photographs. The remaining alignment requires rotation of the sample holder so that the normal to the diffracting planes is perpendicular to the slit edge. This rotation is, in general, less than one degree. Finally the Bragg angle is set by adjusting the ϕ motion of the quarter-circle goniometer. (The χ motion is not used and any single rotation motion can be substituted for the quarter-circle goniometer.)

Fig. 2 shows for superimposed 111 topographs of a (111)-cut silicon wafer taken with this device. The topograph was recorded using an Ilford Nuclear Plate (Type G5) with Ag $K\alpha_1$ radiation. The fact that there is no noticeable loss of resolution in this multiple exposure indicates high reproducibility of the translational motion. Dislocations whose Burgers vector is of the $\frac{1}{2}$ ‹011› type are evident. This type of dislocation is typically found in silicon (Jenkinson & Lang, 1962).

Further details about this camera can be obtained from the authors.

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Reference

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Crystallographers

The **Walter C. Hamilton Memorial Fund** has been established to provide assistance to one or more students, chosen each year, to work in the Chemistry Department at Brookhaven National Laboratory or for such other purposes related to chemical research as may be deemed appropriate by a committee appointed by Associated Universities, Inc. (operators of BNL), which will collect and administer the fund. The committee consists of Dr Gerhardt Friedlander, Chairman, (Department of Chemistry, Brookhaven National Laboratory, Upton, L. I., New York 11973, U.S.A.), Sidney C. Abrahams, David P. Shoemaker and Robert Thomas. Those wishing to participate in this memorial fund may send contributions to any committee member.

Professor **Samuel Tolansky**, who had been Professor of Physics at Royal Holloway College, University of London since 1947, died on 4 March 1973 at the age of 65. He was a Fellow of the Royal Society, an Honorary Member of the American Society for the Advancement of Science and an Honorary Fellow of the Royal Microscopical Society. The many books he wrote included the definitive works *Multiple Beam Interferometry* and *High Resolution Spectroscopy*.

Best known for his development and application of multiple beam interferometry to surface microstructure, he also made major studies of the growth, hardness and etch properties of diamonds, of lunar rock samples and of atomic nuclear spin. With expertise extending far beyond his main scientific fields, he was an accomplished lecturer and broadcaster.

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.

Microscopic identification of crystals. By Richard E. Stoiber and Stearns A. Morse. Pp. vii + 278. New York: Ronald Press, 1972. Price $10.50.

The polarizing microscope is an indispensable tool for the study of rocks and minerals today just as much as in the past, but its role may be changing. It will continue to be used to identify broadly the minerals present in a transparent thin section of rock, and to note unusual features in them such as compositional zoning and twinning, and to observe textural relationships. Since chemical variations affect optical properties, it has been possible to draw up determinative curves which allow the estimation of approximate composition from accurate measurements of refractive indices, extinction angles and other optical parameters. These measurements can best be carried out by studying loose mineral grains mounted in a liquid of known refractive index – the so-called immersion method. One limitation of the method is that determinative curves usually allow for two or three chemical variables, and their use can therefore be misleading if additional chemical substituents are present in appreciable quantity. Even so, obtaining approximate compositions rapidly by microscopy has often been adequate and has certainly seemed preferable to the lengthy process of mineral separation and wet chemical analysis.

Analytical methods have advanced apace however, instrumental methods replacing bench chemistry, and now electron-probe instruments can yield rapid multi-element microanalysis from single mineral grains examined *in situ* in the same thin section as is used in the ordinary microscope for mineral recognition.

In these circumstances the reader may wonder why the authors of this book have chosen to emphasize particularly the immersion method. I think they are justified in this for two reasons. One is the simple fact that a microscope costs about £200 while a microprobe costs about £40000, so for some time to come many geologists will manage without one. The more important justification is that offered by the authors in their preface, namely that the theory and practice of single-grain optics provides a more valuable teaching exercise than the more limited investigations possible with thin rock sections, even though the latter are likely to be the most used in professional practice (sometimes in conjunction with electron-probe analysis).

Although it is the teaching of principles to which the book is clearly devoted, the approach adopted is nonetheless a practical one; so much so that, with the exposition of tactics to be employed in various situations, the book becomes more like a laboratory instruction manual. The use of conoscopic figures is given a much more expanded treatment than is usual in a book of this kind. The text is very clearly written and the layout of type and figures is pleasingly simple. Rigorous theoretical treatments are avoided, but footnotes tell the reader where to find them if required. The diagrams are more easily understood than those in many optics texts because the authors have resisted the temptation to overload them with information; simple projections are used more often than complex perspectives. There are many helpful references to published papers and other textbooks, and a useful guide to compilations of optical data.

Very few errors have been noted, but