BOOK REVIEWS

HARBURN (G.), TAYLOR (C. A.), and WELBERRY (T. R.). *Atlas of optical transforms.* London (G. Bell and Son Ltd.), 1975. 33 pp., 64 plates. £6 (hardback), £3·25 (paperback).

This book will interest any mineralogist or crystallographer concerned with the determination of crystal structures by the use of X-ray, electron, or neutron diffraction. It illustrates the use of optical diffraction from a 2-dimensional model as an analogue for the atomic-scale diffraction phenomena. It also has considerable relevance to the recently developing technique of high-resolution electron microscopy for 'seeing' approximations to mineral structures.

Nearly 400 matching pairs of photographs are presented, each pair being a diffracting mask and its optical transform. The examples are chosen carefully to illustrate various principles of Fourier transformation including the effects of shape and size of diffracting aperture, the spacing between two or more apertures, the superposition of sets of fringes, the orientation of a diffracting unit, symmetry operators, lattice repeats, and lattice defects of various kinds.

Sixty-four pages of plates are accompanied by a brief text in English and French. This describes the apparatus used for producing the masks and their optical transforms, and gives explanatory notes for each of the plates.

The compilation should have value for teaching others as well as one's self.

J. ZUSSMAN

DAVIS (J. C.). *Statistics and data analysis in geology* (with Fortran programs by R. J. Samson). New York and London (John Wiley and Sons), 1973. xiii+550 pp., 159 figs. Price £9·45.

The author of this comprehensive textbook takes it as axiomatic that the statistical analysis of geological data will involve computer techniques, allowing the handling of large amounts of data and the use of sophisticated numerical procedures. The first fifty pages of the book are therefore devoted to an introduction and an abbreviated guide to FORTRAN. Treatment of 'background material' continues with chapters on elementary statistics and matrix algebra. The major part (p. 170 onwards) of the book contains the more advanced material with sections on sequence data, map analysis, and multi-variate data.

Treatment throughout is extremely lucid, although the sections of programming and elementary statistics are very condensed. A large number of FORTRAN computer programs are included. These are written in a simple and straightforward way so that the mathematical basis of the method is not obscured in the translation into FORTRAN. Experience suggests that in general the programs work and are free from errors. They are written in such a way that they can be readily implemented at any normal computer installation.