SCIENTIFIC BOOKS

Medusæ of the World. Volumes I. and II. The Hydromedusæ. By Alfred Goldsborough Mayer. Published by the Carnegie Institution of Washington. 1910.

No one could have approached this task with a better equipment than has Dr. Mayer. Serving for many years as the assistant and companion of such a master as Alexander Agassiz, naturally endowed with keen observational powers, possessed of very exceptional talent as an artist and enjoying the familiarity with his subject which comes from a careful study of a host of living forms in many parts of the world, Dr. Mayer is as well prepared as any man for a monographic treatment of the Medusæ of the world.

The two quarto volumes under review contain 498 pages of text, 30 pages of index, 55 colored plates and 327 text figures. One of the most striking and satisfactory features of the work is the very sensible plan adopted of putting the plates where they logically belong—in the text with the descriptions and discussions of the forms illustrated. This is a concession to convenience and common sense that is extremely refreshing; a practise ordinarily tabooed by publishers, but one that will be welcomed by the actual users of books. The plates themselves are just what was to be expected from Dr. Mayer's pencil and brush, thoroughly satisfactory representations of these exceedingly delicate and beautiful organisms. The lines are in blue and the natural tints of the colored parts are faithfully reproduced, the author's exceptionally extensive acquaintance with the living medusæ giving him a rare power to express both their colors and characteristic attitudes.

The text figures are abundant and well chosen. Many of them being tracings of the drawings of other writers, they are necessarily of less uniform excellence than the plates, although they will prove exceedingly useful to the practical worker in this group.

The text gives a thoroughly monographic treatment of the Hydromedusæ, and the author is fully justified in his claim that "this book aims to be something more than an old-fashioned systematic treatise, for it attempts to record, if not to review, all works upon the embryology, cytology, œcology, physiology, etc., of all forms coming within the scope of the text" (p. 3).

In his systematic treatment the author has found it necessary to frequently revise the work of his predecessors, notably that of Haeckel, the changes in the larger groups being mainly in the combinations of the families of that writer. For example, Mayer's Oceanidæ = Margelidæ + Tiaridæ of Haeckel's classification, and Solmonidæ of Mayer = Solmonidæ + Peganthidæ of Haeckel, thus lowering several of the latter writer's families to subfamily rank. The definitions are clear cut and tersely put, being thus a distinct improvement on the verbose characterizations of many monographic works.

The numerous tables and keys to genera and species will prove very helpful to workers both in the Hydroida and Hydromedusæ, including the hydroid names of all of the medusæ so far as the former are known. Of course it can not be expected that all of Dr. Mayer's determinations will be acceded to by other writers; but this matter can not be properly discussed in the present review. In general, however, it can be said that the author has shown a keen insight in his determination of the hydroid as well as the medusa forms. There is something extremely canny, moreover, in his treatment of the species of particularly troublesome genera, *e. g., Obelia,* where he gives a tabular statement of the characteristic of "the so-called species of *Obelia,*" thus avoiding committing himself unwisely on the one hand and drawing upon his devoted head the thunderbolts of outraged authors of species on the other.

Something over 500 species are described, as compared with 400 in Haeckel's great work. This difference, however, does not properly represent the number of new forms described since the appearance of that monograph, as Mayer's synonymy shows that he has often combined several previously described species in one, as in the case of *Sarsie tubulosa* Lesson, in which *S. mirabilis* Agassiz is included as a variety, besides five other species described by various authors.

The work does not attempt to straighten out the great confusion arising from different names having been bestowed on the hydroid and medusa phases of the same species, and vice versa, *i. e.*, the same names given different species and genera. While this is, of course, to be regretted, the author is fully justified in his statement (p. 3), "These and many other cases of a similar nature interpose a barrier to our attempt to invent a system which includes all hydroids and medusæ in its embrace." The hopelessness of such an attempt is realized when we see that two thirds of the genera of Leptomedusæ in which both hydroid and medusa forms are known have different names for the colonial and medusoid phases in the life history of the same species.

He has been careful, however, to give the hydroid name, whenever it is known, in discussing each species, as well as a description, and often figures, of each hydroid which is known to produce medusæ.

The carefully prepared synonymies under each genus and species is particularly valuable in pointing out the errors of previous writers, as well as giving all names by which the species or genus has been known; *e. g.*, under "*corynitis* McCrady" he says: "Non *Corynitis* Murbach, non *Corynitis* Nutting, non *Corynitis* Hargitt," thus correcting a serious error which had been made by successive writers. It is unfortunate, however, that these synonymies are printed in such small type as to be trying to the eyes when they are studied for any considerable length of time.

The work is replete with interesting facts concerning the embryological and experimental discoveries regarding the species discussed, including a very complete résumé of all that is known through the investigations of the numerous workers in this group.

The author regards the Trachymedusæ and Leptomedusæ as being transformed actinules, and the Anthomedusæ and Leptomedusæ as being formed on a different plan, with their bells not homologous with those of the first-named orders. A further discussion of this exceedingly important point would have been much appreciated by Dr. Mayer's fellow workers.

In one respect the work could have been improved. It seems to the reviewer that a preliminary discussion of the morphology of the group, or of the several orders, corresponding in general to that given by Allman in his "Gymnoblastic Hydroids" would have been very helpful, especially to those interested in the medusæ but not familiar with the technical terms employed and the homologies of the parts, particularly those homologies which exist between the various parts of the hydranth and medusæ and the various forms of gonosome.

There is also occasional inconsistency in sometimes including and sometimes omitting the name of the authority after the specific name: *e. g.*, "*Steenstrupia rubra* Forbes" and "*Steenstrupia aurata*" (pp. 31, 35).

The reviewer, however, so thoroughly admires this excellent piece of work that he finds himself in no mood for criticism of small details. "Medusæ of the World" is a monumental work which will take the very first rank and be a classic of which the Carnegie Institution may well be proud, and for which the author is to be heartily congratulated.

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Identification of the Commercial Dyestuffs. By Professor SAMUEL PARSONS MULLIKEN, of the Massachusetts Institute of Technology. New York, John Wiley & Sons. 1910.

This elaborate treatise has just appeared as Vol. III., of the author's "Method for the Identification of Pure Organic Compounds," and represents an enormous amount of careful and laborious investigation on the part of Professor Mulliken and his assistants. They present here careful records of ten or more separate tests, some of them involving the skillful use of the spectroscope, upon nearly 1,500 different dyestuffs; and the results of these experiments have been expressed in the form of elaborate analytical tables, by which,