It is evident that a book of this kind provides difficult reading for both the mathematician and the electrical engineer. The mathematician will find the mathematical details exceedingly tedious, the derivations sometimes very obscure, and the technical terminology of the engineer unfamiliar. The engineer, on the other hand, may resent being called upon to learn a large amount of mathematical notation without the prospect of any corresponding gain in the computations he must perform. In spite of this, the book demands and is receiving attention from workers in both fields. Thus the investigation of singular transformations in tensor algebra and of tensor concepts in combinatorial topology were stimulated by this book. The introduction of concepts tending to unify special methods of approach to engineering problems will, in the long run, have an important influence on the development of engineering theory.

WALLACE GIVENS

Fourier Series and Boundary Value Problems. By R. V. Churchill. New York, McGraw-Hill, 1941. 206 pp. $2.50.

This book is a useful addition to the meager number of existing books of this general nature in English. Its major use will be as a textbook for students in engineering and the sciences interested in these topics.

The book contains no more subject matter than is implied by the title; that is, it leads up to and considers the solution of the usual several linear partial differential equations by series of trigonometric, Bessel, and Legendre functions. A considerable part of the book is devoted to an exposition of the concept of orthogonal sets of functions in general and Fourier series in particular.

The book contains some material of mathematical interest, but not very suitable to certain types of engineering students. However, it is so arranged that such material can be omitted.

From the point of view of mathematical preciseness the treatment is excellent. The book is also well planned for teaching purposes.

N. LEVINSON

The Weight Field of Force of the Earth. By William H. Roever. (Washington University Studies, New Series, Science and Technology, no. 1.) St. Louis, 1940. 84 pp. $1.50.

This monograph is an extension of the author's retiring address as Chairman of Section A of the American Association for the Advancement of Science. It deals with some statical and dynamical

phenomena of the weight field of force of the earth, and is, in general, a summary of the author's earlier investigations in this field.

The earth's weight field of force is defined by the acceleration relative to the solid part of the earth which a body resting near the surface of the earth sustains, due to gravitation of the earth and the heavenly bodies, and due to the earth's motion in the absolute system.

The first three introductory sections of the monograph deal with the laws of relative motion and the effects of a moving atmosphere. In the fourth section it is shown that the tidal effects and the results of precession and nutation are negligible as compared with the gravitational attraction of the earth and the centrifugal force due to the earth's rotation. This main part of the weight field is at rest with respect to the solid part of the earth, and it possesses a potential. In the next two sections the moments actuating the Eötvös torsion balances are derived in geometrical and analytical treatment. The seventh section and the appendix are devoted to some dynamical phenomena of the weight field which lead to differential equations that can be easily integrated.

In view of the recent revival, due to the national defense program, of interest in geophysics and ballistics, this monograph may prove useful in putting some special investigations, which are capable of application in these fields, in a more available form.

MICHAEL GOLOMB

Introduction to Abstract Algebra. By C. C. MacDuffee. New York, Wiley, 1940. 7+303 pp. $4.00.

The rapid advances in algebra within the last few years have been largely due to an exploitation of the powerful methods of abstract algebra. Accordingly there has been a tremendous increase in the interest in this subject, so that most colleges and universities offer at least one course in abstract algebra. However, students with only an undergraduate course in the theory of equations as a background in algebra frequently have considerable difficulty with the available texts—not so much in reading the proofs as in grasping the significance of the abstract theories. The present book was written primarily as a text for beginning graduate students and is designed to fill the gap between the usual text in the theory of equations and the more advanced texts on algebra. It should prove to be a valuable addition to the growing list of texts on abstract algebra.

The material is organized in such a way that concrete instances of