

NOTES.

A REGULAR meeting of the NEW YORK MATHEMATICAL SOCIETY was held Saturday afternoon, May 6, at half-past three o'clock, the president, Dr. McClintock, in the chair. Professor E. S. Crawley read a paper entitled "The forms of uninodal quartics with four real and distinct asymptotes." Taking the equation in the form $a_1w_4 + a_2w_3 + a_3w_2 = 0$, where a_1, a_2, a_3 are real constants, and w_4, w_3, w_2 are homogeneous functions of x and y of the degrees indicated by the subscripts, the relations to each other of the roots of the equations $w_4 = 0, w_3 = 0, w_2 = 0$, were examined and discussed. Professor Crawley exhibited an elaborate series of drawings, showing the various forms of the curves. A paper by Professor E. A. Engler, entitled "Geometrical constructions for cutting from a cone of revolution plane sections (a) of given eccentricity, (b) of given latus rectum," was also presented to the Society. T. S. F.

THE annual meeting of the *Deutsche Mathematiker-Vereinigung* will take place at Munich, September 4-10. The exhibition of mathematical models, instruments, etc., prepared for this meeting will be open to visitors from September 1 to September 30. A. Z.

HARVARD UNIVERSITY.—Besides regular undergraduate courses, the class-room work in which will average nineteen hours a week throughout the year, the following more advanced mathematical courses are offered for the year 1893-94:—By Professor J. M. Peirce: Quaternions (first course); Algebraic plane curves; Qualitative algebra. By Professor C. J. White: Differential and integral calculus (second course); Theory of equations. By Professor Byerly: Analytic mechanics; Trigonometric series, and spherical harmonics. By Professor B. O. Peirce: Potential function; Hydrostatics and hydrokinematics. By Dr. Osgood: Higher algebra; Theory of substitutions. By Dr. Bôcher: Modern geometry; Theory of functions (first course); Functions defined by differential equations.

Each of the above courses, with a few exceptions, extends throughout the year and consists of three lectures a week. There are also offered two courses in which the work will consist of investigation and reading to be carried on by the students. These are:—By Professor J. M. Peirce: Studies in algebraic curves, quaternions, or the theory of functions, at the option of each student. By Dr. Osgood: Theory of invariants.

Attention should also be called to several courses, largely mathematical, in the departments of physics and engineering.