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The non-characteristic orbits of the space groups. By P. ENGEL, T. MATSUMOTO, G. STEINMANN and H. WONDRATSCHEK. *Supplement Issue* No. 1, *Zeitschrift für Kristallographie.* Munich: R. Oldenbourg Verlag, 1984. Pp. 218. Price DM 58.00.

Let G be a space group and $x_0 \in R^3$ an arbitrary point. For example, x_0 might be the position of an atom of a crystal with symmetry group G. The set of points $Gx_0 = \{g(x_0);\ g \in G\}$ obtained by applying the symmetries of G to x_0 has been given various names: 'point configuration', 'crystallographic orbit' and even 'lattice complex' although Gx_0 is not necessarily a lattice. In more recent work, most significantly the series of papers by W. Fischer & E. Koch, the name 'lattice complex' is used instead for a class of sets Gx_0 arising from a natural equivalence relation that stems from the classification of space groups into 219 (or 230) space-group types. Each point of Gx_0 corresponds to a coset of the subgroup $S_G(x_0)$ of G called the site-symmetry group of x_0; this is just the set of all symmetries in G that keep the point x_0 fixed.

Now forget the original space group G and consider the set Gx_0 in its own right. Its symmetries form a space group E and again there is a subgroup $S_E(x_0)$ of those symmetries that do not move the point x_0. In fact, G is a subgroup of E and its index in E coincides with the index, which is necessarily finite, of the subgroup $S_G(x_0)$ in $S_E(x_0)$. Even the lattices of the two space groups need not coincide: the lattice of E is a 'superlattice' of the lattice of G (*i.e.* it contains additional points in general).

Previous work concentrated mainly on the case where E coincides with G and on choosing a single representative Gx_0 for all points x_0 sharing the same Wyckoff position [*i.e.* with conjugate subgroups $S_G(x_0)$]. It is this work that is reflected in *International Tables for Crystallography* published in 1983. The present volume is intended as an addition to Vol. A of *International Tables for Crystallography.* It gives a complete listing, for each of the 230 space-group types and for each possible position of x_0, of the corresponding groups E and $S_E(x_0)$. Conversely they can be used to search from what possible space groups G an observed symmetry group E might have arisen. There is also a summary table of the different superlattices that can arise in each crystal system. Applications are foreseen to extinction rules, phase transitions and structure determination.

There are brief explanations of the mathematics lying behind the tables, and an even briefer historical note, which cannot do justice to the rather complicated development of these topics.

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Books Received

The following books have been received by the Editor. Brief and generally uncritical notices are given of works of marginal crystallographic interest; occasionally a book of fundamental interest is included under this heading because of difficulty in finding a suitable reviewer without great delay.

Polarons and excitons in polar semiconductors and ionic crystals. Edited by J. T. DEVREESE and F. PEETERS. Pp. xii+471. New York: Plenum Press. Price US $72.50. This volume contains the proceedings of the ten-day Advanced Study Institute of 1982, in Antwerp, the third such international school on this topic in the past two decades. There are 14 chapters (all by different authors) about half devoted to polaron theory and phenomena, and the rest mostly to exciton physics in semiconductors.

Smetic liquid crystals: textures and structures. By G. W. GRAY and J. W. GOODBY. Pp. xxvi+162. Glasgow: Leonard Hill, 1984. Price £46.00. A review of this book, by M. Kléman, has been published in the June 1985 issue of *Acta Crystallographica*, Section B, pages 205–206.

Mineralogy: concepts and principles. By T. ZOLTAI and J. H. STOUT. Pp. x+505. Minneapolis, USA: Burgess Publishing Co., 1984. Price US $38.95. A review of this book, by P. Gadó, has been published in the August 1985 issue of *Acta Crystallographica*, Section B, page 280.

EXAFS and near edge structure III. Edited by K. O. HODGSON, B. HEDMAN and J. E. PENNER-HAHN. Pp. xv+533. Berlin: Springer-Verlag, 1984. Price DM 99.00. This is the third of a continuing series of conference proceedings, this one reporting the papers of the meeting of July 1984 in Stanford, USA.

Landolt-Börnstein: Numerical data and functional relationships in science and technology. Editors in chief K.-H. HELLWEGE and O. MADELUNG. **Group III: Crystal and solid state physics.** Vol. 7. **Crystal structure data of inorganic compounds.** By W. PIES and A. WEISS. Part *d.* (Key elements Si, Ge, Sn, Pb; B, Al, Ga, In, Tl; Be.) Subpart *d1a*: Key element Si (Substances No. d1,..., d1168). Edited by K.-H. HELLWEGE and A. M. HELLWEGE. Pp. xxiii+464. Berlin: Springer-Verlag, 1985. Price DM 950.00.

Landolt-Börnstein: Numerical data and functional relationships in science and technology. Editors in chief K.-H. HELLWEGE and O. MADELUNG. **Group III: Crystal and solid state physics.** Vol. 10. **Structure data of organic crystals.** Subvolume *a*: $C_1, \ldots, C_{15}$. Edited by K.-H. HELLWEGE and A. M. HELLWEGE. Pp. xxi+634. Berlin: Springer-Verlag, 1985. Price DM 1150.00.