NATIONAL RESEARCH COUNCIL
DIVISION OF EDUCATIONAL RELATIONS

In accordance with a request expressed by the research representatives of Middle West institutions, who met in conference on problems of research in educational institutions at the Ryerson Physical Laboratory of the University of Chicago on February 1st, I am enclosing herewith copies of the following documents:

(1) Organization of the National Research Council.
(2) National Research Council. Executive Order Issued by the President of the United States, May 11, 1918.
(3) Proposed Initial Membership of the Divisions of Science and Technology of the National Research Council.
(4) Suggestions Regarding Research Committees in Educational Institutions.
(5) Conference of Representatives from Research Committees in Educational Institutions on the Pacific Coast, held at the University of California, March 8, 1919.

Owing to the pending reorganization of the National Research Council from a war to a peace basis, the preparation of some of these documents has been unavoidably delayed. The list of scientific and technical societies to be represented in the Divisions of Science and Technology of the Council must still be considered provisional. It is hoped that an account of the conference of research representatives of Middle West institutions held February 1st in Chicago can be forwarded in the near future. The enclosed documents are being forwarded to the Presidents of the institutions invited to send representatives to the conference and to the representatives who were in attendance.

The Presidents of institutions are requested to place the enclosed documents in the hands of the Chairman of the Research Committees of their respective institutions. Additional copies of any of the enclosed documents will be forwarded on application to the Secretary of the National Research Council.

J. C. Merriam, Chairman,
Division of Educational Relations.

April 25, 1919.
In accordance with a recent expression of the research representatives of the Higher Education Institutions and the Research Representatives of the Universities of the University of Pretoria, I am forwarding herewith copies of the following.

(1) Organization of the National Research Council.
(2) National Research Council Executive Officer's Report, dated 1 July 1969.
(3) Proposals for the Establishment of the Division of Science and Technology of the National Research Council.
(4) Suggestions for the National Research Council in Education.
(5) Consideration of Resolutions from Research Committees in the University of Pretoria, dated 8 May 1969.

Owing to the recent reorganization of the National Research Council in a war to a peace point, the preparation of some of these documents have been very difficult. The task of selecting and summarizing these documents has been undertaken by the Division of Science and Technology. The Council has decided to refer the detailed discussions and recommendations to the Sub-Committee on Science and Technology for further consideration. The Division of Science and Technology will forward the final report to the Council.

The President of the Council has asked the Committee to examine the possibilities of the establishment of a National Research Council.

Yours truly,

[Signature]

Division of National Research

April 1969
PROPOSED INITIAL MEMBERSHIP OF THE
DIVISIONS OF SCIENCE AND TECHNOLOGY OF THE
NATIONAL RESEARCH COUNCIL.

The following list shows the societies represented, and the number
of representatives each society shall nominate, together with the number to
be nominated by the Division as a means of securing a better apportionment of
members amongst the several interests in any one Division than would be possi-
able if all nominations were to be made by Societies independently of one
another; these members to be recommended by the Executive Committee of the
Division concerned and approved by the Executive Board.

DIVISION OF PHYSICAL SCIENCE

American Physical Society  6
American Mathematical Society  3
American Astronomical Society  3
Divisional Nominations, to include representa-
tives of Geophysics and related sciences  9

21

DIVISION OF ENGINEERING

American Society of Civil Engineers  3
American Institute of Mining Engineers  3
American Society of Mechanical Engineers  3
American Institute of Electrical Engineers  3
American Society for Testing Materials  1
American Society of Illuminating Engineers  1
Western Society of Engineers  1
Society of Automotive Engineers  1
Divisional Nominations  7

23

DIVISION OF CHEMISTRY AND CHEMICAL TECHNOLOGY

American Chemical Society  9
American Electrochemical Society  1
American Institute of Chemical Engineers  1
American Ceramic Society  1
Divisional Nominations  5

18
DIVISION OF GEOLOGY AND GEOGRAPHY

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<td>Geological Society of America</td>
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<td>Palaeontological Society</td>
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<td>Association of American Geographers</td>
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DIVISION OF MEDICAL SCIENCE (PROVISIONAL LIST)

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<td>American Association of Anatomists</td>
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<tr>
<td>American Physiological Society</td>
<td>1</td>
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<tr>
<td>American Society for Experimental Pathology</td>
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<tr>
<td>American Association of Pathologists and Bacteriologists</td>
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<tr>
<td>American Society for Pharmacology and Experimental Therapeutics</td>
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<td>American Society of Biological Chemists</td>
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<td>American Society for Clinical Investigation</td>
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<td>Association of American Physicians</td>
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<td>American Surgical Association</td>
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<td>American Roentgen Ray Society</td>
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<td>American Neurological Society</td>
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<td>National Dental Association</td>
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DIVISION OF BIOLOGY

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<tr>
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<td>American Ecological Society</td>
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<td>American Society of Economic Entomologists</td>
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<td>Society of American Foresters</td>
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<td>American Society of Genetics</td>
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DIVISION OF ANTHROPOLOGY AND PSYCHOLOGY

(Not yet determined upon)
The purpose of the National Research Council, which has been formed at the request of the President of the United States by the National Academy of Sciences, is to bring into co-operation governmental, educational, industrial, and other research organizations with the object of encouraging the investigation of natural phenomena, the increased use of scientific research in the development of American industries, the employment of scientific methods in strengthening the national defense, and such other applications of science as will promote the national security and welfare.

In pursuance of these aims, the Committee on Research in Educational Institutions has recommended the establishment of a Research Committee in each educational institution according serious support to original investigation in science on the part of members of the faculty and advanced students. As stated more fully in the enclosed circular, such committees can accomplish a valuable public service by securing data for the National Census of Research; by shaping the scientific work of the institution so as to develop greater breadth of view, a wider understanding of the methods of research, and a more general perception of the national importance of all forms of research, both in pure and applied science; by promoting co-operation and co-ordination in research, both within and without the institution, but with due appreciation of the fundamental importance of safeguarding individual freedom and initiative; by securing the foundation of research fellowships, professorships, and
andowments; by fostering and promoting the spirit of research on the part of both faculty and students, especially through the provision of more favorable conditions for all forms of original investigation. The reports of the Research Committees, copies of which the Council would be glad to receive, will aid in stimulating the work of other committees, and will provide data for the preparation of annual surveys of the progress of research in educational institutions.

The Research Committees already appointed at our suggestion by the Massachusetts Institute of Technology, Yale University, the University of Chicago, Northwestern University, and Throop College of Technology, which are mentioned in the circular, may serve as useful illustrations of the type of organization we have in mind. The inclusion of members of the board of trustees is regarded as especially advantageous, but this is of course optional in each institution.

As a concrete illustration of such action as the National Research Council would welcome on the part of all co-operating institutions, I beg to call attention to the results already accomplished by Throop College of Technology, where the President, trustees, students, and friends in the community have made immediate practical application of the suggestions offered by the Council. These results indicate how important a part the smaller institutions may play in advancing research.

Trusting that we may have your co-operation in this work, and that you will kindly inform us regarding the membership of your Research Committee, if appointed, I am,

Yours faithfully,

George E. Hale,
Chairman.
The government communication depends greatly on an accurate and timely flow of information. Therefore, the importance of communication in this context cannot be overstated.

The information received at the various levels of government is crucial for effective decision-making. It is essential to ensure that all relevant parties are informed and have access to the necessary information to make informed decisions.

In conclusion, the government communication system plays a vital role in ensuring that the right information reaches the right people at the right time. It is crucial to maintain the integrity and accuracy of the information to ensure that the government can make effective decisions.
NATIONAL RESEARCH COUNCIL

SUGGESTIONS REGARDING RESEARCH COMMITTEES IN EDUCATIONAL INSTITUTIONS

There has never been a time more favorable than the present for the promotion of scientific research. Under the pressure of sharp necessity, statesmen who have never before appreciated the importance of science have been forced to seek its assistance. Postmaster General Pease of Great Britain recently said: "One of the lessons of the war has been that we have learned as a State to respect and be guided by scientific method and scientific men to a degree which nothing but a great necessity could have achieved.

As a consequence, organizations like the Advisory Council for Scientific and Industrial Research have been formed in England, and also in Australia and other British colonies. Fortunately these bodies recognize that research in pure science is not less essential to national advance than research for national defense or for the development of industry. As soon as the pressure of the war ceases, they will accordingly devote much attention to pure science which has suffered serious losses of men and resources.

In the United States we are free to develop the various aspects of scientific research in harmony with a well-balanced plan. We must recognize and adequately meet the obligations which rest upon men of science to assist in our much needed preparation for national defense. We must contribute toward the development of American industry by aiding in the promotion of industrial research. And in doing so we must not forget that pure science, not directly stimulated by patriotic impulse for national service or the promise of financial reward from industrial profits, should be accorded the encouragement which enlightened leaders of industry are so willing to concede as its due.

As a matter of fact, it is easy to show that any form of scientific research is a national service of the first value. Marconi and others could not have developed wireless telegraphy, or even conceived of its possibility, had it not been for Maxwell's discovery of electric waves through his mathematical equations and their subsequent detection by Hertz in his laboratory. The dynamo goes back for its origin to Faraday's experiments at the Royal Institution made solely for the purpose of discovering the laws of electricity. Pasteur's incomparable contributions to the alleviation of human suffering were the direct outcome of his early investigations of the optical properties of crystals. So it is that in seeking to advance scientific research in all its aspects, the National Research Council must devote special attention to pure science.

A very large proportion of the scientific research of the United States is conducted in the laboratories of educational institutions. It is now widely appreciated that contact with knowledge in the making is the most effective means of seizing and holding the student's attention. And it is also
recognized that no greater injury can be done to the cause of science than to compel a promising investigator, fresh from the researches of his graduate years, to relinquish all hopes of further studies because of the complete absorption of his time and energy by other duties.

It is with the fullest appreciation of the difficulties which financial limitations involve, and with a sincere desire not to interfere with the just demands of the teacher's profession, that the National Research Council invites the cooperation of educational institutions in the promotion of research at this critical period in our national progress. We believe it to be feasible, without decreasing the efficiency of the university, the college, or the professional school as teaching institutions, to increase greatly their contribution to knowledge through research. Indeed, we do not hesitate to say that if a portion of the time now given to teaching were devoted to investigation, and if the courses of instruction were so altered as to take full advantage of this change, the educational efficiency of the institutions in question would be materially enhanced. In extending a request for the formation of Research Committees in educational institutions of high standards, which accord serious support to scientific research undertaken by the faculty and advanced students, we beg to call attention to some of the possibilities which lie open to committees of this character.

Before sending out a general invitation, a preliminary test of the plan has been made in certain institutions. The Massachusetts Institute of Technology, Yale University, the University of Chicago, Northwestern University, and Throop College of Technology have already established Research Committees to cooperate with the Council. In each case these committees are composed of the President of the institution, two or three leading members of the board of trustees who are interested in research, six or more faculty members engaged in research, and two or more members of the alumni occupied with research or interested in its promotion. Following the example, at least for the present, of similar organizations abroad, the Council has directed its activities to the promotion of research in chemistry, physics, engineering, mathematics, astronomy, geology and paleontology, geography, botany, agriculture, zoology and animal morphology, physiology, medicine, hygiene, psychology and anthropology. There is no reason, however, why other departments of research should not be represented on the Research Committees of educational institutions wherever this appears desirable.

In view of the importance of encouraging research on the part of members of the faculties of colleges which do not undertake graduate instruction, the invitation of the Council is not limited to universities and other institutions now giving specific recognition to research. It is highly important to encourage competent men to continue the work of research begun in their university career, and a sympathetic Research Committee could help greatly in this respect. Even the existence of such a committee should serve as a valuable stimulus to men who properly look for some measure of encouragement. In small institutions, as an illustration cited below will indicate, powerful support can be given to research by a body of men who genuinely appreciate its significance.
As the invitation of the Council is being rather widely extended, a word of caution may not be out of place at this point. In the case of institutions not in a position to give serious support to research, it would evidently be inadvisable to appoint Research Committees. It is quite possible, however, that the strong moral support which could be given by a committee, even if it were unable to command large financial aid, would justify its formation. Indeed, it is hardly conceivable that a Research Committee really in sympathy with the objects we have in view could fail to secure valuable material assistance to competent investigators.

THE WORK OF RESEARCH COMMITTEES:

Each Research Committee will doubtless discover its own best method of procedure, adapted to the circumstances of the case. Suggestions as to possible lines of work may nevertheless be of service in organizing the committees.

(1) It will probably be advantageous to begin by preparing a survey of the research already in progress in the institution in question. This should serve to indicate the possibilities of extending existing work, and point out favorable opportunities for initiating new lines of investigation.

(2) The Research Council will shortly undertake the preparation of a National Census of Research, indicating the equipment for research, the men engaged in it, and the lines of investigation pursued in government bureaus, educational institutions, research foundations, and industrial research laboratories. The purpose of the Census is to provide data for the effective development of research in pure science and in the industries, as well as for strengthening the national defense. The various Research Committees in educational institutions can aid the Council materially in securing data for the Census, and in supplying information for annual surveys of the progress of scientific research in the United States.

(3) One of the great problems of research laboratories is to find suitably trained men to carry on their work. Nearly all of these men come from educational institutions, where every available means should be used to increase the supply. If research is encouraged on the part of faculty members, and if its national importance is frequently impressed upon the students, more of them will be impelled to follow the career of investigators. The tendency toward narrow specialization, so common at present, should be counteracted by developing more interest in science as a whole. Lectures on the history of science, and broad courses on evolution, covering its various aspects from the constitution of matter and the evolution of stars and the earth, to the rise of man and the development of civilization, should be widely encouraged. From the purely educational viewpoint such courses may be expected to produce a more favorable influence and leave a more lasting impression than routine discussions of the minutiae of the various branches of science, though the latter are obviously essential in the training of the investigator.

(4) The Council wishes to develop a wider appreciation of the part which men of science may play in researches bearing both on industrial progress and national defense, including those of ship design, aeronautics, the fixation of
nitrogen, and many other subjects. Various committees of the Council will soon be prepared to furnish information regarding such research problems.

(6) The development of more general cooperation and coordination in research, within each educational institution and in alliance with other workers outside, is another important subject for consideration. It is essential to remember, however, the necessity of safeguarding the personal freedom and the individual initiative of all investigators.

(7) The interchange of research workers, especially to secure for the smaller institutions the stimulus given by leaders of research, should be strongly encouraged.

(8) The establishment of a large number of research fellowships, each yielding one thousand dollars or more annually, is very desirable. It students showing special aptitude in their work for the doctor's degree could thus be enabled to devote themselves to research for a year or more, their future career as investigators might be assured. Research fellowships may be conferred by colleges on graduates who have taken their doctor's degree elsewhere, or used to secure the services of non-graduates in research laboratories.

(9) The time is also opportune to secure the establishment of research professorships and research endowments. The present appreciation of the national importance of research, and the increasing sense of personal obligation to the State, will cause men of means to contribute more freely than ever before.

(9) Most important of all is the encouragement of the spirit of research; and the development of a sympathetic atmosphere in which the investigator can work to the best possible advantage.

A CONCRETE ILLUSTRATION.

Large institutions should easily be able to extend their research activities, but smaller ones may encounter greater difficulties. As a practical example of what can be done by small institutions in the promotion of the objects of the National Research Council, some results accomplished since June by Throop College of Technology, at the direct instigation of the Council, may be cited. Ten years ago Throop College was essentially a polytechnic high school. The swift elevation of its standards to the level of those of the best schools of technology reduced its student body from nearly five hundred to thirty (now 180). The steps it has taken in connection with the work of the Council may be enumerated as follows:

(1) Passage of a resolution by the board of trustees endorsing the objects of the Research Council and promising cooperation.

(2) Passage of a second resolution providing that in the event of war with a first-class power all available research men and facilities required for the solution of problems of national defense or public need may be counted upon by the Research Council.
(3) Provision of a new fund of two hundred thousand dollars as an endowment for research in physics.

(4) Appointment of Dr. Robert A. Millikan as Director of the Physical Laboratory (under an arrangement with the University of Chicago by which he is to spend a part of each year in Pasadena).

(5) Organization of a cooperative attack on electron problems from the physical, chemical, and astronomical standpoints, in which the physical and chemical laboratories of Throop College and the Mount Wilson Solar Observatory will take part.

(6) Provision of three research fellowships, yielding one thousand dollars each annually, to be awarded to men who have shown exceptional ability in their research work for the doctor's degree. (Balboa College has also established, for a period of five years, a research fellowship yielding one thousand dollars annually.)

(7) Provision of a wind tunnel and well-equipped aerodynamics laboratory for researches on the structure of aeroplanes.

(8) Participation in a cooperative arrangement permitting the repetition at Throop College of Professor Michelson's experiment on the tides within the body of the earth, to determine the possible influence of oceanic tides, and to serve as a part of the general study of Pacific Ocean problems undertaken by a committee of the National Academy of Sciences.

COOPERATION WITH THE NATIONAL RESEARCH COUNCIL.

The engineering Foundation, the American Philosophical Society, the Franklin Institute, the American Physical Society, the Marine Biological Laboratory at Woods Hole, the American Institute of Consulting Engineers, and other societies and institutions have passed resolutions promising cooperation with the National Research Council in its work. The Engineering Foundation also voted to devote its entire income for the current year (including a special gift of $5000 for this purpose from its founder, Mr. Ambrose Swasey) toward the expenses of organization, to give the services of its Secretary, and to provide a New York office for the Council in the United Engineering Society Building.

The American Association for the Advancement of Science, through its Committee of One Hundred on Research, has voted to cooperate by participating in the appointment of Central Committees on Research, as described below.

CENTRAL COMMITTEES ON RESEARCH.

The National Research Council, with the American Association for the Advancement of Science, the American Chemical Society, the American Physical Society, the American Mathematical Society, and other national scientific societies, has established a series of central committees to organize research in the various branches of science.

The purpose of these committees may be outlined as follows:

(1) To join in the preparation of the National Census of Research. This will be taken by the Census Committee of the Research Council, of which the Chairman of the various central committees are members.
(1) Provision of an annual Report on the operation and financial statements of the Council shall be published in each year:

(2) The Report shall be prepared by the Secretary-General and the Committee of the Council.

(3) The Report shall be submitted to the Committee of the Council for approval:

(4) The Report shall be submitted to the Committee of the Council for approval:

(5) The Report shall be submitted to the Committee of the Council for approval:

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(49) The Report shall be submitted to the Committee of the Council for approval:

(50) The Report shall be submitted to the Committee of the Council for approval:
(2) To prepare reports embodying comprehensive surveys of the larger possibilities of research in the various departments of pure science, suggesting important problems and favorable opportunities for investigation.

(3) To survey the economic and industrial problems of the United States, and report on possible means of aiding in their solution by the promotion of research in the fields represented by the various committees. (In co-operation with the Council's Committees on the Promotion of Industrial Research).

(4) To indicate how investigators in each committee's field can aid in the solution of research problems involved in strengthening the national defense. (In co-operation with the Military Committee of the National Research Council).

(5) To point out opportunities, national and international, for co-operation in research, and to assist in the co-ordination of the various agencies already established for this purpose.

(6) To keep in touch with the Research Committees of educational institutions, and to supply research problems, suggestions, or thesis subjects when requested to do so.

(7) To serve as a national clearing house of information regarding research problems in each committee's field which arise from scientific, industrial, and other sources, and are communicated to the Council by local Research Committees or other agencies.

(8) To promote research by such other methods as may prove advisable, including the encouragement of such courses of instruction in educational institutions as are best adapted to develop greater breadth of view, a wider understanding of the methods of research, and a more general perception of the national importance of all forms of research, both in pure and applied science; the more effective use of existing research funds; the establishment of research fellowships, research professorships, and research endowments.

PUBLICATIONS OF THE RESEARCH COMMITTEES.

All reports of the National Research Council and of its Central Committees are published in full in the Proceedings of the National Academy of Sciences through which members of the local Research Committees may keep in touch with the work in progress in all its various fields. Briefer accounts of the work appear in Science and other journals.

The preliminary suggestions contained in this circular embody the results of the discussions of the Council's Committees on Research in Educational Institutions. In order to make the experience of each institution available to all, valuable suggestions received from the various Research Committees and other information as to the progress of the work will appear from time to time in the Proceedings.

GEORGE ELLERY HALE, Chairman.
..
CONFERENCE OF REPRESENTATIVES
From Research Committees
in Educational Institutions on the Pacific Coast.
Held at the University of California, March 8, 1919.
under the auspices of the National Research Council.

Morning Meeting, 10.00 a.m.

Introductory remarks by Professor John C. Merriam on invitation
of the National Research Council to conference on problems
of research in educational institutions.

Research as an element in teaching.
Discussion introduced by Professor Douglas H. Campbell.

Correlation of research programs in groups of university departments.
Discussion introduced by Professor George M. Stratton.

12.30 - Luncheon of Conference Members.

Afternoon Meeting, 2.00 p.m.

National and international exchange of research information and the
place of research committees of Educational Institutions in such
exchange.
Discussion introduced by Professor William F. Durand.

Influence of financial limitations on research.
Discussion introduced by Professor Herbert M. Evans.

Research in educational institutions and its relation to needs of
industry.
Discussion introduced by Professor Edward C. Franklin.

Reports from representatives of Research Committees in Pacific
Coast Region.

6.30 - Dinner of Conference Members.

Informal discussion on "The place of research in the program of
educational institutions."
REPRESENTATIVES OF RESEARCH COMMITTEES

From Educational Institutions

present at Conference

University of California, March 8, 1919.

University of Washington:

Acting Dean C. E. Magnusson, Director of Engineering Experiment Station;
Head of Department of Electrical Engineering.
Professor T.C. Frye, Professor of Botany and Director of the Puget Sound Biological Station.
Dean J. Allen Smith, Professor of Political Science and Dean of Graduate School.

Oregon Agricultural College:

Professor C.I. Lewis, Chairman Research Committee, Chief of Division of Horticulture.

Reed College:

Professor F. L. Griffin, Department of Mathematics.

Stanford University:

Professor D. H. Campbell, Department of Botany.
Professor E. C. Franklin, Department of Chemistry.
Professor W. F. Durand, Department of Mechanical Engineering.
Professor A. W. Mayer, Department of Anatomy.

Throop College of Technology:

Professor S. J. Bates, Department of Physical Chemistry.
Mr. E. C. Barrett, Secretary of Board of Trustees.

University of Southern California:

Professor Laird J. Stabler.

Occidental College:

Professor Smiley
University of California.

President Benjamin Ide Wheeler,
Professor J. C. Harriman, Department of Palaeontology
Professor H. W. Evans, Department of Anatomy
Professor C. M. Stratton, Department of Psychology
Professor W. C. Jones, School of Jurisprudence
Professor H. E. Bolton, Department of History
Professor C. L. Cory, Department of Electrical Engineering
Professor W. C. Bray, Professor of Chemistry
Professor L. C. Uren, Department of Mining
Proceedings of Meeting at 10:00 a.m.

The meeting was called to order by Professor John C. Merriam, Chairman of the Section of Educational Relations of the National Research Council. Professor Merriam opened the discussion with remarks relative to the history and work of the Research Council, plans for its peace time organization, and the invitation of the Council extended to educational institutions for conference on research problems of mutual interest. As educational institutions are among the most important instruments for advancement of research it is of utmost importance to have clearly defined the problems for solution of which we must look especially to these institutions.

Professor Douglas H. Campbell of Stanford University opened the discussion on "Research as an Element in Teaching". Professor Campbell stated it as his view that since it seems difficult in many cases to secure a satisfactory balance between research and teaching in universities, every man who comes into an educational institution as an investigator should have a full understanding regarding his duties in teaching and his privileges in research. Professor Campbell stressed particularly the importance of the instructor's research upon the student, as it gives inspiration to the teacher and makes a living matter of the subject considered rather than the routine of recitation.
Professor Marriam suggested three possible positions of the research man in the University: first, that in which he would have no part in teaching; second, that in which the student might have, through work in the classroom, the benefit of research carried on by the teacher; and third, that in which the student might work under the teacher as an apprentice in research.

Professor Magnusson, of the University of Washington, expressed it as his experience that unless members of the departments of engineering engage in research, they lose inspiration in their work. He stated that in his opinion the great industrial laboratories are taking up a large part of the research problems so that the number of subjects remaining for research in engineering in universities grows rapidly smaller. This situation he felt deters bright young men from taking up research in universities. He expressed it as his belief that unless a large group of problems in research are restored to the laboratories of the engineering departments of the universities for investigation, teachers having little opportunity for original work will diminish in efficiency.

Professor C. I. Lewis of Oregon Agricultural College spoke of his experience in the relation of teaching to research. At one period there was a movement to separate teaching from research, but it was found that men who were teaching became discouraged and needed the inspiration of original work, while those engaged solely in research were deprived of the inspiration of the classroom. Professor Lewis believed that the combination of teaching and research has a very desirable psychological influence.

Professor Griffin of Reed College stated that although the problem in the small college is very different from that of the university, there is still the need for research. At Reed College there is in operation a plan to require certain original work even in freshman courses, in order to develop in the student
what Professor Merriam has characterized as the type of mind that recognizes the importance of constructive work.

Professor Bolton of the University of California, suggested that more time and money might be available for research carried on in connection with other university duties if unnecessary or little used courses were discontinued. Professor Magnusson stated that this was being tried at the University of Washington with some success, but that much more could be accomplished by reducing the hours required for teaching.

Professor Frye of the University of Washington suggested that research should find a more important place in the university than extension work which absorbs much of the funds which might be used for investigation.

Professor Bates of Throop College stated that research work is being initiated with sophomores in Throop College as a means of determining the attitude of the student toward original work. By this means it becomes possible to select more effectively the upper division courses for specially qualified students.

Professor Stratton of the University of California opened the discussion on the topic: "Correlation of Research Programs in Groups of University Departments." He expressed the opinion that too much is left to individual endeavor and that there are many ways in which the efforts of the individual may be made more effective by correlation of programs of investigation in groups of departments included within the university organization. The experience of the Research Board of the University of California was cited. Members of the Departments of engineering, physics, and chemistry have, in the past, found many ways, in which their research work could be carried out more effectively through co-
The importance of integration in education cannot be overemphasized. The concept of integration calls for the establishment of a comprehensive educational system that encompasses all aspects of society. This system should promote equality, respect for diversity, and cooperation among different groups. Education is a powerful tool for social change, and its role in promoting equity and justice cannot be overlooked.

The integration of technology in education is a critical aspect of modern education. With the advent of digital technologies, educators have the opportunity to create engaging and interactive learning environments. However, the integration of technology should be approached thoughtfully, ensuring that it complements traditional teaching methods and does not replace them.

In conclusion, the integration of integration in education is essential for the development of a just and equitable society. It requires a commitment from educators, policymakers, and society at large to work towards creating a more inclusive and inclusive educational environment.
operation. In another instance the construction of a map of the hill region immediately adjacent to the university is proposed by several departments all of which need this particular piece of work for interlocking research. Professor Stratton also referred to his interesting experience at the Medical Research Laboratory of the Air Service at Minneola where specialists from many departments of medicine and psychology were drawn together to investigate problems connected with the Air Service. Although there was some inconvenience in this arrangement there was compensation for this through the return in cooperation of these men from widely separated groups. Applying the same principle to university work the psychologist would secure assistance from the zoologist and from outside institutions such as the Preston School of Industry. In conclusion it was remarked that while organization in itself may mean nothing, there are many ways in which the Research Committees of universities may be exceedingly useful by furnishing means for conferencing of departments within the educational institutions.

Professor Merriam pointed out the similarity between organization of the University Research Committees and that of the National Research Council. Both have the problem of co-ordinating activities in all fields of science. Both have the function of central agencies which act as the medium through which researches of various departments may be made more effective by close relation to the work of other departments.

Professor Durand of Stanford University called attention to the fact that within the last few years the fields of science have become so wide and varied that no one human mind can comprehend them all. Today a great store of scientific knowledge is useless to a large degree because of lack of means for
opposition. To promote the continuance of a system of women's rights

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acquainting one branch of science with the materials that it might obtain from others. This arises from the fact that there is no existing organization which has as its business the development of possibilities in cooperation. A Research Committee within the educational institution, cooperating with the National Research Council in the national sense, would be in a most advantageous position for keeping in contact with the sources of knowledge to which reference will be made in working out the broadest cooperation.

Proceedings of the meeting at 2.00 p.m.

Professor Durand of Stanford University opened the discussion in the afternoon meeting by presenting a description of the international relations of the National Research Council, and a discussion of the steps that had been taken to organize an International Research Council. The main effort in this direction has been toward the establishment of Research Councils within the several countries, all types of organization depending upon their needs as nations. The French, for example, having created an organization leaving all that is possible to individual effort. To make the work of our own Research Council as effective as possible offices were established in London, Paris, and Rome. Weekly reports were collected, covering the progress of scientific investigations on such matters as the submarine problem, location of heavy artillery, and similar subjects. These reports were sent to the office of the Research Council in Washington. They were there abstracted and various parts were sent to whatever laboratories or individual investigators in this country were particularly in need of this information. There was then a reverse flow of information to England, France, and Italy so that to the investigators of each Allied
nation there was available at all times information on the progress made by colleagues in other countries. With this organization carried to its logical conclusion through local Research Committees and through international organization, an individual or an institution will be able to secure, through the National Research Council, the benefit of what has been done along similar lines in this country or even in the world at large.

Professor Bolton spoke of a list of historical theses in preparation but still unpublished. This being an instance of service in the way of cooperation to aid historical research. Professor Merriam stated that the Research Council had considered the organization of an index of sources of materials. This would be a catalogue showing the location of bibliographies and points at which bibliographies were being compiled. A need is also recognized for accurate information concerning the scientific personnel of the country such as has been furnished by American Men of Science. In handling matters of research information it will be the purpose of the Research Council to avoid over-organization and to make as simple as possible the organization which will give lines leading to sources of information needed.

As an illustration of what might be done by research organization, Professor C. I. Lewis spoke of an instance in which, by chance, investigation in a certain subject at the Oregon Agricultural College was compared with a study of the same subject at the University of Missouri. It happened that the two researches supplemented each other completely so that a number of years of investigation was saved for each institution. In connection with the publication of research activities of men of science he stated that he did not favor the policy of allowing but one investigator to work on a given subject. Although both men
may obtain the same result they may use different avenues of approach. These differences in approach or in method may themselves be important contributions.

Professor Merriam suggested that a catalogue kept to date in the Research Information office of the Research Council might not only show what investigations are under way and indicate the extent of duplication, but it might also serve to point the way to fields of research still untouched.

Professor Bolton expressed the opinion that duplication should not necessarily be discouraged, and that if a subject is worth consideration it is surely worth investigation by at least two persons.

Professor H. H. Evans of the University of California opened the discussion on the topic: "Influence of Financial Limitations upon Research". Professor Evans pointed out the many ways in which funds are essential to the prosecution of researches, especially where the work is of such a nature as to require travel and assistance as well as elaborate equipment. It was shown further how essential funds are for conserving the time and energy of the investigator who may have his enthusiasm diminished if swamped with the drudgery of detail. It was also pointed out that university support for research should never be diminished by reason of additional support from other agencies. Professor Evans expressed the opinion that much economy could be effected for research by better organization of teaching. In speaking of support given by commercial enterprises it was stated that there might be a feeling on the part of many that this might control or direct the ideas on certain important subjects. The course to be followed would naturally be determined by the extent of freedom in use of results obtained by such support of investigation.

Professor Smiley, representing Occidental College, reported an instance of investigations on the economic value of certain California plants, which should
have been initiated a year ago had it been possible to secure adequate financial support.

Professor C. I. Lewis suggested that economy might be affected if a freer policy of loaning equipment might be established among departments within the educational institution. Professor Douglas Campbell reported an instance in which such economy had been made possible at Stanford University. Professor Marriam suggested that there are certain limitations to efficiency through common use of materials, and that it is not always wise to permit general use of delicate apparatus which is adjusted for individual use.

The question was raised whether it is desirable in many instances to make selection of problems upon which investigations may be carried out with relatively little expense in educational institutions, certain other problems being avoided because of the extraordinarily high cost of research or investigation. It was also pointed out that the administrative side of research is exceedingly important, especially in making certain that investigations of real promise are carried through to a point at which a reasonable judgment can be made, and are not set aside without conclusion or report. The aggregate loss through promising but uncompleted investigations is probably large.

Professor Franklin of Stanford University opened the discussion on "Research in Educational Institutions and its Relation to Needs of Industry." Professor Franklin spoke of the work in laboratories of the great industrial corporations and stated that these researches are not only profitable in a business sense but they contribute largely to the fundamentals of science. There are many reasons for placing all research in industrial enterprises on such a basis that it will command the full service of science. The question was
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Concerning matters.

The above indicates that the economic aspect of the problem is clearly outlined. It is indeed a complex situation that requires a comprehensive approach to addressing the issues.

The analysis suggests that a dual strategy is necessary: one focusing on immediate relief measures and another on long-term structural reforms. Immediate relief can be provided through welfare programs and immediate funding, while structural reforms can address deeper issues of poverty and inequality.

Moreover, the situation is exacerbated by the lack of effective governance. The government has been criticized for its inability to manage resources effectively and provide adequate services to its citizens.

To address this, there is a need for a strong civil society that can monitor governmental actions and ensure accountability.

In conclusion, while the situation is dire, there are opportunities for improvement. By combining immediate relief with long-term reforms and strengthening governance, we can make significant progress towards alleviating poverty and improving the lives of the affected communities.
raised whether fellowships supported by commercial enterprises may draw students away from the field of pure science if the research of the fellows is not permitted the widest possible freedom. Professor Magnusson was of the opinion that the universities needed aid from the industries as without it their laboratories would not have sufficient support, and the laboratories of the manufacturers would take their place. The principal danger lies in the fact that those who render such support may expect results entirely out of proportion to what is given. The opinion was expressed that laboratories supported by industries may make progress on the practical side which could not otherwise be expected.

Professor Stabler of the University of Southern California expressed the view that the salvation of the small college lies in aid given by industrial institutions, as by this means support is given which might not otherwise be secured. Professor Bray of the University of California raised the question whether connection of university investigators with outside researchers lowers the standard of remuneration for men who are not able to add to their salaries by outside work.

Professor Merriam pointed out the necessary relation of research to industry and how essential it is for all industries to have available a reserve stock of new ideas furnished through the medium of fundamental scientific research. Reference was made to the policy of industries to contribute money to educational institutions for research within certain broad fields, with the understanding that the results shall be published for the benefit of all who wish to use them. The Section of Industrial Relations of the National Research Council has been considering the general problem of relation between science and industry.
On request for reports of organization and activities of Research Committees in the various institutions represented at the conference, Professor Magnusson reported for the Engineering Experiment Station of the University of Washington and spoke of the method by which research in various branches of engineering was coordinated in the Experiment Station.

Professor Frye of the University of Washington reported for the Puget Sound Biological Station and stated that the University Research Committees had been in operation during the war. Dean Smith of the University of Washington expressed the hope that the social sciences may receive fuller recognition in research.

Professor Stabler, reporting for the University of Southern California, stated that the members of the Faculty have frequent informal gatherings at which research problems are discussed.

Professor Franklin, reporting for Stanford University, gave the organization of the Research Committee and stated that its activities had been interrupted due to the extended absence of many of its members during the war.

Professor Griffin, reporting for Reed College, stated that owing to the small size of the institution there are comparatively few persons engaged in research, and that informal gatherings are held frequently for discussion of problems under investigation.

Professor Smiley, reporting for Occidental College, stated that effective constructive work could be done and that financial support was desirable.

Professor Merriam, reporting for the University of California, gave a detailed statement of the work of the University Research Board, which is composed of ten members, representing important research interests of the University and in touch with the activities of the departments of the institution.
A NATIONAL RESEARCH COUNCIL.

It will probably some day appear strange that the public announcement of the inauguration of the work of the National Research Council opens with the statement that it has received assurance that it will have funds enabling it to proceed with its plans. So great is the outlook for its achievement that such an assurance should not have been lacking for a moment. All the more, however, is it to the credit of the Engineering Foundation, and of those to whose generosity the Foundation owes its pecuniary resources, that the income of its $200,000 endowment, together with an additional contribution of $5,000 annually, and the services of its secretary, are to be placed at the disposal of the Council.

And an added source of gratification is to be found in the statement that "the most of the engineers, 9,000 of whom are represented in the Foundation, in coming to the aid financially of the re-establishment of their acknowledged debt to pure science, as well as a matter of patriotism."

The purpose of the Council, as it has been formally stated, is to bring into cooperation existing governmental, educational, industrial, and other research organizations with the object of encouraging the investigation of natural phenomena, the increased use of scientific research in the development of American industries, the employment of scientific methods in strengthening the national defence, and such other applications of science as will promote the national security and welfare. Established by the National Academy of Sciences with the sanction and cooperation of the President of the United States, and comprising in its personnel many of the foremost representatives of both pure and applied science in America, it is impossible to doubt that the Council will achieve in abundant measure the objects for which it has been organized. To endeavor to indicate those objects more specifically would be to attempt a survey of a domain of human activity whose extent, variety, and importance are beyond all measuring. All that one can touch upon in a brief notice is the spirit in which the undertaking is being launched, and with which it is being welcomed. On both points all the signs are most propitious. In all its approaches to institutions and to individual men of science and industry alike, the Council has been met in a spirit of hearty and enthusiastic cooperation, and it will enter upon its labors with the seal of its leading men quickened by the sense of a general and cordial interest in its objects on the part of those to whom it must appeal. One feature which we feel is peculiarly gratifying is the prominent place that is evidently held in the minds of the members of the Council by the idea that the importance of pure science—the pursuit of scientific truth for its own sake—must be strenuously insisted upon and constantly upheld. The idea is conspicuously present in the minutes of the proceedings at the organizing meeting of the Council; and in a statement just given out to the press by Dr. George Ellery Hale, chairman of the Council, occasion is taken to enforce the point. He mentions that the president of a great British steel company speaks of the necessity of encouraging "the toiler in pure science, who has not in view monetary gains, but is willing to advance the world's knowledge for the sake of knowledge, and that alone." He even refers to the fact that "Monseur Painlevé, a pure mathematician, is one of the ablest men of the French Cabinet"—a fact which, to be sure, has no direct bearing on the matter at hand, but which perhaps points the moral just as effectively, at least for those who know upon what intrinsic and subtle grounds are utterly removed from all contact with human interests, Monseur Painlevé was sharpening his intellect and responding to the call for public service. Nor is the conjuncture a new one in France; to mention only one precedent, Carnot, whom all the world thinks of as the man who "organized victory" for the First Republic, is remembered by mathematicians as the author of the theory of transversals and of a famous work on the philosophy of the infinitesimal calculus.

This, however, is a side matter; it relates to individuals, concerning whom there can be no law, not to a principle. The broad principle that the pursuit of science without any thought, direct or indirect, of practical application is of the utmost value for the promotion of progress in the practical concerns of men is emphatically insisted on by Dr. Hale and other members of the Council. In a letter published some time ago in the New York Times Dr. Hale says: "I am especially on this doctrine. And we note that where, in enumerating the purposes of the Council, he speaks of "the promotion of cooperation in research with the object of securing increased efficiency," he adds the important proviso that "in the pursuit of this there must be 'careful avoidance of any hampering control or interference with individual freedom and initiative.' If the spirit manifested in this and other expressions of the attitude of the Council continues to be maintained, men who prize pure science for its own sake will have no need to fear that through overzeal for 'results' the promoters of cooperation in scientific research will inflict upon men of individual aspiration and uncalculating devotion an injury which might go far to counterbalance the gains obtained by increased systematization. These gains, great as they unquestionably may be, are probably not as large as or less calculable; what is utterly in calculable is the potentiality of unhamp ered individual thought and activity inspired by a passionate ardor for the discovery of truth, and directed into those channels which the particular bent of their mind determines for a few rare and 'divinely gifted' men in each generation.
During the past few months the Committee has been endeavoring to become acquainted with the research situation of the University in all departments and for the University as a whole. Through small grants it has attempted to assist individuals with investigations requiring financial support. It has cooperated with departments of the University in working out research programs, and has discussed with groups of departments certain larger fields for investigation requiring cooperation from considerable groups of individuals. With the assistance of members of the faculty, the heads of departments, and the administration of the University, the way has been opened for advance of research in many directions. The Committee has also attempted to further the research interests of members of the faculty by securing transportation to important scientific meetings or for necessary investigations requiring long and extensive journeys. Through all the endeavors of the Committee it has attempted to make itself the servant of the Faculty, and has been particularly desirous of supporting individual and departmental initiative without in any way interfering with the interests of other individuals or institutions.
but the Board will necessarily the Committee and your representa
vance with the Co-operative Association of the University in all matters
and let the University be a whole. A formal meeting of the trustees to
receive information and to decide upon the question of the association
was held on Thursday, June 19th, 1875. The report was presented and
approved. The association was formed with an initial capital of $100,000
and was to be managed by a Board of Trustees of fifteen members.

In the meantime the Committee had been busy in the preparation of
the necessary documents and the necessary subscriptions had been
raised. The association was to be managed by a Board of Directors of
fifteen members. The Director of the association was to be chosen
from the Board of Directors.

The Committee had been successful in raising the necessary funds
and by the end of June, 1875, the association was ready to be
instituted. The Committee had been hard at work in the preparation of
the necessary documents and the necessary subscriptions had been
raised. The association was to be managed by a Board of Directors of
fifteen members. The Director of the association was to be chosen
from the Board of Directors.
Mr. J. S. Dickerson,
Faculty Exchange.

My dear Mr. Dickerson:

I wish to advise you of the appointment of Dr. Leigh Hoadley as a National Research Fellow who will be regarded as an honorary member of the staff of the Department of Zoology. The status is similar to that of Dr. Leonard Loeb who was in this way made an honorary member of the staff of the Department of Physics. There is of course no financial obligation but on the one hand it is an honor to the University to have a Research Fellow doing his research at this institution and in turn we accord the Fellow the above recognition.

Very truly yours,

James H. Tufts

T.S.

These National Research Fellows (for instance Loeb) have been appointed by the Board of Trustees. I think this recommendation should go to Pres. Burton.
The University of Chicago
Office of the Dean of Faculties
October 19, 1932

To the Dean of the College,

I have the honor to inform you of the appointment of Dr. Robert J. Shilling as a visiting professor of biology, to be effective immediately.

Dr. Shilling has been a member of the faculty of the University of Chicago since 1925. He has continued to maintain an active interest in the problems of molecular biology and has made significant contributions to our understanding of the nature of life.

I believe that his appointment will be of great benefit to the college and that he will contribute significantly to the advancement of our educational program.

Sincerely yours,

[Signature]

James H. Tufts