

In the past two years, three publishers have made additions, in the field of muscle biology, to their (continuing) series of books designed for late school or undergraduate consumption. Oxford University Press (London), in their *Biology Readers* series, have produced a 16-page pamphlet entitled *The Contractile Behaviour of Mammalian Muscle* (30 pence) by A. J. Buller; Arnold (London) have persuaded D. R. Wilkie to write a second edition (hard and paperback) of his book on *Muscle* (£2.50; £1.25) in their *Studies in Biology* series; and Blackie (Glasgow and London) have produced a specialised text on *Visceral Muscle: Its Structure and Function* (£5.10) by H. Huddart and S. Hunt.

Muscles, according to Professor Buller and Wilkie and Doctors Huddart and Hunt, respectively, are more important in getting animals about than brains; are the means by which we act on our environment and move objects as well as ourselves; are a tissue and therefore by definition composed of cells. These paraphrased quotations from the first lines of the three books are characteristic and exemplify their approaches.

The books vary enormously in length and in their scope and coverage. Professor Buller concludes all he has to say in 16 succinct pages, of which 5 are taken up by illustrations. Wilkie covers his subject in 67 more sparsely illustrated pages, whereas Huddart and Hunt pack their comprehensive but more specialised subject matter into 165. The shortest work concentrates almost exclusively on isometric and isotonic contractions of fast and slow twitch skeletal muscles, having briefly introduced the subject by way of the ultrastructure and the nervous architecture of muscle. Professor Wilkie, as becomes a pupil of A. V. Hill, does not neglect the thermodynamics of muscle energetics, but also introduces the subject by means of the ultrastructure and chemical composition of muscles. In his book, he gives an overview, taking his examples from all sorts of muscle and from many species. He describes the common experimental methods used in examining muscles, pointing to their shortcomings. He explains the results obtained in terms of the known structure. He leads the reader rather gently through a clarification of the electrical phenomena in quiescent and stimulated muscle and illuminates the chemical changes that result in contraction. Finally, he brings us back to everyday experiences by describing how muscles maintain tone and enable us to take exercise.

The largest, although still slim volume, has a wider target for a narrower topic. It claims to be of interest to students of physiology, medicine,

biology and pharmacology and deals specifically with *Visceral Muscle*. It is the most conventionally organised of the three; once again, the contents run from microscopic structure through innervation to mechanical activity, but conclude with the protein structure and the molecular basis of contraction. Although some of the chapters are of course specifically oriented to visceral muscle, it is surprising how often comparisons are made with experimental work in skeletal and cardiac muscle.

Clearly, here is a triad of books that can be used quite differently, yet they are linked by a unity, since much of the material is common to the three. Wilkie's book stands out above others in the way that it simplifies complex ideas and yet has more than enough meat for any hungry student. Anyone remotely interested in muscle—and who among biologists is not—can—and one might almost say should—read it. The result will be not only an increase in knowledge and understanding, but an experience of an outstanding example of written communication. In addition, the author is a realist who has the interest of students at heart; he does not give the usual unmanageable list for further reading, but confines himself to a few seminal works.

Buller's contribution is more a pamphlet than a book; it probably contains all that a student need retain about the fundamentals of muscular contraction.

Most immunologists are preoccupied with problems pertaining to mice or men but many are now showing an increasing interest in the immunological responses of other species in order to discover evolutionary trends in recognition of foreignness, structure of antibody molecules and mechanisms of protective immunity.

In *Comparative Immunobiology* (£6.60; £3.30), in Blackie's *Tertiary Level Biology* series, Margaret Manning and Rodney Turner are the first authors to write a textbook of suitable size and clarity for students of immunobiology. Indeed, this book can be recommended to anyone seeking an introduction to comparative immunology. Other books have been and are being written on this subject but great credit must go to these authors for providing a book which will obviously remain a basic textbook on the subject for many years to come.

Those immunologists already involved with the vagaries and complexities of immunological responses in different species will admire the layout of the book. First, there is a 28-page introduction on the basic tenets of immunology, largely derived from work on mammals and birds. There follows

The question arises: is he more likely to retain nearly all of this or only a quarter of the slightly longer text? The answer must depend on the assessment of the teacher and the character of the student. It would be reasonable for any biologist or medical student to read a mere 11 pages, but how many have the time or the inclination to read ten times that many on a single subject? The beauty of this pamphlet is that it is short, lucid and expert, yet it does not have unrealistic expectations of the reader.

What then of the last book? It is not for every student; its primary use might be for reference, for each chapter is almost complete in itself, containing at least two key references. In addition, there are some 150 further references, and above all it is the only one of the three with an index.

It seems that these three complementary works offer three solutions to the problem of the modern science student—an elegantly produced evening's reading for tomorrow's seminar, a readable text from which something will be remembered, or the small reference for a narrow subject to be dipped into as required. You pay your money (0.30; £1.25 or £5.10) and you take your choice.

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an ambitious description of immunological responses as we climb the 'evolutionary tree' from sponges to fishes and terrestrial animals. Each chapter is introduced by an accurate phylogenetic tree. Phyla which have been sufficiently studied by immunologists are lucidly described in clearly defined sections headed 'phagocytosis', 'transplantation reactions', 'humoral reaction and factors' and 'lymphoid tissues'.

One of the most intriguing aspects of invertebrate immunology is how animals with no lymphocytes can recognise foreign species. This is treated adequately here, but new theories on recognition now appear monthly.

The bursa of Fabricius is wisely described as being unique to birds (p149), and this should be a warning to those immunologists still hunting for a 'bursal equivalent' in mammals.

This is a concise book, small in appearance but large in its breadth of treatment and factual content. All immunologists should find time to read it.

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