this subject. A few preliminary remarks are necessary to explain this. The linear transformation of a single straight line into itself may be studied from precisely the same point of view as we adopted above in the case of two dimensions. Three cases would again present themselves : one in which the two fixed points are imaginary, and two in which they are real. In one of these last the transformation cannot be regarded as a real motion, while in the other two it can. Now the extension of our theory which suggests itself to us here depends upon the fact that the complex points of a straight line can be conveniently represented in a plane of which the line is the axis of reals. The linear transformation of the line will then give us a corresponding transformation of the plane which of course should not be confounded with the collineation discussed above. The coefficients here need no longer be real to give us a real transformation. This new transformation of the plane may also be regarded as a mode of motion and has been so treated by Klein in his lectures for a number of years (see an article by Prof. Cole in the *Annals of Mathematics* for June, 1890, and part II. chap. I. of the recently published *Modulfunctionen* of Klein-Fricke). The idea cannot fail to suggest itself that the transformation of the plane which we have called collineation should be generalized in a similar way by representing the complex as well as the real points of the plane. I do not know of this subject having been treated; it would of course lead us into four dimensional space.

HARVARD UNIVERSITY, *June*, 1892.

NOTES.

A REGULAR meeting of the NEW YORK MATHEMATICAL SOCIETY was held Saturday afternoon, June 4, at half past two o'clock, the president in the chair. The following persons having been duly nominated, and being recommended by the council, were elected to membership : Dr. James Whitbread Lee Glaisher, Trinity College, Cambridge, England; Mr. Ferdinand Shack, New York, N. Y. The following papers were read : "An expression for the total surface of an ellipsoid in terms of σ- and p- functions, including an application to the surface of a prolate spheroid," by Professor J. H. Boyd ; "On collineation as a mode of motion," by Dr. Maxime Bôcher ; "On Peters' formula for probable error," by Professor W. Woolsey Johnson.