tron-probe microanalysis has now become a routine analytical procedure and, insofar as future events can be predicted, no major developments seem to be around the corner. The appearance of an authoritative, up-to-date and fairly extensive treatise on the subject is therefore well timed.

Reed's book is not the first one on this subject. Among those still of general usefulness are the ones by Birks (1971) and Andersen (1973). Birks's book is a concise and mainly descriptive introduction into the subject, recommendable to the beginner or the scientist or student seeking an overview of electron probe microanalysis. *Microprobe Analysis*, edited by Andersen, is a compilation of chapters written by various authors who are experts in their respective fields. Such a format provides a selection of topics rather than complete coverage. Other publications (Heinrich, 1968; Salter, 1970; Hall, Ecklin & Kaufmann), deal with partial aspects of electron probe microanalysis.

S. J. B. Reed has apported valuable and widely used contributions to the art of microanalysis. His book reflects his long experience in the field, and it will serve very satisfactorily as a textbook for the analyst performing electron probe microanalysis or using the lithium-drifted detector in conjunction with scanning electron microscopy. The principles of instrumentation and operation, the theory of quantification and the analysis of thin films are extensively and rigorously treated. The level of the text is uniformly high and eminently readable. In the application section, the author discusses a small but representative sampling of practical analyses.

The disagreements I may have with the author are mostly of detail – such as to his doubts on the efficacy of the hyperbolic iteration for multielement specimens (p. 294), or concerning the use of an atomic number effect in the absorption correction (p. 252). A more serious objection is that the computer programming, though 'practically essential for matrix corrections ...' (p. 296) is not discussed in sufficient detail. Manual correction calculations are impractical for all but the most casual users of the microanalyzer, and the problems arising from the use of a program which is not fully understood by the analyst are obvious.

Overall, Reed's book is a valuable source of information to the microanalyst, and it deserves a place on the shelf of all scientists who make use, directly or indirectly, of electron probe microanalysis.

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In recent years we have all been made aware of a world shortage of raw materials and immediately usable energy, a crisis which increasingly threatens modern society's mode of existence. With this daunting prospect in mind, the subject emphasis for the 23rd Annual Conference on Applications of X-Ray Analysis, held at Denver in August 1974, was appropriately 'The Application of X-ray Technology to Current Problems in Energy and Resource Development'. The latest volume in *Advances in X-ray Analysis* consists of some fifty papers read at this conference on a wide variety of topics.

In the currently fashionable field of plasma diagnostics, of direct relevance to power generation by a fusion process, measurement of soft X-ray emission from high-temperature plasmas is capable of yielding information about its condition and provides a method of determining plasma parameters. Several papers in the current volume report on this field of interest and cover areas such as spectrometers for investigating shortlived plasmas together with other relevant instrumentation.

On the subject of quantitative X-ray spectrometry several papers are directed towards mathematical correction procedures. With the increasing availability of small on-line computers to facilitate data handling the determination of inter-element correction constants, either based on experimental data or theoretically derived, continues to attract attention. Analyses of geological samples, for example, are reported and one is impressed by the accuracy of determination of constituents currently attainable.

As a measure of the diversity of interests represented at the 23rd Conference one might randomly select papers devoted to the analysis of infected blood, the generation of high-intensity monochromatic X-rays, and aerosol analysis – in addition to the more usual characterization of solid materials. It is of course impossible to do justice to such a wide range of papers and merely a representative few have been mentioned briefly in this review. The overall standard of the contributions is remarkably high and serves to emphasize the expanding interest in X-ray analytical techniques.

One hopes that the aims of this Conference will be achieved and at least a partial solution found to the materials and energy crisis.

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Quantitative scanning electron microscopy. Edited by *D. B. Holt, M. D. Muir, P. R. Grant* and *I. M. Boswarva*. Pp. x + 570, Figs. 302, Tables 25. London: Academic Press, 1975. Price £15.50.

The book contains sixteen independent review chapters but the attempt has been made by the Editors to produce a comprehensive coverage of scanning electron microscopy and its applications in both reflexion (SEM) and transmission (STEM) modes. The bulk of the book is concerned with SEM although three articles touch on the high-resolution STEM introduced by Crewe.

In respect of STEM, Howie invokes the reciprocity theorem for elastic scattering to describe the similarities between the STEM and the conventional transmission electron microscope (CTEM) and points