The Symmetrical Optical System. By G. C. Steward. London, Cambridge
University Press, 1928. viii+102 pp. Price 7 s. 6 d.

This monograph is number 25 of the important series known as Cam-
bridge Tracts in Mathematics and Mathematical Physics. The elementary
theory of the first chapter is followed by a discussion of the characteristic
function of Hamilton, the "eikonal," and the aberration function. The
way is thus prepared for the immediate consideration of coma, distortion,
and geometrical aberrations of the first and higher orders. A chapter is
next devoted to interesting presentations and proofs of the sine-condition,
the cosine-conditions, Herschel's condition, and the very general optical
cosine law. The fifth chapter is devoted to the preparation of formulas
especially adapted to the computation of optical systems. However, no
attempt is made to apply these results to numerical data which have arisen
in the designing of actual optical apparatus. The two remaining chapters
take into account the finite wave-length of light, and they deal respectively
with the diffraction patterns associated with the symmetrical optical system
and with three forms of aperture, namely, the annular aperture, the slit
aperture, and the semi-circular aperture.

The usefulness of the tract is enhanced by the inclusion of lists of refer-
ences at the ends of all the chapters. The figures or line diagrams are clear,
well chosen, and sufficiently numerous, and the monograph will constitute
undoubtedly a valuable reference source both on account of the uniformly
clear, logical presentation of the material involved and because of the
powerful analytical methods developed and employed.

H. S. UHLER

Théorie des Champs Gravifiques. (Mémorial des Sciences Mathématiques,
No. 14.) By Th. de Donder. Paris, Gauthier-Villars, 1926. 60 pp.

This is the second of a sequence of pamphlets on the theory of relativity
which de Donder is contributing to the Mémorial des Sciences Mathé-
matiques (for a review of the first of these pamphlets see this Bulletin,
vol. 32, p. 563).

In this pamphlet the author first derives the equations of a gravita-
tional field in all possible generality. He then considers the more important
special cases, such as those fields due to "ordinary" gravitation associated
with the presence of material bodies, those electromagnetic fields due to
the presence of charged bodies, and those due to the simultaneous presence
of matter and electric charges. As in the other pamphlets of the Mém-
orial series, we have here a minimum of formal derivation with many
references to the literature, the style suggesting that of the Encyklopädie.
As a result we have a very good bird's eye view of a very wide domain.

C. N. REYNOLDS, JR.