SCIENTIFIC BOOKS.

One Thousand American Fungi; How to select and cook the Edible; How to distinguish and avoid the Poisonous; giving full botanic descriptions made easy for reader and student. By CHARLES MCILVAINE, assisted by ROBERT K. MACADAM, Indianapolis. Bowen-Merrill Co., with 65 plates, 34 colored, and numerous cuts. Large 8vo. Pp. 704.

The fashion of gathering and eating fungi, which has suddenly become almost a mania with many people in this country, has called forth a considerable number of books and tracts intended to aid those who have no previous knowledge of fungi to distinguish between the edible and poisonous species. As is seen from the title, the present work has for its object to make the subject easy for the reader and the student. The first thing which the student demands is good illustrations, which, in the case of most fungi classed as edible or poisonous, must be colored in order to be recognized at once. Unfortunately the colored plates of Dr. McIlvaine's book are not satisfactory. Too many species are often crowded together on a single plate, the drawing is too sketchy and the colors, which have a washed-out look are not true to nature. The plate of *Clitocybe illudens* is almost the only one of the colored plates which is at all satisfactory and, were it not for the names attached, in many cases expert mycologists would be at a loss to know what species are represented. On the other hand, the photographic reproductions are excellent and, where color is not an essential feature, serve their purpose admirably. Plate 158, a good picture of *Phallus Ravenelii*, is marked *Phallus impudicus*, although the veil characteristic of that species is wanting.

Turning to the text, we are told that the book is the result of ten years' labor and that the author has added over six hundred species to the one hundred and eleven edible species enumerated by the Rev. M. A. Curtis. From this long practical experience of Dr. McIlvaine he must have acquired a large fund of information valuable to the would-be mycophagist. It is to be regretted that the author's style is marked by an absence of simplicity and clearness, and that he is given to repetition and to frequent side remarks in which sentimentality rather than scientific accuracy predominates. A serious fault, due rather to the lack of clearness in writing than to any desire to misrepresent, is the mixing up of what the author has himself observed with what he has learned from the writings of other mycologists and, in too many cases, one who is not already familiar with the literature cannot tell where the quotations from other writers begin and end. One would like to know exactly what has been the result of Dr. McIlvaine's own experience, and that is not always easy to find out. What is said about *Boletinus porosus* illustrates this point. That species is a common and striking fungus in the eastern part of the country and when raw it has a most disagreeable taste which promises little to the mycophagist. One would like to know what has been Dr. McIlvaine's experience with this species. On turning to p. 403 we find only the following statement: "Fine specimens were sent to me by Mr. H. I. Miller of Terre Haute and Dr. J. R. Weist, Richmond, Ind. They were in condition to be eaten and enjoyed. No disagreeable odor was perceptible." Does this mean that Dr. McIlvaine ate the specimens and enjoyed them? His statement is certainly not explicit enough to satisfy those who have been nearly nauseated eating this fungus raw. Whether a fungus is edible or not often depends on circumstances and in any work intended to instruct students the conditions should be stated. To take *Gyromitra esculenta* as an example, Plate VI. is a somewhat sensational representation of a group of dangerous fungi. A small but very red devil is sitting under the shadow of a large skull reading a book called toxicology. In the foreground is a very bad picture of *Gyromitra esculenta* which, from its surroundings, the reader would infer to be deadly. But on p. 547, in speaking of this species, we find the following: 'Since 1882 myself and friends have repeatedly eaten it. In no instance was the slightest discomfort felt from it. It was always enjoyed.' Now the facts in the case of the *Gyromitra* are these: as long ago as 1882 Bostroem* showed that an active poison exists in this species, but it is soluble in boiling water and there-

* Ueber die Intoxication durch die essbare Lorchel. Eugen Bostroem, Leipzig. 1882.

fore, if the water in which the fungi have been boiled is carefully removed, they can be eaten with impunity. If by experiment Dr. McIlvaine has found Bostroem's observations to be incorrect, he should have made some statements to that effect. Otherwise he should have mentioned Bostroem's experiments in the paragraph in which he speaks of the fungus as edible. As it is, we are not even informed whether in his own cases the water in which the *Gyromitra* was cooked was removed or not. That part of the book treating of the poisonous Amanitæ, a subject of vital importance, is by no means clearly written. The facts are given, but they are so ill arranged that they must be obscure to the persons to whom the book is especially addressed.

With regard to that part of the work treating of the species not preeminently edible or poisonous, and they form the greater part of the whole, it may be said that as a summary of species compiled from many scattered sources, it serves a useful purpose, since in the present state of our knowledge anything like a complete or very accurate account of our larger fungi is out of the question. It would have been well to cite the publications where the different species were originally described, as well as the name of the original describer. In the effort to make the list of species described as complete as possible the mistake has been made of accepting without sufficient discrimination the names and descriptions of different authorities, the result being that the same species in several instances appears not only under different names but with different descriptions in a way puzzling to students who attempt to ascertain the specific distinctions.

The chapter by Professor W. L. Carter on 'Toadstool Poisoning and its Treatment' stands out in bright relief from the rest of the book in its clearness and scientific treatment of the subject. There is also a good practical chapter on cooking and preparing fungi for the table and a good glossary, and the press work is all that need be asked. The great merit of the book lies in the record of the large number of species eaten by the author without injury, in the excellent photographic reproductions, the useful although somewhat indiscriminate summary of our native species, and the chapters on toadstool poisoning and on cooking fungi. The faults of the book are due mainly to the fact that the style of the author is discursive and confused rather than clear and concise and the temptation to write a large book where a shorter and more accurately scientific treatise would have answered the purpose better has not produced the best result. Although valuable in many ways, it does not seem to us to be so well adapted to the general reader and the student to whom it purports to be addressed as the excellent book of Hamilton Gibson, 'Our Edible Toadstools and Mushrooms.'

A Treatise on Zoology. Edited by E. RAY LANKESTER. Part II. The Porifera and Cœlentera. London, Adam and Charles Black; New York, Macmillan & Co. 1900.

The second volume of the 'Treatise on Zoology,' edited by Professor Lankester, has quickly succeeded the first. It includes an introductory chapter by the editor, followed by a chapter on the 'Porifera,' by Professor E. A. Minchin, and chapters on the 'Hydromedusæ and Scyphomedusæ,' by Mr. G. H. Fowler, and on the 'Anthozoa and Ctenophora,' by Mr. G. C. Bourne. The amount of space occupied by the various chapters is, however, very unequal, Professor Minchin's admirable account of the sponges extending through one hundred and sixty-eight pages, while the Hydromedusæ and Scyphomedusæ together are discussed with only seventy-six, the Anthozoa receiving eighty and the Ctenophores twenty-three.

The introductory chapter by the editor is full of interest as a summing up of the results of the important investigations which he and his pupils have been conducting for many years on the significance of the various cavities known as cœlomic. Lankester recognizes primarily only one form of cœlom, the gonocœl, a space surrounding the reproductive cells, though secondarily it may enlarge and become divided to form cavities surrounding other organs, as in the Vertebrates, for example, in which it forms the pericardial, pleural and peritoneal cavities. In the Arthropods, on the other hand, it becomes very greatly reduced concomitantly with the formation of a hæmocœl, produced by the

distension and fusion of spaces primarily belonging to the vascular system, a method of cœlom-formation to which Lankester applies the somewhat cacophonic term *phlebœdesis*. As a corollary of this view of the cœlom a division into two groups of the organs usually termed nephridia has resulted; those which terminate in a flame cell, such as those characteristic of the Platyhelminths, Rotifers, Chætopods and of certain larval Mollusca, have been placed in one group and retain the original name, while those which stand in relation with the gonocœl or its derivatives, such as those of the adult Molluscs, the Arthropods and Vertebrates, form the second group and are termed uroducts. In passing it may be remarked that we cannot help wondering why, in speaking of nephroblasts on p. 34, the credit for their discovery is assigned chiefly to Bergh, the actual discoverers, Whitman and Wilson, being probably included in the term 'other observers.' Is it possible that Professor Lankester finds his greatest joy in one sinner who repents?

The theory thus briefly outlined has certainly much in its favor, though it must be confessed that doubts are still permissible as to the fundamental distinction between the two forms of cœlom. Final judgment on this point must at all events be postponed until further information as to the developmental history of the cœlomic and vascular spaces of such forms as the Nemerteans and Hirudinea is at our disposal.

In connection with the theory Lankester introduces many new terms, a list of which with definitions forms the concluding section of the chapter. The majority of these are undoubtedly necessary, if the theory be correct, but the terms Enterocœla and Cœlomocœla, used in the heading of the chapter, and proposed as substitutes for the more familiar names Cœlentera and Cœlomata, are certainly open to objection. Perhaps they are more symmetrical than the older terms, but a name, after all, is but a peg whereon to hang an idea, and a superabundance of pegs for one idea is just as confusing as a lack of one, and, furthermore, the term Enterocœlia has already been employed by the Hertwigs for the suspension of a very different idea.

Professor Minchin's chapter on the Porifera is admirable in every respect and fully harmonizes with the excellent work he has previously published upon the group. His treatment of all the points of view is full and accurate, and his discussion of the affinities of the group and the phylogeny of its various subdivisions is clear and suggestive. He inclines to the view of an early separation of the sponges, as the Parazoa, from the remaining Metazoa and maintains the non-identity of the germ layers in the two groups. The chapter, in a word, may be taken as an accurate and comprehensive statement of our present knowledge of this interesting group.

Unfortunately, so much cannot be said without reservation regarding the remaining chapters of the volume. Mr. Fowler's chapters do not evidence the same familiarity with the forms described that is seen in Professor Minchin's work, and the same is true, to a certain extent at least, of Mr. Bourne's contribution. The chapters on the Hydromedusæ and Scyphomedusæ are sketchy, as may be appreciated from the fact that the latter group requires but sixteen pages, or really, if the space occupied by the fourteen figures be deducted, but little more than ten pages. The principal facts concerning the structure and histology of the two groups are given, it is true, but the brevity of style which the author affects leads occasionally to statements which convey erroneous impressions, as, for instance, where it is stated that the threads of the nematocysts 'are formed (*sic*) and lie inside the vesicles,' where delamination alone is given as the method by which the germ layers are formed in the Hydromedusæ, and where invagination is alone given as the corresponding process in Scyphomedusæ. And one misses also some treatment of the broader questions suggested by the structural peculiarities of the group. Thus one finds no discussion of the interesting question as to the origin of the alternation of generations in the Hydromedusæ, so admirably treated by Brooks, nor of the corresponding phenomenon in the Scyphomedusæ, and one searches in vain for any discussion of the phylogeny of the various orders into which the two classes are divided, or for any adequate treatment of the principles underlying the polymorphism so strikingly manifested by the Siphonophores.

In the chapters contributed by Mr. Bourne one finds side by side an admirable treatment of some groups and faulty accounts of others. Thus of the groups in which Mr. Bourne has accomplished admirable investigations, the Alcyonaria and corals, the description is very good, but for the most of the remaining groups the treatment is sadly behind the times. This is especially the case with the forms which he includes under the order Actiniidæ, because so much has been accomplished within recent years in connection with this group, and with these recent advances the author appears to be entirely unfamiliar, basing his classification, as he states, on the work of Hertwig (1882, 1888) and Andres (1383). It is to be remembered that Hertwig's work formed merely the starting point for a reconstruction of the taxonomy of the Actiniidæ, and the progress of the reconstruction has gone on since its publication with rapid strides.

Some excuse, however, may be found for many of Mr. Bourne's taxonomic enormities in the fact that the chapter was evidently written as many as four and possibly even five years ago and has since remained unpublished. But when we read on p. 38 that 'pains have been taken to make it (*i. e.*, the classification of the Zoantharia) as fully as possible representative of the actual state of our knowledge,' and find the volume in which this statement appears dated 1900, we are justified in expecting some record of the results of comparatively recent investigations. Apparently, however, there has been practically no attempt at a revision of the original manuscript, and though Mr. Bourne may not be responsible for the delay in its publication, he may well be held accountable for the failure to bring it up to date.

A detailed criticism of the classification adopted for the Actiniidæ would almost result in a comprehensive review of the entire order, but a few errors may be mentioned in justification of the criticism made above. One finds, for instance, no mention of the family Aliciidæ established by Duerden in 1895, its type, Alicia (Cladactis), being referred to the Bunodidæ; Hertwig's family Liponemidæ is retained and no mention is made of the family Boloceridæ (McMurrich, 1893); the Phyllactidæ are described as belonging to a group possessing foliaceous tentacles, though their foliaceous organs are really highly modified marginal spherules, as was shown by McMurrich in 1893; and Savaglia is suggested as a member of Hertwig's family, Amphianthidæ, although Carlgren showed in 1895 that it is really a Zoanthid. These for samples: a long catalogue of sins both of omission and commission might readily be made, and, naturally, the unfamiliarity with recent work has led to errors of statement in the descriptive part of the work.

With the corals, as stated above, the case is different, though even here the soft parts, so important for the proper understanding of the affinities of the group, are barely mentioned, being dismissed with only six lines of description. And little fault is to be found with the chapter on the Ctenophores, in which an accurate and sufficiently complete description is found, the author deserving especial credit for the stand he has taken against the current but erroneous idea that these forms are Cœlentera or even directly derived from any of the existing Cœlenterate groups.

Attention has been directed in what has been said above, chiefly to the failings of the volume and possibly an erroneous impression as to its general excellence may have been given. It is, nevertheless, a valuable book to place in the hands of the 'serious student' for whom, the preface informs us, it was written, and even though it fails here and there to be an entirely 'trustworthy presentation * * * of the main facts of zoology' it is assuredly worthy of a place on the reference shelf of every zoological laboratory. It may be stated that the illustrations are abundant and, as a rule, excellent, and bibliographic lists and good indices are given at the end of each chapter.

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Contributions a l'étude des hyménoptères entomophages. Par L. G. SEURAT. Ann. des Sciences Naturelles. Zoologie, X., Nos. 1–3, Paris, 1899. Pp. 1–159. Pl. I–V.

The development of the larvæ of those parasitic Hymenoptera which live within the bodies of other insects has been the subject of much speculation and of some investigation. How these creatures breathe, nourish themselves,