trypsin, pepsin, and various peptidases are described in detail almost as great as that found in Northrup's book on Crystalline Enzymes, but the methods for the crystallization of papain and ficin are not included.

The discussion of each enzyme begins with a short historical note followed by a list of organs or organisms where the enzyme has been found. With the exception of urease no data are given to indicate the relative concentration of the enzyme in the cells where it occurs. The action and specificity are then discussed and excellent formulae and equations are presented. This is usually followed by a description of the preparation and purification of the enzyme and a very useful outline of the methods for the estimation of its activity. The compounds which inhibit the enzyme are listed but the value of this is limited by the fact that neither the concentration of inhibitor, the conditions under which it acts nor the references are usually given. Moreover, the lists are generally far from complete. Eserine is the only inhibitor mentioned for the cholinesterase and 3 M urea the only one for the monamine oxidase.

The book begins with a simple and clear account of the general characteristics and properties of enzymes and ends with a chapter on carbohydrate metabolism and the Szent-Györgyi and Krebs cycles. This chapter includes the facts and theories made familiar by the numerous reviews that have recently appeared on the subject. The book on the whole is clearly and tersely written, well printed, and has only a small number of misprints. Enzyme chemists should find it useful particularly because of the formulae and methods of estimation which are given. Since, as the title implies, chemistry and methods are the main concern of the authors, the book may be considered to have achieved its purpose.

FREDERICK BERNHEIM

WILDLIFE REFUGES

Wildlife Refuges. By IRA N. GABRIELSON. New York: The Macmillan Company. 257 pp. 32 plates. 17 figs. 1943. $4.00.

FOR so many years it has been the fate of one who wrote of the wild life of the country to approach the subject with a feeling of despair, that it is quite a relief to find a book which is openly and frankly optimistic, a book which speaks of attainments rather than of defeats and losses. Instead of recording increasing additions to lost causes it contains references to 17,643,915 acres added to the national wildlife refuges and many other acres under private and public ownership. It is indeed heartening to read that "All together they are approaching adequacy," especially as it appears under the name of the director of the Fish and Wildlife Service. Here one may read the history of the movement from the early action by the California legislation in 1870, through a succession of similar events in a series of actions until finally in 1939 332,438 acres were added by the Resettlement Administration. These are all national efforts, to which must be added many more state refuges and numerous private grounds.

The book covers so much ground that it is impossible to note every phase of the treatment, but possibly a brief review of one topic, the Okefenokee swamp area, will serve to present the treatment. It is noted here that this area is impossible to classify, having inhabitants that would permit it to be designated as a migratory wild-fowl area, a big game refuge or a general wildlife refuge. The condition of the forest is much regretted, but it is pointed out that before many years have passed, it will be back in good form again, because of what still remains and because of the rapid growth of vegetation. The prairies are described and also the peculiar methods of travel. Only when he comes to a description of the animal life in the morning and evening of the day does the author's statement that "Okefenokee is marvelous" find justification. A brief general description of the swamp, in which the occurrence of the fabulous "sink holes" is vigorously denied, is followed by an account of the fishing, which is described as "locally famous." It is believed that this is a permanent condition, although the habit of going dry and burning is recognized as a handicap. Finally the author takes up the subject of the future of the swamp, pointing out the desire to restore it to its former state, but also indicating that some animal form such as the panther and ivory-billed woodpecker seem to be entirely absent now. Altogether the account ends most hopefully. Each topic in the book is taken up in a similar way, and the final picture is one of great hope and expectation.

C. E. MCCLUNG

SWARTHMORE COLLEGE

SPECIAL ARTICLES

INTERFERENCE OF INACTIVE VIRUS WITH THE PROPAGATION OF VIRUS OF INFLUENZA

NOT much is known as to the optimal conditions for the propagation of the influenza A and B virus in the allantoic cavity of the chick embryo. In an attempt to gain this information it was found that the active virus as shown by titration in mice may reach maximal titer (50 per cent. mortality end point) in the allantoic fluid as early as 12 to 18 hours after