for (apparently) easy assimilation by the reader. Of course, the treatment of many of the above topics must be incomplete in a presentation such as is given in this book, but the author points out any incompleteness in each definition or proof, and suggests possible ways of filling the lacunae.

Some of the exposition is prolix, but prolixity is difficult to avoid in an exposition designed for the general reader. Even with this prolixity the book is very readable. Many examples well illustrate the abstract treatment of the various topics. Some of the more detailed and technical material which may be omitted without destroying the continuity of the exposition is printed in small type.

In the last chapter the author becomes dogmatic in some statements concerning the principle of selection (das Auswahlprinzip) of Zermelo; but enough is said to enable one to see that the author's point of view is not the only possible one. The axiomatic setting up of the theory of sets according to Zermelo, the paradoxes which are to be avoided in this way, and the bearing of the problem of well-ordering on these matters, are explained here quite clearly, considering the limitations imposed by a popular exposition of these abstruse subjects. The method of *logicizing*, and more particularly the theory of types of Russell, are not mentioned, although a footnote reference to Russell's books is given.

The book should be very useful for upper collegiate classes in mathematics and for those interested in mathematical philosophy in a general way. It should help to introduce to a wider circle the ideas and methods of a fundamental and interesting branch of mathematics.

G. A. PFEIFFER.

Descriptive Geometry. By Ervin Kenison and Harry Cyrus Bradley. New York, The Macmillan Company, 1917. vii + 287 pp.

This is one of a series of texts on topics in engineering edited by E. R. Hedrick. In their preface the authors state, "This book represents a teaching experience of more than twenty years on the part of both the authors at the Massachusetts Institute of Technology. . . . The point of view · · · is · · · that of the draftsman. Mathematical formulae and analytic computations have been almost entirely suppressed. . . . The method of attack throughout the book is intended to be that which shall most clearly present the actual conditions in space. . . . The amount of ground covered is that which is considered sufficient to enable the student to begin the study of the technical drawings of any line of engineering or architecture. It is not intended to be a complete treatise on descriptive geometry. Detailed exposition of such branches as shades and shadows, perspective, stereographic projection, axonometry, the solution of spherical triangles, etc., will not be found."

Questions relating to points, straight lines, and planes occupy the first three-fifths of this text; while the latter part, including twenty-two of the fifty-two problems, is devoted to tangent lines and planes, and to curved surfaces and their intersections. The first two problems,—to find the traces of a straight line, and to find its projections from its traces,—are on pages 24 and 25. The third problem,—to find the true length of a straight line,—is found thirty pages further along, after four chapters on simple shadows, the representation of the plane, the profile plane of projection, and secondary planes of projection. After a chapter on simple intersections and developments, there follow twelve problems grouped into three chapters on lines in a plane and parallel lines and planes, on perpendicular lines and planes, and on the intersections of planes and of lines and planes. The fifteen problems involving the revolution and counter-revolution of planes follow a chapter on the intersection of planes and solids.

Of the ten problems on tangent planes there are three each for cones and cylinders, and two each for spheres and double-curved surfaces of revolution. Then follow problems on the intersection of a plane with a cone, a frustum of a cone, a cylinder, a prism or a pyramid, and a double-curved surface of revolution. The book is concluded by problems on the intersection of two cylinders, of a cylinder and a cone, of two cones, of a sphere and a cone, of two surfaces of revolution whose axes intersect, and of any two curved surfaces.

These problems are carefully worked out with figures, analysis, construction, general case, and special cases. They will probably bring to the student an idea of the general methods employed. The one criticism that the reviewer would suggest is the absence of exercises to be worked out by the student. The book gives, however, an interesting presentation and is quite worth careful study.

E. B. COWLEY.