ditions on dairy farms and the numbers and species of bacteria found in milk. The examination of municipal milk supplies for bacteria was directly stimulated by his work in showing the relationship of bacteria to the sanitary character of milk.

He was the founder and first president of the American Society of Bacteriologists. He was for many years a very active member of the American Public Health Association. During his latter years he became closely identified with the work of the New York Milk Committee as a member of the commission on milk standards appointed by that committee. While this commission was composed of twenty of the men most prominently identified with the improvement of municipal milk supplies in the United States and Canada, no member of the commission was more interested in its work or devoted more time to the same than Professor Conn. Through the work of this commission he recognized that many of the principles which for years he had been advocating could be put into practical operation. Among these he was most interested in the establishment of uniform laws and regulations for the control of public milk supplies through state and municipal authorities.

While Professor Conn's name will always be more closely identified with milk sanitation than with any other single subject, his work covered a much broader field. He was the author of numerous pamphlets and books on subjects related to biology and bacteriology. His textbooks on elementary bacteriology, hygiene and physiology are widely used by the public schools throughout the United States. His books on evolution were the first to put in clear and popular language the more important features of the philosophy of Spencer and Darwin and the modern theories on this same subject. His position as director of the laboratories of the State Board of Health of Connecticut, which he occupied during his latter years, brought him into contact with every phase of public-health work. He became identified in this way with the improvement of the sanitary condition of water supplies in the state of Connecticut, and with the supervision of oyster beds. His knowledge and experience in the bacteriology not only of milk but of these other subjects led to his appointment as a member of the committees appointed to establish standard methods for the laboratory examinations and sanitary standards for their control.

As a man, he was always genial and easy to approach, and ready to give freely of his time for the discussion of public-health work. His many scientific associates recognized in him one who could be always relied upon to carry out more than his share of any work assigned to him. This activity he preserved to the last. His high personal standards of integrity and conscientiousness led him to be an ardent advocate of higher professional standards in public-health work, and to take an active part in the movement recently organized to secure fuller recognition of public-health service as a profession. The last work in which he took part before his death was as a member of the council of the newly organized American Academy of Public Health. His death was sudden and entirely unexpected not only by his associates, but by his immediate family. His personality and his numerous activities will make his loss deeply felt by the many organizations and scientific men with whom he has been associated. While carried away with his work still incomplete, he leaves behind him work already accomplished of such great importance not only to science, but to humanity, that it is a contribution that will endure.

C. E. N.

THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

REPORT OF THE COMMITTEE ON GRANTS FOR RESEARCH

By the settlement of the Colburn estate in 1916 the American Association for the Advancement of Science received cash and securities valued at about $76,000, bequeathed by Richard T. Colburn, a fellow of the association, the income of which is to be devoted "to original research in the physical and psychic

demonstrable sciences." The association had accumulated a fund of about $25,000, mainly from the fees of fellows, life members and members. The income from these funds being available for grants for research, the sum of $4,000 was, at the New York meeting of the association, on the recommendation of the treasurer, set aside for this purpose by the council, to be expended during the year 1917. The following committee on Grants for Research was at the same time appointed: E. C. Pickering, astronomy and mathematics, *chairman;* Henry Crew, physics; E. C. Franklin, chemistry; R. T. Chamberlin, geology and geography; W. B. Cannon, zoological sciences; N. L. Britton, botanical sciences; J. McKeen Cattell, psychology and anthropology, *secretary.*

This committee, after a considerable amount of correspondence, met in Washington on April 15 and 16, there being present Messrs. Pickering, Cannon, Crew and Cattell; Mr. R. A. Harper was present to represent Mr. Britton for grants in botany. The following general rules of procedure were adopted, based on the report of the committee on the Colburn and other research funds, presented by Mr. Pickering to the committee on policy at its meeting in New York on September 30, 1916:

1. Applications for grants may be made to the member of the committee representing the science in which the work falls or to the chairman or secretary of the committee. The committee will not depend upon applications, but will make inquiry as to the way in which research funds can be best expended to promote the advancement of science. In such inquiry the committee hopes to have the cooperation of scientific men and especially of the sectional committees of the association and of the subcommittees of the Committee of One Hundred on Research of the association.

2. The committee will meet at the time of the annual meeting of the association or on the call of the chairman. Business may be transacted and grants may be made by correspondence. In such cases the rules of procedure formulated by Mr. Pickering and printed in the issue of SCIENCE for May 23, 1913, will be followed.

3. Grants may be made to residents of any country, but preference will be given to residents of America.

4. Grants of sums of $500 or less are favored, but larger appropriations may be made. In some cases appropriations may be guaranteed for several years in advance.

5. Grants as a rule will be made for work which could not be done or would be very difficult to do without the grant. A grant will not ordinarily be made to defray living expenses.

6. The committee will not undertake to supervise in any way the work done by those who receive the grants. Unless otherwise provided, any apparatus or materials purchased will be the property of the individual receiving the grant.

7. No restriction is made as to publication, but the recipient of the grant should in the publication of his work acknowledge the aid given by the fund.

8. The recipient of the grant is expected to make to the secretary of the committee a report in December of each year while the work is in progress and a final report when the work is completed and published. Each report should be accompanied by a financial statement of expenditures, with vouchers for the larger items when these can be supplied without difficulty.

9. The purposes for which grants are made and the grounds for making them will be published.

At the meetings of the committee held in Washington on April 15 and 16, 1917, the following grants were made:

ASTRONOMY

Five hundred dollars to Professor Philip Fox, of Evanston, Illinois, for the measurement and reduction of the photographic plates taken at the Dearborn Observatory for determining stellar parallax.

PHYSICS

One hundred dollars to Professor F. C. Blake, of Ohio State University, in aid of his well-known work on electric waves. The particular problem which Professor Blake has in hand is to determine how the capacity of an air condenser, consisting of a pair of circular plates, varies with the distance separating the plates. The frequency of the current used is of the order of one hundred million alternations per second. The distance separating the plates is varied from a small fraction of the radius to more than four times the radius.

Three hundred dollars to Professor Richard C. Tolman, of the University of Illinois, for further testing and extending his already published work on the E.M.F. produced in a conductor subjected to mechanical acceleration. The problem is essen-

tially the converse of the one by which Maxwell tried in vain to exhibit the inertia of electricity—of, as we now say, the mass of electrons. Professor Tolman has devised a simpler and more promising method than that which he previously employed for producing the acceleration of the wire.

GEOLOGY

Three hundred dollars to Professor Herman L. Fairchild, of the University of Rochester, to defray traveling expenses in a study of the Postglacial land uplift in New England and the maritime provinces of Canada. Professor Fairchild has already determined the amount of Postglacial uplift in New York and the western part of New England. The results are well shown on the maps submitted. It seems very desirable to extend this important survey eastward across New England and the maritime provinces, and so complete the study across this very significant and possibly critical region. The diastrophic movements connected with the withdrawal of the last ice-sheet, when better understood, are likely to throw much light upon the much larger problem of earth deformation, which is one of the greatest problems now confronting the philosophical geologist. A continuation of this work by Professor Fairchild is likely to prove an important contribution both to Post-Pleistocene geology and also to dynamic geology.

One hundred dollars to Professor Samuel W. Williston, of the University of Chicago, toward the expenses of an artist to help draw the figures of the many new Permian fossil vertebrates which Dr. Williston has discovered and is now describing. Professor Williston has been obliged to draw himself practically all of the numerous figures which illustrate his very important publications. This consumes much very valuable time which might otherwise be employed to far better purpose.

One hundred dollars to Mr. Ralph W. Chaney, advanced graduate student, University of Chicago, toward field expenses of further studies upon a radically new ecological problem presented by the Eagle Creek flora of the Columbia River gorge. As a result of last summer's field work in this portion of Oregon, Mr. Chaney has happened upon a new method for determining the past topography and physiography of a region, based on plant ecology. Its essential features are these: Leaves of two distinct types, the one representing a xerophytic plant association and the other a mesophytic, are found intimately mixed in the same strata. It is not possible to conceive of these having grown together in the same habitat, for their moisture requirements are too widely different. The conclusion is that the xerophytes reflect the nature of the climate of the upland country while the mesophytes in a region with such a climate must have been limited to narrow and deep valleys into which the direct rays of the sun did not penetrate and where, as a result, humid conditions existed.

PATHOLOGY

Five hundred dollars to Professor Frederic P. Gay, of the University of California, for animals and materials to be used by Dr. Takeoka, in the study of the specific treatment of tuberculosis in animals, especially in the use of taurine derived from the muscles of certain shell fish. By the use of this animo acid of bile Dr. Takeoka has been able to cause tuberculous lesions in guinea pigs and rabbits to disappear completely. Taurine being a normal constituent of the body and proving harmless when given intravenously, is now being used cautiously in the treatment of human beings.

BOTANY

Two hundred and fifty dollars to Professor Herbert M. Richards, Barnard College, Columbia University, for the continuation of the investigation of the physiology of succulent plants. The grant is to be used, partly in carrying on experiments at Carmel, California, where the plants are under investigation, partly in purchasing new apparatus and partly in employing assistants, in whatever proportion seems most profitable for the production of results.

One hundred dollars to R. C. Benedict, Brooklyn Botanic Garden, for the continuation of the investigation on the Boston fern. This grant is recommended by the sectional committee of Section G of the association.

One hundred dollars to Professor C. H. Kauffmann, of the University of Michigan, to aid in his studies of the fungus genus *Cortinarius*. The grant is to be used for field explorations in the Rocky Mountains, it being necessary to study there the genus, which is a large and difficult one with evanescent characters.

PSYCHOLOGY

One hundred dollars to Professor J. B. Watson toward the study of the development of the reflexes and instincts of infants. Dr. Watson, who is professor of psychology in the Johns Hopkins University, has done important work on animal behavior and the psychology of conduct. The obstet-

rical ward of the Johns Hopkins University Hospital is adjacent to his laboratory, and about forty newborn infants a month are available for study. The hospital is prepared to cooperate in the work but will not pay the expenses connected with it. No systematic study of the development of infants has hitherto been made under laboratory conditions.

One hundred dollars to Professor R. S. Woodworth for compiling anthropometric data. Dr. Woodworth, who is professor of psychology in Columbia University, had charge of an anthropometric laboratory at the St. Louis Exposition. Many physical, psychophysical and mental measurements were made of the savage and semi-civilized peoples who were assembled at the exposition, as well as of ordinary visitors. Parts of the data have been compiled and published, but there remains a large part of the material that it has not been possible to collate, owing to the fact that our psychological laboratories do not have means to pay the expenses of computation.

One hundred dollars to Professor Robert M. Yerkes toward the cost of apparatus and care of animals in the study of animal behavior. Dr. Yerkes, who is assistant professor of psychology at Harvard University and is this year president of the American Psychological Association, has made many original contributions to animal psychology as well as in other directions, and wishes during the summer to study the alleged ideational behavior of the horse. While extraordinary performances of trained horses have been published and have attracted wide attention, the work has not been done under experimental conditions. The construction of apparatus and the care of animals is expensive and can not be met by the ordinary laboratory appropriation.

ANTHROPOLOGY

One hundred dollars to Dr. A. Hrdlička for anthropometrical investigations on the tribe of Shawnee in Oklahoma. Dr. Hrdlička, who is curator of physical anthropology in the United States National Museum and one of our ablest physical anthropologists, could with advantage carry on these investigations and the work is pressing, as the tribe, so far as pure bloods are concerned, is becoming rapidly extinct.

One hundred dollars to Dr. Benno Oetteking, now working at the American Museum of Natural History, for the purpose of completing the investigation of skeletal material from the Pacific coast of America. The assistance needed is required for the tabulation and reduction of measurements. This grant is recommended by Professor Franz Boas, chairman of the subcommittee on anthropology of the Committee of One Hundred.

GENERAL

Two hundred dollars to the Pacific Coast Subcommittee of the Committee of One Hundred on Scientific Research, of which Professor J. C. Merriam, of the University of California, is chairman. The grant is to be used for printing, postage and clerical work in connection with an investigation to secure organized information relative to research on the Pacific coast. It is planned to secure from each investigator a brief statement of his training, accomplishment, plans for work and needs for supporting the investigation in progress or projected. The work is being done in cooperation with the scientific organizations of the Pacific coast and the committee of the National Research Council on a census of the scientific resources of the United States.

J. MCKEEN CATTELL,
Secretary

SCIENTIFIC EVENTS

THE CARNEGIE EXPEDITION FOR THE STUDY OF CORAL REEFS

PROFESSOR L. R. CARY and Dr. Alfred G. Mayer, members of the Carnegie Institution expedition to study the coral reefs of Tutuila, Samoa, have returned.

It was found that the surface water at the equator is cooler and less alkaline than that 5° or 10° north or south.

Also equatorial counter currents against the prevailing westerly drift of the tropical Pacific were generally places where the water is relatively acid, thus suggesting that they may occur in regions wherein the cold deep water comes to the surface.

The rain-water of Samoa is acid, of the order 10^{-5}, but the streams and springs of both Samoa and Hawaii are alkaline, having a hydrogen ion concentration of 10^{-7}. Thus the reefs can not be dissolved by the "acidity" of the outflowing waters, and the Murray-Agassiz solution-theory fails to account for the origin of barrier reefs. On the other hand, scouring due to currents, and to the activity of holothurians are important factors.

Observation upon *Alcyonaria* and stony