

However, the emergence of Canada as a highly industrialized society, its entrance into multitudinous fields of production, the rapid growth of many large nation-wide industries, the serving of a discriminating domestic market and the meeting of competition from abroad have had the effect of making Canadian manufacturing establishments research conscious and many of the larger ones now possess competent research organizations. The fields covered by some of these industries are outlined in the 1956 Year Book at pp. 386-389. The research work of the Canadian Pulp and Paper Association, an independent corporation combining efforts of government, university and industry in the expanding field of pulp and paper research, is described in the Forestry Chapter of this volume.

**Industrial Research-Development Expenditures.**—In 1958 a survey was conducted by the DBS which attempted to measure the extent of the research program undertaken in the preceding year by industrial firms in Canada and to obtain an indication of its direction. A similar survey will be taken in 1960 covering research expenditures in 1959, the results of which will be carried in the 1961 Year Book. In the meantime, summary data from the 1958 survey are repeated here, as being the latest information available on the subject.

Some 2,800 of the larger industrial firms in the country participated in the 1958 survey and the data secured included both direct expenditures and cost of purchasing research-development results from affiliates or other companies or organizations located in Canada and in foreign countries. Data were also obtained on the principal fields in which the research was carried out and on the number of research personnel employed. The magnitude of the research-development costs in 1957 and the increase planned for 1958 give an indication of the size of the program and the direction in which business is searching for new products, for new and more efficient processes and for improvements to existing products and techniques.

The research-development program was reported by industry as totalling \$149,000,000 in 1957 and was estimated at close to \$161,000,000 in 1958. Of the total expenditure in 1957, the major part—amounting to \$125,000,000—was conducted within the companies reporting, an additional \$20,000,000 was spent for research-development done outside Canada, mainly in the United States, and the remaining \$4,000,000 was spent for research done by other companies or organizations in Canada.

### 1.—Research-Development Expenditures, by Industry, 1957 with Estimates for 1958

Industry	Research Expenditures 1957	Estimated Research Expenditures 1958	Increase or Decrease
	\$	\$	p. c.
Mining, quarrying and oil wells.....	6,279,487	5,260,671	-16.23
Manufacturing—			
Foods and beverages.....	1,883,122	1,976,940	4.98
Rubber products.....	4,307,531	4,459,720	3.53
Textile products.....	1,482,206	1,465,550	-1.12
Wood products.....	148,163	152,300	2.79
Paper products.....	6,213,362	6,536,718	5.20
Iron and steel products.....	4,340,043	4,835,265	11.41
Transportation equipment.....	72,918,827	77,992,404	6.96
Non-ferrous metal products.....	5,793,109	7,110,580	22.74
Electrical apparatus and supplies.....	15,348,440	15,948,267	3.91
Non-metallic mineral products.....	1,713,776	1,817,889	6.08
Products of petroleum and coal.....	7,488,518	9,624,000	28.52
Chemical products.....	12,428,448	14,247,164	14.63
Other manufacturing <sup>1</sup> .....	1,808,351	2,349,419	29.92
Transportation, storage, communication and public utility operations.....	3,898,800	4,171,300	6.99
Other non-manufacturing <sup>2</sup> .....	3,091,896	3,051,372	-1.31
<b>Totals.....</b>	<b>149,144,079</b>	<b>160,999,559</b>	<b>7.95</b>

<sup>1</sup> Includes tobacco and tobacco products, leather products and miscellaneous manufacturing, construction, health services, engineering and scientific services and trade associations.

<sup>2</sup> Includes