

## SHORTER NOTICES

*Algebraische Kurven.* By Dr. H. Wieleitner. I, Gestaltliche Verhältnisse. Sammlung Göschen. Berlin, de Gruyter, 1930. 146 pp.

This book contains four chapters on general considerations, infinite points and asymptotes, curves as envelopes of lines, and higher singularities. The classical methods of curve tracing are clearly presented, the examples are well chosen and illustrated by nearly one hundred accurate figures. Particularly illuminating are the discussion of the continuous variation of curves, the enumeration of the singularities of quartics, and the paragraphs on the form of curves of class four. There is a brief bibliography confined to German texts.

B. H. BROWN

*Geometrische Konfigurationen.* By Friedrich Levi. Leipzig, S. Hirzel, 1929. vi +310 pp.

This book has for its aim the study of geometrical configurations, principally those composed of points, lines and planes. The author has in mind a unified presentation which will show the relation of this subject to algebra and topology. The approach, through a consideration of the incidences which occur among the elements of the configurations, leads immediately to combinatorial methods.

The introduction defines the equivalence of two configurations in terms of one-one incidence preserving correspondences between their elements. Representations of configurations by means of incidence matrices and automorphisms of configurations are introduced.

In Chapter 1 there is an exposition of those parts of group theory which will be required later on. The group of a function and of a configuration, automorphisms of groups and groups of infinite order are discussed.

Chapter 2 consists of a treatment of the topology of two-dimensional manifolds from a purely combinatorial point of view. The elements making up a manifold and the operations thereon are characterized axiomatically and the theory leading up to the classification of these manifolds is put forth very neatly.

In Chapter 3 there is a consideration of the simplest point-line projective configurations. The group, analytical and topological properties of these figures are discussed in detail. Material on the Möbius tetrahedron and on nets of lines in the projective plane is included.

The next chapter is devoted to polyhedral configurations and the theorem of Desargues. There are incidental sections on kinematics and graphical statics.

Chapter five introduces the Pascal figure and collects an extremely generous quantity of results on points, lines, and conics due to Pascal, Kirkman, Steiner, Cayley, Salmon and Plücker.

The last chapter devotes thirty-six pages to a detailed and systematic exposition of the theory of regular polyhedra. Its conclusion discusses polygonal nets in euclidean and non-euclidean spaces with applications to the topology of surfaces.