

Book Review

Progress in Vacuum Microbalance Techniques, Vol. 1, Editors: Th. GAST and E. ROBENS, Heyden and Son Ltd., London, August 1972, pp. 401. Price £5.50, \$14.50, DM 53.—

This volume, although entitled Volume 1, is in fact the Proceedings of the Ninth Conference on Vacuum Microbalance Techniques, the previous proceedings having been published elsewhere.¹ Because of delays in publishing this volume it is appearing some two years after the actual Conference, nevertheless it is of value, particularly taken in conjunction with the earlier volumes which have not received the attention they ought to have had. As the 'art' of vacuum microbalances has developed this volume deals more extensively than before with applications. Thirty-one papers are included, of which five are in German.

The first paper traces the 'Balance in History' and is illustrated with a series of photographs. Although the subject matter does not relate particularly to the rest of the Conference material it is of real interest since there are very few authoritative books or reviews on the subject. For this reason alone the contribution is to be welcomed. The remainder of the papers cover more conventional aspects of vacuum microbalance techniques.

Four papers discuss the use of oscillating quartz crystals particularly in the determination of thin film thicknesses. A number of papers discuss the construction of special purpose equipment for particular applications. One such paper relates to the construc-

tion of a multi-specimen 'Carousel' thermobalance for long duration measurements (ca. 2000 hrs). The equipment is used with automatic data logging and processing of the results. Other papers describe the use of equipments for specialist applications, e.g. flowing atmospheres, high temperature studies of gas-metal systems in the range 1600—2400 °C, vacuum studies, transfer devices for materials carefully conditioned to determined atmosphere conditions, studies of refractories, both carbides and oxides, magnetic studies.

A few papers discuss aspects of techniques such as the use of a closed-bottom furnace design, experiments to reduce the weighing time in microbalances.

The volume is therefore of value both to those planning experiments and work in this field as well as to the designer and developer of equipment. At £5.50 (\$14.50 or DM 53) it can, at today's prices, be considered to be good value for money.

The presentation is clear and both an author and subject index are provided. A reproduction technique direct from the typewritten text has been used. One small point, it is to be hoped that future volumes will conform more completely to the now widely adopted nomenclature in the field of thermal analysis.²

J. P. REDFERN

¹ Previous volumes published by Plenum Press, from 1961 on.

² R. C. MACKENZIE, *Talanta*, 16 (1969) 1228.