gen bonding are described briefly and I think this is right bearing in mind the book of Pimentel & McClellan.

The sections dedicated to neutron magnetic resonance methods are to be highly welcomed. At the moment no one method (I ask the optical spectroscopists not to be angry with me) has a comparable value as a partner of the diffraction methods. The n.m.r. method, as is clearly shown in a special section of the book, is well suited to the determination of proton–proton (or F–F *etc.*) distances. In the next chapter it is shown that without n.m.r. techniques we have no means of investigating the reorientation movements of molecules and this is especially valuable as in many cases even we did not suspect the presence of such movements.

But let us return to Chapter 3. Here we get acquainted with potential functions used for describing hydrogen bonding. It is shown quite clearly that the potentials can be checked with different diffraction and spectroscopic experiments. Some examples of using both techniques are given at the end of Chapter 3. But the importance of the n.m.r. method is insufficiently stressed. One of the n.m.r. applications is buried in a section on diffraction and optical spectroscopy. The other (reorientation problem) is dealt with in the neutron spectroscopy section en passant.

So Chapter 4 is in the first instance an exposition of neutron inelastic scattering. I would be happier if this chapter occupied another 5–10 pages, at the expense of the last part of the book if necessary.

In Chapter 5 we find information about hydrogen-bonded organic and biological molecules; in Chapter 6 are discussed the hydrogen bonds in hydrates and other inorganic crystals. (Why 'other'? There are plenty of organic hydrates.) Chapter 7 is dedicated to the hydrogen bonded ferroelectrics. The last chapter (two pages) has a title – 'Outlook for the Future'.

Summing up I can say that the Hamilton–Ibers book is certainly a happy occurrence. The reading of the methodical parts is surely stimulating. The pages where hydrogen-bonded structures are described give the reader a lot of useful information.

The book is illustrated with stereoscopic drawings. It is amusing and instructive to search for a three-dimensional view of the structure.

The references are voluminous. So, from all points of view the book is a good introduction not only to the hydrogen-bond problem but to the methods of crystal structure investigation.

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The determination of molecular structure.

Second edition. By P. J. WHEATLEY. Pp. viii+265. Oxford: Univ. Press, 1968. Price (in U.K.) 50 *s.*

This is a second edition of P. J. Wheatley's successful book *The Determination of Molecular Structure.* Like the first edition, it is designed to give an introduction to the main methods available for the determination of molecular geometry. The book is divided into three parts which describe spectroscopic methods, diffraction methods and a miscellaneous group of methods which includes nuclear magnetic resonance. Each technique is approached from the point of view of the non-specialist and long mathematical derivations have been carefully avoided, the emphasis being placed on the scope and limitations of the various methods. References to other books and publications giving more detail on each topic are adequate.

The changes from the first edition are not substantial, the main additions and alterations being to the chapters on neutron and X-ray diffraction and nuclear magnetic resonance. Even here the changes are not great and although a number of references to recent work have been included, one is left with the impression that the book is not quite as up-to-date now as it was at its first appearance in 1959. Nevertheless, it is important that students should be aware of what methods of molecular structure determination are available and this book ought to remain a very useful and excellent survey of these methods for some time to come.

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Graphic prints and drawings of M. C. Escher: set of 35 35mm colour slides.

Hilversum: Polygoon. Price Dfl. 20, \$ 5.50, £ 2·7*s*,

Many crystallographers will be familiar with the fascinating work of the Dutch artist M. C. Escher. One of Escher's preoccupations is the filling of two-dimensional space with objects that can be recognized as, or associated with, living creatures and many of his drawings are truly periodic. It is not surprising that X-ray crystallographers are interested in Escher's work when they are concerned with the ways in which nature solves the same problem of packing identical objects in periodic patterns. Escher's drawings are sufficiently complicated to illustrate most of the rules of plane group symmetry without presenting too many difficulties for the beginner. They are certainly superior to patterns of little circles, thinly disguised as atoms or molecules, which appear on the blackboards of crystallography classes and the reviewer has found Escher's drawing an admirable aid to the teaching of symmetry.

Out of the 35 slides in the set under review, 11 are of periodic patterns nearly all of which exhibit colour symmetry. The remainder form a good cross-section of Escher's work and include reproductions of such famous lithographs as 'Belvedere' and 'Waterfall' which depict impossible buildings and play tricks on our concept of the three-dimensional world. Also present are pictures which show a transition from a flat two-dimensional to a spatial three-dimensional world and others that use perspective in the cunning fashion so typical of Escher.

It is easy to think of works that one would like to see included in this set of slides, but very difficult to decide which of the reproductions already present they should replace. The quality of reproduction is satisfactory and if one can judge from the success of an evening showing the slides at a Department of Physics get-together at York, they are well worth buying.

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