

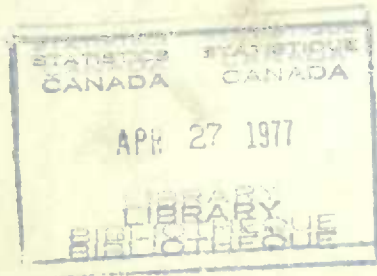
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CANADA



FEDERAL GOVERNMENT EXPENDITURES
ON SCIENTIFIC ACTIVITIES
FISCAL YEAR 1960-61

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PREFACE

This publication, prepared by the Dominion Bureau of Statistics in cooperation with the National Research Council, presents in tabular form an estimate of the magnitude of the scientific activities undertaken by the Federal Government in 1961 and provides an indication of the relative size of the 1962 program.

It covers data in terms of total expenditure in scientific activities, the organizations performing the work, the various scientific fields covered and the number of professional and technical personnel involved in research-development.

The concepts and definitions as well as the questionnaire were prepared following the advice and consultations of senior officials and scientists of the National Research Council and other departments. Questionnaires sent were such that they embraced all Federal Government costs on all scientific activities including those performed by other organizations. In addition, they included payment of salaries made to professional and non-professional personnel, other direct costs and an estimated share of overhead costs. The scientific activities included the conduct of research and development, including planning and administering of research-development; capital expenditures on research-development plant, scientific data collection; scientific information and scholarship and fellowship programs.

The assistance of the Federal Government Departments and agencies who have cooperated by submitting reports is gratefully acknowledged.

WALTER E. DUFFETT,
Dominion Statistician.

September, 1962.

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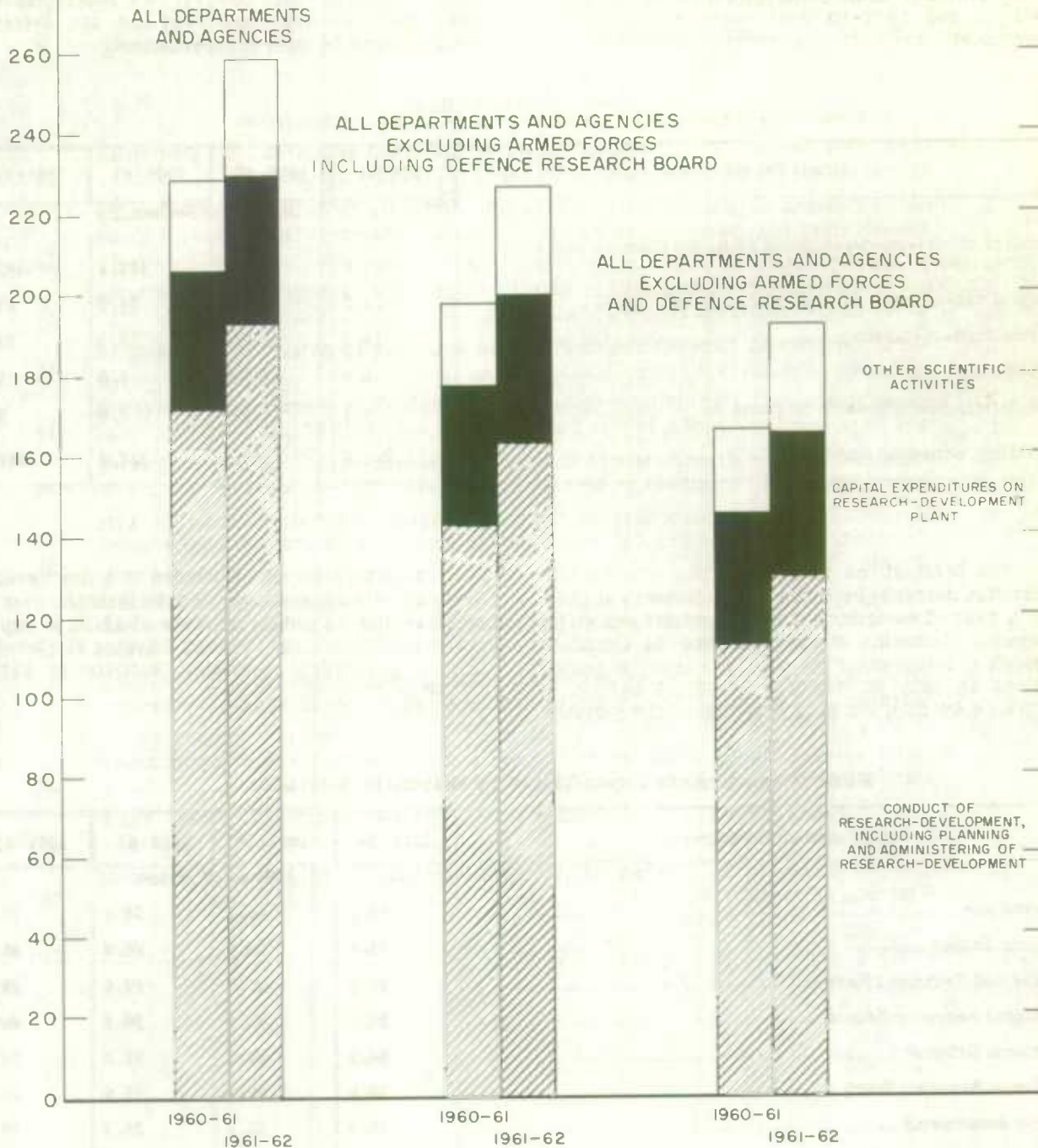
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FEDERAL GOVERNMENT EXPENDITURES ON SCIENTIFIC ACTIVITIES

FISCAL YEARS 1960-61-1961-62

MILLIONS
OF
DOLLARS
280



FEDERAL GOVERNMENT EXPENDITURES ON SCIENTIFIC ACTIVITIES

FISCAL YEAR 1960-61

During the fiscal year 1961-62, the federal government, including all departments and agencies, budgeted for an outlay of \$258.9 million for scientific activities. This amount represents an increase of 13.2% or \$30.1 million over the \$228.8 million spent in the previous fiscal year. The data for the years 1961-62 and 1959-60 were based on the annual departmental estimates presented to parliament, and

are therefore intentions rather than final expenditures and are subject, to some extent, to postponements and cancellations of certain aspects of the program which may cause actual expenditures to fall somewhat short of the figures published. Data for the other two fiscal years however, are actual expenditures made by the department and are therefore considered to be correct expenditures.

Federal Government Expenditures on Scientific Activities

Scientific activities	1958-59	1959-60	1960-61	1961-62
	millions of dollars			
Conduct of research-development including planning and administering research-development.....	168.4	151.8	171.9	192.7
Capital expenditures on research-development plant	30.7	33.0	34.2	37.0
Scientific data collection	18.1	20.6	15.7	21.1
Scientific information	4.1	4.9	5.0	5.6
Scholarship and fellowship programs	1.3	2.0	2.0	2.5
Totals, scientific activities	222.6	212.3	228.8	258.9

The level of the federal government scientific activities decreased slightly in the fiscal year 1959-60; a year of readjustment in government scientific research, following a major change in Canada's aircraft developmental program. The level of expenditures in 1959-60 declined to \$212.3 million, a drop of 4.6% from the \$222.6 million of the previous

year. This program was expanded to a new level in 1960-61 of \$228.8 million, a 7.8% increase over the previous year. A further increase of 13.2% is expected in the fiscal year 1961-62 bringing the level of federal government scientific activity to \$258.9 million.

Federal Government Expenditures on Scientific Activities

Department or agency	1958-59	1959-60	1960-61	1961-62
	millions of dollars			
Agriculture.....	27.2	31.1	28.4	31.7
Atomic Energy.....	27.9	32.8	39.9	40.7
Mines and Technical Surveys	27.1	27.7	29.5	39.9
National Research Council	27.2	32.8	36.6	40.1
National Defence	66.2	34.0	31.0	32.1
Defence Research Board	29.3	30.6	31.9	34.7
Other departments	17.7	23.3	31.5	39.7
Totals, all departments and agencies	222.6	212.3	228.8	258.9

Six of the federal government departments and agencies continue to account for a large part of all scientific activity in the federal government, 85% in 1961-62, although this percentage has decreased from 92% in the fiscal year 1958-59, indicating growth in scientific activities in departments that have been less active in past years. Much of the increase in research in these departments has been in the fields of forestry and fishing.

The Department of Agriculture and the Defence Research Board have increased expenditures between 1958-59 and 1961-62 fiscal years by 17% and 18% respectively, Department of National Defence has decreased by 52%. The other three organizations active in scientific research increased their spending by nearly 50% between 1958-59 and 1961-62; Atomic Energy Commission + 45%, Mines and Technical Surveys + 47% and National Research Council + 48%.

Federal Government Expenditures on Scientific Activities, Fiscal Years 1960-61 and 1961-62

Scientific activities	All departments and agencies excluding armed forces and D.R.B.		Department of National Defence and the Defence Research Board		Total all departments and agencies	
	1960-61	1961-62	1960-61	1961-62	1960-61	1961-62
	millions of dollars					
Conduct of research-development:						
Conduct of research-development including planning and administering research development ¹	112.7	129.7	59.2	63.0	171.9	192.7
Capital expenditures on research-development plant	32.4	35.5	1.8	1.5	34.2	37.0
Other scientific activities:						
Scientific data collection	13.8	18.7	1.9	2.4	15.7	21.1
Scientific information	5.0	5.6	—	—	5.0	5.6
Scholarship and fellowship programs	2.0	2.5	—	—	2.0	2.5
Totals, scientific activities	165.9	192.1	62.9	66.8	228.8	258.9
	Per cent					
Conduct of research-development:						
Conduct of research-development including planning and administering research-development ¹	68.0	67.5	94.1	94.2	75.1	74.4
Capital expenditures on research-development plant	19.5	18.5	2.9	2.2	14.9	14.3
Other scientific activities:						
Scientific data collection	8.3	9.8	3.0	3.6	6.9	8.1
Scientific information	3.0	2.9	—	—	2.2	2.2
Scholarship and fellowship programs	1.2	1.3	—	—	0.9	1.0
Totals, scientific activities	100.0	100.0	100.0	100.0	100.0	100.0

¹ Includes grants-in-aid of research

The civilian branches of government (excluding the armed forces and the Defence Research Board) expected to spend \$192.1 million on scientific activities during the fiscal year 1961-62, an increase of \$26.2 million from the previous year and an increase of 51.3% from the level of 1958-59 of \$127.0 million. In 1961-62 the civilian branches of

government would account for 74.2% of all research-development expenditures of the federal government departments and agencies. This percentage compares with 72.5%, 69.6% and 57.1% for the three previous fiscal years, 1960-61, 1959-60 and 1958-59 respectively.

Funds for the Conduct of Research-Development

Approximately three-quarters of federal government funds for scientific activities is directed to the conduct of research-development. Conduct of research-development as used in this report includes the planning and administering of research and grants-in-aid of research, unless otherwise noted.

Departments and agencies expected to spend, during the fiscal year 1961-62, \$192.7 million for the conduct of research-development, an anticipated 12.1% increase from the \$171.9 million spent during the previous fiscal year and 26.9% increase from the \$151.8 million spent during 1959-60 fiscal year.

Conduct of Research-Development in Government Facilities

	1958-59	1959-60	1960-61	1961-62
	millions of dollars			
Total conduct of research-development expenditures	168.4	151.8	171.9	192.7
Research-development performed in government facilities	111.1	119.5	138.6	154.4
Percent of total research-development performed in government facilities.....%	66.0	78.7	80.6	80.1

During the 1958-59 fiscal year, 66.0% of the research-development program was carried out within government facilities. The remainder was contracted to private organizations and used in universities as grants-in-aid of research. The importance of private research-development work for the

federal government has declined in recent years and in the fiscal year 1961-62, 80.1% of all scientific research-development was carried out in government facilities. Profit organizations carried out \$20.8 million of research-development for the federal government in 1961-62.

Payments to Profit Organizations for Research-Development

Department or agency making payment	1958-59	1959-60	1960-61	1961-62
	millions of dollars			
Atomic Energy	0.4	1.9	3.7	5.6
Defence Production.....	0.4	2.8	2.9	5.5
National Defence	46.3	14.2	8.6	7.4
Defence Research Board	1.5	1.2	1.6	2.0
Other departments	0.1	1.1	0.8	0.3
Totals	48.7	21.2	17.6	20.8

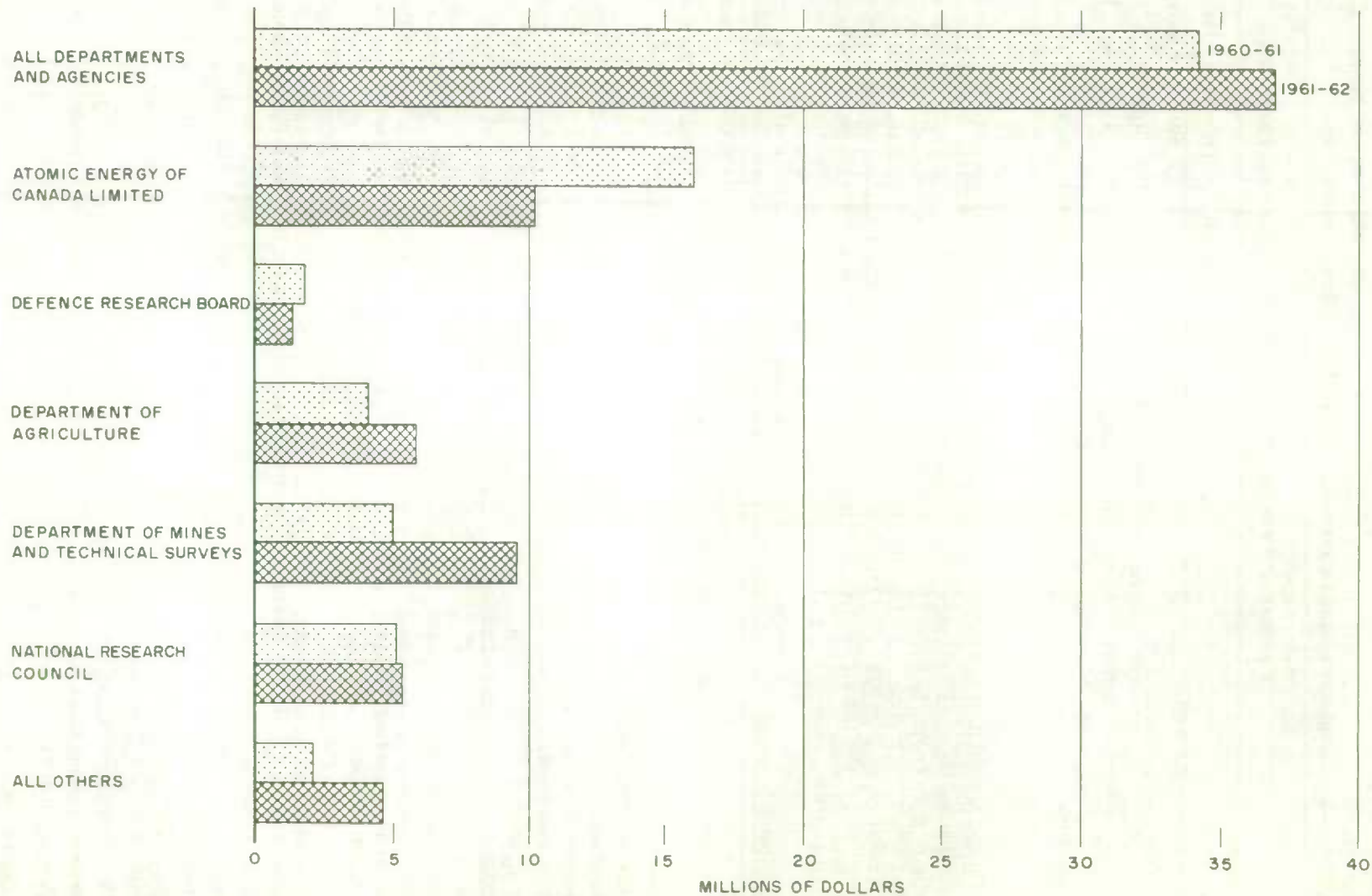
Payments to educational institutions, largely as grants-in-aid of research, increased from \$7.8 million in 1958-59 to \$14.1 million in 1961-62,

an increase of 80.8% between the two periods. Most of these payments are made by the National Research Council.

Grants-in-aid in Educational Institutions for Research-Development

Department or agency making payment	1958-59	1959-60	1960-61	1961-62
	millions of dollars			
Atomic Energy	0.4	0.6	0.7	0.8
National Health and Welfare.....	1.1	1.5	2.0	2.0
National Research Council	4.5	5.9	7.7	9.1
Defence Research Board.....	1.6	1.6	1.7	1.7
Other departments	0.2	0.2	0.4	0.5
Totals	7.8	9.8	12.5	14.1

CAPITAL EXPENDITURES ON RESEARCH-DEVELOPMENT PLANT
FISCAL YEARS 1960-61-1961-62



Capital Expenditures on Research-Development Plant

Capital expenditures on research-development plant include the construction, acquisition, major repairs and alterations of plant and equipment used

in research-development activities. Capital expenditures on research-development plant for the fiscal year 1961-62 are expected to reach \$36.9 million, an increase of \$2.7 million from the previous year.

Capital Expenditures on Research-Development Plant

Department or agency	1958-59	1959-60	1960-61	1961-62
	millions of dollars			
Agriculture	5.3	6.7	4.1	5.9
Atomic Energy	10.1	11.7	16.1	10.2
Mines and Technical Surveys	4.1	1.6	5.0	9.5
National Research Council.....	2.7	4.6	5.1	5.3
Defence Research Board	5.6	6.3	1.8	1.4
Other departments	2.9	2.1	2.1	5.6
Totals	30.7	33.0	34.2	36.9

The Department of Mines and Technical Surveys and Atomic Energy of Canada, continue to account for over 50 percent of all capital outlays in 1961-62 fiscal year, although increases are reported by the Departments of Fisheries, Forestry and Transport. These expenditures represent 14% in 1961-62, of total funds applied for scientific activities. The exclusion of the armed forces does not affect these

figures since the armed forces development is done mainly through contract. These capital expenditures include only federal government facilities. Any expenditures made by an outside organization, for plant and equipment, to carry out a research-development contract for the federal government, would be included in the cost of the contract and not distinguishable by the department.

Capital Expenditures on Research-Development Plant, Fiscal Years 1960-61 and 1961-62

Department or agency	1960-61		1961-62	
	Millions of dollars	Per cent of total	Millions of dollars	Per cent of total
National Research Council.....	5.1	14.9	5.3	14.4
Atomic Energy	16.1	47.1	10.2	27.6
Agriculture	4.1	12.0	5.9	16.0
Board of Grain Commissioners - Grain Research Laboratory	0.1	0.3	-	-
External Affairs	-	-	-	-
Central Mortgage and Housing Corporation	-	-	-	-
Fisheries	0.4	1.2	1.0	2.7
Fisheries Research Board of Canada	0.5	1.4	1.5	4.1
Forestry	0.3	0.9	0.7	1.9
Mines and Technical Surveys	5.0	14.6	9.5	25.7
National Film Board	-	-	-	-
National Health and Welfare	0.2	0.6	0.3	0.8
Northern Affairs and National Resources	0.1	0.3	0.1	0.3
Post Office	-	-	-	-
St. Lawrence Seaway Authority	-	-	-	-
Transport	0.5	1.4	1.0	2.7
Veterans Affairs	-	-	-	-
Defence Production	-	-	-	-
Canadian Arsenal Ltd.	-	-	-	-
Defence Research Board	1.8	5.3	1.4	3.8
Sub-totals	34.2	100.0	36.9	100.0
Armed Forces	-	-	-	-
Grand totals	34.2	100.0	36.9	100.0

Funds for Other Scientific Activities, etc.

Funds for other scientific activities, including scientific data collection, scientific information and scholarship and fellowship programs, amounted to

\$29.2 million during the fiscal year 1961-62 an increase of 28.6% from the \$22.7 million spent in the previous year.

Funds for Other Scientific Activities

	1958-59	1959-60	1960-61	1961-62
	millions of dollars			
Scientific data collection	18.1	20.6	15.7	21.1
Scientific information	4.1	4.9	5.0	5.6
Scholarship and Fellowship programs	1.3	2.0	2.0	2.5
Totals	23.5	27.5	22.7	29.2

Scientific data collection expenditures amounted to \$15.7 million during 1960-61 and were expected to reach \$21.1 million for the fiscal year 1961-62. Scientific data collection includes the collection of scientific data on natural phenomena where such data have general use such as for mapping, collection of geologic, hydrologic, geo-magnetic and other physical data, collection of entomological specimens and other biological data. Excluded are data collection done in the course of carrying out a specific research-development project or program as this activity is included under the conduct of research-development.

Scientific information amounted to \$5.0 million and \$5.6 million during the two fiscal years 1960-61 and 1961-62 and includes library operations, translation, procurement and publication services in connection with information required in or resulting from scientific activities. Also included are expenditures for the standardization of terminology and the making of scientific or technical glossaries.

The scholarship and fellowship programs include the costs of scholarships and fellowships granted to governmental and non-governmental recipients who are or will be engaged in a scientific activity, and the administration costs of these programs.

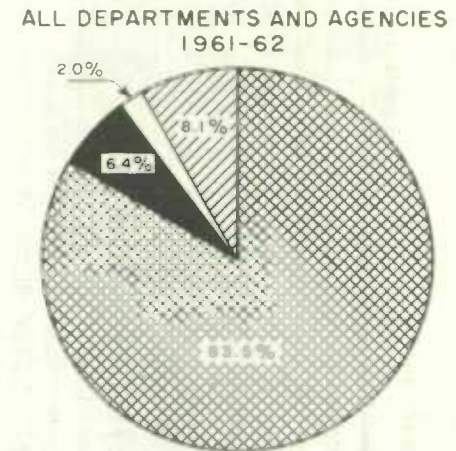
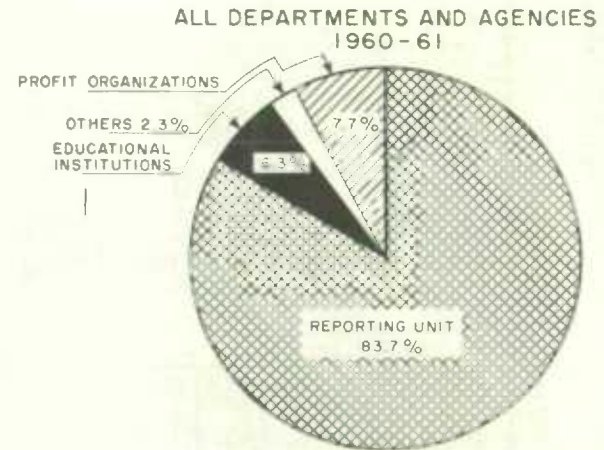
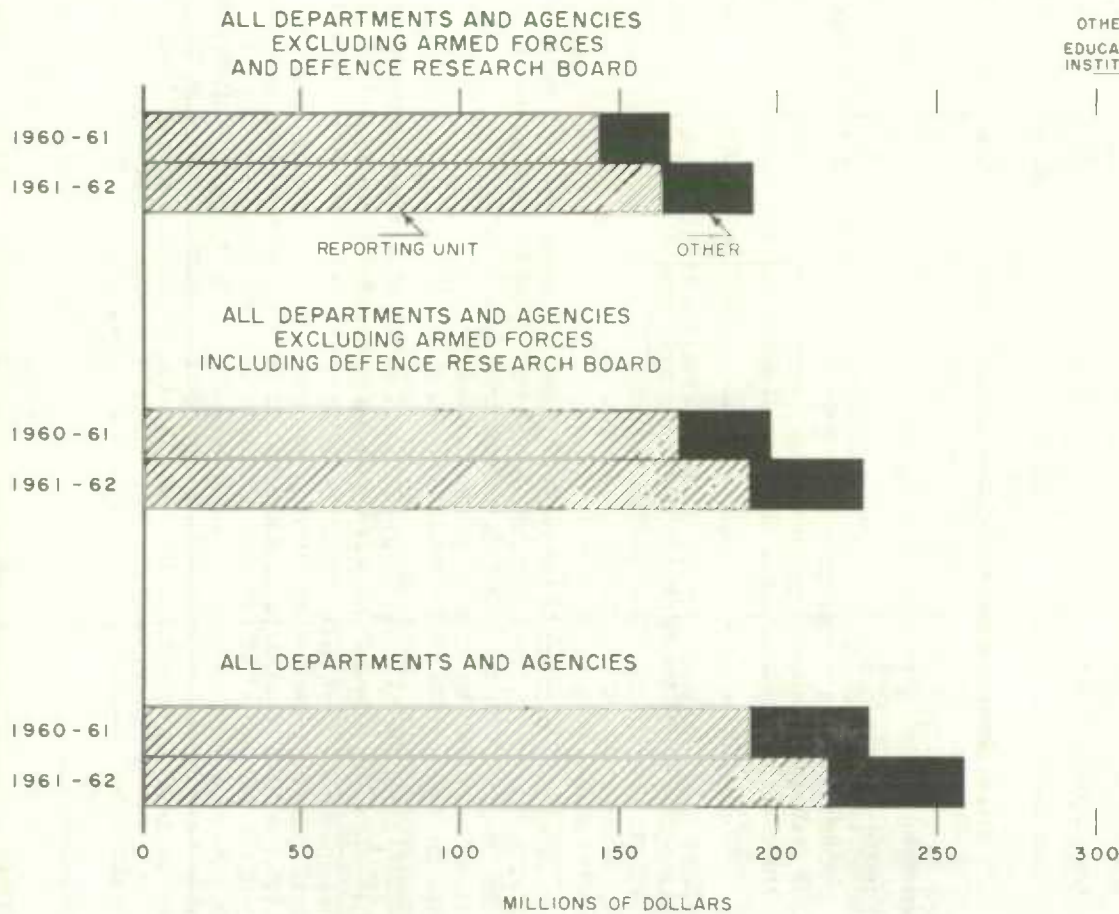
Scientific Fields of Research-Development

The federal government expenditures on the conduct of research-development including planning and administering of research-development and grants-in-aid of research in universities amounted to \$111.7 million in the fiscal year 1960-61 and \$128.9 million in 1961-62 (Excluding the Department of National Defence and the Defence Research Board). During the two fiscal years, more than 50% of all research-development was carried out in the physical sciences, 57.2 per cent in 1960-61 and 59.7 per cent in 1961-62, and the remainder in the life sciences.

Federal Government Expenditures on the Conduct of Research-Development by Scientific Fields (Excluding the Armed Forces and Defence Research Board) Fiscal Years 1960-61 and 1961-62

Scientific field	1960-61		1961-62	
	Millions of dollars	Per cent	Millions of dollars	Per cent
Physical sciences	63.9	57.2	76.9	59.7
Life sciences	47.8	42.8	52.0	40.3
Totals	111.7	100.0	128.9	100.0

FEDERAL GOVERNMENT EXPENDITURES ON SCIENTIFIC ACTIVITIES
 BY TYPE OF ORGANIZATION PERFORMING RESEARCH
 FISCAL YEARS 1960-61 AND 1961-62



Federal Government Expenditures on Research-Development, by Scientific Fields (Excluding the Armed Forces and the Defence Research Board), Fiscal Years 1958-59 to 1961-62 Inclusive

Scientific fields	1958-59	1959-60	1960-61	1961-62
	millions of dollars			
Physical sciences:				
1. Engineering:				
Chemical	3.5	4.4	5.1	6.3
Civil	2.3	2.6	3.4	3.8
Electrical	4.8	5.9	7.4	8.9
Mechanical	8.1	9.6	12.1	13.7
Other	1.7	4.9	5.2	7.7
Sub-totals	20.4	27.4	33.2	40.4
2. Other physical sciences:				
Chemistry	6.4	7.3	8.6	9.8
Physics	7.0	8.2	7.6	9.1
Geology, geophysics and other earth sciences	4.1	4.3	9.4	11.2
Metallurgy	4.9	5.3	2.6	3.4
Mathematics	0.1	0.1	0.4	0.4
Other physical sciences	2.6	2.8	2.1	2.6
Sub-totals	25.1	28.0	30.7	36.5
Totals, physical sciences	45.5	55.4	63.9	76.9
Life sciences:				
Medicine	4.5	5.9	8.1	8.8
Agriculture	23.0	25.4	26.0	27.7
Biology	7.8	9.1	13.2	15.0
Other	—	—	0.5	0.5
Totals, life sciences	35.3	40.4	47.8	52.0
Totals, life and physical sciences	80.8	95.8	111.7	128.9

Increases have occurred in the civilian departments, excluding the Department of National Defence and the Defence Research Board, in expenditures for research-development in most scientific fields between the fiscal years 1958-59 and 1961-62. In the engineering fields, expenditures have increased from \$20.4 million in 1958-59 to \$40.4 million in 1961-62, an increase of 100 per cent. The increase in research-development expenditures in fields of physical sciences, other than engineering, has been from \$25.1 million in 1958-59 to \$36.5 million in 1961-62, an increase of 46 per cent. Expenditures in the field of geology, geophysics and other earth sciences have increased substantially from \$4.1 million in 1958-59 to \$11.2 million in 1961-62, while at the same time expenditures in the field of

metallurgy have declined slightly from \$4.9 million to \$3.4 million over the same period.

Expenditures for research-development in the physical sciences have been increasing approximately \$10 million each year since 1958-59 fiscal year with expenditures of \$45.5 million in 1958-59, \$55.4 million in 1959-60, \$63.9 million in 1960-61 and \$76.9 million in 1961-62.

Research-development expenditures in the life sciences have increased in proportion to total research-development from \$35.3 million in 1958-59 to \$52.0 million in 1961-62 with much of the increase being in the field of biology, which increased from \$7.8 million in 1958-59 to \$15.0 million in 1961-62.

STATISTICAL TABLES

**TABLE 1. Federal Government Expenditures on Scientific Activities, by Activity and Performing Organization
Fiscal Years 1960-61 and 1961-62**

Scientific activity	1960-61						1961-62					
	Performing organization					Total funds applied	Performing organization					Total funds applied
	Reporting unit	Profit organizations	Educational institutions	Other non-profit institutions	Others		Reporting unit	Profit organizations	Educational institutions	Other non-profit institutions	Others	
thousands of dollars												
Scientific research-development:												
Total conduct of research-development including planning and administering research-development	138,588	17,570	252	475	1,391	158,276	154,471	20,767	363	337	1,486	177,424
Grants-in-aid of research	5	-	12,228	1,218	138	13,589	5	-	13,688	1,401	203	15,297
Sub-totals	138,593	17,570	12,480	1,693	1,529	171,865	154,476	20,767	14,051	1,738	1,689	192,721
Capital expenditures on research-development plant	32,351	15	45	25	1,786	34,222	35,414	10	100	17	1,443	36,984
Totals, scientific research-development	170,944	17,585	12,525	1,718	3,315	206,087	189,890	20,777	14,151	1,755	3,132	229,705
Other scientific activities:												
Scientific data collection	15,377	55	240	-	33	15,705	20,547	200	326	-	33	21,106
Scientific information	4,906	-	-	88	42	5,036	5,465	-	-	126	32	5,623
Scholarship and fellowship programs	290	-	1,656	-	74	2,020	318	-	2,020	-	120	2,458
Sub-totals	20,573	55	1,896	88	149	22,761	26,330	200	2,346	126	165	29,187
Totals, funds applied	191,517	17,640	14,421	1,806	3,464	228,848	216,220	20,977	16,497	1,881	3,317	258,892

**TABLE 2. Federal Government Expenditures on Scientific Activities, by Activity and Performing Organization
(Excluding Armed Forces and D.R.B.) Fiscal Years 1960-61 and 1961-62**

Scientific activity component	1960-61						1961-62					
	Performing organization					Total funds applied	Performing organization					Total funds applied
	Reporting unit	Profit organizations	Educational institutions	Other non-profit institutions	Others		Reporting unit	Profit organizations	Educational institutions	Other non-profit institutions	Others	
thousands of dollars												
Scientific research-development:												
Total conduct of research-development including planning and administering research-development	92,439	7,392	252	475	247	100,605	103,667	11,404	363	337	302	116,073
Grants-in-aid of research	5	-	10,533	1,218	138	11,894	5	-	11,998	1,401	203	13,607
Sub-totals	92,444	7,392	10,785	1,693	385	112,699	103,672	11,404	12,361	1,738	505	129,680
Capital expenditures on research-development plant	32,351	15	45	25	-	32,438	35,414	10	100	17	-	35,541
Totals, scientific research-development	124,795	7,407	10,830	1,718	385	145,135	139,086	11,414	12,461	1,755	505	165,221
Other scientific activities:												
Scientific data collection	13,423	55	240	-	33	13,751	18,192	200	326	-	33	18,751
Scientific information	4,906	-	-	88	42	5,036	5,465	-	-	126	32	5,623
Scholarship and fellowship programs	290	-	1,656	-	74	2,020	318	-	2,020	-	120	2,458
Sub-totals	18,619	55	1,696	88	149	20,807	23,975	200	2,346	126	165	26,832
Totals, funds applied	143,414	7,462	12,726	1,806	534	165,942	163,061	11,614	14,807	1,881	690	192,053

TABLE 3 A. Federal Government Expenditures on Scientific Activities, by Activity and Department or Agency, Fiscal Year 1960-61

Department or agency	Scientific research-development				Total scientific research-development	Other scientific activities				Total funds applied
	Conduct of research-development	Grants-in-aid of research	Sub-total	Capital expenditures on research-development plant		Scientific data collection	Scientific information	Scholarship and fellowship programs	Sub-total	
	thousands of dollars									
National Research Council	20,687	7,657	28,344	5,083	33,427	55	1,215	1,878	3,148	36,575
Atomic Energy:										
Atomic Energy Control Board	—	650	650	—	650	—	—	—	—	650
Atomic Energy of Canada Limited	23,056	—	23,056	16,120	39,176	—	—	42	42	39,218
Sub-totals	23,056	650	23,706	16,120	39,826	—	—	42	42	39,868
Agriculture:										
Administration Branch	—	—	—	—	—	—	401	—	401	401
Production and Marketing Branch—Health of Animals Division	422	—	422	26	448	—	14	—	14	462
Research Branch	22,996	136	23,132	4,032	27,164	—	378	—	378	27,542
Sub-totals	23,418	136	23,554	4,058	27,612	—	793	—	793	28,405
Board of Grain Commissioners—Grain Research Laboratory	130	—	130	84	214	166	30	—	196	410
External Affairs	—	54	54	—	54	—	—	74	74	128
Central Mortgage and Housing Corporation	—	76	76	—	76	—	2	—	2	78
Fisheries:										
Conservation and Development Service	411	—	411	340	751	—	—	—	—	751
Inspection Service	6	—	6	—	6	5	—	—	5	11
Industrial Development Service	353	59	412	30	442	—	—	—	—	442
Sub-totals	770	59	829	370	1,199	5	—	—	5	1,204
Fisheries Research Board of Canada	4,860	—	4,860	501	5,361	—	66	26	92	5,453
Forestry:										
Forest, Entomology and Pathology Branch	4,119	23	4,142	330	4,472	—	—	—	—	4,472
Forest Research Branch	2,847	—	2,847	—	2,847	—	—	—	—	2,847
Forest Products Research Branch	1,300	—	1,300	11	1,311	—	—	—	—	1,311
Sub-totals	8,266	23	8,289	341	8,630	—	—	—	—	8,630
Miss and Technical Surveys:										
Dominion Observatories Branch	2,446	—	2,446	—	2,446	—	—	—	—	2,446
Geographical Branch	402	4	406	7	413	—	64	—	64	477
Geological Survey of Canada Branch	2,850	50	2,900	270	3,170	1,318	412	—	1,730	4,900
Mines Branch	4,916	—	4,916	388	5,304	108	59	—	167	5,471
Polar Continental Shelf Project	57	—	57	155	212	1,234	2	—	1,236	1,448
Surveys and Mapping Branch	—	—	—	4,179	4,179	8,617	1,981	—	10,598	14,777
Sub-totals	10,671	54	10,725	4,999	15,724	11,277	2,518	—	13,795	29,519
National Film Board	29	—	29	1	30	—	—	—	—	30
National Health and Welfare	1,643	3,170	4,813	232	5,045	402	54	—	456	5,501
Northern Affairs and National Resources:										
National Parks Branch	743	—	743	—	743	—	12	—	12	755
National Museum of Canada	120	—	120	—	120	240	—	—	240	360
Northern Co-ordination and Research Centre	24	15	39	—	39	—	—	—	—	39
Water Resources Branch	765	—	765	122	887	1,287	226	—	1,513	2,400
Sub-totals	1,652	15	1,667	122	1,789	1,527	238	—	1,765	3,554
Post Office-Engineering and Development Branch	653	—	653	—	653	—	—	—	—	653
St. Lawrence Seaway Authority	20	—	20	—	20	—	—	—	—	20
Transport:										
Air Services:										
Meteorological Branch	385	—	385	140	525	319	5	—	324	849
Telecommunications and Electronics Branch	223	—	223	385	608	—	112	—	112	720
Marine Services:										
Marine Works Branch	—	—	—	—	—	—	—	—	—	—
Shipbuilding Branch	52	—	52	—	52	—	—	—	—	52
Sub-totals	660	—	660	525	1,185	319	117	—	436	1,621
Veterans Affairs	354	—	354	—	354	—	3	—	3	357
Defence Production	2,902	—	2,902	—	2,902	—	—	—	—	2,902
Canadian Arsenals Ltd.	1,034	—	1,034	—	1,034	—	—	—	—	1,034
Totals	100,805	11,894	112,699	32,436	145,135	13,751	5,036	2,020	20,807	165,942
National Defence (excluding Defence Research Board)	29,075	—	29,075	—	29,075	1,954	—	—	1,954	31,029
Defence Research Board	28,396	1,695	30,091	1,786	31,877	—	—	—	—	31,877
Totals, all departments and agencies	158,278	13,589	171,865	34,222	206,087	15,705	5,036	2,020	22,761	228,848

TABLE 3 B. Federal Government Expenditures on Scientific Activities, by Activity and Department or Agency, Fiscal Year 1961-62

Department or agency	Scientific research-development				Total scientific research-development	Other scientific activities				Total funds applied
	Conduct of research-development	Grants-in aid of research	Sub-total	Capital expenditures on research-development plant		Scientific data collection	Scientific information	Scholarship and fellowship programs	Sub-total	
	thousands of dollars									
National Research Council	21,881	9,015	30,896	5,271	36,167	200	1,473	2,260	3,933	40,100
Atomic Energy:										
Atomic Energy Board	—	700	700	—	700	—	—	—	—	700
Atomic Energy of Canada Limited	29,706	—	29,706	10,198	39,904	—	—	50	50	39,954
Sub-totals	29,706	700	30,406	10,198	40,604	—	—	50	50	40,654
Agriculture:										
Administration Branch	—	—	—	—	—	—	442	—	442	442
Production and Marketing Branch—Health of Animals Division	593	—	593	895	1,488	—	12	—	12	1,500
Research Branch	24,193	140	24,333	5,016	29,349	—	400	—	400	29,749
Sub-totals	24,786	140	24,926	5,911	30,837	—	854	—	854	31,691
Board of Grain Commissioners—Grain Research Laboratory	165	—	165	49	214	188	33	—	221	435
External Affairs	—	22	22	—	22	—	—	120	120	142
Central Mortgage and Housing Corporation	50	138	188	—	188	—	—	—	—	188
Fisheries:										
Conservation and Development Service	449	—	449	934	1,383	—	—	—	—	1,383
Inspection Service	7	—	7	—	7	7	—	—	7	14
Industrial Development Service	541	113	654	35	689	—	—	—	—	689
Sub-totals	997	113	1,110	969	2,079	7	—	—	7	2,086
Fisheries Research Board of Canada	5,609	23	5,632	1,494	7,126	—	78	28	106	7,232
Forestry:										
Forest Entomology and Pathology Branch	4,697	11	4,708	530	5,238	—	—	—	—	5,238
Forest Research Branch	3,310	—	3,310	218	3,528	—	—	—	—	3,528
Forest Products Research Board	1,545	—	1,545	—	1,545	—	—	—	—	1,545
Sub-totals	9,552	11	9,563	748	10,311	—	—	—	—	10,311
Mines and Technical Surveys:										
Dominion Observatories Branch	2,797	—	2,797	—	2,797	—	—	—	—	2,797
Geographical Branch	454	—	454	11	465	—	113	—	113	578
Geological Survey of Canada Branch	3,289	75	3,364	366	3,730	1,920	450	—	2,370	6,100
Mines Branch	5,341	—	5,341	328	5,669	116	64	—	180	5,849
Polar Continental Shelf Project	32	—	32	202	234	1,569	5	—	1,574	1,808
Surveys and Mapping Branch	—	—	—	8,610	8,610	12,032	2,101	—	14,133	22,743
Sub-totals	11,913	75	11,988	9,517	21,505	15,637	2,733	—	18,370	39,875
National Film Board	30	—	30	2	32	—	—	—	—	32
National Health and Welfare	1,727	3,330	5,057	261	5,318	472	52	—	524	5,842
Northern Affairs and National Resources:										
National Parks Branch	810	—	810	—	810	—	13	—	13	823
National Museum of Canada	163	—	163	—	163	326	—	—	326	489
Northern Co-ordination and Research Centre	37	15	52	—	52	—	—	—	—	52
Water Resources Branch	925	—	925	96	1,021	1,487	262	—	1,749	2,770
Sub-totals	1,935	15	1,950	96	2,046	1,813	275	—	2,088	4,134
Post Office-Engineering and Development Branch	132	—	132	—	132	—	—	—	—	132
St. Lawrence Seaway Authority	—	—	—	—	—	—	—	—	—	—
Transport:										
Air Services:										
Meteorological Branch	452	25	477	300	777	354	5	—	359	1,136
Telecommunications and Electronics Branch	334	—	334	494	828	—	115	—	115	943
Marine Services:										
Marine Works Branch	60	—	60	231	291	80	—	—	80	371
Shipbuilding Branch	47	—	47	—	47	—	—	—	—	47
Sub-totals	893	25	918	1,025	1,943	434	120	—	554	2,497
Veterans Affairs	384	—	384	—	384	—	5	—	5	389
Defence Production	5,500	—	5,500	—	5,500	—	—	—	—	5,500
Canadian Arsenals Ltd.	813	—	813	—	813	—	—	—	—	813
Totals	116,073	13,607	129,680	35,541	165,221	18,751	5,623	2,458	26,832	192,053
National Defence (excluding Defence Research Board)	29,744	—	29,744	—	29,744	2,355	—	—	2,355	32,099
Defence Research Board	31,607	1,690	33,297	1,443	34,740	—	—	—	—	34,740
Totals, all departments and agencies....	177,424	15,297	192,721	36,984	229,705	21,106	5,623	2,458	29,187	258,892

TABLE 4. Federal Government Expenditures on Scientific Activities, by Performing Organization and Department or Agency Fiscal Years 1960-61 and 1961-62

Department of agency	1960-61					1961-62				
	Performing organization				Total funds applied	Performing organization				Total funds applied
	Reporting unit	Profit organizations	Educational institutions	Others ¹		Reporting unit	Profit organizations	Educational institutions	Others ¹	
	thousands of dollars									
National Research Council	26,603	55	9,380	537	36,575	28,356	200	11,105	437	40,100
Atomic Energy:										
Atomic Energy Control Board	—	—	650	—	650	—	—	700	—	700
Atomic Energy of Canada Limited	35,412	3,743	63	—	39,218	34,253	5,571	130	—	39,954
Sub-totals	35,412	3,743	713	—	39,868	34,253	5,571	830	—	40,654
Agriculture:										
Administration Branch	385	—	—	36	401	416	—	—	26	442
Production and Marketing Branch—Health of Animals Division	462	—	—	—	462	1,500	—	—	—	1,500
Research Branch	27,406	—	136	—	27,542	29,609	—	140	—	29,749
Sub-totals	28,233	—	136	36	28,405	31,525	—	140	26	31,691
Board of Grain Commissioners—Grain Research Laboratory	410	—	—	—	410	435	—	—	—	435
External Affairs	—	—	—	128	128	—	—	—	142	142
Central Mortgage and Housing Corporation	2	—	—	76	78	50	—	—	138	188
Fisheries:										
Conservation and Development Service	751	—	—	—	751	1,383	—	—	—	1,383
Inspection Service	11	—	—	—	11	14	—	—	—	14
Industrial Development Service	312	71	—	59	442	356	220	9	104	689
Sub-totals	1,074	71	—	59	1,204	1,753	220	9	104	2,086
Fisheries Research Board of Canada	5,453	—	—	—	5,453	7,209	—	23	—	7,232
Forestry:										
Forest Entomology and Pathology Branch	4,449	—	23	—	4,472	5,227	—	11	—	5,238
Forest Research Branch	2,847	—	—	—	2,847	3,528	—	—	—	3,528
Forest Products Research Branch	1,311	—	—	—	1,311	1,545	—	—	—	1,545
Sub-totals	8,607	—	23	—	8,630	10,300	—	11	—	10,311
Mines and Technical Surveys:										
Dominion Observations Branch	2,446	—	—	—	2,446	2,797	—	—	—	2,797
Geographical Branch	473	—	4	—	477	578	—	—	—	578
Geological Survey of Canada Branch	4,850	—	50	—	4,900	6,025	—	75	—	8,100
Mines Branch	5,471	—	—	—	5,471	5,849	—	—	—	5,849
Polar Continental Shelf Project	1,412	36	—	—	1,448	1,808	—	—	—	1,808
Surveys and Mapping Branch	14,777	—	—	—	14,777	22,743	—	—	—	22,743
Sub-totals	29,429	36	54	—	29,519	39,800	—	75	—	39,875
National Film Board	30	—	—	—	30	32	—	—	—	32
National Health and Welfare	2,261	—	2,058	1,182	5,501	2,395	—	2,100	1,347	5,842
Northern Affairs and National Resources:										
National Parks Branch	755	—	—	—	755	823	—	—	—	823
National Museum of Canada	29	—	360	—	389	—	—	489	—	489
Northern Co-ordination and Research Centre	2,088	—	—	10	2,108	2,403	—	—	10	2,418
Water Resources Branch	—	—	—	312	312	2,403	—	—	367	2,770
Sub-totals	2,872	—	360	322	3,554	3,226	—	489	377	4,134
Post Office—Engineering and Development Branch	50	603	—	—	653	56	76	—	—	132
St. Lawrence Seaway Authority	20	—	—	—	20	—	—	—	—	—
Transport:										
Air Services:										
Meteorological Branch	849	—	—	—	849	1,111	—	25	—	1,136
Telecommunications and Electronics Branch	720	—	—	—	720	943	—	—	—	943
Marine Services:										
Marine Works Branch	—	—	—	—	—	371	—	—	—	371
Shipbuilding Branch	—	52	—	—	52	—	47	—	—	47
Sub-totals	1,569	52	—	—	1,621	2,425	47	25	—	2,497
Veterans Affairs	355	—	2	—	357	389	—	—	—	389
Defence Production	—	2,902	—	—	2,902	—	5,500	—	—	5,500
Canadian Arsenals Ltd.	1,034	—	—	—	1,034	813	—	—	—	813
Totals	143,414	7,462	12,726	2,340	165,942	163,061	11,614	14,807	2,571	192,053
National Defence (excluding Defence Research Board)	22,416	8,613	—	—	31,029	24,605	7,384	—	10	32,099
Defence Research Board	25,687	1,565	1,695	2,930	31,877	28,454	1,979	1,690	2,617	34,740
Totals, all departments and agencies	181,517	17,640	14,421	5,270	228,848	216,220	20,877	16,497	5,188	258,892

¹ Includes other non-profit organizations and other governments.

TABLE 5. Federal Government Expenditures on Conduct of Research-Development, by Performing Organization and Department or Agency Fiscal Years 1960-61 and 1961-62

Department or agency	1960-61					1961-62				
	Performing organization				Total conduct of research-development ²	Performing organization				Total conduct of research-development ²
	Reporting unit	Profit organizations	Educational institutions	Others ¹		Reporting unit	Profit organizations	Educational institutions	Others ¹	
thousands of dollars										
National Research Council	20,145	-	7,724	475	28,344	21,474	-	9,085	337	30,896
Atomic Energy:										
Atomic Energy Control Board	-	-	650	-	650	-	-	700	-	700
Atomic Energy of Canada Limited	19,250	3,743	63	-	23,056	24,005	5,571	130	-	29,706
Sub-totals	19,250	3,743	713	-	23,706	24,005	5,571	830	-	30,406
Agriculture:										
Administration Branch	-	-	-	-	-	-	-	-	-	-
Production and Marketing Branch-Health of Animals Division	422	-	-	-	422	593	-	-	-	593
Research Branch	22,996	-	136	-	23,132	24,193	-	140	-	24,333
Sub-totals	23,418	-	136	-	23,554	24,786	-	140	-	24,926
Board of Grain Commissioners-Grain Research Laboratory	130	-	-	-	130	165	-	-	-	165
External Affairs	-	-	-	54	54	-	-	-	22	22
Central Mortgage and Housing Corporation	-	-	-	76	76	50	-	-	138	168
Fisheries:										
Conservation and Development Service	411	-	-	-	411	449	-	-	-	449
Inspection Service	6	-	-	-	6	7	-	-	-	7
Industrial Development Service	297	56	-	59	412	331	210	9	104	654
Sub-totals	714	56	-	59	829	787	210	9	104	1,110
Fisheries Research Board of Canada	4,860	-	-	-	4,860	5,609	-	23	-	5,632
Forestry:										
Forest Entomology and Pathology Branch	4,119	-	23	-	4,142	4,697	-	11	-	4,708
Forest Research Branch	2,847	-	-	-	2,847	3,310	-	-	-	3,310
Forest Products Research Branch	1,300	-	-	-	1,300	1,545	-	-	-	1,545
Sub-totals	8,266	-	23	-	8,289	9,552	-	11	-	9,563
Mines and Technical Surveys:										
Dominion Observatories Branch	2,446	-	-	-	2,446	2,797	-	-	-	2,797
Geographical Branch	402	-	4	-	406	454	-	-	-	454
Geological Survey of Canada Branch	2,850	-	50	-	2,900	3,289	-	75	-	3,364
Mines Branch	4,916	-	-	-	4,916	5,341	-	-	-	5,341
Polar Continental Shelf Project	21	36	-	-	57	32	-	-	-	32
Surveys and Mapping Branch	-	-	-	-	-	-	-	-	-	-
Sub-totals	10,635	36	54	-	10,725	11,913	-	75	-	11,988
National Film Board	29	-	-	-	29	30	-	-	-	30
National Health and Welfare	1,643	-	2,013	1,157	4,813	1,727	-	2,000	1,330	5,057
Northern Affairs and National Resources:										
National Parks Branch	743	-	-	-	743	810	-	-	-	810
National Museum of Canada	29	-	120	-	120	-	-	163	-	163
Northern Co-ordination and Research Centre	29	-	-	10	39	42	-	-	10	52
Water Resources Branch	518	-	-	247	765	623	-	-	302	925
Sub-totals	1,290	-	120	257	1,667	1,475	-	163	312	1,950
Post Office-Engineering and Development Branch	50	603	-	-	653	56	76	-	-	132
St. Lawrence Seaway Authority	20	-	-	-	20	-	-	-	-	-
Transport:										
Air Services:										
Meteorological Branch	385	-	-	-	385	452	-	25	-	477
Telecommunications and Electronics Branch	223	-	-	-	223	334	-	-	-	334
Marine Services:										
Marine Works Branch	-	-	-	-	-	60	-	-	-	60
Shipbuilding Branch	-	52	-	-	52	-	47	-	-	47
Sub-totals	608	52	-	-	660	846	47	25	-	918
Veterans Affairs	352	-	2	-	354	364	-	-	-	384
Defence Production	-	2,902	-	-	2,902	-	5,500	-	-	5,500
Canadian Arsenals Ltd.	1,034	-	-	-	1,034	813	-	-	-	813
Totals	92,444	7,392	10,785	2,078	112,699	103,672	11,404	12,361	2,243	129,680
National Defence (excluding Defence Research Board)	20,462	8,613	-	-	29,075	22,350	7,384	-	10	29,744
Defence Research Board	25,687	1,565	1,695	1,144	30,091	28,454	1,979	1,690	1,174	33,297
Totals, all departments and agencies ..	138,593	17,570	12,480	3,222	171,865	154,476	20,767	14,051	3,427	192,721

¹ Includes other non-profit organizations and other governments.

² Includes grants-in-aid of research; excludes capital expenditures on research-development plant.

TABLE 6. Federal Government Expenditures on Conduct of Research-Development in the Life Sciences, by Department or Agency, (Excluding Armed Forces and D.R.B.), Fiscal Years 1960-61 and 1961-62

Department or Agency	1960-61					1961-62				
	Medicine	Agri-culture	Biology	Others	Total life sciences	Medicine	Agri-culture	Biology	Others	Total life sciences
	thousands of dollars									
National Research Council	2,551	283	3,685	-	6,519	2,781	309	4,017	-	7,107
Atomic Energy:										
Atomic Energy Control Board	-	-	-	-	-	-	-	-	-	-
Atomic Energy of Canada Limited	-	-	461	-	461	-	-	594	-	594
Sub-totals	-	-	461	-	461	-	-	594	-	594
Agriculture:										
Administration Branch	-	-	-	-	-	-	-	-	-	-
Production and Marketing Branch-Health of Animals Division	422	-	-	-	422	593	-	-	-	593
Research Branch	-	22,903	-	-	22,903	-	24,092	-	-	24,092
Sub-totals	422	22,903	-	-	23,325	593	24,092	-	-	24,685
Board of Grain Commissioners - Grain Research Laboratory	-	130	-	-	130	-	165	-	-	165
External Affairs	-	-	-	-	-	-	-	-	-	-
Central Mortgage and Housing Corporation	-	-	-	-	-	-	-	-	-	-
Fisheries:										
Conservation and Development Service	-	-	237	-	237	-	-	261	-	261
Inspection Service	-	-	-	5	5	-	-	-	6	6
Industrial Development Service	-	-	-	-	-	-	-	-	-	-
Sub-totals	-	-	237	5	242	-	-	261	6	267
Fisheries Research Board of Canada	-	-	3,451	194	3,645	-	-	3,999	225	4,224
Forestry:										
Forest Entomology and Pathology Branch	-	-	4,142	-	4,142	-	-	4,708	-	4,708
Forest Research Branch	-	2,705	142	-	2,847	-	3,144	166	-	3,310
Forest Products Research Branch	-	-	204	204	408	-	-	215	215	430
Sub-totals	-	2,705	4,488	204	7,397	-	3,144	5,089	215	8,448
Mines and Technical Surveys:										
Dominion Observatories Branch	-	-	-	-	-	-	-	-	-	-
Geographical Branch	-	-	-	-	-	-	-	-	-	-
Geological Survey of Canada Branch	-	-	-	-	-	-	-	-	-	-
Mines Branch	-	-	-	-	-	-	-	-	-	-
Polar Continental Shelf Project	-	-	-	-	-	-	-	-	-	-
Surveys and Mapping Branch	-	-	-	-	-	-	-	-	-	-
Sub-totals	-	-	-	-	-	-	-	-	-	-
National Film Board	-	-	-	-	-	-	-	-	-	-
National Health and Welfare	4,813	-	-	-	4,813	5,057	-	-	-	5,057
Northern Affairs and National Resources:										
National Parks Branch	-	-	743	-	743	-	-	810	-	810
National Museum of Canada	-	-	120	-	120	-	-	163	-	163
Northern Co-ordination and Research Centre ..	-	-	-	39	39	-	-	-	52	52
Water Resources Branch	-	-	-	-	-	-	-	-	-	-
Sub-totals	-	-	863	39	902	-	-	973	52	1,025
Post Office-Engineering and Development Branch	-	-	-	-	-	-	-	-	-	-
St. Lawrence Seaway Authority	-	-	-	-	-	-	-	-	-	-
Transport:										
Air Services:										
Meteorological Branch	-	-	-	-	-	-	-	-	-	-
Telecommunications and Electronics Branch ..	-	-	-	-	-	-	-	-	-	-
Marine Services:										
Marine Works Branch	-	-	-	-	-	-	-	-	-	-
Shipbuilding Branch	-	-	-	-	-	-	-	-	-	-
Sub-totals	-	-	-	-	-	-	-	-	-	-
Veterans Affairs	354	-	-	-	354	384	-	-	-	384
Defence Production	-	-	-	-	-	-	-	-	-	-
Canadian Arsenals Ltd.	-	-	-	-	-	-	-	-	-	-
Totals	8,140	26,021	13,185	442	47,788	8,815	27,710	14,933	498	51,956

TABLE 7A. Federal Government Expenditures of Conduct of Research-Development in the Physical Sciences, by Department or Agency, (Excluding Armed Forces and D.R.B.), Fiscal Year 1960-61

Department or agency	All engineering ¹	Chemistry	Physics	Geology geophysics and other earth sciences	Metallurgy	Mathematics	Other physical sciences	Total physical sciences
thousands of dollars								
National Research Council	12,756	3,968	—	4,818	—	283	—	21,825
Atomic Energy:								
Atomic Energy Control Board	98	—	500	—	52	—	—	650
Atomic Energy of Canada Limited	12,450	3,228	5,764	—	922	—	231	22,595
Sub-totals	12,548	3,228	6,264	—	974	—	231	23,245
Agriculture:								
Administration Branch	—	—	—	—	—	—	—	—
Production and Marketing Branch—Health of Animals Division	—	—	—	—	—	—	—	—
Research Branch	150	—	—	—	—	79	—	229
Sub-totals	150	—	—	—	—	79	—	229
Board of Grain Commissioners—Grain Research Laboratory	—	—	—	—	—	—	—	—
External Affairs	—	—	—	—	—	—	54	54
Central Mortgage and Housing Corporation	76	—	—	—	—	—	—	76
Fisheries:								
Conservation and Development Service	172	—	—	2	—	—	—	174
Inspection Service	—	1	—	—	—	—	—	1
Industrial Development Service	412	—	—	—	—	—	—	412
Sub-totals	584	1	—	2	—	—	—	587
Fisheries Research Board of Canada	146	656	—	316	97	—	—	1,215
Forestry:								
Forest Entomology and Pathology Branch	—	—	—	—	—	—	—	—
Forest Research Branch	—	—	—	—	—	—	—	—
Forest Products Research Branch	223	264	81	—	—	20	304	892
Sub-totals	223	264	81	—	—	20	304	892
Mines and Technical Surveys:								
Dominion Observatories Branch	—	—	978	1,468	—	—	—	2,446
Geographical Branch	—	—	—	—	—	—	408	408
Geological Survey of Canada Branch	—	174	116	2,610	—	—	—	2,900
Mines Branch	2,694	285	133	231	1,573	—	—	4,916
Polar Continental Shelf Project	57	—	—	—	—	—	—	57
Surveys and Mapping Branch	—	—	—	—	—	—	—	—
Sub-totals	2,751	459	1,227	4,309	1,573	—	406	10,725
National Film Board	29	—	—	—	—	—	—	29
National Health and Welfare	—	—	—	—	—	—	—	—
Northern Affairs and National Resources:								
National Parks Branch	—	—	—	—	—	—	—	—
National Museum of Canada	—	—	—	—	—	—	—	—
Northern Co-ordination and Research Centre	—	—	—	—	—	—	—	—
Water Resources Branch	—	—	—	—	—	—	765	765
Sub-totals	—	—	—	—	—	—	765	765
Post Office-Engineering and Development Branch	653	—	—	—	—	—	—	653
St. Lawrence Seaway Authority	20	—	—	—	—	—	—	20
Transport:								
Air Services:								
Meteorological Branch	—	—	—	—	—	—	385	385
Telecommunications and Electronics Branch	223	—	—	—	—	—	—	223
Marine Services:								
Marine Works Branch	—	—	—	—	—	—	—	—
Shipbuilding Branch	52	—	—	—	—	—	—	52
Sub-totals	275	—	—	—	—	—	385	660
Veterans Affairs	—	—	—	—	—	—	—	—
Defence Production	2,902	—	—	—	—	—	—	2,902
Canadian Arsenals	—	—	—	—	—	—	—	—
Totals	33,113	8,576	7,572	9,445	2,044	382	2,145	63,877

¹ Includes chemical, civil, electrical, mechanical and other engineering.

TABLE 7B. Federal Government Expenditures on Conduct of Research-Development in the Physical Sciences, by Department or Agency, (Excluding Armed Forces and D.R.B.), Fiscal Year 1961-62

Department or agency	All engineering ¹	Chemistry	Physics	Geology geophysics and other earth sciences	Metallurgy	Mathematics	Other physical sciences	Total physical sciences
	thousands of dollars							
National Research Council	13,285	4,325	-	5,870	-	309	-	23,789
Atomic Energy:								
Atomic Energy Control Board	140	-	511	-	49	-	-	700
Atomic Energy of Canada Limited	16,339	3,862	7,129	-	1,485	-	297	29,112
Sub-totals	16,479	3,862	7,640	-	1,534	-	297	29,812
Agriculture:								
Administration Branch	-	-	-	-	-	-	-	-
Production and Marketing Branch—Health of Animals Division	-	-	-	-	-	-	-	-
Research Branch	170	-	-	-	-	71	-	241
Sub-totals	170	-	-	-	-	71	-	241
Board of Grain Commissioners—Grain Research Laboratory	-	-	-	-	-	-	-	-
External Affairs	-	-	-	-	-	-	22	22
Central Mortgage and Housing Corporation	188	-	-	-	-	-	-	188
Fisheries:								
Conservation and Development Service	187	-	-	1	-	-	-	188
Inspection Service	-	1	-	-	-	-	-	1
Industrial Development Service	654	-	-	-	-	-	-	654
Sub-totals	841	1	-	1	-	-	-	843
Fisheries Research Board of Canada	169	760	-	366	113	-	-	1,408
Forestry:								
Forest Entomology and Pathology Branch	-	-	-	-	-	-	-	-
Forest Research Branch	-	-	-	-	-	-	-	-
Forest Products Research Branch	257	321	86	-	-	20	431	1,115
Sub-totals	257	321	86	-	-	20	431	1,115
Mines and Technical Surveys:								
Dominion Observatories Branch	-	-	1,119	1,678	-	-	-	2,797
Geographical Branch	-	-	-	-	-	-	454	454
Geological Survey of Canada Branch	-	202	101	3,061	-	-	-	3,364
Mines Branch	2,884	299	144	262	1,752	-	-	5,341
Polar Continental Shelf Project	32	-	-	-	-	-	-	32
Surveys and Mapping Branch	-	-	-	-	-	-	-	-
Sub-totals	2,916	501	1,364	5,001	1,752	-	454	11,988
National Film Board	30	-	-	-	-	-	-	30
National Health and Welfare	-	-	-	-	-	-	-	-
Northern Affairs and National Resources:								
National Parks Branch	-	-	-	-	-	-	-	-
National Museum of Canada	-	-	-	-	-	-	-	-
Northern Co-ordination and Research Centre	-	-	-	-	-	-	-	-
Water Resources Branch	-	-	-	-	-	-	925	925
Sub-totals	-	-	-	-	-	-	925	925
Post Office-Engineering and Development Branch	125	3	3	-	1	-	-	132
St. Lawrence Seaway Authority	-	-	-	-	-	-	-	-
Transport:								
Air Services:								
Meteorological Branch	-	-	-	-	-	-	477	477
Telecommunications and Electronics Branch	334	-	-	-	-	-	-	334
Marine Services:								
Marine Works Branch	60	-	-	-	-	-	-	60
Shipbuilding Branch	47	-	-	-	-	-	-	47
Sub-totals	441	-	-	-	-	-	477	918
Veterans Affairs	-	-	-	-	-	-	-	-
Defence Production	5,500	-	-	-	-	-	-	5,500
Canadian Arsenals Ltd.	-	-	-	-	-	-	-	-
Totals	40,401	9,773	9,093	11,238	3,400	400	2,606	76,911

¹ Includes chemical, civil, electrical, mechanical and other engineering.

**TABLE 8. Federal Government Expenditures on Scientific Activities Type of Organization Performing Research
Fiscal Years 1960-61 and 1961-62**

Type of organization performing research	All departments and agencies excluding armed forces and D.R.B.		Department of National Defence and Defence Research Board		Total all departments and agencies	
	Millions of dollars	Per cent of total	Millions of dollars	Per cent of total	Millions of dollars	Per cent of total
Fiscal Year 1960-61						
Reporting unit	143.4	86.4	48.1	76.5	191.5	83.7
Profit organizations	7.5	4.5	10.1	16.0	17.6	7.7
Educational institutions	12.7	7.7	1.7	2.7	14.4	6.3
Others	2.3	1.4	3.0	4.8	5.3	2.3
Totals	165.9	100.0	62.9	100.0	228.8	100.0
Fiscal Year 1961-62						
Reporting unit	163.1	84.9	53.1	79.5	216.2	83.5
Profit organizations	11.6	6.0	9.4	14.1	21.0	8.1
Educational institutions	14.8	7.7	1.7	2.5	16.5	6.4
Others	2.6	1.4	2.6	3.9	5.2	2.0
Totals	192.1	100.0	66.8	100.0	258.9	100.0

**TABLE 9. Source of Funds for Scientific Activities in the Federal Government,
Fiscal Years 1960-61 and 1961-62**

Source of funds	All departments and agencies excluding armed forces and D.R.B.		Total all departments and agencies	
	1960-61	1961-62	1960-61	1961-62
millions of dollars				
Funds available from:				
Departmental or agency funds available as a result of annual estimates	152.4	176.9	213.0	238.4
Cost of indirect support by other units, departments or agencies	8.1	10.3	9.6	11.8
Transfers from other units of the department or agency	0.8	0.9	4.6	7.0
Transfers from other departments or agencies	7.1	7.0	7.1	7.0
Funds received directly from non-federal government sources	1.1	0.3	1.1	0.4
Other sources	2.2	2.0	2.2	2.0
Sub-totals	171.7	197.4	237.6	266.6
Less:				
Transfers to other units of the department or agency	—	—	0.5	0.4
Transfers to other departments or agencies	1.5	0.7	4.1	2.7
Support provided non-scientific activities	4.3	4.6	4.2	4.6
Sub-totals	5.8	5.3	8.8	7.7
Totals, funds available for scientific activities	165.9	192.1	228.8	258.9

TABLE 10. Personnel Employed in Conduct of Research-Development, by Field and Level of Training, as of March 31, 1961

Field of scientific training	All departments and agencies excluding armed forces and D.R.B.				All departments and agencies excluding armed forces, including D.R.B.			
	Level of training				Level of training			
	Bachelor	Master	Doctorate	Total	Bachelor	Master	Doctorate	Total
Physical scientists:								
Engineers, chemical	103	20	18	141	115	23	18	156
Engineers, civil	38	19	—	57	38	19	—	57
Engineers, electrical	117	24	12	153	177	60	19	256
Engineers, mechanical	168	34	12	214	190	39	13	242
Engineers, other	130	34	6	170	143	47	13	203
Sub-totals	556	131	48	735	663	188	63	914
Chemists	145	53	199	397	159	69	248	476
Physicists	78	59	159	296	128	110	228	466
Geologists, geophysicists and other earth scientists ..	45	31	147	223	49	36	148	233
Metallurgists	39	8	20	67	39	9	21	69
Mathematicians	8	10	17	35	19	21	19	59
Other physical scientists	30	44	9	83	32	44	9	85
Sub-totals	345	205	551	1, 101	426	289	673	1, 388
Totals, physical scientists	901	336	599	1, 836	1, 089	477	736	2, 302
Life scientists:								
Medical scientists	52	51	71	174	52	51	71	174
Agricultural scientists	324	403	413	1, 140	324	405	413	1, 142
Biologists	54	130	159	343	56	141	177	374
Other	17	9	32	58	22	17	34	73
Totals, life scientists	447	593	675	1, 715	454	614	695	1, 763
Administrators (of research-development)	36	45	103	184	36	45	103	184
Others	3	—	5	8	39	13	26	78
Totals, professional scientists	1, 387	674	1, 382	3, 743	1, 618	1, 149	1, 560	4, 327
Supporting personnel:								
Research-development technicians	—	—	—	3, 118	—	—	—	3, 918
Skilled craftsmen	—	—	—	1, 503	—	—	—	1, 854
Other supporting personnel	—	—	—	4, 471	—	—	—	5, 665
Total, supporting personnel	—	—	—	9, 092	—	—	—	11, 437
Total employed in the conduct of research-development	—	—	—	12, 835	—	—	—	15, 764

QUESTIONNAIRE

Complete in duplicate. Keep one copy for your files and return one copy in the enclosed envelope to the Dominion Bureau of Statistics, Ottawa

FOR IMMEDIATE ATTENTION

DOMINION BUREAU OF STATISTICS

Business Finance Division

FEDERAL GOVERNMENT EXPENDITURES ON SCIENTIFIC ACTIVITIES

FISCAL YEAR 1960-61 ACTUAL

AND ESTIMATES 1961-62

This survey is being conducted in cooperation with the National Research Council, in an effort to assess the magnitude and direction of the federal government scientific program.

It is desired to publish the results of this survey in detail giving figures for each reporting unit. Permission is requested to consider all information reported on this form as available for publication. If your unit does not wish to give this permission please indicate in an accompanying letter.

Complete the questionnaire as fully as possible. If precise figures are not available, your best estimates will be satisfactory. Address enquiries to Business Finance Division, Dominion Bureau of Statistics.

Note: If report is made at department or agency level, questions 1(c) and 1(g) do not apply.

1. TOTAL COST OF SCIENTIFIC ACTIVITIES BY SOURCE OF FUNDS: (see definition page 3 item 3.)		Actual Expenditures April 1/60 to March 31/61 \$ (000's)	Estimated Expenditures April 1/61 to March 31/62 \$ (000's)
Report total cost of all scientific activities including those performed by other organizations for your unit. Scientific activities comprise conduct of research and development including the planning and administering of research-development, grants-in-aid of research, capital expenditures on research-development plant, scientific data collection, scientific information, and scholarship and fellowship programs (see definitions, page 3 item 1). Include all professional and non-professional salaries, other direct costs and an estimated share of overhead expenses.			
(a) Departmental or agency funds available as a result of annual estimates			
(b) Cost of indirect support by other units, departments or agencies			
(c) Transfers from other units of your department or agency			
(d) Transfers from other Federal Government departments or agencies: Names:			
(e) Funds received directly from non-federal government sources: Names:			
(f) Other (specify)			
Sub-total			
(g) Transfers to other units of your department or agency			
(h) Transfers to other federal government departments or agencies: Names			
(i) Support provided non-scientific activities			
Sub-total			
TOTAL COSTS			

2. TOTAL COST OF SCIENTIFIC ACTIVITIES BY TYPE OF ORGANIZATION: (see definition page 3 items 1 and 3).		Type of organization performing scientific activity					
Actual Expenditures April 1/60 - March 31/61	Scientific activities	(1) Reporting Unit ^a	(2) Profit Organizations	(3) Educational Institutions	(4) Other Non-Profit Institutions	(5) Others	(6) Total
		\$ (000's)	\$ (000's)	\$ (000's)	\$ (000's)	\$ (000's)	\$ (000's)
(a) (i) Conduct of research-development including planning and administering research-development							
(ii) Grants-in-aid of research							
	Sub-total						
(b) Capital expenditures on research-development plant							
(c) Scientific data collection							
(d) Scientific information							
(e) Scholarship & fellowship programs							
	GRAND TOTAL (equals TOTAL COSTS shown in Question 1)						
Estimated Expenditures April 1/61 - March 31/62							
(a) (i) Conduct of research-development including planning and administering research-development							
(ii) Grants-in-aid of research							
	Sub-total						
(b) Capital expenditures on research-development plant							
(c) Scientific data collection							
(d) Scientific information							
(e) Scholarship and fellowship programs							
	GRAND TOTAL (equals TOTAL COSTS shown in Question 1)						

<p>3. Support given to the scientific activities of educational and other non-profit institutions, as reported in question 2, columns 3 and 4.</p> <p>Names of organizations receiving funds:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p style="text-align: center;">TOTALS</p>	<p>Actual Expenditures April 1/60 to March 31/61 \$ (000's)</p>	<p>Estimated Expenditures April 1/61 to March 31/62 \$ (000's)</p>		
<p>4. Indicate approximate distribution of the cost of the conduct of research-development and grants-in-aid of research as reported in 2(a), in each of the following scientific fields: (see definitions page 3, item 5)</p> <p>Physical Sciences:</p> <p>Engineering, Chemical</p> <p>Engineering, Civil</p> <p>Engineering, Electrical</p> <p>Engineering, Mechanical</p> <p>Engineering, Other (specify)</p> <p style="text-align: center;">Sub-Totals</p> <p>Chemistry</p> <p>Physics</p> <p>Geology, Geophysics and Other Earth Sciences</p> <p>Metallurgy</p> <p>Mathematics</p> <p>Other Physical Sciences (specify)</p> <p>Life Sciences:</p> <p>Medicine</p> <p>Agriculture</p> <p>Biology</p> <p>Other (specify)</p> <p style="text-align: center;">TOTALS</p>	<p>Actual Expenditures April 1/60 to March 31/61</p>	<p>Estimated Expenditures April 1/61 to March 31/62</p>	<p>%</p> <p>for D.B.S. use only</p>	<p>%</p> <p>for D.B.S. use only</p>
<p>5. Number of persons employed in the conduct of research-development in your unit as of March 31, 1961.</p> <p>(a) Research-development scientists and engineers: (Exclude all classes of supporting personnel from this section. These should be entered in (b) below)</p> <p style="text-align: center;">FIELD OF TRAINING</p> <p>Physical Scientists:</p> <p>Engineers, Chemical</p> <p>Engineers, Civil</p> <p>Engineers, Electrical</p> <p>Engineers, Mechanical</p> <p>Engineers, Other (specify)</p> <p style="text-align: center;">Sub-Totals</p> <p>Chemists</p> <p>Physicists</p> <p>Geologists, Geophysicists and Other Earth Scientists</p> <p>Metallurgists</p> <p>Mathematicians</p> <p>Other Physical Scientists (specify)</p> <p>Life Scientists:</p> <p>Medical Scientists</p> <p>Agricultural Scientists</p> <p>Biologists</p> <p>Other</p> <p>Administrators: (of research-development)</p> <p>Others: (specify)</p> <p style="text-align: center;">TOTALS</p>	<p>Level of training</p>			
<p>(b) Supporting personnel: (see definitions, page 3, item 6)</p> <p>(1) Research-development technicians</p> <p>(2) Skilled craftsmen</p> <p>(3) Other supporting personnel</p> <p style="text-align: center;">Total Supporting Personnel</p>	<p>Bachelor level</p>	<p>Master level</p>	<p>Doctorate level</p>	<p>Totals</p>
	<p>Number</p>			

Name of reporting unit

Name of person making this report

(Please print)

Telephone

Date

DEFINITION

1. **SCIENTIFIC ACTIVITIES** include all activities in the natural sciences concerned with the creation of new knowledge, new applications of knowledge to useful purposes, or the furtherance of both the creation of new knowledge or new applications. It does not include routine application of scientific knowledge or skills except when these are related to the creation and furtherance of new knowledge or applications. **Scientific research** is here defined as systematic and intensive study directed toward fuller knowledge of the phenomenon or subject. Development is the systematic use of scientific knowledge directed toward the production of useful materials, devices, systems or methods including design and development of prototype and processes. It excludes quality control or routine product testing. Specific categories of scientific activities to be included are as follows:
 - CONDUCT OF RESEARCH-DEVELOPMENT** including the planning and administering of research-development includes research-development work done or financed by the reporting unit through contracts, testing evaluation through prototype stage, or pilot plants under the control of the unit; research on techniques and methods associated with the other scientific activities described below; planning and administering of research-development even when segregated from the conduct of research-development. It excludes routine testing.
 - CAPITAL EXPENDITURES ON RESEARCH-DEVELOPMENT** plant includes acquisition, construction, major repairs to or alterations in structures, works, equipment or facilities, for use in research-development activities at federal or non-federal sites. These may be borne by the budget of the reporting department or agency or on the budget of another department or agency.
 - SCIENTIFIC DATA COLLECTION** includes the collection of scientific data on natural phenomena where such data have general use such as for mapping; collection of geologic, hydrologic, geo-magnetic, meteorologic and other physical data; collection of entomological specimens and other biological data. Exclude data collection done in the course of carrying out a specific research-development project or program as this activity should be included under the conduct of research-development. Exclude also data collection done solely for internal operating purposes. If, however, these data are made available for general use, additional costs of material and personnel are to be included. The presentation of these data in reports, maps and other publications is included under dissemination of scientific information described below.
 - SCIENTIFIC INFORMATION** includes library operations, translation, procurement and publication services in connection with information required in or resulting from scientific activities; standardization of terminology and the making of scientific or technical glossaries; and the support, including travel allowances of scientific conference and symposia.
 - SCHOLARSHIP AND FELLOWSHIP PROGRAMS** are to include costs of scholarships and fellowships granted to governmental or non-governmental recipients who are or will be engaged in a scientific activity, and the administration costs of these programs.
2. **FISCAL YEAR** refers to government accounting time period beginning April 1 and ending March 31 of the following year.
 - (a) Actual - Based on expenditures or payments made and accounted for in annual reports for the fiscal year ending March 31, 1961.
 - (b) Estimate - Based on requirements for the fiscal year ending March 31, 1962 tabled in the House of Commons.
3. **COST OF SCIENTIFIC ACTIVITIES.** All funds received for and applied to scientific activities administered by the department or agency should be reported. The **departments and agencies** are all divisions of government classified as such by the Financial Administration Act plus agency corporations named in Schedule C of the Act. Included in department or agency funds are monies received directly from parliamentary appropriation or the amounts used in compiling the "estimates" for your department. Include as **cost of indirect support by other units or agencies** (question 1(b)) those funds administered by other departments or agencies for the benefit of these scientific activities, such as funds for capital buildings and equipment, relevant overhead costs, building and property maintenance, superannuation and costs of other services and salaries such as military pay and allowances, which are incurred on behalf of your scientific activities. Overhead costs at remote sites are to include net costs of requisite services such as housing, restaurants, etc. Exclude costs not attributable to a reporting unit unless the department or agency is wholly engaged in scientific activities. Other costs to be excluded are non-reimbursable services normally provided, such as those of the Civil Service Commission, imputed depreciation not charged against available funds, support of non-scientific activity and salaries of civilian personnel assigned on a non-reimbursable basis. Estimates based where possible on concrete indicators such as the number of scientific personnel may be made where the information required is not available. **Transfers from other units of your department or agency** are to include all such transfers of funds for scientific services. No entry is to be made if report is completed at department or agency level. **Support provided non-scientific activities** which are deducted (question 1(i)) includes any portion of the funds shown in 1(a) to 1(f) which are devoted directly or indirectly to the support of non-scientific activities.
4. **REPORTING UNIT:** Any unit or department for which a questionnaire is completed.
5. **PHYSICAL SCIENCES** include (a) **physical sciences** proper, that is, those sciences concerned primarily with the understanding of the natural phenomena associated with non-living things such as physics, chemistry and the earth sciences; (b) **mathematics** which includes those sciences employing logical reasoning with the aid of symbols and concerned with the development of methods of operations employing such symbols, such as mathematics, pure and applied; statistical methods, and computer research, exclusive of engineering; (c) **engineering sciences**, that is, those sciences which are concerned with studies directed toward developing scientific principles or toward making specific scientific principles usable in engineering practice such as metallurgy, chemical engineering, civil engineering, electrical engineering, mechanical engineering, etc., and (d) **other physical sciences** which includes any other sciences dealing with non-living matter which cannot be classified under the given headings.
 - LIFE SCIENCES** include (a) **medicine**, which comprises those sciences that, apart from the strictly clinical aspects of professional medicine, are concerned primarily with the utilization of scientific principles in understanding human diseases and in maintaining and improving human health; (b) **agriculture** which comprises those sciences directed primarily toward understanding and improving agricultural productivity such as agronomy, animal husbandry, forestry, horticulture, range management, soil culture, etc., (c) **biology**, which comprises all life sciences other than those listed in (a) and (b) above, which deals with life processes and any work done in other disciplines primarily for the purpose of understanding life processes.
6. **RESEARCH-DEVELOPMENT TECHNICIANS:** Technical personnel having high school graduation or equivalent and additional technical training, who assist scientists and engineers in research-development work (i.e. laboratory technicians and assistants, draftsmen, etc.).
 - SKILLED CRAFTSMEN:** Workers in positions requiring specialized training and experience and who are engaged in research-development work (i.e. glass blowers, machinists, model makers, etc.)
 - OTHER SUPPORTING PERSONNEL:** All other persons whose pay is included in the cost of the conduct of research-development.

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