fills them does this book deal". All the same, the subject of cell structure is generally called 'cytology' and that of cell behaviour 'cell physiology'. Moreover, it is not clear why, if a treatise on protoplasm is to have such a wide scope, some aspects of cell physiology, such as those mentioned above, are included, while others, such as respiration, a universal property of living matter, are excluded.

What, then, of protoplasm itself? The chapters dealing definitely with the subject of the book are the first ("The Living Substance"), the fourth and fifth on "Micurgy" and "Tissue Culture" respectively, and the fifteenth ("The Structure of Protoplasm and Organic Colloidal Matter"). There are also throughout the book, even in chapters purporting to deal with chemical and physical subjects, constant references to the bearing on protoplasm of the subjects discussed. To the reviewer, the chapter on the structure of protoplasm is the most interesting in the book, for in this the author presents his reasons for regarding protoplasm as possessing a fibrillar structure; reasons, the forcefulness of which readers must judge for themselves, but which the reviewer must confess he does not find particularly convincing.

The reviewer is mystified by the arrangement of the material in the book; why, for example, the chapters on carbohydrates, fats and proteins follow,

instead of precede, the chapter dealing with the structure of protoplasm.

All the same, if the contents of the book do not fit the title, and if they are strangely arranged, they do comprise much valuable and interesting material. The author states in his preface that the book is written for students of biology and medicine and the related fields of biophysics and biochemistry. Actually, as already indicated, it contains among other material, accounts of physical and chemical principles with which students of physiology should be acquainted, and as such can be recommended to those who require a text-book bringing together necessary information on these matters. The reviewer, however, cannot help feeling that Prof. Seifriz would have rendered much greater assistance to students of biology if, instead of bringing together the materials he has into one book, he had divided it and written two books, one comprising an exposition of the fundamental physical and chemical principles necessary for an understanding of physiological processes, the other a work more strictly confined to an account of protoplasm. The latter might well have included not only a detailed statement of his own views of the structure of the living substance, but also a reasoned criticism of other views of the constitution of protoplasm with which he may not be in agreement.

Bird Migration

Bird Migration:

a Short Account. By Dr. A. Landsborough Thomson. (Birdlovers' Manuals.) Pp. 224+6 plates. (London: H. F. and G. Witherby, 1936.) 5s. net.

AN account of a subject with as many ramifications as bird migration can be handled in different ways. Dr. Landsborough Thomson has chosen to present the subject from the impartial point of view of a well-informed spectator. He has neither pet theories to develop nor a personal axe to grind. His treatment is comprehensive in spite of rather severe space limitations, and the vast array of facts is systematically marshalled and logically presented.

The book is quite general and deals with migration in the widest sense. Specific examples of migratory behaviour are not too freely used and are drawn in the main from British sources. Authors are sparingly cited and there is no bibliography. Readers interested in more particular knowledge are referred to a short list of suitably selected works.

The make-up of the book is attractive and its few illustrations are unusually well reproduced.

Occasional inaccuracies occur, as in the description of the migrations of the American golden plover. The statement that the spring passage is through the interior of the continent and the autumn passage over the Atlantic from Newfoundland to the Lesser Antilles is only partly correct. Actually it is only the adults that use the latter route in the autumn, while the immature birds proceed south separately through the interior, generally at a later date. It would be nice to see this classical but incorrect account dropped permanently from migration literature, particularly in a book with the merits of this one. The author appears to be over-cautious in his treatment of modern investigations. Even if their final implications are as yet open to doubt, they should at least be mentioned if there is no space to accord them a brief description.

It seems regrettable that interest in bird migration should be largely confined to ornithologists. The present volume, short but dependable and eminently readable, contains much food for thought for the general biologist. WM. ROWAN.