the San Andreas fault and two days of study of the stratigraphy, structure and oil fields of the region. After a day spent on the San Francisco Peninsula and Berkeley Hills, the party moved to the Yosemite National Park and again divided, one group going by bus across the Tioga Pass to Mono Lake, Lake Truckee and Reno, and the other visiting the mines of the Mother Lode. At Salt Lake likewise two sets of excursions were available. Some preferred to visit Zion and Bryce Canyons and the north rim of the Grand Canyon. For those who remained in Salt Lake there were visits to the principal mines of the Bingham, Park City and Tintic districts and trips to localities of structural and general geologic interest. In Colorado there was a choice of three options; the most popular excursion visited the mining districts of Gilman, Leadville, Alma and Cripple Creek; another trip crossed the San Juan Mountains, and the third allowed study of the stratigraphy and structure of the Front Range between Minturn and Colorado Springs.

The success of all the excursions was, of course, due in great measure to the volunteer assistance rendered, often at considerable personal inconvenience, by all geologists and mining engineers whose fields of work lay within the regions visited. To a great extent, moreover, the officers of the congress are indebted to the hearty cooperation and cordial hospitality offered by all residents of the regions traversed. In particular, most cordial cooperation was afforded by the officers of the National Park and Forest Services and all civic organizations.

A HISTORY OF THE NATIONAL RESEARCH COUNCIL, 1919-1933

X. THE DIVISIONS OF GENERAL RELATIONS[1]

By ALBERT L. BARROWS
ASSISTANT SECRETARY

IN addition to its divisions of science and technology established for the direct encouragement of scientific research, the National Research Council has maintained four divisions of general relationships. These divisions are concerned with the relations of the Council to the Federal Government, to international scientific organizations, to conditions of research in scientific agencies of state governments and to research interests in educational institutions.

Division of Federal Relations: During the World War special contacts were maintained between the National Research Council and the War and Navy Departments of the Government through a Military Committee of the Research Council, composed of representatives of these two departments and of various scientific bureaus of the Government. The Executive Order of President Wilson of May 11, 1918, requested the National Academy of Sciences to perpetuate the National Research Council for the stimulation of research "with the object of increasing knowledge, of strengthening the national defense, and of contributing in other ways to the public welfare," and specifies that the duties of the Council shall be, among other functions:

> To serve as a means of bringing American and foreign investigators into active cooperation with the scientific and technical services of the War and Navy Departments and with those of the civil branches of the Government.
>
> To direct the attention of scientific and technical investigators to the present importance of military and industrial problems in connection with the War, and to aid in the solution of these problems by organizing specific researches.

This Executive Order further directs that "the cordial collaboration of the scientific and technical branches of the Government, both military and civil" be given to the Council, and that "to this end representatives of the Government, upon the nomination of the President of the National Academy of Sciences, will be designated by the President as members of the Council, as heretofore, and the heads of the departments immediately concerned will continue to cooperate in every way that may be required."

In order to carry out these instructions the National Research Council includes a Division of Federal Relations, composed of representatives designated in accordance with the Executive Order. This division now contains 43 members, representing the ten departments of the Federal Government or the scientific bureaus of these departments, and also three independent establishments of the Government. Through this division a medium is provided for the discussion of matters relating to the general function of research in government and a mechanism is furnished by means of which formal cooperation between governmental agencies and the Council may be effected whenever occasion for doing so arises.

Division of Foreign Relations: The Council also

[1] This is the last of a series of ten articles prepared to describe briefly the nature of the activities upon which the National Research Council has been engaged during the past fourteen years.

maintains a special division to provide for its international relationships. The functions of this division are:

(1) To serve as the agent of the National Research Council in foreign affairs not within the scope of qualified special organizations, and in dealings with the International Research Council which involve the joint interests of two or more international bodies concerned with special branches of science and technology.

(2) To promote cooperation in matters of joint interest among the several American national committees or other representatives of international organizations.

(3) To inquire into the advisability of initiating new international organizations, and to cooperate with the special American groups interested in their formation.

(4) To keep in close touch with the Department of State, and to inform the Department of pending international scientific and technical questions in which the Government may be interested.

(5) To prepare and publish annually a concise summary of American activities in international scientific and technical organizations.

The membership of the Division of Foreign Relations is planned to bring together as many as possible of the organized interests of this country in international scientific affairs. It is composed of representatives of the American sections of the six international unions to which the Council now adheres (representing astronomy, physics, radio-telegraphy, chemistry, geodesy and geophysics, and geography), of representatives of certain governmental agencies having an interest in international scientific affairs and of other American organizations which have a concern in scientific matters abroad. The Foreign Secretary of the National Academy of Sciences is, *ex officio,* the Chairman of the Division of Foreign Relations.

The European contacts of the National Research Council have been mainly with international scientific organizations in the traditional fields of learning. On the Asiatic side the international scientific relations of the Council have centered largely around the problems that are of common interest to the countries bordering upon the Pacific Ocean or lying within the Pacific area. These interests in all fields of science are represented in an organization, the Pacific Science Association, to which scientific bodies in fourteen of the Pacific countries have adhered. The contacts of the National Research Council with this association are in charge of a Committee on Pacific Investigations of the Division of Foreign Relations. Through this committee the Council has participated since 1920 in a series of Pacific Science Congresses, of which the fifth was held in Victoria and Vancouver early in June, 1933. This committee, also, has encouraged the advancement of researches recommended by these congresses as important problems on which cooperation is desirable.

Division of States Relations: The suggestion to include a Division of States Relations in the peace-time organization of the Research Council arose from the relationships of the Council during the war years with state scientific research committees organized in more than twenty of the states as parts of the State Councils of Defense. These state research committees rendered important services during the war period.

The Division of States Relations has been maintained by the Research Council in order to conserve the increased impetus given to state research enterprise during the war and in order to provide a medium for the discussion of conditions attending the work of state scientific agencies. It was felt, however, that any discussion of these conditions should be based upon an understanding of the functions and responsibilities of state government and a knowledge of the governmental organization of the state. This division has therefore given attention to a study of the mechanism of state organization in its relation to the promotion of scientific work. This has been done in two ways: (1) by making studies of the organization and relationships of state scientific agencies, and (2) by providing for occasional discussions in the nature of symposia for the consideration of problems relating to state scientific work.

The division is indebted to a number of collaborators for the preparation of reports on particular topics. One of the first of these reports was an account of the organization and activities of the Committee on Scientific Research of the State Council of Defense of California, which was published as an example of the nature of the service which such a body can render in emergency. The division also issued a report upon the nature and extent of the cooperation existing in scientific work between the Federal Government and non-governmental agencies, chiefly of the state systems, and has sponsored studies of the organization, relationships and work of the state scientific agencies in California, Illinois and other states. A special study was made of the systems of central financial control of research in state governments in several states. Shorter papers have been published upon the value of state scientific work to the commonwealth. Most of these reports and papers were issued as publications of the Research Council. A number of meetings have also been held under the auspices of this division for the discussion of questions raised in these papers and of other conditions affecting the progress of the scientific work of the states.

Division of Educational Relations: The Division of Educational Relations is an outgrowth of relationships

between the National Research Council and a large number of research committees which were organized in American universities during the war. The results of this movement in the universities suggested the possibility of a study of the conditions affecting the research life of American institutions of higher education which, it was thought, might be helpful in bringing about larger development of research facilities in our educational institutions.

With this object in view the division undertook a study of means for the discovery and encouragement of students of superior capacity. In order to learn the experience which faculty members generally have had in meeting this problem the division arranged for representatives of the Council to visit a large number of colleges and universities. Altogether 326 such visits were made at 208 institutions in all parts of the country by eleven representatives of the Council during the seven years in which the division carried on this study.

One of the means considered for the encouragement of superior students was the development of honors courses and of plans for free study in the undergraduate years. The division issued a summary of the several types of honors courses as found in American institutions in 1924, and a year later a revision of this summary showing a considerable extension of honors systems in the liberalizing of the curriculum of that period. The division also considered the grouping of students, when classes are large, into sections on the basis of ability, as a device for benefiting especially the superior individual.

In order to direct the attention of gifted students to the opportunities for a worth-while career in research the division issued a series of over twenty pamphlets describing these opportunities in a number of callings. These papers were distributed without charge to faculty members of colleges and universities for use with their students, more than 128,000 copies having been circulated in this way. A number of other pertinent papers were also distributed, including an "Open Letter to College Seniors," designed to aid advanced students in the rational choice of a career. The division also cooperated with a committee of the American Association of University Professors in a study of means for increasing the intellectual interests of students.

In conjunction with the Divisions of Medical Sciences, and of Anthropology and Psychology of the Council, the Division of Educational Relations sponsored a survey of American schools for the deaf in 1924 and 1925 which became the starting point of a study of the physical causes of deafness, subsequently carried out by the Division of Medical Sciences, and led to the preparation by the Division of Anthropology and Psychology of an extensive program of studies upon psychological problems of deafness, many of which bear upon the special education of the deaf.

This division is therefore continued in the Council in order to provide an opportunity, as occasion may offer, for the study of similar problems of an educational character in which it may serve as a coordinating agency.

OBITUARY

ALBERT MARTIN BLEILE

THE death of Albert Martin Bleile, which occurred on August 16, 1933, brings to a close the career of one of the pioneer physiologists of this country. Dr. Bleile was born at Columbus, Ohio, on June 26, 1856. In 1876 he graduated from Starling Medical College, with the degree of doctor of medicine. He then went abroad and spent three years in study at Vienna, Leipzig and Paris. During this time he was a student of Professor Carl Ludwig. Upon his return to the United States, he began the practise of medicine, and also accepted the post of lecturer of experimental physiology at the Starling Medical College. At this time there was but one laboratory of experimental physiology in the United States, that of the late Professor H. Newell Martin, which had recently been established at the Johns Hopkins University.

Dr. Bleile's real interests did not lie in the practise of medicine; therefore, in 1891, when he was offered the post of professor of physiology at Ohio State University he gladly abandoned his practise and devoted his full time to teaching and research in the field of physiology. He continued in this position until 1931, when he was retired from active work with the title of professor emeritus, which he held at the time of his death.

Dr. Bleile's researches on blood sugar and the inversion of cane sugar by gastric juice were of fundamental importance and laid the foundation for modern investigation. He also published important work on the cause of death by electric shock, the composition of urine in epilepsy, the effect of section of the vagus nerve on the heart and on the detection and recognition of bloods.

During the latter part of his life he published nothing. This in a large part was due to his feeling that much of the flood of scientific literature was superficial and unimportant, and therefore, his failure to publish was at least in part a protest against such superficial work. However, he was always engaged in some type of experimental work, and was always ready and willing to give advice to his younger colleagues in