data are interspersed to show how modern spectroscopic methods and wet analysis can go hand-in-hand. The book concludes with a section on use of the research literature. Throughout the book there are good reading references, and it deserves to become a sort of bible for undergraduates taking courses in experimental organic chemistry; but it probably will not achieve this exalted position, as at £10.35 for a paperback, there are cheaper alternatives.

One of these is by W. Kemp (*Qualitative Organic Analysis*), who has successfully integrated wet analysis and modern spectroscopic techniques, but the coverage is not quite so comprehensive as that of Pasto and Johnson. The tables of derivatives are, however, marginally more extensive. The section on spectroscopic methods is much poorer, and includes only the bare essentials of each technique. The aim of the book is nonetheless realised, in that it shows qualitative analysis as a vehicle for learning functional group chemistry. On balance, a chemistry undergraduate would probably do better to buy Pasto and Johnson, whereas ancillary students should find Kemp's book adequate for their needs.

The fourth book, *An Introduction to Organic Chemistry* by J. Carnduff, seeks to present organic chemistry for advanced level school students, from an electronic point of view. Thus the standard reactions of organic compounds are discussed with reference to the fate of the electrons involved. This is a refreshing departure from the norm, as most advanced level school texts seem afraid to include mechanisms and curly arrows. There are seven chapters which cover the fundamentals: 'electron accounting', nomenclature, stereochemistry (including chirality — perhaps a bit ambitious at this level), electronegativity, delocalisation, and classification of reaction types. This is accomplished very effectively, and is followed by chapters on organic compounds, including a useful chapter on organometallic species, as well as the usual list from hydrocarbons to carbonyl compounds by way of alcohols and amines. The section on aromatic chemistry is particularly good. Problems appear at the end of each chapter, with answers at the end of the following one. The final chapter summarises what has been said about ionic reactions. This is a book full of good basic organic chemistry presented in a modern (mechanistic) fashion, and schools will probably buy a cheaper paperback version. My one reservation is the virtual absence of examples showing the industrial and biological relevance of organic chemistry. The Nuffield advanced level books go to the other extreme, with almost total exclusion of mechanism. Surely, a compromise can be reached — perhaps next year? □

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Fluid mechanics

T.N. Stevenson

Fluid Mechanics. By H.C. Lowe. Pp.228. (Macmillan: London, 1979.) Paperback £3.95.

FIRST-YEAR engineering courses in fluid mechanics are chosen from a vast range of topics. The material found in these courses would fill many volumes, and consequently any one volume of this size is unlikely to be adequate for any one course.

Each chapter in the book includes a short description of the physics and a cursory look at the theory for a particular topic. This is followed by a number of examples and specimen solutions. Some of the examples rely on the theory in this or earlier chapters, but most of them require a much deeper understanding of the subject. Questions are taken from the examinations of the North Staffordshire Polytechnic and the Council of Engineering Institutions. The author knows the syllabus for these courses and has made the approximations expected in those examinations. For the benefit of other students the author could have indicated how more accurate solutions could be obtained to some of the problems.

The book is written in note form with some of the symbols incomplete due to poor type. At least two of the examples have omissions which make them dimensionally incorrect and the vector notation used is not always correct. Some partial derivatives have been typed as total derivatives. The sections on dimensional analysis, wakes, vortex shedding, and on turbulence are misleading. The explanation of Buckingham's π theorem is incomplete and the definition of laminar flow is wrong.

There are scores of books covering parts of first year undergraduate courses in fluid mechanics. Probably not one of these covers exactly the same topics as this text. There is an interesting set of examples in the book. However, in view of the omissions and errors in the explanation of the physics involved, I cannot recommend the book to students. □

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Classical mechanics

J.W. Humberston

Intermediate Classical Mechanics. By J. Norwood, Jr. Pp.417. (Prentice-Hall International: Hemel Hempstead, UK, 1979.) £14.30.

THE author's justification for writing another undergraduate text on classical mechanics is his belief that the subject should not only be concerned with particles and rigid bodies, but also with many body systems. He has therefore included chapters on elastic bodies, statistical mechanics and fluid mechanics in addition to the usual topics contained in books on classical mechanics. Some of the topics in these chapters are occasionally discussed in mechanics books at this level (for example, *Mechanics* by K.R. Symon), but others, such as plasma physics and hydromagnetic waves, are not. A chapter on relativity theory is also included which gives a rather superficial account of special relativity and only a very brief introduction to general relativity. Several short problems are set throughout the book, but no solutions are given.

The general level of presentation is somewhat higher than is usual for a first year course in mechanics in a British University, although anyone who has taken such a course should have little difficulty understanding most parts of the book. It is clearly written and very well produced and seems to contain very few misprints or errors. One rather unfortunate example of the latter, however, occurs in the discussion of Kepler's laws of planetary motion. The author states, and claims to prove, that the second law, the constancy of the areal velocity, is only true for an attractive inverse square law of force; it is, of course, true for any central force, being a direct consequence of the conservation of angular momentum. □

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