

Part 1 covers the field of general analytical techniques. An informative chapter on the decomposition of solid samples includes a table showing the percentage loss of volatile elements during acid attack. Another chapter comprehensively surveys the fields of complexometric, iodometric, acid-base and redox titrimetry; the properties of a wide range of indicators are presented in several tables. There are brief chapters on gravimetry, electro-deposition and optical methods.

Part 2 includes a detailed and comprehensive survey of the many organic reagents now in use in gravimetric and colorimetric analysis. Structural formulae of many reagents and metal complexes are given which will be of assistance to the analyst not well versed in organic chemistry. In addition, there are useful chapters on ion-exchange, chromatographic and solvent extraction techniques. As is the case throughout this work the text is augmented by many tabulated data.

The arrangement of Part 3, the main section of this volume, follows the classical scheme of group analysis and each chapter is devoted to one element or group of similar elements. Chapters are subdivided into sections on attack, separation and determination. Treatment is comprehensive but selective, as methods are enumerated in order of analytical importance, preferred methods often being indicated; this is a useful feature for the analyst who has little time for method investigation. Systematic schemes of analysis are not neglected and many are presented in lucid diagrammatic form and include the analysis of silicate and fluorosilicate materials, the platinum metals, rare earth and uranium minerals. The needs of an analyst confronted with a wide range of analysis are fully met, only the analytical chemistry of the transuranic elements being neglected.

Numerous references both to standard works and to original papers are given at the end of each chapter and with many of the tables. There is an extensive index, and clarity has been enhanced by separation into two sections—one general and one devoted entirely to organic reagents.

The author has drawn heavily on such authorities as Hillebrand and Lundell, Schoeller and Powell, Fresenius-Jandor, Sandell, Welcher, etc., and this book can be regarded as an omnibus digest of these works supplemented by methods from the original chemical literature up to 1957. This treatise is therefore comprehensive and authoritative, but there has been considerable delay in publication due to checking and correction. There are a few minor errors in the text.

This work will undoubtedly appeal both to the research and routine analytical chemist. The encyclopaedic nature of this work makes it useful for reference, but, above all, this is a book for the inorganic analyst to have on his bench as a practical working manual.

A. D. WILSON

TEXT-BOOK OF ACOUSTICS

A Course of Lectures on the Theory of Sound

By S. N. Rachevkin. Translated from the Russian by O. M. Blunn. Pp. xv+464. (Oxford, London, New York and Paris: Pergamon Press, 1963.) 84s.

AT a time when there is a tendency to play down acoustics in physics departments of universities, it is interesting to observe the material presented in this subject to students specializing in acoustics in the Faculty of Physics of the University of Moscow. The impression is gained that the presentation is much more extensive and detailed, and therefore better drill, than in Britain. Thus the 450 pages of *A Course of Lectures on the Theory of Sound*, as compared with existing fundamental books on acoustics (for example, P. M. Morse's now classic *Vibration and Sound*), are easy to read through and form

a good introductory text-book on the theory of sound. There are also occasional practical touches to the book which will endear it to applied acousticians; numerical examples are worked into the text from time to time to show the physical orders of magnitude involved and the treatment of lumped acoustic impedances and acoustic waveguides is carried through in enough detail to make the methods and results readily accessible to those not primarily interested in the theory for its own sake.

The book is not, however, a comprehensive text-book on all aspects of acoustics, being confined almost entirely to problems of sound transmission and radiation. Nothing is said about such broad subjects as room acoustics, aerodynamic noise (apart from some reference to Gutin's propeller noise theory), nor about physiological acoustics. These omissions make it incomplete as a technological text-book. Regrettably, therefore, it is not the answer to the often heard prayer for a complete modern text-book of acoustics.

There are several things about the treatment which might well be taken up in British presentations. For example, the confusion that can arise from following Lord Rayleigh's tradition of commencing with the vibrations of strings and membranes is overcome by eradication of these topics, and the whole subject is developed immediately from the hydrodynamic equations. The traditional method is dear to the hearts of most physicists, of course, but in those unfamiliar with wave motion it can easily create the impression that standing wave motion, rather than travelling wave motion, is the basic ingredient of sound.

The book is well written and translated, the adherence to the symbolic notation used in the Russian edition doing surprisingly little to detract from its value. To sum up, it is a good book for those desiring an extensive treatment of the basic elements of acoustic transmission and radiation theory and as such, it will undoubtedly be useful to students of acoustics, filling the gap between existing elementary and advanced works. It fits into present engineering courses in Britain on acoustics as a reference book, however, rather than as a principal text-book.

E. J. RICHARDS

POLITICAL TRANSGRESSION OF THE PACIFIC

The Western Invasions of the Pacific and Its Continents A Study of Moving Frontiers and Changing Landscapes, 1513-1958. By Dr. A. Grenfell Price. Pp. viii+236+11 plates. (Oxford: Clarendon Press; London: Oxford University Press, 1963.) 35s. net.

SIR GRENFELL PRICE has chosen a huge canvas—the largest and deepest of oceans and its contiguous continents, the land-mass of Asia, North and South America and Australasia and peoples as remote from each other as the Eskimos and the Maoris. He spans four centuries, from the invention of the lateen sail which enabled European invaders "to sail close to the wind and avoid the dangers of lee shores" to the present redrawing of the political map.

It would have been a big enough task for any historical geographer to reassess the motivations and impact of the Portuguese, the Spaniards, the Dutch, the British, the French and the Russians as conquerors, sojourners and settlers. This Sir Grenfell Price has done with an insight, illumined by the political events of our times, and with an objectivity which will not make it 'recommended reading' in emergent countries which do not count themselves as beneficiaries. That is a pity because, as the heirs of the empires, it might help them to evaluate their inheritance.

But *The Western Invasions of the Pacific and its Continents* goes much further. It deals with the landscape,