

CANADA
DEPARTMENT OF MINES
MINES BRANCH

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PRODUCTION
OF
NATURAL GAS AND PETROLEUM
IN
CANADA

During the Calendar Years

1907 AND 1908



OTTAWA
GOVERNMENT PRINTING BUREAU
1909

ADVANCE CHAPTER OF THE ANNUAL REPORT ON THE MINERAL PRODUCTION
OF CANADA DURING THE CALENDAR YEARS 1907 AND 1908.

NATURAL GAS.

In 1907, natural gas was produced in the Provinces of Ontario, Alberta and Quebec: production in the respective provinces ranking in the order named.

In 1908, no production was reported from the Province of Quebec, hence Ontario and Alberta are responsible for the total output of that year.

The production of natural gas is greatly on the increase. After a period of depression—1901 and 1902—when the old Essex field along the border of Lake Erie became exhausted, the industry began to revive; owing to the discovery of new pools in Haldimand, Kent, and Essex counties. Since then, each year has shown a substantial increase over the preceding one.

NATURAL GAS.—TABLE 1.
Annual Production since 1892.

| Calendar Year. | Value. | Calendar Year. | Value. |
|----------------|------------|----------------|------------|
| 1892 | \$ 150,000 | 1901 | \$ 339,476 |
| 1893 | 376,233 | 1902 | 195,992 |
| 1894 | 313,754 | 1903 | 202,210 |
| 1895 | 423,032 | 1904 | 328,376 |
| 1896 | 276,301 | 1905 | 379,561 |
| 1897 | 325,873 | 1906 | 583,523 |
| 1898 | 322,123 | 1907 | 815,032 |
| 1899 | 387,271 | 1908 | 1,012,660 |
| 1900 | 417,094 | | |

In 1907, the production of natural gas reached a total value of \$815,032; an increase of \$231,509, or 39.7 per cent, as compared with 1906. To this total the two main fields of Ontario, namely, the Welland and Haldimand fields, contributed about equal shares of 42 per cent each. About 10 per cent can be attributed to the fields in Kent, and Essex counties. Alberta and Quebec are responsible for 4½ per cent, and 1½ per cent respectively.

The development of the Haldimand field, which began producing only four years ago, and the new pools struck in Essex and Kent counties, were the most important factors in the increased production.

In 1908 there was a continuance of activity in the natural gas industry, and returns received show a total production valued at \$1,012,660. This is by far the largest figure ever recorded, and shows an increase of \$197,628, or 24.2 per cent, as compared with 1907; of \$429,137, or 73.5 per cent as compared with 1906; and of \$633,099, or 167 per cent as compared with 1905. Of the total for 1908, the Welland field contributed about 31 per cent; the Haldimand field, 51 per cent; the Essex and Kent fields, 11 per cent, and the Province of Alberta about 7 per cent.

The increase in the production is attributable to the expansion of the Haldimand field, as well as to increased production from all the other fields; with the exception of the Three Rivers field in the Province of Quebec, which became exhausted towards the end of 1907.

In connexion with this last field it may be interesting to quote the following extract from the annual report of the Superintendent of Mines of the Province of Quebec for 1907:—

‘In July, 1907, the gas wells operated by the Canadian Gas and Oil Co., whose office is now in Three Rivers, were visited.

‘The Company sank a certain number of wells in the vicinity of Louiseville, Yamachiche and St. Barnabé, 13 of which struck gas in merchantable quantities. These wells begin with a diameter of 6 inch casing and generally strike gas at a depth of from 225 to 300 feet, that is in the neighbourhood of solid rock which seems, in that region, to be the Hudson River limestone that outcrops opposite Three Rivers on the other side of the River St. Lawrence. They pass through clay, fine sand and gravel of variable thicknesses before striking the solid rock and gas. The Company has a boring plant and the work is done very rapidly. It has also sunk some testing wells: among others, one on the Yamachiche river, north of St. Barnabé, some twelve miles from the St. Lawrence. At the time of my visit it was 500 feet deep; it began directly on the Trenton limestone, 50 feet of which were pierced, then it met 200 feet of sandstone which seems to me to belong to the Potsdam formation; the remainder is Laurentian gneiss which is found at the northern end of the Trenton basin. This work was abandoned and another testing well begun farther south.

‘The producing wells are cased and connected with the distributing line. I examined several of these wells and found the pressure good.

‘The Company has laid down lines of pipes which supply gas to St. Barnabé, Yamachiche, and Louiseville, and in the summer of 1907 it completed a line of 8-inch pipe thirteen miles long for supplying gas in Three Rivers. It bought out the old gas company of that city and laid 6 inch pipes in the streets, which enables it to supply gas for heating and lighting at very low prices, which I mentioned in my previous report. The pressure in the city is reduced to four ounces.

‘The gas of this region is very good and is not sulphurous. As to duration, everybody knows that it is surface gas, and I estimate that, in order to find more lasting reservoirs, it will be necessary to bore deeper into the rock and locate the wells towards the south.

‘The fact must not be lost sight of that those reservoirs are not inexhaustible; that they should be dealt with sparingly, and preparations should be made for the future in case the gas should disappear.’

That the above remarks were opportune is shown by the fact that, this gas field became exhausted before the end of 1907; and the Company had to discontinue the supply of gas to its subscribers.

The formations along the north shore of the St. Lawrence river are rather disturbed and broken; they are, therefore, not favourable to any large accumulation of gas in the rocks. In future operations in that region it would be well to

make sure of a lasting supply of natural gas in the rocks before making large outlays for extensive systems of distribution.

In 1908, there were in Canada, some 480 wells producing natural gas, distributed as follows: Welland field, 281; Haldimand field, 252; Kent and Essex fields, 35; Alberta, 12.

In the west, gas is reported to have been struck in merchantable quantities at Calgary, by the Calgary Natural Gas Company, after several years of persistent exploratory work. It is quite possible that in 1909 a production from the Calgary field will be recorded.

In Alberta, it is now proved that the existence of natural gas in commercial quantities is not confined to the city of Medicine Hat and immediate vicinity.

The Canadian Pacific railway, during the last few years, has been doing a great deal of drilling in search of oil and gas at various points in central Alberta, and has struck large flows of gas at Dunmore Junction, four miles east of Medicine Hat; at Suffield, some twenty-six miles northwest of that city; and at Bow Island, some forty miles southwest of the same point. At this last place it is reported that a flow of gas—estimated at 4,000,000 cubic feet per 24 hours—was struck at a depth of 1,900 feet. These occurrences may not, of course, prove that a continuous field exists between these points, and that natural gas would certainly be struck at any place between them, but it reveals a wide distribution, and an abundant supply of that almost ideal fuel.

That this fuel constitutes a very important asset in the regions where it exists, is proved by the repeated efforts put forth at different times by municipalities: groups of inhabitants interested in local industries, and consumers in Ontario, urging both provincial and federal governments to regulate the exports of natural gas from Canadian territories to the United States, in such a way that, only the surplus—after the Canadian consumers have been supplied—be allowed to be piped to cities across the border. In 1901, as a result of these numerous representations, the Ontario government cancelled the agreement granting permission to use the bed of the Detroit river to lay a pipe line to export the gas from the Essex field to Detroit, thus cutting off an outlet of export. Moreover, by the Supplementary Revenue Act of 1907, the same provincial government imposed a tax of two cents per thousand cubic feet on natural gas; 90 per cent of which tax is remitted when the gas is consumed in the Province. The gas allowed to go to waste is not subject to the remittance, but pays two cents per 1,000 feet, as in the case of gas exported.

It is also interesting to note the measures taken by the Dominion government in respect to the exportation of natural gas from Canadian fields. During the third session of the tenth Parliament, an Act was passed regulating the exportation of electric power, and certain liquids and gases. Of such importance commercially is this law, that it has been deemed advisable to reproduce it here in full.

6-7 EDWARD VII.—CHAP. 16.

AN ACT TO REGULATE THE EXPORTATION OF ELECTRIC POWER AND CERTAIN LIQUIDS AND GASES.

(Assented to 27th April, 1907.)

His Majesty, by and with the advice and consent of the Senate and House of Commons of Canada, enacts as follows:—

1. This Act may be cited as *The Electricity and Fluid Exportation Act*.

2. In this Act, unless the context otherwise requires,—

(a) 'export' and 'exportation,' when used with reference to electrical power or energy, mean respectively export and exportation from Canada by lines of wire or other conductor, and when used with reference to petroleum, natural gas, water or other fluid, whether liquid or gaseous, capable of being exported, mean respectively export and exportation from Canada through pipe lines or other like contrivances;

(b) 'power' means electrical power or energy produced in Canada;

(c) 'fluid' means petroleum, natural gas, water or other fluid, whether liquid or gaseous, capable of being exported by means of pipe lines or other like contrivances, and produced in Canada.

3. No person shall export any power or fluid without a license, or any power or fluid in excess of the quantity permitted by his license, or otherwise than as permitted by such license; Provided that any person who, immediately prior to the passing of this Act, is lawfully engaged in the exportation of power or fluid shall not, with respect to such exportation, be subject to the provisions of this Act until six months after this Act comes into force or until he has sooner obtained a license under this Act, unless and except in so far as his exportation at any time during the interval ratably exceeds in quantity of power or fluid the amount which he was exporting prior to the passing of this Act.

(2). No person shall, without a license, construct or place in position any line of wire or other conductor for the exportation of power, or any pipe line or other like contrivance for the exportation of fluid.

4. Subject to any regulations of the Governor in Council in that behalf, the Governor in Council may grant licenses, upon such conditions as he thinks proper, for the exportation of power or fluid where a right to export exists by lawful authority; and such license shall be revocable upon such notice to the licensee as the Governor in Council deems reasonable in each case.

5. Any such license may provide that the quantity of power or fluid to be exported shall be limited to the surplus, after the licensee has supplied for distribution to customers for use in Canada, power or fluid to the extent defined by such license, at prices and in accordance with conditions, rules and regulations prescribed by the Governor in Council.

(2). Every such license shall be revocable at will by the Governor in Council if the licensee refuses or neglects to comply with any of the conditions imposed with regard to the supply and distribution of power or fluid in Canada.

6. Subject to any regulations of the Governor in Council in that behalf, the Governor in Council may grant licenses for the construction, placing or laying of

any line of wire or other conductor for the exportation of power, or of any pipe line or other like contrivance for the exportation of fluid.

7. Every person who exports any such power or fluid contrary to the provisions of this Act shall, for each day on which any such export takes place, be liable to a penalty not exceeding five thousand dollars and not less than one thousand dollars.

8. Every person who, contrary to the provisions of this Act, constructs, places or lays in position any line of wire or other conductor for the exportation of power, or any pipe line or other like contrivance for the exportation of fluid, shall for each such offence be liable to a penalty not exceeding five thousand dollars and not less than one thousand dollars, and to forfeiture and confiscation of such line of wire or other conductor, or of such pipe line or other contrivance, which may forthwith upon such conviction be destroyed or removed by direction of the Governor in Council.

9. The Governor in Council may make regulations not inconsistent with this Act for giving effect to the object and intention thereof, and by such regulations may impose fees to be paid thereunder by applicants for licenses or others.

(2) Such regulations shall be laid before Parliament within fifteen days after the making thereof, or, if Parliament is not then in session, within fifteen days after the opening of the next session thereof.

10. The Governor in Council may, by proclamation published in *The Canada Gazette*, impose export duties, not exceeding ten dollars per annum per horsepower, upon power exported from Canada, or not exceeding ten cents per thousand cubic feet on fluid exported from Canada, and such duties shall be chargeable accordingly after the publication of such proclamation.

(2) The Governor in Council may, by proclamation published in like manner, from time to time remove or re-impose such duties or vary the amount thereof.

(3) The Governor in Council may, by proclamation published in like manner, exempt from the payment of such duties such persons as comply with the direction of the Governor in Council with regard to the quantity of power or fluid to be supplied by such persons for distribution to customers for use in Canada.

PETROLEUM.

The Province of Ontario was responsible for the total production of oil in Canada during both 1907 and 1908. Active drilling explorations in search of oil were carried on in Alberta and British Columbia, but no production has yet been reported from these western provinces.

In 1904, an Act was passed by the Dominion government, providing for the payment of a bounty of 1½ cents per gallon on crude petroleum produced from wells in Canada. The payments are made on claims submitted by the producers of crude oil to the Minister of Trade and Commerce. These claims have to be substantiated as to quantity, by the certificate of the receiving stations, tanking companies, refineries or other purchasers, as well as by the supervising officers of the Department of Trade and Commerce. Moreover, declarations have to be made of the number and location of the wells from which the oil is derived; and all the books of the claimants are subject to examination at all times by the supervising officer of the department.

The bounty paid on the crude petroleum produced, gives, therefore, as accurate a basis as is available for a reliable statement of the annual production. In 1908 the total bounty paid was \$277,193, representing a quantity of 527,987 barrels, of 35 gallons each, of crude petroleum.

Table 1, following, gives the production of oil in Canada since 1901, in barrels of 35 gallons, together with the total value, and average price per barrel:—

PETROLEUM.—TABLE 1.

Annual Production of Crude Petroleum since 1901.

| Year. | Barrels of 35 Gallons. | Value. | Average Price Per Barrel. |
|-----------|------------------------|--------------|---------------------------|
| 1901..... | 622,392 | \$ 1,008,275 | \$ 1 62 |
| 1902..... | 530,624 | 951,190 | 1 792 |
| 1903..... | 486,637 | 1,048,974 | 2 155 |
| 1904..... | 503,474 | 935,395 | 1 858 |
| 1905..... | 634,095 | 856,028 | 1 35 |
| 1906..... | 569,753 | 761,760 | 1 337 |
| 1907..... | 788,872 | 1,057,088 | 1 34 |
| 1908..... | 527,987 | 747,102 | 1 415 |

The figures for the years 1905 to 1908 are deduced from the bounty paid by the federal government; whereas the production for the years 1901 to 1904 is based on direct returns received from the refineries, and the producers. Further details of these figures are given below in tabular form:—

Production of Crude Oil, 1901 to 1904, based on Direct Returns.

| Crude Oil. | 1901. | 1902. | 1903. | 1904. |
|---|------------|------------|------------|------------|
| | Bls. | Bls. | Bls. | Bls. |
| Received at refineries..... | 508,677 | 443,333 | 410,280 | 455,074 |
| Direct sales for industrial purposes..... | 113,715 | 87,291 | 76,357 | 48,400 |
| Total sales of crude oil..... | 622,392 | 530,624 | 486,637 | 503,474 |
| Total sales in gallons..... | 21,783,720 | 18,571,840 | 17,032,295 | 17,621,590 |

Production of Petroleum estimated on the basis of the bounty of 1½ cents per gallon, paid by the Dominion Government, 1905 to 1908.

| Petroleum. | Bounty Paid. | Production of Crude Oil Represented. | |
|------------|--------------|--------------------------------------|-------------|
| | | In Gallons. | In Barrels. |
| | \$ | | |
| 1905..... | 332,900 | 22,193,336 | 634,095 |
| 1906..... | 299,120 | 19,941,357 | 569,753 |
| 1907..... | 414,158 | 27,610,526 | 788,872 |
| 1908..... | 277,193 | 18,479,547 | 527,987 |

For the years previous to 1901, the production of crude oil was obtained from government inspection returns, by assuming a ratio of crude to refined. The statistics of production—on this basis—for the years 1881 to 1900, are given in Table 2, below:—

PETROLEUM.—TABLE 2.

Canadian Oils and Naphtha inspected, and corresponding quantities of Crude Oil.

| Calendar Year. | Refined Oils Inspected. | Crude Equivalent Calculated. | Ratio of Crude to Refined. | Equivalent in Barrels of 35 Gallons. | Average Price Per Barrel of Crude. | Value of Crude Oil. |
|----------------|-------------------------|------------------------------|----------------------------|--------------------------------------|------------------------------------|---------------------|
| | Gallons. | Gallons. | | | \$ | \$ |
| 1881..... | 6,467,270 | 12,914,540 | 100:50 | 368,987 | | |
| 1882..... | 6,135,732 | 13,635,071 | 100:45 | 389,573 | | |
| 1883..... | 7,447,648 | 16,550,328 | 100:45 | 472,866 | | |
| 1884..... | 7,993,995 | 19,984,987 | 100:40 | 571,000 | | |
| 1885..... | 8,225,882 | 20,564,705 | 100:40 | 587,563 | | |
| 1886..... | 7,768,006 | 20,442,121 | 100:38 | 584,061 | 0 90 | 525,655 |
| 1887..... | 9,492,588 | 24,980,494 | 100:38 | 713,728 | 0 78 | 556,708 |
| 1888..... | 9,246,176 | 24,332,042 | 100:38 | 695,203 | 1 02½ | 713,695 |
| 1889..... | 9,472,476 | 24,664,144 | 100:38 | 704,690 | 0 92½ | 653,600 |
| 1890..... | 10,174,894 | 26,776,037 | 100:38 | 795,030 | 1 18 | 902,734 |
| 1891..... | 10,065,463 | 26,435,430 | 100:38 | 755,298 | 1 33½ | 1,010,211 |
| 1892..... | 10,370,707 | 27,291,334 | 100:38 | 779,753 | 1 26½ | 984,438 |
| 1893..... | 10,618,804 | 27,944,221 | 100:38 | 798,406 | 1 09½ | 874,255 |
| 1894..... | 11,027,082 | 29,018,637 | 100:38 | 829,104 | 1 00½ | 835,322 |
| 1895..... | 10,674,232 | 25,414,838 | 100:42 | 726,138 | 1 49½ | 1,086,738 |
| 1896..... | 10,684,284 | 25,438,771 | 100:42 | 726,822 | 1 59 | 1,155,647 |
| 1897..... | 10,434,878 | 24,844,995 | 100:42 | 709,857 | 1 42½ | 1,011,546 |
| 1898..... | 11,148,348 | 26,543,685 | 100:42 | 758,391 | 1 40 | 1,061,747 |
| 1899..... | 11,927,981 | 28,399,955 | 100:42 | 808,570 | 1 48½ | 1,202,020 |
| 1900..... | 13,428,422 | 24,867,449 | 100:54 | 710,498 | 1 62 | 1,151,007 |

By referring to Table 1, it will be noticed that the production for 1908 shows a considerable falling off, as compared with 1907. The decrease is 260,885 barrels, or 33·07 per cent in quantity; but, owing to the slightly increased prices which prevailed in 1908 for crude petroleum, the decrease in value is only \$309,986, or 29·32 per cent. This decrease is mainly due to the diminished production of the Merlin field in East Tilbury and Raleigh townships in Kent county.

The Imperial Oil Company have kindly given us their estimate of the production of the various Ontario oil fields during 1907 and 1908, and by comparing these figures, the source of the falling off will be apparent. The figures of production do not quite agree with those calculated on the basis of the bounty paid; but they are very interesting for the purpose of comparison:—

| District. | 1907. | 1908. |
|--|----------|----------|
| | Barrels. | Barrels. |
| Dutton..... | 14,698 | 12,268 |
| Leamington (Staples, Comber, and Blytheswood)..... | 16,210 | 18,117 |
| Bothwell..... | 40,556 | 39,820 |
| Richardson (Chatham)..... | 941 | 2,882 |
| Thamesville..... | 1,139 | 853 |
| Moore township..... | 32,720 | 25,667 |
| Oilsprings..... | 55,813 | 61,252 |
| East Tilbury and Raleigh..... | 344,358 | 170,589 |
| Romney..... | 49,785 | 11,165 |
| Petrolia, (includes all districts not enumerated above)..... | 206,285 | 171,019 |
| | 762,503 | 513,632 |

Table 3, gives the value of the products manufactured during the respective years by the oil refineries of Canada. It is to be remembered, however, that the refineries use a considerable proportion of imported crude petroleum, which is probably equal in amount to the total production of Canadian crude oil; for in the fiscal year ending March 30, 1908, the imports of crude petroleum—as shown by the Customs' reports—amounted to nearly 25,000,000 gallons.

PETROLEUM.—TABLE 3.

Value of the Production of Canadian Oil Refineries.

| Calendar Year. | Value. | Calendar Year. | Value. |
|----------------|--------------|----------------|---------------|
| 1887..... | \$ 1,288,109 | 1898..... | \$ 1,825,265 |
| 1888..... | 1,401,459 | 1899..... | 1,490,870 |
| 1889..... | 1,414,184 | 1900..... | 1,620,705 |
| 1890..... | 1,638,420 | 1901..... | 1,251,373 |
| 1891..... | 1,534,509 | 1902..... | 1,222,641 |
| 1892..... | 1,782,365 | 1903..... | 1,302,104 |
| 1893..... | 1,675,784 | 1904..... | 975,840 |
| 1894..... | 1,567,134 | 1905..... | (a) 1,815,525 |
| 1895..... | 1,806,237 | 1906..... | (a) 2,120,343 |
| 1896..... | 1,876,913 | 1907..... | (a) 2,245,980 |
| 1897..... | 1,672,429 | 1908..... | (a) 1,995,982 |

(a) Derived from both Canadian and imported crude oils.

The following tables give the statistics of the oil industry of Canada: oil inspected, exported, imported, etc., both crude and manufactured.

PETROLEUM.—TABLE 4.

Total Amount of Oil Inspected, Canadian and Imported.

| Fiscal Year. | Made in Canada. | Imported. | Total. | Canadian. | Imported. |
|-----------------|--------------------|-------------|------------|-----------|-----------|
| | Gallons. | Gallons. | Gallons. | Per cent. | Per cent. |
| 1881 | 6,406,783 | 476,784 | 6,883,567 | 93·1 | 6·9 |
| 1882 | 5,910,747 | 1,351,412 | 7,262,159 | 81·4 | 18·6 |
| 1883 | 6,970,550 | 1,190,828 | 8,161,378 | 85·4 | 14·6 |
| 1884 | 7,656,001 | 1,142,575 | 8,798,586 | 87·0 | 13·0 |
| 1885 | 7,661,617 | 1,278,115 | 8,939,732 | 85·7 | 14·3 |
| 1886 | 8,149,472 | 1,327,616 | 9,477,088 | 86·0 | 14·0 |
| 1887 | 8,243,962 | 1,665,604 | 9,909,566 | 83·2 | 16·8 |
| 1888 | 9,545,895 | 1,821,342 | 11,367,237 | 84·0 | 16·0 |
| 1889 | 9,462,834 | 1,767,812 | 11,230,646 | 84·3 | 15·7 |
| 1890 | 10,121,210 | 2,020,742 | 12,141,952 | 83·4 | 16·6 |
| 1891 | 10,270,107 | 2,022,002 | 12,292,109 | 83·6 | 16·4 |
| 1892 | 10,238,426 | 2,429,445 | 12,667,871 | 80·8 | 19·2 |
| 1893 | 10,683,806 | 2,641,690 | 13,325,496 | 80·2 | 19·8 |
| 1894 | 10,824,270 | 5,633,222 | 16,457,492 | 65·8 | 34·2 |
| 1895 | 10,936,992 | 5,650,994 | 16,587,986 | 65·9 | 34·1 |
| 1896 | 10,533,951 | 5,807,991 | 16,341,942 | 64·5 | 35·5 |
| 1897 | 10,506,526 | 6,248,743 | 16,755,269 | 62·7 | 37·3 |
| 1898 | 10,796,847 | 6,880,734 | 17,677,581 | 61·1 | 38·9 |
| 1899 | 11,005,804 | 7,232,348 | 18,238,152 | 60·3 | 39·7 |
| 1900 | 13,014,713 | *8,216,207 | 21,230,920 | 61·3 | 38·7 |
| 1901 | 12,674,977 | *9,232,165 | 21,907,142 | 57·9 | 42·1 |
| 1902 | 10,494,874 | *10,916,396 | 21,411,270 | 49·0 | 51·0 |
| 1903 | 8,615,892 | *14,479,176 | 23,095,068 | 37·3 | 62·7 |
| 1904 | 7,292,113 | *17,369,930 | 24,662,043 | 29·6 | 70·4 |
| 1905 | 17,520,035 | *10,284,053 | 27,804,088 | 63·0 | 37·0 |
| 1906 | 18,634,155 | *9,255,200 | 27,889,355 | 66·8 | 33·2 |
| 1907 (9 months) | 15,365,933 | *6,879,494 | 22,245,427 | 69·1 | 30·9 |
| 1908 | 22,887,026 | *6,295,457 | 29,182,483 | 78·4 | 21·6 |

* Item (c) table 6.

PETROLEUM.—TABLE 5.

Exports of Crude and Refined Petroleum, 1881-1908.

| Calendar Year. | Crude Oil. | | Refined Oil. | | Total. | |
|----------------|------------|--------|--------------|--------|-----------|--------|
| | Gallons. | Value. | Gallons. | Value. | Gallons. | Value. |
| | | \$ | | \$ | | \$ |
| 1881..... | | | | | 501 | 99 |
| 1882..... | | | | | 1,119 | 286 |
| 1883..... | | | | | 13,283 | 710 |
| 1884..... | | | | | 1,098,090 | 30,168 |
| 1885..... | | | | | 337,967 | 10,562 |
| 1886..... | | | | | 241,716 | 9,855 |
| 1887..... | | | | | 473,559 | 13,831 |
| 1888..... | | | | | 196,602 | 74,542 |
| 1889..... | | | | | 235,855 | 10,777 |
| 1890..... | | | | | 420,492 | 18,154 |
| 1891..... | 446,770 | 18,471 | 585 | 104 | 447,355 | 18,575 |
| 1892..... | 310,387 | 12,945 | 1,146 | 100 | 311,533 | 13,045 |
| 1893..... | 107,719 | 3,696 | 2,196 | 394 | 109,915 | 4,090 |
| 1894..... | 53,985 | 2,773 | 5,297 | 513 | 59,282 | 3,286 |
| 1895..... | 22,831 | 1,044 | 10,237 | 2,023 | 33,068 | 3,067 |
| 1896..... | 601 | 101 | 7,489 | 999 | 8,090 | 1,100 |
| 1897..... | | | 342 | 49 | 342 | 49 |
| 1898..... | 96 | 4 | 12,735 | 3,001 | 12,831 | 3,005 |
| 1899..... | | | 3,425 | 859 | 3,425 | 859 |
| 1900..... | 40 | 2 | 8,559 | 394 | 8,559 | 2,396 |
| 1901..... | 14,168 | 691 | 375 | 66 | 14,543 | 757 |
| 1902..... | 400 | 40 | 626 | 146 | 1,026 | 186 |
| 1903..... | 350 | 15 | 1,013 | 190 | 1,363 | 205 |
| 1904..... | 4,207 | 213 | 2,126 | 470 | 6,333 | 683 |
| 1905..... | 35 | 2 | 7,228 | 2,078 | 7,263 | 2,080 |
| 1906..... | 900 | 141 | 8,938 | 1,401 | 9,338 | 1,542 |
| 1907..... | 1,125 | 102 | 3,132 | 575 | 4,257 | 677 |
| 1908..... | | | 296 | 71 | 296 | 71 |

By glancing over Table 6, below, it will be perceived that a large quantity of crude oil is imported into Canada. The greater part of this goes to the refineries. In 1908, this importation of crude oil amounted to 24,866,963 gallons; representing 710,485 barrels, of 35 gallons each; which is a considerable increase over 1907, when it was 13,252,968 gallons, or 378,656 barrels.

PETROLEUM.—TABLE 6.

Imports of Petroleum and Products thereof, during the Fiscal Years ending 1907 and 1908.

| Products. | 1907 (9 mos. ending March.) | | 1908 (12 mos. ending March.) | |
|--|--------------------------------|-----------|---------------------------------|-----------|
| | Gallons. | Value. | Gallons. | Value. |
| | | \$ | | \$ |
| (a) Petroleum crude, fuel and gas oils (8233 specific gravity)..... | 13,252,968 | 469,730 | 24,866,963 | 889,080 |
| (b) Crude petroleum, gas oils (other than benzine and gasoline)..... | 10,146 | 1,214 | 52,605 | 5,900 |
| (c) Coal and kerosene, distilled, purified or refined, and petroleum, N. E. S. | 6,879,494 | 578,329 | 6,295,457 | 503,829 |
| (d) Illuminating oils composed wholly or in part of the products of petroleum, coal, shale or lignite costing more than 30 cents per gallon..... | 4,654 | 971 | 2,232 | 1,035 |
| (e) Lubricating oils composed wholly or in part of petroleum, costing less than 25 cents per gallon..... | 1,902,702 | 248,200 | 3,262,846 | 411,172 |
| (f) Products of petroleum..... | 1,595,897 | 181,817 | 1,834,615 | 195,003 |
| Total..... | 23,645,861 | 1,480,261 | 36,314,718 | 2,006,019 |

(a) Free. (b) Duty 1½c. per gal. (c), (e), and (f) Duty 2½c. per gal. (d) 20 p. c.

PETROLEUM.—TABLE 7.

Imports of Petroleum and Products thereof, years 1880-1908.

| Fiscal Year. | Gallons. | Value. | Fiscal Year. | Gallons. | Value. |
|--------------|-----------|---------|----------------------|------------|-----------|
| | | \$ | | | \$ |
| 1880..... | 687,641 | 131,359 | 1895..... | 7,577,674 | 525,372 |
| 1881..... | 1,437,475 | 262,168 | 1896..... | 8,005,891 | 735,913 |
| 1882..... | 3,007,702 | 398,031 | 1897..... | 8,415,302 | 697,169 |
| 1883..... | 3,086,316 | 358,546 | 1898..... | 9,074,311 | 724,519 |
| 1884..... | 3,160,282 | 380,082 | 1899..... | 10,394,208 | 763,303 |
| 1885..... | 3,767,441 | 415,195 | 1900..... | 9,633,647 | 864,833 |
| 1886..... | 3,819,146 | 421,833 | 1901..... | 11,082,822 | 982,640 |
| 1887..... | 4,290,003 | 467,003 | 1902..... | 13,220,005 | 1,107,207 |
| 1888..... | 4,523,056 | 408,025 | 1903..... | 13,799,312 | 1,643,371 |
| 1889..... | 4,650,274 | 484,462 | 1904..... | 24,521,115 | 2,152,623 |
| 1890..... | 5,075,650 | 515,852 | 1905..... | 35,296,332 | 2,151,514 |
| 1891..... | 5,071,386 | 498,330 | 1906..... | 32,624,410 | 1,908,177 |
| 1892..... | 5,649,145 | 475,732 | 1907 (9 months)..... | 23,645,861 | 1,480,261 |
| 1893..... | 6,002,141 | 446,839 | 1908..... | 36,314,718 | 2,006,019 |
| 1894..... | 6,597,108 | 439,988 | | | |

PETROLEUM.—TABLE 8.

Imports of Crude and Manufactured Oils, other than Illuminating, 1881-1908.

| Fiscal Year. | Gallons. | Fiscal Year. | Gallons. |
|--------------|-----------|----------------------|------------|
| 1881..... | 960,691 | 1895..... | 1,106,993 |
| 1882..... | 1,656,290 | 1896..... | 1,079,965 |
| 1883..... | 1,895,488 | 1897..... | 802,286 |
| 1884..... | 2,017,707 | 1898..... | 1,047,026 |
| 1885..... | 2,439,326 | 1899..... | 1,017,278 |
| 1886..... | 2,491,580 | 1900..... | 1,406,700 |
| 1887..... | 2,624,399 | 1901..... | 1,838,966 |
| 1888..... | 2,701,714 | 1902..... | 2,296,353 |
| 1889..... | 2,882,462 | 1903..... | 4,316,010 |
| 1890..... | 3,054,908 | 1904..... | 7,141,109 |
| 1891..... | 3,049,384 | 1905..... | 25,002,047 |
| 1892..... | 3,047,199 | 1906..... | 23,365,674 |
| 1893..... | 1,481,749 | 1907 (9 months)..... | 16,761,713 |
| 1894..... | 1,860,829 | 1908..... | 30,017,029 |

* The figures for the years from 1881 to 1894, inclusive, represent the total imports of petroleum and products, less the quantity of imported illuminating oils, inspected by the Inland Revenue Department. For 1895 and subsequent years, the table is composed of items (a), (b), (c), and (f) of Table 6.

PETROLEUM.—TABLE 9.

Imports of Paraffin Wax, 1883-1908.

| Fiscal Year. | Pounds. | Value. | Fiscal Year. | Pounds. | Value. |
|--------------|---------|--------|----------------------|---------|--------|
| | | \$ | | | \$ |
| 1883..... | 43,716 | 5,166 | 1896..... | 150,287 | 10,042 |
| 1884..... | 39,010 | 6,079 | 1897..... | 138,703 | 7,945 |
| 1885..... | 59,967 | 8,123 | 1898..... | 103,570 | 5,987 |
| 1886..... | 62,035 | 7,953 | 1899..... | 92,242 | 4,025 |
| 1887..... | 61,132 | 6,796 | 1900..... | 47,400 | 3,529 |
| 1888..... | 53,862 | 4,930 | 1901..... | 118,848 | 9,639 |
| 1889..... | 63,229 | 5,250 | 1902..... | 225,885 | 12,750 |
| 1890..... | 239,229 | 15,844 | 1903..... | 592,642 | 28,674 |
| 1891..... | 753,854 | 50,275 | 1904..... | 418,967 | 18,440 |
| 1892..... | 733,873 | 48,776 | 1905..... | 81,992 | 7,795 |
| 1893..... | 452,916 | 38,935 | 1906..... | 112,612 | 9,721 |
| 1894..... | 208,099 | 15,704 | 1907 (9 months)..... | 55,021 | 5,922 |
| 1895..... | 163,817 | 11,579 | 1908..... | 62,308 | 8,041 |

PETROLEUM.—TABLE 10.

Imports of Paraffin Wax Candles, 1880-1908.

| Fiscal Year. | Pounds. | Value. | Fiscal Year. | Pounds. | Value. |
|--------------|---------|--------|-----------------------|---------|--------|
| | | \$ | | | \$ |
| 1880 | 10,445 | 2,269 | 1895 | 19,448 | 2,541 |
| 1881 | 7,494 | 1,683 | 1896 | 25,787 | 4,072 |
| 1882 | 5,818 | 1,428 | 1897 | 25,114 | 2,929 |
| 1883 | 7,149 | 1,734 | 1898 | 60,802 | 4,427 |
| 1884 | 8,755 | 2,229 | 1899 | 62,331 | 5,856 |
| 1885 | 9,247 | 2,449 | 1900 | 27,663 | 3,671 |
| 1886 | 12,242 | 2,587 | 1901 | 44,562 | 3,588 |
| 1887 | 21,364 | 3,611 | 1902 | 51,120 | 5,752 |
| 1888 | 22,054 | 2,829 | 1903 | 83,377 | 9,025 |
| 1889 | 8,038 | 1,337 | 1904 | 83,471 | 9,078 |
| 1890 | 7,233 | 1,186 | 1905 | 137,353 | 15,293 |
| 1891 | 10,598 | 2,116 | 1906 | 148,808 | 15,804 |
| 1892 | 9,259 | 1,952 | 1907 (9 months) | 38,900 | 5,088 |
| 1893 | 8,351 | 1,735 | 1908 | 156,934 | 20,035 |
| 1894 | 10,818 | 1,685 | | | |

A reference to Tables 1 and 2 will show that, the production of crude oil in 1907 was the highest since 1899. This is accounted for by the active development of the Merlin or East Tilbury field, which although discovered in December, 1905, was at its best in 1907. During that year it was responsible for nearly 43 per cent of the total production of oil in Ontario. In 1908, this field did not produce as much as during the previous year, and is responsible for the greater part of the decrease in the total production.

OIL SHALES IN NEW BRUNSWICK AND NOVA SCOTIA

The oil shale deposits of New Brunswick, which cover large areas in Kings, Albert, and Westmorland counties, have been known for a long period. As early as 1862, some steps were taken towards their exploitation as a source of mineral oil. This enterprise, however, was soon abandoned after the discovery of the Pennsylvania and other oil fields.

In 1908, the Albertite, Oilite, and Cannel Coal Co., Ltd., of New York—represented in New Brunswick by Mr. Matthew Lodge, of Moncton—took up again very actively the question of distillation of oil from these Albert shales, and 45 tons of the oil shales—which occur at Baltimore in Albert county—were sent to Glasgow, Scotland, for the purpose of making a commercial test in the works of the Pumpherton Oil Company. Dr. R. W. Ells, on the recommendation of Dr. Eugene Haanel, Director of Mines, was commissioned to go to Scotland for the purpose of witnessing and reporting on these experiments. The preliminary report on these tests was published in the report of the Mines Branch, Department of Mines, for 1908. The results were very satisfactory, as the average yield per ton of shale was 40·09 gallons of crude oil, and 76·94 lbs. of sulphate of ammonia. This compares very favourably with the shales which are worked so extensively in Scotland, the yield of which rarely exceeds 25 to 30 gallons of crude oil.

Should the New Brunswick enterprise become a commercial success there is little doubt that it will stimulate the exploitation of other oil-shale deposits which exist in places in Nova Scotia, notably at Stellarton in Pictou county. The Stellarton deposits were also worked to some extent in the early sixties.

The Mines Branch of the Department of Mines has installed a distillation furnace and apparatus in its chemical laboratory, for the purpose of testing oil shales, determining their yield of crude oil, sulphate of ammonia, etc. It may be mentioned that the oil shale industry is successfully carried on not only in Scotland, but in France and New South Wales. The outlook for the establishment of an oil-shale industry in Canada is very promising.