

GRADUATE WORK IN MATHEMATICS IN UNIVERSITIES AND IN OTHER INSTITUTIONS OF LIKE GRADE IN THE UNITED STATES.\*

1. *The Establishment of Advanced Instruction in the United States.*

FORTY years ago the bachelor's degree granted on the completion of a four years' course of a general character marked not merely the close of a young man's liberal education, but also, except in the case of some lawyers, ministers, and physicians, the end of all academic instruction of any kind. In particular, apart from a few exceptional cases, no advanced instruction in mathematics was anywhere provided beyond the usually rather meager ingredients—hardly more than analytic geometry and a little calculus—of this college course, which consisted mainly of prescribed studies. As an external sign of this state of affairs we note that the master's degree, where it existed, was conferred for reasons having very little to do with study, while the doctor's degree was practically non-existent.† The desire for higher education in America, which had been felt for many years by some of the leading minds of the country, had been able so far to achieve only momentary and sporadic success.

The most notable example of such a momentary success, so far as the study of mathematics is concerned, is to be found at Harvard during the fifties and early sixties, where, under the guidance of Benjamin Peirce, a band of young men devoted themselves successfully to the pursuit of higher mathematics.‡

---

\* *International Commission on the Teaching of Mathematics.* Committee XII. Chairman, MAXIME BÔCHER, Harvard University; D. R. CURTISS, Northwestern University; P. F. SMITH, Yale University; E. B. VAN VLECK, the University of Wisconsin.

The subcommittee reports here referred to are:

1. Courses of Instruction and the Master's Degree. Chairman, Professor Curtiss. Cf. BULLETIN, February, 1911.

2. Preparation for Research and the Doctor's Degree. Chairman, Professor Smith. Cf. BULLETIN, March, 1911.

3. Preparation of Instructors for Colleges and Universities. Chairman, Professor Van Vleck. Cf. BULLETIN, November, 1910.

No attempt will here be made to summarize these reports completely or even to refer to all questions treated in them.

† Except at Yale University, where the degree of doctor of philosophy was established in 1860.

‡ Peirce was tutor or professor of mathematics at Harvard from 1831 till his death in 1880, but, except during the period here considered, it was only in the last ten years of his life that, under the influence of an expanding elective system, he again began to have an appreciable number of advanced students.