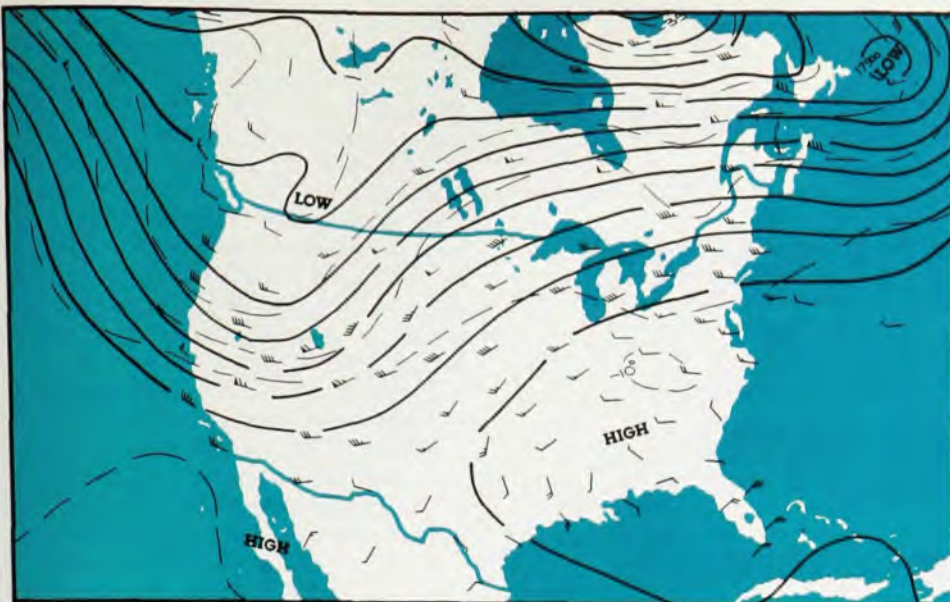




Height contours and isotherms of the 500-millibar surface at 7:00 am EST, 20 Sept. 1970. The height contours are shown as continuous lines and the isotherms are presented as dashed lines. (From the US Department of Commerce, Environmental Services Administration.)

page 236 contains two incorrect statements. Statement (d), that the charging of small ice splinters ejected from freezing drops could be important in thunderstorm electrification, is no longer considered valid, as the phenomenon has been found to be a spurious effect of carbon dioxide from dry ice used in the experiments. The statement (e), that the warm end of an ice crystal acquires a positive charge and the cold end a negative charge is incorrect, in that the sign of the charging is reversed.

The above errors, and probably others, should be listed in an errata insert to the book. However, I would recommend the book as a text for a basic course for those with a general interest in meteorology. Instructors will be able to correct and elaborate on the technical discrepancies.

J. Doyne Sartor

National Center for Atmospheric Research

An Introduction to X-Ray Crystallography

By M. M. Woolfson

380 pp. Cambridge U. P., New York, 1970. \$13.50

Seldom has an author adhered so rigorously to his avowed purpose as Michael Woolfson has in his latest book. He states in his preface that his aim is to provide a foundation for further study of crystallography by explaining the principles involved. He has resisted temptation, and thereby achieved his goal by deliberately excluding more specialized topics such as diffraction from non-crystalline solids, liquids or imperfect

crystals. Moreover, one will search in vain for any discussion of the complementary techniques of electron and neutron diffraction. Thus, by limiting the scope of his book, Woolfson has produced an ideal candidate for use as an elementary text. It should compete successfully with the many other introductory texts already on the market.

The book is divided into nine chapters, the first six of which treat the elementary concepts of crystal symmetry and x-ray scattering from atoms and crystals. Chapter 4 contains a useful introduction to the Fourier transform, which clearly establishes the relationship between diffraction and the transform. Chapter 5 is the only one that deals with experimental methods of collecting diffraction data. Here, Woolfson has provided a rather concise description of the standard diffraction cameras in current use. Reference to the Laue transmission and back-reflection techniques is omitted, although the latter is mentioned briefly in a later chapter. Some readers may find this chapter rather disappointing, and it is certainly true that they will need to consult other sources for more detail.

The final third of the book describes the classical methods for determining space groups and crystal structure, and the techniques for refining diffraction data. An added bonus is the inclusion of sections on the optical properties of crystals, and on the analogy between optical transforms and x-ray diffraction. Almost all of the examples deal with organic crystals, but this fact does not detract from the general usefulness of the text.

This book is noteworthy for its clear and concise exposition and for its liberal use of excellent illustrations. Woolfson's pedagogical experience is evident in his attention to those concepts that

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students tend to find troublesome. Each chapter ends with a set of problems, the answers to which are given at the end of the book. Whereas some of the answers merely consist of numerical results, many of them contain a brief explanation of the method of attack. The bibliography that completes the book is adequate, although it does not include some of the more recent texts such as those by Bertram E. Warren, Leonid V. Azaroff, Jerome B. Cohen or Arthur J. C. Wilson.

In summary, while less ambitious in scope than many other introductory books on x-ray crystallography, Woolfson's text succeeds as well or better than most in explaining those aspects of the subject that he has chosen to include.

Allen N. Goland

Brookhaven National Laboratory

Experiments in Physical Optics

By M. Françon, N. Krauzman,
J. P. Mathieu, M. May
271 pp. Gordon & Breach,
New York, 1970. \$19.50

The title is a little misleading, because the book is not concerned with experiments to be performed by students but rather with those that might be performed as class demonstrations. More than 100 experiments are described, and although very few are quantitative, they still demonstrate a very wide range of phenomena in physical optics. In each case, the principle of the experiment is first outlined and the effect to be demonstrated is described. A list of the necessary apparatus is then given in adequate detail and the adjustment of the apparatus is explained. The book is well illustrated both with ray diagrams and some sketches of apparatus.

An essential feature of a demonstration experiment is that it should be visible to a class of students; the authors are careful to indicate which demonstrations can be projected on to a screen, which require a television camera and screen, and which require individual observation by the students in turn. There are very few in this last group.

The title of the book invites comparison with laboratory texts, and in particular, with *Optics Experiments and Demonstrations* by C. Harvey Palmer. However, these two books are intended for different readers. Palmer's book is full of the sort of detail that a student needs and also includes many references where points are elaborated. The present volume is clearly meant for the experienced teacher. There are no references and while the notes on the principles of the experiments are perfectly adequate as reminders, they are too brief to be of much use to someone who