



INFORMATION DIVISION  
DEPARTMENT OF EXTERNAL AFFAIRS  
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THE NATIONAL RESEARCH COUNCIL OF CANADA

That Canada was able to make important contributions to research in radar, RDX explosive, atomic energy and other scientific war projects for the Allies was largely due to the National Research Council, the government scientific and industrial research organization. The Council, in addition to pursuing extensive research in its own laboratories, co-ordinates and assists all scientific investigation in Canada. Its system of Associate Research Committees, without parallel in any other country, has proven remarkably successful in the solution of problems where concerted efforts are required.

During the war the Council worked in close collaboration with the three branches of the Armed Forces - on land, sea and air. Its work covered a wide range of projects as spectacular as nuclear physics and as prosaic as methods for packaging dehydrated pork. To aircraft pilots the National Research Council has given a dependable new method of de-icing aircraft propellers by electric heating, and the marvellous 'distance indicator', a radar instrument which shows the airman his distance continuously from any selected points on the ground. People in the typhus ridden areas of the earth are benefitting by the quick method of producing anti-typhus serum developed in Canada.

Other important achievements of the National Research Council in recent years are:

A method of producing magnesium from dolomite - introducing a new industry into Canada.

The development of a process for the production of butylene glycol from wheat.

The construction of a 'flying wing' type of aircraft in moulded plywood. Tests proved satisfactory.

An emergency arrangement for refrigerating the holds of cargo ships.

The development of rot-proofing, flame-proofing and water repellancy treatments for fabrics.

Important advances in the dehydration of food products, the cracking process of fuels for aircraft and the production of optical glass.

The most significant part of the National Research Council's work, however, lies in a large number of discoveries, individually not very spectacular, but which add up to the production of better goods and services with less labour and in the end an improved standard of living for the people.

The war's end found Canada's Research Council greatly expanded beyond its pre-war stature - employing more than four times as many persons on a budget more than five times the size. Activities at this high level are to be continued on into the future. Canadian scientists are already adapting wherever possible the methods of war to civilian uses. This includes the study of atomic energy as an aid to industry, research and medicine; the application of radar to air and sea navigation; the use of military medical experience towards better health for all Canadians.



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Canada's major social problem, housing, has an important place in the Research Council's immediate program. Working closely with the Department of Reconstruction and Supply through its Research and Development Branch, the Council is involved in practical schemes to improve housing in all its branches - construction, plumbing, heating, lighting, ventilation and planning.



General's major board project, however, has an important place  
in the Research Council's immediate program. Working closely with the  
Department of Agriculture and Energy through the Research and Develop-  
ment Branch, the Council is engaged in practical schemes to improve  
accuracy in all the sciences - mathematics, physics, chemistry, biology,  
geology and planning.



THE NATURE OF  
THE NATIONAL RESEARCH COUNCIL

HISTORICAL BACKGROUND

The need for organized and correlated scientific research was widely recognized during World War I when the value of science to Canada's industry was definitely established.

In 1916, the Government of Canada, acting upon the suggestion of the Government of Great Britain, set up the Honorary Advisory Council for Scientific and Industrial Research, known by its short title - "National Research Council".

The Research Council Act, establishing the Council, was passed in 1917, amended in 1924 and again in 1946.

One of the first activities of the Council was to take, in 1917, a research inventory of Canada. This disclosed that industrial research was practically non-existent in Canada and that the supply of scientists capable of undertaking research was entirely inadequate.

Pending the establishment of its own laboratories, the National Research Council directed its activities along three main lines.

(a) The co-ordination of research and the organization of co-operative investigations through competent and representative committees;

(b) The postgraduate training, through scholarships, of students selected for their aptitude in scientific research;

(c) The encouragement of graduate research through financial grants to heads of science departments in Canadian universities.

The Research Council Act was amended in 1924 to provide for the establishment of the National Research Council Laboratories. Laboratories were set up at the time in temporary quarters. Construction of the present National Research Building at Ottawa was completed in 1932. Additional provision for laboratory space was made in 1939; laboratories for work in aeronautics, hydrodynamics, structures, gasoline and oil studies, aircraft engine testing and explosives were installed and general shops were constructed.

The Research Council Act was again amended in 1946 to strengthen the inner structure of the Council and enable it to meet its enlarged responsibilities. The Council was given the right to create government owned companies to carry out projects on which research was done in Research Council laboratories.



## FINANCING THE NATIONAL RESEARCH COUNCIL

The National Research Council is financed largely by Parliamentary appropriation supplemented by fees for laboratory and other services, contributions from industry for special work, income from trust funds, royalties and sale of patents. During the war the Council's normal revenues were strengthened by special allotments from the Government War Appropriation.

### FUNCTIONS

The main functions of the Research Council are:

1. To promote through research the utilization of the natural resources of Canada. This includes research to (a) discover new and improve known technical processes, and (b) utilize the waste products of industry.
2. To act as adviser on scientific matters to the various departments of the government.
3. To organize and co-ordinate national co-operative research programmes in which various departments and organizations have an active interest. Also to conduct researches, under conditions to be determined in each case, on behalf of single industrial firms or groups of firms.
4. To disseminate information on scientific research.

The fifth function, for which plans are as yet incomplete, is the continuing of inter-Commonwealth scientific liaison begun during the war.

### ORGANIZATION

#### The Committee of the Privy Council on Scientific and Industrial Research

The Committee consists of Cabinet ministers nominated by the Governor in Council. At the present time there are eight; - the Minister of Reconstruction and Supply (acting as Chairman), the Minister of Trade and Commerce, the Minister of Mines and Resources, the Minister of National Defence, the Minister of National Health and Welfare, the Minister of Finance, the Minister of Agriculture and the Minister of Labour.

#### The Research Council

The Council consists of a president, two vice-presidents and not more than 17 other members. All are appointed by the Governor in Council. The president is the chief executive officer of the Council and supervises and directs the work. He is assisted by a vice-president in charge of administration and a vice-president in charge of laboratories.

Members of the council are selected from among men prominent in scientific and industrial work in Canada. At present they number fourteen and include scientists, college professors, engineers and one representative of organized labour. All members of the Council, excepting the president and vice-presidents, give their services free of charge and hold office for periods of three years.

The Research Council meets at least four times a year, to review past work and plan future projects. Four standing committees apportion the work of the council. They are:



1. The Assisted Researches Committee - supervises the making of grants for assisted researches in the universities.

2. The Scholarships Committee - reviews qualifications of likely science students and recommends studentships, bursaries and scholarships.

3. The Review Committee - keeps in personal contact with the National Research Council Laboratories, the work and personnel.

4. Selections Board - reviews the qualifications of all candidates for appointment on the staff of the National Research Council and makes recommendations in regard thereto.

To expedite a programme so infinitely involved and varied as scientific and industrial research, the Research Council is constituted a corporate body, with power to acquire money and to hold lands or other property. The framework of organization is purposely flexible, allowing for the making of special arrangements to meet special problems.

The research work is organized roughly in three fields:

(a) Activities of the National Research Council Laboratories

(b) Projects directed by the Associate Committees

(c) Assisted Research

(a) The National Research Council Laboratories

These are organized in five divisions:

Division of Applied Biology - (includes a Prairie Regional Laboratory at Saskatoon). Undertakes studies in bacteriology, biochemistry, refrigeration, fermentations, polysaccharides, animal fats and biometrics.

Division of Chemistry - Studies problems in both organic and inorganic chemistry, physical chemistry, chemical engineering and textiles.

Division of Mechanical Engineering - Includes work on aerodynamics instrument hydrodynamics, structures, gasolines and oils, and low temperatures.

Division of Physics - (with subsidiary laboratories for electrical engineering and radio added during the war) Engaged in research in acoustics, radiology, metrology, optics, heat, electrical measurements, and general physics. Electrical Engineering and Radio Laboratories are engaged in research in electrical engineering, cathode ray direction finding, ionosphere, radio and radar.

Division of Medical Research - (organized to continue work formerly done under the Associate Committee on Medical Research).

In addition to its central laboratory buildings at Ottawa, the National Research Council operates research stations at Saskatoon, Saskatchewan, (Prairie Regional Laboratories); at Chalk River, Ontario, (Atomic Energy Project); at Arnprior Ontario, (Experimental Air Station); and at other points across Canada.

(b) The Associate Committees

Since the beginning of its activities, the National Research Council has sought to utilize the technical knowledge and directing ability of scientific men in the universities, in other government departments, and in industry for the study and solution of broad, general research problems



of national interest. The Associate Committee structure provides the means to this end. When an associate committee has been established to deal with a given project, it proceeds to co-ordinate resources, plan the programme, allocate studies in such a way that maximum results are produced under most economical conditions. In all cases, the nature of the individual problem dictates the method through which it is approached. Hence there is a great diversity in committees; some are of long-standing duration; others work only for a pre-arranged length of time, or until a certain job is finished.

The National Research Council finances its Associate Committees. The number of Associate committees varies from year to year as some projects are completed and new ones begun.

The first Medical Research Committee was organized under the leadership of the late Sir Frederick Banting. To this committee the National Research Council grants an allocation for which the committee has the sole responsibility in financing projects and assisting workers in the university hospitals and medical research institutes in Canada. The pilot plant for the production of penicillin was financed through a grant from this committee. Medical Research Committees were also established during the war to direct work of special interest to each of the three armed services.

The Grain Research Committee, as an example of the co-ordination of interested groups, is a joint committee of the National Research Council and the Dominion Department of Agriculture, with the Department of Trade and Commerce and three prairie universities co-operating. Twelve interested organizations co-operate to form the Associate Committee on Aeronautical Research. Some large problems require the collaboration of two committees; for example, the Field Crop Diseases Committee works closely with the Grain Research Committee.

At the present time, the National Research Council is directing associate committees on aeronautical research, artificial limbs, asbestos, Canadian Government purchasing standards, coal classifications, corrosion research, dental research, electrical research, explosives, field crop diseases, fish culture, food preservation, forestry, geophysics, grain research, high temperature metals, high voltage systems, industrial radiology, the national building code, oceanography, parasitology, petroleum, photographic research, plant breeding, soil and snow mechanics, survey research, synthetic rubber research; and advisory committee on medical research; special committees on applied mathematics, applied mathematical statistics, electrical units and regulations, the Prairie Regional Laboratory; and a co-ordinating committee on Western crop investigations.

Other Dominion Government Departments collaborating with the National Research Council Associate Committees and laboratories are:

Department of Agriculture - Division of Science Service and Experimental Farm Service.

Department of Trade and Commerce - The Board of Grain Commissioners Laboratory.

Department of Mines and Resources - Bureau of Mines, Dominion Forest Service.

Department of Fisheries - Fisheries Research Board.

Department of Reconstruction and Supply - Research and Development Branch.

Department of National Health and Welfare.



### (c) Assisted Research

For some years following its establishment, the National Research Council functioned only as a consulting and co-operating agency, giving financial aid and leadership in the organization of research and ensuring the most efficient use of the various laboratories and technical staffs available in the universities, departments of government and industry. A great part of Canadian research is still done in this manner. The Assisted Researches Committee of the council handles this branch of the work; it arranges for projects to be undertaken in universities or other laboratories; provides funds; lends supplementary equipment to any grantees needing it; gives consideration to proposals put forward by scientists, universities or industries. In short, any Canadian scientist having an acceptable research programme to offer, may apply to the National Research Council for support.

Assisted researches are being carried on in practically all Canadian universities having facilities for scientific research. Amongst them are the University of Toronto, McGill, Dalhousie, Queen's, Western Ontario, l'Universite de Montreal, l'Universite Laval, the University of New Brunswick, Manitoba, Saskatchewan, Alberta and British Columbia.

### National Research Council Scholarship Programme

The National Research Council grants post-graduate scholarships to promising young scientists.

Since its inception it has granted over 1,500 fellowships, studentships and bursaries at a cost of \$880,000.

Post-graduate work was done in the following fields of research: biochemistry, biology, chemical engineering, chemistry, economic geology, electrochemistry, genetics, industrial cellular chemistry, metallurgical engineering, organic chemistry, physical chemistry, physics, physiology, zoology.

### Publications of the National Research Council

The Canadian Journal of Research is published yearly in six sections, one appearing every two months.

An Annual Report is issued.

A series of single publications is issued from time to time, including documents arising from Committee activities as well as addresses and other papers on the work of the Council.

A clip-sheet containing abstracts of all papers appearing in the Canadian Journal of Research is published every second month and circulated to abstract journals and prospective subscribers.

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Further information on the National Research Council and its work may be obtained from the PUBLIC RELATIONS BRANCH, National Research Council, Sussex Street, Ottawa, Ontario, Canada.



Science Goes Fishing  
Vegetable Insects  
Soil For Tomorrow  
Civilian Epidemics  
Condition Improved  
Handle With Care  
The Face of Time

New Faces Come Back  
Sixteen To Twenty-Six  
Very Dangerous  
Warble Fly Control  
Just Weeds  
Photo Canada  
Canada's Research Facilities  
(film strip)

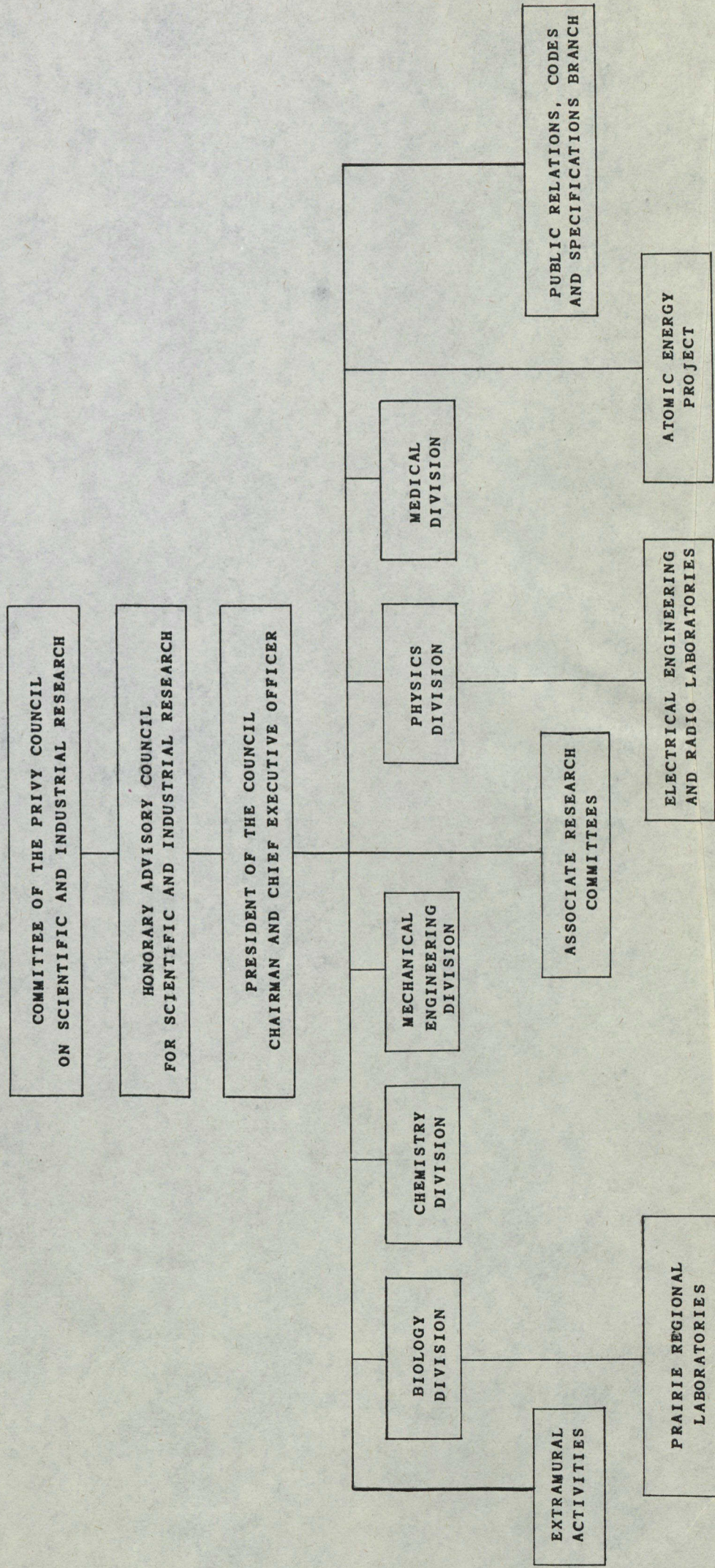
SUPPLEMENTARY READING ON SCIENCE IN CANADA

The Friendly Arctic; by Vilhjalmur Stefansson.  
Science Serves the Farmer; a CANADIAN AFFAIRS publication.  
Science in the Peace; a CANADIAN AFFAIRS publication.  
Canada's Future in Test Tubes? a CANADIAN INSTITUTE OF INTERNATIONAL AFFAIRS publication - 'Behind the Headlines' series.  
The Canada Year Book.

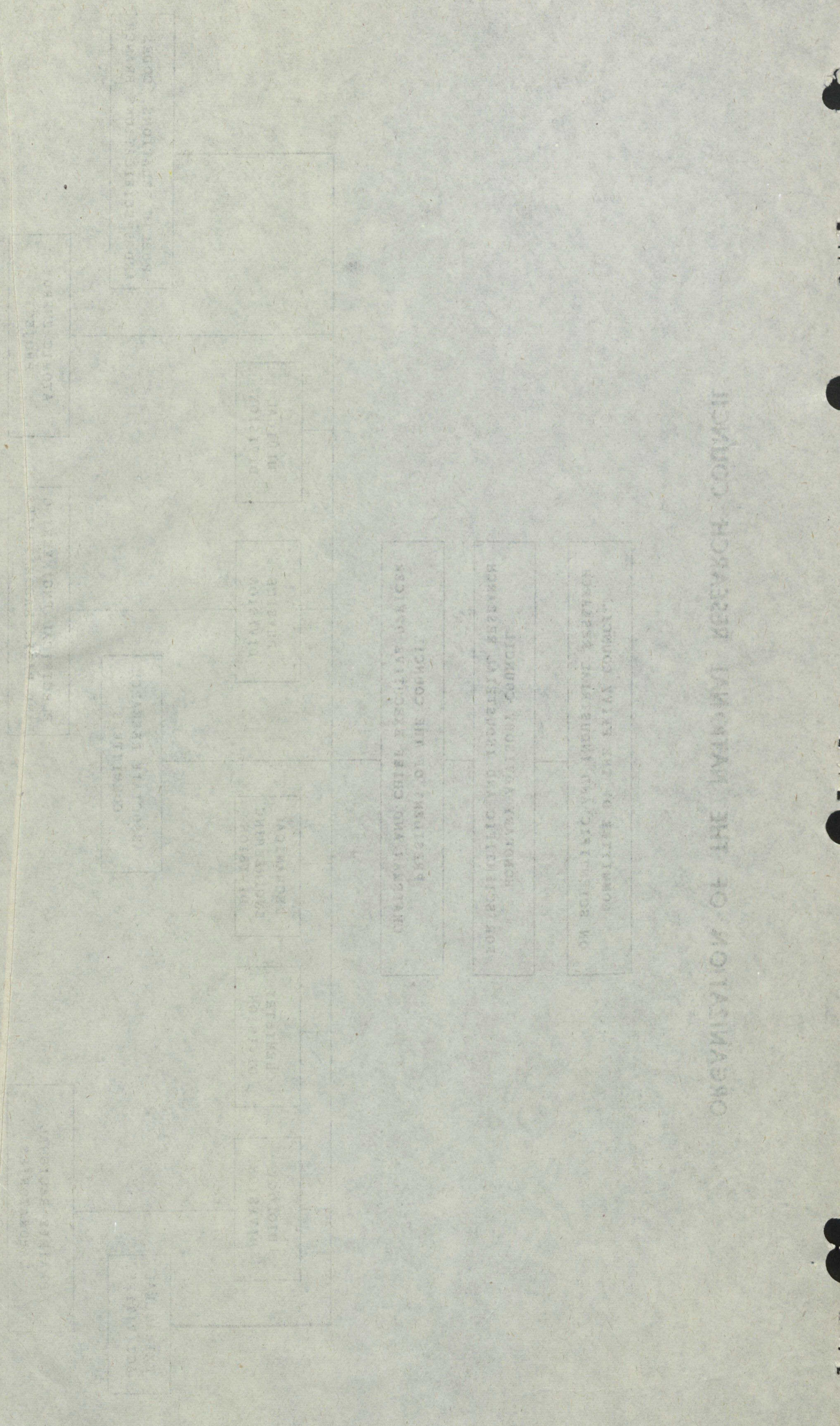
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