REPORTS

APPROPRIATIONS OF THE ROCKEFELLER FOUNDATION FOR THE MEDICAL AND NATURAL SCIENCES IN 1939[1]

THE MEDICAL SCIENCES

GRANTS in the medical sciences made by The Rockefeller Foundation in 1939 fall into three general groups: new appropriations in the field of psychiatry; renewals or extensions of earlier appropriations in this field, and new appropriations or renewals in support of other phases of medical research and teaching not closely related to psychiatry.

Among new appropriations in psychiatry, $106,080 was given to the University of Toronto for research on carbohydrate metabolism as related to mental disease, a joint enterprise of the Psychiatric Clinic and the physiologists of the Banting Institute, who are particularly qualified in the studies of insulin. To the Catholic University of America $85,000 was appropriated for the teaching of abnormal psychology and child psychiatry to Catholic teachers and social workers, both lay and clerical. An appropriation of $17,150 was made to the Dikemark Mental Hospital in Norway for biochemical studies of the insane. Each of these three grants was for five years or more.

Renewal of support previously given by the Foundation to psychiatric research was made to departments of psychiatry at Johns Hopkins, Harvard, Institute of the Pennsylvania Hospital, University of Illinois, University of Colorado, Tulane University, University of Oxford, University of Lund (Sweden), University of Brussels, the Tavistock Clinic (London) and to the Boston State Hospital. These 11 grants, averaging about three years in duration and approximately $37,000 in amount, involved a total of $404,750. In judging the relatively short duration of these grants, it should be noted that the Foundation had already given aid to these 11 undertakings over periods of time averaging more than four years.

Outside the program in psychiatry some relatively large grants were made in 1939 to a variety of undertakings. A conditional appropriation of $400,000 was made to Harvard University for the endowment of its School of Dental Medicine, toward which the Carnegie Corporation has pledged $650,000. This appropriation of the Foundation becomes effective when from all sources the total increase in the endowment of the school reaches $2,550,000.

For the development of an adequate department of preventive medicine and public health in the Johns Hopkins School of Medicine, an appropriation was made of $350,000, payable at the rate of $35,000 a year for ten years. Continuation of studies in endocrinology at Yale and the University of California was provided for by grants of $36,000 and $75,000, respectively. Psychological research under the direction of the Child Research Council of Denver was aided with a grant of $19,200 available over a period of six years. For the maintenance of the National Committee of Maternal Health, an independent organization selecting and administering research projects in the fields of reproduction and sex phenomena, $12,000 was appropriated over a two-year period. Support in the amount of $42,000 was renewed for a three-year period for studies in the constitutional aspects of disease, under the direction of Dr. George Draper at the School of Medicine of Columbia University. The sum of $15,000 was contributed to the development of legal medicine at Harvard over a three-year period. Two appropriations were voted of fluid research funds from which allocations are to be made by the recipient institutions to investigators and projects which they themselves select: one to the Johns Hopkins School of Medicine in the amount of $15,000 a year for six years; and one to the Medical Research Council of Great Britain for research in endocrinology, psychiatry, neurology and allied subjects, in the amount of $10,000 a year for five years.

THE NATURAL SCIENCES

As has been stated, the present program of the Foundation in the natural sciences places primary emphasis on experimental biology. This program is based upon the conviction that man will profit enormously from a deeper and clearer understanding of the phenomena of life. It is particularly concerned in helping to bring to bear upon these complicated and subtle problems all the battery of modern precision techniques. It is interested in the way inheritance operates, in the way cells grow and divide, in the way genetic characteristics find their physiological expression, in the physical and chemical control of growth and development, in the biochemical aspects of nutrition and in a variety of other matters involved in understanding the details of life processes.

One group of 1939 appropriations was related to the application of chemistry to biological problems. A five-year grant was made to the University of Utrecht for research under Professor F. Kögl on the biochemistry of growth substances. Two grants were made to the University of Minnesota: one provides assistance over five years to Professor G. O. Burr for studies of certain substances (lipids) which play a vital role in

[1] From the annual review of the president of the Rockefeller Foundation, Dr. Raymond B. Fosdick.

cellular activities; the other gives aid over three years to researches under Professor M. V. Visscher on the mechanism of osmosis in living systems. To the Johns Hopkins University a four-year appropriation was made for a group program on the chemical structure of biologically important compounds. To Oxford University funds were voted to build an extension to the research laboratory of organic chemistry under Sir Robert Robinson. The five appropriations in this group totaled $197,875.

A second group of appropriations emphasized the application of physics to biological problems. Funds were given to Washington University, St. Louis, to construct a cyclotron which will be used in biological and medical experimentation; and a three-year grant was made to Professor Lawrence's group in support of similar activities at the University of California. A three-year grant to the University of Chicago is assisting studies in molecular spectra, under Professor R. S. Mulliken. The Memorial Hospital of New York received a grant covering three years, for research in the spectroscopic aspects of anemia, under Dr. C. P. Rhoads. The four grants in this group totaled $149,000.

Two grants were made in the field of genetics. The University of Missouri, where there has been an important recent development in this subject, was assisted in building a research laboratory of genetics, and was given a five-year grant toward its research program. An appropriation covering five years was made to Brown University to aid the genetics researches of Professor P. B. Sawin. These two grants totaled $109,000.

A five-year grant to the biology group at Amherst College also involved support of genetics, as well as of experimental embryology and growth studies. Such assistance to groups or departments, in contrast to support of specific projects, has been an important part of the division's program. Thus during 1939 a ten-year grant was made in support of research in biology at Stanford University. Also involving assistance to a group activity was a grant in support of the Cold Spring Harbor symposia on quantitative biology. The appropriations in this classification totaled $242,500.

Emphasis on several interests of the Foundation was included in a grant of $224,000 in support of further activities of the Yale Laboratories of Primate Biology. A minor portion of this sum covered the cost of erecting and equipping a small new physiological laboratory at Orange Park, Florida, where there are already located extensive facilities for breeding and rearing chimpanzees for research purposes. The remainder of the grant will contribute, over a five-year period, to the support of a general program in which these animals, so close to man in many important regards, are to be utilized in the study of a wide range of physiological, psychobiological, neurological, nutritional, serological and biochemical problems.

In addition to these appropriations, funds were voted to the National Research Council in support of its general budget (61,956.54) and of its fellowship program ($180,000).

Once during the year an appropriation was made for a purpose somewhat removed from the program of the Foundation in the natural sciences under its policy of concentration. Political interference in Germany having threatened the integrity of the leading world journal for abstracting mathematical literature, a grant was given to the American Mathematical Society to aid in the founding of such a journal in the United States. The editorial offices of this new journal are at Brown University. A second grant was made for the establishment of a microfilm laboratory at Brown, through which an important microfilm service in mathematics has been set up in conjunction with the new journal. These two grants totaled $61,500.

SPECIAL ARTICLES

ASSOCIATION OF THE HETEROGENETIC ANTIGEN WITH A MATERIAL IN NORMAL AND TUMOR TISSUES SEDIMENTABLE AT HIGH SPEED[1]

THERE have been numerous investigations[2, 3, 4] on the nature of the substances in tissues of different species and in micro-organisms which have the ability to produce hemolysins in rabbits against sheep erythrocytes. The procedures applied to the characterization of these substances were usually drastic and yielded no precise information concerning the antigenic substances as they occur in tissues although they contributed greatly to the knowledge of its hapten, that is, the part of the molecule determining immunological reactivity.

Studies on the nature of agents producing leukosis and sarcoma of chickens have shown that they can be sedimented in the ultracentrifuge at 27,000 rpm for one hour and are associated with a normal substance which has approximately the same sedimentation rate.[5, 6, 7] Immunological studies failed to show dif-

[1] These studies have been supported by the Jane Coffin Childs Memorial Fund, the International Cancer Research Foundation and the Anna Fuller Fund.

[2] K. Landsteiner, "The Specificity of Serological Reactions," C. C Thomas, Springfield, Illinois, 1936.

[3] F. E. Brunius, Dissertation, Stockholm, 1936.

[4] H. Schmidt, "Die Heterogenetische Hammelblut Antikörper und Ihre Antigene," Leipzig, 1924.

[5] A. Claude, SCIENCE, 90: 213, 1939.

[6] K. G. Stern, *et al.*, SCIENCE, 89: 609–610, 1939.