the University of Chicago, president of the American Association for the Advancement of Science.

DISCUSSION AND CORRESPONDENCE

THE EFFECTS OF PARASITIC CASTRATION IN INSECTS

In his very interesting paper on the above subject published in the *Journal of Experimental Zoology*, for July, 1910, Professor W. M. Wheeler says (p. 419) that "Giard has given good reasons for supposing" that the dimorphism exhibited by the forcipes of male earwigs from the Farne Islands, Northumberland,[1] is due to "differences in the number of gregarines they harbor in their alimentary tract." The reference to Giard is *Comptes Rendus Acad. Sci.*, 1894, Vol. 118, p. 872.

> J'ai tout lieu de croire qu'une interprétation du même genre (referring to the changes brought about in *Carcinus* by the action of parasites) peut s'appliquer pour la distribution des longueurs des pinces des Forficules mâles. Il est possible, en effet, d'après la longueur de la pince, de prévoir qu'une Forficule mâle possède des Grégarines et qu'elle en possède une plus ou moins grande quantité.

We do not, however, feel justified in regarding this passage alone (and there is no further account by the French observer) as direct evidence that Giard had examined the intestine of *Forficula* for gregarines and found a correspondence between their presence and the differing states of the male secondary sexual characters. In this connection we may record our own observations made to resolve this debatable point. In 1907 we visited the Farne Islands and collected several thousand earwigs. Over fifty dimorphic males were carefully dissected and a large gregarine (presumably *Gregarina ovata*) was found to occur commonly in the alimentary canal. Examples were, however, contained indifferently in low males as well as high; in both they were sometimes absent and no correlation could be observed between the number of parasites in an individual and the length of its forceps. It may at the same time be mentioned that no difference in the development of the testes or other internal sexual organs could be detected in high and low males respectively.

[1] Bateson and Brindley, *Proc. Zool. Soc. London*, 1892, p. 585.

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MONO- AND DI-BASIC PHOSPHATES

Recently my attention has been directed to the confusion in the use of the terms "mono-" and "dibasic" as applied to the alkali salts of orthophosphoric acid. As certain authors make use of these terms without further qualification, it seems desirable to call attention to the conflicting use of these terms and to urge instead the use of more precise designations.

Orthophosphoric acid, H_3PO_4, is generally considered to be a tribasic acid. As salts of this acid, it seems only logical to call KH_2PO_4 dibasic, and K_2HPO_4 monobasic. In Merck's and some other catalogues, KH_2PO_4 is called monobasic, and K_2HPO_4 dibasic. These firms commonly send out their preparations labeled as follows: "Potassium phosphate—Dibasic," and "Potassium phosphate—Monobasic."

No further explanation appears on the label, and unless one happens to consult the catalogue (and this does not always explain) one is apt to get curious results in the use of these salts. The more serious difficulty appears, however, in the use—without other qualification—of the terms "mono-" and "di-basic phosphate" in literature. This is frequently the case in physiological and bacteriological papers. In discussion of the matter with a number of technical chemists it was evident that the conflicting use of these terms was not confined to biologists.

In view of the confusion resulting from the uncertain use of the terms "mono-" and "di-basic" as applied to the alkali phosphates, I would urge all workers—and chemical supply houses—to discontinue the use of these terms and to substitute more exact terms, such as primary, secondary and tertiary, respectively, for the salts KH_2PO_4, K_2HPO_4, K_3PO_4. It

would be even clearer, perhaps, to speak of these salts as mono-, di- and tri- *potassium* phosphates. In all cases it is desirable to give the formula as well as the name of the salt.

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THE LOAN OF LANTERN SLIDES TO ILLUSTRATE LECTURES ON HOOKWORM DISEASE

REQUESTS for the loan of lantern slides to illustrate the anatomy and life history of the hookworm and the methods of preventing hookworm diseases have increased to such an extent that I have ordered several extra sets of forty-five slides each.

These slides will be loaned to medical societies, colleges, schools, teachers' associations, women's clubs, etc., that may desire to use them. The two conditions attached to the loan are: (1) that all requests be forwarded through the secretary of the state board of health; (2) that the slides be returned, express prepaid, immediately following their use.

Preference will be shown to societies and institutions in hookworm-infected states.

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SCIENTIFIC BOOKS

Die Variabilität niederer Organismen. Eine deszendenztheoretische Studie von HANS PRINGSHEIM. Berlin, Julius Springer. Pp. 216.

Dr. Pringsheim has done a unique and valuable piece of work in thus resuming our knowledge of unicellular organisms from the standpoint of the student of variation, heredity and evolution. The book is based mainly on bacteriological work, together with work on yeasts and pathogenic protozoa. This is probably just, since it is chiefly in these groups that investigation has gone deep enough to furnish data on the problems of genetics. Other groups of protista are not left out of consideration, and a number of the more important pieces of work on these are dealt with, but the pertinent literature is by no means so fully considered as in the case of the groups mentioned. The author is himself an investigator in bacteriological lines, and has gone over the literature in this and related fields with a fine-toothed comb, bringing forth whatever bears on the problems of genetics. This material is well digested and is arranged in unified sections following a well-laid-out plan. The references to literature are so extensive as to make this a handbook of the subject.

There is an introduction dealing with variation and inheritance in a general way. This is followed by sections on the struggle for existence in lower organisms (with many concrete examples, of great interest); on the normal "breadth of variability"; on variation in form and structure; in colonial growth; in movements and reactions; in spore-formation; in production of ferments and of colors; in virulence; variation as evidenced in acclimatization to heat and cold; to light; to variations in food and oxygen, to poisons, etc. A final chapter gives some general results, with suggestions for future work.

A broad view is taken of all these phenomena, so that the author gives us what might be called a general (though condensed and concrete) treatise on the physiology of protista, dealt with from the standpoint of genetics. From the purely physiological point of view the result serves as a valuable corrective for the impressions obtained from physiological works that deal chiefly or only with the supposedly typical.

The author is very conservative as to the conclusions to be drawn regarding fundamental problems, though this does not conceal the enthusiasm which he feels for his subject, particularly for its future. He holds that it has been proved that in certain cases fluctuating variations have shown themselves heritable, giving rise to new races; and that in some cases direct adaptations have proved heritable—concrete cases being cited for each.