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Œuvres Complètes de Christiaan Huygens. Vol. XIV by Christiaan Huygens

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appearance of signs of the influence upon Leibniz of the mathematical ideas of Isaac Barrow. Mr. Child came fresh to his study of these papers from an exhaustive examination of the mathematical works of Newton's great predecessor. He at once recognised the obligations of the younger student to the English master. To Barrow, Leibniz owed "everything but his methods." Leibniz took up Descartes, laid him down, just as Newton laid aside *The Elements*. He resumed his study of the great Frenchman, and applied the Cartesian geometry to the theorems of Barrow; meanwhile his own notation began to develop. The operational calculus began to take form. The critical and historical notes in this volume display complete familiarity with the great controversy which raged around the notorious *Commercium Epistolicum*. Finally Mr. Child is forced to the conclusion that "Leibniz was in no way indebted to Newton for anything," and that "he was under no obligation to Barrow for his methods." The translation runs smoothly, and a useful and necessary piece of historical work has been done. The prevailing characteristic of the commentary is one of intense enthusiasm, and at times one almost feels that the writer can scarcely refrain from regarding his own hypotheses as proven facts. But on the whole there are very few slips, and the only fault that we have to find with this interesting volume lies in those places wherein his excitement and anxiety to press home his point, the author indulges in colloquialisms which are unusual in works of this type.

Ceuvres Completes de Christiaan Huygens. Publiées par la Société Hollandaise des Sciences. Vol. XIV. Calcul des Probabilités, Travaux de Mathématiques, 1655-1666. Pp. 556. N.p. 1920. (Nijhoff, La Haye.)

One third of this volume is given up to Huygens' work on Probabilities. The papers between 1655 and 1659 deal with problems and theorems of Arithmetic, Stereometry, and Analytical Geometry, work on the Theory of Numbers, including papers on the Pellian Equation; rectification of the parabola, quadratures of the curved surfaces of the three conoids; areas of curves, volumes of solids of revolution, centres of gravity; the cycloid; evolutes. Some of the mathematical results obtained by Huygens, and never published by himself, were added to the Commentaries of van Schooten on the *Geometria* of Descartes (1649 and 1659). These fill about sixteen pages. Finally the papers between 1661 and 1666 deal with logarithms and the logarithmic curve, quadrature of the hyperbola by logarithms with application to the height of the barometric column; the construction of the regular heptagon; constructions for tangents to algebraic curves, and for the diameter of a spherical surface; researches on cubics; calculation of the smallest number which divided by given numbers leaves given remainders. We shall be grateful to any reader who is familiar with the astronomical volumes of this collected edition for a reference to the passage where Huygens speaks of an afternoon observation as taken "après-dîner."

Elementary Algebra. By C. V. DURELL and G. W. PALMER. Part I. Pp. xxxi + 256 + xlvi. With Introduction and complete set of Answers. 4s. 6d. Without Introduction, and with Answers to Questions where intermediate work is required (with perforated pages). 3s. 6d. 1920. (Bell & Sons.)

After using this little book for some months we have come to the conclusion that it is nearer the ideal book for beginners than any we have yet seen. Prominence is given to oral work, there is a reduction to a minimum of the usual "talk," the constant attention is paid throughout to the hundred and one minutiae which, if properly attended to at an early stage, lead to clearness of thinking, correctness, and even elegance of expression. All the familiar traps are here. Every master will recognise at once the good qualities of the book, and we know of nothing better to place in the hands of a private student. A boy who has worked it through will have a sound knowledge of the subject up to quadratics, and will be able to apply his powers to the problems that meet us in every-day life. There are good sets of revision papers, and, what is not often found in a book for beginners, a glossary.