tions. The 50,000 abstracts in hand editorially for the year 1931 and the indices in arrears can not all be published without more money from this source. Every dollar received from additional subscriptions will count toward current publication as well as in support of the solicitation of permanent endowment for editorial costs.

A campaign of publicity and of advertising for subscriptions is being initiated, but thirty societies in a union present a difficult problem as compared with the situation of the chemists with a single society. The Union of American Biological Societies has undertaken to support this campaign as the most effective means of increasing the subscription list. Thus, editorial costs are paid by subsidy, printing by subscriptions, and selling costs in the present emergency will be paid by the union. The funds of the union are derived from contributions by member societies. These funds must be voted, and most of the societies do not have business or executive committee meetings until next December. Hence we are especially in need of every dollar that can be obtained within the next six months. The original financing of the union came in part by contributions of from one to ten dollars from individual biologists. It is thought that many will wish to contribute in the present emergency. Checks should be sent to A. L. Quaintance, treasurer, Silver Spring, Maryland. The officers of the union also urge every biologist to use his best efforts in securing additional individual subscriptions at $9.00 and institutional subscriptions at $15.00.

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Executive Committee, Union of American Biological Societies

REPORTS

COMMITTEE ON EFFECTS OF RADIATION UPON ORGANISMS OF THE NATIONAL RESEARCH COUNCIL

THE organization and initial activities of this committee were reported in SCIENCE, January 4, 1929. A statement of its policies and of assistance rendered to investigators during the first two fiscal years of its existence, 1929–30 and 1930–31, may now be recorded.

The general policies announced in the report above cited have been in practice with modification of details as experience has shown desirable. The funds are handled by the methods current with the Research Council. Investigators have been informed and applications invited by periodic advertisement in SCIENCE, as with the National Research Council Fellowships and by other justifiable publicity. Reports of progress and copies of published papers are submitted annually for current information of the committee by each investigator assisted. On March 1, 1931, there were 27 titles thus recorded.

Although dealing with the effects of physical agencies, the committee has been composed of individuals who are primarily biologists. The advice of physicists has been sought informally as seemed desirable. For purposes of cooperation, the addition of a physicist recommended by the Division of Physical Sciences of the Research Council has been arranged. By this means we shall obtain advice that is often needed and also cordial support from another division of the council.

Donations of money totalling $25,000 per year by the Commonwealth Fund and the General Education Board and gifts of money and apparatus were mentioned in the earlier statement. Experience shows that for legal and practical reasons large sums of money can not be expected from manufacturing organizations for work of this character. The current industrial depression is also a deterrent factor. Nevertheless, the committee has received $6,300 from this source. It is another matter with apparatus. This has been freely donated, and there is a list of over twenty-five cooperating industrial organizations. These contributions of apparatus are received in various ways now that the system is well in action. Under one arrangement the donation is outright and title to the apparatus rests with the Research Council. Assignment is made year by year with the expectation that title will ultimately be transferred to some institution where the use will be permanent and effective. In other cases the manufacturers loan directly to the investigator upon recommendation of the committee for as long a period as may be required. This method is simpler in administration since it does not involve the Research Council in matters of title and consequent responsibility. Or the manufacturer may donate to the institution in which the investigator is located. In practice it has been found impossible to keep an exact account of the apparatus made available under these diverse conditions, but it represents a large sum and there is reason to believe that support of this nature will be forthcoming throughout the period of the committee's activities. In addition to assignment of apparatus there is often opportunity to introduce investigators to the research laboratories

of industrial establishments from which advice and other assistance may be given.

The efforts of the committee with regard to apparatus are being directed not only toward the furnishing of needed equipment to the individual, but toward its more economical and effective use. Biologists often encounter difficulties in the operation of complicated physical instruments. These should really be in the hands of physicists and technically trained physical rather than biological assistants. The x-ray apparatus at the Marine Biological Laboratory is an example. For several years this was in charge of a biologist who had special qualifications. It was as well managed as could have been expected by one not a physicist, but the operation of such apparatus at the seashore is troublesome and during the summer of 1929 increasing difficulties were encountered. In 1930 it was possible, by a cooperative arrangement, to place the apparatus in charge of Dr. Failla, of the Memorial Hospital in New York City. During June, July and August, Dr. Failla was in residence at Woods Hole as an investigator and as an adviser to those who desired his assistance in the use of radium or x-rays. The arrangement will probably be continued by the committee in 1931.

Assistance in both apparatus and money is given to individuals rather than institutions, but the importance of the Marine Biological Laboratory and the Cold Spring Harbor Biological Laboratory as centers to which investigators are drawn is such that these institutions may be considered apart. With Dr. Fricke at Cold Spring Harbor throughout the year and Dr. Failla at Woods Hole during the summer, many investigators can be served in the manner indicated. The committee has, therefore, felt it desirable to support these two laboratories in every way possible by grants of apparatus and the manufacturers appear to be quite appreciative of the situation.

In considering the relative merits of different investigations it was felt that something like a "survey" of the present status of research upon the effects of radiation upon organisms might be undertaken for the better guidance of our subcommittee on allotment and for information of the standing committee in any solicitation of additional support or other contacts. A subcommittee on survey was accordingly established and brought together in March, 1930, in Washington. As the field is diversified this subcommittee includes the following general interests:

Genetics: A. F. Blakeslee, Carnegie Institution; L. J. Stadler, University of Missouri.

General Physiology: Janet H. Clark, Johns Hopkins University; Max Ellis, University of Missouri; S. O. Mast, Johns Hopkins University.

Development: E. E. Just, Howard University.

Plant Physiology: C. Stuart Gager, Brooklyn Botanic Garden; W. W. Garner, U. S. Department of Agriculture; H. W. Popp, Pennsylvania State College; B. M. Duggar (*chairman*), University of Wisconsin.

On the zoological side this subcommittee divided the field in the manner indicated, and on the botanical side into four divisions for problems especially related to plants. It was thought that the most satisfactory way to begin such discussion would be to bring together as advisers to the subcommittee investigators in the several fields, but to do this at a time when other business was not at hand would be expensive. A meeting of such individuals interested in *development* was held at Woods Hole in August, 1930, without expense. On November 1 and 2, 1930, a meeting for *Genetics* was held in St. Louis, through generosity of the General Electric X-ray Corporation. With a few exceptions this meeting, which lasted a full two days, was attended by all the leading investigators in this country now interested in the effects of radiation upon heredity. Although the meeting resolved itself into accounts of each man's work, followed by informal discussion, and was seemingly more profitable to the individuals concerned than to the committee, there has resulted a clarification with reference to future distribution of support and there seems no question of the stimulus to the participants, since they exchanged ideas in a way that is never possible at the annual meetings of a scientific society.

For *General Physiology* a meeting was held in Washington on November 8. In this case the financing was provided by joint contributions from the General Electric, Cooper-Hewitt, Westinghouse and Burdick Companies. It was attended by about thirty individuals, including representatives of clinical medicine and of the manufacturers. Here again individuals discussed their work, although in more general terms than the geneticists. The effects of x-rays and radium and of ultra-violet light were especially considered. The latter problem is of great interest to manufacturers at the present time because there is no adequate evidence from animal experimentation to support the belief of many clinicians in the efficacy of ultra-violet in general therapy, although in the specific instance of rickets these rays are unquestionably effective. If it can be shown beyond question that ultra-violet thus affects the general health and resistance of human beings, there are great possibilities for its commercial exploitation in artificial illumination. Some of those present, whose competence could not be questioned, felt obliged at this meeting to tell our friends among the manufacturers that the experimental evidence on animals is still inconclusive, save in the case of rickets, and that clin-

ical interpretations of results on human beings are open to serious criticism. But there remains a residue of clinical observations that justify further study, alike for their scientific importance and for their commercial possibilities. The fact that so wide a range of wave-lengths have been involved in most research upon effects of ultra-violet light may account for conflicting observations, if it can be shown that some wave-lengths in this series are beneficial to man and the higher animals while other lengths are ineffective.

For *Plant Physiology,* meetings were made possible in Washington on March 14 and 15, 1930, by the committee on grants-in-aid of the Research Council, with an attendance of about twenty-five individuals. The results of the discussions in all these gatherings will be assembled for the confidential use of the committee on radiation and for other purposes, including, no doubt, ultimate publication of certain derivative material of value to investigators.

Grants during the period of January 1, 1929, to June 30, 1931, may be summarized as follows:

Some 32 investigators have been assisted with money and many of these have also received apparatus; 9 have received apparatus only; 4 have been loaned for extended periods the 125 milligrams of radium placed at our disposal by the Radium Chemical Company; 17 of the above 32 investigators received grants for both 1929–30 and 1930–31; 15 received a grant for only the first of these years or for the first time in 1930–31. The total amount of these grants to June 30, 1931, is $53,315.73. The amounts in single grants during the two and one half years since January 1, 1929, include: 1 for $2,100; 8 for $2,000; 4 for $1,800; 1 for $1,750; 1 for $1,170; 1 for $1,600; 1 for $1,500; 1 for $1,250; 2 for $1,200; 4 for $1,000; 2 for $900; 3 for $800; 6 for $750; 5 for $500; 1 for $400; 6 for $300; 1 for $200; 1 for $150; 2 for $100.

In preparing this statement attention has been drawn to the titles listed on the program of the principal organization of American geneticists at the scientific meetings in Cleveland, December 29, 1930, to January 2, 1931. Papers by individuals who have been substantially assisted by the committee constituted a relatively large fraction of this program. In addition to Blakeslee, Muller, Patterson, Stadler, Weinstein and Whiting, there appear the names of several students introduced by these individuals. This may be cited as an example of the wide-spread influence of the committee in one of the principal fields in which it is supporting investigation.

W. C. CURTIS,
Chairman

SOCIETIES AND ACADEMIES

THE IOWA ACADEMY OF SCIENCE

THE forty-fifth annual meeting of the Iowa Academy of Science was held at Davenport, Iowa, at the Davenport Public Museum and Saint Ambrose College on May 1 and 2 with 203 members and visitors in registered attendance.

The president's address, "Some Remarks on Mathematical Statistics," was given by Dr. H. L. Rietz, of the State University of Iowa, after a welcome by Mr. E. K. Putnam, the director of the Davenport Public Museum, and Fr. Martin Cone, president of Saint Ambrose College. The address, presented by the academy to the citizens of Davenport, was made by Dr. M. F. Guyer, chairman of the department of zoology at the University of Wisconsin, on "Internal Secretions and Human Well-being."

A grant from the academy research fund was made to Professor H. E. Jaques to help carry on an entomological survey of the State of Iowa.

The academy approved the organization of a junior academy of science, composed of high-school science clubs, which would be affiliated with the senior academy. A provisional constitution was approved and the furtherance of the movement was placed in the hands of a committee on high-school relations.

Officers and section chairmen for the year 1931–32 were elected as follows:

President, J. E. Lees, Des Moines.
Vice President, H. E. Jaques, Mt. Pleasant.
Treasurer, W. F. Loehwing, Iowa City.
Editor, G. H. Coleman, Iowa City.
Secretary, J. C. Gilman, Ames.
Representative of the American Association for the Advancement of Science, C. W. Lantz, Cedar Falls. The new chairmen of sections are: Botany, G. W. Martin, Iowa City. Chemistry, inorganic and physical, T. H. Liggett, Pella. Chemistry, organic and biological, H. A. Mattill, Iowa City. Geology, E. J. Cable, Cedar Falls. Mathematics, C. W. Strom, Decorah. Physics, T. C. Poulter, Mt. Pleasant. Psychology, T. F. Vance, Ames. Zoology, R. L. Abbott, Cedar Falls.

Botany Section: E. W. Lindstrom. Twelve papers were presented before this section, some of which were of sufficient general importance to merit attention. W. E. Loomis and K. H. Burnett reported on the photosynthetic efficiency of maize, using field plants from which certain parts (leaves or ears) were removed. Soil aeration of experimental plants was found by W. F. Loehwing to exercise a profound effect on root growth and on general plant growth