The primary object of interest for the development of the simulation program was to investigate the effect on the symmetry when moving the twin boundary out of the specimen mid-plane. In Figs. 7(*a*) and (*b*) the results are compared for boundary positions at 0·5 and 0·4. Here a radial scan is plotted at 0·5 of the (000) disc radius. When scaled on 32 grey levels it is seen that at 0·4 the *6mm* symmetry is reduced to *3m* symmetry. Thus a relative small shift of the boundary plane out of the midplane causes an appreciable symmetry change.

Fig. 8 shows the effect on the pattern symmetry of a rigid translation in the twin boundary plane. As an example a translation of 1/12 $[\bar{1}2\bar{1}]$ is used, the boundary plane being coincident with the mid-plane of the specimen. The observed symmetry in the (000) disc is now *2mm*, in agreement with the point symmetry deduced by Schapink & Mertens (1981). Similar results were found for different translations at the twin boundary.

5. Conclusions

A program has been set up that enables the simulation of CBED patterns to be performed from single crystals and bicrystals. In the latter case the influence of a number of parameters, such as the position of the boundary plane and a rigid translation at the boundary, on the symmetry of CBED patterns has been evaluated. In particular, it has been shown that a relatively small shift of the boundary plane away from the specimen midplane alters the symmetry of the CBED pattern from the bicrystal. This result is important in connection with the determination of the state of translation at a boundary from the experimentally obtained symmetry of suitable CBED patterns.

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Book Reviews

Works intended for notice in this column should be sent direct to the Book-Review Editor (J. H. Robertson, School of Chemistry, University of Leeds, Leeds LS9 9JT, England) As far as practicable books will be reviewed in a country different from that of publication.

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Electro-optical and magneto-optical properties of liquid crystals. By *L. M. Blinov*. Pp. xxi + 341. Chichester: J. Wiley, 1983.

In this book the author aims to present 'a complete and readily understood treatment of all the known phenomena occurring in liquid crystals under the influence of electrical and magnetic fields. Major emphasis is given to explaining the qualitative aspects of the phenomena and to portraying their physical basis'. The result of setting out to perform such an ambitious task in under 350 pages is remarkably successful. Inevitably, much has been culled directly from the literature, sometimes less critically and with less depth of understanding than one might wish, but the sources of information are well referenced, although it is unfortunate that the bibliography is arranged by chapter and order of citation without any attempt at an alphabetical listing or an author index. Blinov himself has made original contributions in this field and naturally writes with particular authority on areas in which he has worked.

The book is divided into two sections. The first (chs. 1–3) describes the basic physics of liquid crystals, while the second (chs. 4–8) looks in detail at the orientational and electrohydrodynamic effects in nematic phases and texture changes and instabilities in cholesteric and smectic liquid crystals. The final chapter (ch. 8) attempts to give a perspective of the practical applications of electro-optical effects in liquid crystals; a particularly hazardous task in so fast moving a field, which nevertheless manages to be laudably comprehensive bearing in mind that the book is a translation of a Russian volume, which appears from the references to have been published about 1980. The publishers, incidentally, appear somewhat coy about the pedigree of this book as a translation from the Russian.

In summary, this is a nicely produced and readable book, which will be valuable to anyone interested in thermotropic liquid crystals for its broad overview of the interesting and important physical phenomena that may occur in such phases.

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