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RESEARCH AND DEVELOPMENT
IN CANADIAN INDUSTRY

Science Statistics Centre
Centre de la statistique des sciences

**STATISTICAL
TABULATIONS
STATISTIQUES**

OCTOBER, 1979

RESEARCH AND DEVELOPMENT
IN CANADIAN INDUSTRY



Français au verso

Selected Tabulations Based on the 1977 Survey

PUBLICATIONS ON SCIENCE STATISTICS

1. Available from Statistics Canada:

- a) Annual Review of Science Statistics, Catalogue 13-212. (released in May/June)
- b) Science Statistics, Catalogue 13-003 (there are 8 to 12 issues every year)

Contact: Publications Distribution
Statistics Canada
Ottawa, Ontario
K1A 0T6

Telephone: (613-992-3151)

2. Available from the Ministry of State for Science and Technology:

- a) Federal Science Activities
- b) Federal Science Expenditures and Manpower

Both are normally released in March and are available from:

Communications Services Division
Ministry of State for Science and Technology
270 Albert Street
Ottawa, Ontario
K1A 1A1

Telephone: (613-995-3093)

Technical Notes

Terminology

In these tabulations the following terminology is used:

- (a) Reporting company: the organization which submitted the return. In the case of a consolidated return, "reporting company" could include several firms. It also includes divisions of an enterprise which send separate returns or organizations such as industrial research institutes.
- (b) Intramural expenditures: expenditures for work performed within the reporting company, including work financed by others.
- (c) Extramural expenditures: expenditures for work performed outside the reporting company, i.e., payments for the R & D performed by other organizations for the reporting company.

Industry classification

Industries included in the survey are a number of primary industries (mines, oil and gas wells) most industries in the manufacturing sector, and some in the service sector (transportation, public utilities, consultants). Industries not covered are agriculture, forestry, fishing and trapping, trade, finance, insurance, real estate, the community, most of the business, and the whole of personal services industries. The activities of these industries are such as to involve little or no research. The activities of other sectors such as the federal government, provincial governments, and private non-profit organizations are covered in other surveys conducted by this department.

For the purposes of this survey, industries have been arranged as shown in the Section I table 2. There are 23 industries comprising eight groups. In some of the tables only figures by industry group are presented, in order to comply with the secrecy portion of the Statistics Act.

SYMBOLS

The following standard symbols are used in Statistics Canada publications:

- nil or zero
- amount too small to be expressed.
- x confidential to meet secrecy requirements of the Statistics Act.

Please forward any comments regarding these tables to

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THE RESPONDENTS

Table 1. Response to the 1977 Industrial
R & D Survey

Eighty per cent of the contacted firms replied to the survey. "Long" forms (questionnaires requesting data for 1976-1979) were sent to firms representing at least 85% of each industry's 1975 current intramural expenditures. Short forms were sent to the rest, and requested data for 1977 only. For those that reported 1977 R & D expenditures on the "short" forms, the data for the other three years were estimated based on trends observed in other responses for the industry. The actual response is shown in the tabulation below:

Response	Long form	Short form	Total
R & D	305(1)	757(1)	1,062(1)
No R & D	30	2,287	2,317
No reply	25	705	730
Other(2)	10	355	365
<u>TOTAL</u>	370	4,104	4,474

(1) Thirty-two of the long forms and 104 of the short forms were estimated by the staff of the Science Statistics Centre. They account for 4% of current intramural expenditures.

(2) Inactive, out of business and unlocated.

Table 2. Industrial Distribution of
R & D Performers and Funders, 1977

<u>INDUSTRY GROUP</u>	<u>INDUSTRY(a)</u>	<u>NUMBER OF COMPANIES</u>	
<u>Mines and Wells</u>	<u>Mines</u>		
	051 N/A Placer Gold Mines	-	
	052 Gold Quartz Mines	1	
	057 Uranium Mines	1	
	058 Iron Mines	1	
	059 Miscellaneous Metal Mines	9	
	061 Coal Mines	-	
	071 Asbestos Mines	3	
	072 Peat Extraction	-	
	073 Gypsum Mines	-	
	079 Miscellaneous Non-Metal Mines	4	
	083 Stone Quarries	1	
	087 Sand Pits or Quarries	-	
	098 Other Contract Drilling	-	
	099 Miscellaneous Services Incidental to Mining	<u>7</u>	
		26	
		<u>Gas and Oil Wells</u>	
		064 Crude Petroleum and Natural Gas Mines	22
		096 Contract Drilling for Petroleum	<u>-</u>
			22
<u>Chemical Based</u>	<u>Food, Beverages and Tobacco</u>		
	041 Fishing	1	
	101 Meat and Poultry Products	10	
	102 Fish Products	4	
	103 Fruit and Vegetable Processing	15	
	104 Dairy Products	8	

(a) Numbers refer to the Standard Industrial Classification codes (1970),
Statistics Canada, Catalogue 12-501, Occasional.

INDUSTRY GROUPINDUSTRY(a)NUMBER OF COMPANIESChemical BasedFood, Beverages and Tobacco - Continued

105 Flour and Breakfast Cereal Products	7
106 Feed Industry	1
107 Bakery Products	6
108 Miscellaneous Food	21
109 Beverages	9
151 Leaf Tobacco	-
153 Tobacco Products	4
	<u>86</u>

Rubber and Plastic Products

162 Rubber Products	12
165 Plastic Fabricating	<u>12</u>
	24

Textiles

181 Cotton Yarn and Cloth Mills	2
182 Wool Yarn and Cloth Mills	4
183 Man-made Fibre Yarn and Cloth Mills	5
184 Cordage and Twine Industry	-
185 Felt and Fibre Processing Mills	-
186 Carpet, Mat and Rug	1
187 Canvas Products and Cotton and Jute Bags	-
188 Automobile Fabric Accessories	1
189 Miscellaneous Textile Industries	<u>2</u>
	15

Petroleum Products

365 Petroleum Refineries	8
369 Miscellaneous Petroleum and Coal Products	-
	<u>8</u>

(a) Numbers refer to the Standard Industrial Classification codes (1970),
Statistics Canada, Catalogue 12-501, Occasional.

INDUSTRY GROUPINDUSTRY(a)NUMBER OF COMPANIESChemical BasedDrugs and Medicines

374 Manufacturers of Pharmaceuticals and Medicines	37
	<u>37</u>

Other Chemical Products

372 Manufacturers of Mixed Fertilizers	1
373 Manufacturers of Plastics and Synthetic Resins	8
375 Manufacturers of Paint and Varnish	15
376 Manufacturers of Soap and Cleaning Compounds	10
377 Manufacturers of Toilet Preparations	5
378 Manufacturers of Industrial Preparations	27
379 Miscellaneous Chemicals	<u>45</u>
	111

Wood BasedWood

031 Logging	1
251 Sawmills, Planing Mills and Shingle Mills	5
252 Veneer and Plywood Mills	3
254 Sash, Door and Other Millwood Plants	2
256 Wooden Box Factories	-
258 Coffins and Caskets	-
259 Miscellaneous Wood	<u>2</u>
	13

Paper

271 Pulp and Paper Mills	31
272 Asphalt Roofing Manufacturers	1
273 Paper Box and Bag Manufacturers	2
274 Miscellaneous Paper Converters	<u>7</u>
	41

(a) Numbers refer to the Standard Industrial Classification codes (1970),
 Statistics Canada, Catalogue 12-501, Occasional.

INDUSTRY GROUPINDUSTRY(a)NUMBER OF COMPANIESMetalsPrimary Metals (Ferrous)

291 Iron and Steel Mills	12
292 Steel Pipe and Tube Mills	-
294 Iron Foundries	<u>5</u>
	17

Primary Metals (Non-ferrous)

295 Smelting and Refining	5
296 Aluminum Rolling, Casting and Extruding	2
297 Copper and Alloy Rolling, Casting and Extruding	2
298 Metal Rolling, Casting and Extruding	<u>5</u>
	14

Metal Fabricating

301 Boiler and Plate Works	7
302 Fabricated Structural Metal	-
303 Ornamental and Architectural Metal Industry	8
304 Metal Stamping, Pressing and Coating Industry	13
305 Wire and Wire Products	4
306 Hardware, Tool and Cutlery Manufacturers	7
307 Heating Equipment Manufacturers	10
308 Machine Shops	5
309 Miscellaneous Metal Fabricating	<u>20</u>
	79

Machinery andTransportation EquipmentBusiness Machines

318 Office and Store Machinery	<u>11</u>
	11

(a) Numbers refer to the Standard Industrial Classification codes (1970),
Statistics Canada, Catalogue 12-501, Occasional.

INDUSTRY GROUPINDUSTRY(a)NUMBER OF COMPANIESMachinery andTransportation EquipmentOther Machinery

311 Agricultural Implement Industry	15
315 Miscellaneous Machinery and Equipment Manufacturers	85
316 Commercial Refrigeration and Air Conditioning Equipment Manufacturers	<u>5</u>
	105

Aircraft and Parts

312 Aircraft and parts	<u>13</u>
	13

Other Transportation Equipment

323 Motor Vehicle Manufacturers	3
324 Truck Body and Trailer Manufacturers	5
325 Motor Vehicle Parts and Accessories	15
326 Railroad Rolling Stock	3
327 Shipbuilding and Repair	1
328 Boatbuilding and Repair	-
329 Miscellaneous Vehicle Manufacturers	<u>3</u>
	30

ElectricElectrical Products

331 Manufacturers of Small Electrical Appliances	4
332 Manufacturers of Major Appliances (electric and non-electric)	6
333 Manufacturers of Lighting fixtures	-
334 Manufacturers of Household Radio and Television Receivers	3
335 Communication Equipment	71

(a) Numbers refer to the Standard Industrial Classification codes (1970),
Statistics Canada, Catalogue 12-501, Occasional.

<u>INDUSTRY GROUP</u>	<u>INDUSTRY(a)</u>	<u>NUMBER OF COMPANIES</u>	
<u>Electric</u>	<u>Electrical Products - Continued</u>		
	336 Manufacturers of Electrical Industrial Equipment	15	
	338 Manufacturers of Electrical Wire and Cable	3	
	339 Manufacturers of Miscellaneous Electrical Products	<u>24</u>	
		126	
	<u>Scientific and Professional Instruments</u>		
	391 Scientific and Professional Equipment	<u>28</u>	
		28	
	<u>Other Manufacturing</u>	<u>Non-metallic Mineral Products</u>	
		351 Clay Products	3
352 Cement Manufacturers		3	
353 Stone Products		-	
354 Concrete Products		2	
355 Ready-mix Concrete		-	
356 Glass and Glass Products		6	
357 Abrasives Manufacturers		1	
358 Lime Manufacturers		-	
359 Miscellaneous Non-metallic Mineral Products		<u>10</u>	
		25	
<u>Other Manufacturing</u>			
172 Leather Tanneries		1	
174 Shoe Factories		4	
175 Leather Glove Factories		-	
179 Leather Luggage		-	
231 Hosiery Mills		-	

(a) Numbers refer to the Standard Industrial Classification codes (1970),
 Statistics Canada, Catalogue 12-501, Occasional.

INDUSTRY GROUPINDUSTRY(a)NUMBER OF COMPANIESOther ManufacturingOther Manufacturing - Continued

239 Knitting Mills (except hosiery)	-
243 Men's Clothing	-
244 Women's Clothing	-
245 Children's Clothing	-
246 Fur Goods	-
248 Foundation Garment	1
249 Miscellaneous Clothing	-
261 Household Furniture Manufacturers	2
264 Office Furniture	3
266 Miscellaneous Furniture and Fixtures	-
268 Electric Lamp and Shade	-
286 Commercial Printing	1
287 Platemaking, Typesetting and Trade Bindery	3
288 Publishing Only	-
289 Publishing and Printing	-
392 Jewellery and Silverware	2
393 Sporting Goods and Toys	4
397 Signs and Display	-
399 Miscellaneous Manufacturing	17
	<u>38</u>

Other IndustriesTransportation and Other Utilities

501 Air Transport	-
502 Service Incidental to Air Transport	-
503 Railway Transport	1
504 Water Transport	2
505 Services Incidental to Water Transport	-
506 Moving and Storage, Used Goods, Uncrated	2
507 Other Truck Transport	-
508 Bus Transport, Interurban and Rural	-
509 Urban Transit Systems	2
512 Taxicab Operations	-

(a) Numbers refer to the Standard Industrial Classification codes (1970),
 Statistics Canada, Catalogue 12-501, Occasional.

INDUSTRY GROUPINDUSTRY(a)NUMBER OF COMPANIESOther IndustriesTransportation and Other Utilities - Continued

515 Pipeline Transport	5
516 Highway and Bridge Maintenance	-
517 Miscellaneous Services Incidental to Transport	-
519 Other Transportation	-
524 Grain Elevators	3
527 Other Storage and Warehousing	-
543 Radio and Television Broadcasting	4
544 Telephone Systems	8
545 Telegraph and Cable Systems	1
548 Post Office	-
572 Electric Power	10
574 Gas Distribution	3
576 Water Systems	2
579 Other Utilities	<u>1</u>
	62

Other Non-manufacturing

404 Building Construction	2
406 Highway, Bridge and Street Construction	1
409 Other Construction	-
421 Special Trade Contractors	9
853 Computer Services	5
864 Engineering and Scientific Services	105
867 Offices of Management and Business Consultants	2
869 Miscellaneous Services to Business Management	20
891 Labour Organizations and Trade Associations	3
838 Photographic Services, n.e.s.	1
899 Miscellaneous Services, n.e.s.	<u>4</u>
	152

Total 1062

(a) Numbers refer to the Standard Industrial Classification codes (1970),
Statistics Canada, Catalogue 12-501, Occasional.

TABLE 3. NUMBER OF R&D PERFORMERS (a),
BY OWNERSHIP AND BY SALES SIZE, 1977

Ownership	(number of firms)					Total
	Sales size (\$000)					
	Non-commercial	<\$1000	\$1,000-9,999	\$10,000-49,999	>\$49,999	
Canadian	77	104	222	101	88	592
Foreign	10	5	84	146	129	374
Total	87	109	306	247	217	966

SOURCE: Science Statistics Centre, October 1979

(a) Companies with extramural R&D payments only (and no intramural R&D expenditures) are not included.

INDUSTRIAL R & D IN 1977

TABLE 1. TOTAL INTRAMURAL R&D EXPENDITURES,
BY TYPE AND BY INDUSTRY, 1977

Industry	(\$000,000)				
	Current expenditures			Capital expenditures	Total
	Wages	Other	Total		
Mines	10.0	5.1	15.1	0.6	15.7
Gas & oil wells	6.5	27.1	33.7	6.8	40.4
Food, beverages & tobacco	16.1	8.9	25.0	1.9	26.9
Rubber & plastic products	3.8	2.4	6.1	0.4	6.5
Textiles	2.7	1.7	4.4	1.0	5.4
Wood based industries	22.0	11.3	33.3	2.2	35.5
Primary metals(ferrous)	7.6	5.8	13.4	0.3	13.7
Primary metals(non-ferrous)	25.0	17.8	42.8	2.4	45.2
Metal fabricating	6.9	4.3	11.2	1.3	12.4
Business machines	10.0	7.7	17.7	1.7	19.5
Other machinery	24.7	16.2	40.9	2.3	43.2
Aircraft & parts	39.2	53.9	93.0	1.1	94.1
Other transportation equipment	8.7	4.8	13.5	0.3	13.9
Electrical products	97.0	70.0	167.0	11.1	178.1
Non-metallic mineral products	3.2	1.6	4.8	0.6	5.3
Petroleum products	20.5	30.6	51.2	13.7	64.9
Drugs & medicines	14.6	12.5	27.1	1.1	28.2
Other chemical products	31.8	14.1	46.0	2.4	48.3
Scientific & professional instruments	3.2	2.3	5.5	0.2	5.7
Other manufacturing industries	2.8	1.4	4.2	0.5	4.6
Transportation & other utilities	52.8	23.1	75.8	10.8	86.6
Other non-manufacturing industries	20.6	15.2	35.9	7.0	42.8
Total	429.6	337.7	767.4	69.7	837.0

SOURCE: Science Statistics Centre, October 1979

TABLE 2. TOTAL CURRENT AND CAPITAL R&D EXPENDITURES
BY TYPE AND BY SALES SIZE GROUP, 1977

Sales size group
(\$000)

(\$000,000)

	Current expenditures			Capital expenditures			Total
	Wages	Other	Total	Land & buildings	Equipment	Total	
Non-commercial	33.6	26.9	60.6	3.2	10.2	13.5	74.0
<\$1,000	6.6	3.0	9.6	0.1	1.0	1.1	10.8
\$1,000 - \$9,999	32.0	21.8	53.8	0.4	3.4	3.9	57.6
\$10,000 - \$49,999	57.7	46.2	103.9	1.3	4.9	6.2	110.1
>\$49,999	299.7	239.8	539.5	8.1	36.8	45.0	584.5
TOTAL	429.6	337.7	767.4	13.2	56.5	69.7	837.0

SOURCE: Science Statistics Centre, October 1979

TABLE 3. DISTRIBUTION OF CURRENT INTRAMURAL R&D EXPENDITURES,
BY INDUSTRY, 1977

Industry	(\$000)				Number of Firms
	Lower Quartile	Median	Upper Quartile	Mean	
Mines	90	150	290	660	23
Gas & oil wells	100	350	2,010	1,980	17
Food, beverages & tobacco	60	120	330	310	80
Rubber & plastic products	60	100	180	270	23
Textiles	50	80	350	310	14
Wood based industries	120	250	700	850	39
Primary metals (ferrous)	60	240	460	960	14
Primary metals (non-ferrous)	50	60	380	3,060	14
Metal fabricating	40	70	180	160	71
Business machines	120	680	2,070	1,610	11
Other machinery	60	130	310	430	95
Aircraft & parts	70	1,150	3,530	7,160	13
Other transportation equipment	100	190	450	540	25
Electrical products	80	190	510	1,320	126
Non-metallic mineral products	50	80	170	220	22
Petroleum products	80	300	6,220	6,400	8
Drugs & medicines	120	350	710	840	32
Other chemical products	50	120	400	460	99
Scientific & professional instruments	60	100	360	210	26
Other manufacturing industries	40	100	160	120	34
Transportation and other utilities	100	250	2,300	2,810	27
Other non-manufacturing industries	40	80	250	230	153
Total	55 60	140	354 350	790	966

SOURCE: Science Statistics Centre, October 1979

TABLE 4. DISTRIBUTION OF CURRENT INTRAMURAL R&D EXPENDITURES,
BY SALES SIZE, 1977

Sales size
group (\$000)

(rounded to the nearest ten thousand)

	(\$000)				
	Lower quartile	Median	Upper quartile	Mean	Number of firms
Non-commercial	60	120	650	700	87
<\$1,000	20	50	100	90	109
\$1,000 - 9,999	50	90	190	180	306
\$10,000 - 49,999	70	170	370	420	247
>\$49,999	160	460	2,010	2,490	217
Total	60	140	350	790	966

SOURCE: Science Statistics Centre, October 1979

TABLE 5. Current Intramural R & D Expenditures per One Hundred Dollars of Sales,
by Industry and by Sales Size, 1977

Industry	Sales Size (\$000)				Total
	< \$1,000	\$1,000- \$9,999	\$10,000- \$49,999	>\$49,999	
Mines	58.46	0.86	0.57	0.60	0.62
Gas and Oil Wells	6.47	2.54	1.00	1.25	1.25
Food, beverages and tobacco	6.33	4.44	0.53	0.20	0.23
Rubber and Plastic products	1.44	2.58	0.92	0.41	0.54
Textiles	80.00	0.81	1.45	0.40	0.53
Wood based	47.93	3.39	1.04	0.24	0.26
Primary metals (ferrous)	12.00	2.94	0.87	0.32	0.34
Primary metals (non-ferrous)	-	1.12	0.27	0.70	0.70
Metal fabricating	10.47	2.50	0.70	0.22	0.50
Business machines	79.12	3.71	7.52	0.93	1.16
Other machinery	16.43	4.62	1.45	1.06	1.42
Aircraft & parts	-	1.40	4.61	10.63	9.74
Other transportation equipment	24.45	3.81	1.18	0.14	0.20
Electrical products	19.34	6.58	5.01	2.62	3.17
Non-metallic mineral products	-	1.52	0.35	0.29	0.33
Petroleum products	12.50	1.53	-	0.43	0.43
Drugs & medicines	9.67	4.30	3.39	4.59	3.95
Other chemical products	24.78	2.12	1.29	0.75	0.88
Scientific and professional instruments	38.21	6.93	1.22	0.31	1.24
Other manufacturing industries	3.93	2.47	0.62	-	1.10
Transportation and other utilities	36.58	4.67	1.58	0.45	0.46
Other non-manufacturing industries	15.62	6.04	2.39	0.09	2.13
Total	20.83	4.14	1.91	0.66	0.80

Source: Science Statistics Centre, October 1979

TABLE 6. DISTRIBUTION OF CURRENT INTRAMURAL R & D EXPENDITURES PER ONE HUNDRED DOLLARS OF SALES, BY SALES SIZE, 1977

Sales size
group (\$000)

	Lower quartile	Median	Upper quartile	Number of firms
< \$1,000	6.47	15.33	42.49	109
\$ 1,000 - 9,999	1.25	2.49	5.57	307 306
10,000 - 49,999	0.37	0.90	1.83	247
> \$49,999	0.12	0.26	0.72	212 217
Total	0.42	1.42	4.51	875 879

Source: Science Statistics Centre, October 1979.

TABLE 7. CURRENT INTRAMURAL R&D EXPENDITURES,
BY PRODUCT FIELD AND BY INDUSTRY, 1977

Industry

(\$000,000)

	Unrefined mining products	Petroleum products	Non- electrical machinery	Aircraft	Electronic equipment	Drugs, chemicals & chemical products	Other	Total
Mines	13	-	-	-	-	-	2	15
Gas and oil wells	27	X	-	-	-	--	1	34
Food, beverages and tobacco	-	-	-	-	-	X	24	25
Rubber and plastic products	-	-	--	-	-	6	--	6
Textiles	-	-	-	-	-	-	4	4
Wood based industries	-	--	-	-	-	--	33	33
Primary metals (ferrous)	-	-	-	-	-	-	13	13
Primary metals (non-ferrous)	X	-	-	-	-	X	39	43
Metal fabricating	-	-	-	-	-	-	11	11
Business machines	-	-	-	-	9	2	7	18
Other machinery	-	-	36	-	-	-	5	41
Aircraft and parts	-	-	X	86	X	-	4	93
Other transportation equipment	-	-	-	-	-	-	13	13
Electrical products	-	-	X	-	129	X	37	167
Non-metallic mineral products	-	-	-	-	-	--	4	5
Petroleum products	X	36	-	-	-	2	X	51
Drugs and medicines	-	-	-	-	-	26	1	27
Other chemical products	-	-	-	-	-	43	3	46
Scientific and professional instruments	-	-	-	-	-	-	5	5
Other manufacturing industries	-	-	-	-	-	-	4	4
Transportation and other utilities	-	X	X	-	7	X	56	76
Other non-manufacturing industries	-	X	-	-	X	-	33	36
Total	54	48	41	86	151	86	302	767

SOURCE: Science Statistics Centre, October 1979

TABLE 8. SOURCES OF FUNDS FOR INTRAMURAL R&D,
BY INDUSTRY, 1977

Industry

(\$000,000)

	Reporting company	Federal government	Other Canadian	Foreign	Total
Mines	13.0	1.1	0.9	0.6	15.7
Gas & oil wells	22.4	1.6	16.5	-	40.4
Food, beverages & tobacco	22.4	3.6	x	x	26.9
Rubber & plastic products	6.0	0.5	-	-	6.5
Textiles	5.2	0.1	x	x	5.4
Wood based industries	22.9	3.3	8.1	1.1	35.5
Primary metals (ferrous)	12.1	1.4	0.1	--	13.7
Primary metals (non-ferrous)	39.6	2.0	1.0	2.6	45.2
Metal fabricating	10.7	0.9	x	x	12.4
Business machines	6.0	4.5	-	8.9	19.5
Other machinery	35.0	3.9	0.1	4.1	43.2
Aircraft & parts	57.2	25.4	5.7	5.8	94.1
Other transportation equipment	12.2	1.7	-	-	13.9
Electrical products	114.7	25.0	26.4	12.0	178.1
Non-metallic mineral products	4.8	0.4	x	x	5.3
Petroleum products	52.2	1.4	8.9	2.3	64.9
Drugs & medicines	22.9	1.8	--	3.4	28.2
Other chemical products	44.3	2.4	0.5	1.1	48.3
Scientific & professional instruments	3.4	2.1	0.2	--	5.7
Other manufacturing industries	3.4	1.2	x	x	4.6
Transportation & other utilities	74.2	3.6	6.6	2.2	86.6
Other non-manufacturing industries	17.4	9.2	10.9	5.4	42.8
Total	602.1	97.1	87.7	50.2	837.0

SOURCE: Science Statistics Centre, October 1979

TABLE 9. SOURCES OF FUNDS FOR INTRAMURAL R&D,
BY OWNERSHIP, 1977

Ownership

	(percent)				Total (\$000,000)
	Reporting company	Federal government	Other Canadian	Foreign	
Canadian research institutes	5	9	84	2	10.0
Other Canadian (including crown corporations)	73	12	12	3	467.3
Total Canadian	72	12	13	3	477.3
Foreign	72	11	7	10	359.8
Total	72	12	10	6	837.0

SOURCE: Science Statistics Centre, October 1979

TABLE 10. SOURCES OF FUNDS FOR INTRAMURAL R&D,
BY SALES SIZE GROUP, 1977

Sales size group
(\$000)

(percent)

	Reporting company	Federal government	Other canadian	Foreign	Total (\$000,000)
Non-commercial	38	12	34	16	74.0
<\$1,000	45	25	26	4	10.8
\$1,000 - \$9,999	73	21	3	3	57.6
\$10,000 - \$49,999	66	16	4	14	110.1
>\$49,999	78	9	9	4	584.5
Total	72	12	10	6	837.0

SOURCE: Science Statistics Centre, October 1979

TABLE 11. NUMBER OF PERSONS ENGAGED IN R&D,
BY CATEGORY AND BY INDUSTRY, 1977

Industry

(person-years)

	Professionals	Technicians	Other supporting staff	Total
Mines	200	218	81	499
Gas and oil wells	105	75	127	307
Food, beverages and tobacco	400	351	162	913
Rubber and plastic products	128	106	32	266
Textiles	72	39	55	166
Wood based industries	449	455	225	1,129
Primary metals (ferrous)	153	132	81	366
Primary metals (non-ferrous)	394	491	197	1,082
Metal fabricating	162	147	76	385
Business machines	281	171	84	536
Other machinery	365	415	555	1,335
Aircraft and parts	856	655	500	2,011
Other transportation equipment	144	193	205	542
Electrical products	2,565	1,491	1,062	5,118
Non-metallic mineral products	66	66	40	172
Petroleum products	377	319	93	789
Drugs and medicines	440	178	188	806
Other chemical products	755	632	269	1,656
Scientific and professional instruments	83	73	34	190
Other manufacturing industries	56	64	40	160
Transportation and other utilities	1,081	549	319	1,949
Other non-manufacturing industries	553	378	211	1,142
Total	9,685	7,198	4,636	21,519

SOURCE: Science Statistics Centre, October 1979

TABLE 12. PROFESSIONAL STAFF ENGAGED IN R&D,
BY INDUSTRY AND BY DEGREE, 1977

Industry group

	(person-years)			
	Bachelors	Masters	Doctors	Total
Mines and wells	205	50	50	305
Chemical based	1,283	303	586	2,172
Wood based	222	56	171	449
Metals	452	118	139	709
Machinery and transportation equipment	1,268	270	108	1,646
Electric	1,607	723	318	2,648
Other manufacturing	87	17	18	122
Other industries	979	384	271	1,634
Total	6,103	1,921	1,661	9,685

SOURCE: Science Statistics Centre, October 1979

TABLE 13. PROFESSIONAL R&D PERSONNEL,
BY DEGREE AND BY OWNERSHIP, 1977

Ownership

(person-years)

	Bachelors	Masters	Doctors	Total
Canadian	3,502	1,259	1,006	5,767
Foreign	2,601	662	655	3,918
Total	6,103	1,921	1,661	9,685

SOURCE: Science Statistics Centre, October 1979

TABLE 14. PROFESSIONAL R&D PERSONNEL,
BY DEGREE AND BY SALES SIZE GROUP, 1977

Sales size group
(\$000)

(person-years)

	Bachelors	Masters	Doctors	Total
Non-commercial	293	140	258	691
<\$1,000	109	36	41	186
\$1,000 - \$9,999	558	164	99	821
\$10,000 - \$49,999	1,014	293	201	1,508
>\$49,999	4,129	1,288	1,062	6,479
TOTAL	6,103	1,921	1,661	9,685

SOURCE: Science Statistics Centre, October 1979

TABLE 15. CURRENT INTRAMURAL R&D EXPENDITURES,
BY REGION AND BY INDUSTRY GROUP, 1977

Industry group

(\$000,000)

	Quebec	Ontario	Alberta	British Columbia	Total(a)
Mines and wells	X	6.1	33.1	X	48.7
Chemical based	38.9	88.7	19.4	1.5	159.6
Wood based	17.2	7.7	X	X	33.3
Metals	20.9	39.3	X	2.3	67.4
Machinery & transportation equipment	78.4	76.4	0.7	3.2	165.2
Electric	29.1	135.9	-	4.2	172.5
Other manufacturing	X	7.1	X	--	8.9
Other industries	32.3	56.8	7.4	8.9	111.7
Total	221.3	418.1	65.1	31.9	767.4

SOURCE: Science Statistics Centre, October 1979

(a) The total is distributed among provinces as follows: Nova Scotia-\$3.2, New Brunswick-\$2.1, Manitoba-\$7.4, Saskatchewan-\$5.7, North West Territories & offshore-\$9.0. Individually, Newfoundland and Prince Edward Island are confidential; combined they amount to \$3.6.

TABLE 16. TOTAL INTRAMURAL R&D EXPENDITURES,
BY REGION AND BY INDUSTRY GROUP, 1977

Industry group

(\$000,000)

	Quebec	Ontario	Alberta	British Columbia	Total(a)
Mines and wells	2.8	6.6	39.8	X	56.1
Chemical based	41.8	97.0	28.6	1.6	180.3
Wood based	18.5	8.0	X	7.3	35.5
Metals	21.3	42.4	X	2.4	71.3
Machinery & transportation equipment	79.6	80.1	0.8	3.5	170.6
Electric	30.6	145.5	-	4.4	183.8
Other manufacturing	2.1	7.7	X	X	10.0
Other industries	36.9	64.8	7.6	12.2	129.5
Total	233.7	452.1	81.4	36.4	837.0

SOURCE: Science Statistics Centre, October 1979

(a) The total is distributed among provinces as follows: Nova Scotia-\$3.2, New Brunswick-\$2.5, Manitoba-\$7.6, Saskatchewan-\$6.8, North West Territories & offshore-\$9.0. Individually, Newfoundland and Prince Edward Island are confidential; combined they amount to \$4.3.

TABLE 17. PERSONNEL ENGAGED IN R&D,
BY REGION AND BY INDUSTRY GROUP, 1977

Industry group

	(person-years)				
	Quebec	Ontario	Alberta	British Columbia	Total(a)
Mines and wells	128	232	293	X	806
Chemical based	1,481	2,698	208	62	4,596
Wood based	612	258	X	210	1,129
Metals	643	1,006	X	66	1,833
Machinery & transportation equipment	1,988	2,078	23	102	4,424
Electric	857	4,215	-	173	5,308
Other manufacturing	66	257	X	X	332
Other industries	938	1,547	152	243	3,091
Total	6,713	12,291	779	971	21,519

SOURCE: Science Statistics Centre, October 1979

(a) The total is distributed among provinces as follows: Nova Scotia=102, New Brunswick=71, Manitoba=250, Saskatchewan=169, North West Territories & offshore=91. Individually, Newfoundland and Prince Edward Island are confidential; combined they amount to 82.

TABLE 18. PROFESSIONAL PERSONNEL ENGAGED IN R&D,
BY REGION AND BY INDUSTRY GROUP, 1977

Industry group	(person-years)				
	Quebec	Ontario	Alberta	British Columbia	Total(a)
Mines and wells	50	81	99	X	305
Chemical based	712	1,220	132	34	2,172
Wood based	252	86	X	X	449
Metals	265	374	X	29	709
Machinery & transportation equipment	791	770	9	27	1,646
Electric	483	2,071	-	64	2,648
Other manufacturing	22	95	X	X	122
Other industries	430	908	76	128	1,634
Total	3,005	5,605	357	434	9,685

SOURCE: Science Statistics Centre, October 1979

- (a) The total is distributed among provinces as follows: Nova Scotia=37, New Brunswick=22, Manitoba=56, Saskatchewan=81, North West Territories & offshore=40. Individually, Newfoundland and Prince Edward Island figures are confidential; combined they amount to 48.

TABLE 19. R&D PAYMENTS BETWEEN CANADIAN COMPANIES AND FOREIGN AFFILIATES,
BY INDUSTRY GROUP, 1977

Industry group

(\$000,000)

	Payments from foreign affiliates	Payments to foreign affiliates	Balance
Mines and wells	X	X	-11.4
Chemical based	6.8	25.8	-18.9
Wood based	X	X	0.4
Metals	X	X	-13.3
Machinery and transportation equipment	12.9	13.6	-0.7
Electric	1.2	7.4	-6.2
Other manufacturing	--	1.9	-1.9
Other industries	5.4	1.0	4.4
Total	29.8	77.9	-48.1

SOURCE: Science Statistics Centre, October 1979

TABLE 20. R&D PAYMENTS BETWEEN CANADIAN COMPANIES AND FOREIGN AFFILIATES, BY OWNERSHIP, 1977

Ownership

(\$000,000)

	Payments from foreign affiliates	Payments to foreign affiliates	Balance
Canadian	8.1	23.2	-15.1
Foreign	21.8	54.7	-32.9
Total	29.8	77.9	-48.1

SOURCE: Science Statistics Centre, October 1979

TABLE 21. R&D PAYMENTS BETWEEN CANADIAN COMPANIES AND FOREIGN AFFILIATES,
BY SALES SIZE, 1977

Sales size group
(\$000)

	(\$000,000)		
	Payments from foreign affiliates	Payments to foreign affiliates	Balance
Non-commercial	8.8	0.5	8.3
<\$1,000	0.2	0.4	-0.1
\$1,000 - \$9,999	1.7	3.3	-1.6
\$10,000 - \$49,999	4.4	12.0	-7.7
>\$49,999	14.8	61.8	-47.0
TOTAL	29.8	77.9	-48.1

SOURCE: Science Statistics Centre, October 1979

TABLE 22. PAYMENTS MADE OR RECEIVED FOR TECHNOLOGY, (a)
BY INDUSTRY GROUP, 1977

Industry group	Payments	Receipts	Net balance		
			Canadian	Foreign	Total
Mines and wells	2.4	--	-0.2	-2.1	-2.3
Chemical based	34.5	3.2	-0.9	-30.4	-31.3
Wood based	1.6	0.6	--	-1.0	-1.1
Metals	7.6	6.3	-2.3	1.0	-1.3
Machinery and transportation equipment	100.0	2.1	-0.4	-97.6	-97.9
Electric	25.1	1.4	0.3	-24.0	-23.7
Other manufacturing	2.6	0.5	0.1	-2.2	-2.1
Other industries	5.0	0.5	-0.2	-4.3	-4.5
Total	178.7	14.5	-3.5	-160.7	-164.2

SOURCE: Science Statistics Centre, October 1979

(a) Payments made or received for patents, licenses and technical "know-how"

TABLE 23. TECHNOLOGY PAYMENTS (a),
BY OWNERSHIP, 1977

Ownership

(\$000,000)

	to Canadian companies	to foreign companies	Total
Canadian	4.6	10.0	14.6
Foreign	3.0	161.1	164.1
Total	7.6	171.1	178.7

SOURCE: Science Statistics Centre, October 1979

(a) Payments for patents, licenses and technical "know-how"

TABLE 24. TECHNOLOGY PAYMENTS (a),
BY SALES SIZE GROUP, 1977

Sales Size
Group (\$000)

(\$000,000)

	to Canadian companies	to foreign companies	Total
< \$49,999	4.3	16.3	20.6
> \$49,999	3.3	154.8	158.1
Total	7.6	171.1	178.7

SOURCE: Science Statistics Centre, October 1979

(a) Payments for patents, licenses and technical "know-how"

TABLE 25. TECHNOLOGY RECEIPTS (a),
BY OWNERSHIP, 1977

Ownership

(\$000,000)

	from Canadian sources	from foreign sources	Total
Canadian	1.7	5.5	7.2
Foreign	2.4	4.9	7.3
TOTAL	4.1	10.4	14.5

SOURCE: Science Statistics Centre, October 1979

(a) Receipts for patents, licenses and technical "know-how"

TABLE 26. TECHNOLOGY RECEIPTS (a),
BY SALES SIZE GROUP, 1977

Sales size
group (\$000)

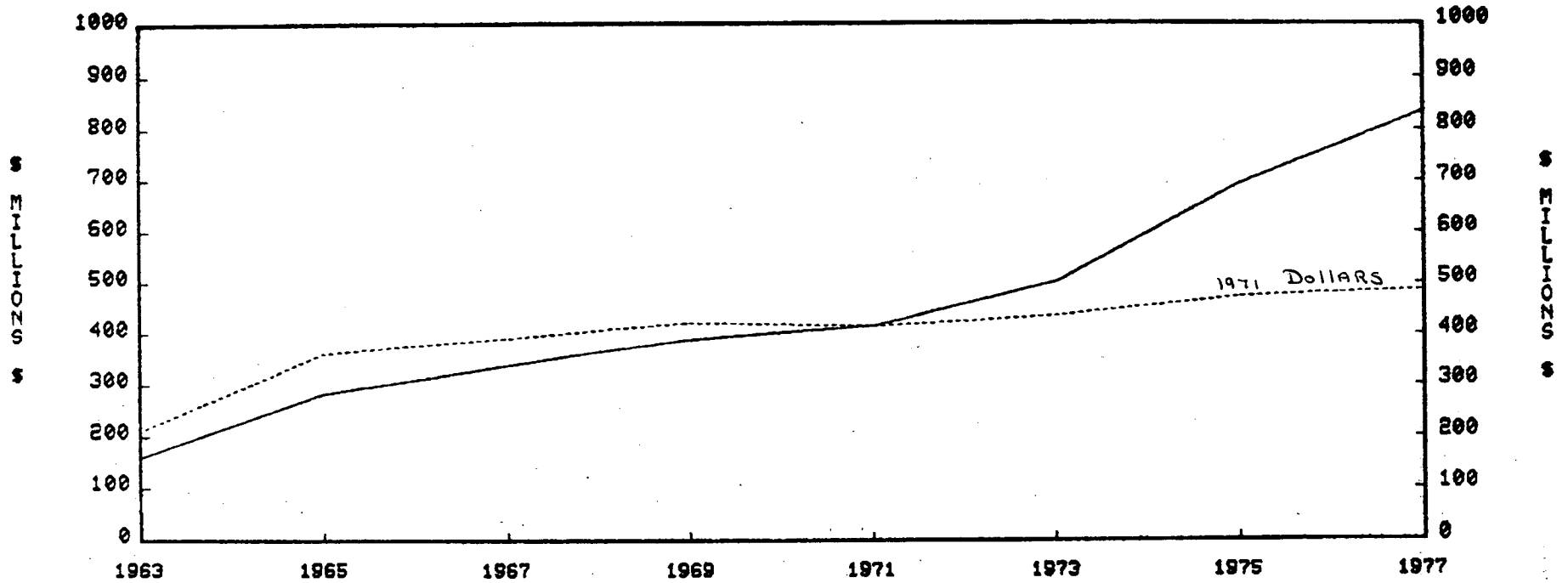
	(\$000,000)		Total
	from Canadian sources	from foreign sources	
<\$49,999	0.6	1.7	2.2
>\$49,999	3.5	8.7	12.2
TOTAL	4.1	10.4	14.5

SOURCE: Science Statistics Centre, October 1979

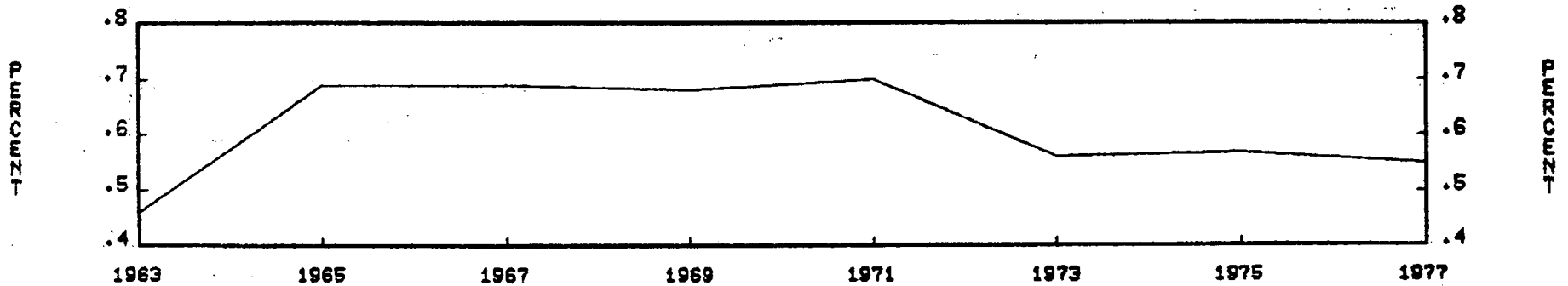
(a) Receipts for patents, licenses and technical "know-how"

HISTORICAL INDUSTRIAL R & D EXPENDITURES

CHART 1. Total Intramural R & D Expenditures in Canada, 1963-1977

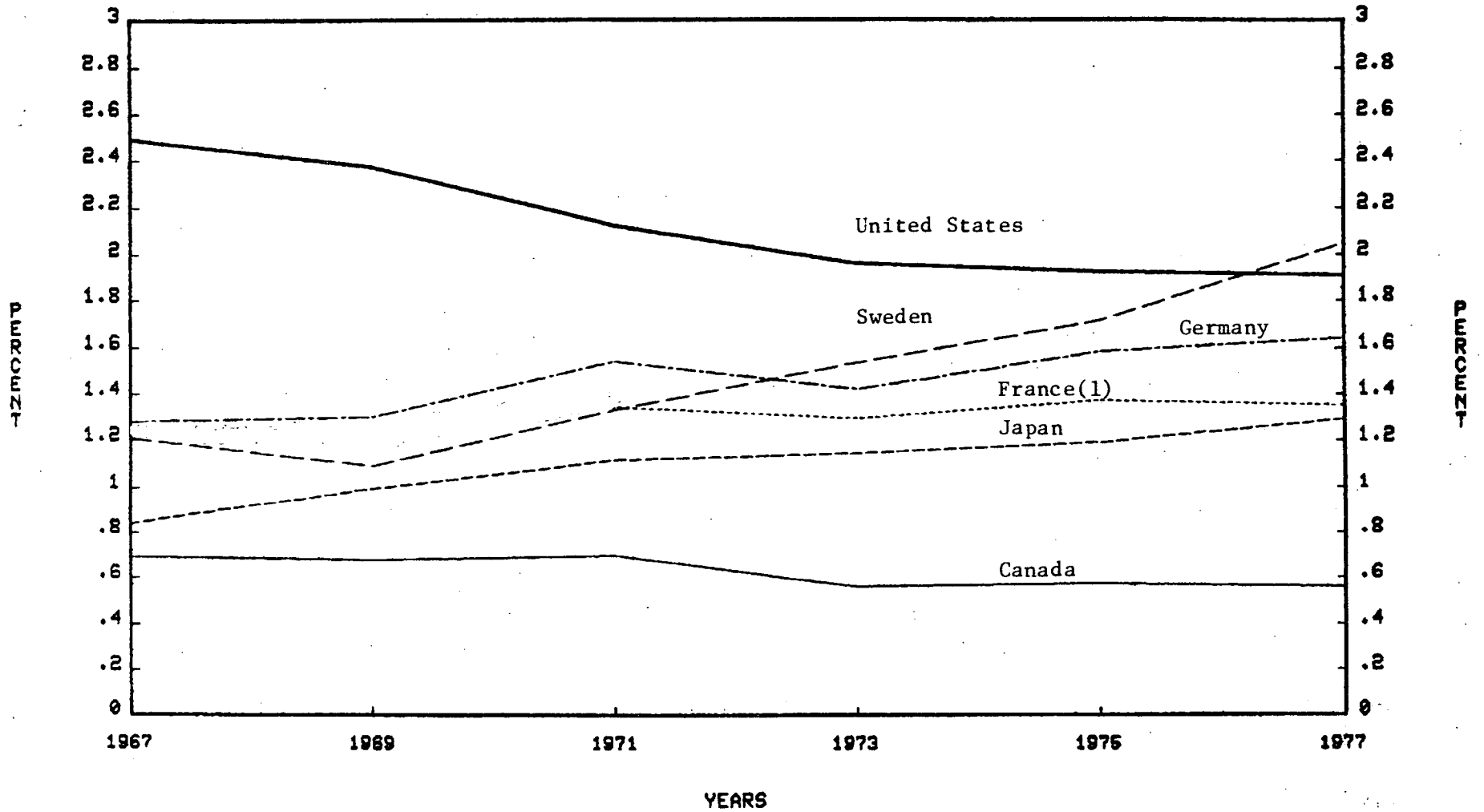


Total Intramural R & D Expenditures/Industrial Domestic Product



YEARS

CHART 2. Total Intramural R & D Expenditures/Industrial Domestic Product,
for Selected OECD Countries, 1969-1977.



(1) Data for France not available before 1971.

TABLE 1. CURRENT INTRAMURAL R&D EXPENDITURES,
BY INDUSTRY, 1973 - 1979

Industry

(\$000,000)

	1973	1974	1975	1976	1977	1978	1979
Mines	15.3	12.8	14.1	15.2	15.1	16.7	18.7
Gas & oil wells	14.5	14.5	30.2	18.3	33.7	30.6	32.2
Food, beverages & tobacco	16.0	19.1	21.6	22.9	25.0	27.2	29.3
Rubber & plastic products	4.8	4.1	4.3	6.1	6.1	6.8	7.5
Textiles	3.9	3.2	5.0	4.0	4.4	4.7	5.0
Wood based industries	19.1	22.1	28.4	32.8	33.3	35.1	37.2
Primary metals (ferrous)	9.2	12.1	12.9	13.6	13.4	14.2	15.7
Primary metals (non-ferrous)	26.6	31.3	39.0	48.8	42.8	45.7	50.5
Metal fabricating	7.3	7.2	9.4	10.3	11.2	12.9	15.1
Business machines	17.3	15.6	17.2	17.2	17.7	21.2	26.9
Other machinery	24.9	29.7	36.3	35.2	40.9	46.3	47.4
Aircraft & parts	60.4	53.8	56.4	70.6	93.0	123.7	92.8
Other transportation equipment	14.6	12.9	14.3	14.5	13.5	15.1	17.9
Electrical products	108.6	128.4	146.3	154.2	167.0	188.5	199.5
Non-metallic mineral products	4.1	4.6	4.5	4.0	4.8	5.8	6.4
Petroleum products	18.4	27.4	40.8	37.8	51.2	63.5	73.6
Drugs & medicines	19.4	20.8	23.5	25.9	27.1	29.5	31.8
Other chemical products	29.8	34.6	38.5	41.9	46.0	49.9	52.8
Scientific & professional instruments	4.4	4.9	5.3	4.7	5.5	6.3	6.6
Other manufacturing industries	3.6	5.0	5.8	3.7	4.2	4.6	5.0
Transportation & other utilities	21.9	33.7	45.8	52.1	75.8	81.3	90.2
Other non-manufacturing industries	13.7	22.0	23.0	30.9	35.9	37.5	41.0
Total	457.7	519.9	623.0	664.8	767.4	867.1	903.2

SOURCE: Science Statistics Centre, October 1979

TABLE 2. CAPITAL R&D EXPENDITURES,
BY INDUSTRY, 1973 - 1979

Industry

(\$000,000)

	1973	1974	1975	1976	1977	1978	1979
Mines	0.6	0.8	0.7	0.8	0.6	1.1	7.0
Gas & oil wells	1.2	3.9	3.0	10.1	6.8	7.8	8.5
Food, beverages & tobacco	1.1	1.6	2.9	1.5	1.9	3.7	2.2
Rubber & plastic products	0.2	0.4	0.3	0.1	0.4	0.9	0.9
Textiles	0.4	0.1	0.3	1.1	1.0	1.0	0.9
Wood based industries	1.1	2.0	2.2	2.4	2.2	2.9	3.4
Primary metals (ferrous)	0.3	1.0	0.8	0.3	0.3	0.4	0.6
Primary metals (non-ferrous)	1.2	4.8	8.4	2.6	2.4	7.1	11.1
Metal fabricating	1.3	0.7	0.5	0.6	1.3	4.0	2.4
Business machines	1.9	4.7	2.3	1.3	1.7	3.1	9.8
Other machinery	0.7	2.6	6.4	2.4	2.3	1.8	1.9
Aircraft & parts	1.7	1.0	0.8	1.3	1.1	1.0	3.2
Other transportation equipment	0.5	0.8	0.4	0.3	0.3	1.8	2.2
Electrical products	11.8	18.9	10.3	12.4	11.1	13.0	20.5
Non-metallic mineral products	0.7	1.1	0.4	0.4	0.6	0.8	0.8
Petroleum products	1.2	15.0	5.6	5.5	13.7	24.8	18.4
Drugs & medicines	0.7	1.1	1.1	1.3	1.1	1.7	2.5
Other chemical products	3.9	5.0	5.5	4.5	2.4	4.3	6.5
Scientific & professional instruments	0.2	0.4	0.1	0.2	0.2	0.4	0.5
Other manufacturing industries	0.1	0.7	0.6	0.2	0.5	0.6	0.5
Transportation & other utilities	10.7	9.7	14.6	13.1	10.8	23.3	13.5
Other non-manufacturing industries	0.8	0.7	1.8	7.6	7.0	7.1	4.3
Total	42.4	77.0	69.1	70.0	69.7	113.0	121.4

SOURCE: Science Statistics Centre, October 1979

TABLE 2(a). CAPITAL EXPENDITURES ON R&D
BY SELECTED INDUSTRIES, 1973 - 1979

Industry

(\$000,000)

	1973	1974	1975	1976	1977	1978	1979
Petroleum(a)	2.5	19.0	8.6	15.6	20.5	32.7	26.8
Electrical products	11.8	18.9	10.3	12.4	11.1	13.0	20.5
Utilities	10.7	9.7	14.6	13.1	10.8	23.3	13.5
Other industries	17.5	29.3	35.6	29.0	27.2	44.0	60.6
TOTAL	42.4	77.0	69.1	70.0	69.7	113.0	121.4
of which:							
Land & buildings	6.4	24.3	17.0	15.7	13.2	23.1	29.3
Equipment	36.1	52.6	52.0	54.2	56.5	89.9	92.0

SOURCE: Science Statistics Centre, October 1979

(a) Includes Gas & oil wells and Petroleum products

TABLE 3. TOTAL INTRAMURAL R&D EXPENDITURES,
BY INDUSTRY, 1973 - 1979

Industry

(\$000,000)

	1973	1974	1975	1976	1977	1978	1979
Mines	15.9	13.6	14.8	16.0	15.7	17.8	25.7
Gas & oil wells	15.8	18.5	33.2	28.4	40.4	38.4	40.7
Food, beverages & tobacco	17.1	20.8	24.6	24.4	26.9	30.9	31.6
Rubber & plastic products	5.0	4.5	4.7	6.2	6.5	7.8	8.4
Textiles	4.3	3.4	5.3	5.2	5.4	5.7	5.9
Wood based industries	20.2	24.0	30.6	35.2	35.5	38.0	40.6
Primary metals (ferrous)	9.5	13.0	13.8	13.9	13.7	14.7	16.3
Primary metals (non-ferrous)	27.8	36.1	47.4	51.4	45.2	52.8	61.5
Metal fabricating	8.6	7.9	9.9	10.9	12.4	16.9	17.5
Business machines	19.3	20.3	19.5	18.5	19.5	24.3	36.7
Other machinery	25.6	32.3	42.7	37.6	43.2	48.1	49.3
Aircraft & parts	62.2	54.8	57.2	72.0	94.1	124.7	96.0
Other transportation equipment	15.1	13.6	14.7	14.8	13.9	16.9	20.0
Electrical products	120.4	147.3	156.6	166.6	178.1	201.5	220.0
Non-metallic mineral products	4.8	5.7	4.9	4.4	5.3	6.6	7.1
Petroleum products	19.6	42.5	46.4	43.3	64.9	88.3	92.0
Drugs & medicines	20.1	21.9	24.6	27.2	28.2	31.2	34.3
Other chemical products	33.6	39.6	44.1	46.3	48.3	54.3	59.3
Scientific & professional instruments	4.6	5.3	5.4	4.9	5.7	6.7	7.1
Other manufacturing industries	3.8	5.7	6.5	3.9	4.6	5.2	5.4
Transportation & other utilities	32.6	43.4	60.4	65.2	86.6	104.6	103.7
Other non-manufacturing industries	14.5	22.7	24.8	38.4	42.9	44.6	45.3
Total	500.1	596.8	692.1	734.8	837.0	980.1	1,024.6

SOURCE: Science Statistics Centre, October 1979

TABLE 4. CURRENT INTRAMURAL R&D EXPENDITURES,
BY INDUSTRY, IN CONSTANT DOLLARS,
1973-1979

Industry

(1971 dollars - \$000,000)

	1973	1974	1975	1976	1977	1978	1979
Mines	13.3	9.7	9.6	9.5	8.8	9.2	9.5
Gas & oil wells	12.7	11.0	20.6	11.4	19.6	16.7	16.4
Food, beverages & tobacco	13.9	14.5	14.8	14.2	14.5	14.9	14.9
Rubber & plastic products	4.2	3.1	3.0	3.8	3.6	3.7	3.8
Textiles	3.4	2.4	3.4	2.5	2.5	2.5	2.6
Wood based industries	16.6	16.7	19.4	20.4	19.4	19.2	18.9
Primary metals (ferrous)	8.1	9.1	8.8	8.5	7.8	7.8	8.0
Primary metals (non-ferrous)	23.2	23.7	26.7	30.4	24.9	25.0	25.6
Metal fabricating	6.3	5.5	6.4	6.4	6.5	7.0	7.7
Business machines	15.1	11.8	11.8	10.7	10.3	11.6	13.7
Other machinery	21.7	22.5	24.8	22.0	23.8	25.3	24.1
Aircraft & parts	52.7	40.7	38.5	44.0	54.2	67.7	47.1
Other transportation equipment	12.8	9.7	9.8	9.0	7.9	8.3	9.1
Electrical products	94.8	97.2	100.0	96.1	97.3	103.2	101.3
Non-metallic mineral products	3.6	3.5	3.1	2.5	2.8	3.2	3.2
Petroleum products	16.0	20.8	27.9	23.6	29.8	34.7	37.4
Drugs & medicines	16.9	15.8	16.0	16.2	15.8	16.1	16.2
Other chemical products	26.0	26.2	26.3	26.1	26.8	27.3	26.8
Scientific & professional instruments	3.8	3.7	3.6	3.0	3.2	3.4	3.4
Other manufacturing industries	3.2	3.8	4.0	2.3	2.4	2.5	2.5
Transportation & other utilities	19.1	25.5	31.3	32.5	44.2	44.5	45.8
Other non-manufacturing industries	12.0	16.6	15.7	19.2	20.9	20.5	20.8
Total	399.4	393.5	425.8	414.2	446.9	474.6	458.7

SOURCE: Science Statistics Centre, October 1979

TABLE 5. RELATIVE WAGES AND SALARIES FOR R&D,
BY SELECTED INDUSTRIES, 1973 - 1979

Industry

(percent of current intramural)

	1973	1974	1975	1976	1977	1978	1979
Mines	60	63	62	66	66	64	64
Gas and oil wells	17	19	12	24	19	22	23
Petroleum products	54	41	37	49	40	39	39
Drugs and medicines	57	56	54	54	54	54	55
Other chemical products	63	64	64	68	69	70	69
Paper	63	67	65	64	67	68	68
Primary metals (ferrous)	41	41	48	54	57	58	59
Primary metals (non-ferrous)	70	68	62	61	58	60	59
Business machines	38	42	45	50	56	54	55
Other machinery	55	56	57	60	60	58	59
Aircraft and parts	34	45	46	46	42	41	47
Electrical products	56	56	55	57	58	59	59
Other manufacturing	53	57	60	64	67	64	63
Transportation and other utilities	72	57	51	53	70	76	76
Other non-manufacturing	49	49	50	56	58	59	57
Total	53	54	52	56	56	56	58

SOURCE: Science Statistics Centre, October 1979

TABLE 6. CURRENT INTRAMURAL R&D EXPENDITURES,
BY OWNERSHIP, 1973-1979

Ownership

	PERCENT						
	1973	1974	1975	1976	1977	1978	1979
Canadian	44.0	52.0	51.0	56.0	57.0	58.0	56.0
Foreign	56.0	48.0	49.0	44.0	43.0	42.0	44.0
TOTAL (\$000,000)	457.7	519.9	623.0	664.8	767.4	867.1	903.2

SOURCE: Science Statistics Centre, October 1979

TABLE 7. CURRENT INTRAMURAL R&D EXPENDITURES,
BY SALES SIZE GROUP, 1973 - 1979

Sales size group
(\$000)

	(percent)						
	1973	1974	1975	1976	1977	1978	1979
Non-commercial	6	6	6	8	8	7	8
<\$1,000	2	2	2	2	1	1	1
\$1,000 - \$9,999	11	9	8	8	8	7	7
\$10,000 - \$49,999	21	18	18	14	13	13	13
>\$49,999	60	65	66	69	70	71	71
TOTAL (\$000,000)	457.7	519.9	623.0	664.8	767.4	867.1	903.2

SOURCE: Science Statistics Centre, October 1979

TABLE 8. SOURCES OF FUNDS FOR INTRAMURAL R&D EXPENDITURES,
BY TYPE, 1963 - 1977

Source of funds

	(percent)							
	1963	1965	1967	1969	1971	1973	1975	1977
Reporting company	74	71	77	75	71	69	73	72
Related companies	2	1	2	4	6	7	4	4
Federal government	18	18	14	14	16	15	12	12
Other canadian sources	2	1	2	2	2	2	5	6
Foreign	5	9	5	5	6	6	6	6
Total (\$000,000)	160.2	284.9	337.8	390.0	416.9	500.1	692.1	837.0

SOURCE: Science Statistics Centre, October 1979

TABLE 9. Payments Made or Received by the Reporting Companies
for Patents, Licenses and Technical "Know-How", 1963-1977.

Year	In Canada			Outside Canada		
	Payments(a)	Receipts	Net Balance	Payments(a)	Receipts	Net Balance
1963	1.7	1.3	-0.4	21.1	2.3	-18.8
1965	2.1	1.1	-1.0	27.6	3.0	-24.7
1967	5.2	4.2	-0.9	42.6	3.3	-39.3
1969	2.7	3.2	0.5	62.3	2.1	-60.2
1971	3.1	1.9	-1.2	57.6	5.5	-52.1
1973	3.6	1.5	-2.0	90.5	5.0	-85.5
1975	4.7	2.4	-2.3	118.9	9.5	-109.4
1977	7.3	3.9	-3.4	155.9	10.3	-145.5

SOURCE: Science Statistics Centre, October 1979.

(a) Does not include payments from companies not funding R & D.

Table 10. Destination of Extramural Expenditures on R & D,
by Industry Group, 1969-1977.

Industry group	1969	1971	1973	In Canada	
				1975	1977
Mines and wells	1.5	3.2	5.1	9.1	15.4
Chemical based	3.7	4.4	6.9	11.0	7.3
Wood based	4.0	3.6	3.2	5.6	5.9
Metals	1.2	0.9	0.8	1.6	1.3
Machinery and trans- portation equipment	2.2	1.4	2.7	2.3	14.5
Electric	1.0	1.3	0.8	1.1	1.8
Other manufacturing	1.9	0.6	0.2	0.4	0.2
Other industries	7.3	16.1	28.1	34.5	59.2
Total	22.8	31.5	47.7	65.5	105.6
				Outside Canada	
Mines and wells	2.1	4.9	6.0	8.3	11.9
Chemical based	15.7	18.0	17.4	25.0	26.3
Wood based	0.7	1.1	0.7	1.0	0.4
Metals	8.9	10.9	13.3	16.9	23.1
Machinery and trans- portation equipment	4.3	4.5	10.3	12.6	28.0
Electric	5.4	4.5	3.3	3.2	8.2
Other manufacturing	1.4	1.8	2.5	2.9	2.8
Other industries	0.3	6.8	10.5	7.6	2.4
Total	38.8	52.5	64.0	77.5	103.2

