

*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 Cambridge 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 references 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 Mathématiques (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 gravitational 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 Mémorial 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.