Type: Manuscript

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Title: Elements of Mathematics

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Abstract / Description:

From the Robin Catalogue:

A. MS., n.p., [c.1895], pp. 1-357 (pp. 61, 77, 93, 213, 259-273, 276-294 missing), with 23 pp. of a well-detailed “Table of Contents” and “Subject Index” and 18 pp. of another draft of Article 2, Scholium 2, of Chapter I.

Chapter I “Introduction” (pp. 1-39): Elementary account of the nature of mathematics; analysis of the game of tit-tat-too as an illustration of the process of deducing the consequences of hypotheses; definitions and the etymology of important terms. See MS. 1525 for possible early drafts of some of this material. Chapter II “Sequences” (pp. 40-76, with p. 61 missing): Sequences, both simple and complex. Chapter III “The Fundamental Operations in Algebra” (pp. 78-92, with pp. 77 and 93 missing): Fundamental operations in algebra; explicit and implicit functions; functions of several variables. Chapter IV “Factors” (pp. 94-106): Parts, divisors, and factors; prime factors; greatest common divisor of several numbers; multiples, dividends, and products; least common multiple; fundamental theorem of composition. Chapter V “Negative Numbers” (pp. 107 116): Definition and historical data. Chapter VI “Fractional Quantities” (pp. 117-130): Rational number explained; the system of rational numbers as including the values of all rational fractions except o/o. Chapter VII “Simple Equations” (pp. 131-173): Solution of linear equations; systems of simultaneous equations. Chapter VIII “Ratios and Proportions” (pp. 174-188): Ratios, proportions, anharmonic ratio. Chapter IX “Surds” (pp. 189-222, with p. 213 missing): Possibility and importance of surds; definition of “limit”; Achilles and the tortoise (p. 196); imaginary quantities; exercises and problems. Chapter X “Topical Geometry” (pp. 223-275, with pp. 259-273, 276-293 missing): Topical geometry explained; continuum; homo-geneity; tridimensionality of space; singularities; topical classes of surfaces; the topical census. Long footnote on the intelligibility of infinitesimals. Chapter XI “Perspective” (pp. 294-357): Graphics; homoloidal system of plates; dominant (optical) homoloids; projection; Desarques’ Ten-Line theorem; the Nine-

Ray theorem.

Language: English