All who attended the Congress felt more than repaid for the journey to Paris and deeply indebted to the genial President, Professor Albert Gaudry, to the indefatigable and much beloved Secretary, Professor Charles Barrois, and to his associates, Messrs. Thévenin, Von Arthaber and Zimmermann.

H. F. O.

SCIENTIFIC BOOKS.

Introduction to Zoology. By Charles Benedict Davenport and Gertrude Crotty Davenport. New York, The Macmillan Co. 1900. Pp. xii + 412; 311 illustrations. Price, $1.10.

The purpose of this new text-book, as indicated by its secondary title, is that of 'a guide to the study of animals for the use of secondary schools.' Unlike most of its predecessors among zoological books for secondary schools its title is not misleading, for the book is sent forth not as an 'elementary zoology' but as an *introduction* to the study of animals. It does not pretend to be a treatise on 'zoology' from the varied aspects of comparative anatomy, embryology, and physiology, but rather it attempts a presentation of facts which may well pave the way for advanced study of the special sub-sciences of zoology. But in addition to writing an introduction for students who may go deeper into zoological studies, the authors have recognized the important fact that 'the vast majority of secondary students, are not to be zoologists, but rather men of affairs.' Although this view has been gaining recognition in recent years, this is the first text-book which seems to have been planned with consideration for the needs of the 'vast majority' who are limited to a short elementary course in zoology.

Contrasted with the elementary books on zoology which have appeared during the last decade, the plan of this book is decidedly new; for it places no emphasis upon comparative anatomy, which has strongly characterized recent zoological teaching in most secondary schools. There is no description of internal structure of animals, and consequently no discussion of fundamental physiological processes. The book deals with common animals, and their habits, homes, their life histories, and their systematic, economical and ecological relations. In short, the book is a *modern* Natural History full of the spirit and the charm which characterized the old-time books on that subject.

As a text-book the 'Introduction to Zoology' is intended to accompany the well-known outline of laboratory study in zoology which Professor Davenport prepared several years ago, and which was published as an 'Outline of Requirements in Zoology,' Lawrence Scientific School, Harvard University. A revised reprint of this outline forms an appendix to the book. The order of treatment in the text follows that of the outline for laboratory work, beginning with insects and following with other arthropods, worms, mollusks, echinoderms, cœlenterates, protozoa, and the vertebrates.

Considerable attention is given to classification. Twenty chapters have appendices with keys for identification of common families and orders. Both common and scientific names of animals are freely used in the text, and footnotes give the meaning and derivation of the technical names.

The book is liberally illustrated both by figures from well-known works and by numerous new photographs of the natural objects. With regard to the photographs it must be regretted that many are imperfect and do not well illustrate. One feels convinced that good outline drawings would in many cases have been more instructive, particularly in the case of small animals like insects. However, many of the photographs are excellent and add a charm to the book.

On the whole the book is written in an entertaining style, and can scarcely fail to arouse interest concerning our common animals. The authors have well presented the natural history aspect of zoology. Teachers who read the book will probably agree that for liberal secondary education no other phase of zoology would be more important, but many readers will doubt the wisdom of omitting from secondary education all reference to the essential facts concerning the internal structure and the fundamental physiological processes of animals.

The book will surely find a place in secondary

schools whose teachers recognize that most of their pupils are studying zoology for use in everyday life and not as preparation for advanced study in college. Moreover, college officers in charge of admission requirements will probably give more favor to such a course in elementary zoology than they have accorded the purely morphological study which is now so much in vogue in secondary schools.

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Oysters and Disease. An account of Certain Observations upon the Normal and Pathological Histology and Bacteriology of the Oyster and other Shell-fish. By W. A. HERDMAN, D.Sc., F.R.S., and RUBERT BOYCE, M.B., London. George Philip and Son. 1899. Lancashire Sea-fisheries Memoir No. 1.

In this thin volume Professors Herdman and Boyce, record the results of an investigation extending over a period of three years and, although they have not actually established a connection between oysters and disease, they have produced the most important contribution which has yet appeared upon the subject, which is one of considerable scientific and unusual popular interest.

The disputed question as to the cause of green oysters has been re-examined, with the result that several forms of greenness have been recognized and studied. But little is added to our knowledge of the well-known oysters of Marennes, the authors being in practical accord with most previous investigators, but concerning the green oysters of Falmouth and certain green American oysters laid down in the vicinity of Liverpool they reach results divergent from the views held by previous workers and more in accord with popular beliefs.

Copper in minute quantities is normally present in all oysters, but in the green Falmouths and Liverpool Americans it is found in unusual amounts. In the greenest of the American oysters as compared with the whitest, the proportion is 3.75 : 1, calculated per oyster, and 3.63 : 1, calculated on the ash, and a careful study of the distribution of the copper by chemical and histo-chemical methods demonstrates that it is the cause of the greenness.

Some years ago Dr. Ryder, as noted by the authors, studied a case of leucocytosis in American oysters, although he did not determine the presence of copper nor appreciate the true cause of the greenness. The reviewer has examined during recent years, a great many green oysters, but in no case has the greenness been in the leucocytes of the blood of the heart and the sinuses and tissues of the mantle, as described by Ryder and the present authors, nor in those which were tested, has the copper been present in abnormal quantities or unusual distribution. The specimens rather resembled the poor but harmless Dutch oysters described by Herdman and Boyce, and it would appear that we have in America, as in Europe, several kinds of green oysters, that in which the color is due to copper being comparatively rare.

The connection of oysters with the transmission of infectious diseases, especially typhoid and enteric fevers, is carefully considered. Bacilli of the colon group are frequently found in oysters sold in towns, but there is no evidence that they occur in those living in pure sea-water. The experiments show that pure sea-water is inimical to the growth of typhoid bacilli and that they do not multiply either in the alimentary tract nor in the tissues of the living oyster. *B. typhosus* was not found in any of the oysters obtained from dealers or directly from the sea, but from inoculated specimens the bacilli were obtained up to the tenth day, although the results indicate that they perish during passage through the intestines.

Oysters and other mollusca obtained from dealers frequently contain a bacillus possessing the characters of Klein's *B. enteritidis sporogenes*, presumptively resulting from sewage contamination, but it was found that the infected oysters could be cleansed by washing in clean running sea-water. It is evident, therefore, that by changing oysters from an infected bed to one where the surroundings are pure they may be purged of their dangerous qualities. The authors urge, in conclusion, that, by legislative action and cooperation among growers, steps be taken to prevent sewage contamination of the oyster beds from which the markets are supplied.