Chemisorption on evaporated films

Chemisorption: An Experimental Approach. By G. Wedler. Translated by Derek Klemperer. Pp. vi+250. (Butterworths; London and Boston, Massachusetts, 1976.) £12.

'*Quot homines, tot sententiae*', that venerable Latin tag, is particularly applicable to chemisorption. Since the recent invasion of the subject by physicists and mathematicians it has become so vast, that a full account of the simpler gases on metals alone would require a separate volume for each metal, and a chapter for each lattice plane. Therefore, it is particularly sensible that Professor Wedler, in this broad conspectus of methods, should tend to emphasise the approaches taken by his teacher, R. Suhrmann and himself, to chemisorption on evaporated metal films. This does mean, however, that a proper balance is hardly given to some of the earlier work—for example, Otto Beeck's film work is mentioned but no reference is made to J. K. Roberts' even more crucial studies on tungsten wires, which many regard as a turning point in the subject.

The index reveals no reference to accommodation coefficients or heats of adsorption on wires. Other important more modern techniques are also omitted, such as the Mossbauer effect, and neutron diffraction. The new PhD student starting up in the field would still be well advised to read the Hayward and Trapnell book (*Chemisorption*, Butterworths; London, 1964) to get the scholarly background to the modern methods described here. But having done this, he or she will find Professor Wedler's book makes easy reading and gives a fairly wide coverage, with 744 references up to 1974. (Here a word of praise should be given to Dr Klemperer for his translation and updating of the German (1970) version.) In addition, it ends up with a short discussion of selected data on Ni/H_2 and Ni/CO, and brings Trapnell's well known Table up to date; it does, however, exclude the hydrocarbons.

Third-year undergraduates doing surface chemistry and research students will find some sections useful, but would be advised to read up nuclear and electron spin resonance elsewhere. How can one possibly explain electron spin resonance in two pages? This is a subject where *g*-factor anisotropies and hyperfine interactions (no mention of these) have contributed vital information covering the adsorbed species on oxides such as SiO_2 and MgO, and a little more effort could have given this topic its proper place in the whole picture.

Experienced workers will want to refer to it for the areas of special expertise of its author, such as electrical and heat measurements on evaporated metal films. Indeed, a better title for the book would surely have been *Chemisorption on Metals*, since there are very few references to metal oxides, or other systems apart from metals. With these qualifications, its purchase can be recommended to science libraries with an interest in the topic concerned.

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Our living planet

Earth, The Living Planet. By Michael J. Bradshaw. Pp. 302. (Hodder and Stoughton: London, Sydney, Auckland and Toronto, 1977.) Paperback £4.95.

THIS volume is intended as "a reader for sixth-form [advanced school] and college courses in physical geography and environmental science", and is a companion to *The Earth's Changing Surface*, about the solid Earth. *Earth, the Living Planet* divides almost equally between a description of the atmosphere, oceans, weather systems and climates of the Earth (the first half of the book) and a description of the kind of life that has evolved and adapted to those conditions. The large (A4) format, generous use of diagrams and a section of colour illustrations help to provide an attractive overall presentation, and make it easy for the reader to dip into the book for selected highlights. In a few places the need for access to the companion volume handicaps the reader who has only bought this one of the pair; but by and large the book stands well on its own as an introduction to both the physics and the lifeforms of the biosphere.

There are, however, some deficiences in the presentation, mostly due to over-compression of the material into a limited space. The discussion of weather modification, for example, could well have been developed further, and I was disappointed to find that the chapter "Climates of the Past —and Future?" made no mention of the Milankovitch model of Ice Ages, which in its modern form has now become widely accepted as at least a partial explanation of climatic changes on timescales of a few thousand to several tens of thousand years. By and large, the book provides an excellent introduction to our living planet, at a remarkably reasonable price, and will be useful not only as an introduction for new students but as a refresher for those whose student days are more remote.

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Exploration geophysics

Applied Geophysics. By W. M. Telford, L. P. Geldart, R. E. Sheriff and D. A. Keys. Pp. xvii+860. (Cambridge University: Cambridge, London and New York, 1977.) Hardback £26; paperback £9.75.

THIS textbook of exploration geophysics is intended for practitioners and graduate students, replacing the classic works such as those of Heiland and Jakosky which are now outdated. It stems from another classic, that of Eve and Keyes published twenty years ago, but is far more than a revision of that book, reflecting two decades of particularly rapid advances in both instrumentation and interpretation. The treatment is comprehensive both in coverage of all the important geophysical techniques (developments in remote sensing seem to be the only omission) and in dealing with the practical, theoretical, geological and physical aspects of geophysics in a balanced way. The text is supplemented by problems, mostly using real data, some of which are drawn together in the last chapter to provide examples of integrated interpretation, usually in a mining context.

Over a quarter of the book is concerned with the seismic method. This section has been most successfully updated, and includes sections on the essentials of digital data processing and on the geological interpretation of seismic reflection sections. The refraction method is treated only very briefly but with a clarity which is a feature of the whole book.

The chapters on potential field and electrical methods are rather less satisfactory, giving undue emphasis to instruments, interpretation methods and units now best consigned to the museum: for example, several obsolete methods for the interpretation of resistivity soundings could well have been given as references only, saving space for the 'resistivity transform' approach to this problem. These chapters also assume some knowledge of vector calculus, but the rest of the book should present no mathematical difficulties even to readers trained primarily as geologists.

It is still true that no single textbook is sufficient for the education of a graduate geophysicist, but this one is certainly necessary for reading and reference. At little more than a penny a page in paperback, it has the advantage of being within his means.

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