

ever, to whom the analytic theory is chiefly due (in volume 5 of the *Mémoires de St. Pétersbourg*).

An examination of the *Produzioni* shows that it is as an algebraist that Fagnano deserves chief recognition. To be sure he devotes a large amount of space to his *Teoria generale delle proporzioni geometriche*, so much space that few readers will be found who care to master it, but it is in his *Applicazione dell' algoritmo nuovo* that one finds displayed an interest in the field of mathematics in which Italy stood preeminent from the time of Ferro and Florido. Fagnano's treatment of equations, his ability to handle skilfully the complex number, and his contributions of a *nuova maniera* of handling cubic and quartic equations, are quite as noteworthy as his discoveries in the theory of the lemniscate.

Of the three volumes edited and published with such care by Professors Volterra, Loria, and Gambioli, the first contains Volume I of the *Produzioni matematiche*, devoted chiefly to geometric proportion and the "new algorism" applied to the treatment of equations. The second contains Volume II of the *Produzioni*, chiefly concerned with the theory of the triangle, special problems in the calculus, and the lemniscate. The third volume contains Fagnano's other scientific and polemic writings, a large number of his letters, and his biography.

Whether or not one feels that the standing of Fagnano justifies the republication of his memoirs and his *opus magnus* before those of other scientists whose works are out of print, he cannot deny the value of the labor undertaken by the *Società Italiana per il Progresso delle Scienze*, nor withhold the praise that is so justly due to Professors Volterra, Loria, and Gambioli.

DAVID EUGENE SMITH.

*The Method of Archimedes Recently Discovered by Heiberg.*

A Supplement to the Works of Archimedes, 1897. Edited by Sir THOMAS L. HEATH, K.C.B., Sc.D., F.R.S., Sometime Fellow of Trinity College, Cambridge. Cambridge University Press, 1912. 51 pp. Two shillings and sixpence net.

It is nearly four years since there appeared in *The Monist* Miss Robinson's translation from the German of the treatise on mechanics by Archimedes discovered by Heiberg in 1906. It was this reviewer's privilege to write a brief introduction to that translation, and all this material appeared in pamphlet

form a little later. It is therefore with a personal pleasure that the reviewer calls attention to the pamphlet prepared by Sir Thomas L. Heath as a supplement to the well-known edition of the works of Archimedes that appeared in 1897.

The pamphlet has several advantages over the one prepared in 1909. In the first place the introductory note is more complete, having been prepared with the added information given out by Heiberg in 1910 in Volume I of his new edition of the text of Archimedes. Again, it is prepared with the wealth of learning that only Sir Thomas Heath or Professor Heiberg could bring to such a task. And finally, the translation of the text is from the Greek instead of through the German, and has the advantage of the author's profound knowledge of the idioms to be found in the works of the Greek mathematicians.

The chief value of the work lies in the fact that it sets forth the method followed by the great Syracusan in making his discoveries in mechanics, and to the testimony that it bears to the fact that Democritus instead of Eudoxus should be credited with the discovery that the volume of a pyramid or a cone is one third of the volume of the corresponding prism or cylinder.

A word of commendation should also be given to the clear way in which the translation has been arranged upon the page, so that, as in the edition of 1897, the eye easily follows the proof.

DAVID EUGENE SMITH.

*Didaktik des mathematischen Unterrichts.* Von Dr. ALOIS HÖFLER, O.O. Professor an der Universität Wien. Leipzig, B. G. Teubner, 1910. Mit zwei Tafeln und 147 Figuren im Text. xviii+509 pp. 12 Marks.

THE present day in the teaching of secondary mathematics, and in a less degree of all mathematics, is characterized by a spirit of unrest in every progressive country in the world. No one person is responsible for this state of affairs, and not very many leading names are connected with it. It is not a campaign carried on by field marshals in education or in mathematics; it is rather a mass movement without other leader than the *Zeitgeist*; it is democracy asserting itself against the old aristocracy of learning; it is often merely an effort to have things different, with no well-defined plan of having them better. This desire for change shows itself