a 3-pan evaporating plant. The successful operation of the Malagash deposit has greatly stimulated the prospecting for salt in the Maritime Province.

General Situation, Market Conditions, etc.:

The production, except for small exports is sold in Canada principally to the dairy, meat-curing, fisheries, and chemical industries and as table salt for household use. The market for salt in Canada is steadily increasing. At present a large tonnage is imported duty free for use in the fisheries. This is due to the fact, that, until recently the only producing district has been in Ontario which is unfavourably situated with respect to the market offered by the Atlantic and Pacific coast fisheries. The increasing production at Malagash will materially aid the fishing industry in the Maritime Provinces. An increasing demand for salt for the chemical industries may reasonably be expected, since at present, with the exception of caustic soda, soda ash, and small quantities of sodium sulphate, practically all of the soda product used in Canada are imported.

SILICA IN 1929Production:

32,849	tons of silica sand	valued at	\$100,278
253,311	" " quartz	" "	446,141
286,160			546,419

Exports:

None recorded.

Imports:

3,995	tons of silex	valued at	\$79,653
3,595	" " flint, etc."	" "	39,272
233,963	" " silica sand"	" "	490,558
	silica firebrick	" "	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. 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 of the Canada Glass Products Co. at East Templeton, Que., was closed down for most of the year 1929.

The silica sand deposits in Black Island, Lake Winnipeg, Man., were opened on a substantial scale. The sand is employed in the manufacture of glass bottles by the Mid West Glass Co. at Winnipeg, Man.

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.

General Situation, Market Conditions, etc.:

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

NATURAL SODIUM SULPHATE IN 1929

(Glauber's Salt and Salt Cake)

Production:

1929	—	6,592 tons valued at	\$70,396
1928	—	6,016 " " "	68,804

Exports:

A small quantity was exported but not separately recorded.

Imports:

	362 tons of Glauber's salt valued at	\$ 4,450
39,512	" " salt cake	" " 514,212
80,872	" " nitre cake	" " 1,081,984

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., and the Sodium Sulphate Refining Co., Fusilier, Sask.

Important Developments and Prospective Producing Localities:

An important development is the opening up of Horseshoe lake near Ormiston, Sask., where the Horseshoe Lake Mining & Development Co. is erecting a large and modern plant for the dehydrating of the hydrous sodium salts, to produce salt cake to the extent of 25,000 tons per year. This plant will be in operation by June 1930, and its product will go to Copper Cliff, Ont., where it will be treated with sulphuric acid to make acid sodium sulphate which is an essential flux used in the separation of copper and nickel. The sodium sulphate will be delivered to a sulphuric acid plant now being constructed by Canadian Industries Ltd. which has entered into a long term contract with the International Nickel Co. to supply nitre cake in quantities sufficient to meet refinery requirements.

The investigation of the deposits in western Canada by the Mines Branch, Department of Mines, has proven up tonnages of hydrous sodium and magnesium sulphates 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 production of sodium sulphate from natural deposits of western Canada is still in its infancy. A fairly steady market of around 40,000 tons for salt cake in the pulp and paper industry exists, but the largest consuming centres are in eastern Canada and the present freight rates from the deposits to the markets are an important factor. The replacing of imported nitre cake by salt cake treated with sulphuric acid at Copper Cliff, Ont., will greatly extend the market, and the gradual rise in price of salt cake will have a beneficial effect on the western deposits. The increasing production of hydrochloric acid synthetically which means that less by-product salt cake will be produced, should also in time materially benefit the development of the natural deposits.

TALC AND SOAPSTONE IN 1929

Production:

1929 - 15,509 tons of ground talc valued at	\$181,222
Block soapstone	" " 47,986
1928 - 14,925 tons of ground talc	" " 179,187
Block soapstone	" " 40,171

Exports:

1929 - 11,399 tons of ground talc	" " 139,096
1928 - 10,946 " " " "	" " 133,601

Imports:

1929 - 5,516 tons valued at	\$109,675
1928 - 5,421 " " " "	91,702

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. A third mine with mill, exists at Eldorado, a few miles north of Madoc, but has been idle for several years. There has also been an intermittent production from deposits near Victoria, Vancouver Island, and near Keefers and D'Arcy, in British Columbia. The Victoria and D'Arcy material is a rather impure talc, which finds employment in the roofing trade. The Keefers talc is of a superior grade, and has been successfully employed in paper, 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. 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 Toronto syndicate was incorporated in 1927 for the purpose of mining this material for lava purposes. A road has been built to the property, and production is expected to start in 1930.

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 import 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 now imported.

The commercial utilization of the soapstone dust from the sawing benches at the Quebec quarries has been considered, and tests were conducted during 1928 in the Ceramic division of the Mines Branch to devise methods of bonding this dust to form slabs and plates for use as insulation in cooking range walls, etc. The erection of a grinding mill to treat quarry waste and make roofing, foundry, and other grades of talc is also being considered by the Quebec operators.

H.S.S. February 1930.

VOLCANIC DUST IN 1929Production:

1929	---	300 tons valued at \$6,000
1928	---	485 " " " 9,795

Exports:

Not separately recorded.

Imports:

Included under pumice, pumice stone, lava and calcareous tufa valued at \$35,955, as against \$48,062 in 1928. Private information for volcanic dust alone indicates an increase in 1929.

Ores Mined and Producing Localities:

Volcanic dust beds up to 30 feet thick are being worked by the Van-Kel Cleansers Ltd., Swift Current, and by the Old Sol Manufacturing Co., Winnipeg, Man., from deposits near Waldeck and Beverley, a few miles east and west of Swift Current, Sask. The former have completed the erection of a 50-ton treatment plant and research laboratory.

Important Developments and Prospective Producing Localities:

Production was to some extent set aside by the Swift Current producer in favour of construction and research. The completion of the former and gratifying results in the latter in the form of new uses such as for the calcimine and paint trades, cement admixture and as a bleaching agent indicate a good volume of business for 1930.

There are several other deposits of volcanic dust near Ashcroft, Williams Lake, and Nakusp, all in British Columbia.

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. There is a large output from Kansas in the United States and all producers report an increase during the year which is expected to continue in 1930. Their output is now about 60,000 tons annually and their exports into Canada increased in 1929.

CEMENT IN 1929Production:

1929	---	12,284,081 bbl. valued at \$19,339,244
1928	---	11,023,928 " " " 16,739,163

Exports:

1929	---	234,111 " " "	252,995
1928	---	267,325 " " "	340,624

Imports:

Portland and hydraulic or water lime 55,980 bbl. valued at \$189,169 as against 34,047 bbl. valued at \$146,164 in 1928. Cement n.o.p. and manufacture of, valued at \$64,942 as against \$31,594 in 1928.

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 19 plants having an aggregate rated annual capacity of over 15 million barrels; five of these are not operating and one is still in the constructive stage. The actual production capacity of the operating plants is about 13 million barrels. The large excess capacity over production is easily explained. The cement plant is the handmaid of the building and construction industries. These industries are subject to wide seasonal fluctuations in activity, mainly because of climatic influences. In certain months the demand for building materials is such as to tax the productive resources of the manufacturing industries, while in other months the quantities required are very small.

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

	<u>1928</u>	<u>1929</u>
Quebec .....	\$1.28	\$1.38
Ontario .....	1.41	1.43
Manitoba .....	2.43	2.35
Alberta .....	2.07	2.19
British Columbia .....	2.23	2.18

KAOLIN (CHINA CLAY) AND BALL CLAY, 1929

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:

1929	- Clays unmanufactured	16,379 cwt.	valued at \$6,640
1928	- " " "	19,903 " "	" 20,577

Imports:

1929	- China clay,			
	ground or unground	497,571 "	"	"\$292,980
1928	- " " "	462,357 "	"	" 262,207

No figures for the import of ball clay 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 is evidently an extensive occurrence 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 china clay 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.

LIME IN 1929 (revised)Production:

The production of lime in Canada in 1929 was the highest ever reported and was as follows:-

Quicklime	505,671 tons	valued at	\$4,228,794
Hydrated lime	84,504 "	" "	1,059,557
	<u>590,175</u>		<u>5,288,351</u>

Exports:

Exports were largely from British Columbia to the United States, the Phillipines, Hawaii, Central America, and New Zealand. The 1929 exports were 24,238 tons valued at \$428,209.

Imports:

1929 - 4,448 tons valued at \$49,395, most of which was finishing lime from Chic. Some lime was imported from Michigan by northern Ontario pulp mills.

Ores Mined and Producing Localities:

Lime is burned in every province of Canada with the exception of Prince Edward Island and Saskatchewan. Both high-calcium and magnesium 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 lime is sold as quicklime and as hydrated lime. The tendency is toward greater production of hydrated lime particularly for use in the building trades and chemical industries.

Of the total production, Ontario accounted for about 59% of the quicklime and 55% of the hydrated lime; Quebec 19% of the quicklime and 11% of the hydrated lime; Manitoba produced about 12% of the hydrated lime.

Forty-six companies operating 54 plants were engaged in lime production.

Important Developments and Prospective Producing Localities:

The outstanding development was the purchase by Gypsum, Lime and Alabastine, Canada, Ltd., of five of the principal lime companies in Ontario and also the largest lime company in Quebec. The above-named company now has virtual control of the lime industry in these two provinces.

No new lime plants came into production during 1929 but several plants were enlarged and their equipment modernized. The Pacific Lime Co. at Blubber Bay, B.C., installed a rotary kiln. The Moosehorn Lime Co. at Moosehorn, Manitoba, entirely reconstructed their plant. Gypsum, Lime & Alabastine, Canada, Ltd., are proceeding with the modernization of several of their plants.

There are many prospective producing localities owing to the abundance of high-grade limestone in Canada.

General Situation, Market Conditions, etc.:

For the fifth successive year the Canadian lime industry has established a new high record of production. Lime manufacturers all report a record volume of sales. Prices were maintained at a satisfactory level, although in Ontario and Quebec prices were affected somewhat by competition from the United States.

The outlook for the Canadian lime industry is satisfactory. For a number of years the proportion of the lime consumed by chemical and metallurgical industries has been increasing, and at present about 65% of the total production is taken by these industries. The prospects for the steady expansion of existing industries of these types and for the establishment of new ones are promising.

The quantity used by the building trades has remained nearly stationary for a number of years past, although building activities have increased. This is due largely to competition from other structural materials. The average price of quicklime in 1929 for all Canada was \$8.36 per ton, and of hydrated lime \$12.53 per ton. Prices vary in different parts of the country.

## LIMESTONE IN 1929.

### Production:

In 1929 the production of limestone in Canada for all purposes exclusive of that used for the manufacture of cement and lime was 8,273,544 tons valued at \$8,341,672 as against 6,949,420 tons valued at \$7,267,437 in 1928. The 1929 production is the highest on record.

### Exports:

The exports of limestone are almost negligible. No separate record kept.

### Imports:

Considerable building stone is imported from the United States and a large tonnage of limestone for use as flux is imported from the United States and Newfoundland. Some of the pulp mills in northern Ontario import their limestones from Michigan. No separate record kept.

### Products and Producing Localities:

Every province of Canada except Prince Edward Island contains workable deposits of good quality limestone. In the case of Saskatchewan the limestone is inaccessible at present. Ontario was the principal producer in 1929, and Quebec came next.

The chief products vary in the different provinces. In Ontario and Quebec the principal product is crushed stone which is used for railroad ballast, road metal and as aggregate in concrete. In Manitoba the chief product is building stone; in Nova Scotia, flux; in British Columbia, flux; and in New Brunswick, agricultural limestone. The cement and lime industries utilize large quantities of limestone but their requirements are not included in the above figures on production.

### Important Developments and Prospective Producing Localities:

There have been no new developments in connexion with limestone during 1929.

Owing to the abundance of limestone in Canada, the prospective producing localities are too numerous to list.

### General Situation, Market Conditions, etc.:

At the beginning of the present century the uses of limestone were comparatively few and production was small. Today when the amount used for all purposes is considered it ranks among the foremost of non-metallic materials in tonnage and value of production. It is estimated that in 1929 more than 12,000,000 tons of limestone were quarried which when fabricated into its primary products such as lime, cement and stone for various purposes had an initial selling value of \$33,000,000. Owing to the abundance of high-grade limestone in nearly every province the limestone quarrying industry is decentralized and only when it is viewed as a whole do its real extent and value become manifest. The limestone industry is being organized into large holding companies resulting in greater production.

There are three principal markets for limestone:

1. Building and Road construction; 2. Chemical and Metallurgical industries; 3. Agriculture. The outlook for increased sales in each of these markets is promising.

On account of the diversity of products and the dearth of published statistics relating to limestone, it is impossible to quote unit prices for the various products.

COAL IN 1929Production:

The production of coal in Canada in 1929 was 17,502,355 tons valued at \$63,026,369 consisting of:-

Bituminous .....	12,868,049	tons	valued	at	\$49,951,119
Sub-bituminous .....	668,692	"	"	"	1,908,954
Lignite .....	<u>3,965,614</u>	"	"	"	<u>11,166,296</u>
	<u>17,502,355</u>	"	"	"	<u>\$63,026,369</u>

In 1928 the production was 17,564,293 tons valued at \$63,757,833.

Exports:

1929	842,972	tons	valued	at	\$4,374,328
1928	863,941	"	"	"	4,469,999

Imports:

The imports of coal entered for consumption in 1929 amounted to 18,204,163 tons and consisted of 17,243,047 tons from the United States, 843,502 tons from Great Britain and 117,614 tons from other countries.

Coal Mined and Producing Localities:

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

Important Developments and Prospective Producing Localities:

The re-examination of deposits of lignite on the Abitibi river was carried on by the Department of Mines of Ontario during the summer of 1929. To date at least 2 square miles of lignite, about 20 feet in thickness have been delimited. The quantity in sight is conservatively placed at 40 million 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 will be built 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 years 1928 and 1929 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.

A.B. February 1930.

COKE IN 1929Production:

Coke (by-product and gas)	1929	2,673,899	tons
	1928	2,308,127	"

Exports:

	1929	53,130	tons valued at	\$732,489
	1928	44,915	" " "	625,862

Imports:

	1929	1,227,225	tons valued at	\$6,674,858
	1928	1,060,520	" " "	6,128,031

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.

Important Developments and Prospective Producing Localities:

There were no new developments during the year 1929.

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 as a domestic fuel.

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.

A.B.

R.A.S. March 1930.

## NATURAL GAS IN 1929

### Production:

1929	28,097,456 M cubic feet	valued at \$9,891,659
1928	22,582,586 M " " " "	8,614,182

### Exports:

None.

### Imports:

No natural gas has been imported, though the supply at Niagara Falls, Ont., has been increased by the importation of 132,942 M. cu.ft. of manufactured gas valued at \$85,338, as against 128,004 M. cu.ft. valued at \$82,681 in 1928, and 104,001 M. cu.ft. valued at \$65,759 in 1927.

### 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 Lambton, Kent, Norfolk, Haldimand and Welland counties. Some productive wells were drilled during the year in Midaleton township, Norfolk county, which greatly helped in supplying 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 there was active staking for oil and gas during the last few months of 1929 in the counties of Laval, L'Assomption, Berthier and Portneuf. Activity was particularly marked in the last named county. Lately staking has also been done in the counties of Nicolet and St. Hyacinthe, where conditions are believed to be somewhat more favourable.

In Alberta large flows of natural gas have been opened up in many of the new wells in the Turner Valley and in other points in the foothills, and other large flows are available in the Wainwright area, and in the Sweet Grass district of southern Alberta, where the Rogers-Imperial well, with a flow of some 50,000,000 cubic feet has been successfully capped for future use. Recent discoveries in the Red Coulee area in southern Alberta have given much promise of further production.

The outstanding event of the year was the appointment by the Federal and Provincial Governments of a Committee to investigate the waste gas situation in Alberta. At the end of October the gas wastage was estimated as at least 200,000,000 cu.ft. per day, which figure is equivalent in heating value to 9,000 tons of high grade coal.

The Committee has already made public some of its findings.

### General Situation, Market Conditions, etc.:

All the gas companies operating in Alberta which supply practically all the larger towns and villages, have ample reserves of gas, and the consumption in 1929 amounted to about 18,845,900 M. cu.ft.

The conservation brought about by more careful use of gas, and by closer attention to up-keep and cleaning out of wells has resulted in a more satisfactory condition in Ontario.

CIL SHALE IN 1929Production:

Nil.

Exports:

Nil.

Imports:

None recorded.

Producing Localities:

None.

Important Developments and Prospective Producing Localities:

The plant of the Maritime Education Co. at Rosevale, N.B., has not yet started operations owing to delays incidental to the financial reorganization of the company; the plant of the Torbanite Products Ltd. near Glasgow, N.S., was still incomplete at the end of 1929 owing to delays in obtaining materials, etc., but it is expected to start operating early in 1930. These two plants will have a capacity for treating 150 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. During the last two years, Oil & Nitrates Products, Ltd., (H. F. C. Spence, Mgr., New Glasgow, N. S.) have been investigating possibilities of commercial development in this area.

New Brunswick:- In Albert and Westmorland counties there is a large aggregate tonnage of valuable oil shale. In 1921 the D'Arcy Exploration Co. installed an experimental retort near Rosevale, Albert county, and have also made a detailed study of portions of the shale area. Results of this work have not been announced. At the present time (January 1930) the following companies are interested in proposed commercial development, viz.:- Maritime Education Co., Shale Hill, Rosevale, N.B., K.E. Clayton-Kennedy, Chief Engineer; and Albertite Chemical Oil & Fertilizer Co., Ltd., Albert Mines, N.B., Louis Simpson, Mgr.

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.

In addition, the Forest Products Laboratories are conducting tests to determine the value of shale oil as a wood preservative, but their report is not yet available.

PEAT IN 1929Production:

2,607 tons valued at \$13,339.

Exports:

None.

Imports:

None.

Peat Bogs Worked:

The only peat manufacturing operations carried on during 1929 were those of the Hydro Peat Company, located on a bog near St. Hyacinthe, Quebec. This company is reported to have laid on the ground to dry between three and four thousand tons of peat fuel. 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 was not operated in 1929 owing to difficulties which developed in connection with the ownership of the property. The only operations conducted at this plant were those involved in selling the stock of peat fuel on hand. During 1929 approximately 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 publication 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 are 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.

B.F.H. February 1930.

PETROLEUM IN 1929Production:

1929	1,120,693 bbl.	valued at	\$3,790,497
1928	624,184 "	" " "	2,035,300

Exports:

Crude and refined oil, kerosene, gasoline, etc.	34,647,448 gal.	valued at	\$2,665,901
Wax	155,600 lb.	" "	62,171

Imports:

1929	Petroleum and its products to the value of	\$76,886,930
1928	" " " " " " " "	61,669,989

Producing Localities:

The chief producing localities are the Petrolia and Enniskillen, the Oil Springs, and the Bothwell fields in western Ontario, and the Turner Valley field, Alberta.

Prior to 1925 the western Ontario field was the only producing locality in Canada of any importance, but, in that year Alberta took first place with a production of 183,491 bbl., 482,047 bbl. in 1928 and 992,000 bbl. in 1929.

At the end of 1929 approximately 35 wells were producing in Turner Valley with a combined monthly production of about 90,000 bbl. of crude oil. In addition about 65 wells were being drilled in the field. Results to date indicate that Turner Valley will be one of the world's large natural gas fields.

The Wainwright field located about 160 miles east of Edmonton has been undergoing development for several years. About 12 wells have been drilled, many yielding dry gas and oil showings, but not more than three may be considered possible commercially productive wells.

Several wells are being drilled in other parts of Alberta particularly in the Red Coulee area, southern Alberta, and a few wells were drilled in Saskatchewan and British Columbia.

In New Brunswick several wells have been drilled in various areas but the production is still relatively small.

Important Developments and Prospective Producing Localities:

In addition to the intensive drilling which has been going on during the past two years in the Turner Valley and Wainwright fields, drilling is being done in various other parts of the province notably in the Medicine Hat and Bow Island gas fields.

The only oil found in the Plains area has been heavy and the wells have produced such small quantities that they are at best of doubtful commercial value, but exploration is being proceeded with in a very systematic and intelligent way and the future alone will determine the economic possibilities of the Plains area.

General Situation, etc.:

The outstanding feature of the year is the continued successful development in the Turner Valley field with prospects of a considerable increase in production in the near future.

In western Ontario the 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 July 1925.

A.B. March 1930.