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Royal Commission

on Canada's Economic Prospects

# The Canadian Industrial Machinery Industry



by Urwick, Currie Limited

ROYAL COMMISSION ON CANADA'S ECONOMIC PROSPECTS

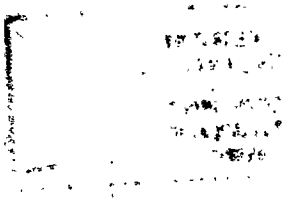


# THE CANADIAN INDUSTRIAL MACHINERY INDUSTRY

By URWICK CURRIE LIMITED

FEBRUARY, 1956

*While authorizing the publication of this study, which has been prepared at their request, the Commissioners do not necessarily accept responsibility for all the statements or opinions that may be found in it.*



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# 1

## SCOPE OF THE INQUIRY

In response to a request made on September 2nd, 1955, by Mr. W. L. Gordon, we undertook to carry out a study of the industrial machinery industry on behalf of the Royal Commission on Canada's Economic Prospects.

At an early discussion with the staff of the Royal Commission it was agreed that the industry should include all firms and products so classified by the Dominion Bureau of Statistics with the exception of those relating to household, office and store machinery. The industry referred to in this report includes all types of machinery products used in primary and secondary industry with the exception of agricultural machinery, most types of transportation equipment, electrical apparatus and supplies (except those parts that form an integral part of an industrial machine) and household, office and store machinery.

In order to cover the terms of reference fully, we decided that our principal source of information should be the industry itself, supported by all available published statistics. Accordingly, we selected a sample made up of firms of varying size which between them manufactured all the main products produced in the industry. We then visited each of these firms and, using a list of questions which we had previously prepared as a basis, we held discussions with the Presidents and other officials to obtain their views on the past progress and future prospects of their own firms and of the industry generally. We also made brief tours of inspection of the plants to obtain a general assessment of the efficiency with which manufacturing activities were carried out. The firms which we visited represented 56% of the total employment in the industry and 12% of the total number of firms. A list of these firms is given in Appendix 1 attached to this report.

In addition to our visits and discussions with firms in the industry we also obtained the views of certain distributors of industrial machinery and of a number of users.

The statistics which we have used throughout this report have been made available by the Dominion Bureau of Statistics. We are indebted to them for providing breakdowns not normally published.

We would like to record our sincere appreciation of the courteous and helpful attitude of those members of the industry whom we were fortunate enough to meet.

# 2

## CONCLUSIONS

The study which we have carried out, the results of which are contained in this report, lead us to the following conclusions:

1. The industry is generally efficiently run and has very good plant facilities. It could expand its operations to the extent envisaged over the next twenty-five years, i.e., 4-5 times.

2. The machine tool section of the industry has declined to a point where its survival as builders of machine tools is doubtful.

3. The industry is important to the country as a training ground for highly skilled personnel and because of its ability to build machinery and equipment necessary for the development of other industries. Its value to the defense effort in the last war is proven and it undoubtedly has a value in the future within the framework of continental defense.

4. The carrying out of technical development by the industry and the expansion of its activities is severely restricted by the operation of tariff items 427 and 427A relating to goods of a class or kind made in Canada and by the administration of Section 35 of the Customs Act relating to the valuation of imports.

5. The industry has a small share of the domestic market; its total production accounting for only 38% of the total. The industry lacks volume and suffers the resulting disadvantages. Firms produce a diversified line of products in order to make the maximum use of their resources.

6. The industry is a small exporter of its products and its export prospects are not favourable.

7. The industry is an important employer of labour with the main concentration in the provinces of Ontario and Quebec.
8. The industry does not carry out sufficient research and technical development.
9. The industry is not likely to experience any rapid change in its method of operation due to technological changes arising from the use of electronic devices, automation or other causes.

# 3

## STRUCTURE OF THE INDUSTRY

### *A. Size and Location of Firms*

In 1953 there were 325 firms in the industry, of which 13 were engaged primarily in the manufacture of machine tools. The following table shows the location and number of firms graded accordingly to numbers employed:

*Table 1*

PROVINCIAL ANALYSIS OF FIRMS BY SIZE

| Total Firms | Province | No. of Employees | NUMBER OF FIRMS (10 20 30 40 50 60 70 80 90 100 110 120 130) |
|---|---|---|---|
| 2 | NEWFOUNDLAND | Under 50 | 2 |
| 2 | NEW BRUNSWICK | Under 50 | 1 |
| | | 50-99 | 1 |
| 4 | NOVA SCOTIA | Under 50 | 3 |
| | | 50-99 | 1 |
| 60 | QUEBEC | Under 50 | 39 |
| | | 50-99 | 8 |
| | | 100-199 | 6 |
| | | 200-499 | 4 |
| | | 500-over | 3 |
| 196 | ONTARIO | Under 50 | 130 |
| | | 50-99 | 28 |
| | | 100-199 | 17 |
| | | 200-499 | 17 |
| | | 500-over | 4 |
| 12 | MANITOBA | Under 50 | 8 |
| | | 50-99 | 4 |
| 6 | SASKATCHEWAN | Under 50 | 5 |
| | | 50-99 | |
| 6 | ALBERTA | Under 50 | 3 |
| | | 50-99 | 1 |
| | | 100-199 | |
| | | 200-499 | 2 |
| 37 | BRITISH COLUMBIA | Under 50 | 27 |
| | | 50-99 | 3 |
| | | 100-199 | 4 |
| | | 200-499 | 3 |

SUMMARY

| NUMBER EMPLOYED | Under 50 | 50-99 | 100-199 | 200-499 | 500-over |
|---|---|---|---|---|---|
| TOTAL NO. OF FIRMS | 218 | 47 | 27 | 26 | 7 |
| PERCENTAGE AS TO SIZE | 67% | 15% | 8% | 8% | 2% |

The most notable features of this analysis are the very high percentage, 67%, of small firms, the very low percentage, 2%, of large firms, and the preponderance of firms located in Ontario. The concentration of firms in Ontario is particularly marked in the case of the very small and medium-

sized firms. The industry is clearly not one which is dominated by a few large firms; indeed it requires 53 firms to account for 75% of the total employment in the industry.

The large number of small firms is able to operate because of their ability to manufacture and service specific custom-built items at competitive prices. This is a natural condition for this industry because the larger firms are not so advantageously placed to handle this type of work, due to the relative smallness of the total market, the custom nature of the products, and the degree of installation and service which would be required over a wide area.

One consequence of the small size of firms in the industry and their location in established industrial centres is that with very few exceptions individual firms are not a major factor in the employment picture in their areas. In addition to the firms in the industry there are four main firms outside the industry which produce a considerable amount of industrial machinery.

### *B. Products Made*

The industry manufactures a very wide range of machinery and equipment, much of which is custom made to the requirements of individual customers. Included among the products made are pumps, transmission machinery, pulp and paper machinery, materials handling equipment, metal working machinery and water wheels and turbines.

The Montreal area is the centre for the manufacture of heavy industrial machinery and firms in that area produce the major part of the total output of compressors and water wheels and turbines, and a large share of the total output of pumps, mining machinery, pulp and paper machinery, diesel engines and power shovels. By contrast, firms in the Toronto and southern Ontario industrial area tend to produce mainly the lighter type of machinery and equipment. Products made by firms in this area include materials handling equipment, freight and passenger elevators, roller bearings, transmission machinery, woodworking machinery, chemical equipment and baking machinery. The manufacture of machine tools is virtually all carried out in southern Ontario.

It is interesting to note that firms in the Montreal area tend to serve basic industries such as mining, pulp and paper, and power projects not located in the immediate area, while firms in Toronto and the southern Ontario region tend to serve the wide range of industries located in that region.

### *C. Ownership and Control*

The majority of firms in the industry is owned and operated by Canadians. However, well over one-third of the production of the industry originates in plants owned or controlled by American interests. Just under one-half of the firms employing 200 persons or more are subsidiaries of

larger United States companies, reflecting the concentration of United States control among the larger firms. These American branch plants are responsible for the largest share of the domestic production of air compressors, materials handling equipment, bearings, and industrial belting. Their output of other products such as mining machinery and parts, pulp and paper machinery, industrial pumps, transmission machinery, industrial engines and water wheels and turbines is a significant part of domestic output.

The creation of subsidiaries in Canada by United States companies has been brought about by the desire to secure the Canadian market for their products and the Canadian subsidiary gives its full effort towards this end. The subsidiary normally has a free hand in its day-to-day activities but the major policy decisions are usually made by the parent company. This suggests to us that if at any time the demands of the market in the United States should decline to any substantial extent, then the parent company might close its Canadian plant and meet the needs of the Canadian market from the spare capacity of its plants in the United States.

American controlled companies are usually efficiently run, due mainly to the insistence of the parent company that the level of productivity be comparable with that achieved in the United States. To help them towards this end they draw extensively on the research facilities and manufacturing know-how of the parent company, advantages which a similar company would not enjoy were it Canadian owned. To this extent United States ownership brings advantages to the industry and to the economy as a whole.

Although United Kingdom direct investments in the industry are not substantial, British controlled companies do produce machine tools, air compressors, industrial pumps, refrigeration equipment, elevators, and marine diesel engines, but, in view of the small part that these firms play, any curtailment of their operations would not have a serious effect on the industry.

### *D. Employment and Wages*

The industry is an important employer of labour and ranks seventeenth among all industries in terms of employment. Preliminary figures for 1954 indicate that 23,700 persons were employed in the industry, of whom 1,471 were engaged in the machine tool section. Firms in Ontario and Quebec accounted for 90% of the total employment, with Ontario accounting for some 14,000 employees against some 7,000 in Quebec. Firms in British Columbia accounted for 6% of the total and the other 4% was accounted for by the remaining provinces. In addition to the employment within the industry it is estimated that an additional 4,500 persons are employed in the manufacture of industrial machinery by firms which are outside the industry.

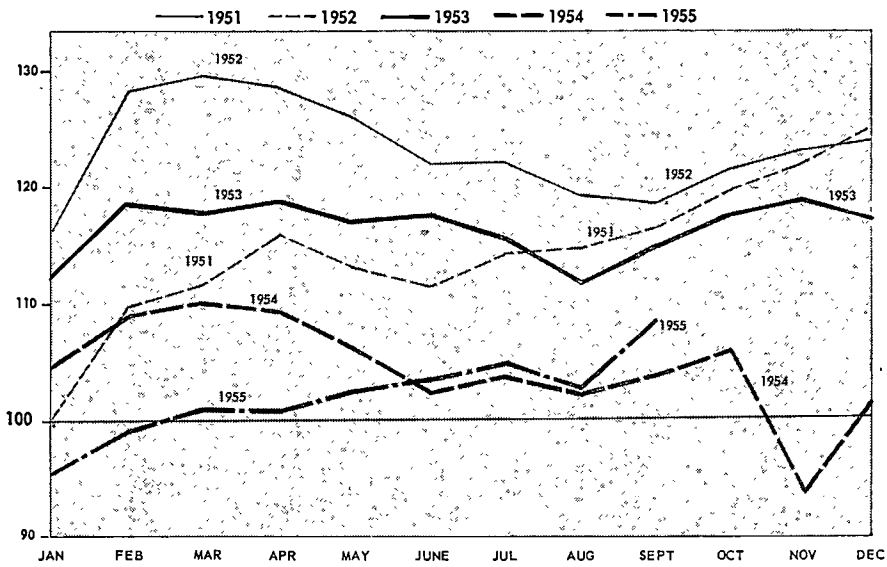
Total employment in the industry increased by 16% between 1949 and 1951 and the level then reached has been fairly steadily maintained. The machine tool section of the industry, however, reached a postwar peak in

1952 through the rearmament demands occasioned by the Korean War and has since declined until employment is now at about the 1950 level.

Variations have occurred in the man-hours worked by the industry and reference to Chart 1, that follows, emphasizes the severity of the decline in activity in 1954. In assessing this decline, it is important to note that hours worked by the machine tool section of the industry declined by 33% while those worked by the remainder of the industry declined only 8%. In 1955 the man-hours worked by the industry were below the comparable figures for 1954 during the first five months of the year. Indications are that in the second half of 1955 the industry ran at better than 1954 level.

*Chart 1*

INDEX OF MAN HOURS WORKED IN THE INDUSTRIAL MACHINERY INDUSTRY
(January 1951 Equals 100)




The average hourly earnings in the machinery section of the industry have increased considerably in the past six years and have now risen to over $65. per week. This is above the average of $60. for manufacturing industry as a whole. The earnings of the machine tool section of the industry average about $4. per week higher than the average for the rest of the industry.

Despite the rapid rise in wage rates during the postwar period, Canadian rates are appreciably lower than those paid by competing firms in the United States and considerably higher than those paid by competing firms in European countries. Although exact comparison with competing countries are difficult to make due to regional variations in rates paid, Canadian industrial machinery rates are generally some 13%-17% below comparable rates in the United States, and about 150% above those paid by European competitors.

# 4

## THE TRADING POSITION

### *A. The Domestic Market*

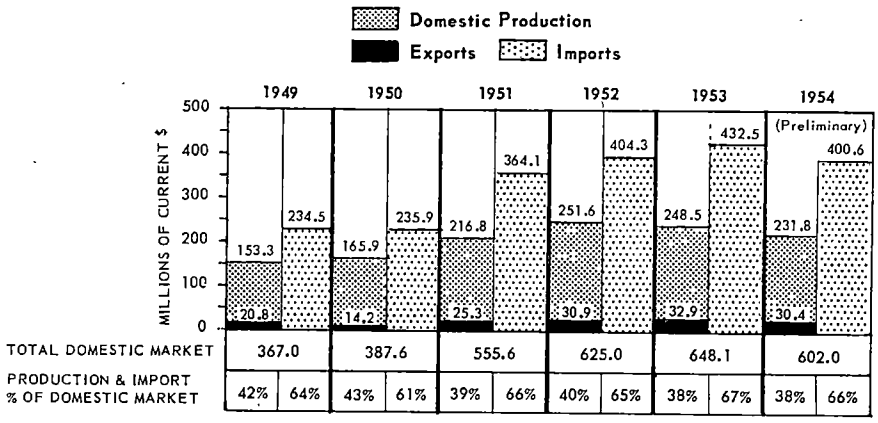
After the outbreak of the Second World War, the industry expanded its production to a remarkable degree and between 1939 and 1949 it is estimated that output increased two and one-half times. This increase in the level of output exceeded the average rate of growth of durable goods industries for the same period. The rate of increase in the value of production in the period 1949-52 was even more rapid than in the early postwar period and in the three years the value increased by 65%. In 1953 the value of production declined slightly so that the increase for the four years to 1953 was 62%. Preliminary figures for 1954 show the total value of domestic production to be $231 million, of which $41 million is estimated to have been produced by firms outside the industry. Indications are that in 1955 the industry recovered from the recession that took place in 1953 and 1954 and the value of domestic production should be above the 1954 level.

In order that the relationship between domestic production, imports, exports and the domestic supply of industrial machinery may be appreciated, we give the figures for recent years in Table 2, below, and a graphic presentation in Chart 2 at the end of this section of the report.

The domestic market for industrial machinery showed a remarkable change in the years 1949-53 increasing by 76% in that period. One result of this increase was that, although domestic production had made great strides, its rate of expansion was below the increase in demand. The total domestic production declined in relation to the total domestic market by three percentage points, from 41% to 38%, while imports increased by 2%. In the prewar period 1935-39 the industry enjoyed a larger share of the total domestic market with an average of 49% over that period. In 1939 the industry had 45% of the total domestic market with production of $30 million out of a total of $67 million. The factors affecting the export market are discussed in Para. IV B later in this report.

*Table 2*

DOMESTIC MARKET FOR INDUSTRIAL MACHINERY 1949-54




| | 1949 | | 1950 | | 1951 | | 1952 | | 1953 | | 1954 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TOTAL DOMESTIC MARKET | 367.0 | | 387.6 | | 555.6 | | 625.0 | | 648.1 | | 602.0 | |
| PRODUCTION & IMPORT % OF DOMESTIC MARKET | 42% | 64% | 43% | 61% | 39% | 66% | 40% | 65% | 38% | 67% | 38% | 66% |

*NOTE: Domestic production quoted as a % of domestic market is then reduced by the amount of exports shown.*

The largest share of the domestic market for industrial machinery has always been provided by imports from other countries. These imports have provided over 60% of the total supply in the postwar period and during the four years 1949-1953 they have varied between 61% and 67%. Traditionally, the bulk of these imports has come from the United States and, although their share has been reduced in recent years, it still makes up some 87% of total imports. Imports from the United Kingdom on the other hand have increased and now represent some 10% of the total. The remaining 3% of imports come from many countries, including Western Germany, Italy, Sweden, and Switzerland.

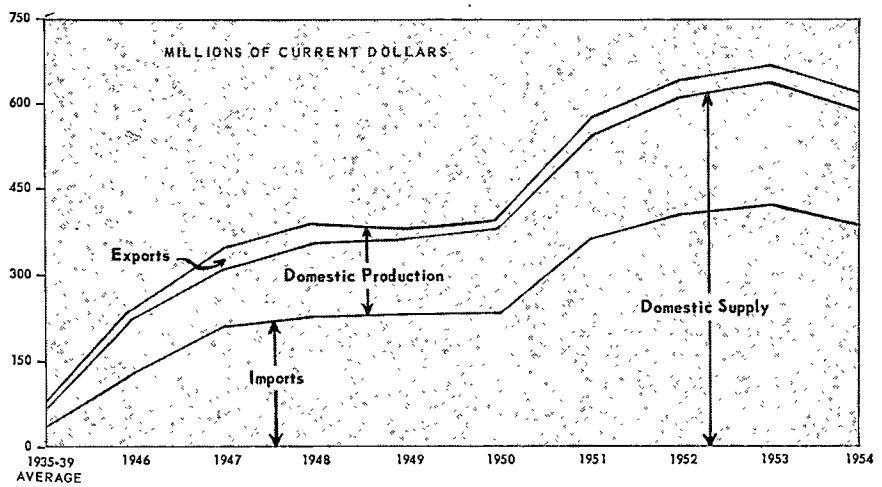
Although the total imports of industrial machinery exceeds the domestic production, the relationship between the two is not constant for different groups of products. In the case of power pumps, pulp and paper machinery, water wheels and turbines and materials handling equipment, the domestic production exceeds the amount imported, while substantially all the printing and publishing machinery and textile machinery is imported. For other classes of machinery the imports exceed the domestic production. As Appendix II to this report we have included a table showing the make-up of the total domestic supply by product groups.

The machine tool section of the industry has been particularly affected by imports. In the prewar period 1935-1939 it held an average of 20% of the total domestic market. In 1939 it had 27% of the total domestic market with production of $2.1 million out of a total of $7.8 million. During the years 1951-1953 its production equalled between 20% and 25% of the domestic market. After the end of 1953, imports of European machine tools,

the decline in demand when the build-up ceased after the Korean War, and the recession in the economy in 1954, all combined to seriously reduce its output and the extent to which manufacturing capacity was utilized. In 1954 its total production only equalled 17% of the domestic market, the lowest proportion since 1950. The major factor (which may make this decline permanent) has been the loss of market to United Kingdom manufacturers who can sell machines in Canada at prices with which Canadian machine tool builders can not compete.

*Chart 2*

IMPORTS, EXPORTS AND DOMESTIC PRODUCTION (Includes Imported Production Parts)

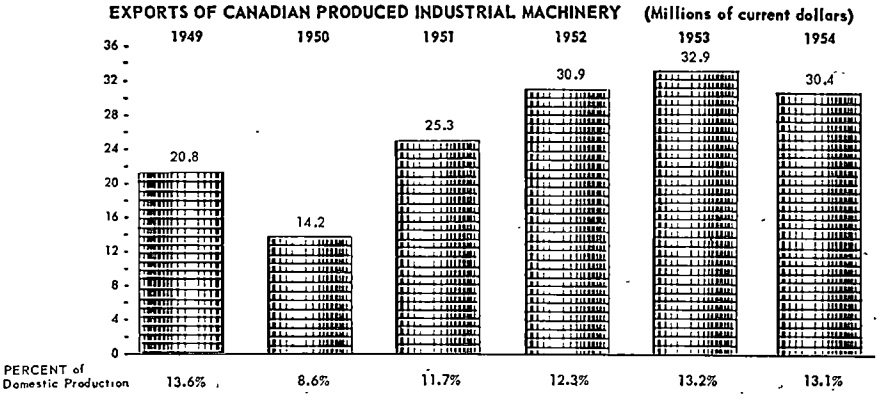



## *B. The Export Market*

The industrial machinery industry in Canada developed to help fulfil the national need for machinery and it has never been a major exporter of its products. As a high cost producer with a small home market, the Canadian

*Table 3*

EXPORTS OF CANADIAN PRODUCED INDUSTRIAL MACHINERY (Millions of current dollars)



manufacturer finds difficulty in competing overseas with high volume countries like the United States, the United Kingdom and Western Germany. The wide acceptance throughout the world of American methods and techniques and the acceptance throughout the Commonwealth and colonial countries of British methods and techniques gives those countries advantages not normally enjoyed by the Canadian exporting manufacturer.

The percentage of exports to domestic production shown for the years 1949-1954 is comparable to that attained in the prewar period 1935-1939 when the average was 13.5% of domestic production. The value of goods exported, however, was lower in the prewar period and over the five years 1935-1939 averaged $4 million against an average of $24.8 million for the five years 1949-1953. Prices in the period 1949-1953 were approximately double those in the prewar period and therefore exports were approximately three times the prewar level in quantity.

The largest single export market for Canadian machinery in recent years has been the United States and, in 1953, exports to that market amounted to $15 million, and accounted for 46% of all Canadian produced exports. Many of these exports were possible only because it was necessary for the United States to supplement its own production in periods of heavy demand. This is reflected in the exports of machine tools which were $6 million in 1952, $7 million in 1953 and dropped to $2 million in 1954.

In 1954, machinery was exported to many parts of the world including the United States, United Kingdom, Commonwealth countries and Latin America. The items exported included industrial engines, mining machinery, pulp and paper machinery, metal working machinery, and logging and sawmill machinery.

Technical assistance which Canadian firms supplied towards building a large pulp and paper mill in New Zealand enabled Canadian firms to export machinery for use on the project in 1954. The action that the government has taken to aid under-developed countries by such schemes as the Colombo Plan has also played a part in obtaining the postwar level of exports. Firms in the industry have expressed the view that they can not hope for any increase in their share of world markets without such assistance.

The present products of the industry are not, on the whole, competitive as to price and tend to be sold only when more rapid delivery can be offered than can be obtained from established foreign sources of supply. Whether price is a factor or not, the action taken by foreign governments due to their shortage of dollars is a major restriction to trading in many parts of the world; and United States tariff administrative practices are a restrictive barrier to exports to United States markets. We believe however that despite these restrictions a well designed efficiently produced product of a specialist nature can be sold overseas and we were encouraged to find two small firms

in our sample which are selling a substantial proportion of their output of packaging machinery and mining equipment in the export market.

A substantial proportion of the industrial machinery built in Canada is either produced by Canadian subsidiaries of foreign companies or is manufactured under licence from firms in other countries. Under these conditions the right to sell in overseas markets is usually reserved by the parent company or licensers involved. It is doubtful whether this situation is seriously hampering exports at the present time due to the more fundamental difficulties discussed above, but should selling in the export market become easier in the future then the restrictions imposed by ownership and licensing arrangements could have a noticeable effect.

### *C. Factors Affecting the Trading Position*

#### 1. *Tariff Policy and Imports*

Canada's early economic development was mainly associated with the exploitation of her natural resources through primary agriculture, fishing, forestry and mining. To meet the need for capital goods in those industries, foreign producers of industrial machinery sold their goods in Canada. By the 1870's Canadian manufacturers were producing metal working equipment, elevators, sawmill and other machinery. In 1879 the first tariff aimed at protecting the Canadian industry was introduced. In the years that followed the tariff structure developed on a selective basis, the object of the selectivity being a desire to avoid adding unnecessarily to the costs of producing those raw materials on which much of the wealth of the country depends.

Over the past twenty years the level of tariffs which applies to imports of industrial machinery has been steadily reduced. Two sets of rates exist, one relating to goods of a class or kind made in Canada, and the other to goods of a class or kind not made in Canada. The present rates for goods made in Canada are 10% for British preferential, 22½% for most favoured nation, and 35% for all other countries. The present rates for goods not made in Canada are free, 7½% and 35% for the same three categories. At the present time, almost all the industrial machinery imported comes from countries enjoying British preferential or most favoured nation treatment, so that, for all practical purposes, there is no protection at all at one end of the scale and a maximum of 22½% at the other. The actual duty collected is less than 10% of the value of imported machinery.

The relatively low rate of protection offered to the industry does, however, force it to produce more efficiently than might otherwise be the case, because the selling price for many products tends to be controlled by the price at which imported goods are offered for sale. On the other hand, the level of tariffs is ineffective when applied to imports from the United Kingdom, Western Germany and other European sources which are low cost producers. This lack of protection bears hardly on the machine tool section

of the industry where it has caused the manufacture of smaller standard machine tools to virtually cease. It leaves the machine tool builders to compete on the larger and special purpose machines where they have found their selling prices to be as much as 25% above the price of comparable machines imported from the United Kingdom and 40% above those from Western Germany, even though the imported machines have borne duty and transportation costs. These variations are representative of the maximum spread between the prices of Canadian and European machine tools of the types stated and do not necessarily apply to all machine tools of those types. Nevertheless it is probably true to say that the Canadian machine tool builder sells his machines on quality, suitability, delivery, service, and the willingness of some manufacturers to pay a higher price to buy a Canadian made machine.

The differing rates of duty which apply according to whether or not goods are of a class or kind made in Canada have already been described. There is, however, an additional requirement to be met before goods can be classified as of a class or kind made in Canada and thus qualify for a higher rate of protection, namely, that they should be produced in Canada in substantial quantities. Under present rulings, this means that domestic production must supply 10% of normal Canadian consumption of that article. This ruling prevents the industry from developing new products and hampers its growth. Its effect is to require a manufacturer to undertake and finance the development of a product and sell it, probably at a loss, until such time as he has 10% of the market. Having reached this point by streamlining his operation and cutting costs, he is then able to apply for a further 10-15% tariff protection against his competitors in other countries. At this stage, it is conceivable that he may be so efficient as to not require all this additional protection but he will get it just the same.

The difficulty in deciding that industrial machinery is of a class or kind made in Canada is greater than with other kinds of imports. Machinery may differ in details of design or construction and still be equally capable of doing the same job. It is also almost impossible to determine in many cases whether Canadian production supplies 10% of the domestic demand. As a result, the situation arises where the industry and its prospective customers are in opposition; the one seeking protection to enable him to manufacture the machinery and the other presenting a case for its importation as of a class or kind not made in Canada. Each has some validity in his argument; the manufacturer may have previously built a larger machine of the type under consideration (although not one of the specific size required) and the importer is anxious to buy his machine as cheaply as possible. Although customs officials treat each case on its merits in determining whether goods are of a class or kind made in Canada or not, the industry feels that in all cases of doubt there is a traditional leaning towards the needs of the importer.

In addition to the difficulties of classifying equipment for duty purposes, a major problem exists in determining the value of imports of industrial machinery for duty purposes. Section 35 subsection 2 of the Customs Act provides that the value for duty shall be the fair market value, at the time when and place from which the goods were shipped to Canada, of like goods when sold in like quantities for home consumption in the ordinary course of trade under fully competitive conditions and under comparable conditions of sale. Subsections 3-5 are designed to determine the value of like or similar goods when sold for home consumption in the country of export, while subsection 6 permits the Minister to determine a value where similar goods are not sold or no established market exists.

The difficulty of administering such provisions when applied to industrial machinery is that, due to the special nature of many of the imports a fair market value can not be easily obtained for them. The alternative would appear to be to take advantage of subsection 7 which provides that where the value can not be determined under the preceding subsections, the value for duty shall be the cost of production plus a reasonable addition for administration costs, selling costs and profit. This would require customs appraisers to investigate the costs of manufacturers in the exporting countries. This is done in some cases, but for such action to be completely effective, many more appraisers would be required, all of whom would need to be highly skilled in assessing machinery values.

Section 6 of the Customs Tariff makes provision for the application of a special or dumping duty where the selling price is less than the fair market value as determined under Section 35 of the Customs Act and the goods are of a class or kind made in Canada. Providing a fair market value, or a relative value can be established, then legislation is available to combat dumping for that class of goods. The view has been expressed to us however that difficulty arises in making this provision effective in protecting Canadian manufacturers where machinery is manufactured under contract for delivery at a future date. The sale is made before the fact of dumping is established because nothing is done administratively until after the machinery is imported. By that time the damage to a Canadian manufacturer has been done.

Where goods are not of a class or kind made in Canada no means of preventing dumping appears to exist under present legislation.

The difficulties arising from the present class or kind provisions and from the need to assess a fair market value have three serious repercussions:

a. The development of new products and the opportunity to build products akin to those already manufactured is severely restricted.

b. Little incentive exists for purchasers of imported machinery which is not made here to give any encouragement or support to the manufacturer of similar equipment in Canada.

c. Orders are lost, according to some members of the industry, through United States companies selling in Canada at marginal rates of profit and in some cases at or below cost. This situation appears to arise when United States companies have spare capacity in their own plants. Among the examples given to us were two major installations of steel mill machinery where a Canadian manufacturer claims that the sales were made at or below cost.

The principles and administration of class or kind provisions, and the administration of valuation for duty purposes requires re-examination if the difficulties at present hampering both customs appraisers and the industry are to be removed.

2. *Size of the Canadian Market*

The Canadian market for industrial machinery is a small one and the domestic industry does not compare in size with those of its main competitors in the United States and the United Kingdom. It lacks the volume of output and cannot maintain the most efficient plant and the most effective manufacturing methods and techniques for any given product or product group. As a result, firms produce diversified lines of products in order to make the maximum use of their resources. Although this has been inevitable, it does leave the industry at a disadvantage in terms of the cost of manufacture when in competition with countries which enjoy large volume home markets. In Appendix III attached to this report we show the range of product groups covered by each firm in our sample.

Firms in the industry can probably operate most successfully when applying their skills to the development and manufacture of special custom made machinery where volume cannot become a factor. Valuable and necessary as this type of work may be, it would not be possible for the industry to exist in such a limited field and the disadvantages imposed by a small home market have, therefore, to be faced and overcome.

# 5

## PLANT MANAGEMENT AND MANUFACTURING SKILLS

### *A. Efficiency of Operations*

During the course of our visits to firms in the industry we were able to form an impression of the efficiency with which those firms carried out their activities. While there was a considerable variation between the very best firms and the very worst, it is probably true to say that the industry can be rated quite favourably from an efficiency angle bearing in mind the conditions relative to size of market which have already been discussed. This does not mean to say that further improvement is not possible; indeed our assessment has been considerably affected by five firms, of varying size, included in our sample which would be outstanding in any industrial community.

The plant and equipment used by the industry has been well maintained and is well suited to the work undertaken. However, the small size of the Canadian market for any product or group of products has forced the industry to diversify its product line. This results in short runs, more setup and changeover time and less opportunity for operators to achieve maximum efficiency due to the need to master several jobs instead of just one or two. By contrast, the United States industrial machinery industry, which has a volume some fifty times that of the Canadian industry, is able, because of its greater volume, to enjoy longer runs and to afford better and faster machinery.

In addition to having fewer man-hours per unit of production, the United States industry is able to spread development costs and most items of overhead cost over a greater output and, as a result, have a lower cost of production. Canadian costs are also higher because many raw materials and component parts used are imported from the United States and bear a Canadian duty.

Some of the managements we met were very good indeed but others showed a lack of good managerial ability and a readiness to accept difficul-

ties rather than an aggressive desire to overcome them. In some cases there has been a failure to assess market potential accurately after the war and a lack of quick, effective action to relate the need of facilities and equipment to the changing nature of the market. This showed in over-investment in fixed assets and renewal of large numbers of machines through the lack of planned replacement programme.

Almost every firm visited has land and capital available for expansion but very few firms could foresee the rate at which additional output would be required or have made any plans or estimates for meeting an anticipated growth. However, without the construction of new buildings, most firms have the capacity to expand production through greater utilization of existing machinery and, with limited capital expenditure, could probably increase by some 25-40% above present production levels without additional shifts being worked. With double or treble shift working, production could be increased between 100-200%, inclusive of the increase arising from the greater use of existing facilities. In view of the weight of overhead costs which do not vary with output, it is very desirable that sales be increased and the advantage of lower unit costs obtained.

A lack of forward planning and the difficulty of meeting foreign competition have probably been the main reasons for seven old established firms included in our sample changing hands in recent years. Of the seven firms, control of two has gone to the United States, two to the United Kingdom, one to Western Germany and two to other Canadian owners.

### *B. Class of Labour Employed*

The industry employs a bigger proportion of highly skilled labour than other industries, including all types of skilled tradesmen and operators, draughtsmen and engineers. Although the Canadian industrial machinery industry has a lower level of productivity than the industry in the United States, firms within the industry were almost unanimous in their belief that the Canadian worker gives as much effort as his United States counterpart albeit he produces less due to factors outside his control.

There is, at present, a shortage of graduate engineers and the demand for them is expected to increase progressively in the future. This situation can only be corrected by expanding existing educational facilities.

The shortage of skilled operators which existed after the war has now been overcome with the help of immigrants from European countries. Local shortages of draughtsmen, however, do still exist. Shortages of these classes of personnel should not become serious in the future providing public educational facilities provide proper basic training for the growing population and industry expands its own apprentice and specialized training schemes. At present, little effort is being made by firms in the industry, other than by large firms, to conduct training programmes.

### *C. Capital Investment*

The rate of investment by the industry in capital equipment has been proportionately greater than that of the iron and steel products group and that of other comparable industries. If the total investment of firms in the industry is computed on the basis of the cost per employee, there are wide variations depending on the nature of the work undertaken and the investment required in machinery and equipment. The present investment in terms of original cost would range from $2,000-$8,000 per employee with the majority of firms at the upper end of the bracket. If the investment is measured in terms of current replacement costs requiring new equipment and buildings, then the cost is likely to be $7,000-$25,000 per employee. It is probable that, as an industry, the investment per employee would be slightly above the average for all industries.

As Appendix IV to this report we give a table based on figures published by the Bank of Canada showing the capital investment and the percentage of profit earned on capital investment for the years 1947-1953 inclusive. These figures may not be representative of the industry both because of the limited coverage and because they include companies engaged in the manufacture of household, office, and store machinery. They do show however that for the firms included, capital investment increased 79% during the six years, some 6% more than for other companies in the iron and steel products group. Profits on the other hand did not keep pace with the increase in investment and from 1950 onwards the return on capital investment declined to the level of other companies in the iron and steel products group. Between 1947 and 1953 the return fell from 11.2% to 10.1% and we would expect that in 1954 a further and more serious decline occurred, followed by a recovery in 1955 when we would expect to find the return on capital investment above the 1954 level.

### *D. Research and Development*

Research and technical development are the lifeblood of any industrial machinery industry. It is likely that fewer than half the firms in the industry are undertaking any research or development due to the high cost in relation to the smallness of the market. It is interesting to note that several of the small firms develop machinery and equipment of a special nature for firms in other industries, thus serving as development centres. In a few instances products have been developed by small firms which have found acceptance in world markets. The industry has relied extensively on results achieved by parent companies in other countries and on licensing arrangements which permit them to manufacture other peoples' equipment in Canada. While this has advantages and makes the running of a business easier, it is not a progressive method of operating and it is not surprising to find that the rate of advancement in development is generally behind that of the United States.

While the cost of undertaking research may be prohibitive for many firms, if it could be carried out on a group basis by the industry it would be beneficial. For a group scheme to operate successfully agreement would have to be reached on the type of research necessary to meet the requirements of firms making different products. Such action is highly desirable in order to secure the benefits that can arise from the high level of skills and crafts in the industry. These skills represent the most important single advantage the industry has over the United States where, because of greater volume production, the level of skills is declining.

The research and development carried out by an industry can often receive a boost through the opportunity to develop special equipment for government sponsored projects. The industrial machinery industry has not, as yet, had that opportunity. It is desirable that it should do so as suitable occasions arise.

The changes that are taking place in the so-called mass production industries due to electronic devices and automation are not likely to have any effect on the industrial machinery industry in the next five to seven years and, even after that, the effect will be gradual. The industry makes specialized machinery for industries that produce in volume and is not likely to require any radical change in its own machinery, equipment and skills to keep pace with design changes in the equipment it builds.

# 6

## IMPORTANCE TO THE NATIONAL ECONOMY

### *A. Skills and Training*

The need for trained and experienced engineers, draughtsmen and tradesmen throughout Canadian industry is well recognized and is constantly the subject of comment by leading figures in the industrial field.

The industrial machinery industry provides a natural training ground for these specialists and this aspect of the industry's contribution to the economy is important. There is not the same scope in mass production industries for developing the best engineering skills so that they tend to flow to those industries from the industrial machinery industry where continual design and development work provide the opportunity for working experience and skills to be acquired. The heavy machine tool section of the industry, in particular, makes a contribution out of all proportion to its size, for its very existence depends on the highest possible standards of engineering skill and experience.

If there were no other reason for the existence of the industrial machinery industry, it would still be important to the economy of the country as a pool of highly trained and experienced engineers, draughtsmen and skilled tradesmen of all types.

### *B. Defence*

The contribution that Canada made towards meeting the equipment needs of the Second World War is acknowledged the world over. This contribution would not have been possible without the cooperation of all Canadian industry. However, before industry can produce on a war footing, major re-tooling is required and only one section of industry can provide that tooling, the machine tool industry.

### *C. Research and Development*

In Para. 5D we have discussed the extent to which the industry carries out research on its own account. Because of the limitations imposed by the

size of the home market and the small size of the majority of firms, there is only a limited amount of research undertaken. The importance of the industry lies in its potential to build existing types of machinery and develop new machinery should the supply from existing sources diminish.

# 7

## FUTURE PROSPECTS FOR THE INDUSTRY

The experience of the past twenty-five years is of little value as a guide to the future prospects of the industry because of the vastly different economic conditions which then prevailed and the impact of the Second World War. In attempting to assess the potential market for the industrial machinery industry in the next twenty-five years, it is necessary therefore to examine each relevant factor as it will apply during that period and assess its effect on the potential. The main factors are as follows:

a. Increases in the total working population. Taken alone, such increases in the labour force would yield a directly proportional increase in the industrial machinery market.

b. Improvements in productivity, or increases in output relative to the number of men and machines employed. Historically, productivity gains have raised national output and wealth and have led to an increasing demand for more and better machinery.

c. Changes in the industrial distribution of national production. An example would be the recent decline in the relative importance of agriculture and the increasing importance of the chemical industry. This factor, by itself, will produce an increase in the market for the industrial machinery industry when the movement is from those labour-intensive industries with a small amount of machinery per employee to more capital-intensive industries with a greater amount of machinery per person employed. Although, of course, the reverse trend would lower the demand for machinery, the past few decades have seen a pronounced shift towards such capital-intensive industries as mining, oil refining, pulp and paper, and other basic primary industries. Similarly there has been a shift within the consumer goods field from such labour-intensive industries as textiles towards the more highly

mechanized consumer durables such as automobiles and house appliances.

It is necessary to attempt to assess the effect of each of these three factors and to integrate these in order to arrive at some judgment of the possible increase in the market for industrial machinery in the next twenty-five years.

1. The effect of an increase in total working population. It has been estimated that the total population will increase by 70 to 75 percent by 1980. There is no reason to believe that the present degree of employment will change much in this period and it can be assumed, therefore, that the working population will increase by the same amount. Thus the effect of this factor alone would be to increase the potential market for the industrial machinery industry by 70-75%.

2. Estimates about future productivity trends vary widely but due to the accelerating rate of technological improvements in recent years we would expect productivity in the economy to rise at a somewhat faster rate over the next twenty-five years than the 2-2½% experienced during the past half century. We would assess the additional demand for machinery due to this factor at a minimum of 3% per annum.

3. As to the future industrial distribution of national output, we believe that the trend to more capital-intensive production will continue, particularly in those basic resource and extractive industries in which Canada as a nation excels. In view of the fact that much of the production of the industrial machinery industry will be for these extractive industries they will enjoy a further increase in the market from this source.

A large increase in Canadian industrial machinery production is not likely to result in an equivalent increase in employment in the industry since some improvement in the industry's productivity may be expected. It might be noted, however, that these productivity gains are more likely to be reflected in continuing improvements in the machines produced rather than in a reduction in the number of men required to build each machine.

The effect of factors 1 and 2 above is to increase the potential for industrial machinery to three to four times the present level in 25 years. To this must be added the weight of the additional demand which will arise from the factors set out in 3 above, together with additional demand which is likely to arise from faster obsolescence of machines as they become more specialized and productive. It is not possible, however, to evaluate the effect of these factors, but by taking them in conjunction with the calculated increase in potential, it is reasonable to assume that in 25 years the demand for industrial machinery will increase four to five times.

Our assessment of the demand does not take account of the share of the total domestic market enjoyed by the Canadian industry and if their share remains constant, they will be able to increase their output to four to five times the present level. Any increase in share would proportionately increase their level of output from the estimate of four to five times the present level. The important point which arises from this is that the potential market in 25 years time is likely to be approximately 12 times the present level of production of the Canadian manufacturers.

## APPENDIX I

### LIST OF FIRMS VISITED

Atlas Engineering and Machine Company Limited
Bawden Industries, Limited
Bertram, John & Sons Company, Limited
Bowser, S. F., Company, Limited
Braidwood, John, and Sons, Limited
Brantford Oven and Rack Company, Limited
Brown Boggs Foundry & Machine Company, Limited
Canada Machinery Corporation, Limited
Canadian Allis-Chalmers Ltd.
Canadian Ingersoll-Rand Company, Limited
Canadian Sumner Iron Works Limited
Cober Elevator Manufacturing Company
Darling Brothers, Limited
Delamere & Williams Company, Limited
Dillon, Thomas A., Limited
Dominion Engineering Works Limited
Forano Limited
Ford-Smith Machine Company Limited
Gilbert and Barker Manufacturing Company Limited
Greey Mining Equipment Limited
Hamilton Gear and Machine Company Limited
Jeffrey Mfg. Co. Limited
Koehring Waterous Ltd.
Linde Canadian Refrigeration Company Limited
Link-Belt Ltd.
Long, E., Limited
McDougall, R., Company Limited
Monarch Machinery Co. Ltd.
Otis Elevator Company, Limited
Peerless Machine & Tool Company, Limited
Pendrith Machinery Company, Limited
Smart-Turner Machine Company, Limited
Standard-Modern Tool Company Limited
Timken Roller Bearing Co.
Toronto Engine Works, Limited
United Shoe Machinery Company of Canada, Limited
United Steel Corporation, Limited
Vivian Diesels & Munitions, Limited
Yates, P. B., Machine Company, Limited

## APPENDIX II

# DOMESTIC MARKET FOR INDUSTRIAL MACHINERY 1949-1954

*(Millions of Current Dollars)*

| | Domestic Production | Exports | Imports | Total Domestic Market | Import Share of Domestic Market |
|---|---|---|---|---|---|
| *Air Compressors* | | | | | |
| 1949 | 3.623 | .075 | 3.254 | 6.802 | 47.8 |
| 1950 | 3.499 | .092 | 3.539 | 6.946 | 51.0 |
| 1951 | 6.406 | .102 | 5.873 | 12.177 | 48.2 |
| 1952 | 7.927 | .029 | 6.083 | 13.981 | 43.5 |
| 1953 | 5.577 | .148 | 6.651 | 12.080 | 55.1 |
| 1954 | 6.161 | .065 | 7.067 | 13.163 | 53.7 |
| *Construction Equipment* | | | | | |
| 1949 | 7.195 | — | 12.507 | 19.702 | 63.5 |
| 1950 | 6.608 | — | 14.168 | 20.776 | 68.2 |
| 1951 | 8.311 | — | 22.243 | 30.554 | 72.8 |
| 1952 | 8.605 | — | 23.349 | 31.954 | 73.1 |
| 1953 | 7.210 | — | 22.866 | 30.076 | 76.0 |
| 1954 | 7.819 | — | 18.689 | 26.508 | 70.5 |
| *Industrial Engines* | | | | | |
| 1949 | 10.320 | 3.282 | 24.789 | 31.827 | 77.9 |
| 1950 | 13.511 | 2.526 | 23.386 | 34.371 | 68.0 |
| 1951 | 18.378 | 5.831 | 43.926 | 56.473 | 77.8 |
| 1952 | 19.968 | 4.385 | 45.333 | 60.916 | 74.5 |
| 1953 | 17.987 | 6.404 | 44.878 | 56.461 | 79.5 |
| 1954 | 19.484 | 6.620 | 35.072 | 47.936 | 73.2 |
| *Food Processing Machinery* | | | | | |
| 1949 | 6.314 | .011 | 8.619 | 14.922 | 57.8 |
| 1950 | 6.059 | .055 | 7.972 | 13.976 | 57.0 |
| 1951 | 6.715 | .195 | 9.152 | 15.672 | 58.4 |
| 1952 | 6.974 | .099 | 9.292 | 16.167 | 57.5 |
| 1953 | 7.510 | .108 | 11.448 | 18.850 | 60.7 |
| 1954 | 7.066 | .100 | 10.128 | 17.094 | 59.3 |
| *Logging and Sawmill Machinery* | | | | | |
| 1949 | 5.537 | 1.285 | 3.508 | 7.760 | 45.2 |
| 1950 | 6.105 | 1.221 | 6.282 | 11.166 | 56.3 |
| 1951 | 11.273 | 1.933 | 12.305 | 21.645 | 56.9 |
| 1952 | 9.207 | 1.544 | 8.549 | 16.212 | 52.7 |
| 1953 | 8.850 | 1.073 | 7.480 | 15.257 | 49.0 |
| 1954 | 8.360 | 1.553 | 10.597 | 17.404 | 60.9 |
| *Materials Handling Equipment* | | | | | |
| 1949 | 28.395 | .266 | 12.108 | 40.237 | 30.1 |
| 1950 | 25.281 | .264 | 11.566 | 36.583 | 31.6 |
| 1951 | 29.953 | .375 | 20.505 | 50.083 | 40.9 |
| 1952 | 34.798 | .309 | 27.074 | 61.563 | 44.0 |
| 1953 | 39.239 | .626 | 28.996 | 67.609 | 42.9 |
| 1954 | 39.814 | .354 | 24.685 | 64.145 | 38.5 |
| *Metal Working Machinery* | | | | | |
| 1949 | 6.541 | 1.388 | 26.745 | 31.898 | 83.9 |
| 1950 | 6.528 | .932 | 30.957 | 36.553 | 84.7 |
| 1951 | 9.900 | 2.151 | 41.862 | 49.611 | 84.4 |
| 1952 | 19.874 | 6.530 | 58.039 | 71.383 | 81.3 |
| 1953 | 19.642 | 7.090 | 67.944 | 80.496 | 84.4 |
| 1954 | 11.090 | 2.025 | 54.648 | 63.713 | 85.8 |
| *Mining, Metallurgical and Oil Well Machinery* | | | | | |
| 1949 | 12.157 | 1.612 | 37.769 | 48.314 | 78.7 |
| 1950 | 14.578 | 1.960 | 33.423 | 46.041 | 72.6 |
| 1951 | 20.695 | 3.154 | 61.925 | 79.466 | 76.9 |
| 1952 | 30.279 | 4.210 | 72.505 | 98.574 | 73.6 |
| 1953 | 23.914 | 3.137 | 58.135 | 78.912 | 73.7 |
| 1954 | 25.618 | 2.793 | 57.896 | 80.721 | 71.7 |

## APPENDIX II *Cont'd.*

| | Domestic Production | Exports | Imports | Total Domestic Market | Import Share of Domestic Market |
|---|---|---|---|---|---|
| *Power Pumps* | | | | | |
| 1949 | 12.663 | .458 | 4.233 | 16.438 | 25.8 |
| 1950 | 13.740 | .544 | 5.171 | 18.367 | 28.2 |
| 1951 | 17.076 | .648 | 6.524 | 22.952 | 28.4 |
| 1952 | 18.283 | .802 | 7.912 | 25.393 | 31.2 |
| 1953 | 19.338 | .761 | 8.460 | 27.037 | 31.3 |
| 1954 | 18.393 | .612 | 9.417 | 27.198 | 34.6 |
| *Printing and Publishing Machinery* | | | | | |
| 1949 | .282 | .001 | 16.502 | 16.783 | 98.3 |
| 1950 | .293 | .001 | 16.569 | 16.861 | 98.3 |
| 1951 | .374 | .001 | 19.815 | 20.188 | 98.2 |
| 1952 | .288 | .019 | 14.639 | 14.908 | 98.2 |
| 1953 | .279 | .000 | 18.678 | 18.957 | 98.5 |
| 1954 | .494 | .010 | 23.452 | 23.936 | 98.0 |
| *Pulp and Paper Machinery* | | | | | |
| 1949 | 16.312 | 4.193 | 2.905 | 15.024 | 19.3 |
| 1950 | 14.701 | 1.193 | 3.381 | 16.889 | 20.0 |
| 1951 | 18.887 | 1.115 | 4.955 | 22.727 | 21.8 |
| 1952 | 22.629 | .896 | 6.041 | 27.774 | 21.8 |
| 1953 | 19.866 | .585 | 6.201 | 25.482 | 24.3 |
| 1954 | 16.068 | 2.747 | 7.457 | 20.778 | 35.9 |
| *Textile Machinery* | | | | | |
| 1949 | 1.003 | .190 | 24.121 | 24.934 | 96.7 |
| 1950 | .557 | .219 | 18.108 | 18.446 | 98.2 |
| 1951 | .440 | .260 | 23.349 | 23.529 | 99.2 |
| 1952 | .613 | .562 | 20.276 | 20.327 | 99.8 |
| 1953 | .340 | .156 | 17.284 | 17.468 | 99.0 |
| 1954 | .372 | .140 | 11.474 | 11.706 | 98.0 |
| *Water Wheels and Turbines* | | | | | |
| 1949 | 3.874 | — | .320 | 4.194 | 7.6 |
| 1950 | 7.030 | — | .461 | 7.491 | 6.2 |
| 1951 | 10.706 | — | .941 | 11.647 | 8.1 |
| 1952 | 10.669 | — | .982 | 11.651 | 8.4 |
| 1953 | 12.138 | — | .849 | 12.987 | 6.5 |
| 1954 | 15.520 | — | 1.023 | 16.543 | 6.2 |
| *Woodworking Machinery* | | | | | |
| 1949 | 2.982 | .126 | 3.986 | 6.842 | 58.3 |
| 1950 | 3.217 | .107 | 3.766 | 6.876 | 54.8 |
| 1951 | 3.830 | .310 | 6.000 | 9.520 | 63.0 |
| 1952 | 3.979 | .266 | 4.787 | 8.500 | 56.3 |
| 1953 | 3.818 | .208 | 5.578 | 9.188 | 60.7 |
| 1954 | 3.207 | .168 | 5.608 | 8.647 | 64.9 |
| *Other Machinery* | | | | | |
| 1949 | 36.145 | 7.904 | 53.115 | 81.356 | 65.2 |
| 1950 | 44.223 | 5.075 | 57.185 | 96.333 | 59.4 |
| 1951 | 53.852 | 9.197 | 84.761 | 129.416 | 65.5 |
| 1952 | 57.471 | 11.298 | 99.474 | 145.647 | 68.3 |
| 1953 | 62.809 | 12.644 | 127.004 | 177.169 | 71.7 |
| 1954 | 52.290 | 13.200 | 123.351 | 162.441 | 75.9 |
| *Total Machinery* | | | | | |
| 1949 | 153.343 | 20.791 | 234.481 | 367.033 | 63.9 |
| 1950 | 165.930 | 14.189 | 235.934 | 387.675 | 60.9 |
| 1951 | 216.796 | 25.272 | 364.136 | 555.660 | 65.5 |
| 1952 | 251.564 | 30.949 | 404.335 | 624.950 | 64.7 |
| 1953 | 248.517 | 32.940 | 432.452 | 648.029 | 66.7 |
| 1954 | 231.756 | 30.387 | 400.564 | 601.933 | 66.6 |

NOTE:
1. 1954 figures are preliminary actual.
2. Re-exports have been excluded from both import and export figures.
3. The domestic production figures used here and elsewhere in this study refer to total production of industrial machinery in Canada. They, therefore, include industrial machinery manufactured by other industries as well as by the industrial machinery industry itself.
4. The import figures differ from those normally published in that they include duty paid on these imports. This method was chosen in order to bring the value of imports closer to their landed cost in Canada.

# APPENDIX III

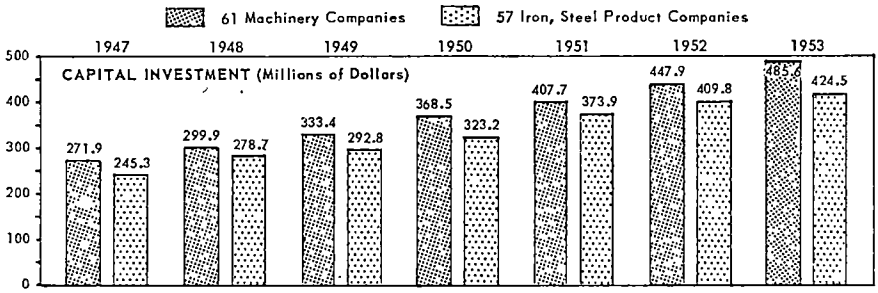
**SAMPLE FIRMS – ANALYSIS OF OUTPUT BY PRODUCT GROUPS**

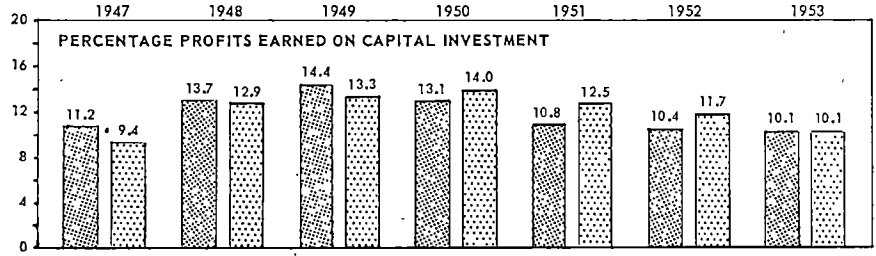
| PRODUCTS | COMPANY | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 |
| Air Compressors & Pumps | | | | • | | | | | | | • | | • | | | • | | | | • | • | | | | | | | | | • | | | | | • | • | | |
| Boilers, Burners & Stokers | | | | | | • | | • | | | | | • | | | | | | | | | | | | | | | | • | | | | | | | | | |
| Chemical & Refinery | | | | | | | | | | | | | | | | | | | | | | | | • | | | | | • | | | | | | | | | |
| Construction | | | | | | • | | | | | | | | • | | | | • | | | | | | | | | | | | | | | | | • | | | |
| Engines, Industrial | | | | | | | | | | | | | | | | | | • | | | | | | | | | | | | | | | | | | | | • |
| Food Processing | | | | | | | | | | | | | | | | | | | | | | | | • | | • | | | | | | | | | | | | |
| Logging and Sawmill | | | | | | | | | | | | | | | | • | | | | | | | | | | | | | | | | | | | | | | |
| Materials Handling | | | | | | | | | | | • | • | | | | | | | | | | | • | | | | | | | | | | | • | | | | |
| Metal Working | • | | | | | | | • | | • | | | | | | | • | • | • | • | | | | | | | | | | | • | | • | | • | | | |
| Mining, Metallurgical & Oil | | | | • | | | • | | | | | | | | | | | | | | | • | | | | | • | | | | | | | | | | | |
| Pulp and Paper | | | | | • | • | | | | | | | | | | • | | • | | • | | | | | | | | | | | | | | | | | | |
| Transmission | | | • | | • | | | | | | | | • | | • | | | | | | | | | | | | | | | | | | | | | | | |
| Water Wheels & Turbines | | | | | | | | | | | | | | | | | | • | | | • | | | | | | | | | | | | | | | | | |
| Wood Working | | • | | | | | | | | | | | | | • | | | | | | | | | | | | | | | | | | | | | | | |
| Machinery Nec. | • | | | | | | | | | | | | | | | | | | | • | | | | • | | | | | | | | • | | | | | | |
| Repairs & Merchandising | | • | • | • | | • | • | | • | • | • | | | | • | | | | | | | • | • | • | | | | | • | | | | • | | | | • | |
| General Engineering | | | | | | | • | | • | | • | | • | | | | | | | | | | | | | • | | | | | | | | | • | | • | | • |
| Other Products | | | | | | | | • | | | | • | | | | | | • | | | • | • | | | | | | | | | | | | | | | | • | |

# APPENDIX IV

## CAPITAL INVESTMENT AND RATE OF PROFITS EARNED

Taken from Bank of Canada – Statistical Summary, Nov. 1954.




**SUMMARY**

| 1947–53 (6 Years) | 61 Mach. Co's | 57 Iron, Steel Prod. Co's |
|---|---|---|
| CAPITAL INVESTMENT | 79% increase | 73% increase |
| PROFITS EARNED ON CAP. INVEST. | 1.1% increase | .7% increase |

*Note: 1. The profit figures used in the calculations for this table were net after income tax provisions were deducted.*

*2. No figures have been issued for years after 1953.*

## APPENDIX V

## OTHER STUDIES TO BE PUBLISHED BY THE ROYAL COMMISSION

Output, Labour and Capital in the Canadian Economy —
by Wm. C. Hood and Anthony Scott

Canadian Energy Prospects —
by John Davis

Progress and Prospects of Canadian Agriculture —
by W. M. Drummond and W. Mackenzie

The Commercial Fisheries of Canada —
by The Fisheries Research Board and The Economic Service of The Department of Fisheries of Canada

The Outlook for the Canadian Forest Industries —
by John Davis, A. L. Best, P. E. Lachance, S. L. Pringle, J. M. Smith, D. A. Wilson

Mining and Mineral Processing in Canada —
by John Davis

Canadian Secondary Manufacturing Industry —
by D. H. Fullerton and H. A. Hampson

The Canadian Primary Iron and Steel Industry —
by The Bank of Nova Scotia

The Canadian Automotive Industry —
by The Sun Life Assurance Company of Canada

The Canadian Agricultural Machinery Industry —
by J. D. Woods & Gordon Limited

The Canadian Electrical Manufacturing Industry —
by Clarence L. Barber

The Electronics Industry in Canada —
by Canadian Business Service Limited

The Canadian Primary Textiles Industry —
by National Industrial Conference Board (Canadian Office)

The Canadian Construction Industry —
by The Royal Bank of Canada

The Canadian Chemical Industry —
by John Davis

The Service Industries —
by The Bank of Montreal

Probable Effects of Increasing Mechanization in Industry —
by The Canadian Congress of Labour, now
The Canadian Labour Congress

Labour Mobility —
by The Trades and Labor Congress of Canada, now
The Canadian Labour Congress

Skilled and Professional Manpower in Canada, 1945-1965 —
by The Economics and Research Branch, Department
of Labour, Canada

Transportation in Canada —
by J-C. Lessard

Industrial Concentration —
by The Canadian Bank of Commerce

Housing and Social Capital —
by Yves Dubé, J. E. Howes and D. L. McQueen

Financing of Economic Activity in Canada —
by Wm. C. Hood with the collaboration of
J. V. Poapst and L. M. Read

Certain Aspects of Taxation Relating to Investment in
Canada by Non-Residents —
by J. Grant Glassco of Clarkson, Gordon & Co.,
Chartered Accountants

Consumption Expenditures in Canada —
by David W. Slater

Canada's Imports —
by David W. Slater

The Future of Canada's Export Trade[1] —
by R. V. Anderson

Canada - United States Economic Relations[1] —
by Irving Brecher and S. S. Reisman

Canadian Commercial Policy[1] —
by J. H. Young

Some Regional Aspects of Canada's Economic Development —
by R. D. Howland

The Nova Scotia Coal Industry —
by Urwick, Currie Limited

Canadian Economic Growth and Development from 1939 to 1955 —
by J. M. Smith

[1]This is one of a series of three studies on Canadian international economic relations prepared under the direction of S. S. Reisman.

HULL
EDMOND CLOUTIER, C.M.G., O.A., D.S.P.
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
1956