

## OSGOOD'S ADVANCED CALCULUS

*Advanced Calculus.* By William F. Osgood. New York, The Macmillan Company, 1925. xvi+530 pages.

Almost twenty years ago, in a presidential address delivered before the American Mathematical Society\*, Professor Osgood outlined his conception of the aims and methods that should underly the teaching of the calculus. As between the formalists and the reformists of the Perry school, he pointed out that though the former were right in insisting on the necessity of rigorous training in formal work in order to acquire the ideas of the calculus, still this drill must appear to the student "as having for its direct object the power to solve some of the real problems of pure and applied mathematics, and these problems must always be kept before his eye." This idea was emphasized again with the words "That which is most central in the calculus is its *quantitative* character, through which it measures and estimates the things of the world of our senses. And instruction in the calculus that does not point out—not merely at the beginning or at the end, but all through the course—this close contact with nature, has not done its duty by the student." He felt, however, that too often those who had attempted to interpret physical phenomena mathematically had started from incomplete and vaguely stated hypotheses and had used methods so slipshod as to be beneath the respect of the undergraduate student of the calculus.

Later in the same year his *First Course in the Differential and Integral Calculus* was published. Here the program of his presidential address was carried out. There was a large amount of material for drill in technique; statements of hypotheses and conclusions were clear and accurate; proofs were carried through with all the rigor suitable for a first course in the calculus, and a large part of the book was devoted to applications, with the aim not merely to impart knowledge, but to foster appreciation of the spirit of the calculus and to give power to use it as a tool in the interpretation of nature. The book had a wide sale, and many of the younger generation of American mathematicians there acquired their first appreciation of what mathematics means. Still, however great the service thus rendered, it was surpassed by the influence for the better that this text exerted upon all succeeding works on the calculus published in this country, and on many published abroad. Few could successfully imitate the style of Osgood, many saw only imperfectly what he was aiming at, yet if they could not draw the bow of Ulysses they at least modeled their armory after his and shot as nearly as they could in the same direction.

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\* This Bulletin, vol. 13, No. 9 (June, 1907), pp. 449–467.