But the electrical engineer who was partly responsible for what is called electro-surgery might well feel differently about it, and he was welcome to have a private look if he desired. The letter was returned from Lynn saying that there was no H.F.A.C. Thomson there any longer. There was a Q.F. Thomson who was busy squirting molten quartz on a mirror and who said he didn't recall H.F.A.C's address—only knew him slightly and never thought much of him anyhow.

So you can easily see how difficult it is for a person "representing all the other professions" to speak intelligently and authoritatively of the manifold and shifting interests of an electrical engineer, particularly when his name is Thomson—as it usually is and always should be—and more especially when he alternates from one field of research to another with such astonishingly high frequency. And also how embarrassing it is for an after-dinner speaker to realize that one of these Elihus—quite possibly the one here—not only is familiar with more types of gas than will be turned on to-night, but also invented the first muffler or silencer which by this time he probably wishes he'd brought with him.

But when we actually come to fuse all these Thomsons of our immediate vicinity and to get a composite picture of them, it becomes quite evident that the resultant Elihu is one of those rare men who transcend their own chosen walk in life and who belong to us all. It is not their genius alone which is responsible for this, however rare a gift genius may be and however much it may be envied and admired. It is only when genius is combined with those equally precious qualities of modesty, unselfishness and simplicity—the imponderables of high character and lovable personality—that there emerges from the common herd, from time to time, an occasional man whose life symbolizes for the rest of us, whatever be our profession, something as nearly perfect as one could hope to attain in this fallen world.

A HISTORY OF THE NATIONAL RESEARCH COUNCIL 1919--1933

VI. DIVISION OF MEDICAL SCIENCES[1]

By Professor STANHOPE BAYNE-JONES
CHAIRMAN

WHEN the National Research Council was organized in 1916 the medical sciences were at first represented by two committees: one on Medicine and Hygiene, and one on Research. These committees, like the National Research Council in general, constituted a part of the Division of Science and Research of the Council of National Defense. In February, 1918, a Medical Division was organized in the National Research Council.

During the war the division promoted and aided some forty investigations of industrial and medico-military problems. Although the division had certain funds at its disposal, chief reliance was placed upon the volunteer services of investigators, who patriotically devoted their efforts and facilities to research on problems of immediate interest in connection with the nation's conduct of the war.

After the war, in December, 1918, the division anticipated that its future functions would be: to take part in the correlation of research, to further research directly through grants obtained for the support of selected investigations, to aid the Army, Navy and Public Health Service in the solution of medical problems, and to promote the study of problems of industrial medicine. During the past fourteen years, the actual work of the division has been along the first two lines of anticipated activity. Since the Army, Navy and Public Health Service are provided with their own facilities and have qualified investigators on their staffs, they have not brought their problems to the division. Nevertheless, close and mutually beneficial relations have been maintained between these Services and the Division, providing a valuable exchange of information and a channel for cooperative endeavor whenever the need for it arises. The investigation of problems of industrial medicine and hygiene has not figured as largely in the activities of the Division as was anticipated.

The membership of the Division of Medical Sciences has been composed of the representatives of some fifteen scientific societies in the field of medicine and six or eight members at large. Through them the scientific medical organizations of the country have had a voice in the deliberations of the division and have had a direct influence upon its activities. This relationship with organized associations of scientists has been an important factor in the life of the division.

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

The following persons have served as chairmen since the establishment of the division in 1918:

1918 —R. M. Pearce
1919–1920—Henry A. Christian
1920–1921—George W. McCoy
1921–1922—Victor C. Vaughan
1922–1923—Frederick P. Gay
1923–1924—C. M. Jackson
1924–1925—Ludwig Hektoen
1925–1926—Victor C. Vaughan
1926–1927—Ludwig Hektoen
1927–1928—Howard T. Karsner
1928–1929—William Charles White
1929–1930—Ludwig Hektoen
1930–1931—Edmund V. Cowdry
1931–1932—W. H. Howell
1932–1933—Stanhope Bayne-Jones

Aside from funds for certain salaries and administrative expenses in Washington, the division has no independent source of income. The funds administered by it, under the authority of the National Academy of Sciences, have been received through the Council from donations made by foundations or individuals for specific purposes.

Research projects approved for sponsorship by the division have usually been placed under the charge of special committees. In forming such a committee it has been the custom to enlist the services of the best qualified men in the country, whether or not they happened at the time to be members of the division. This committee then takes charge of the formulation of detailed plans of research, preparation of budgets, allocation of funds to investigators, preparation and issuance of reports and other matters. The committee serves as the active agent of the division and from time to time is called into conference to review and reformulate the work in progress.

During the past fourteen years 29 special committees, in charge of as many different projects, have been established under the division. Some of these committees were never able to function because no funds were obtainable for their work. Others, appointed for advisory purposes, completed their work in the preparation of a needed report. It is apparent from the record that when adequate funds have been available the committees thus supported have been successful in their undertakings. The character of the work done by the division through the financially supported committees is indicated in the following brief reports:

The division was instrumental in securing a fund for the maintenance of the American Type Culture Collection of Bacteria after its transference from the American Museum of Natural History to the Army Medical Museum and thence to the John McCormick Institute for Infectious Diseases in Chicago. At present the division has no connection with the continued maintenance of that collection, but appreciates the valuable services which the collection has rendered to students of bacteria in universities and institutes and to the industrial users of bacterial cultures.

Through a joint committee with the Division of Biology and Agriculture support was obtained for the establishment and work of a commission on the standardization of biological stains. A permanent commission, now functioning independently of the National Research Council, has been of great service to the users and manufacturers of dyes.

Investigation of problems in dentistry has not secured any considerable support through the division. Valuable reports, however, have been prepared on the relation of oral infection to nephritis and on a survey of the field of dental research.

At the request of Dr. Hubert Work, Secretary of the Interior in 1925, a committee of the division prepared for the department a report and plan of investigation of the therapeutic value of the waters of Hot Springs, Arkansas. Although the investigation was not carried out, due to a lack of appropriation of funds, the study given this project by the division was an example of the cooperation with the Federal Government in which the Council and the division were glad to participate.

The division has always had an interest in the study of the effects of climate upon health. During nearly eight years a committee, originally organized in the Division of Biology and Agriculture, considered this subject. Finally funds were secured which made possible a statistical investigation of the daily mortality in New York City in relation to the weather. Another Committee on Climate and Health, recently formed, has not yet obtained the funds needed for its work. The division continues to have a keen interest in physiological climatology and hopes to be able at some time to be of service in the advancement of knowledge of the obviously profound but as yet unmeasured effect of climate upon the welfare and characteristics of human beings.

A joint committee with the Division of Anthropology and Psychology, supported by a small fund, advanced the more general acceptance of a uniform nomenclature of blood groups by giving its support to the Landsteiner or international classification.

For more than ten years the division has been associated with medical, veterinary and bacteriological investigations of undulant fever in man and infectious abortion in swine and cattle. The work has been conducted by a joint committee in cooperation with the Division of Biology and Agriculture. A Central Brucella Station, now semi-independent of the Council,

has been in operation for some time at Michigan State College. Numerous investigations have been made of the bacteriology and chemistry of the organisms in the Brucella group, a collection of cultures of these organisms has been maintained, and a number of publications have been issued. The division would be glad to have the opportunity to expand the program of investigation of undulant fever in man.

A series of publications useful to state and municipal governments and to universities and medical schools has been issued by the division's Committee on Medicolegal Problems. These reports have dealt with workings of the coroner system in this country, the statute laws of coroners and medical examiners, a survey of the law concerning dead bodies, the possibilities and need for the development of legal medicine in the United States, and a report on departments of criminology in our universities. These reports bring together information not previously assembled. They provide a basis for new legislation and new medicolegal education.

After a period of cooperation with the Division of Anthropology and Psychology in the formulation of a very extensive program for the study of deafness and the education of the deaf, the division established a Committee on the Physical Causes of Deafness. During four years the members of this committee and their associates examined 5,000 deaf children. They have published the statistics in two reports, which throw new light upon many of the problems of deafness in children. The reports contain indications of the direction which future investigations might follow to obtain interesting scientific results and an amelioration of the unhappy condition of deaf children. The extension of the studies to include deafness acquired by adults would be highly desirable.

The division has recognized the need for investigation of infections of the nasal sinuses which are responsible for distress and disability in both children and adults. During three years a Committee on Nasal Sinuses has been engaged in this work. In spite of inadequate financial support, this committee has made valuable contributions to the mechanism of ciliary activity, the effects of salt solutions and disinfectants upon ciliated epithelium and the manner in which bacteria and particles are swept from cavities lined by ciliated cells.

A Committee on the Microbiology of the Soil, working in cooperation with the Division of Biology and Agriculture, has undertaken an investigation of the fate of the avian tubercle bacillus in the soil. At present this committee has only small financial resources at its disposal, but it is hoped that support may be obtained to permit it to continue its broadly conceived investigation of the cycles, changes or general fate of pathogenic microorganisms in natural environment outside the animal body.

During the past two years the division has been associated with the Army Medical Museum and clinical societies in the maintenance of an American Registry of Pathology. Case histories, gross and microscopic specimens and photographic material have been collected, chiefly in relation to certain tumors. The results of these collections and summaries and the illustrative material have been made available to surgeons.

Through the efforts of the Committee on Medical Problems of Animal Parasitology an extensive and valuable survey of ascariasis in children has been made in some of the Southern states. The results accomplished have been of real benefit, directly and indirectly, to public health work in this country. State sanitary organizations are continuing along the lines indicated by the findings and practises of this committee.

In January, 1929, a Committee on Drug Addiction was established in the division. The objectives of this committee have been to discover, if possible, a substitute for morphine free from habit-forming properties and to improve the treatment of chronic morphine poisoning and drug addiction in man. Two centers of research have been established, one at the University of Virginia for analytical and synthetic chemical investigation, and one at the University of Michigan for pharmacological testing of substances prepared at the chemical center. In its activity this committee has adopted with success the plan of deliberately establishing and supporting centers for special investigation. It has already greatly increased the knowledge of the chemistry and pharmacology of morphine and its derivatives, of synthetic compounds with possible narcotic and analgesic properties, and is rendering a very general service to alkaloidal chemistry in the United States. With recently renewed support the committee is continuing these studies and is beginning to investigate the problems of drug addiction in man. Throughout its work the committee had had the cooperation of the Public Health Service. The support, assistance and participation in this work given by federal agencies concerned in the narcotic problem in the United States have been invaluable and provide the most advantageous possibilities for future accomplishments.

During the past ten years a large and well-endowed committee of the division has been very active in conducting research in problems of sex. This committee has supported numerous researches, particularly at certain centers where problems of significance in this field were under investigation by competent workers. One evidence of its accomplishment is the publication

during this period of about 500 scientific papers reporting results of work supported by the committee, and a notable recent book on the relation of internal secretions to the phenomena of sex. These researches have played a very important part in the extraordinary advance in our knowledge of reproduction, particularly as regards the sex hormones, which has taken place in the last few years.

Since June, 1922, 198 fellowships in medicine have been granted by the Medical Fellowship Board of the division. The holders of these fellowships have studied in institutions in this country and abroad. According to information obtained by direct inquiry, among 179 past fellows, 154 are now engaged in various forms of teaching and research, mostly in medical schools.

Through the division the Council's Committee on Grants-in-Aid has made 58 grants to individual investigators for research on problems of medical interest. These grants, of relatively small amounts, have supplemented provisions for research at numerous institutions. By encouragement and financial aid they have made possible the initiation or advancement of investigations in the pre-clinical as well as the clinical fields of medicine.

SCIENTIFIC EVENTS

SURVEY OF THE INDIAN OCEAN

A CORRESPONDENT of the London *Times* writes that the plans of the John Murray Expedition, which is to make a survey of the bed of the Indian Ocean, are approaching completion, and Colonel Sewell, until recently director of the Zoological Survey of India, is to settle the final details. The chief difficulty before the committee which is arranging the expedition on behalf of the trustees of the late Sir John Murray was to find a suitable vessel of the trawler type.

An essential feature of modern oceanographical exploration is echo-sounding, the depth of the ocean floor as the ship proceeds on her course being read off in the chartroom. Most available vessels proved quite unsuitable, but the difficulty has been solved by the friendly action of the Egyptian Government in proffering the loan of *The Mabahiss,* a vessel expressly built for fishery investigations. She is a trawler of about 140 feet, with her engines set well aft, built in 1929, and she is to go into dock at Alexandria in July to be fitted with echo gear. The University of Cairo is also undertaking the chemical analyses of the surface waters obtained by the expedition, and is sending two research students to help the British scientific staff in their work.

Captain Mackenzie, formerly of *The Discovery,* is to command *The Mabahiss,* and the sounding gear and all survey work is in the charge of Lieutenant-Commander Farquharson, R.N., who has been seconded by the Admiralty. The other officers and crew will be drawn from the Egyptian service. On the scientific side Colonel Sewell will be assisted by four biologists, of whom two will be mainly concerned with the physical and chemical conditions of the deeper water layers of the Indian Ocean, and two with the zoological side.

The Mabahiss will be commissioned in August, and according to present plans will go direct to the Gulf of Aden, an intensive study of the waters and depths of which will be made. Thence she will run a traverse off the Arabian coast to Karachi, taking water sections and trawling at selected stations. The next cruise will be in the Gulf of Oman.

The second part of the expedition will be mainly concerned with the southern areas, where the Antarctic waters flow to the north and the Indian Ocean waters commence that flow which is farther south known as the Agulhas current. The area south of Sokotra and Cape Guardafui will probably demand particular study, for here during the south-west monsoon are strong currents and confused seas as bad as found in any ocean. Aden should be reached in May, and from thence a direct course will be set to Ghardaga, the marine station of the University of Cairo, and so to the Suez Canal and Alexandria.

The University of Cairo proposes to use *The Mabahiss* in 1934–35 for a national expedition in the Red Sea. She will employ the same methods and gear as on the Murray Expedition, so that all results will be strictly comparable.

FELLOWSHIPS OF THE CHARLES A. COFFIN FOUNDATION

FELLOWSHIPS to nine graduates of technical schools and colleges for the academic year 1933–34 were recently awarded by the Charles A. Coffin Foundation, established by the General Electric Company. The men and the institutions in which they will carry on post-graduate research work, under the terms of these fellowships, are:

Samuel N. Alexander, Oklahoma City, and Philip Nudd, Hampton, New Hampshire, at the Massachusetts Institute of Technology.

William H. Pickering, Los Angeles, and Jesse E. Hobson, Marshall, Indiana, at the California Institute of Technology.

C. Irving Bradford, Newport, New Jersey, and Earl A. Long, Charlotte, North Carolina, at the Ohio State University.

Edward G. Pickels, Richmond, Virginia, at the University of Virginia.