

Haecker's book by reason of its thoroughness and scientific method of exposition will undoubtedly be to a large extent caviare to the general, but that by Castle will appeal to a much wider circle of readers as a clear and direct statement of the Mendelian principles and their application, couched in language as simple and untechnical as may be. Its title, compared with that selected by Haecker, is perhaps a little misleading, for the book is limited to an account of the Mendelian phenomena and their formal explanation. The cytological side of inheritance, so prominent in Haecker's book, is barely considered; indeed, it could hardly be expected in a book written for the general reading public. Taking into account the limitations set by its purpose, the book is an excellent presentation of the Mendelian phenomena, based upon studies extending over some ten years, and while the general reader may in some cases find it difficult to follow the complexities of the phenomena, yet he will not fail to form an intelligent appreciation of the far-reaching significance of Mendelism.

But it is not to the lay brother alone that the book will prove of interest. The expert will find much to interest him in its logical methods and in the *résumé* it presents of extensive experience in experimental breeding, and in certain of the chapters, such, for instance, as those on Mendelism and Selection and on Heredity and Sex, he will be rewarded with no scanty supply of food for thought.

Rigano's work appeared in a French edition as long ago as 1907 and an abstract of it by the present translator was published in *The Monist* in 1909. It is an attempt to formulate a new theory of heredity based on analogy with certain electrical phenomena. The theory of centro-epigenesis, as it is named, assumes the existence in the germ plasma of certain specific potential elements, which send out in succession through the organism impulses which determine the various stages of its ontogeny, each specific impulse depositing in the nucleus of the cells to which it passes a definite substance, which, under similar con-

ditions is again capable of producing the same specific impulse as that by which it was deposited. When ontogenesis is complete the organism is in a state of dynamic equilibrium so far as the epigenetic impulses from the germ plasma are concerned, but it is now receiving functional stimuli, which in a similar manner produce specific impulses leading to the deposit of what may be a new kind of material. If the stimulus reaches the germ plasma new specific potential elements will be deposited in it and so the way is open for the inheritance of acquired characters.

This is a bald statement of the essentials of the theory which is fully elaborated and compared with rival theories in the volume under consideration. Similarities with Semon's theory of mnemes suggest themselves, and like this the theory can truthfully be said to be exceedingly suggestive. But if criticism may be made without entering into details, it would seem that centroepigenesis explains almost too much, in furnishing possibilities for the inheritance of acquired characters far beyond what reality demands. It is based on assumptions which at present we have no means of either proving or, what is much more difficult, disproving, assumptions drawn from what is not always a reliable source, namely from analogy. But right or wrong, it should serve to suggest lines along which the further investigation of the physiology and physics of the developing organism may advantageously proceed.

The translation, it should be stated, is well done and the translator is to be congratulated on having supplied English readers with an accurate and readable statement of the theory.

J. P. McM.

Nephritis, An Experimental and Critical Study of its Nature, Cause and the Principles of its Relief. By DR. MARTIN H. FISCHER. (The 1911 Cartwright Prize Essay of the Association of the Alumni of the College of Physicians and Surgeons, Medical Department of Columbia University, New York.) First edition, large 12mo. Pp. ix + 203;

31 figures, including a colored plate. Cloth, \$2.50 net. New York, John Wiley & Sons. 1912.

In this book Fischer has made a special application to the kidney of the same standpoint, principles and methods as were used in the more general discussion contained in his work on edema, published two years ago. According to his view it is to the colloidal properties of albuminous substances, and particularly of such bodies in the *jel* state, that we must look for an explanation of many phases of the behavior of living cells, not only in health, but to an equal degree in disease. In particular the amount of water contained within every cell, *i. e.*, its turgescence, and the extent to which the cell membrane dissolves, passing from the *jel* to the *sol* condition in the surrounding fluids, are determined by the properties peculiar to colloids. These properties, as we find them in the so-called emulsion or lyophilic colloids to which all albuminous substances belong, include a specific avidity for water according to the conditions under which the colloid is placed. Thus if a piece of dry sheet gelatin is placed in water at an ordinary temperature it swells—that is, imbibes water—to a fairly definite degree. Similarly in the *sol* condition, as in the case of the proteins of the blood plasma, the water in which they are said to be “dissolved” is really held by the colloid. Otherwise the tissues of the body should immediately imbibe all of the blood fluid as they do saline or Ringer’s solution. The avidity of the colloids for water is, however, subject to great alterations according to the surrounding conditions. Thus acids and alkalies both induce a markedly increased degree of swelling as compared with a neutral watery medium, while salts, on the contrary, tend to decrease the capacity of colloids to take up and hold water. As the result, in particular, of the work of L. J. Henderson it is now known that the normal blood is not only neutral in reaction, but that it has a remarkable capacity to maintain its neutrality against the introduction of considerable quantities of acids or alkalies. Under the influence of toxic substances, or under conditions in which the

circulation is interfered with, a formation and accumulation of acids within the tissues of an organ does, however, occur. This is particularly the case in an organ which, like the kidney, has normally a large respiratory exchange.

Boldly following this conception to its conclusion Fischer holds that “all the changes that characterize nephritis are due to a common cause—the abnormal production or accumulation of acid in the cells of the kidney. To the action of this acid on the colloidal structures that make up the kidney are due the albuminuria, the specific morphological changes noted in the kidneys, the associated production of casts, the quantitative variations in the amount of urine secreted, the quantitative variations in the amounts of dissolved substances secreted, etc.” In support of this thesis experiments are reported in which a typical cloudy swelling was induced in thin sections of fresh kidney tissue when placed in dilute acid. Similarly in experiments upon animals injection of acid into the blood stream is quickly followed by a marked albuminuria. The same result follows temporary ligation of the renal blood vessels. On the other hand—and herein, perhaps, lies the most important points of Fischer’s investigations—if under conditions in which nephritis would otherwise occur an increased quantity of neutral salts is brought into contact with the tissues, the effects of acid may be completely counteracted, and the kidney restored to practically normal structural appearance and functional behavior. Thus, “Sodium chloride when injected intravenously, in concentrated solution, simultaneously with hydrochloric acid solution of a concentration which we found in other experiments to lead to the symptoms of a most intense acute nephritis, practically suppresses this entirely. The albuminuria scarcely appears, and there are no casts, no red blood corpuscles, no hemoglobinuria, no decrease in the amount of urinary secretion, and no general edema.” Finally Fischer reports a number of clinical cases of nephritis, some of them with complete anuria and coma, in which a rapid recovery was in-

duced by the administration per rectum of a solution of NaCO_3 and NaCl .

From the foregoing outline it will be seen that this book is in no sense the conventional restatement of pre-existing data and current opinions. On the contrary, it is a highly original thesis. From those hide-bound critics, who resent whatever is unorthodox, it will probably elicit more dissent than approval. This has always been the price exacted by such critics from those who are ahead of their time. They objected to Fischer's preceding work on "Edema" on the ground that "there are some facts which it fails to explain." They will find that the same criticism can be made of the present monograph. There are indeed some points in the book upon which one must hope that the author will later bring forward fuller evidence. Nevertheless, if, as seems but fair, a new idea is rather to be approved for the points which it illumines than condemned for those which it leaves in obscurity, this work should be welcomed and studied. It holds out suggestions which may prove of great practical therapeutic usefulness. On the theoretic side there is a wide range of phenomena, previously obscure, upon which it throws a brilliant light.

YANDELL HENDERSON

An Experimental Study of the Death-Feigning of Belostoma (= Zaitia Aucet.) flumineum Say and Nepa apiculata Uhler. By HENRY H. P. SEVERIN, Ph.D., Professor of Entomology, College of Hawaii, and HARRY C. SEVERIN, M.A., Professor of Entomology, South Dakota State College of Agriculture and Mechanic Arts. Cambridge, Boston, Mass., Henry Holt and Company. 1911. Pp. iii + 47, with one plate.

This excellent piece of experimental work forms one of the series of "Behavior Monographs," that are being published in connection with *The Journal of Animal Behavior*, being Number 3, Serial Number 3, Volume I.

There is, perhaps, no more curious and interesting form of instinctive response than that represented by the death-feigning reac-

tion among insects. It has been a matter of considerable discussion among students of animal activities for many years. There has been no piece of work of this nature published for some time which so thoroughly treats of this peculiar form of behavior, by the experimental method—unless we consider that of Holmes on *Ranatra*.

The major headings of the table of contents will largely indicate the nature of the monograph: I., Introduction; II., General Characteristics of the Death-Feint; III., Duration of Successive Death-Feints; IV., The Effect of Dryness and Moisture on the Duration of the Death-Feint; V., The Effect of Temperature on the Duration of the Death-Feint; VI., The Effect of Light on the Duration of the Death-Feint; VII., The Effect of Mutilation on the Death-Feint; VIII., The Origin and Development of the Death-Feint; IX., The Psychic Aspect of the Death-Feint; X., Summary.

II. It is shown that the "death-feigning" postures of *Belostoma* are decidedly characteristic. However, the positions assumed during the feint are unlike those of the dead insect. The response may be elicited by simple contact; as, for instance, when it is dipped out of the water with the net; or when it is picked out of the aquarium by hand. Some individuals do not feign death readily; in such cases, repeated touching of the posterior part of the abdomen will cause the organism to respond with the death-feigning reaction. *Nepa* feigns death either in the water or out of it. Here again contact seems to be the important stimulus. *Nepa* will even feign death when feeding, the creature "keeping the styliform mandibles and maxillæ sunk into the prey." Detailed descriptions are given of the positions of the various appendages during the feint, both in the case of *Belostoma* and *Nepa*. While the former assumes a characteristic posture, *Nepa* will feign death with the appendages in the same position as taken just previous to the death-feint. During the feigning period, the muscles of *Belostoma* are in a condition of "extreme tetanus." *Nepa*