

The book will suggest many problems to the biological student, while for the general reader it shows the present position of knowledge on debated topics, with a wealth of happy analogy and often humorous comment; thus, speaking of protoplasm, Sir Arthur says that it "may be compared to an archipelago with a very large number of small islands on whose multitudinous coastlines there are endless opportunities for brisk trading." Part 4 is a serious contribution to the philosophy of evolution; the remainder is a 'common-place book', for constant reference—and entertainment.

*Water-Fowl and Game-Birds in Captivity: some Notes on Habits and Management.* By Arthur F. Moody. Pp. 240 + 6 plates. (London: H. F. and G. Witherby, 1932.) 10s. 6d. net.

THE study of birds in captivity can provide much valuable information, such as the length of incubation and the different stages through which the chicks pass on their way to maturity. In the present volume, we have the author's personal knowledge of how he tended the birds. He gives much information on the construction of aviaries; the varying foods and how to give them; how to handle the birds; how to feather clip and how to pinion them. Under "Vermin" many creatures are included and instructions given for dealing with them. The book ends with a chapter on diseases and how they should be treated.

The volume contains an abundance of information on many different birds and should be welcomed by all aviculturists. Some of the plates are very attractive.

*Principles of Soil Microbiology.* By Prof. Selman A. Waksman. Second edition, thoroughly revised. Pp. xxviii + 894 + 15 plates. (London: Baillière, Tindall and Cox, 1931.) 52s. 6d. net.

MUCH additional information has been incorporated in the second edition, but to avoid undue enlargement of the volume the earlier text has been considerably condensed by certain omissions and by the combination of several chapters to avoid unnecessary duplication.

*An Introduction to the Scientific Study of the Soil.* By Prof. Norman H. Comber. Second edition. Pp. 208. (London: Edward Arnold and Co., 1932.) 7s. 6d. net.

IN the second edition of this textbook the chief alterations are an expansion of the section on soil microbiology and the re-writing of that dealing with mechanical analysis. Other parts of the book are being brought up to date.

### Chemistry

*Liesegang Rings: and other Periodic Structures.* By Dr. Ernest S. Hedges. Pp. viii + 122 + 8 plates. (London: Chapman and Hall, Ltd., 1932.) 10s. 6d. net.

ALTHOUGH the Liesegang phenomenon, having engaged the attention of mineralogists, histologists

and colloid chemists, has given rise to an extensive and scattered literature, the present work is the first monograph devoted exclusively to the subject. The author gives a full account of the experimental material, beginning with Liesegang's original silver chromate rings and enumerating the numerous other combinations of reactants which have since been found to produce periodic precipitates in certain gels and within certain limits of concentration. He then devotes a chapter to the various theories so far proposed, which have in turn postulated metastable supersaturation, adsorption at the precipitate, membrane formation, variations in the rate of diffusion, periodic coagulation of a colloidal reaction product and periodic inhibition of precipitation by the second (soluble) reaction product as the principal agency. Most of these theories are based on a few, or even on isolated, examples and are incapable of explaining others. This is not really surprising, as there is no *a priori* reason for assuming that the mechanism of periodic precipitation is necessarily the same whatever the reaction producing it.

The author proposes a "comprehensive theory" of periodic phenomena, which however does not at present amount to more than a general qualitative statement of the conditions necessary and (possibly) sufficient for their occurrence, and does not allow one to predict the result in any specific instance.

Interesting chapters are devoted to other periodic phenomena, such as periodic sedimentation and crystallisation, as well as to periodic structures in Nature. A feature of the book is a bibliography containing nearly five hundred references, in which the reviewer has not been able to detect any omissions and has found much that was new to him. The work should stimulate exploration of one of the more curious by-paths of colloid chemistry.

*The Structure and Composition of Foods.* By Dr. Andrew L. Winton and Dr. Kate Barber Winton. Vol. I: *Cereals, Starch, Oil Seeds, Nuts, Oils, Forage Plants.* Pp. xiv + 710. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1932.) 53s. net.

THE name of Dr. A. L. Winton is well known to food technologists for his editing of Leach's "Food Inspection and Analysis" and for his collaboration with Hanausek in "The Microscopy of Technical Products" and with Moeller in "The Microscopy of Vegetable Foods". In this, the first of three entirely new volumes, he has joined with Dr. K. B. Winton, and the work will not in any way replace the earlier books, though it extends and amplifies them; its emphasis is on description, classification, and identification, rather than on the technique of analysis, inspection, or microscopy. It will evidently be considerably larger than the earlier books of which Dr. Winton has been editor or joint author, and, judging by Part I, will form a most comprehensive and well illustrated book of reference.

A. L. B.