NOBLE, B. *Numerical Methods, I: Iteration, Programming and Algebraic Equations* (Oliver and Boyd, Edinburgh, 1964), 156 pp., 10s. 6d.

The resurgence of interest in numerical mathematics initiated by developments in automatic computation has brought with it a proliferation of books on the subject which fall roughly into two classes; the erudite and often elegant exposition by a researcher in the field intent on propagating new ideas and the rather pedestrian textbook which often fails to reflect the changes induced by the new techniques. In this most recent addition to the well-established University Mathematical Text series, Dr Noble has succeeded in combining an awareness of how the subject is evolving with an appreciation of the limitations of the undergraduate student for whom the book is intended. A great deal of hard thinking has gone into the preparation of this text and both student and teacher will reap the benefits.

The dilemma as to whether an introductory course should be oriented to hand machine or automatic machine techniques has been resolved by recognising that they are complementary and the essential features of both methods are covered. The author avoids the multiplicity of formulae usually found in textbooks on numerical analysis but presents selected methods, emphasising concepts which are fundamental to numerical work without obscuring their practical use with unnecessary mathematical rigor. Consideration is given to the requirements of numerical accuracy and estimation of tolerances of numerical results.

This is the first of two volumes, the second is as yet unpublished, and deals with iterative methods for the solution of equations with particular emphasis on Newton-Raphson iteration and its adaptation to the solution of polynomial equations, elementary programming for automatic computers based on a FORTRAN type language with flow diagrams and applications to algorithms derived in the text using suitable starting procedures, and computational procedures associated with linear algebra including the solution of linear equations, inversion of matrices, and the determination of their eigenvalues. The importance of the "condition" of the equations is discussed and this volume is concluded by an account of iterative methods of solving sets of linear equations with an interesting simplified treatment of the convergence rate in the method of successive over-relaxation.

The enlightened and competent manner in which these topics are dealt with will leave readers waiting expectantly for the issue of the second volume the topics of which will be differences, integration and differential equations.

JAMES FULTON

FEJES TOTH, L., *Regular Figures* (Pergamon Press, 1964), xi+339 pp., 84s.

This interesting book falls into two distinct parts, of approximately equal length, which form a complete contrast to each other.

The first part, which the author calls "Systematology of the Regular Figures," is a formal development of the theory of regular and Archimedean polyhedra and of regular polytopes. The treatment, in which elementary group theory is well to the fore, is concise and complete. The chapter headings give a clear enough notion of the contents: I. Plane Ornaments (which contains a complete discussion of the two-dimensional crystallographic groups); II. Spherical arrangements (including an enumeration of the 32 crystal classes); III. Hyperbolic tessellations (essentially a discussion of the discrete groups generated by two operations whose product is involutary); IV. Polyhedra (including the enumeration of the regular solids, concave as well as convex, and of the convex Archimedean solids); V. Regular polytopes (which completes the enumeration of the regular figures in Euclidean space of higher dimension than three).