year, and in only a few instances have observations continued through a series of years. We are all prone to generalize on the facts in our hands, but it must be acknowledged that the facts upon which we can build theories of fresh water plankton are very meager. There is need of a series of examinations of typical lakes carried on for a term of years, before we can build with certainty.

There remains the great problem, or complex of problems, of the relation of the different elements of the plankton to each other and to the fish. We see, frequently, an apparent overproduction of one of the elements. In shallow lakes—at least in many of them—there is apparently a great overproduction of vegetation. How is this explained? How is the balance of life restored? What constitutes an ideal relation between the vegetable and animal growth? When we plant a new species of fish in a lake, we, of course, disturb the existing balance of organisms, may we not, in some cases, at least, work actual damage? To what extent is this balance between animals and plants maintained in a lake that is not interfered with by man?

These and similar questions, now without answers, offer a field of almost unlimited work, and work that is worthy the best efforts of our students. For while my address, in treating of the present condition of the study of lakes, has dealt largely with isolated facts, after all it is not the facts which the student pursues as his ultimate aim, but the general laws underlying the facts. He is an unfortunate man who sees the trees, but cannot perceive the forest, who can see the stones of which the cathedral is constructed, and show how they were lifted to their places, but cannot perceive the beauty of the structure as it stands in its exquisite proportions, its massive masonry and wealth of sculptured detail only serving to express the idea of beauty and harmony in the master mind of the architect.

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SCIENTIFIC BOOKS.

The Cambridge Natural History. By DAVID SHARP, M.A. (Cantab.), M.B. (Edinb.), F.R.S. Vol. VI. *Insects* (Part II.). London and New York, Macmillan & Co. 1899. 8°. Pp. xii+626, and 293 cuts.

The completion of that portion of the Cambridge Natural History which is devoted to insects is an event of unusual importance to entomologists; for these two volumes constitute the most useful work of its kind that has appeared since the publication of Westwood's Classification of Insects.

The most striking feature of this work is the same as that which characterized Westwood's Classification and has made it an indispensable part of every entomological library; that is, it includes the results of a careful sifting of the greater part of all entomological literature. In a word, these two volumes of the Cambridge Natural History constitute an encyclopædia of entomology, written by one who has thoroughly studied the more important contributions to all departments of entomology, and who also contributes much that is new.

An admirable feature of the work is the fact that it is well-balanced; the morphology, the taxonomy, and the œcology of insects have each received sufficiently full treatment. The student of any phase of entomology is almost sure to find someting on his subject here and to find also references to the more important literature.

The author has placed entomologists under so great obligations to him that one does not feel like saying anything but praise of his work. I cannot help feeling, however, that it would have been better if in some respects he had been less conservative. This is especially true of his treatment of the larger divisions of the class of Insecta; his conclusions on this subject are hardly an advance on what might have been written a quarter of a century ago. In fact this is the weakest part of his work. Thus, in his discussion of Brauer's classification (Vol. V., pp. 175–176), he has apparently failed to

grasp the most important point brought out by Brauer. He says (p. 175) that one of the chief characters on which Brauer bases his system is the existence or absence of wings ; and later (p. 176) he says "Thus it (Brauer's classification) begins by a division of Insecta into winged and wingless ; but the winged division is made to comprehend an enormous number of wingless Insects, whole subdivisions of Orders such as Mallophaga being placed in the winged series, although all are without wings." Now the fact is Brauer does not use the existence or absence of wings as a character distinguishing the two groups into which he divides the Insecta. Brauer believes that the wingless condition of the Thysanura and Collembola is due to their generalized condition ; that none of their ancestors had wings. On the other hand he believes that the wingless condition of all other wingless insects is a secondary condition, that they have descended from winged ancestors. In other words that existing insects represent two distinct lines of descent ; in one, the primitive wingless condition has been constantly retained ; in the other are found only descendants of a common-winged ancestor. This distinction is clearly indicated by the names he proposed for the two groups, Apterygogenea and Pterygogenea. The fact that many of the Pterygogenea have lost their wings does not militate in the least against this distinction. The only indication that our author has understood Brauer's position is a statement that "This first division is entirely theoretical." But if we give him credit for understanding Brauer we must blame him for stating the case in a very misleading manner.

As a rule, however, the work is written in a clear, simple style. The illustrations are abundant and are excellent ; and the pages present an attractive appearance. It is a work that no entomologist can afford to be without.

J. H. Comstock.

Traité de Zoologie Concrète. By Yves Delage and Edgard Hérouard. Tome 11, 1re Partie, Mésozoaires, Spongiares. Paris, Schleicher Frères. 244 pages 15 colored plates and 274 text figures. 1899.

In the most recent volume of their 'Concrète Zoology' Delage and Hérouard present, from the teacher's standpoint, one of the most difficult branches of Invertebrate Zoology, and only praise is due them for the excellent manner in which the subjects are treated.

The group including the two families Dicyemidæ and Orthonectidæ, to which Van Beneden gave the name Mesozoa as indicative of their supposed intermediate position between the Metazoa and the Protozoa is considerably enlarged by the addition of a number of forms which show less evidence of degeneration than do Van Beneden's original types. The classification, however, is only provisional, for in most cases the life history is not known and it is recognized that future investigations may show the forms in question to be only larval stages of other animals. With this in mind the authors make four classes of the Mesozoa as follows, the name of each class indicating the nature of the sub-ectodermal structures : (1) Mesocoelia.—Forms having a digestive cavity with no other cellular boundary than the ectoderm (Frenzel's *Salinella salve*). (2) Mesenchymia.—Forms having a parenchymatous tissue within the ectoderm and without a digestive cavity (*Trichoplax* and *Treptoplax* (Monticelli)). (3) Mesogonia.—Forms without digestive cavity and with one or several cells beneath the ectoderm which are destined for sexual reproduction (Dicyemidæ and Orthonectidæ). (4) Mesogastria.—Forms having a digestive tract like the archenteron of a gastrula, the walls being separated from the ectoderm by a coelomic cavity in which there is no intermediate tissue (*Pemmatodiscus*, a parasite on *Rhizostoma pulmo* (Monticelli)). In addition to these classes, Haeckel's Physemaria, the 'urn' forms in the cavities of the Sipunculidæ, and the curious form described by Caullery and Mesnil under the name *Siedleckia nematoides*, are included as appendices.

In the second part of the volume the authors put into their subject an intimate knowledge gained only by personal investigation and continued research upon the structure and the development of the Sponges. The result is a clear and concise presentation of the numerous complicated Sponge-structures. The canals, inhalent and exhalent, with their many con-