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Conference on Computing Methods and the Phase Problem in X-ray Crystal Analysis Glasgow. 9–12 August 1960

A small conference under the above title is being planned by Prof. Ray Pepinsky and Prof. J. Monteath Robertson to be held in Glasgow, Scotland, during the week before the Fifth International Crystallographic Congress in Cambridge, England. It will be recalled that a conference under this title was held in State College, Pa., U.S.A., in 1950. Since that time there have been tremendous developments, especially in the field of electronic digital computing, and at the decennial meeting it is hoped to accumulate, emphasize and develop new ideas. These will be arranged broadly under two heads: (*a*) on computing techniques, programs and applications, and (*b*) on the theory of the phase problem.

A small number of people have been invited to present papers at this conference, and it is hoped that preprints will be available at the time of the meeting. It is intended to publish the proceedings in book form as soon after the conference as possible.

With regard to (*a*), there are now so many machines and programs in existence that an effort must be made to avoid undue repetition; in some cases summarizing talks will be necessary, with attempts made to cover all significant developments. In general the plan will be for one author to deal with each of the more important types of digital machine. Under (*b*) it is hoped that the more important recent developments on the theory of the phase problem will be adequately covered.

The conference itself will be held in the Chemistry Department, The University, Glasgow, Scotland, and is expected to occupy 3 days. Inexpensive accommodation will be available in some nearby University halls of residence for a limited number of participants. Intending participants should apply to Dr J. C. Speakman (Chemistry Department, The University, Glasgow, W. 2, Scotland) for a registration form, which should be returned not later than 15 April 1960.

Book Review

Works intended for notice in this column should be sent direct to the Editor (A. J. C. Wilson, Department of Physics, University College, Cathays Park, Cardiff, Great Britain). As far as practicable books will be reviewed in a country different from that of publication.

Single Crystal Orienter Instruction Manual. By Dr Thomas C. Furnas Jr with cooperation of the X-ray Department General Electric Co. Pp. 174 with 94 figs. Published by General Electric Company, Milwaukee, Wisconsin. 1957.

This is a thorough analysis of all the problems likely to be encountered in using the X-ray diffractometer manufactured by the General Electric Company, U.S.A. There are eleven chapters; the first three are concerned with general crystallographic theory with especial emphasis on the application of the reciprocal lattice to the use of the instrument; the next five chapters deal mainly with single crystal problems and the remaining chapters are concerned with polycrystalline aggregates or imperfect crystals. The manual has been written in the early chapters as though the reader had no previous knowledge of crystallography. The beginner must, however, soon be out of his depth. It should also be said that some difficulties are placed in the student's path. A concept is confused with a real object when the manual states that the origin of the reciprocal lattice is at the centre of the crystal (p. 7). The reciprocal lattice and Ewald sphere are used for finding directions of reflected rays and not the material object from which they arise. It also seems unfortunate to regard as lattice planes only those having no common factor in their Miller indices (p. 67). Since all planes of the type *hkl* intersect lattice points in an identical manner, no matter whether they have a common factor or not, it is difficult to see the justification for treating them in different ways. There is a notable lack of a definition of integrated reflection (p. 71), although great pains are taken to explain how accurate measurements of intensity are made.

The great merit of the book is the description of the diffractometer and all the various tests and corrections which have to be made or applied. For the trained crystallographer wishing to use the General Electric instrument the manual is particularly helpful and it will also be useful to other users of diffractometers. The detailed tables of permissible sizes of apertures and the effects on these of mosaic spread, crystal size, presence of $K\alpha$ doublet doublets, etc. is most valuable. The diagrams explain clearly the geometry of the various measurements and the numerous reproductions of the pen-records given by the ratemeter will help everyone to see what may be expected from the instrument.

The author argues (p. 1) that the diffractometer is simpler to operate than photographic goniometers. It is doubtful whether many readers of this manual will come to the same conclusion. Generally speaking it is better to study any pattern of X-ray reflections photographically and to make any quantitative measurements with a diffractometer. Perhaps it would be more helpful to attempt a combination of photographic and diffractometer techniques even on this particular instrument rather than to attempt to solve every problem using a counter.

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