the more modern Smith texts. Briefly, it embodies the spirit of the newer series in the forms of the older. It is "thoroughly modern in spirit and in material" but is free from all traces of "fad-ism" found in so many texts of recent years. The book is strictly topical, although the authors frankly admit, in the preface, that under certain conditions the recurrent treatment of topics may be preferable. The problem material is carefully chosen and is given in great abundance. And, at frequent intervals, under the heading "Problems without Numbers" are given sets of questions that combine review and generalization very effectively. It might have been well to present the metric system earlier and then give practical problems in it through a longer interval.

G. H. SCOTT.

Theorie des Potentials und der Kugelfunktionen. Von DR. A. WANGERIN. I. Band., Leipzig, Göschen (Sammlung Schubert. Band LVIII.), 1909. 8 + 255 pp. M. 6.60.

THIS is the first of two volumes dealing in an elementary way with the subject indicated by the title. The second volume will treat of spherical harmonics and their applications to the potential of the sphere. The present volume is confined to the derivation of the characteristic properties of the potential. The treatment follows Gauss for the potential due to solids, Weingarten for that due to surfaces. The potential function for other laws than the Newtonian is briefly considered. The last section gives in some detail the problems of potential and attraction of a homogeneous ellipsoid.

The development is very skilfully handled. The text begins with very elementary data, and builds up the integrals for the attractions of solids and surfaces, with applications to circular arcs, straight segments, and surface of circle and sphere. It is thus made to connect easily with an ordinary course in integral calculus. The potential function noticed by Lagrange is then introduced as a point function whose three partial derivatives are the three components of the attraction. The conceptions of equipotential surface and lines of force follow. The next chapter derives the usual characteristic properties of the potential function, as a function of a position in space, for points outside the attracting mass. The holomorphism of the function and its derivative as to x, y, or z, its order at infinity, and the vanishing of its concentration are shown. Next the characteristics for