

*Collected Geometrical Papers.* Part I. By Syamadas Mukhopadhyaya. Calcutta, University Press, 1930. 159 pp.

The present collection contains 17 papers, previously published for the most part in Asiatic periodicals in the interval 1908–1928.

The topics considered fall into three general heads, those concerning topological questions, including cyclic points, sextactic points, etc. of plane curves, those concerning triangles and quadrilaterals in hyperbolic geometry, and those on methods of visualizing representations of four way space.

The methods are mostly those of elementary geometry, although differential expressions are used freely in the treatment of osculation. The proofs are strikingly direct and simple, and many of the theorems were first published previously to those obtained by others. For workers in topology, the Papers will be of real service.

VIRGIL SNYDER

*Theory and Application of Infinite Series.* By K. Knopp. Translated from the second German edition by R. C. Young. London, Blackie, 1928. 12+571 pp.

The first edition of Professor Knopp's book on infinite series appeared in 1922 and was reviewed in this Bulletin, volume 29 (1923), pp. 474–475. Two years later a second edition was necessary and the author took occasion to improve the details of expression and demonstration throughout and to re-write the last chapter, dealing with divergent series. The clear and elegant presentation has made this treatise a standard introduction to the subject and English readers are fortunate in having now a skillfully prepared translation. In addition to the material contained in the second edition the author has added a chapter on Euler's summation formula and asymptotic expansions, a subject which he omitted with great reluctance from the German edition. The book is designed particularly for those who may wish to acquire a knowledge of the subject by private study and contains a large collection of exercises.

W. R. LONGLEY

*Über die Verhältniszahl des Goldenen Schnitts, die Reihe der mit ihr zusammen hängenden ganzen Zahlen und eine aus dieser abgeleitete Reihe.* By Ludwig Kaiser. Berlin, Teubner, 1929. 123 pp.

The popular accounts of the Golden Section mostly delight in its mysterious connections with the shape of picture-frames, matchboxes, the Great Pyramids, cathedrals, the distribution of leaves on herbs and trees, etc., etc. In the present elementary book the author only proposes to derive the arithmetical properties of the Golden Section and related numbers. The book is clearly written and probably intended for interested pupils in the German "Gymnasium." Part I deals with various properties of  $g = (1 + \sqrt{5})/2$  and its powers, most of them easily obtainable from the well known theorems on the algebraic field  $k(\sqrt{5})$  and continued fractions. Part II contains an investigation of the arithmetic properties of the numbers in the series of Kepler (Lambert), which is the same as the series of denominators or numerators of the successive convergents in the continued fraction for  $g$ .

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