carry their current membership cards when attending meetings, and to be prepared to show them to museum attendants if requested to do so.

REPORTS received by the editors of *Chronica Botanica* stated that the collection of cultures of the Central Bureau of Fungus Cultures in Baarn, Holland, is in excellent condition and has not been damaged by the war. Shortly before the invasion of the Netherlands tentative plans had been made to transfer part of this collection to the United States, as it contains many types of great importance to American mycologists and phytopathologists.

ACCORDING to the *Journal* of the American Medical Association, the medical department of the University of Chicago eventually will receive all of the estimated $100,000 estate of the late William O. Oppenheim. Under a trust established by the will, the income will go to relatives during their lifetime.

IT is reported that the construction of a new library in the Harvard yard, to house rare books and manuscripts and to provide exhibition and study rooms for important collections, will be begun this autumn. The new building, 55 by 120 feet, will be situated east of Widener Library. It will be of Georgian style, brick and limestone, three stories above ground, housing more than a quarter of a million volumes. The structure has been made possible through the support of an anonymous alumnus. One of the most important collections of sixteenth and seventeenth century material in the United States, now in Widener Library, and all the books in the Treasure Room will be moved there. This transfer will relieve in part the critical shortage of space in the library.

NOMINATIONS are solicited for the 1941 award of $1,000 established by Mead Johnson and Company to promote researches dealing with the B-complex vitamins. The recipient will be chosen by a Committee of Judges of the American Institute of Nutrition and the formal presentation will be made at the annual meeting of the institute at Chicago on April 16, 1941. The award will be given to the laboratory or research worker in the United States or Canada who, in the opinion of the judges, has published during the previous calendar year the most meritorious scientific report dealing with the field of the B-complex vitamins. Membership in the American Institute of Nutrition is not a requisite of eligibility for the award. Nominations for work published in 1940 must be in the hands of the secretary by January 25, 1941. They should be accompanied by such data relative to the nominee and his research as will facilitate the task of the committee in its consideration of the nominations. Correspondence should be addressed to Dr. L. A. Maynard, secretary of the American Institute of Nutrition, Laboratory of Animal Nutrition, Cornell University, Ithaca, New York.

THE *Journal* of the American Medical Association states that the Chicago Heart Association, Inc., has received from the Clara A. Abbott Trust a gift of $27,000 to be added to the Memorial Fund founded in memory of Morris Fishbein, Jr. The money is to be used either by itself or with other funds of the society for the study and treatment of diseases of the heart and the circulation. A fellowship is to be established in a hospital or medical school in Chicago, which will be devoted primarily to the study of the cause and treatment of rheumatic fever. The Clara A. Abbott Trust has already donated millions of dollars to the University of Chicago, to Northwestern University and to the Evanston Hospital, since the purpose of the Clara A. Abbott Trust is to aid the care of the sick and the advancement of medical science. The Memorial Fund of the Chicago Heart Association, now almost $40,000, was established in 1929 by Dr. Morris Fishbein, editor of the *Journal* of the American Medical Association, and Mrs. Fishbein, at the time of the death of their son from rheumatic fever. The fund is administered by a self-perpetuating committee of five, including Drs. Robert B. Preble, Newell C. Gilbert, James B. Herrick, Walter W. Hamburger and Morris Fishbein.

THE *Lancet* reports that the outbreak of war had an unfortunate paralyzing effect on organized medical research, more particularly on the work of the special institutes in London whose staffs were dispersed to the various sectors or to emergency public-health laboratories throughout the country. The Lister Institute, with the exception of its biochemical and biophysical departments, shared in the general exodus, but it had at Elstree a country home for its bacteriological staff, the division of nutrition was accommodated at Cambridge, while individual members of the staff found refuge in other research institutes. As a result, the latest annual report, giving an account of the extensive researches in bacteriology, nutrition and biochemistry of the institute, bears little imprint of disorganization.

DISCUSSION

EDUCATION AND PARTICIPATION IN SCIENCE

LAYMEN scientists or amateurs from time to time have made important contributions to research in the physical and natural sciences. Such persons, although lacking professional training, often become experts in their field and learn the spirit and method of science through actual apprenticeship. To test the effective-

ness of such work on the part of amateurs, as well as to bridge the gap between the general public and pure research, has been the purpose of a program in the Philadelphia area conducted by the Committee on Education and Participation in Science under the supervision of The American Philosophical Society since June, 1939. The grant from the Carnegie Corporation of New York, which has made this work possible, was renewed to extend until June, 1941. The members of the society who comprise the committee are: Dr. E. G. Conklin, *chairman;* Dr. Anton J. Carlson, Dr. Karl K. Darrow, Dr. Luther P. Eisenhart, Dr. C. E. Kenneth Mees, Dr. Oscar Riddle, Dr. Harlow Shapley, Dr. George G. Simpson, Dr. W. F. G. Swann, Dr. Edward L. Thorndike, Dr. Harold C. Urey and Mr. Roland S. Morris, president of the American Philosophical Society. For the past fourteen months, the committee has made an intensive survey of the amateur scientific movement through both questionnaires addressed to individuals and a study of amateur clubs and societies. The results of this work are now being prepared for publication in the form of a pamphlet entitled, "The Layman Scientist in Philadelphia: A Directory of Amateur Scientific Organizations and Resources in Science."

More recently, beginning April 1, 1940, a series of programs has been carried out by the committee whereby amateur scientists in the Philadelphia area, working on a voluntary basis, are making original observations and compiling data in the fields of botany, climatology, physics and radio, and zoology under the supervision of professional scientists. These consultants are attached to the committee's executive staff. In botany, eighty laymen observers in suburban localities near Philadelphia have been engaged in a phytophenological study. In the course of this work they have recorded, in systematic form, the opening of petals, the shedding of pollen and the maturing of fruit of some 115 of local spring and summer wild flowers. The records included weather observations and other notes which were made on mimeographed charts supplied by the committee. The study was planned and directed by Dr. John M. Fogg, Jr., assistant professor of botany of the University of Pennsylvania and consultant to the committee. At the same time, another group of men and women, under the supervision of Dr. Edward E. Wildman, of the Philadelphia Board of Education and also a staff member, are participating in a study of tree ring growth in relation to the climate of the Delaware Valley included in eastern Pennsylvania, southern New Jersey and parts of Delaware and Maryland. Over one hundred individuals have already supplied data on the location of stumps and cross-sections of trees one hundred years or more in age. Some of the participants have made paper strip records indicating the relative thickness of the growth rings, not only in tree stumps but of the cross-sections from timbers of ancient dwellings. It is planned that the information will be collected and used in the compilation of master charts which will be available for study by professional dendrochronologists. The committee issues, from time to time, a mimeographed "Tree Ring Log" which contains letters and notes from the amateurs engaged in this project as well as information concerning old diaries, letters and newspaper accounts which reveal the past weather history of the Philadelphia region and which are being uncovered by volunteer students.

Radio communication and a phase of its relation to physics concerns the third project for laymen volunteers. This program, under the direction of Dr. Serge A. Korff, of the Bartol Research Foundation and consultant in physics and astronomy to the committee, involves a study of the ionosphere or Heaviside layer. Amateur radio operators who agree to cooperate filll out charts with technical information concerning receptions, fade-outs, skip-distance records and other data obtained in the course of their normal contacts. More than two hundred persons have commenced active participation in this study and have sent in several hundred important records. One member of the group contributed many hours of his time in compiling the data already accumulated, which will eventually be used in the ionosphere investigations carried on by Dr. L. V. Berkner, of the Carnegie Institution of Washington.

A fourth experiment for the Philadelphia amateurs has been undertaken in the field of zoology under the leadership of Mr. Roger Conant, of the committee's executive staff, who is also curator of the Philadelphia Zoological Garden. During the past summer some thirty amateur naturalists have made intensive local studies of reptiles, amphibians and insects by tagging or otherwise marking them and studying their feeding, growth, mating and other habits. In some cases these studies have involved the devising of original techniques on the part of the volunteers. Frogs and turtles have been the animals most frequently employed.

In all these programs the work has been entirely voluntary. Close touch is kept with the various persons who cooperate and informal meetings and discussions are held by the scientists of the committee's executive staff who supervise the projects. The volunteers represent dwellers in urban and suburban communities with varied occupations and interests, including business men, stenographers, engineers, housewives, teachers and others. The amount of time devoted to this work attests to the enthusiasm which has been aroused. Many of the persons taking part have expressed their satisfaction in being permitted to do experimental work in some field of science, even if the duties often

comprise the laborious one of making detailed observations and recording data. Since June, 1940, four radio talks have been presented by the consultants of the executive staff. These talks on various phases of the committee's programs for amateurs included two nation-wide broadcasts in cooperation with the series of "Adventures in Science" of Science Service on the Columbia Broadcasting System. One result of these talks and other forms of publicity has been an increasing interest in amateur scientific programs for other sections of the country. Starting in October the committee will resume the monthly publication of its circular, "Activities in Science in the Philadelphia Area," which lists a variety of educational opportunities in the physical and natural sciences, such as lectures, demonstrations, field trips, exhibits and radio broadcasts. It also includes notices of the regular meetings of the forty amateur scientific societies in the region. An interesting development of the activities of the committee has been the formation of the Philadelphia Council of Amateur Scientists which will hold its first formal meeting on September 23. Delegates from all the active groups will be present.

Further information concerning the American Philosophical Society's Committee on Education and Participation in Science can be obtained from W. Stephen Thomas, Executive Secretary of the Committee, The American Philosophical Society, 104 South 5th Street, Philadelphia, Pennsylvania.

W. STEPHEN THOMAS

VEGETATION TYPE MAPS OF CALIFORNIA AND WESTERN NEVADA

IN order to obtain information needed in a variety of administrative and research problems, the Forest Survey Division of the California Forest and Range Experiment Station[1] has for some years been mapping the natural vegetation resources of California and western Nevada. Twenty-one of the map units have been published to date.[2] Each unit consists of a standard 15- or 30-minute U. S. Geological Survey topographic quadrangle (approximately 1- or ½-inch to the mile, respectively) on which symbol and color overprints have been placed to show, as far as the base permits, the present dominant vegetation just as it occurs on the ground. On wide margins are the legend; brief descriptions of the type classification basis and the various types found on the quadrangle; a table summarizing the type areas by counties, national forests and parks; and a profile illustrating the relationship of types to elevation and slope exposure.

Plant associations, based upon dominant species composition, comprise the primary vegetational elements mapped. These are shown in their actual relation to the topography, with symbols identifying the species involved. Any species is considered a dominant if it forms 20 per cent. or more of the total vegetation cover in associations that are wholly herbaceous, shrubby or arborescent; or like percentages of its respective class in composite associations. These percentages are applied only to the vegetation visible from above, however, since the mapping is done externally. The associations are segregated according to general similarities of use, economic importance and fire-hazard characteristics into broad types, which are designated by colors. Three of these types are classed as herbaceous, 5 as shrubby, 4 as broadleaved tree, and 10 as coniferous tree. Also shown are barren, semi-barren and desert areas, cultivated and urban lands and tree plantations.

A considerable amount of basic information concerning the present vegetation resource is thus made available for ready use. The color designations alone are ample for many purposes in which only broad classes of vegetation are involved. If it should be necessary to modify the grouping or to obtain certain details of species composition, the individual associations and their included symbols may be used. In either case the distributions may be studied in relation to location and area occupied, elevation and slope exposure. Although successional positions are not directly indicated, a knowledge of the ecological relationships of the local flora will provide the clues for such a classification.

This flexibility opens up a wide range in usefulness. In California, the maps have had important parts in many projects dealing with the protection, management and utilization of the resource they depict, and in botanical, zoological, ecological and geographical studies as well. For classroom study and demonstration their use has been wide-spread. As the significances of the different elements making up the resource become better understood, these and other uses will grow. Whatever may be lost through lack of agreement with actual conditions after vegetational changes have occurred will be more than compensated by the increasing value of a record against which conditions of the future may be compared.

Other maps of this series will be published as rapidly as funds become available for that purpose.

H. A. JENSEN

CALIFORNIA FOREST AND RANGE EXPERIMENT STATION

[1] Maintained by the U. S. Department of Agriculture at Berkeley, Calif., in cooperation with the University of California.

[2] Obtainable at the cost of printing from the University of California Press, Berkeley, Calif.

SEX VARIATION IN THE UTILIZATION OF IRON BY ANEMIC RATS

IN the issue of SCIENCE for June 28, 1940, Dr. Mary Swartz Rose calls attention to our article entitled