

116[G].—H. S. M. COXETER & W. O. J. MOSER, *Generators and Relations for Discrete Groups*, Second edition, *Ergebnisse der Mathematik und ihrer Grenzgebiete*, Band 14, Springer-Verlag, New York, 1965, ix + 161 pp., 24 cm. Price \$8.00.

This is a revised version of the first edition, which appeared in 1957. For a brief review of the latter see that by G. Higman in *Math. Reviews*, v. 19, 1958, p. 527. The changes here are relatively small, but there is inclusion of further results on binary polyhedral groups, the groups $GL(2, p)$ and $PGL(2, p)$, and the Mathieu groups M_{11} and M_{12} . There is also mention of recent work on the Burnside problem and of some studies on electronic computers. It would appear that, so far, the use of computers has not changed the subject very significantly.

The 12 tables in the back of the book on non-Abelian groups, point groups, space groups, crystallographic groups, symmetric groups, reflexible maps, finite maps, regular maps, etc. are carried over unchanged from the first edition except that some of them, like the bibliography that follows, have been reset in a more spacious format.

The book remains, as before, the definitive work on the subject, and with its further improved and corrected text, and the new hard cover in which it is bedecked, it is one that the student of group theory will want to possess.

The reviewer agrees with the opinion in Higman's review that the study and knowledge of many specific groups forms a valuable basis for insight and inspiration concerning the general theory. The modern style is, of course, usually more abstract. It would be of value if some student of the psychology of mathematical invention would undertake a serious, quantitative study of the relative effectiveness of these two approaches.

D. S.

117[G, X].—L. Fox, *An Introduction to Numerical Linear Algebra*, Oxford University Press, New York, 1965, xi + 327 pp., 24 cm. Price \$8.50.

This American edition differs from the earlier British edition [cf. the review by Ortega, *Math. Comp.*, v. 19, 1965, pp. 337–338] only in that 32 pages of exercises have been added. Some of these call attention to errors and ambiguities in the text. Mostly, however, they include a number of numerical examples, with small matrices usually of integer elements, and exercises providing commentaries on or extensions of the theory. All are fairly straightforward, and considerably enhance the value of the book, whether for self-study, or as a classroom text.

The Oxford University Press, Oxford, England has available copies of the exercises that can be obtained on request by those owning the British edition.

A. S. H.

118[H].—HERBERT E. SALZER, CHARLES H. RICHARDS & ISABELLE ARSHAM, *Table for the Solution of Cubic Equations*, McGraw-Hill Book Co., Inc., New York, 1958, xv + 161 pp., 21 cm. Price \$4.50. Paperback (1963), \$2.25.

The cubic equation $ax^3 + bx^2 + cx + d = 0$, by the substitution $x = y - b/3a$, is transformed to (1) $a'y^3 + b'y + c' = 0$, where $a' = a$, $b' = c - b^2/3a$ and $c' = d - bc/3a + 2b^3/27a^2$. The three roots of (1) are given by $(-c'/b')f_i(\theta)$, $i = 1, 2, 3$, where $\theta = a'c'^{1/2}/b'^{3/2}$ and