

has reproduced by photographic process a hundred and twenty-six of the rarest counters in his collection, generally both in obverse and reverse, and has given scientific descriptions of a large number of others. As to the opportunity that he has given the reader of having some share in his scholarship—he has shown the painstaking care in research into historical details, and the interesting style of presenting facts that characterize his other writings upon the period to which he has devoted a life of study. The fact that the bibliography of works consulted contains more than six hundred items is proof of the care with which he has considered the literature relating to the subject.

The work consists of three parts. Part I relates to the history of the casting-counter and to descriptions of the specimens found in England, Italy, France, the Low Countries, Germany, and Portugal. Part II contains the only worthy description that we have of the counting boards and counting cloths used in the medieval and Renaissance periods, and is admirably illustrated by numerous plates. Part III sets forth the methods of casting with jettons, a subject upon which we have plenty of information from such sources as Robert Recorde (c. 1542), John Awdeley (1574), Nicholas Cusa (1514), Martinus Siliceus (1526), Köbel (1514), and various other writers of the sixteenth century, upon whose works the author has freely drawn.

There are two elaborate indexes, one of legends and inscriptions on the counters and the other of a general nature—and nothing is more conducive to the comfort of a student who has occasion to consult a work of this nature than a good index.

It may be said of the work as a whole that it represents the most elaborate study that we have upon any of the minor features of this kind in the history of mathematics, and that it deserves a place in every college and university library and on the shelves of every one who is working in the special field of the history of computation.      DAVID EUGENE SMITH.

*Tables des Nombres Premiers, et de la Décomposition des Nombres de 1 à 100,000.* By G. INGHIRAMI, reviewed and corrected by Dr. PROMPT. Gauthier-Villars et Cie., 1919. xi + 35 pp.

THIS little factor table gives the smallest divisor of all

numbers less than 100,000 which are prime to 2 and 5. The inclusion of the smallest factor 3 adds little to the value of the table and much to the bulk. It is decidedly inferior to Burckhardt's table in convenience of arrangement, and is approximately twice as bulky as a table which omits multiples of 2, 3, 5 and 7. It is difficult to see what end is served by the republication of such a table at the present time.

The book also contains a table of "Tessaréen" numbers, which seem to be prime numbers of the form  $a^2 - a - 1$ . The connection between such numbers and the numbers representable by the binary quadratic form  $x^2 - xy - y^2$  is not indicated. A list of such numbers with the corresponding values of  $a$  is given, the list extending as far as the prime 19991. What particular use is to be made of this table is not indicated. The "preliminary explanation" avoids giving any demonstration of the properties of "Tessaréen" numbers, on the ground that such a demonstration would not teach anything to one who was already familiar with the theory of numbers, and would not be understood by one who was not.

The author of the preliminary explanation—name not signed, but perhaps Lebon—deplores the neglect of the theory of numbers, which neglect he attributes to the vicious methods and barbarous terminology of German mathematicians. Gauss especially comes in for a thorough castigation for his bizarre and incoherent formulas!

Five pages of the introduction are devoted to a biography of Inghirami by Giovanni Giovannozzi. Inghirami's most important work seems to have been done in astronomy and in geodesy. The factor tables here republished appeared for the first time in 1832 at the end of a volume on *Elementi di Matematiche*. He evidently did not know of Burckhardt's tables published some twenty years previously.

D. N. LEHMER.

*Lectures of the Theory of Plane Curves.* By SURENDRAMOCHAN GANGULI, M.Sc., Lecturer in Pure Mathematics, University of Calcutta. Part I, x + 140 pp.; Part II, xiii + 350 pp., and 13 pages of figures. Published by the University of Calcutta, 1919.

THESE lectures were delivered to postgraduate students and comprise in a fairly satisfactory manner most of the topics usually presented in an elementary course on plane curves.