useful for courses on solid-state or surface chemistry at this level.

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Patterson and Pattersons. Fifty years of the Patterson function. (IUCr crystallographic symposia, Vol. 1.) Edited by JENNY P. GLUSKER, BETTY K. PATTERSON and MIRIAM ROSSI. Pp. xx+727. Oxford University Press, 1987. Price £35.00.

This book looks back to the giant step made by A. L. Patterson in 1934 in recognising that given only the amplitudes of the structure factors it was still possible to obtain useful and in many cases total information about a crystal structure. A symposium was held in 1984 in the Fox Chase Cancer Center, Philadelphia, to celebrate the 50th anniversary of Patterson's paper on the $|F|^2$ synthesis and the proceedings of this meeting form the central part of this volume.

The text is divided into four parts. Part 1 is an historical introduction and underlines the contribution that David Harker made in the interpretation of the sections of the Patterson function which bear his name. Part 2, the record of the symposium, emphasized the impact of X-ray crystallography, and the contribution of the Patterson function, to the determination of structures of biological and biomedical importance. Dorothy Hodgkin's contribution here shows the value of the Patterson function in the interpretation of the structures of large biological molecules. Part 3, a set of contributed papers, looks at the development of rotation and translation searches for a known model or the detection of non-crystallographic symmetry and their application to biological structures. In addtion, a section looks at the question of homometric structures, and the expert, the late Martin J. Buerger, gives a clear introduction to the subject. Part 4 consists of biographical anecdotes from leading members of the crystallographic fraternity. It is of considerable interest to those who knew Lindo Patterson or have been affected by his work.

My own experience confirms all that is said. He always humbly referred to what we all know as the Patterson function as the F^2 synthesis. And he was always willing to listen keenly and attentively to young research workers in the field.

The book is rather long, partly because of the inclusion of material rather removed from the topic and partly by the repetitiveness of some of the anecdotal material. However, I can thoroughly recommend it to all crystallographers and perhaps especially to a new generation who may feel that direct methods are the answer to all problems.

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Symmetries in physics. By W. LUDWIG and C. FALTER. (**Springer series in solid state physics,** Vol. 64.) Pp. xi+461. Berlin and Heidelberg: Springer-Verlag, 1987. DM 98.

There are so many books available on group theory that it is hard to see why there should be yet another one. Nevertheless, this book does achieve some notable success in breaking new territory by the immense range of applicability that is discussed. The topics covered include the usual solid-state symmetries, molecular vibrations and electronic states, as well as molecular and crystal spectra, all well treated in many other group theory texts. In this book, however, the authors include the application of group theory to Lie algebras and to gauge theories, with particular reference to particle physics. It is therefore very complete and is highly to be recommended for those who wish to have the full story of group theory rather than the more piecemeal approach adopted in most books. Throughout, the text is cleanly printed with equations set out clearly; a joy to follow in what must rank as a difficult book for most people. For once, although the authors are not themselves crystallographers, they do not use terms that offend crystallographers' sensibilities, apart from some references to the now discarded term 'lattice structure', whose use in this book may mean crystal structure or simply 'lattice'; I do not know which. It is a pity that they do not use the International notation when discussing crystals, but prefer the Schoenflies symbols. But these are mere quibbles, as the book is well worth including on your bookshelf.

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