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DEPARTMENT OF MINES
OTTAWA, CANADA

THE CANADIAN MINERAL INDUSTRY IN 1927

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THE CANADIAN MINERAL INDUSTRY DURING 1927:

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NOTE:

The figures of production are preliminary figures, as published by the Dominion Bureau of Statistics.

The figures of Imports and Exports are taken from the "Trade of Canada," Dominion Bureau of Statistics and cover the calendar year.

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ANTIMONY IN 1927Production:

There was no production of antimony ore, concentrates or of antimony regulus in 1927. A small shipment of ore, already mined, was made from Lake George property in New Brunswick to the New England States for experimental purposes.

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

The Consolidated Mining and Smelting Co. produce some impure antimony as a by-product in connexion with their silver refining operations at Trail, B.C. This product is allowed to accumulate at the smelter until the company decide to install the necessary equipment to treat it.

Exports:

12½ tons of antimony ore were exported in 1927.

Imports:

Imports in 1927 were:- metallic antimony or regulus 1,284,483 lb. valued at \$143,446 and salts of antimony 52,709 lb. valued at \$10,766.

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 were produced intermittently for a number of years in the Maritime Provinces. The Lake George property was taken over in 1927 by the Canadian International Corporation, 718 Sherbrooke St. W., Montreal, which company plans on producing antimony regulus in 1928.

The General Situation, Markets, etc.:

The high price in 1926 encouraged production from China, which country supplies 80 to 90 per cent of the world's requirements. Heavy arrivals in United States ports caused the price to decline rapidly to a minimum of 10½ cents in June 1926. After recovering slightly the year ended with a price of 12½ cents.

The market opened in January 1927 at 12½ cents per pound, duty paid (duty 2 cents per pound) f.o.b. New York, and reached a maximum of 15½ cents in April then gradually decreased to as low as 10½ cents in September, closing the year at 11½ cents. While the consumption of antimony decreased in 1927 the unsettled conditions in China curtailed production thus preventing too heavy a drop in the price. The outlook for 1928 is more promising.

A. B. March 1928.

COBALT IN 1927Production:

The estimated production of cobalt in 1927 was 877,875 lbs., valued at \$1,763,543, including metal, alloys and chemical compounds -- output and value being computed in terms of refined metal at average New York price.

Exports:

Metallic cobalt.....	354,908	lbs.	valued at	\$707,709
Cobalt alloys.....	13,031	"	"	59,230
Cobalt oxides and salts...	379,136	"	"	668,788
Cobalt ore.....	1,366,000	"	"	242,741
	<u>2,113,075</u>	"	"	<u>\$1,678,468</u>

Imports:

Cobalt ore	.....	.....
Colours, metallic viz., oxides of cobalt, tin and copper		237,787 lbs. valued at \$147,236.

Ores Mined and Producing-Localities:

Cobalt produced in Canada is obtained chiefly by treating arsenical silver-cobalt-nickel residues from the Cobalt, South Lorrain, and Gowganda silver camps in northern Ontario, though a small part of the production is obtained directly from low-silver high-cobalt ores.

The Deloro Smelting and Refining Company, of Deloro, Ont., is the only smelter in North America now producing cobalt, metal, oxides, and salts. A considerable tonnage of residues is shipped to Germany for treatment.

Important Developments, etc.:

The world's output of cobalt metal and salts is now controlled by African and Ontario producers, who also, to a large extent, control the available raw materials.

Nominal quotations are \$2.50 per lb. for metal and \$2.10 for black oxide. Substantial concessions from these prices, however, are said to be offered on large lots in an effort to increase consumption. Much research has been carried on with the same end in view.

A.H.A.R. March 1928.

COPPER IN 1927

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Production:

Copper produced in Canada in 1927 amounted to 140,141,823 lbs., valued at \$17,194,955; of this 91,685,843 lbs. was produced in British Columbia, 45,334,303 lbs. in Ontario and 3,121,677 lbs. in Quebec.

Exports:

Copper in ore, matte, etc...	72,841,200	lbs.	valued at	\$7,371,542
Copper, blister.....	54,258,800	"	"	6,667,270
Copper, scrap.....	5,912,500	"	"	602,494
Copper bars, rods, etc.....	.....	"	"	309,739
Copper, pig.....	11,200	"	"	1,734
				\$14,952,779

Imports:

Copper in blocks, pigs, etc.	3,795,607	"	"	510,771
Copper, scrap.....	5,817,100	"	"	737,029
Copper bars, rods, etc.....	28,952,800	"	"	4,232,881
Other copper products.....	.....			2,033,876
				\$7,514,557

Ores Mined, Producing-Localities, etc.:

Part of the year's output is to be credited to Ontario, obtained mostly from the nickel-copper mattes produced at Sudbury, Ont.; the remainder to British Columbia sources, with the exception of a small amount of concentrates shipped from Eustis, Quebec, to United States smelters and some blister copper produced at Noranda. The Consolidated Mining and Smelting Co.'s copper smelter at Trail is now treating, under contract, the concentrates from the Granby Co.'s mine at Copper Mountain near Princeton, B. C.

The British Columbia ores are chiefly low-grade chalcopyrite carrying small amounts of gold and silver and are concentrated before smelting; the Ontario ores are the nickeliferous pyrrhotite chalcopyrite ores of the Sudbury district; and in Quebec the production has been in the form of concentrates obtained from the treatment of the low-grade cupriferous pyrites of the Eastern townships, but from now on the main production will be derived from the chalcopyrite and the chalcopyrite-sphalerite ores of Rouyn and adjoining areas.

Developments and Prospective Producing-Localities:

Considerable bodies of copper-zinc ore have been developed at the Horne, Amulet, Waite and Aldermac mines in western Quebec, and a number of other promising prospects are being actively explored in the same district. Production from this source started in December 1927, with the blowing in of the first unit of the Noranda smelter.

The Flin Flon mine in northern Manitoba, owned by the Hudson Bay Mining and Smelting Co., and operated by the new Flin Flon Mines Ltd. has been under active development these last two years. A small pilot mill was completed in 1927, and has been in operation producing copper and zinc concentrates. Construction has started on the 90 mile extension branch from Mile 6 of the Hudson Bay railway, and the erection of the necessary metallurgical works will start shortly. A large body of copper-zinc ore has also been opened up at the Sherritt-Gordon property about 40 miles northeast of the Flin Flon mine. The Mandy mine which was producing during the war period and is situated on Athapapuskow lake will be re-opened in 1928.

A rolling mill for the production of copper wire rods is in operation at Brockville, Ont., to take advantage of the bounty offered by the Federal government in 1923. Supplies of copper are obtained from Trail, B. C., where a rod mill is also available.

A. B. March 1928.

GOLD IN 1927Production:

Gold production in Canada in 1927 was 1,844,544 ounces, valued at \$38,130,107, as compared with 1,754,228 ounces, valued at \$36,263,100 in 1926. The increase in production is largely from Ontario mines, the Porcupine district being credited with 1,156,365 ounces and the Kirkland lake district with 457,820 ounces of the total production in 1927. There was a large falling off in British Columbia's production.

Exports:

In gold-bearing quartz, dust, nuggets, and bullion direct from the mines \$7,881,512 as against \$7,340,451 in 1926. There was also exported during 1927 Gold Coin, (Canadian), valued at \$1,005, (Foreign), valued at \$42,003,384, and Gold Bullion (Canadian), valued at \$5,019,346. Most of the bullion is now refined in the Royal Mint, Ottawa, which fact accounts for the big decrease in exports in 1926 and 1927 from previous years.

Imports:

Coins valued at \$30,510,818, and bullion in bars, clocks, etc., unmanufactured valued at \$745,820. Gold fringe and bullion \$31,076, manufactures of gold \$85,477. (Articles of gold and silver in which the two metals are not valued separately \$1,130,856).

Ores Mined and Producing-Localities:

The chief sources of production continue to be the gold quartz ores of Porcupine and Kirkland lake, Ontario; the copper-gold, sulphide ores and the quartz veins of British Columbia; and the placer deposits of Yukon. A small amount of placer gold is obtained also in British Columbia. Lode gold is recovered from quartz veins in Nova Scotia and Manitoba, and as a by-product of the treatment of copper ores in Quebec.

Important Developments and Prospective-Localities:

Increased milling capacity, extension of reserves, and the further development of new properties give promise of continued increase in the output of gold from northern Ontario in 1928.

The year has been characterized by marked activity both in prospecting and development in all the gold-producing provinces of Canada. Outstanding events have been the bringing into production of the Central Manitoba Mines, in Manitoba, and the Noranda gold-copper deposits in Quebec. These two provinces will, in all probability, furnish steadily increasing contributions to Canada's gold production for some years to come.

In addition to continued activity in the gold-bearing districts of western Quebec, prospecting has been particularly active during the year in the Kamiskotia, Red Lake, and Michipicoton districts in Ontario, and in northeastern Manitoba. There has also been a marked revival of interest in gold-mining in Nova Scotia.

If gold production in the United States continues to decline in the fairly steady way it has done since 1915, Canada with its yearly increasing production will in a very few years be the second largest gold-producing country in the world.

A.H.A.R. March 1928.

IRON ORE IN 1927Production:

Iron ore sold for export 2,029 tons valued at \$8,960. No iron ore for commercial blast furnace use has been mined in Canada for several years.

Exports:

Iron ore, 2,475 tons valued at \$12,125, all shipped to the United States.

Imports:

Some 1,487,366 tons, valued at \$2,875,624 were imported, chiefly from the United States and Newfoundland, for use in Canadian blast furnaces. Small quantities came from Sweden.

Ores Mined and Producing-Localities:

Bog iron ore for the purification of gas is mined to some extent in Quebec and British Columbia. No ore for commercial blast furnace use is now being mined.

Important Developments and Prospective-Districts, Etc.:

No authenticated new discoveries of iron ore have been made in Canada during the year; and all the formerly producing iron mines are lying idle, and, with possibly one exception, their mining plants destroyed or dismantled.

The General Situation, Etc.:

Though bounties on the production of iron ore or on pig iron smelted from domestic ores are now offered by three provinces in the Dominion -- Quebec, Ontario, and British Columbia -- these have so far been without effect and there is no indication of any immediate resumption of iron ore mining in Canada.

A. H. A. R. March 1928.

LEAD IN 1927Production:

The production of lead in Canada in 1927 was by far the largest on record, amounting to 310,183,455 pounds valued at \$16,411,980. Of this total British Columbia produced 94.0 per cent, Yukon 1.3 per cent, Ontario 2.2 per cent, and Quebec 2.1 per cent.

Exports:

Lead in ores, etc....	15,032,600 lb. valued at \$	844,637
Lead in pigs, and refined lead.....	239,409,100 " " "	11,981,388
Total Exports.....	252,441,700 " " "	\$12,826,025

Imports:

Lead in pigs and blocks.....	405,127 " " "	\$ 33,165
Bars, sheets, pipe, etc.	295,272 " " "	24,812
Lead pigments.....	5,557,988 " " "	424,119
Manufactures of lead.		344,053
Nitrate and acetate of lead.....	337,044 " " "	28,218
Total.....		\$854,367

Ores Mined and Producing-Localities:

Much the greater part of the lead produced in Canada comes from the refinery at Tadoussac, B. C., which treats lead concentrates from the Sullivan lead-zinc mine at Kimberley. The output of this mine far exceeds that of all other Canadian lead mines put together. There is also a considerable production from numerous silver-lead and silver-lead-zinc mines in the Kootenay districts and other parts of British Columbia. The Yukon output is 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 and Smelting Co. have enlarged their electrolytic lead refinery at Trail, B. C. to 400 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 which has a capacity of 4,000 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. At Notre-Dame-des-Anges, in Quebec the British Metals Corporation have made improvements both in their mine and mill, which have resulted in increased output. The mill flow-sheet is based on experimental work done at the Mines Department laboratories at Ottawa. The Kingdon Mining, Smelting and Manufacturing Co. at Galetta, Ont. also increased their output during the year. The British Metals (Canada) Corporation have taken over the Sterling lead-zinc property in Cape Breton, N. S.

Intensive development work was carried on by the Pioneer Mining Corporation and the Federal Lead and Zinc Co. on their properties in Gaspe peninsula, Que. Some work is also being done on a number of other lead prospects in eastern Canada.

The General Situation, etc.:

The average price of lead at Montreal in 1927 was 6.73 cents per pound as against 8.15 cents in 1926 and 9.12 cents in 1925. Despite the drop in price the year ended with the market in a healthy condition.

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MOLYBDENUM IN 1927

Production: Nil.

Exports: Exports of molybdenite in 1927 were 10.5 tons, valued at \$10,472.

Imports: None recorded.

Ores Mined and Producing-Localities:

Molybdenite is the only ore of molybdenum found in Canada. The Moss mine at Guyon, Que., which during the war produced 80 per cent of the Canadian molybdenite did not produce during the year but dismantled part of their concentrator.

Important Developments and Prospective Producing-Areas:

The Molybdenite Reduction Co. Ltd., have further prospected their property in the Abitibi district south of Amos, Que. A shaft has been sunk to 80 feet and some buildings erected and plans are under way to erect a concentrator in the spring of 1928 with a view to immediate production. Some survey work was carried on by the Indian Lake Molybdenite Co., (Bain mine) in Masham township, Que.

General Situation in respect to the Industries and Market Conditions:

During the past year the consumption of molybdenum has slightly increased, but there is little new in the way of application. That is, the business is slowly increasing in the line of ordinary structural alloy steels in which molybdenum is a constituent, particularly in the automobile industry. It has not made any progress when used in high percentages, as for example in high speed steels. About 5 per cent of this metal now finds its way into industry as oxides used in electricity, chemical reagents and as a mordant in dye works. All told the molybdenum consumption in the United States during 1927, amounted to between 450 to 600 tons. About 85 per cent of the present world's production of ore comes from the United States from two producers of which the Climax Company in Colorado is by far the largest. About 10 per cent comes from Norway. As an addition agent in the manufacture of the steels, the use of calcium molybdate continues to increase over ferro-molybdenum.

At the present new low prices, molybdenum steel can be sold for about \$1.50 per ton less than chrome-nickel steel.

V.L.E.W. March 1928.

8

NICKEL IN 1927

Production:

In 1927 Canada produced 33,399 tons of nickel valued at \$15,262,171, as against 32,857 tons valued at \$14,374,163 in 1926.

<u>Exports:</u>	<u>Quantity</u>	<u>Value</u>
Nickel in ore, matte, or speiss	36,458,800 lb.	\$5,784,623
Fine Nickel	29,015,800 "	7,896,211
Nickel oxides (9 months)	5,196,100 "	1,600,986
	<u>70,670,700</u>	<u>\$15,281,820</u>

Imports:

Nickel in bars, rods, sheets and plates	825,715 "	233,366
German silver.....		907,693
Nickel-plated ware.....		2,194,808
		<u>\$3,335,867</u>

Ores Mined and Producing-Localities:

Production is almost wholly from the nickeliferous pyrrhotite-chalcopryrite ores of the Sudbury district, where two large companies, the International Nickel Co., and the Mond Nickel Co., now control the whole output. A small amount is also derived from the silver-cobalt-nickel ores of the Cobalt district as a by-product.

Important Developments and Prospective Producing-Localities:

The enormous proved ore reserves and strong position of the two large companies now operating in the Sudbury district act as an effectual deterrent to any attempts to exploit known nickeliferous deposits in other parts of the country, such as those in Falconbridge township, and at Shebandowan lake in Ontario; and these along the Oiseau and Maskwa rivers in southeastern Manitoba.

Sudbury nickel ore is now being raised and smelted at the rate of 1 1/4 millions tons per year and the ore reserves are placed at over 150,000,000 tons.

The most important development of the year is the reported discovery of large bodies of rich copper ore at depth in the Frood mine, which promises to make Sudbury one of the great copper camps of North America, entirely independent of its nickel output. The Frood deposit is owned in part by the International and part by the Mond Company.

The General Situation, etc.:

An extensive campaign, involving research, engineering skill, salesmanship, field service, and advertising undertaken by the two companies producing nickel at Sudbury, has resulted in a rate of consumption of nickel surpassing that of pre-war days and promising soon to equal and exceed that of the peak years of the war period.

The use of nickel in steel is now, and has for many years, been a long established commercial practice, but its use in cast-iron had apparently been given no consideration until within the past few years. The use of nickel in cast-iron is still in the development stage. Its commercial possibilities cannot even yet be adequately visualized, but suggest a promising future.

There was a further gratifying expansion in the industrial uses of nickel in 1927 over 1926.

A.H.A.R. March 1928.

PLATINUM GROUP OF METALS IN 1927

Production:

The metals of the platinum group produced from Canadian ores in 1927 were valued at \$1,270,843 and consisted of:- platinum, 11,217 ounces valued at \$716,653, and palladium, rhodium, etc., 11,545 ounces valued at \$554,190.

Exports:

The exports in 1927 were: platinum contained in concentrates 771 ounces valued at \$52,660, and platinum, old and scrap, 221 ounces valued at \$15,789. These figures do not include the precious metals contained in the copper-nickel matte exported.

Imports:

The imports in 1927 were valued at \$130,020 and consisted of platinum retorts, crucibles, wire, etc.

Ores Mined and Producing-Localities:

With the exception of a very few ounces of platinum obtained from the black sands of British Columbia, all the Canadian platinum and allied metals are obtained from the treatment of the Sudbury nickel-copper matte. The precious metal residues are allowed to accumulate over irregular periods before being treated, so that recoveries do not bear any definite relation to the quantity of matte treated in any particular year.

The General Situation:

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 over 7,000 ounces were produced for the first eight months in 1927. The production of Columbia is estimated at 60,000 ounces and that of Russia possibly a little higher.

Refined platinum which began the year at \$112 an ounce dropped to \$104 in April and \$72 per ounce after June 1st.

A. B. March 1928.

SILVER IN 1927Production:

The silver produced in Canada in 1927 amounted to 22,683,134 ounces valued at \$12,747,024, as compared with 22,371,924 ounces valued at \$13,894,531 in 1926.

<u>Exports:</u>	<u>Quantity</u>	<u>Value</u>
Silver in ore, concentrates, etc.	5,445,117 ozs.	\$2,894,386
Silver bullion	15,970,961 "	8,995,040
	<u>21,416,078 "</u>	<u>\$11,889,426</u>

Imports:

Unmanufactured silver bullion	.....	\$896,535
Sterling and other silver	.....	344,021
Silver coin	.....	410
		<u>\$1,240,966</u>

Ores Mined and Producing-Localities:

In Ontario, production is practically all obtained from the silver-cobalt-nickel ores of Cobalt, South Lorrain and Gowganda; in British Columbia, from the native silver and argenti-ferous galena of the Premier mine, and from the silver-lead-zinc ores of the Kootenays, and other parts of the province; in Yukon, Mayo is the productive locality, the output being a rich silver-lead ore.

Important Developments and Prospective Producing-Localities:

A declining production in the Cobalt camp is being offset by increased output from the outlying camps in South Lorrain and Gowganda, where maximum production has not yet been reached. In British Columbia increased production of silver has resulted from the expansion of the Consolidated Mining and Smelting Company's operations and from increased activity in the silver-lead-zinc camps of the Kootenays where production has been stimulated by the high prices of lead and zinc.

The General Situation:

The low price of silver during the past two years has had an adverse effect on profits, which has been felt most severely by the operators who must produce at high cost.

V.L.E-W. March 1928.

TITANIUM IN 1927Production:

In 1927, 2,029 tons of ilmenite valued at \$8,980 were shipped from Quebec to Niagara Falls, N. Y., and Lynn, Mass.

Exports:

All the exports were to the United States, as above stated.

Imports:

No imports were separately recorded.

Ores Mined and Producing-Localities:

Ilmenite carrying 18 to 25 per cent of titanium is mined occasionally at Ivry and at St. Urbain in Quebec. It is all exported to the United States, most of it to Niagara Falls, N. Y., for the manufacture of ferro-titanium, but occasional shipments of rutile-bearing ilmenite are made by the General Electric Company from their property at St. Urbain to their works at Lynn, Mass., presumably for use in the manufacture of arc-light electrodes.

Important Developments:

Control of the Ivry ilmenite deposits is now in the hands of the McArthur-Irwin Company, paint makers, of Montreal, who are developing a commercial process for the production of titanium-white pigments in Canada.

In addition to the ilmenite of Ivry and St. Urbain, there are larger known bodies of titaniferous magnetite in both Ontario and Quebec, but these are too low in titanium to be valuable primarily as a source of that element in competition with ilmenite, supplies of which are ample and cheap.

The General Situation:

There is little or no general demand for ilmenite, practically all the larger users controlling their own sources of supply. The only known rutile deposit in Canada is held as a reserve by the General Electric Company of New York, who do not produce for sale.

The use of titanium oxide as a white pigment is rapidly increasing and many tons are now consumed annually in the manufacture of white paints and enamels. Up to the present, however, the commercial production of this material has not been undertaken in Canada.

A.H.A.R. March 1928.

ZINC IN 1927Production:

The production of zinc in Canada in 1927 was 81,803 tons valued at \$10,133,697, an increase of 6,834 tons from the record output of 1926.

Exports:

Zinc ore	25,227 tons valued at	\$ 862,498
Metallic zinc	<u>56,210</u> " " "	<u>6,826,808</u>
		\$7,689,306

Imports:

Spelter	1,355,816 lb. valued at	\$ 89,233
Zinc sheets and plates, blocks, pigs, etc.	5,911,727 " " "	512,389
Other imports of zinc		<u>1,511,068</u>
		\$2,112,690

Ores Mined and Producing-Localities:

Almost all the zinc produced in Canada comes from the Consolidated Mining and Smelting Co.'s plant at Trail, which secures 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, British Columbia. Zinc concentrates are also produced at Notre-Dame-des-Anges in Quebec.

Important Developments, etc.:

The Consolidated Mining and Smelting Company's plant at Trail, B. C., made a further increase in production in 1927; and there was also a large increase in the quantity of zinc concentrates exported from Notre-Dame-des-Anges in Quebec by British Metals Corporation, Ltd.

Developments at the Flin Flon, Sherritt-Gordon, and Mandy deposits 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. There is also a possibility that Quebec's output of zinc will be materially increased at some time in the future by the recovery of zinc from the mixed copper-zinc ores that are believed to exist in large quantities in the Rouyn district.

Exploratory operations were carried on during the year, on the lead-zinc deposits of Gaspé, Quebec, by various parties, but there was no actual production. Exploration of the Stirling deposits in Cape Breton, N. S., also, was pushed ahead vigorously during the year by the British Metals Corporation, Ltd., who succeeded the American Cyanamid Co. in control of the property.

Markets:

The average price of zinc at Montreal for 1927 was 7.71 cents per pound and the demand was good throughout the year. In the United States, over production in 1927 resulted in increased sales at lower prices than in 1926.

A.H.A.R. March 1928.

ARSENIC IN 1927Production:

The production of arsenic, estimated as white arsenic, As_2O_3 , in Canada in 1927 was 3,596 tons valued at \$211,279, as against 2,537 tons valued at \$146,811 in 1926.

Exports:

The exports for 1927 were 1,928 tons valued at \$124,823 as against 1,672 tons, valued at \$108,120 in 1926.

Imports:

White arsenic.....	286,377 lb.	valued at	\$11,833
Arsonic, sulphide of.....	16,245 "	" "	1,593
Soda, arseniate, bi-arseniate and stannate of.....	25,148 "	" "	4,024
	<u>327,770</u>		<u>\$17,450</u>

Ores Mined and Producing-Localities:

All the white arsenic produced in Canada is obtained by treating the arsenical silver-cobalt-nickel ores of northern Ontario in refineries at Deloro, Ont. Arsenical gold concentrates are shipped from Hedley, British Columbia to Tacoma, Wash.

Prospective Producing-Localities, etc.:

Due to the drop in the price of arsenic from 12.05 cents per pound in 1923 to from 3 1/4 to 4 cents in 1927, the activity in the search for arsenic properties in Canada that was so much in evidence in 1923 and the early part of 1924, ceased entirely in 1926. Some of the Nova Scotia gold mines have small stocks of arsenical concentrates on hand for which they report there is at present no market.

The General Situation and Market Conditions:

At the prices that have prevailed for arsenic throughout the year, and from which no immediate relief is in sight, the possibility of producing arsenic profitably except as a by-product would appear to be doubtful; and by-product arsenic contained in gold-bearing concentrates is, as a rule, not paid for by the smelters when white arsenic is selling at less than 4 cents per pound.

A.H.A.R. March 1928.

ASBESTOS IN 1927Production:

The total shipments of asbestos of all grades in 1927 amounted to 275,461 tons, valued at \$10,624,106, compared with 279,403 tons, valued at \$10,099,423 in 1926. The tonnage figures were slightly lower than in 1926 while the value is the highest since 1920.

Exports:

	Tons	\$
Asbestos	133,225	8,697,376
Asbestos sand and waste	130,065	2,037,935
Manufactures of asbestos		66,334
Total		<u>\$10,801,645</u>

Imports:

	Tons	\$
Asbestos packing	114	109,088
Asbestos in any form other than crude		562,794
Total		<u>\$671,882</u>

Products and Producing-Localities:

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

Occurrences of chrysotile are known in northern Ontario, where some development work has been done on deposits in Deloro and Bannockburn townships. The Bowman property in Deloro township shipped 2 tons, valued at \$901 in 1925. The deposit carried an excellent grade of fibre, the quality being fully the equal of the best Quebec asbestos. Active work was carried out on this property during 1926, but the quantity of asbestos secured was not sufficient to justify operations and the mine was closed down at the end of the year.

General Situation:

The demand for Canadian asbestos in 1927 was about the same as in the previous year. Increasing amounts of lower grade asbestos are being marketed, the roofing industry being responsible for much of the demand for this class of material. Asbestos roofing is now competing successfully on a price basis with rag felt roofing.

While tonnage figures show little change over 1926 values have improved materially and the year has been a prosperous one for the industry.

The possibilities of asbestos waste as a soil improver have been under investigation during 1926 and 1927 and the results are reported to be encouraging.

South African asbestos continues to be a strong competitor to the Canadian product, chiefly in the European market but also in the United States. It is estimated that South Africa produced about 51,000 tons in 1927, valued at \$5,085,000.

The merger of a number of the more important operators which went into effect during the latter part of 1925, seems to be working satisfactorily and nine producers are now amalgamated under the name of the Asbestos Corporation, Ltd. It is hoped that this arrangement will prove increasingly advantageous to the Canadian industry, and that it will enable Canadian asbestos to hold its own better against the South African product.

BARYTES IN 1927Production:

The production of barytes in 1927 was 56 tons valued at \$1,268, as compared with 100 tons, valued at \$2,307 in 1926. The value as reported refers to the product after grinding.

Exports:

Not separately classified in trade records, but probably nil.

Imports:

Imports of ground barytes in 1927 totalled 2,841 tons, valued at \$58,504, compared with 2,422 tons, valued at \$48,011 in 1926.

Imports into Canada are as follows:

	<u>1927</u>		
	<u>Tons</u>		<u>\$</u>
From Great Britain	119		2,353
" United States	1,344		30,727
" Germany	1,378		25,424
	<u>2,841</u>		<u>58,504</u>

Products and Producing-Localities:

As in 1926, production was confined to a single deposit at Lake Ainslie, Nova Scotia, worked by a Halifax paint firm to supply its own requirements. There have been no developments in connection with the important barytes deposits of northern Ontario or of the Spillamacheen region, British Columbia. An interest is reported to have been taken by Sudbury Basin Mines in the Cryderman property near Tionaga, northern Ontario, and in the Jarvis island deposits, near Port Arthur.

General Situation, Markets, etc.:

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

Prices have remained fairly steady during the year. The tariff of \$7.50 per ton on ground barytes, 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 barytes, particularly crude, as well as of barium compounds. The duties levied are, however, sufficient to effectually shut out Canadian barytes, both crude and ground, and there seems little immediate hope for any successful development of our known resources of high-grade barytes. 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. About two-thirds of the American production of crude barytes ore is employed in lithopone manufacture.

H. S. S. March 1928.

BITUMINOUS SAND IN 1927Production:

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 paving. 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.

Occurrences:

Bituminous sand -- commonly, though incorrectly, referred to as "tar sand" -- consists chiefly of silica sand cemented together by a soft bitumen. The percentage of associated bitumen varies between 3 and 22 per cent. In the McMurray area, Alberta, the bitumen content of a very large tonnage will average 14 per cent.

The only occurrence of commercial importance in Canada is along the Athabaska river and certain of its tributaries between the 23rd and 26th base lines near McMurray, Alberta.

Prospective Uses:

(a) As a surfacing material for highways, city pavements, sidewalks, railway platforms, pavements in stock yards, etc. It is also well adapted for surfacing floors in railway and machine shops, freight sheds, garages, bridges and viaducts, and similar structures.

(b) As a source of liquid hydrocarbons by distillation.

(c) As a source of high grade solid and semi-solid bitumen, obtained by distillation or mechanical separation. This product is applicable to a wide variety of uses including the manufacture of paints and varnishes, as a binder for briquetting fuel, and as an important ingredient in the preparation of asphalt mastic.

Field Work by Department of Mines:

Reports of Investigation by S. C. Ells, (1913-27).

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).

A report on recent paving operations carried out at Jasper, Alberta, in 1927, is now in press.

Laboratory and Demonstration Work by Department of Mines:

(a) Analyses of representative samples of bituminous sand and of separated bitumen.

(b) Investigation of distillation and separation methods designed for recovery of hydrocarbons.

(c) Construction of demonstration pavements in Edmonton in 1915, and paving on a commercial scale at Jasper, Alberta, in 1926. This latter has involved opening a quarry near McMurray and the installation of loading equipment at the terminus of the A. & G. W. Ry. at Waterways. Heating and mixing equipment for the commercial manipulation of bituminous sand for paving purposes has also been designed, constructed and successfully operated.

(d) Preparation of asphalt mastic.

(e) Development and demonstration of a drilling system suitable for core drilling through bituminous sand.

Possible Markets:

Commercial development of bituminous sands will depend primarily on the extent to which a market becomes available in Canada. In 1927 imports into Canada of asphalts and asphaltic oils for paving purposes, (and value of same), were as follows: Maritime Provinces, 1,036 tons, at \$21,484; Quebec, 22,648 tons, at \$262,455; Ontario, 49,877 tons, at \$525,477; Western Provinces, 12,741 tons, at \$117,795. Total 86,302 tons, at \$927,211.

CHROMITE IN 1927Production:

No production of chromite was reported in 1927, or in the preceeding year. In 1923, 3,558 tons of 48 per cent Cr₂O₃ concentrates, valued at \$52,650 was produced.

Exports:

There were no exports of chromite in 1927.

Imports:

The imports of chrome ore are not separately recorded. During 1927, the following were imported: bichromate of soda 2,060,560 lbs., valued at \$121,209; bichromate of potash 191,798 lbs., valued at \$15,127; Chrome steel 935 lbs., valued at \$74,820; chrome fire brick valued at \$52,565.

Ores and Producing-Localities:

The principal chromite mines are situated in the Coleraine district, Quebec, and are regarded as capable of producing large quantities of ore. 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 nearly doubled since 1914. This increased consumption is due to the development of high-grade alloy steels and to the growing use of chromite refractories.

Over half of the world's supply of chromite is now derived from Rhodesia, which produced about 210,000 tons in 1927. The remainder is obtained chiefly from New Caledonia, Cuba, Greece, Russia and the Transvaal.

H. S. S. March 1928.

CORUNDUM IN 1927Production:

There was no production in 1927. No corundum has been produced since 1921, when shipments amounted to 403 tons of graded grain valued at \$55,965

Exports:

There were no exports of corundum in 1927.

Imports:

Nil.

Producing Localities:

Corundum is found near Craigmont, Ont., and several mines have been operated in the past. The competition from artificial abrasives has been the main cause of the decline in production. Recently, however, natural corundum has been used for the manufacture of the artificial abrasive, oxide of aluminum, the corundum for which is at present obtained from South Africa.

General Situation:

There has been an increase of the imports in the U. S. A. of South African corundum during 1927, which now probably amounts to 5,000 tons. The mineral is used in the manufacture of grinding wheels, artificial abrasives, and for lens and optical glass polishing.

V.L.E-W. March 1928.

DIATOMITE IN 1927Production:

The production of diatomite (also called diatomaceous earth, tripoli, infusorial earth, kieselguhr), in 1927 amounted to 266 tons, valued at ~~\$6650~~. There were no shipments in 1926, though about 50 tons were mined.

Exports:

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

Imports:

Not separately recorded, but amounted to about 2500 tons.

Producing Localities:

Diatomite is mined by the Oxford Tripoli Company, who own several deposits in northwestern Nova Scotia. Their old deposit at Silica Lake was abandoned in 1926 and during the year all their material was obtained from ponds at New Annan, north of Tatamagouche, where a drying and calcining plant was erected. The raw calcined product is shipped to the company's refinery, at Haverstraw, New York, U. S. A.

Prospective Producing-Localities:

Although there are upwards of a hundred occurrences of diatomite in the Maritime provinces, where the material occurs in the bottoms of ancient or existent lakes, there are only a few of sufficient size to be worked commercially. The most important of these are in the Cobequid mountains, and Digby Neck in Nova Scotia and Pollet Lake, southeastern New Brunswick.

The largest deposit in the Dominion at present known, is in the vicinity of Quesnel in central British Columbia, where material of pure grade occurs in beds 40 feet thick that extend over a large area.

During the year two companies were formed to operate deposits in Muskoka, Ont., one at Quesnel, B. C., and one at Digby Neck, N. S., the last named deposit is the largest known in eastern Canada and considerable prospecting work has been done and a concentrator has been started with a view to producing in the spring of 1928.

General Situation:

Diatomite has numerous uses, which 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. Recently it has been successfully employed as an ingredient in the manufacture of concrete for which about 400 tons were used in 1927. Although the annual production in Canada is small, nevertheless there has been a marked increase in activity and there has also been both an increase in demand and in its variety of uses.

Most of the present production comes from the United States which now amounts to about 100,000 tons annually, the price varying from \$10 to \$150 per ton according to grade and use.

FELDSPAR IN 1927Production:

Feldspar production in 1927 totalled 28,677 tons, valued at \$250,954, as compared with 35,951 tons, valued at \$310,238 in 1926.

Exports:

Exports of crude feldspar in 1927 were 28,648 tons, valued at \$225,955, as against 33,016 tons, valued at \$251,551 in 1926. The bulk of the exports were consigned, as in previous years, 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.

Imports:

Imports of ground feldspar in 1927 totalled 3,040 tons, valued at \$50,875, as compared with 2,314 tons, valued at \$43,040 in 1926.

Products and Producing-Localities:

All of the feldspar mined in Canada is of the Potash variety known as orthoclase or microcline. Some soda feldspar, (albite) exists, but there is little demand for this variety and none is mined.

The principal producing localities in 1927 were the Hybla, Perth, Verona, and Sudbury 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 and resulted in a production of 10,000 tons from one quarry alone in that year. Previous to 1921, Ontario furnished practically the entire production. Selected feldspar from Buckingham is in high demand for dental purposes.

General Situation, Markets, etc.:

Production of feldspar in 1927 was less by more than 7,000 tons than in the previous year, and was 16,000 tons lower than the 1924 figure which was the highest, both in tonnage and value, in the history of the industry. Exports decreased 4,000 tons over 1926.

The grinding plant at Toronto owned by Industrial Minerals Corporation was not operated during the year and the mill of the Frontenac Floor & Wall Tile Company, at Kingston, supplied the only domestic production of ground feldspar.

The price level for crude Canadian feldspar in 1927 remained at around \$8 for the best grade, f.o.b. cars.

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 is Canadian. The American market will doubtless continue to be the chief outlet for the Canadian production.

H. S. S. March 1928.

FLUORSPAR IN 1927Production:

Fluorspar production in 1927 and 1926 was nil, compared with 3,886 tons worth \$19,234, (\$4.90 per ton), in 1925.

Exports:

There were no exports of fluorspar in 1926 or 1927.

Imports:

Imports of fluorspar in 1927 amounted to 4,561 tons, valued at \$58,701, a decrease of 5,407 tons in quantity and \$38,781 in value from 1926. In addition, Customs records showed a small importation of hydrofluosilicic acid of 5 tons valued at \$811.

Products and Producing-Localities:

Canadian fluorspar consists of both lump and ground spar. The deposits vary in the type of mineral they carry; in some mines, the fluorspar occurs in a massive crystalline form, and can be cobbled of impurities; in others, the spar is in the form of a loose sand or gravel.

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.

Development of a large vein of fluorspar was undertaken several years ago near Grand Forks, B. C., by the Consolidated Mining and Smelting Company. The ore contained silica, and it was necessary to erect a concentrator to make a marketable product. Due to slackened demand, the mine was not actively operated for several years; it was, however, re-opened in 1925, and accounted for most of the Canadian production during that year.

General Situation, Markets, etc.:

The eastern deposits of fluorspar are relatively small and expensive to work, and operators find it difficult to compete with foreign supplies. Exports to the United States have been discouraged by the 1922 tariff which imposes a duty of \$5 a ton on fluorite. In the U. S. market, also, Canadian fluorite can hardly meet the competition of cheap European and South African mineral.

Gravel fluorspar, not less than 85 per cent CaF_2 and not over 5 per cent SiO_2 was quoted at \$16 per ton, f.o.b. American mines at the end of the year, a decrease of \$2 from the January level.

Increasing imports of cheap, foreign fluorspar are rendering it more and more difficult for American producers to operate profitably, and an increase in the tariff is being sought.

H. S. S. March 1928.

GARNET IN 1927Production:

Garnet was first produced in 1923 when 1,250 tons valued at \$100,000 were shipped. There was no production since.

Exports:

Nil.

Imports:

Not separately recorded but probably about 100 tons.

Ores 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, Ont.

Prospective Producing-Localities:

No more work has been done to mine garnet at Depot Harbour, Parry Sound, Ont. A small amount of development work has been carried out on a garnet deposit of excellent grade at Labelle, 100 miles north of Montreal, where the Labelle Nickel and Garnet Company intend to erect a concentrator and produce in the spring of 1928. The Langlade Garnet Syndicate, at Langlade, Baudin township, Abitibi district, Quebec, also intend to erect a mill and produce in the near future.

General Situation and Market Conditions:

Ninety per cent of the world's production is used for making abrasive papers and cloths. Garnet paper has now largely taken the place of sand and emery papers, particularly in the wood-working industries. These papers are manufactured in Canada to a small extent by the Western Abrasive Company, Victoria, B.C., but the larger output is maintained by Abrasives Ltd., Brantford, Ont., a subsidiary of the American Glue Company. The material received from American and Canadian mines is in the form of a semi-graded concentrate that brings from \$70 to \$85 per ton according to quality. The finer grades have recently been successfully employed in the glass grinding and bevelling industries.

The world's best garnet is at present obtained from mines in New York state the annual production of which is now over 8,000 tons. Owing to present increase in milling capacity there has been a tendency for over production. There is, however, still a fair demand for the highest quality abrasive garnet.

V.L.E-W. March 1928.

GRAPHITE IN 1927Production:

The production of graphite in 1927 totalled 1,848 tons, valued at \$111,713, as compared with 2,727 tons, valued at \$194,860 in 1926.

Exports:

In 1927, 1,699 tons of graphite were exported, valued at \$102,476.

Imports:

Graphite imports, including crucibles, were valued at \$123,137.

Products and Producing-Localities:

Canadian graphite is marketed as refined flake, the product of concentration of disseminated ore. One mine formerly shipped a certain amount of rich crude ore. No lump crystalline graphite, (plumbago) is produced in Canada.

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 1927, the Black Donald mine at Calabogie, Ont., continued to be the only active operator, and worked at capacity all year. In Quebec, the only operator was the Canadian Graphite Corporation, at Guenette.

General Situation, Markets, etc.:

The graphite market, which had been in a very depressed condition since 1918, strengthened considerably in 1925, due to the depletion of accumulated stocks of both graphite and crucibles. Madagascar production had fallen off considerably during 1923 and 1924, owing to the market being over-supplied, and as a result, consumers, in 1925, found themselves faced with a shortage of flake. This led to higher prices all round, which, in turn, aroused a degree of fresh interest in Canadian graphite deposits. However, prices are likely to be controlled very largely by Madagascar, which possesses great resources of cheaply-won flake graphite of excellent crucible grade; this graphite can be laid down in New York, and in Europe, at prices probably lower than the cost of extraction of American graphite. Any material increase in price of flake graphite, owing to depletion of stocks, will probably lead to increased production by Madagascar operators.

There was little change in the general graphite situation in 1927, as compared with the previous year, though prices weakened slightly.

No. 1 flake was quoted at around 8 cents per pound ex dock New York, at the close of the year.

All graphite crucibles used in Canada are imported from Great Britain or the United States. The crucible plant erected at St. Johns, Que., during the war was dismantled some years ago.

Due to the increasing use of electric furnaces for the melting of metals, the demand for graphite crucibles has fallen off very markedly, and a number of American crucible makers have gone out of business or have turned to the making of refractories. Whereas ten years ago, about 75 per cent of the world's production of graphite was estimated to go into crucibles, it is now believed that less than 25 per cent is so employed.

H. S. S. March 1928.

GRINDSTONE AND PULPSTONES IN 1927Production:

The production in 1927 of grindstones, pulpstones, and scythstones was 2,251 tons, valued at \$125,017, as against 2,695 tons, valued at \$151,227 in 1926.

Exports:

The exports in 1927 amounted to \$50,866, as against \$75,374 in 1926.

Imports:

The imports, (mostly pulpstones), in 1927 amounted to \$911,708 as against \$828,250 in 1926.

Producing-Localities:

During 1927 five companies, all in the Maritime provinces, produced grindstone and pulpstones. The largest producer of grindstones is the Read Stone Company, with quarries situated at Stonehaven, in northern New Brunswick. The Mic Mac Company, whose quarry is at Woodburn, east of New Glasgow, N. S., is the second largest producer of grindstones. A few stones have been made by J. Sutherland from Quarry island, one mile north of the Mic Mac Company. Pulpstones are mainly produced from the Miramichi Quarry Company's quarry at Quarryville, near Newcastle, N. B. The J. A. McDonald Company, Vancouver, are also producing pulpstones from a sandstone deposit on Newcastle, island off the east coast of Vancouver island.

Prospective Producing-Areas:

There are in the Maritime provinces at least 60 or 70 quarries from which stones have been furnished, many of which are now idle because of present market conditions.

General Situation and Markets:

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

There is a demand for good pulpstones and over half a million dollars worth are used annually in the 60 Canadian pulp mills. The 1926 Canadian pulpstone production is the highest on record, but only about 10 per cent of the stones used in Canadian mills are produced in Canada.

GYPSUM IN 1927Production:

There were 1,039,562 tons, valued at \$3,214,356 produced in Canada in 1927, as compared with 883,728 tons, valued at \$2,770,813 in 1926.

Exports:

Exports of gypsum and gypsum products in 1927 were 595,364 tons, valued at \$1,072,907, as against 678,126 tons valued at \$1,206,908 in 1926.

Imports:

The imports of gypsum and plaster of Paris for 1927 were 8,219 tons, valued at \$147,560, as against 6,298 tons, valued at \$119,141 in 1926.

Ores Mined and Producing-Localities:

The materials produced in this industry 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 New Brunswick, Ontario, Manitoba and British Columbia.

Important Developments and Prospective Producing-Ores or Districts:

The continued operation of the British Columbia deposits by the British Columbia Gypsum Company at Falkland and the Canada Cement Company at Mayook seem to have established the gypsum industry in that province on a firm basis.

In Nova Scotia extensive work was carried out on the gypsum areas near Antigonish and in this province as well as in New Brunswick there are additional deposits of gypsum which could be readily operated should the demand warrant their exploitation. There are also large deposits on the Magdalen islands.

Extensive deposits are known on the Abitibi river in northern Ontario, and, (if the Timiskaming and Northern Ontario railway is completed to James Bay), these deposits may become producers. The deposits in Alberta, although situated at a distance from markets and railway transportation, are of good grade.

The General Situation in Respect to the Industries and Market Conditions:

The market for gypsum in 1927 showed a decided improvement over 1926, and there is an increasing interest being taken in this industry throughout the whole Dominion. With the revival in the building trade, the gypsum industry during 1928 should show a corresponding increase, especially if additional grinding and calcining mills are opened in Canada and more attention is paid to the preparation of plaster board, building blocks and other such finished products.

L. H. C. March 1928.

IRON OXIDE MINERAL PIGMENTS IN 1927Production:

The production of iron oxide was 6,116 tons, valued at \$103,368 in 1927 as against 6,626 tons, valued \$101,843 in 1926.

Exports:

Iron oxides, ochres, etc., 851.6 tons, valued at \$34,800.

Imports:

Ochrey earths, oxides, etc., 6,010 tons, valued at \$723,084.

Products and Producing-Localities:

Material produced under this heading includes: ochreous iron oxide sold uncalcined for the manufacture of paint and for the purification of illuminating gas; ochreous iron oxide, calcined, called metallic oxide; umber, uncalcined and calcined; and sienna, calcined and uncalcined.

The major part of the production is from the vicinity of Three Rivers, Quebec. Production has also been reported in recent years from Lynch township, Labelle county; Ste. Anne de Beaupre; and Iberville township, Saguenay county, all in the province of Quebec. Some production has been reported from British Columbia since 1923.

General Situation:

The demand within the country for these products is good and with further development the export trade might be increased.

LITHIUM MINERALS IN ~~XXXX~~ 1927Production:

Six tons were produced in 1925, the ore mined consisting of spodumene and lepidolite. In 1926, an amount estimated at about 100 tons each of these minerals were produced, though no figures of shipments were furnished by the operators. According to unofficial records, a carload of lepidolite and the same quantity of spodumene was shipped in 1927 to an American glass firm.

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.

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 montebrazite, (a variety of amblygonite).

Prospective Producing-Districts:

While the district above mentioned is still in the prospect stage, it is worthy to note that this is the first property in Canada from which an actual shipment has been made.

Outside of occurrences of mineralogical interest only, there is only one other deposit in Canada in which lithium minerals are known to occur. This is the Leduc mine situated in Wakefield township, Quebec. This property has been worked in the past for tourmaline and carries lepidolite crystals up to 2 feet in diameter.

General Situation in Respect to the Lithium Industry and Market:

There is no present market in Canada for lithium ores, so that unless an extraction plant for the recovery of lithia salts is erected, the ores 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, despite the known large deposits of lithium ores in the United States.

H. S. S. March 1928.

MAGNESITE IN 1927Production:

Production of calcined and dead-burned magnesite in 1927 was 7,337 tons, valued at \$230,309.

Exports:

Magnesite, calcined, and
dead-burned.....1,953 tons, valued at \$48,487.

Imports:

Magnesite.....	166 tons,	"	"	5,805
Magnesia.....	293,333 lbs.	"	"	19,151
Magnesia pipe covering.....		"	"	157,982
Magnesite firebricks.....		"	"	118,457

Products and Producing-Localities:

Magnesite is sold by producers in three forms:- crude, 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.

Prospective Producing-Localities:

The only known magnesite deposits of 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:

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 imposing of duty by the American Government, the demand for the Canadian product fell. The present small production is confined largely to caustic calcined magnesia and dead-burned magnesite.

H. F. March 1928.

MICA IN 1927Production:

Mica shipments in 1927 totalled 3,365 tons, valued at \$182,421, compared with 2,545 tons valued at \$229,205 in 1926. Production showed an increase in every class, except splittings as indicated below:

	<u>1926</u>	:	<u>1927</u>	
Rough cobbled	109,880 lbs.	\$11,724:	173,925 lbs.	\$16,123
Thumb trimmed	322,639 "	64,958:	454,729 "	71,612
Splittings	180,603 "	120,503:	81,919 "	54,048
Scrap	4,476,405 "	32,020:	6,040,238 "	40,638

Exports:

Exports of mica, including trimmed sheet, mica plate, splittings and scrap, were valued at \$326,846, as against \$499,242 in 1926.

Imports:

Mica imports were valued at \$97,000.

Note: The important discrepancy between production and export figures is due to the fact that the former do not cover the business done by mica dealers, who make large quantities of splittings, and also scrap mica, from the cobbled and trimmed products. Indian mica, also, is imported by dealers and re-exported, largely in the form of splittings.

Products and Producing-Localities:

Practically all of the mica produced in Canada is of the amber variety (phlogopite). Mica is marketed in the rough-cobbled 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, both in 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 probably the largest mica mine in the world. As in 1926, only a very small number of the existing mines were operated, production being confined to some half dozen of the larger properties.

General Situation, Markets, etc.:

The market for Canadian mica was, on the whole, dull throughout a large part of the year. Sheet mica, especially the larger sizes, continued 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 some 780 tons, and \$8,600 in value.

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

1 x 1 inches	20 cents per pound
1 x 2 "	30 " " "
1 x 3 "	40 " " "
2 x 4 "	80 " " "
2 x 3 "	50 " " "
3 x 5 "	\$1.50 " "

SALT IN 1927production:

The salt marketed in 1927 was 268,672 tons, valued at \$1,623,557, compared with 262,547 tons, valued at \$1,480,149 in 1926. These values as far as possible exclude the value of packages.

Exports:

Exports of salt in 1927 were recorded as 1,212 tons, valued at \$22,793, as against 1,164 tons, valued at \$19,423, in 1926.

Imports:

The imports of salt for 1927 were 176,761 tons, valued at \$1,082,080, as against 188,401 tons, valued at \$1,036,594, in 1926.

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 1927, 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. A small quantity was also shipped from stock from the McMurray field in Alberta.

Important Developments and Prospective Producing-Districts:

At McMurray, Alberta, the Alberta government has drilled wells which encountered salt beds at depths between 600 and 650 feet, and it has been proposed to sink a shaft and recover the salt by mining. In the vicinity of McMurray an evaporation plant was erected a few years ago to treat the brine from a local well; the salt produced at this plant found a ready market in western Canada. This plant was idle during 1927.

At a lake near Senlac, Saskatchewan, salt brine was discovered a few years ago and a small production made in 1919. The property has since been idle.

At Neepawa, Manitoba, a well encountered salt brine 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.

In a well drilled for oil near Goutreau, New Brunswick, to the south of Moncton, extensive beds of rock salt were encountered between the depths of 1,300 and 1,800 feet. So far these extensive beds have remained unexploited.

In Nova Scotia, the Malagash mine has been connected with its own shipping docks and with the main line of the Canadian National railway by a spur line. The improved shipping facilities have greatly stimulated production during the past year as evidence by nearly 100 per cent increase.

The successful operation of the Malagash deposit in Nova Scotia has greatly stimulated the search for salt in the Maritime Provinces and further prospecting is contemplated.

General Situation and Market Conditions:

The Canadian 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 the present time a large tonnage is imported free of duty 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 which use sodium chloride as a basic material 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 products used in this country are imported.

SILICA IN 1927Production:

The production of quartz in 1927 amounted to 204,429 tons, valued at \$385,400 and included 24,223 tons of silica sand valued at \$60,856 and 324,544 tons of quartz, used for metallurgical purposes, valued at \$324,544.

Exports:

None recorded.

Imports:

The imports in 1927 amounted to 3,188 tons of silex or crystallized quartz, ground or unground, valued at \$75,230.

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 are coarsely crushed and used in the manufacture of ferro-silicon in sizes from 2 to 6 inches. For silica brick it is crushed to about 8 mesh.

Silica sand is generally 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 require 150 mesh or finer while the paint trade require water-floated material 250 mesh or finer.

Quartzite and sand are being produced in Nova Scotia, Quebec, and Ontario. British Columbia produced small quantities of quartzite for fluxing purposes.

Important Developments and Prospective Producing-Localities:

A mill for the preparation of silica sand was erected at East Templeton, Quebec, in 1926, with a capacity of 200 tons of washed and dried sand per day, and plans are under way at one of the older plants for fine grinding of silica for the production of silex. 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.

The General Situation in Respect to the Industry and Market Conditions:

In the use of silica for a flux, the smelter endeavours 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. The market for silica sand and silex is steadily increasing each year.

NATURAL SODIUM SULPHATE IN 1927

(Glauber's Salt and Salt Cake)

Production:

There were 5,659 tons, valued at \$11,319 produced in Canada in 1927, as against 6,775 tons, valued at \$13,550 in 1926.

Exports:

There were no exports in 1927 recorded in the report of the Trade of Canada.

Imports:

There were 288 tons of Glauber's salt valued at \$5,276 and 42,333 tons of salt cake valued at \$686,458, imported in 1927. There were also 13,143 tons of bisulphate of soda or nitre cake valued at \$50,698 imported in 1927.

Ores Mined and Producing-Localities:

The material produced in this industry 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 numerous lakes throughout Western Canada.

The production was all from the province of Saskatchewan, the main shipper being the Bishopric & Lent Co., Dunkirk, Sask.

Important Developments and Prospective Producing-Districts:

The investigation of the deposits in Western Canada by the Mines Branch, Department of Mines, has proved up tonnage of hydrous sodium and magnesium sulphate in excess of 100,000,000 tons. There are many other deposits in the Prairie Provinces, which could produce sodium sulphate, but while the markets are limited and the price low, only those close to railroads can be considered as producers at present.

The General Situation in Respect to the Industries and Market Conditions:

The production of sodium sulphate from the natural deposits of Western Canada is still in its infancy. There is a fairly steady market of around 40,000 tons for salt cake in the pulp and paper industry, but the largest consuming centres are in Eastern Canada and the present freight rates from the deposits to the market are an important factor. Very little of the crude material can be marketed as such, and this necessitates the installation of refining plants. The product has to compete with that made from nitre cake as well as with that produced as a by-product from hydrochloric acid manufacture, but there are hopes that simple refining methods and lower freight rates will help this industry. The increasing production of hydrochloric acid synthetically which means that less by-product salt cake will be produced, should in time materially benefit the development of the natural deposits.

L. H. C. March 1928.

TALC AND SOAPSTONE IN 1927Production:

The production of ground talc in 1927 amounted to 15,105 tons valued at \$178,575, compared with 14,772 tons, valued at \$174,586 in 1926. The output of block soapstone was 1,411 tons, valued at \$57,174, an increase of 416 tons over the 1926 production.

Exports:

Exports of ground talc in 1927 totalled 10,692 tons, valued at \$125,123, compared with 10,823 tons, valued at \$125,633 in 1926. In 1927 there was also an export of 12 tons of crude talc, valued at \$154.

Imports:

Imports of talc and soapstone were not recorded before April 1, 1924. The imports for 1927 were 4,907 tons, valued at \$86,858, compared with 4,213 tons valued at \$89,026 in 1926. These figures relate to ground talc and block soapstone.

Products and Producing-Localities:

Most of the talc produced undergoes grinding 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 Elderado, 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, 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 has made some shipments to coast points. Deposits of massive talc (steatite) occur near Vermilion Summit, on the Alberta-British Columbia divide; a Toronto syndicate reported plans in 1927 for mining this material for lava purposes.

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; and important developments are also reported from Vermilion bay, Lake of the Woods region, Ont., where a large plant has been installed for the production of cut soapstone. The Company formed in 1922 to develop a soapstone deposit at Wabigoon, Lake of the Woods region, Ontario, has not yet commenced operations.

General Situation, Markets, etc.:

There was little change in the general tone of the talc industry during 1927.

It is encouraging 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 source. 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.

VOLCANIC DUST IN 1927Production:

The production of volcanic dust in 1927 was 105 tons, valued at \$735, as against 90 tons, valued at \$630 in 1926.

Exports:

Not separately recorded.

Imports:

Included under pumice, pumice stone, lava, and calcareous tufa, valued at \$35,211 as against \$32,005 in 1926.

Producing-Localities:

Volcanic dust beds 30 feet thick have been worked by the Van Kel Cleansers, Ltd., and by the Old Sol Manufacturing Co., from deposits near Waldeck, 11 miles northeast of Swift Current, Sask.

Prospective Producing-Localities:

Extensive and pure deposits occur on the Deadman river, 30 miles north of Ashcroft, British Columbia; also on the east shore of the Arrow lakes, 25 miles south of Nakusp, B.C. Several other deposits have recently been discovered in the vicinity of the Saskatchewan producers, and increased development may be expected.

General Situation, etc.:

Volcanic dust is used for purposes similar to ground pumice, particularly in the manufacture of cleansers and scouring powders, and in some instances as a substitute for fuller's earth in the refining of hard oils and fats. Although the domestic market is not large, nevertheless, only about 2 per cent constitutes the home product. Foreign markets are supplied mainly from material from Italy and the United States.

V.L.E-W. March 1928.

CEMENT IN 1927Production:

The production of cement in Canada in 1927 was 10,065,865 barrels, valued at \$14,391,897, as against 8,707,021 barrels valued at \$13,013,283 in 1926 and 8,116,597 barrels valued at \$14,046,704 in 1925.

Exports:

249,694 barrels valued at \$308,144 as against 285,932 barrels valued at \$358,231, and 997,915 barrels valued at \$1,498,495 in 1925.

Imports:

Portland and hydraulic or water line 19,354 barrels valued at \$87,541 as against 21,114 barrels valued at \$77,866 in 1926. Cement n.o.p. and manufacture of, valued at \$17,879 as against \$18,813 in 1926.

Products and Producing-Localities:

The chief product is Portland cement, for the production of which there are 18 plants having an aggregate rated capacity of about 50,000 barrels per day; five of these are not operating. There is also one plant in Nova Scotia capable of making cement from blast furnace slag, and one in Manitoba making puzzolan, or natural rock cement.

General Situation, etc.:

The production in 1926 was about 67 per cent of the total capacity of the milling plants, being the highest ever reported, the next highest production having been obtained in 1926 and amounted to 60 per cent of the total capacity. The exports in 1926 constituted the maximum for the industry in Canada in 1927. The average selling price per barrel, f.o.b. plant was as follows: Quebec \$1.16; Ontario \$1.37; Manitoba \$2.49; Alberta \$2.17; British Columbia \$1.97.

A. B. March 1928.

KAOLIN (CHINA CLAY) AND BALL CLAY, 1927.

Production:

There has been no production of china clay since 1923, though a shipment of 24 tons was made to the Mines Branch for testing purposes in 1927.

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

Exports:

There was no china clay exported in 1927. The export of ball clay was somewhat under 200 tons in 1926.

Imports:

China clay, ground or unground:- 420,822 cwt., valued at \$235,824. No figures for the import of ball clay are available.

Products and Producing Locality:

The only place that 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.

Prospective 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. Sur. Summary Report, 1926, Part C, p. 16; also article by W. S. Dyer in Can. Min. and Met. Bulletin, April, 1928).

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.

Markets:

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.

H. F. March 1928.

LIME IN 1927Production:

In 1927 the production of lime in Canada surpassed that of any former year. The figures are as follows:

Quicklime	364,124 tons valued at	\$3,082,797
Hydrated lime	71,484 " " "	844,287
		<u>\$3,927,084</u>

In 1926 the production was:

Quicklime	348,086 tons valued at	\$3,018,853
Hydrated lime	65,814 " " "	762,631
		<u>\$3,781,484</u>

Exports:

In 1927:	Lime 21,069 tons valued at	\$367,939
In 1926:	Lime 18,712 " " "	\$344,616

Imports:

In 1927:	Lime 5,784 tons valued at	\$70,075
In 1926:	Lime 3,868 " " "	\$42,855

Products 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 from the limestones of Nova Scotia, New Brunswick, Ontario and Manitoba, but in Quebec, Alberta, and British Columbia high-calcium limes only are produced at present.

The lime is marketed in the form of quicklime and as hydrated lime. The tendency is toward the greater production of hydrated lime particularly for use in the building trades.

Of the total production, Ontario accounted for about 55.5 per cent of the quicklime and 62.5 per cent of the hydrated lime, and Quebec followed with 26.9 per cent of the quicklime and 14.8 per cent of the hydrated lime.

General Situation, Markets, etc.:

In 1927 the production of lime increased over that of 1926 in the provinces of Ontario, Quebec, Alberta and British Columbia, the greatest proportionate increase was in Ontario and Alberta. Unit prices declined slightly over those of 1926 being \$8.46 per ton for quicklime and \$11.81 per ton for hydrated lime.

The industry is now practically in the hands of the large producers and each year fewer of the small pot kilns, which formerly dotted the countryside in the limestone areas are operated. There has been a marked improvement in the methods and machinery used in the lime industry during recent years and costs have been lowered. This improvement in technology will undoubtedly be more marked in the near future for the lime industry might now be termed a key industry among the manufacturing industries of the world and more and more attention is being devoted to its improvement each year.

The market for lime is almost entirely domestic; the principal consumers are the building trades, and the pulp and chemical industries. The outlook for a still greater production of lime during 1928 is favourable.

LIMESTONE IN 1927Production:

In 1927 the production of limestone in Canada for all purposes exclusive of that used for the manufacture of cement and lime was 6,316,476 tons valued at \$6,688,092 as against 5,352,144 tons valued at \$6,373,230 in 1926. The 1927 production is the highest on record.

Exports:

No separate record kept.

Imports:

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 and it is not worked. Ontario is the principal producer and in 1927 accounted for 63 per cent of the total production. Quebec came next with 32 per cent, followed by Manitoba, British Columbia, Nova Scotia, New Brunswick, and Alberta in order of production.

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.

General Situation, Markets, 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 minerals in value of production. 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.

There are three principal markets for limestone: 1. Building and Road construction; 2. Chemical and Metallurgical industries; 3. Agriculture. Notwithstanding the fact that the 1927 production is a record one the outlook for increased sales in each of these markets is promising, particularly so in the agricultural market for the value of ground limestone for soil conditioning purposes is being more widely recognized and increased use will follow.

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

M. F. G. March 1928.

COAL IN 1927Production:

The production of coal in Canada in 1927 was 17,411,505 tons, valued at \$61,809,672 consisting of:

Bituminous.....	12,996,564 tons,	valued at \$49,333,859
Sub-bituminous...	594,497 "	" " 1,778,109
Lignite.....	3,820,444 "	" " 10,697,704

In 1927 Alberta produced 6,929,366 tons, bituminous, sub-bituminous, and lignite; Nova Scotia's output of 7,071,091 tons is all bituminous; British Columbia produced 2,737,009 tons all bituminous; Saskatchewan 469,908 tons of lignite; New Brunswick 203,717 tons of bituminous; and Yukon 414 tons of bituminous.

Exports:

The exports in 1927 were 1,113,300 tons as against 1,028,200 tons in 1926.

Imports:

The imports of coal entered for consumption in 1927 amounted to 18,687,354 tons and consisted of 17,769,963 tons from the United States, 907,220 tons from Great Britain and 10,171 tons from other countries.

Prospective Producing-Localities:

There are a number of large undeveloped coal fields in Alberta, British Columbia, and Yukon. Since, however, it is as yet impossible to find a market for all the output the present developed fields are capable of producing, there is no reason to expect that attempts will be made to develop new fields for some time to come.

The General Situation:

As Canada's coal fields are all situated either in the extreme east or west, the most thickly populated provinces, Ontario and Quebec, are largely dependent on foreign supplies, hence the large imports. Formerly, these imports were practically all from the United States, but there is now also a considerable amount of Welsh and Scotch coal imported, although during 1926 these imports were considerably reduced owing to the strike in these coal areas. However, these imports have considerably increased in 1927. Attempts are also being made to substitute locally manufactured by-product coke for American anthracite, with considerable success. Attempts to bring Alberta coal to Ontario for domestic use have so far not succeeded, on account of the long rail haul involved, but negotiations are still under way.

A. B. March 1928.

OIL SHALE IN 1927Prospective Use:

As a source of crude petroleum and of ammonium sulphate. It is considered by many that the maximum production of well petroleum from North American fields has been reached, and that subject to periods of temporary over production, a gradual decline may be anticipated.

Occurrences:

Nova Scotia. The principal recognized occurrences of oil shale (and certain sub-varieties), are found in Pictou and Antigonish counties. Of these, the deposits in Pictou county are the most promising. During the past two years, Oil and Nitrates Products, Ltd., (H. E. 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 Rossvale, 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 1928) 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 and Fertilizer Co., Ltd., Albert Mines N. B., Louis Simpson, Mgr.

Quebec. Apart from the deposits of Gaspé Peninsula, which apparently do not warrant further exploration, no other occurrences are known in the province of Quebec.

Ontario. Low grade oil shales occur in southern Ontario, and also outcrop along the Abitibi and Mattagami rivers. None of these are of present commercial value.

Manitoba and Saskatchewan. Shales examined are of no present economic value.

Alberta. No oil shales of commercial value have yet been recognized.

British Columbia. No deposits of oil shale of commercial value have yet been recognized. MacKenzie suggests that oil shale bands on Graham Island may prove to be of commercial value.

Provisional District of MacKenzie. Reported occurrences of oil shale are too remote from transportation to be of present commercial value.

Statistical Data:

There is no commercial production in Canada as yet.

Laboratory Work by Department of Mines:

(1) Determination of petroleum content of representative samples of oil shales from various localities.

(2) Determination of important factors affecting the recovery of crude petroleum by destructive distillation, and the character of petroleum recovered.

(3) Prospective large scale work. Provision is being made for retorting large representative samples of oil shales. The commercial value of various fractions derived from crude distillates obtained in this manner, will also be subsequently determined.

(4) Investigation of processes designed for the distillation of oil shales. Such an investigation includes processes which have been demonstrated on a commercial scale, processes which give promise of ultimate commercial application, and processes which have but little promise of proving commercially successfully.

(5) Comparison of ordinary and pressure-cracking refining of the crude shale oil.

S. C. E. March 1928.

PEAT IN 1927Production:

None.

Exports:

None.

Imports:

None recorded.

Prospective Producing-Localities:

There are a large number of peat bogs scattered over central and eastern Canada containing material suitable for the manufacture of fuel. Many of these are favourably situated with respect to possible markets.

Market Conditions, etc.:

On account of the high price and an anticipated diminution in the supply of U.S. anthracite available to Canadian consumers, there should be a good demand for machine-made peat for household use.

Field work by the Department of Mines:

The reports of investigations are contained in the Summary reports of the Mines Branch.

The most recent special reports on peat are publication Number 641, - "The Manufacture and Uses of Peat", and publication Number 614, - "Facts about Peat".

Construction and development of peat manufacturing plant by the Department of Mines at Alfred, Ontario.

In March, 1927, the Department of Mines acquired a bog comprising about 400 acres, situated on the C.P.R. Montreal-Ottawa division, on the south side of the right of way, and about 2 miles from the village of Alfred and an equal distance from Alfred station. During the summer and fall a new plant was constructed and erected; also, the necessary office and other buildings were erected and equipped. A siding was completed late in the summer for the purpose of delivering and taking away cars loaded with peat. The capacity of the plant is 20,000 tons of saleable air-dried machine peat per working season, viz. 100 days, working two shifts, night and day, making a total working season of 2,000 hours. No peat fuel was manufactured except that in the course of trying out certain parts of the plant. Manufacturing operations will be begun towards the end of April, 1928.

Other Plants:

It is reported that a plant is in the course of erection on the St. Hyacinthe bog at St. Hyacinthe, Quebec, which will operate according to the hydro-peat process. The capacity of this plant, it is estimated, will be about 15,000 tons.

B. F. H. March 1928.

PETROLEUM IN 1927Production:

The production of crude petroleum in Canada in 1927 amounted to 479,503 barrels valued at \$1,520,145, as against 364,444 barrels valued at \$1,311,665 in 1926, 332,001 barrels valued at \$1,250,705 in 1925 and 160,830 barrels valued at \$407,128 in 1924.

The production by provinces in 1927 was as follows:

New Brunswick...	18,748 bbls.	valued at \$	41,748
Ontario.....	140,105 "	" "	289,390
Alberta.....	321,154 "	" "	1,189,007

Exports:

	Value
Crude and refined oil, kerosene, gasoline, etc..	23,274,722 gals...\$1,627,689
Wax.....	3,609 cwt.... 21,327

Imports:

Petroleum and its products to the value of \$52,878,717 as against \$52,063,686 in 1926 and \$43,842,427 in 1925.

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.

The western Ontario fields showed an increase over the production of 1926 but was still below the production of 153,766 barrels in 1924. Up to 1924 this was the only producing locality in Canada of any importance, but, with the bringing in of the Royalite No. 4 well in the Turner Valley field, in the fall of 1924, Alberta took first place with a production of 183,491 bbls. in 1925, 217,088 bbls. in 1926 and 321,154 bbls. in 1927. The Royalite No. 4 well yielded on an average of 455 bbls. of light oil (naphtha) per day in 1925, over 600 bbls. per day in 1926 and 1927, and is therefore, producing more naphtha than the total oil production of the two thousand odd producing wells in Canada.

At the end of 1927 there were 12 completed wells in Turner Valley with a combined production of about 900 bbls. of 70-73° Bc. naphtha, 200 bbls. crude oil and 47,000,000 cu. ft. of gas. In addition about 20 wells were drilling in the field. Results to date indicate that Turner Valley is to 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 possibly be considered commercially productive wells.

In New Brunswick several wells have been drilled in various areas and while the production is still relatively small it has shown an increase of 88 per cent over that of 1926.

Prospective Producing-Localities:

Apart from the intensive drilling which has been going on these last 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.

The 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.

NATURAL GAS IN 1927Production:

The production of natural gas in 1927 amounted to 20,529,873 thousand cubic feet valued at \$7,741,661 as against 19,208,209 thousand cubic feet of natural gas valued at \$7,557,174 in 1926, and 16,902,897 thousand cubic feet valued at \$6,833,005 in 1925.

The production by provinces was as follows:

Alberta.....	12,933,801 M cu. ft.
Ontario.....	6,965,117 M cu. ft.
New Brunswick.....	630,755 M cu. ft.
Manitoba.....	200 M cu. ft.

Exports:

None

Imports:

No natural gas has been imported, though supply at Niagara Falls, Ont. has been increased by the importation of 104,001 M cu. ft. of manufactured gas valued at \$65,759, as against 119,310 M cu. ft. valued at \$74,942 in 1926.

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 Middleton townships, 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.

Prospective Localities:

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 area of southern Alberta, where the Rogers-Imperial well with a flow of some 50 M cubic feet has been successfully capped for future use.

The General Situation with respect to the Industries and Market Conditions:

All the gas companies operating in Alberta which supply practically all the larger towns and villages, have ample reserves of gas, and the scarcity that threatened Calgary a few years ago is now a thing of the past.

Although there was a small decline in the production in Ontario the supply of gas was sufficient to meet the demand. There was a small increase in gas rates in many of the localities supplied and the conservation brought about by more careful use of gas, and by closer attention to up-keep and cleaning out of wells accounts for the more satisfactory condition.

A. B. March 1928.

