

DEPARTMENT OF TRADE AND COMMERCE  
DOMINION BUREAU OF STATISTICS  
MINING, METALLURGICAL AND CHEMICAL BRANCH  
OTTAWA - CANADA

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THE ASBESTOS MINING INDUSTRY

and

THE ASBESTOS PRODUCTS INDUSTRY IN CANADA, 1935.

(a) THE ASBESTOS MINING INDUSTRY - Finally revised statistics relating to Canadian asbestos production during the calendar year 1935, as issued by the Mining, Metallurgical and Chemical Branch of the Dominion Bureau of Statistics at Ottawa, indicate a decided improvement in the industry during the year under review. The output of all grades of the mineral totalled 210,467 short tons valued at \$7,054,614 as compared with 155,980 tons worth \$4,936,326 in the preceding year. Increases in both quantity and value were recorded for all grades including crudes, fibres and shorts; the tonnage of rock mined totalled 2,852,118 as compared with 2,320,750 in 1934 while rock milled amounted to 2,256,994 tons as against 1,935,129 tons in 1934. The asbestos mines and mills in 1935 provided employment for 2,072 persons and distributed \$1,904,053 in salaries and wages as compared with a distribution of \$1,608,812 to 1,855 employees in 1934.

The value of all Canadian asbestos exports, including manufactures of same, totalled \$7,061,109 in 1935 representing a 34 per cent increase over 1934; the products of Canadian asbestos mines now find a world-wide market, going in 1935 to the United Kingdom, United States, Australia, Belgium, France, Germany, Italy, Japan, and various other countries. Canadian asbestos is of the chrysotile or serpentine variety and of excellent quality; in 1935 commercial production was confined to the Eastern Townships, Quebec. Fibrous minerals similar to asbestos have been reported from other localities in Canada.

According to the Department of Mines, Ottawa, explorations and developments on the properties of the operating companies have disclosed reserves of ore sufficient for many years to come. The recent application of block-caving methods in one of the larger Canadian asbestos mines has resulted in remarkable reductions in mining costs, in improved mill feed, and in improved working conditions.

The Bureau of Mines, Quebec, in reviewing the industry in that province for 1935 states that although there were no new developments of a pronounced nature, the year witnessed a most decided recovery in production, the shipments in 1935 being the highest in both quantity and value since 1930. Several of the larger mines operated continuously throughout the year and mill extensions were reported by three companies. Stripping operations were conducted on deposits located in the Asbestos, Black Lake and the Thetford areas.

One of the more interesting events in the industry during the year was the development work conducted in Bannockburn township, Ontario, by Rahn Lake Mines Corporation; about 400 tons of mill rock asbestos ore was placed on the stock pile; this was reported to contain a high quality fibre and to average from \$8 to \$10 per ton.

Some Notes on Asbestos Research being done at NATIONAL RESEARCH LABORATORIES, OTTAWA.

(D. Wolochow and A. van Winsen)

The evaluation of milled asbestos fibre, particularly of the spinning grades, has been one of the chief problems under investigation. Several methods for measuring some of the physical characteristics which may affect the relative values of spinning fibres of varying texture have been developed and a large number of samples have been tested. Towards the end of the year there was obtained a laboratory-size carding machine which should facilitate this study. The work conducted to date has embraced full-scale factory spinning tests. The study gives promise not only of providing a fuller understanding of the various factors which determine the behaviour of a given mass of asbestos fibre, but also of suggesting improvements in the milling methods and the machines used to extract fibre from asbestos rock.

Further work on the separation of magnetic iron from asbestos indicates that the removal of this undesirable constituent is feasible and means for achieving this are under consideration.

Among other matters studied were: (a) weathering resistance of asbestos, (b) behaviour of metals when in contact with asbestos fibre, (c) the effect of asbestos insulation on heating coils, (d) comparative composition of crude asbestos from different sources, (e) methods of treating asbestos with tars, resins, etc., in order to produce light-weight, water-shedding bonded material, (f) recovery of fibre from asbestos tailings and utilization of tailings.

Table 1 - SALES AND SHIPMENTS(x) OF CANADIAN ASBESTOS, 1933, 1934 and 1935.

|   | 1933    |           | 1934    |           | 1935    |           |
|---|---------|-----------|---------|-----------|---------|-----------|
|   | Tons    | \$        | Tons    | \$        | Tons    | \$        |
| Crudes .....                                      | 1,306   | 341,734   | 1,663   | 409,853   | 2,278   | 539,558   |
| Fibres .....                                      | 82,605  | 3,843,887 | 77,465  | 3,456,399 | 102,270 | 4,873,255 |
| Shorts .....                                      | 74,456  | 1,025,556 | 76,852  | 1,070,074 | 105,919 | 1,641,801 |
| TOTAL .....                                       | 158,367 | 5,211,177 | 155,980 | 4,936,326 | 210,467 | 7,054,614 |
| Sand, gravel, and stone<br>(waste rock only) (a). | 6,445   | 3,215     | 4,672   | 3,480     | 3,025   | 2,053     |

(x) All from the province of Quebec.

(a) This production is included under the sand and gravel industry.

|                                      | 1933      | 1934      | 1935      |
|--------------------------------------|-----------|-----------|-----------|
|                                      | Tons      | Tons      | Tons      |
| Quantity of rock mines .....         | 1,566,919 | 2,320,750 | 2,852,118 |
| Quantity of rock milled .....        | 1,329,814 | 1,935,129 | 2,256,994 |
| Quantity of tailings retreated ..... | 521,930   | ...       | ...       |



Table 2 - SALES AND SHIPMENTS OF ASBESTOS, 1926 - 1935.

| Year       | Tons    | \$         | Year       | Tons    | \$        |
|------------|---------|------------|------------|---------|-----------|
| 1926 ..... | 279,403 | 10,099,423 | 1931 ..... | 164,296 | 4,812,886 |
| 1927 ..... | 274,778 | 10,621,013 | 1932 ..... | 122,977 | 3,039,721 |
| 1928 ..... | 273,033 | 11,238,360 | 1933 ..... | 158,367 | 5,211,177 |
| 1929 ..... | 306,055 | 13,172,581 | 1934 ..... | 155,980 | 4,936,326 |
| 1930 ..... | 242,114 | 8,390,163  | 1935 ..... | 210,467 | 7,054,614 |

Table 3 - IMPORTS INTO CANADA AND EXPORTS OF ASBESTOS, 1934 and 1935.

|  |     | 1934      | 1935      |
|--|-----|-----------|-----------|
| <u>IMPORTS -</u>   |     |           |           |
| Asbestos brake and clutch lining .....   | xx  | ...       | ...       |
|  | \$  | 218,052   | 235,620   |
| Asbestos packing .....   | ton | 83        | 60        |
|  | \$  | 64,713    | 56,208    |
| Asbestos in any form other than crude, and all<br>manufactures of, n.o.p. .... | xx  | ...       | ...       |
|  | \$  | 408,020   | 420,469   |
| TOTAL IMPORTS .....  | \$  | 690,785   | 712,297   |
| <u>EXPORTS -</u>   |     |           |           |
| Asbestos - TOTAL EXPORTS .....   | ton | 83,267    | 100,186   |
|  | \$  | 4,029,191 | 5,300,176 |
| To - United Kingdom .....  | ton | 4,618     | 4,584     |
|  | \$  | 316,468   | 290,569   |
| United States .....  | ton | 44,541    | 61,059    |
|  | \$  | 1,996,915 | 3,079,366 |
| Australia .....  | ton | 998       | 2,004     |
|  | \$  | 49,859    | 99,632    |
| Belgium .....  | ton | 3,548     | 4,814     |
|  | \$  | 191,519   | 270,606   |
| France .....   | ton | 3,969     | 3,781     |
|  | \$  | 243,416   | 254,142   |
| Germany .....  | ton | 5,435     | 4,913     |
|  | \$  | 441,188   | 438,062   |
| Italy .....  | ton | 618       | 806       |
|  | \$  | 58,090    | 74,435    |
| Japan .....  | ton | 18,489    | 15,597    |
|  | \$  | 679,723   | 628,597   |
| Netherlands .....  | ton | 734       | 1,671     |
|  | \$  | 35,800    | 110,725   |
| Spain .....  | ton | 162       | 710       |
|  | \$  | 7,887     | 37,328    |
| Asbestos sand and waste -  |     |           |           |
| TOTAL EXPORTS .....  | ton | 74,977    | 100,025   |
|  | \$  | 1,100,305 | 1,585,481 |
| To - United Kingdom .....  | ton | 2,080     | 3,595     |
|  | \$  | 44,620    | 75,516    |
| United States .....  | ton | 68,171    | 92,810    |
|  | \$  | 964,429   | 1,440,995 |

Table 3 - IMPORTS INTO CANADA AND EXPORTS OF ASBESTOS, 1934 and 1935 (concluded)

|   |     | 1934      | 1935      |
|---|-----|-----------|-----------|
| <u>EXPORTS (concluded) -</u>                        |     |           |           |
| Asbestos sand and waste (concluded) -               |     |           |           |
| To - Belgium .....                                  | ton | 455       | 833       |
|   | \$  | 8,968     | 14,407    |
| France .....  | ton | 540       | 320       |
|   | \$  | 10,075    | 6,200     |
| Germany .....                                       | ton | 2,497     | 1,438     |
|   | \$  | 50,787    | 29,805    |
| Netherlands .....                                   | ton | 579       | 700       |
|   | \$  | 11,541    | 14,776    |
| Asbestos manufactures, including asbestos roofing - |     |           |           |
| TOTAL EXPORTS .....                                 | \$  | 140,826   | 175,452   |
| To - United Kingdom .....                           | \$  | 91,501    | 119,878   |
| United States .....                                 | \$  | 1,770     | 444       |
| Newfoundland .....                                  | \$  | 5,245     | 6,345     |
| Australia .....                                     | \$  | 5,050     | 7,529     |
| Argentina .....                                     | \$  | 4,463     | 3,826     |
| Brazil .....  | \$  | 5,806     | 7,599     |
| Chile .....   | \$  | 3,933     | 3,212     |
| Colombia .....                                      | \$  | 2,216     | 4,538     |
| Mexico .....  | \$  | 5,715     | 8,577     |
| Peru .....  | \$  | 3,133     | 2,855     |
| TOTAL ASBESTOS EXPORTS .....                        | \$  | 5,270,322 | 7,061,109 |
| To - United Kingdom .....                           | \$  | 452,589   | 485,963   |
| United States .....                                 | \$  | 2,963,114 | 4,520,805 |

Table 4 - PRINCIPAL STATISTICS OF THE ASBESTOS MINING INDUSTRY IN CANADA, 1934 and 1935.

|   |    | 1934       | 1935       |
|---|----|------------|------------|
| Number of firms .....                           |    | 7          | 8          |
| Capital employed (d) .....                      | \$ | 21,816,350 | 16,805,583 |
| Number of employees - On salaries .....         |    | 147        | 152        |
| On wages .....                                  |    | 1,708      | 1,920      |
| Total .....                                     |    | 1,855      | 2,072      |
| Salaries and wages - Salaries .....             | \$ | 281,493    | 302,151    |
| Wages .....                                     | \$ | 1,327,319  | 1,601,902  |
| Total .....                                     | \$ | 1,608,812  | 1,904,053  |
| Selling value of products .....                 | \$ | 4,939,806  | 7,056,667  |
| Cost of fuel and electricity (purchased) (b) .. | \$ | 855,556    | 923,483    |
| Cost of process supplies (c) .....              | \$ | (a)        | 1,134,968  |
| Net value of sales .....                        | \$ | (a)        | 4,998,216  |

(a) Information not available.

(c) Does not include value of item (b)

(d) The value of broken ore was included in 1934 but not in 1935.

Table 5 - WAGE-EARNERS EMPLOYED BY MONTHS, in the ASBESTOS MINING INDUSTRY IN CANADA, 1933, 1934 and 1935.

| Months          | 1933  | 1934  | 1 9 3 5 |  |       |  |
|-----------------|-------|-------|---------|--|-------|--|
|                 |       |       | Mine    |  | Mill  |  |
| January .....   | 1,218 | 1,577 | 671     |  | 934   |  |
| February .....  | 1,048 | 1,587 | 688     |  | 962   |  |
| March .....     | 1,016 | 1,595 | 708     |  | 932   |  |
| April .....     | 1,119 | 1,587 | 723     |  | 1,016 |  |
| May .....       | 1,399 | 1,780 | 755     |  | 1,058 |  |
| June .....      | 1,392 | 1,928 | 794     |  | 1,144 |  |
| July .....      | 1,543 | 1,902 | 861     |  | 1,175 |  |
| August .....    | 1,564 | 1,806 | 835     |  | 1,118 |  |
| September ..... | 1,920 | 1,623 | 843     |  | 1,114 |  |
| October .....   | 2,059 | 1,688 | 915     |  | 1,233 |  |
| November .....  | 1,819 | 1,762 | 964     |  | 1,273 |  |
| December .....  | 1,754 | 1,653 | 1,015   |  | 1,289 |  |

Table 6 - FUEL AND ELECTRICITY USED IN THE ASBESTOS MINING INDUSTRY IN CANADA, 1934 and 1935.

| Kind  | Unit of measure | 1 9 3 4    |  |         |  | 1 9 3 5    |  |         |  |
|---|-----------------|------------|--|---------|--|------------|--|---------|--|
|   |                 | Quantity   |  | Value   |  | Quantity   |  | Value   |  |
|   |                 |            |  | \$      |  |            |  | \$      |  |
| Bituminous coal - From Canadian mines .....                     | short ton       | 17,900     |  | 120,605 |  | 22,598     |  | 152,116 |  |
| Imported .....  | short ton       | 14         |  | 193     |  | ...        |  | ...     |  |
| Anthracite coal - From United States .....                      | short ton)      | 8,269      |  | 52,756  |  | 8,560      |  | 59,472  |  |
| Other .....   | short ton)      |            |  |         |  | 1,781      |  | 10,844  |  |
| Coke (for fuel only) .....                                      | short ton       | 110        |  | 1,309   |  | 100        |  | 1,195   |  |
| Gasoline (exclusive of that used in motor cars or trucks) ..... | imp. gal.       | 29,226     |  | 5,356   |  | 27,745     |  | 5,934   |  |
| Kerosene or coal oil .....                                      | imp. gal.       | 3,664      |  | 593     |  | 4,004      |  | 771     |  |
| Fuel, oil and diesel oil .....                                  | imp. gal.       | 6,580      |  | 750     |  | 6,633      |  | 716     |  |
| Wood (cords of 128 cubic feet of piled wood) .....              | cord            | ...        |  | ...     |  | 10         |  | 40      |  |
| Electricity purchased, including service charges .....          | k.w.h.          | 67,564,991 |  | 673,994 |  | 72,825,928 |  | 692,397 |  |
| TOTAL .....   | ....            | ...        |  | 855,556 |  | ...        |  | 923,483 |  |

Table 7 - POWER EQUIPMENT (including stand-by or emergency equipment), 1935.

| Description  | Ordinarily in use |                      | In reserve or idle |                      |
|--|-------------------|----------------------|--------------------|----------------------|
|  | Number of units   | Total horse power(x) | Number of units    | Total horse power(x) |
| Steam engines and steam turbines ....                          | 6                 | 210                  | ...                | ...                  |
| Gasoline, gas and oil engines, other than diesel engines ..... | 1                 | 6                    | 2                  | 9                    |
| Electric motors - Operated by purchased power ..               | 760               | 41,465               | 36                 | 3,102                |
| TOTAL .....  | 767               | 41,681               | 38                 | 3,111                |
| All boilers .....  | 3                 | 800                  | 4                  | 300                  |

(x) According to manufacturers' rating.



Table 8 - CONSUMPTION OF ASBESTOS IN SPECIFIED CANADIAN INDUSTRIES, 1934.

| Industry                            | Quantity                                  | Cost at works<br>\$ |
|-------------------------------------|---|---------------------|
| Electrical Apparatus and Supplies - |   |                     |
| Board .....                         | pound 96,757                              | 16,093              |
| Yarn .....                          | pound 57,174                              | 20,589              |
| Tape .....                          | pound 1,577                               | 1,645               |
| Boilers, Tanks and Engines .....    | xxx ...                                   | 2,534               |
| Asbestos Products -                 |   |                     |
| Fibre .....                         | See Table 8 - Asbestos Products Industry. |                     |
| Other forms .....                   |   |                     |
| Roofing paper .....                 | ton 1,540                                 | 47,466              |
| Cotton goods, n.e.s. ....           | pound 12,576                              | 633                 |
| Woollen goods, n.e.s. ....          | pound 211,816                             | 63,545              |

Table 9 - WORLD PRODUCTION OF ASBESTOS, 1932 - 1934. (Taken from the Imperial Institute's publication "The Mineral Industry of the British Empire and Foreign Countries.")

(Long tons)

| Producing Country and Description | 1932      | 1933    | 1934    |
|-----------------------------------|-----------|---------|---------|
| <u>BRITISH EMPIRE</u>             |           |         |         |
| Southern Rhodesia .....           | 14,077    | 26,948  | 28,762  |
| Swaziland .....                   | 4         | ...     | ...     |
| Union of South Africa (b) .....   | 7,844     | 15,185  | 15,709  |
| Canada -                          |           |         |         |
| Chrysotile (c) .....              | 112,902   | 147,153 | 143,439 |
| Crude .....                       | 421       | 1,166   | 1,485   |
| Fibre .....                       | 40,467    | 73,754  | 69,165  |
| Shorts .....                      | 68,913    | 66,479  | 68,618  |
| Sand and gravel .....             | 3,101     | 5,754   | 4,171   |
| Actinolite .....                  | ...       | ...     | 27      |
| Cyprus .....                      | 1,520     | 3,494   | 7,081   |
| India .....                       | 90        | ...     | 25      |
| Australia .....                   | 150       | 279     | 170     |
| TOTAL .....                       | 137,000   | 193,000 | 195,000 |
| <u>FOREIGN COUNTRIES</u>          |           |         |         |
| Finland (Fibre) .....             | 1,677     | 2,311   | 3,629   |
| France .....                      | 300       | (a)     | (a)     |
| Greece .....                      | 8         | 14      | (a)     |
| Italy .....                       | 1,461     | 3,215   | (a)     |
| United States .....               | (c) 3,178 | 4,479   | 5,843   |
| Argentina .....                   | 7         | ...     | (a)     |
| Brazil .....                      | 36        | 97      | (a)     |
| China (estimated) .....           | 500       | 500     | 500     |
| Japan (estimated) .....           | 1,000     | 1,000   | 1,000   |
| Korea .....                       | ...       | 12      | ...     |
| "Manchoukuo" .....                | 118       | 104     | (a)     |
| Turkey .....                      | ...       | 118     | 4       |
| TOTAL (x) .....                   | 8,000     | 12,000  | 14,000  |
| WORLD'S TOTAL (x) .....           | 145,000   | 205,000 | 209,000 |

For footnotes to this table, see next page.

Footnotes to Table 9 -

(x) Excluding the production of U.S.S.R. (Russia); statistics for which are not available.

(a) Information not available.

(b) Production is not available by kinds, but sales were as follows:-

|                  |           | <u>1 9 3 2</u> | <u>1 9 3 3</u> | <u>1 9 3 4</u> |
|------------------|-----------|----------------|----------------|----------------|
| Amosite .....    | long tons | 1,242          | 2,765          | 3,354          |
| Blue .....       | " "       | 2,647          | 2,879          | 2,511          |
| Chrysotile ..... | " "       | 6,888          | 8,546          | 9,844          |

(c) Sales and shipments.

NOTE - For available 1935 data, see General Review.

GENERAL REVIEW

UNITED STATES - (Supplied by the United States Bureau of Mines). -

"Production of asbestos in the United States amounted to 9,415 short tons in 1935 compared with 6,544 tons in 1934, an increase of about 44 per cent. That sold or used by producers in 1935 amounted to 8,920 tons valued at \$292,927, an increase of about 75 per cent in quantity and 85 per cent in value over 1934. Most of that sold or used by producers was short fibre chrysotile from Vermont, although small sales of Arizona crude were recorded. Small quantities of amphibole were mined in Maryland and Montana.

"Imports of unmanufactured asbestos amounted to 166,585 tons valued at \$5,125,413, a gain of about 38 per cent in quantity and nearly 52 per cent in value compared with 1934. Exports, which are always small, were only 850 tons valued at \$87,896. Apparent consumption in 1935 (domestic fibre used plus imports, minus exports) was 174,655 tons valued at \$5,330,444, a gain of 41 per cent in quantity and 55 per cent in value over 1934.

"The United States leads all countries in the manufacture of asbestos products, but domestic asbestos mines furnish only 2 to 5 per cent of the country's requirements of raw asbestos. The following table shows the quantity, value and origin of asbestos imported into the United States in 1935:-

Table 10 - ASBESTOS (UNMANUFACTURED) IMPORTED FOR CONSUMPTION IN THE UNITED STATES IN 1935 BY COUNTRIES AND CLASSES(x)

| Country                      | Short tons | Value     |
|------------------------------|------------|-----------|
|                              |            | \$        |
| Africa, British -            |            |           |
| Union of South Africa .....  | 945        | 121,577   |
| Other British .....          | 1,183      | 172,654   |
| Canada .....                 | 154,236    | 4,486,112 |
| Finland .....                | 11         | 446       |
| Italy .....                  | 545        | 16,666    |
| Malta, Gozo and Cyprus ..... | 4,628      | 87,844    |
| Morocco .....                | 22         | 2,131     |
| U.S.S.R. (Russia) .....      | 4,813      | 214,532   |
| United Kingdom .....         | 202        | 23,451    |
| TOTAL - 1935 .....           | 166,585    | 5,125,413 |
| TOTAL - 1934 .....           | 120,334    | 3,377,994 |

(x) Figures on imports and exports compiled by M. B. Price, of the Bureau of Mines, from records of the Bureau of Foreign and Domestic Commerce."



"Rhodesian crude No. 1 was quoted at \$210 throughout the year, and crude No. 2 at \$160 until October, and \$185 during November and December.

"Russian crude No. 1 was not quoted until July. The price was \$185 July to October, and \$200 November and December. Crude No. 2 was \$165 - \$170, and crude No. 3, \$125 - \$135 all year. Shingle stock ranged from \$45 to \$60 throughout the year. Beginning July, 1935, a new classification designated Crude "AA" was quoted regularly at \$450 a ton."

UNION OF SOUTH AFRICA (Department of Mines, Union of South Africa) - The Inspector of Mines, Pretoria, reported that several new asbestos concerns commenced work in the Pietersburg district during 1935. Sales effected during the year amounted to 20,400 tons as compared with 14,783 tons in 1934.

The Inspector of Mines, Bloemfontein, stated that the asbestos industry in that section is capable of considerable expansion if the demand warrants it. The demand, however, was weak during the year, and during the latter months showed no improvement. In view of this, restriction of output was required. As the smaller producers, who eke out a bare existence, cannot be expected to share in this restriction, it is practised solely by the large producers, some of whose mines are now working to one-third capacity. These companies buy the products of the smaller producers and, as the export trade is in capable hands, no inferior quality is placed on the market.

Table 11 - (From the Annual Report of the Government Mining Engineer, Department of Mines, Union of South Africa).

"In regard to the sales of asbestos during the year, the relative figures for each class of asbestos and province are as follows:-

| Province  | AMOSITE   |            | CHRYSTILE  |            | BLUE      |            | TOTAL      |            |
|-----------|-----------|------------|------------|------------|-----------|------------|------------|------------|
|           | Tons      | Value<br>£ | Tons       | Value<br>£ | Tons      | Value<br>£ | Tons       | Value<br>£ |
| Transvaal | 4,683,762 | 46,170     | 15,641,670 | 138,013    | 74,717    | 984        | 20,400,149 | 185,167    |
| Cape .... | ...       | ...        | ...        | ...        | 2,401,745 | 41,714     | 2,401,745  | 41,714     |
| Natal ... | ...       | ...        | ...        | ...        | ...       | ...        | ...        | ...        |
| TOTAL ..  | 4,683,762 | 46,170     | 15,641,670 | 138,013    | 2,476,462 | 42,698     | 22,801,894 | 226,881    |
| Year 1934 | 3,756,420 | 37,104     | 11,025,300 | 114,241    | 2,812,143 | 51,688     | 17,593,963 | 203,033    |

"The classification of Chrysotile sold is as follows:-

|                           | <u>Tons</u>  |
|---------------------------|--------------|
| Crude No. 1 .....         | 87.700       |
| Crude No. 2 .....         | 1.700        |
| Crude - Run of Mine ..... | 128.500      |
| Spinning Fibre .....      | 1,108.125    |
| Shingle Fibre .....       | 8,424.300    |
| Paper Stock .....         | 4,760.850    |
| Millboard Stock .....     | 1,108.495    |
| Fillers .....             | 22.000       |
| Floats .....              | ...          |
| TOTAL .....               | 15,641.670 " |



SOUTHERN RHODESIA - The correspondent of "The Mining Journal" - London, reports in May, 1936, on the position of the Rhodesian asbestos industry as follows: "The news that the Rhodesian and General Asbestos Corp. is installing a large water-filtration plant at the company's pumping station on the Lundi River, which will be of immense value to the Shabanie mine and the residents of Shabani, serves to call attention to the improved state of the asbestos industry in the Colony ... The Southern Rhodesian ore contains a large amount of spinning fibre, in which respect it is unique. The class of fibre known as "shingles" when separated from the raw material, is of a clean and crisp quality, and on this account its value in the manufacture of asbestos cement products is higher than elsewhere. Unfortunately the market for the Rhodesian product is confined to the grades mentioned, because heavy railage rates and freights prevent the shipment of "shorts" to compete in the world's markets. As things are, there is not much likelihood of the sales output exceeding 50,000 tons per annum unless the Government provides facilities to make it possible to reduce costs to enable the lower grades of the mineral to be exported."

Table 12 - ASBESTOS PRODUCTION IN RHODESIA, 1935.

| Month           | Short ton |
|-----------------|-----------|
| January .....   | 3,191.13  |
| February .....  | 3,122.53  |
| March .....     | 3,689.50  |
| April .....     | 2,444.85  |
| May .....       | 2,883.85  |
| June .....      | 3,689.45  |
| July .....      | 3,852.83  |
| August .....    | 3,896.15  |
| September ..... | 3,822.10  |
| October .....   | 4,052.70  |
| November .....  | 3,992.25  |
| December .....  | 3,960.28  |
| TOTAL .....     | 42,597.62 |

RUSSIA - Comparatively little information is available relating to Russian asbestos production. A circular issued by the United States Bureau of Mines contains the following information:- "A large new mill designed to handle 2,000,000 tons of rock annually and produce 80,000 tons of fibre in six grades was nearing completion in 1934. This mill will give Russia a total milling capacity of approximately 175,000 tons of fibre a year.

"Estimates made in 1931 indicated that fibre a third of an inch or more in length constituted about 30 per cent of the total output. Since that date, with increasing factory capacity for the manufacture of asbestos products, probably a larger proportion of the shorter grades is produced. Grades entering the German market in 1929 were designated as follows:- Grade 0,  $1\frac{1}{2}$  inch or longer; Grade 1,  $\frac{3}{4}$  inch to  $1\frac{1}{2}$  inch; Grade 2,  $\frac{5}{8}$  to  $\frac{3}{4}$  inch; Grade 3,  $\frac{3}{8}$  to  $\frac{5}{8}$  inch; Grade 4,  $\frac{1}{8}$  to  $\frac{3}{8}$  inch, and Grade 5, less than  $\frac{1}{8}$  inch.

The following information, taken from "ASBESTOS" - Philadelphia, was supplied by the U.S.S.R. Industrial Export Corporation. Total exports of asbestos from Russia during 1935 totalled 27,677 short tons divided as to countries:-

|                        |                   |
|------------------------|-------------------|
| To Europe .....        | 21,597 short tons |
| To United States ..... | 3,416 " "         |
| To Japan .....         | 2,664 " "         |

Divided as to grade:-

|   |            |
|---|------------|
| Crude (fibre not less than $\frac{3}{4}$ inch) .. | 60 " "     |
| Mill fibre .....                                  | 27,485 " " |
| Shorts and waste .....                            | 132 " "    |

CYPRUS - "Milled asbestos (Chrysotile) in Cyprus is graded into three classes - standard, shorts and fines. The standard grade, designated "shingle stock" is said to include about 75 per cent of the production. The entire output is exported. Twelve mills were reported in operation in 1935. Their aggregate capacity is 25,000 tons of fibre a year of six working months. They are operated only in the dry season." (United States Bureau of Mines).

The March issue of "ASBESTOS" reported that the sale of the Cyprus Asbestos Mines to the Tunnel Asbestos Cement Company was confirmed at the meeting held on February 10th. Prior to the negotiations which resulted in the agreement, the Tunnel Portland Cement Company had decided to manufacture and sell asbestos cement, and, with this in view, had ordered the erection of the necessary new buildings and plant on a site at West Thurrock (England) adjoining its existing Portland cement works.

Table 13 - EXPORTS OF ASBESTOS FROM CYPRUS DURING 1935.

| Final Destination              | Long tons | Value<br>£ |
|--------------------------------|-----------|------------|
| United Kingdom .....           | 115       | 418        |
| Palestine .....                | 12        | 38         |
| Belgium .....                  | 350       | 5,101      |
| Denmark .....                  | 741       | 9,440      |
| Egypt .....                    | 21        | 72         |
| Germany .....                  | 34        | 164        |
| Holland .....                  | 43        | 594        |
| Italy .....                    | 389       | 4,939      |
| Japan .....                    | 1,654     | 8,064      |
| Portugal .....                 | 208       | 2,744      |
| Spain .....                    | 429       | 4,455      |
| Syria .....                    | ...       | 2          |
| United States of America ..... | 3,517     | 14,143     |
| TOTAL .....                    | 7,513     | 50,174     |

UNITED KINGDOM -

Table 14 - IMPORTS OF ASBESTOS, RAW AND FIBRE, AND MANUFACTURES, INTO THE UNITED KINGDOM DURING THE CALENDAR YEARS 1933, 1934 and 1935.

|                               | 1        | 9 | 3       | 3 | 1       | 9        | 3 | 4       | 1    | 9       | 3        | 5 |  |  |   |
|-------------------------------|----------|---|---------|---|---------|----------|---|---------|------|---------|----------|---|--|--|---|
| From -                        | Long ton |   |         |   | £       | Long ton |   |         |      | £       | Long ton |   |  |  | £ |
| Union of South Africa .....   | 7,384    |   | 133,745 |   | 6,449   | 118,587  |   | 10,932  |      | 156,168 |          |   |  |  |   |
| Southern Rhodesia .....       | 7,214    |   | 151,038 |   | 11,264  | 238,350  |   | 11,910  |      | 274,312 |          |   |  |  |   |
| Other British countries ..... | 8,233    |   | 119,926 |   | 6,605   | 104,763  |   | 7,273   |      | 90,975  |          |   |  |  |   |
| Foreign countries .....       | 1,789    |   | 35,838  |   | 2,264   | 35,883   |   | 1,944   |      | 37,267  |          |   |  |  |   |
| TOTAL .....                   | 24,620   |   | 440,547 |   | 26,582  | 497,583  |   | 32,059  |      | 558,722 |          |   |  |  |   |
|                               | Cwt.     |   | £       |   | Cwt.    |          | £ |         | Cwt. |         | £        |   |  |  |   |
| Asbestos manufactures .....   | 220,857  |   | 96,047  |   | 378,888 | 135,797  |   | 402,766 |      | 137,421 |          |   |  |  |   |



GERMANY - "Hamburg has been for many years the centre of German and, according to local experts, European, trade in asbestos. German imports of asbestos, by principal countries of shipment during the past four years, follow:-

Table 15 - GERMAN IMPORTS OF ASBESTOS, 1932 - 1935.  
(in metric tons)

| Countries                    | 1 9 3 2 | 1 9 3 3 | 1 9 3 4 | 1 9 3 5 |
|------------------------------|---------|---------|---------|---------|
| Canada .....                 | 3,481   | 5,052   | 5,848   | 5,684   |
| Russia .....                 | 2,222   | 3,379   | 10,038  | 11,913  |
| British South Africa .....   | 1,301   | 3,021   | 2,946   | 3,124   |
| United States .....          | 250     | 345     | 280     | 380     |
| Finland .....                | 221     | 350     | 683     | 434     |
| Australia .....              | 36      | 218     | 168     | 41      |
| Great Britain .....          | ...     | 98      | 42      | 23      |
| Austria .....                | ...     | 56      | 34      | 6       |
| British Mediterranean .....  | ...     | ...     | 39      | 25      |
| Italy .....                  | ...     | ...     | 48      | 166     |
| British East Africa .....    | ...     | ...     | 7       | 26      |
| Portuguese East Africa ..... | ...     | ...     | ...     | 31      |
| Other countries .....        | 71      | 94      | 21      | 32      |
| TOTALS .....                 | 7,582   | 12,613  | 20,154  | 21,885  |

"The general agreement between the net receipts of asbestos in Hamburg (27,519 tons) and total German imports (21,885 tons) indicate the leading position of this port in the German trade in asbestos.

"Since there is no commercial production of asbestos in Germany, and re-exports are negligible, the country's annual consumption is practically identical with net imports, except for fluctuations in the accumulation of stocks, which are usually unimportant. Therefore, the consumption of asbestos may be considered as increasing from 7,582 tons in 1932 to 21,885 in 1935. A steadily increasing demand for asbestos in recent years in Germany has stimulated imports and helped to maintain a firm market. Prices have varied little, being often fixed for 1 year in advance, and contracts are usually made to cover annual deliveries. The industries consuming the product are scattered over northern, middle, western and southern Germany. Hamburg accounts for several large factories manufacturing asbestos products." (Taken from the March issue of "Foreign Metals and Minerals" - Bureau of Foreign and Domestic Commerce, Department of Commerce, Washington).

CZECHOSLOVAKIA - "The output of the sole producer of asbestos in Czechoslovakia, "Asbest" Gewinnung und Verwertung von Asbest, Gesellschaft m.b.H., Dobsina, amounted to 2,600 metric tons in 1935, as against 2,100 in 1934 and 1,200 in 1933. As the annual minimum domestic consumption is estimated at around 6,500 tons, considerable quantities are necessarily imported. Official statistics indicate that imports in 1935 totalled 3,403 metric tons as compared with 4,938 in 1934. Russia was the chief supplier in both years, shipping 1,035 tons in 1935 and 1,620 in 1934. Shipments from British West Asia dropped from 1,115 tons in 1934 to only 41 in 1935. South Africa ranked second in the 1935 trade, accounting for 792 tons, followed by Canada with 725. The United States supplied 42 tons in 1935 as against 4 in the previous year. Asbestos was exported from Czechoslovakia to the amount of 364 tons in 1935 against 516 in 1934." (Taken from the April issue of "Foreign Metals and Minerals" - Bureau of Foreign and Domestic Commerce, Department of Commerce, Washington).

NETHERLANDS - The market for asbestos fibre in Holland is a limited one as there are no asbestos spinneries in this country. The principal uses of asbestos fibre are in insulation work and by the asbestos-cement factories. A slight increase in demand during the next few years is possible.

Table 16 - IMPORTS OF ASBESTOS(x) INTO THE NETHERLANDS, 1935.

| Country of Origin            | Metric tons | Florins |
|------------------------------|-------------|---------|
| TOTAL .....                  | 426         | 47,586  |
| Germany .....                | 8           | 3,482   |
| Great Britain .....          | 38          | 11,029  |
| Finland .....                | 43          | 2,935   |
| Portuguese East Africa ..... | 207         | 19,805  |
| Canada .....                 | 79          | 4,941   |
| Palestine, Cyprus .....      | 33          | 3,600   |
| South Africa .....           | 14          | 1,048   |

(x) All asbestos with exception of asbestos cement, sheets and roofing. The amounts credited to the Dominion are only those shipments arriving direct or from a transit port where identification is made possible by a through bill of lading or by the invoice submitted by the importer. Guilder - nominal quotations in Montreal week ending December 30, 1935 - \$0.6832. (Commercial Intelligence Journal, Department of Trade and Commerce, Ottawa.)

CHINA - Mr. B. A. Macdonald, Assistant Canadian Trade Commissioner, reports that imports of asbestos and manufactures thereof into China during 1935 were valued at 229,200 gold units as compared with 224,900 gold units in 1934. The average value of a gold unit in Canadian funds was \$0.68 in 1935 as against \$0.66 in 1934.

AUSTRALIA - The value of crude asbestos imported into Australia totalled £60,607 during 1934-35 as compared with £34,538 in 1933-1934 (fiscal years ending June 30) and of the total 1934-1935 imports those from South Africa amounted to £42,592; Canada, £11,047, and Rhodesia, £4,765.

JAPAN -

Table 17 - IMPORTS OF ASBESTOS AND MANUFACTURES THEREOF INTO JAPAN, 1933, 1934 and 1935.

|                                   | (100 kin) |              |         |              |         |              |  |  |
|-----------------------------------|-----------|--------------|---------|--------------|---------|--------------|--|--|
|                                   | 1 9 3 3   |              | 1 9 3 4 |              | 1 9 3 5 |              |  |  |
|                                   | Kin       | Value<br>Yen | Kin     | Value<br>Yen | Kin     | Value<br>Yen |  |  |
| TOTAL .....                       | 236,619   | 3,901,678    | 347,323 | 5,093,656    | 370,657 | 5,536,097    |  |  |
| In lump, powder or<br>fibre ..... | 229,397   | 2,342,530    | 341,911 | 4,067,522    | 360,481 | 4,914,416    |  |  |
| Other .....                       | 7,222     | 559,148      | 5,412   | 486,134      | 10,176  | 621,681      |  |  |

Kin = 1.3228 pounds.

Yen - Nominal quotations in Montreal, week ending December 30, 1935 - \$0.2898.



FRANCE -

Table 18 - IMPORTS OF ASBESTOS AND ASBESTOS MANUFACTURES INTO FRANCE, 1934 and 1935.

| Item                                | 1934       |  |           |  | 1935       |  |            |  |
|-------------------------------------|------------|--|-----------|--|------------|--|------------|--|
|                                     | Kilos      |  | Francs    |  | Kilos      |  | Francs     |  |
| Paper and cardboard .....           | 192,900    |  | 1,529,000 |  | 165,100    |  | 1,173,000  |  |
| Rope and cord, mixed .....          | 7,500      |  | 216,000   |  | 5,600      |  | 142,000    |  |
| Tresses, woven and other .....      | 66,200     |  | 1,597,000 |  | 39,700     |  | 855,000    |  |
| Brake lining and other for friction | 8,600      |  | 259,000   |  | 94,500     |  | 2,634,000  |  |
| Asbestos, crude .....               | 10,220,500 |  | 1,605,000 |  | 12,128,300 |  | 17,588,000 |  |

USES

The consumption of asbestos in industry is ever growing and its diversified employment steadily expanding throughout the world. Spinning fibre is utilized in the manufacture of theatre curtains, blankets, clothing, conveyor belts for carrying hot materials, tape, rope, gaskets, clutch facings, brake-band linings and a variety of other manufactures.

Large quantities of the non-spinning fibre are consumed in the production of roofing materials and asbestos paper for pipe coverings, heaters, automobile mufflers, etc. Cement and asbestos compressed in sheets is utilized extensively as millboard, floor tile, corrugated sheeting, lumber, and as lining for electric switch boxes, garages, safes, etc. Non-corrosive, acid resisting pipes made of cement and asbestos are being employed extensively for water and gas mains and sewers. A standard European pipe consists of 80 per cent cement and 20 per cent asbestos. Large quantities of short fibres are consumed in the manufacture of plastic fireproof cements used for boiler, pipe and furnace lining. Short fibres are also used in fireproof paints and as a constituent of asphalt-roofing coatings.

The following information relating to some of the more recent and interesting applications of asbestos was supplied by "ASBESTOS" - Philadelphia:-

"Asbestos is playing an increasing part in the very active campaign that is being waged in London against traffic noise.

"The London Passenger Transport Board, which controls all London bus, street car and subway services, is employing asbestos in a variety of ways as a sound-deadener and success has been such as to warrant a continuation of the research into the material's silencing properties.

"Many of the tunnel walls of the London subways have been lined with asbestos mats up to the level of the floor of the train, and this has resulted in a surprising diminution of noise. At first it was feared that the asbestos mats might lose their sound-absorbing qualities thru the accumulation of dust, but after a month or so of use it has been found that the dust deadens noise rather than reproduces it.

"An experiment now in progress is with "skirted" wheels for subway trains. Engineers are devising a system of cawling for the wheels which, if successful will be generally introduced. This "skirting" is of metal and one of the suggestions put forward is to line it with asbestos.

"At the close of 1935 a "triple insulated" house was completed and exhibited in the United States. This house is of much interest to the asbestos industry as it is built with the idea of incorporating asbestos materials in its construction wherever possible. The exterior of the house is asbestos-cement shingles; both walls and roof are insulated with rock wool while the interior walls are plaster applied over steel wire mesh attached to a fibrous backing - therefore the "triple insulated." The chief object in the building of this house is to bring sturdy, lasting construction of homes within the reach of the average citizen. The house is not "modern" nor "freakish" in appearance, but is of the colonial type of home of moderate cost and most attractive."

DIRECTORY OF FIRMS IN CANADIAN ASBESTOS MINING INDUSTRY, 1935.

| <u>Name of Company</u>           | <u>Head Office Address</u>   | <u>Location of Plant</u>  |
|----------------------------------|--|---|
| <u>QUEBEC -</u>                  |  |   |
| Asbestos Corporation Ltd.        | Canada Cement Bldg., Montreal, P.Q.                                      | Thetford Mines,<br>East Broughton,<br>Black Lake,<br>Coleraine. |
| Canadian Johns-Manville Co. Ltd. | Montreal, P.Q.   | Asbestos.   |
| Johnson's Company                | Thetford Mines West, P.Q.  | Thetford Mines,<br>Coleraine.                                   |
| Keasbey & Mattison Company       | Ambler, Pa., U.S.A.  | Thetford Mines.   |
| Nicolet Asbestos Mines, Ltd.     | c-o Greenshields & Greenshields,<br>Transportation Bldg., Montreal, P.Q. | Wotton Tp.<br>Tingwick Tp.                                      |
| Northern Asbestos Co. Ltd.       | Black Lake, P.Q.   | Thetford Mines.   |
| Quebec Asbestos Corp. Ltd.       | East Broughton, P.Q.   | East Broughton.   |
| <u>ONTARIO -</u>                 |  |   |
| (a) Rahn Lake Mines Corp. Ltd.   | Box 422, North Bay, Ontario  | Matachewan.   |

(a) Active but not yet producing in 1935.



(b) THE ASBESTOS PRODUCTS INDUSTRY IN CANADA, 1935.

Manufactures of asbestos products in Canada were valued at \$1,130,282 in 1935 compared with \$910,983 in 1934. The chief products in 1935 were: woven and moulded brake linings, \$439,904; boiler and pipe coverings, \$136,157; packings, \$107,824; clutch facings, \$78,131, and gaskets, \$24,501. Asbestos sheets, shingles, blackboards, paper, millboard, yarn, dryer felts, and cement were also manufactured but as there were only one or two producers in each case, the output figures cannot be shown separately.

A total of 15 plants reported in this industry in 1935; 7 were located in Quebec, 5 in Ontario, and 1 in Nova Scotia. Capital employed in manufacturing operations amounted to \$1,703,301, the number of workers was 327, and salaries and wages totalled \$523,854. Purchased materials for manufacturing cost \$518,994.

Detailed statistics for the asbestos manufacturing plants are recorded below for 1934 and 1935.

Table 1 - PRINCIPAL STATISTICS OF THE ASBESTOS PRODUCTS INDUSTRY, 1925 - 1935.

| Years      | No. of plants | Capital employed | Average number of employees | Salaries and wages | Cost of fuel and electricity at works | Cost of materials at works | Selling value of products at works |
|------------|---------------|------------------|-----------------------------|--------------------|---------------------------------------|----------------------------|------------------------------------|
|            |               | \$               |                             | \$                 | \$                                    | \$                         | \$                                 |
| 1925 ..... | 12            | 2,624,260        | 256                         | 282,382            | 62,640                                | 783,063                    | 1,344,097                          |
| 1926 ..... | 14            | 2,773,433        | 270                         | 321,865            | 64,288                                | 750,907                    | 1,530,094                          |
| 1927 ..... | 13            | 2,860,945        | 300                         | 358,959            | 73,495                                | 797,975                    | 1,663,300                          |
| 1928 ..... | 14            | 3,064,164        | 345                         | 421,448            | 72,421                                | 925,661                    | 2,050,432                          |
| 1929 ..... | 12            | 2,949,712        | 351                         | 359,433            | 80,902                                | 1,348,460                  | 2,286,638                          |
| 1930 ..... | 11            | 2,316,645        | 306                         | 401,490            | 77,082                                | 1,327,025                  | 2,301,924                          |
| 1931 ..... | 13            | 1,112,141        | 240                         | 302,638            | 57,339                                | 729,771                    | 1,308,183                          |
| 1932 ..... | 13            | 2,682,882        | 279                         | 280,953            | 67,732                                | 559,673                    | 1,067,801                          |
| 1933 ..... | 11            | 1,777,975        | 222                         | 208,580            | 55,031                                | 331,062                    | 757,626                            |
| 1934 ..... | 11            | 1,391,873        | 228                         | 233,379            | 46,488                                | 387,074                    | 910,983                            |
| 1935 ..... | 13            | 1,703,301        | 327                         | 523,854            | 66,793                                | 518,994                    | 1,130,282                          |

Table 2 - PRINCIPAL STATISTICS, BY PROVINCES, 1934 and 1935.

| Years                 | No. of plants | Capital employed | Average number of employees | Salaries and wages | Cost of fuel and electricity at works | Cost of materials at works | Selling value of products at works |
|-----------------------|---------------|------------------|-----------------------------|--------------------|---------------------------------------|----------------------------|------------------------------------|
|                       |               | \$               |                             | \$                 | \$                                    | \$                         | \$                                 |
| <u>1934</u>           |               |                  |                             |                    |                                       |                            |                                    |
| Quebec .....          | 4             | 917,062          | 149                         | 128,284            | 32,057                                | 199,244                    | 416,967                            |
| Other provinces ..... | 7             | 474,811          | 79                          | 105,095            | 14,431                                | 187,830                    | 494,016                            |
| CANADA ...            | 11            | 1,391,873        | 228                         | 233,379            | 46,488                                | 387,074                    | 910,983                            |
| <u>1935</u>           |               |                  |                             |                    |                                       |                            |                                    |
| Quebec .....          | 7             | 1,259,101        | 244                         | 216,741            | 54,313                                | 318,303                    | 641,819                            |
| Other provinces ..... | 6             | 444,200          | 83                          | 107,113            | 12,480                                | 200,691                    | 488,463                            |
| CANADA ...            | 13            | 1,703,301        | 327                         | 323,854            | 66,793                                | 518,994                    | 1,130,282                          |

Table 3 - CAPITAL EMPLOYED, BY PROVINCES, 1934 and 1935.

| Provinces         | Present value<br>of land, build-<br>ings, fixtures,<br>machinery and<br>tools | Inventory value<br>of materials on<br>hand, finished pro-<br>ducts and stocks<br>in process | Cash, bills<br>and accounts<br>receivable,<br>prepaid ex-<br>penses, etc. | TOTAL<br>CAPITAL<br>EMPLOYED |
|-------------------|---|---|---|------------------------------|
|                   | \$  | \$  | \$  | \$                           |
| <u>1 9 3 4</u>    |   |   |   |                              |
| Quebec .....      | 570,784   | 179,198   | 167,080   | 917,062                      |
| Other provinces . | 224,717   | 136,464   | 113,630   | 474,811                      |
| CANADA .....      | 795,501   | 315,662   | 280,710   | 1,391,873                    |
| <u>1 9 3 5</u>    |   |   |   |                              |
| Quebec .....      | 874,362   | 317,994   | 66,745  | 1,259,101                    |
| Other provinces . | 251,660   | 125,765   | 66,775  | 444,200                      |
| CANADA .....      | 1,126,022   | 443,759   | 133,520   | 1,703,301                    |

Table 4 - EMPLOYEES, SALARIES AND WAGES, BY PROVINCES, 1934 and 1935.

| Provinces         | Average number of employees |        |          |        |       | Salaries | Wages   | TOTAL<br>SALARIES<br>AND WAGES |
|-------------------|-----------------------------|--------|----------|--------|-------|----------|---------|--------------------------------|
|                   | On salaries                 |        | On wages |        | TOTAL |          |         |                                |
|                   | Male                        | Female | Male     | Female |       |          |         |                                |
|                   |                             |        |          |        |       | \$       | \$      | \$                             |
| 1 9 3 4           |                             |        |          |        |       |          |         |                                |
| Quebec .....      | 14                          | 4      | 110      | 21     | 149   | 27,093   | 101,191 | 128,284                        |
| Other provinces . | 15                          | 9      | 54       | 1      | 79    | 51,741   | 53,354  | 105,095                        |
| CANADA .....      | 29                          | 13     | 164      | 22     | 228   | 78,834   | 154,545 | 233,379                        |
| 1 9 3 5           |                             |        |          |        |       |          |         |                                |
| Quebec .....      | 27                          | 5      | 190      | 22     | 244   | 53,925   | 162,816 | 216,741                        |
| Other provinces . | 15                          | 9      | 59       | ...    | 83    | 54,778   | 52,335  | 107,113                        |
| CANADA .....      | 42                          | 14     | 249      | 22     | 327   | 108,703  | 215,151 | 323,854                        |

Table 5 - WAGE-EARNERS, BY MONTHS, 1934 and 1935.

| Months          | 1 9 3 4 |        |       | 1 9 3 5 |        |       |
|-----------------|---------|--------|-------|---------|--------|-------|
|                 | Male    | Female | TOTAL | Male    | Female | TOTAL |
| January .....   | 132     | 21     | 153   | 177     | 20     | 197   |
| February .....  | 145     | 23     | 168   | 183     | 22     | 205   |
| March .....     | 157     | 21     | 178   | 219     | 22     | 241   |
| April .....     | 154     | 20     | 174   | 234     | 22     | 256   |
| May .....       | 174     | 22     | 196   | 257     | 21     | 278   |
| June .....      | 176     | 21     | 197   | 248     | 21     | 269   |
| July .....      | 177     | 21     | 198   | 254     | 22     | 276   |
| August .....    | 162     | 21     | 183   | 274     | 21     | 295   |
| September ..... | 170     | 22     | 192   | 278     | 22     | 300   |
| October .....   | 175     | 22     | 197   | 286     | 22     | 308   |
| November .....  | 180     | 23     | 203   | 294     | 23     | 317   |
| December .....  | 169     | 22     | 191   | 267     | 22     | 289   |
| AVERAGE .....   | 164     | 22     | 186   | 249     | 22     | 271   |



Table 6 - FUEL AND ELECTRICITY USED, 1934 and 1935.

| Kinds                          |           | 1 9 3 4                |        | 1 9 3 5                |        |
|--------------------------------|-----------|------------------------|--------|------------------------|--------|
|                                |           | Quantity               |        | Quantity               |        |
|                                |           | Cost at<br>works<br>\$ |        | Cost at<br>works<br>\$ |        |
| Anthracite coal .....          | short ton | 47                     | 540    | 33                     | 328    |
| Bituminous coal - Canadian ... | short ton | 2,772                  | 16,695 | 5,452                  | 32,383 |
| Gasoline .....                 | Imp. gal. | 2,786                  | 750    | 2,780                  | 650    |
| Fuel oil .....                 | Imp. gal. | 147,249                | 13,254 | 198,100                | 12,188 |
| Wood .....                     | cord      | ...                    | ...    | 10                     | 65     |
| Gas - Manufactured .....       | M cu. ft. | 303                    | 198    | 200                    | 177    |
| Electricity purchased .....    | K. W. H.  | 1,145,360              | 15,051 | 1,640,578              | 21,002 |
| TOTAL .....                    | xxx       | ...                    | 46,488 | ...                    | 66,793 |

Table 7 - POWER EQUIPMENT, 1934 and 1935.

|  |  | 1 9 3 4            |                            | 1 9 3 5            |                            |
|--|--|--------------------|----------------------------|--------------------|----------------------------|
|  |  | Number of<br>units | Total rated<br>horse power | Number of<br>units | Total rated<br>horse power |
| Electric motors - Ordinarily in use .... |  | Not shown          |                            | 169                | 2,301                      |
| In reserve or idle ...                   |  | separately         |                            | 5                  | 103                        |
| TOTAL .....                              |  | 128                | 1,992                      | 174                | 2,404                      |
| Boilers - Ordinarily in use .....        |  | Not shown          |                            | 6                  | 608                        |
| In reserve or idle .....                 |  | separately         |                            | 1                  | 200                        |
| TOTAL .....                              |  | 5                  | 408                        | 7                  | 808                        |

Table 8 - MATERIALS USED IN MANUFACTURING, 1934 and 1935.

| Materials                              |     | 1 9 3 4                |         | 1 9 3 5                |         |
|--|-----|------------------------|---------|------------------------|---------|
|  |     | Quantity               |         | Quantity               |         |
|  |     | Cost at<br>works<br>\$ |         | Cost at<br>works<br>\$ |         |
| Asbestos fibre .....                   | lb. | 4,844,692              | 66,524  | 5,321,075              | 75,147  |
| Asbestos cloth and strips .....        | lb. | 36,291                 | 15,703  | 47,121                 | 19,233  |
| Asbestos paper, corrugated or plain .. | lb. | 48,183                 | 2,771   | 350,623                | 14,940  |
| Asbestos yarn .....                    | lb. | 247,555                | 67,044  | 347,039                | 87,513  |
| Portland cement .....                  | lb. | 255,452                | 1,507   | 463,803                | 3,754   |
| Cotton cloth, yarn and waste .....     | xx  | ...                    | 10,397  | ...                    | 37,647  |
| Rubber .....                           | lb. | 66,801                 | 8,799   | 47,939                 | 7,639   |
| Containers, boxes, etc. ....           | xx  | ...                    | 30,071  | ...                    | 41,168  |
| All other materials .....              | xx  | ...                    | 184,258 | ...                    | 231,953 |
| TOTAL .....                            | xx  | ...                    | 387,074 | ...                    | 518,994 |

Table 9 - PRODUCTS MANUFACTURED, 1934 and 1935.

| Products                                | Unit of<br>measure | 1 9 3 4       |                | 1 9 3 5       |                |
|---|--------------------|---------------|----------------|---------------|----------------|
|   |                    | Selling value |                | Selling value |                |
|   |                    | Quantity      | at works<br>\$ | Quantity      | at works<br>\$ |
| Asbestos brake linings .....            | ft.                | 2,692,184     | 458,147        | 2,927,962     | 439,904        |
| Asbestos boiler and pipe coverings .... | ft.                | 1,207,301     | 99,948         | 1,477,121     | 136,157        |
| Asbestos clutch facings .....           | No.                | 338,069       | 49,317         | 416,311       | 78,131         |
| Asbestos gaskets and tape .....         | lb.                | 38,775        | 21,058         | 46,289        | 24,501         |
| Asbestos packings .....                 | lb.                | 196,627       | 78,860         | 229,724       | 107,824        |
| Other asbestos products(1) .....        | xx                 | ...           | 106,124        | ...           | 172,647        |
| All other products (2) .....            | xx                 | ...           | 97,529         | ...           | 171,118        |
| TOTAL .....                             | xx                 | ...           | 910,983        | ...           | 1,130,282      |

(1) Includes asbestos blackboards, millboard, paper, shingles, yarn, cloth, cements, dryer felts, etc.

(2) Includes packings of rubber, duck and flax; brass rivets, rock wool and eel grass insulation.

Table 10 - PRODUCTION OF ASBESTOS BRAKE LININGS, PIPE COVERINGS AND PACKINGS, 1925-1935.

| Years      | Asbestos brake<br>linings | Asbestos boiler and<br>pipe coverings | Asbestos<br>packings |
|------------|---------------------------|---------------------------------------|----------------------|
|            | \$                        | \$                                    | \$                   |
| 1925 ..... | 272,217                   | 179,717                               | 187,916              |
| 1926 ..... | 279,783                   | 232,963                               | 184,515              |
| 1927 ..... | 326,072                   | 277,339                               | 204,376              |
| 1928 ..... | 439,431                   | 376,399                               | 218,904              |
| 1929 ..... | 555,739                   | 406,395                               | 234,595              |
| 1930 ..... | 459,616                   | 283,312                               | 197,601              |
| 1931 ..... | 321,664                   | 178,611                               | 144,983              |
| 1932 ..... | 309,942                   | 83,964                                | 87,682               |
| 1933 ..... | 316,938                   | 65,725                                | 91,597               |
| 1934 ..... | 458,147                   | 99,948                                | 78,860               |
| 1935 ..... | 439,904                   | 136,917                               | 107,824              |

DIRECTORY OF FIRMS IN THE ASBESTOS PRODUCTS INDUSTRY, 1935.

Names of Firms and Location of Plants

Main Products, 1935.

Guildfords Limited,  
June St., Halifax, N.S.

Asbestos boiler and pipe coverings,  
packings, gaskets, tape, and cements;  
eel grass insulation.

Asbestonos Corporation Limited,  
St. Lambert, Montreal, P.Q.

Asbestos brake linings, clutch facings,  
packings and brake blocks.

Asten-Hill Ltd.,  
Valleyfield, P.Q.

Asbestos dryer felts.

Modern School Furniture Ltd.,  
6450 Hutchison St., Montreal, P.Q.

Asbestos blackboards.

Atlas Asbestos Company Limited,  
110 McGill St., Montreal, P.Q.

Asbestos gaskets and cloth.

Canadian Johns-Manville Co. Ltd.,  
Asbestos, P.Q.

Asbestos brake linings, boiler and pipe  
covering, cloth, gaskets, clutch facings,  
packings, paper, shingles, sheets, re-  
fractory cements, brake block sheets,  
yarn, etc.; and ebony, transite, rock  
wool.

Philip Carey Company Limited,  
Lennoxville, P.Q.

Asbestos boiler and pipe covering, paper,  
millboard.

Realbestos Corporation Limited,  
Disraeli, P.Q.

Asbestos brake linings.

Beldam's Asbestos Packing & General Mfg.  
Co. Ltd.,  
37 Britain St., Toronto, Ont.

Asbestos gaskets.

Canadian Raybestos Co. Ltd.,  
280 Perry St., Peterboro, Ont.

Asbestos brake linings, clutch facings,  
packings, and gaskets; brass rivets.



DIRECTORY OF FIRMS IN THE ASBESTOS PRODUCTS INDUSTRY, 1935. (concluded)

Names of Firms and Location of Plants

Main Products, 1935.

Eureka Mineral Wool & Asbestos Co.,  
102 Adelaide St. W., Toronto, Ont.

Asbestos boiler and pipe covering and  
gaskets.

Garlock Packing Company,  
200 Queen St. N., Hamilton, Ont.

Asbestos packings and gaskets; rubber,  
duck and flax packings.

Wild, Arthur C.,  
38 Hiron Ave., Toronto, Ont.

Asbestos boiler and pipe covering.

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