In the three volumes of Pascal's *Lezioni* on the other hand, misprints are quite numerous, particularly in volume 3, where some fifty were noticed on slightly over three hundred duodecimo pages. Enough has been said above in comparing the two works to make further discussion of the first two volumes of Pascal's *Lezioni* superfluous. The third volume is little different from the first edition of 1897 of which the first part appeared in a German translation by Schepp in 1899.* It appears to be a reprint of this earlier volume rather than a new edition. It is this which accounts for the apparent disregard of the important developments in the calculus of variations during the last twenty years. It still frankly represents the old school, so that a detailed criticism from the modern point of view, for which the book furnishes ample opportunity, would clearly be out of place. The extensive bibliographies inserted at various points form a valuable feature. It is surprising, however, that in the list of treatises on page 19, apparently revised since the earlier edition, Hadamard's *Leçons* is not mentioned, while there is mention made of a *Lehrbuch der Variationsrechnung* by Carathéodory and Zermelo, which, although announced repeatedly, has not yet appeared and does not occur on Teubner's later lists of future publications.

<div align="right">ARNOLD DRESDEN</div>

<div align="center">――――――――――</div>

SHORTER NOTICES

Allgemeine Theorie der Raumkurven und Flächen. By V. Kommerell and K. Kommerell. Vols. I and II, third edition. (Sammlung Schubert, XXIX and XLIV.) Berlin and Leipzig, Vereinigung wissenschaftlicher Verleger, 1921. 184 + 196 pp. 28 + 13 figs.

The third edition of these two volumes is so nearly a reprint of the second edition, which has already been reviewed in this BULLETIN,† that an account of its contents is quite unnecessary. The arrangement of material is precisely the same in the two editions, but many of the discussions have been slightly amplified in the later one and the few errors in printing have been corrected. The only new material appears in the derivation of curves from given properties and in the definition of the Christoffel symbols.

These two volumes should be intelligible to the student who has little training beyond the calculus, yet they present an excellent treatment of the essentials of differential geometry. The student who has read them should have no difficulty with the more extensive treatments of Bianchi, Eisenhart, Forsyth and others. Such a presentation of differential geometry as this by Kommerell and Kommerell, if available in English, would increase the teaching of that important subject to the advanced students in our American universities.

<div align="right">E. B. STOUFFER</div>

―――

* See the review by E. R. Hedrick in this BULLETIN, vol. 12 (1906), p. 172.

† Vol. 21 (1915), pp. 99–100.