

same mentality and style of thought. If nature was consonant with itself, so was Isaac Newton's mind... In whatever direction he turned he was searching for a unifying structure. He tried to force everything in the heavens and on earth into a grandiose but tight frame from which the most minuscule detail could not escape."

It is impossible to do justice here to the wealth and complexity of ideas that Manuel presents, particularly in the second section in which he discusses Newton's religious work in historical context. Manuel points out that secular Newtonism would destroy the religious-scientific world view that Newton, seeing himself as a prophet, had created: "... he who would be the new Christ became AntiChrist." Present-day scientists may be interested to know that to Newton, science should be pursued not for man's comfort but for what it could teach man about God.

On the rare occasion that I write a rare letter of recommendation for a student, I hasten to add that this is not my normal wont. That is the case now when I state that Manuel's book is not only brilliant and profound, but is written with wit and elegance in a style that does credit to the English language.

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Symmetry of Many-Electron Systems

I. G. Kaplan
370 pp. Academic, New York, 1975.
\$34.50

This book is a translation by J. Gerratt of the Russian edition published in 1969; some additional material has been added but with four exceptions all the references are pre-1970. It deals with the role of point groups, the permutation group and the three-dimensional rotation group in atomic and molecular quantum mechanics. Because of its size and the vastness of the subject it covers, the book is necessarily rather concise and certainly not for beginners in the field. Rather it falls into the category of an expanded research monograph and would make an excellent follow-up to the many introductory textbooks on the application of group theory to atomic and molecular problems.

Its major contribution is in dealing with the permutation and three-dimensional rotation group (an area in which I. G. Kaplan has published much important work). These groups are usually only scantily treated in the elementary textbooks. I feel that he could have reduced the part devoted to point

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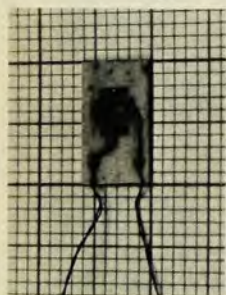
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groups, since they are well covered in other books. I regret that he decided to leave out the application of group theory to solids.

An irritating feature of the book is the large number of footnotes, often of a nature important enough to be incorporated into the body of the text. I noted few misprints, and because one is not aware that the book is a translation, Gerratt is to be congratulated.

There are, however, several misconceptions concerning point groups: A triangle belongs to D_{3h} not C_{3v} ; the proof given concerning the sum of the squares of all the dimensions of all the irreducible representations of a group is in fact not a proof but a verification; symmetry operations are not used to construct matrix representations, but rather sets of homomorphic transformation operators.

In the field of notation something is left to be desired, the symbols $\oplus$ and $\otimes$ are much to be preferred to $+$ and $\times$ in the decomposition and products of representations; Γ should be used as a symbol for a representation and not for an individual matrix.

However, none of these points nor the brevity of some of the explanations will detract someone already fairly conversant with the field and I expect this book will find its way to the shelves of many chemical physicists.

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Glass Science

R. H. Doremus

349 pp. Wiley, New York, 1973. \$17.95

The importance of research on matter in the glassy state has become widely recognized recently with the industrial development of semiconductor, chalcogenide, and metal-alloy glasses, though silicate-glass and polymer people have been busy at it a long time. This is the first textbook for a course on the subject; it is directed also to persons involved in glass manufacture and to research scientists working on glasses. The author, Robert H. Doremus of Rensselaer Polytechnic Institute, has made important contributions to several fields of glass science.

It is a small book, which covers a wide range of topics at the expense, naturally, of not covering any one topic in depth. To make up for this, the author gives generous and quite adequate lists of references, which any reader could use well. The concern is first with silicate glasses, and second with a general discussion of inorganic glasses. Dore-