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Review

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merits, and is on the whole clear, readable, and reasonably accurate. To profess that I regard its methods as the "latest and best" would, however, be an exaggeration.

G. H. HARDY.

**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. Pp. 51. 2s. 6d. net. 1912. (Cambridge University Press.)

The story of the discovery of this MS. by Heiberg has been told in *Hermes*, xlii., and in *Bibliotheca*, viii. The particular interest attaching to "The Method" has been most felicitously set forth by the Editor: "Nothing is more characteristic of the classical works of the great geometers of Greece, or more tantalising, than the absence of any indication of the steps by which they worked their way to the discovery of their great theorems. As they have come down to us, these theorems are finished masterpieces, which leave no traces of any rough-hewn stage, no hint of the manner by which they were evolved. We cannot but suppose that the Greeks had some method or methods of analysis hardly less powerful than those of modern analysis; yet, in general, they seem to have taken pains to clear away all traces of the machinery used and all the litter, so to speak, resulting from tentative efforts, before they permitted themselves to publish, in sequence carefully thought out, and with definitely and rigorously scientific proofs, the results obtained." A partial exception is now furnished by the Method, for here we have a sort of lifting of the veil, a glimpse of the interior of Archimedes' workshop as it were. Assuming the principle of the lever, he attacks geometrical problems through the medium of mechanics. For instance, he has already, in the Quadrature of the Parabola, proved the theorem that the area of a parabolic segment  $ABC$  is  $\frac{4}{3}$  of the triangle  $ABC$ . The mechanical discussion of the Method he regards, not as a demonstration, but simply as giving reasons for suspecting that the property is true—"argument has given a sort of indication." It is interesting to find that Archimedes discovered his formula for the volume of the sphere before he found an expression for the area, and that Eudoxus was the first to discover "that the volumes of a pyramid and a cone are one-third of the volumes of a prism and a cylinder respectively which have the same base and equal height," Democritus having asserted it previously but without proof. The admirable introduction by Sir T. L. Heath is a model of editorial craftsmanship.

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