Book Reviews

Works intended for notice in this column should be sent direct to the Book-Review Editor (M. M. Woolfson, Physics Department, University of York, Heslington, York YO1 5DD, England). As far as practicable books will be reviewed in a country different from that of publication.

Multiple-beam interference microscopy of metals. By S. Tolansky. Pp. ix + 147. London: Academic Press, 1970. Price £2.25.

The author states in the preface that 'multiple beam interferometry is both an elegant optical technique and at the same time a valuable technological tool'. Furthermore, he says that its elegance is to be found in its very real economy of means. He then sets out to verify these premises with a detectable enthusiasm.

The book consists of 13 chapters but may be divided into three areas of concern: theory, chapters 1 and 2; technique, chapters 3 to 8; and applications, chapters 9 to 13. The theory is straightforward and adequately covered for the incident illumination case.

The section on technique is, in my opinion, the high point of the book. The author emphasizes that the book contains the 'know-how' resulting from years of study; this is ably demonstrated in these chapters. The heart of the multiple-beam interferometer is an optical flat on which a thin reflecting film has been deposited. The preparation and properties of several types of thin films are described in detail in chapter 3. In this chapter, the use of H_2O_2 (20 vols) is recommended for cleaning the optical flat prior to coating with the thin film. A statement should have been included for the benefit of the technician with regard to the hazards involved in the use of this compound.

Materials suitable for use as the optical flat are discussed in chapter 5. The recommendation of selected pieces of window or picture frame glass as an optical flat for this purpose makes good the claim for 'economy of means'.

The various topographical features observed with this technique have been conveniently categorized in chapter 6. Appropriate mathematical expressions are given for each feature to permit measurement of the pertinent dimension.

I would like to mention at this point the material included in the Appendix. This discussion of a very useful technique suffers in my opinion from the absence of drawings to illustrate the somewhat more sophisticated instrumentation employed. Furthermore, it is most unfortunate that this information was not included in chapter 6 with other methods for determining whether a feature on a sample is a depression or elevation.

Figure 8. 5 should be rotated 90° to bring it into agreement with the text.

The application of this technique to the study of metallurgical samples occupies the remainder of the book. These examples not only serve to demonstrate the extreme sensitivity of the measurement, but also hint at the range of problems amenable to the method. Even to the casual reader, these chapters provide interesting reading.

The few negative comments should not dissuade those interested in the fine surface structure of metallic surfaces from acquiring this book. It is safe to say that a seasoned experimentalist using this text can soon acquire a marked proficiency with this technique.

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Electroluminescence, Vol. 50. Edited by D. V. Skobel'tsyn. Pp. vi + 137. New York: Consultants Bureau, 1972. Price $17.00.

This volume, which constitutes volume 50 of the Proceedings (Trudy) of the Lebedev Physics Institute, is mainly a collection of review papers on electroluminescence of the high field, high impedance type (the Destriau effect). If one is looking for an up-to-date coverage of the subject as far as Russian research is concerned then this text may provide it. However, it offers neither information on nor references to other, more world-wide developments since the middle nineteen sixties. It is surprising how much introductory matter occurs in each chapter. In Chapter I on the kinetics of the Destriau effect there is a general discussion of band theory applied to photo-conducting phosphors which might have been omitted, save perhaps by provision of suitable references. Chapter II will attract some attention from the West since *PN* junction emission in zinc sulphide is a universal 'pipe dream' for would-be designers of ultimate efficiency light sources. After reading the chapter the dream will remain. The next chapter, concerned with electroluminescence in single-crystal zinc sulphide has two interesting features. One is a picture of a sizeable zinc sulphide crystal, claimed to be 'natural size' cleaved as a 3 or 4 cm sided prism from a larger crystal grown in the Institute for Single Crystals. The other is a report of ultra violet electroluminescence from zinc sulphide attributed to band-to-band recombinations with polaron states involved. The next chapter on temperature dependence of electroluminescence can be bettered by much earlier work of western scientists. There is finally a large chapter on conversion of electrical energy into light which contains little of an original nature.

The obvious defect of the text is the exclusion of up-to-date references to authors outside the USSR and the consequent lack of perspective in the various treatments. The book provides a rather expensive way of learning about electroluminescence research as pursued in the USSR in what is apparently an isolation from world scientific journals and other workers in the field.

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Industrial crystallisation from solutions. Von Jaroslav Nyvlt. S. 189. London: Butterworths, 1971. Preis £5.50.

Das Buch soll, wie in seinem Vorwort zum Ausdruck kommt, den Leser mit den Problemen der Kristallisation aus industrieller Sicht vertrautmachen, wobei in erster Linie auf die Vermittlung von in der Praxis anwendbaren Informationen Wert gelegt wird und die rein theoretischen Grundlagen unter Hinweis auf das einschlägige Spezialschrifttum soweit als vertretbar zurückgestellt werden. Durch sinnvolle Auswahl und gut verständliche textliche Gestaltung des dargebotenen Stoffs, der durch eine grosse Zahl den Inhalt der einzelnen Abschnitte vertiefenden Rechenbeispiele ergänzt ist, wird diese Absicht erfolg-