the reaction which follows nervous excitement. This fact, however, merely indicates that there are other mechanisms capable of bringing about the reaction. By stimulating the adrenal glands electrically the melanophores of the entire skin may be contracted. If one leg is ligatured during this procedure, it will remain much darker than its mate; if the ligature be removed several minutes after stimulation has been discontinued, the leg will quickly become as pale as the rest of the body. If the gland be isolated from the general circulation by a ligature, no contraction of the melanophores will follow the stimulation of its surface.

From the foregoing it is clear that the melanophores of the horned toad are coordinated, in part, through the action of a hormone. There is some circumstantial evidence that this hormone is adrenin. Experiments are in progress designed to give more direct evidence concerning the latter point.

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SOCIETIES AND ACADEMIES

THE AMERICAN PHILOSOPHICAL SOCIETY

ON March 3, Dr. Caroline Rumbold, University of Pennsylvania, spoke before the American Philosophical Society of Philadelphia on the "Pathological Anatomy of Injected Chestnut Trees."

While working on tree injection in connection with the chestnut-tree blight, about 50 different substances: hydrocarbons, alkali metals and metals were injected in solutions of varying dilution into the trunks of chestnut trees. So far, an examination of the trunks and branches of the trees shows that the reaction of the tree to the injections was alike in kind though not in intensity. This reaction varied with the distance from the point of injection. The affected region extended up and down the trunk from the point of injection in a line, whose width usually was but little more than the injection hole. As the distance from this point increased the tissues appeared more normal and the area of disturbance decreased. Occasionally all stages of reaction to an injection could be seen in a tree: death—at the point of injection—retarded growth, stimulated growth and no reaction.

The regions that showed response were the cambium and the phlœm. The cambium as such ceases growth and is wholly converted into wood-tissue. Small isolated groups of xylem cells develop on the outside of the rows of normal bast-fiber, through proliferation of the already formed phlœm cells. Large and very numerous stone-cells appear in the phlœm, which increase in number until rows of them are formed. An increased number of calcium oxylate crystals form. The isolated groups of xylem, developed in above-mentioned manner in the phlœm, grow in area and coalesce. In this conversion the cells of the phlœm take part with the exception of the bast-fibers and the stone-cells. They are frequently found embedded in xylem. This conversion proceeds irregularly, leaving areas of phlœm surrounded by xylem, or groups of cells of an undecided appearance, apparently partly phlœm, partly xylem. No specimens have been found in which all the phlœm cells in the injected region of the bark had been entirely converted into xylem.

The conversion of the cells of the phlœm into xylem cells is not unknown, but it is believed that this is the first instance in which by injected chemicals this phenomenon has been produced and it may prove a help in the future histological study of the cells of the phlœm.

THE BIOLOGICAL SOCIETY OF WASHINGTON

THE 552d regular meeting of the society was held in the Assembly Hall of the Cosmos Club, Saturday, March 11, 1916, called to order by President Hay at 8 P.M., with 28 persons present.

On recommendation of the council the following persons were elected to active membership: Dr. Molyneux L. Turner, R. T. Jackson, Biological Survey; H. L. Viereck, Biological Survey.

Under the heading Brief Notes and Exhibition of Specimens, Dr. Shufeldt exhibited lantern slide views of some of the aquatic and terrestrial vertebrates of the District of Columbia and Vicinity.

Under the same heading Mr. Wm. Palmer made remarks on and exhibited the bones of a hitherto unknown cetacean lately collected by him at Chesapeake Beach, Maryland.

The first paper of the regular program was by M. W. Lyon, Jr.: "Hemolysis and Complement Fixation." Dr. Lyon outlined the steps in the discovery of hemolysis by normal and immune serums from the early observation following transfusion by Landois in 1875, through Pfeiffer's phenomenon of bacteriolysis in 1889, Bordet's discovery of complement in 1899, Bordet and Gengou's discovery of complement fixation in 1901, to the practical application of the latter phenomenon as utilized by Wassermann in 1905 and by later workers in the diagnosis of syphilis, glanders, Malta fever, dourine, tuberculosis, infectious abortion, etc. The graphic conceptions of amboceptor, complement, antigen, and fixation as understood by Ehrlich, and as understood by Bordet, were illustrated by movable models. The action of hemolytic amboceptors and complement on blood cells of the ox and of the sheep was demonstrated by test-tube mixtures, and some positive and negative results in complement fixation were exhibited.

The last paper of the regular program was by D. L. Van Dine, "A Study of Malarial Mosquitoes in their Relation to Agriculture." Mr. Van Dine said: The Bureau of Entomology is making a study of the relation of malaria to agriculture and of the malaria-bearing mosquitoes, on a plantation in the lower Mississippi valley where typical conditions as regards malaria and plantation operations occur.

The object is to devise measures for prevention of malaria which will apply practically to farming conditions. Lines of work include determination of manner in which malaria operates in reducing farm profits, of the relative efficiency of *Anopheles* to act as transmitting agent and their distribution, of behavior of each species under known conditions of environment, and consideration of preventative measures which involve control of mosquito host.

Solution centers around prevention of malaria among tenants since it has been shown that the direct loss to planters occurs through lost time and reduced efficiency in labor. Detailed study was made of tenants, their relations to plantation, their habits and prevalence of malaria among them; the conclusion is that it will be more practical to control the mosquito than the human host.

One measure of prevention is favorable location of tenants' houses, demanding information on habits of flight, food and breeding. Where drainage is impracticable, surface water must be rendered unsuitable for *Anopheles* development. Food requirements and natural checks to larval development are being studied, the Bureau of Fisheries cooperating in a study of the relation of fish to mosquito development.

Anopheles quadrimaculatus, A. punctipennis and *A. crucians* were the species studied. *A. quadrimaculatus* is the common house-frequenting species of that region, *A. crucians* occurs in very limited numbers, and *A. punctipennis* is more restricted in its house habits but is common in nature. The work thus far has dealt almost entirely with *A. quadrimaculatus,* but following the demonstration of tertian and estivo-autumnal malaria in *A. punctipennis* by King in cooperation with Bass it will be expanded to include this species.

The study includes the habits of mosquitoes under low temperature conditions; also resistance of malaria organisms to low temperatures in body of mosquito host.

Mr. Van Dine's paper was illustrated with lantern slide views of the various conditions on the plantation. Messrs. Wm. Palmer, Doolittle and Knab took part in the discussion.

M. W. Lyon, Jr.,
Recording Secretary

THE BOTANICAL SOCIETY OF WASHINGTON

The 111th regular meeting of the Botanical Society of Washington was held in the Crystal Dining Room of the New Ebbitt Hotel, Washington, D. C., Wednesday evening, March 8, 1916. Eighty-two members and one hundred and seventeen guests were present. Professor A. S. Hitchcock presided. Dr. Rodney H. True, as retiring president, delivered an address to the society, entitled "Thomas Jefferson in Relation to Botany." This paper will be published in full in *The Scientific Monthly*. A dinner preceded the address and after it there was dancing.

W. E. Safford,
Corresponding Secretary