

cause in some ways the treatment is most elementary and in other chapters use is made of the calculus. The field covered is satisfactory on the whole, as is shown by searching in the various chapters for discussions of all the important general phenomena. It would not be difficult to refer to certain sections which might be omitted with profit, but on the whole there is little to criticize in this respect, for the rights of the individual teacher and author must be respected.

The success of any text-book in physics must be decided from its effect upon the mind of the students who use it. If they are taught by means of it to reason correctly, and if they learn a consistent view of the great phenomena of nature, it has accomplished its purpose. A great deal naturally depends upon the teacher, but certainly in the present case the authors of the text-book referred to above have done their full share. J. S. AMES

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A Manual of North American Diptera. By SAMUEL W. WILLISTON. Third edition, illustrated. New Haven, Conn., James T. Hathaway. 1908. Price, \$4.00 postpaid. Pp. 405, duodecimo, cloth.

The much-desired third edition of Dr. Williston's manual was actually published and some copies distributed about August 28, 1908, but on account of the absence of the author on a fossil-hunting expedition in western Texas only a few copies were sent out until about the end of the year. It has, therefore, received but little notice in reviews up to the present time.

The book, like the preceding editions, is designed largely for beginners. It contains an introduction, a treatise on the anatomy of diptera, suggestions as to methods of collecting, preserving and studying the insects, some general remarks on the principles of classification, a synoptic table of the families and a series of chapters on the families. These last-mentioned chapters each include one family, giving in uniform style the following topics: definition of the family, characters of the larvæ, habits of larvæ and adults (often at some length), and table of genera based on

adult characters. In a few cases the larvæ are to some extent subdivided in a separate table. Several of the chapters are written partly or wholly by other entomologists.

The illustrations form a new and conspicuous feature of the work, numbering nearly a thousand. While recent entomological literature has been drawn upon to some extent, a large proportion of the figures are new and drawn by Williston himself, representing an immense amount of labor on his part.

In the preface, after mentioning the successive publications in which he had attempted to outline the classification of North American diptera, the author states that he feels his work in this line completed with the present publication. Perhaps, for this reason, he has allowed himself to express his views and even his feelings to a greater extent than in former editions. Many passages might well be quoted, either as illustrating generalizations derived from thirty years of strenuous scientific work, or to illuminate points of disagreement between the author and certain younger dipterists. A very few selections must suffice.

Giantism in any group of animals is a specialization, and is, in general, an indication of approaching decadence. . . . No strong or dominant group of flies, like the Tachinidæ, Dolichopodidæ, Syrphidæ or Bombyliidæ, has ever had in the past a larger average bodily size than is found among their living representatives.

On the splitting of genera in the mosquitoes:

I fear even Desvoidy's shade would turn pale with envy in the contemplation of some of the proposed genera of the modern culicidologists.

On the "mere collector":

His labors are hardly more important than those of the microtometist who cuts up frogs' eggs and makes pictures of them.

In the matter of wing nomenclature the common system is wisely adhered to, while the Comstock (here called the Comstock-Needham) is illustrated in a page of wings. Unfortunately, the tabular exhibit of homologous terms is imperfect because Comstock's earlier designations are used. The fact that there are already three distinct forms of Comstock nomenclature in existence is an excellent rea-

son, if any were needed, for not introducing even the latest one into the manual.

In the classification of mosquitoes he expresses strong dissent from the process of continually subdividing the great central mass of the genus *Culex*, but naturally is not in a position to elaborate a system, and is therefore obliged to use one that is not much different from that of Dyar and Knab. In Cecidomyiæ, too, he finds too many genera, and adopts a current generic table only under protest. In Dexiidæ and Tachinidæ the tables were prepared by Professor C. F. Adams. Dr. Williston, wishing the criticism of a specialist on this difficult group, and being unable to secure the assistance of Mr. Coquillett, asked Mr. C. H. T. Townsend to prepare notes on the figures. This was unfortunate, as Mr. Townsend's ideas of genera are extremely radical; it naturally happened that his notes only serve to confuse the subject. He, however, seized the opportunity to erect a few new genera on the figures, which was the more out of place and uncalled for since he promised fuller descriptions in a forthcoming paper. Would that he had reserved his adumbrations in their entirety!

A few errors in typography and other mistakes are corrected in a brief appendix. Typographical or any other sort of perfection must not be demanded in a contribution offered as a gift to science after years of strenuous and wholly gratuitous effort. Professor Williston has acquitted himself well, and has given us a work which no one else in the world could have produced, one not approached in any other large order of North American insects. Nay, he has done still more—he has printed it practically at his own expense, and will not be reimbursed until almost the whole edition is sold. Because I happen to know this I wish the entomological public to understand how great their debt really is. And Professor Williston never occupied an entomological position in his life. He has given *himself* to science, and that is the greatest offering any man can make.

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SCIENTIFIC JOURNALS AND ARTICLES

THE contents of *The Journal of Biological Chemistry* (Vol. VI., No. 2, issued May 10, 1909) are as follows: "On the Composition of Dilute Renal Excretions," by A. B. Macallum and C. C. Benson. Large volumes of water were ingested to increase rapidity of flow and decrease concentration of urine in order to diminish the reabsorption of water and salts in the convoluted tubules of the kidney postulated in Ludwig's theory of urine formation. Estimations of potassium and chlorine in very dilute urine revealed neither a proportionality between salt content of blood plasma and of urine nor a uniform ratio of potassium and chlorine excretion. Secretion of water and salts is therefore not a process of filtration, but is truly secretory; the secretory activity varies for each inorganic constituent. "On the Depression of the Freezing Point Due to Dissolved Caseinates," by T. Brailsford Robertson and Theo. C. Burnett. Casein combines with bases to form "neutral" and "basic" salts of definite composition which produce a definite measurable depression of the freezing point. Estimations indicate a molecular weight of "basic" caseinates of 1,400; of "neutral," 2,000. "The Cerebrospinal Fluid in Certain Forms of Insanity, with Special Reference to the Content of Potassium," by Victor C. Myers. Analyses show that changes in the composition of cerebrospinal fluid occur after death. Protein-phosphates, and especially potassium, are increased. The protein-content in dementia paralytica is increased during life. "Human Pancreatic Juice," by Harold C. Bradley. Examination of human pancreatic juice showed an average specific gravity of 1010; alkalinity equal to $N/20$ — $N/10$ sodium bicarbonate; no definite relation between diet and enzyme content; no rennin, invertase or lactase; trypsinogen in all specimens, trypsin in 50 per cent. A study was made of the influence of various conditions upon the activity of lipase. "On a Modification of Lunge's Method for the Quantitative Estimation of Urea," by Clarence Quinan. Lunge's method (*Zeitschr. f. angew. Chem.*, 1890, p. 139) of reducing measurements of