is weak. Particular areas that need revision are the meagre introduction to capacitance, inductance and AC theory; the description of phase contrast microscopy with terms such as "this is done by inserting a glass phase ring in plane P", with no explanation of phase rings, will leave students who have only the basics floundering; and in a similar manner the introduction to electron microscopy and the wave nature of moving electrons is badly skimped. Throughout the text there are curious statements which suggest that the book was written to meet a deadline. On page 5 it is stated, "It is a common experience that when a stationary object is pushed sufficiently hard it moves". Later (p 35), we have, "The eye is sensitive to light because the retina responds to the electric field". About ionic conduction through membranes it is stated (p 84), "The permeability of the membrane for Na^+ ions is less than that for K^+ and Cl^- ions so that when the fibre is in its normal state there are more Na^+ ions on the outside than inside". There are too many statements of this kind to unreservedly recommend it for reading by biologists as an introduction to physics.

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Insights into biological phenomena

Introductory Biophysics. By F. R. Hallett, P. A. Speight and R. H. Stinson. Pp 243. (Chapman and Hall: London 1978.) Paperback £5.95.

THERE is currently a need for a comprehensive modern textbook on biophysics suitable for university students. There are, of course, many books which are in effect physics primers for biologists, but what is required is rather a book that illustrates the great insight into biological phenomena that can be gained from the application of physics. This book falls into the latter category. It not only describes the application of classical physics to biological phenomena but also covers the more modern areas such as the biological effects of electromagnetic and ionising radiations and the application of X-ray crystallography to biological molecules. Thus, physics is brought in as a tool to solve problems rather than as an end in itself. One can criticise the book for omission of some important topics—for example, thermodynamics and respiratory processes—but for a book of its size it covers a reasonable range. Furthermore, it is good to find a book aimed at the life science student which does not attempt verbal gymnastics in order to avoid a mathematical description of a process, and one that lays considerable emphsis on problem solving to consolidate concepts in the mind of the student.

Unfortunately, although the book has many good points, it is nevertheless something of a disappointment on two counts. The first is a lack of balance apparent in some of the chapters. It is, for example, difficult to understand how a chapter labelled 'molecular biophysics' can contain a discussion of protein structure and yet not show even one diagram of a protein model, and contain only one paragraph on how the modern understanding of the architecture of such molecules allows an interpretation of their function at a molecular level. Similarly, in the chapter on radiation biophysics, a good section on target theory is followed by a trivial discussion of the actual damage that ionising radiations can cause; furthermore, in such a chapter surely the biological and medical applications of ionising radiations deserve mention.

A second area of disappointment lies in the terse manner in which many crucial concepts are covered. This may be acceptable in a revision book, but this is clearly meant to be a primary text and as such these concepts deserved a fuller treatment. To give only two examples: if, as occurs in chapter 7, it is necessary to have a section explaining the physical meaning of the terms work and energy, then more than the two paragraphs given are needed for adequate coverage. Similarly, in the chapter on heat flow in biological systems the phenomena of convection and radiation are explained at some length but conduction is not explained at all except in so far as the relevant equation is given. Indeed this particular chapter is rather poor because, though many of the ways in which heat may be lost by an animal are explained, the control of heat production and loss in animals is described in so disjointed and incomplete a manner that it would be difficult for the student to obtain a coherent picture.

So we are still in need of a really good textbook on Biophysics, for, although this book does contain some very good material, it is frequently marred by omission and inadequate presentation.

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Lysosome

Taken from Membranes and their Cellular Functions, reviewed on page 88