

for her original research work in biology. She was an inspiration to her students and also found means of helping them in many practical ways, unknown to any but herself.

Miss Thompson did original research work in biology in connection with the marine laboratories both at Naples, Italy, and Woods Hole, Mass. Her most noted work was on the biology of termites—the most destructive of the social insects. She has been a collaborator of the Branch of Forest Entomology, Bureau of Entomology, U. S. Department of Agriculture, since March, 1917.

1916 saw Miss Thompson's first paper on termites. It was an original piece of research on the brain and frontal gland of a common termite of eastern United States. She discovered that there was very little differentiation between the brains of the different castes of this termite and none between the sexes, the most marked difference being in the optic apparatus. Miss Thompson suggests that the frontal gland may have arisen phylogenetically from the ancestral median ocellus now lacking. This work was of considerable importance, since the frontal gland is of great taxonomic value.

In 1917, a paper on the origin of the castes of a common termite revolutionized the attitude taken by students of termites. Hitherto the attitude had been almost entirely anthropocentric; Dr. Thompson disproved that the "complementary" or "substitute" queens or reproductive forms of termites could be manufactured through feeding by workers. She definitely proved that the origin of all castes is due to intrinsic causes. Thus, by careful scientific study, much of the mystery of the "complex" social system of the termites—which has led to admiration by man of these insects—has been proved a myth. Facts now supplant the older fantastic theories, so dear to writers of the eighteenth and nineteenth centuries.

Another paper in 1919 discussed the phylogeny of the termite castes and outlined breeding experiments which were in progress at the time of her death. It was hoped to work out a genetic formula for termites.

These papers were followed by several others

on the development of the castes and reproductive forms of species of many genera of termites.

Work on the development of the castes of the honey bee had been planned and material fixed ready to section. It is to be regretted that ill health and other duties interfered. Miss Thompson was undertaking this work as she ever did with an open mind—realizing that very careful work had been done on the honey bee and that no generalizations could be made in advance. The social insects often radically differ in habits. What might be an anthropocentrism in case of the termites, might be a fact in the biology of the honey bee!

With two other co-workers, Miss Thompson was working on a more or less popular book on termites and her share was to be the internal anatomy of termites as well as phylogeny and genetic work.

A kindly, helpful spirit, of keen mind, but modest—Miss Thompson will be long remembered by her students and co-workers in science. A striking point in Dr. Thompson's personality, in fact its key note and which signaled her as an investigator and as a teacher, is that with all her splendid training and her admirable technique she was not biased by the current fashions of the school in which she was trained, but struck out into new fields. Her own research work will endure forever!

T. E. S.

WASHINGTON, D. C.

DECEMBER 10, 1921.

## SCIENTIFIC EVENTS

### THE HECKSCHER RESEARCH FOUNDATION

THE following grants have been made during the year 1921 by the Heckscher Research Foundation for the support of investigation at Cornell University:

1. To Professor J. Q. Adams a sum sufficient to secure his release from the duties of teaching for the first term of the year 1921-1922, to enable him to complete his book on "The Life of Shakespeare."

2. \$2,000 to Professor C. C. Bidwell to enable him to carry on cryogenic measurements, and to study the relation between electrical conductivity and temperature for so-called "variable" conductors.

3. \$700 to Professor J. C. Bradley to cover the cost of preparing illustrations and otherwise completing a manuscript embodying the results of investigations of the wing venation of Hymenoptera.

4. \$1,200 to Professor A. W. Browne to aid him in investigations of certain problems in the field of the oxidation of hydrazine, especially in non-aqueous solutions (grant increased to \$1,800).

5. \$350 to Professor L. M. Dennis for carrying on investigations on the "Separation of the Isotopes of Lead by Chemical Processes."

5. \$2,000 to Professor L. M. Dennis in aid of investigation of the preparation and properties of germanium and its compounds.

7. \$500 to Professor F. L. Fairbanks for the purpose of developing and completing a traction dynamometer.

8. \$250 to Professor S. H. Gage and Professor P. A. Fish for colored plates needed in completing the manuscript of an investigation concerning the digestion and assimilation of fat in the human and animal body.

9. \$200 to Professor V. Karapetoff for an assistant and materials in carrying on investigations on mechanical aids in the design of electrical machinery and lines.

10. \$1,125 to Professor W. R. Orndorff and Professor R. C. Gibbs to enable them to carry on more rapidly their investigations of the absorption spectra of certain organic compounds.

11. \$1,800 to Professor F. K. Richtmyer for investigations in the laws of the absorption of X-rays.

12. To Professor E. W. Schoder a sum sufficient to secure his release from the duties of teaching for the first term of the year 1921-1922, in order that he may prepare for publication results of investigations in hydraulics, made by himself and the late Professor Turner.

13. \$100 to Professor Sutherland Simpson to enable him to continue his investigations into the functions of the thyroid and parathyroid glands.

14. \$500 to Professor A. H. Wright for investigation of the life history of North American frogs, toads and tree toads. Grant later increased by \$350.

15. \$1,200 to Professor V. Snyder to secure his release from the duties of teaching during the second term of 1921-1922, in order to permit him to continue during that term his studies of algebraic correspondences.

16. \$1,400 to Professors W. R. Orndorff and R. C. Gibbs for the purchase of apparatus to be

used in connection with investigations of absorption spectra of certain organic compounds.

17. \$500 to Professor C. C. Bidwell for the purchase of metals to carry on cryogenic measurements.

18. \$1,000 to Professor F. K. Richtmyer for apparatus to be used in research on the absorption of X-rays by various media.

19. \$1,800 to Professor Wallace Notestein for editing historical documents on the parliamentary history of England.

20. \$500 to Mr. H. S. Vandiver for investigations on the subject of algebraic numbers.

21. \$500 to Professor J. G. Needham and Dr. P. W. Claassen for preparing a monograph on the Plecoptera of North America.

22. \$750 to Professor B. F. Kingsbury for use in studies of the early developmental pattern.

23. \$500 to Professor H. Hermannsson for use in the study of Icelandic books of the seventeenth century.

24. \$850 to Professor H. M. Fitzpatrick for aid in the study of a large group of fungi known as the Pyrenomycetes.

25. \$150 to Professor A. A. Allen to assist in experiments in the artificial propagation of the ruffed grouse and the canvasback duck.

26. \$600 to Professor W. C. Ballard for use in an investigation into high power electron tubes.

28. \$900 to Mr. H. S. Vandiver for use in continuing his investigations on algebraic numbers.

Supplement to No. 17. \$500 to Professor C. C. Bidwell to continue his work on the chemical purification of metals.

29. \$500 to Professor R. M. Ogden for use in completing a monograph on the psychology of audition.

30. \$800 to Professor E. M. Chamot to cover the cost of publication of the "Results of Microscopic Investigations of Small Arms Primers."

31. \$500 to Professor A. H. Wright for the publication of "A Biological Reconnaissance of Okefinokee Swamp."

32. \$1,000 to Professor F. C. Prescott for the publication of a book entitled "The Poetic Mind."

33. \$2,500 to Professor Clark S. Northrup for the publication of a book entitled "A Register of Bibliographies of the English Language and Literatures."

34. \$500 to Professor R. H. Keniston and Professor G. H. Hamilton for the publication of a critical and linguistic study of an old Spanish poem, "El Libro de los Tres Reyes de Oriente."

35. \$300 to Professor G. G. Bogert for research into the law of conditional sales.

36. \$2,000 to Professor V. Karapetoff for investigations on mechanical aids in the design of electrical machinery and lines, and a study of fields of force or flow, electric, magnetic and hydraulic.

Supplement to No. 19. \$150 to Professor Wallace Notestein to continue his work of editing historical documents.

37. \$1,500 to Professors Bancroft, Chamot and Merritt for the study of structural colors in feathers.

Supplement to No. 25. \$150 to Professor A. A. Allen to enable him to continue his experiments in the artificial propagation of the ruffed grouse and the canvasback duck.

38. \$450 to Professors Orndorff and Gibbs for a study of the absorption spectra of orthocresolsulphonphthalein and other related compounds.

39. \$3,000 to Professor J. S. Shearer for the study of the selective absorption of X-rays, and of new methods of exciting X-ray tubes.

Supplement to No. 3. \$450 to Professor J. C. Bradley to enable him to complete his illustrations of the wing venation of Hymenoptera.

Supplement to No. 11. An additional sum of \$450 to Professor F. K. Richtmyer for further investigations in the laws of the absorption of X-rays.

40. \$3,000 to Professor H. Diederichs for study of the infiltration of air into buildings through walls and windows, the development of a satisfactory heat treatment of "Kinite" alloy steel, and of the combustion process in a Diesel engine.

41. \$700 to Professor C. R. Crosby for drawings of the genitalia of a group of spiders, the linyphiidæ, to be used in devising a natural system of classification of the species and to determine the limits of the general and their affinities.

42. \$300 to Professor W. F. Willcox for statistical investigations.

43. \$300 to Professor W. L. Westermann for editing Greek papyri owned by Cornell University.

#### THE STANDARDIZATION OF BIOLOGICAL STAINS

THE need of standardizing stains for biological uses has become increasingly evident during the last four or five years. During this period German stains have been either difficult to obtain or entirely unavailable; and the American products, although often excellent, have varied so much one from another as to

give uncertain results. The manufacturers have been willing to meet the demand of biologists, but the latter have generally been uncertain just what they wanted. The efforts of the Society of American Bacteriologists to clarify the situation have already been mentioned in this publication<sup>1</sup>. More recently other societies have offered to assist in the work, many of the men concerned expressing a wish not to try to duplicate the Grubler stains, but to secure domestic stains better than their foreign predecessors.

The interest thus awakened led to a conference held on November 5, 1921, at the Chemists Club, New York City, to discuss the standardization of biological stains and the steps to be taken to develop a reliable American supply. The conference was under the auspices of the National Research Council, Dr. L. R. Jones, chairman of the Division of Biology and Agriculture, presiding. Those present were: L. R. Jones, H. E. Howe, and C. E. McClung, of the Research Council (Dr. McClung also representing the American Society of Zoologists); E. D. Ball and J. A. Ambler, of the Department of Agriculture; W. F. Keohan, of the Chemical Foundation; R. A. Harper and T. E. Hazen, representing the Botanical Society of America; H. J. Conn, representing the Society of American Bacteriologists; and R. T. Will of the Will Corporation.

H. J. Conn spoke for the Bacteriological Society, stating the interests of this society in the matter and showing what had been accomplished during the past year by cooperative work among the members of the society. He stated that stains must be standardized by three different methods: by chemical analysis, by testing for bacterial staining, and by testing for histological purposes. So far as bacterial staining is concerned, he considered his society to be already in a position to select satisfactory samples of basic fuchsin and methylene blue, and believed that the work now in progress on gentian violet would soon lead to a similar result in regard to that stain.

<sup>1</sup>H. J. Conn. The Production of Biological Stains in America. *Sci. N. S.*, 53, 289-290.