the more advanced topics and revised his presentation, helped by imaginative typography. This really is a book for all physics students (and course lecturers). The basic theory is there but solid physics flesh covers the mathematical bones without running to the fat of an over-written text. The book covers the first two years of an honours course in a British university and Duffin's technique is to take the early chapters slowly and to accelerate when the student is well grounded. His concern not to lose the reader is shown by commentaries and by revision summaries at the end of each chapter which bring the preceding pages into sharper focus. In addition there are nearly 300 problems and the answers are given to all of them with many useful hints.

There are few books which leave the impression that an outstanding lecture course has been transferred from black-board to page — this is one of them. □

John Pain is Reader in Physics at the Imperial College of Science and Technology, University of London.

Learning soil physics

David L. Rimmer

Soil Physics. By T. J. Marshall and J. W. Holmes. Pp.345. (Cambridge University Press: 1980.) Hbk £33, \$77.50; pbk £10.95, \$21.95. *Applied Soil Physics: Soil Water and Temperature Applications.* By R. J. Hanks and G. L. Ashcroft. Pp.159. (Springer-Verlag: 1980.) DM 39.50, \$22.20.

FOR some time an alternative has been required to the standard text on soil physics, *Soil Physics* by Baver *et al.* (4th Edn, Wiley, 1972), especially as it never appeared in paperback and eventually became too expensive for undergraduates to buy. The book by Marshall and Holmes is thus to be welcomed. In it they present a full account of the subject, concentrating in the first half on fundamental and theoretical aspects, especially of soil water, and in the later chapters dealing with the more field-orientated or management aspects, for example structural stability, compaction, tillage and irrigation.

The material is readable and attractively presented; tables and figures break up the pages, avoiding the problem of page after page of continuous text interspersed only by intimidating equations. Throughout there are many references; about 600 in total, these are brought together at the back of the book to provide a most useful reference list. There are, however, certain inconsistencies between chapters. For example, in Chapter 2 the total potential of

soil water is defined in terms of pressure, osmotic and gravitational potentials only, where pressure potential is taken to cover matric potential under certain conditions. In Chapter 12 the total potential of water in plants is defined in terms of all four potentials separately. The choice of symbols and the use of SI units is generally good. Units for density however cause some problems; these appear in different places as kg m^{-3} , g cm^{-3} and Mg m^{-3} . Yet these are relatively minor criticisms of what is a very good book, which should become widely adopted.

Applied Soil Physics by Hanks and Ashcroft is different in many respects, although aimed at a similar readership (students of soil physics and scientists in related fields). First, its scope is more limited, as suggested by its sub-title *Soil Water and Temperature Applications*. Second, it specifically aims to show how the basic theoretical equations can be applied to field situations by means of numerous worked examples. These examples are backed up by sets of problems at the end of each unit (chapter). The aspects of soil water are dealt with in four units and soil temperature in a final unit. By working through the units the physical significance of the rather abstract theoretical relationships is made more apparent. The book is not strictly a textbook, but then it was not intended to be such (as evidenced by references to relevant textbooks at the end of each unit). What the book offers is an aid to teaching the subject. Its usefulness as such is somewhat diminished by the use of non-SI units, which may cause problems for students. But as a source of worked examples and relevant problems it will be of value to teachers of soil physics. □

David L. Rimmer is a Lecturer in the Department of Soil Science at the University of Newcastle upon Tyne.

Pedology illustrated

Milo I. Harpstead

Soils: Their Formation, Classification and Distribution. By E.A. FitzPatrick. Pp.353. (Longman: 1980.) £25, \$60.

SOIL science has attracted increased public awareness in recent years and has become the professional concern of scientists in a wide variety of fields. Soils can be lost by erosion and contaminated by pollutants, sometimes with disastrous consequences, and vary in their suitability to produce crops, support structures and accept waste products. Soils are being inventoried on a world-wide scale and soil survey reports are now consulted for purposes of land-use planning.

This book covers a wide range of topics

text books from MACMILLAN PRESS

ORBITALS & SYMMETRY

D. S. URCH

This book introduces both symmetry and molecular orbital theory in one volume. The mathematics which chemists need to apply to symmetry ideas is developed using molecular examples, (rather than abstract mathematical ones). At all stages worked problems are given in the text and further exercises are set at the end of each chapter.

The aim has been to give the reader a critical appreciation of two very important aspects of theoretical chemistry, molecular orbital theory and symmetry, and to show him how to apply them to a wide range of chemical problems. £4.95, 0 333 26675 7

CHEMISTRY FOR THE LIFE SCIENCES

Second Edition

J. C. DAWBER and
A. T. MOORE

The book is primarily designed as an integrated chemistry text for undergraduate students on degree courses in biology, biochemistry, pharmacy, and medicine at universities, polytechnics, and colleges of higher education.

It will also serve as a text for HNC and HND students in Applied Biology and Medical Laboratory subjects, and students studying for MIBiol. and Membership of the Institute of Medical Laboratory Technicians. Students on joint honours courses (e.g., Combined Science) in which biology is a major subject will find the book useful.

£16.00, 0 333 25820 7

£8.95, 0 333 25821 5

PLANT METABOLISM

H. D. KUMAR and
H. N. SINGH

The highly complicated, interconnected metabolic cycles that continue unceasingly within the living cells of plants are refreshingly simplified in this classic text for students of botany and those studying agricultural botany and plant physiology in agricultural colleges.

The physiologist, the biochemist, and the phytochemist — each will find his particular field ably covered in this masterful analysis which integrates the different features of plant chemicals — their potential functions, their synthesis and degradation — into a comprehensive account.

£4.95, 0 333 25638 7

Macmillan Press books are available from leading booksellers. If you have difficulty obtaining these titles please write to Tony Watson, Macmillan Retail Ltd, Houndmills, Basingstoke, Hants, enclosing purchase price + 70p (p&p).

M MACMILLAN
PRESS