little known form of insurance, pointing out, it would seem, every exigency that could possibly arise.

CHARLES C. GROVE.

Konstructionen und Approximationen. Von THEODOR VAHLEN. Teubner, Leipzig und Berlin, 1911. xii + 349 pp.

ONE who expects to find in this book—Band XXXIII of the Teubner Sammlung—a more or less complete list of constructions and approximations with a strong flavor of applied mathematics will be disappointed, as was the reviewer. According to the author it is intended to help bridge the gap which exists between the mathematics of the German gymnasium and university. The latter does not begin its work where the former ends. Various books, notably those by Klein and Enriques, have been published recently which might be studied by those intending to follow the lectures on higher mathematics. The book under review aims to furnish such preparation by having the student actually come in contact with some concrete facts in mathematics and to know these so well that later when the professor during his lecture has him soaring more or less he may still have a point or two of contact with the earth below.

The class of books having in view preparation for the university is decidedly different for Germany than for the United States. To illustrate this we might mention that the first 75 pages of the book under review are devoted to having the student obtain definite notions concerning the fundamental principles of projective geometry. Special emphasis is placed in all of its phases, both algebraic and geometric, on the interpretation of the cross-ratio. Good drill work, all of it. Of course, it couldn't be included in the lectures given later—that would seem too much like teaching.

Throughout the book the various aspects of the solutions of the three famous problems of antiquity are presented and many references to the literature on the subject given. Interesting metric cubic constructions in which algebra and geometry are closely correlated are cited. Approximate solutions of cubics and biquadratics are obtained geometrically and the limited range of constructions possible with ruler and compass pointed out. In this connection are included several solutions, ancient and modern, of the duplication of the cube and tri-