ing of the previous edition. This discovery led to the theory according to which protons and neutrons are regarded as the bricks with which all atomic nuclei are built, and the present book, written by one of the leaders in his field, gives an authoritative and readable account of the theory of nuclear structure and of the experimental results in this field. The book is divided into three parts and the following chapter headings clearly indicate the topics treated. Part I: Stable nuclei. 1. Elementary particles and constituent parts of nuclei. 2. Nuclear binding energy and stability limits. 3. Spins and magnetic moments of nuclei. 4. Electromagnetic radiation of nuclei. Part II: Spontaneous nuclear transformations. 5. Spontaneous α-disintegration. 6. γ-ray emission following α-disintegration. 7. Spontaneous β-disintegration. 8. γ-ray emission following β-disintegration. Part III: Nuclear transformations by collisions. 9. Collisions without disintegration. 10. Nuclear reactions. 11. Nuclear reactions essentially involving radiation. 12. Relative abundance and origin of the elements.

F. D. MURNAGHAN

Lectures on the Mathematical Theory of Electricity. By F. B. Pidduck. Oxford, Clarendon Press, 1937. 8+110 pp.

This little book, which does not pretend to constitute either a complete or a balanced treatment of electromagnetism, is in the main a collection of very concise solutions of mathematical problems of experimental interest. As with many other British texts, most of the book is devoted to electrostatics and magnetostatics. In fact the law of electromagnetic induction does not appear until page 68, and the complete set of field equations are not stated until within twelve pages of the end of the book. The point of view is that of the generally discarded ether theory. Except for eight exercises for the student, the book contains no problems. References are mostly to Maxwell, A. G. Webster, and the author's *Treatise on Electricity.*

This book provides the student with a useful set of solutions of specific problems, but does not take him far into modern electromagnetic theory.

LEIGH PAGE

Differentialgeometrie. Vol. 1. *Raumkurven und Anfänge der Flächentheorie.* By R. Rothe. (Sammlung Göschen, no. 1113.) Berlin and Leipzig, de Gruyter, 1937. 132 pp.

This is intended to be the first volume of a set. The first hundred pages deal with space curves, and the last thirty with surfaces. The book closes with Meusnier's theorem and with some examples of applicability. The line element is introduced, but the second fundamental form and curvatures of surfaces are left to a second volume.

The book is written for students of the maturity of first year graduate students. Discussions and computations are given in enough detail, there are many applications to special cases and it is easy for the reader to see the geometrical meaning of the formulas. Vector notation is used from the start, but nothing more than a knowledge of scalar and vector products is assumed.

The book is not designed as an introduction to the study of quadratic differential forms or of tensor analysis, and everything is in three dimensions. Both the writer and the printer did their work with great care.

K. W. LAMSON

Projektive Liniengeometrie. By Robert Sauer. (Göschens Lehrbücherei, group 1, reine und angewandte Mathematik, vol. 23.) Berlin, de Gruyter, 1937. 194 pp.

This book was written with the specific purpose of interesting young mathematicians in projective differential line geometry. With this end in view the author makes no attempt to give a complete presentation of any part of the subject, choosing rather to introduce the reader to several of the important phases of line geometry. These phases have been selected on the basis of their simplicity and their geometric content. The treatment is necessarily analytical, but the geometric significance of various theorems is illustrated by interpreting them in terms of the properties of certain discrete systems of lines. However, no mention is made of the representation of lines by the points of a quadric hypersurface in projective 5-space; the reviewer believes that the use of this representation would have added interesting geometric content to many of the theorems, especially in the earlier chapters.

In the first chapter the author presents the fundamental notions of projective line geometry. Two types of line coordinates are used, projective (Plücker) coordinates and vector coordinates for treating problems in euclidean space. The effect of a point transformation on the line coordinates is studied and applied to the classification of linear complexes and related topics. Chapter 2 is concerned with one parameter systems of lines, or ruled surfaces. The treatment is purely projective and parallels that usually given for space curves. Invariants are found and are shown to determine the surface to within a projective transformation. There is also a discussion of ruled surfaces invariant under a group of transformations. Chapters 3 and 6 discuss two and three-parameter systems in a similar manner. Tensors are used to determine the invariants of the systems. Chapter 4 considers some special two-parameter systems, including those invariant under a group of transformations. In Chapter 5, vector line coordinates and the theory of two-parameter systems are applied to the theory of infinitesimal deformations of surfaces.

R. J. Walker

Principles of Mathematics. By Bertrand Russell. 2d edition. New York, Norton, 1938. 39+534 pp.

The first edition of this book is so well known, being the author's first important publication on mathematical logic, that any description here would be superfluous. The text is a reprint of the 1903 edition with, however, an interesting new introduction by the author discussing the developments in mathematical logic since it was first published. As he says "such interest as the book now possesses is historical" since the same ground was subsequently traversed with far more rigor in the *Principia Mathematica.*

In dealing with later developments the author discusses the three current views of the nature of logic and mathematics, the logistic (his own view), the formalist, and the so-called intuitionist. He sums up the discussion by saying that modern developments have resulted in an outlook "less Platonic, or less realistic in the medieval sense of the word"; that is, the view that the principles of logic, which we seem to find at different stages, are real and absolute, has receded. Put otherwise, Wittgenstein's view that what logic is "in itself" (whatever this means) "cannot be said but can only be shown" has been confirmed. Any attempt to "say" it can only be one exemplification out of many possible, not a uniquely true statement. The three current views differ, it is true, as to whether certain specific propositions are true or false, but, if Wittgenstein is correct, the removal of these differences would not result in showing that one of these views was true and the other two false, but would leave all three as alternative ideologies by which logic could be symbolized. The choice between them would be aesthetic, or based on convenience, depending on which brings into clear-cut relief some aspect of the matter in which we are interested.