Dr. Martin deduces in his paper a number of formulæ which lead to very remarkable numerical results.

In Professor White's paper the problem is to reduce the resultant of a binary quadric and n-ic to a sum of products of invariants of the "reduced system." Clebsch, and later Gordan, have solved it. They use unnecessary auxiliaries. The reduction is accomplished more speedily by constructing synthetically, according to the method of the theory of forms, an expression involving undetermined coefficients whose values are then found by the differential equation of apolarity applied to that covariant which becomes an exact power of the common factor of the two quantities in case their resultant vanishes. Incidentally the connection between apolarity and the semicombinant property is illustrated.

THOMAS S. FISKE.

ON THE CONNECTION BETWEEN BINARY QUARTICS AND ELLIPTIC FUNCTIONS.*

BY PROFESSOR E. STUDY.

AFTER the treatment which the subject has received in the recent work of Professors Harkness and Morley, it may be supposed that American mathematicians are quite familiar with the utilization of the theory of invariants in the theory of elliptic functions. We shall confine ourselves to the simplest case, where the theory of a binary quartic is concerned. We intend to show how a certain group of rational and irrational covariants of a binary quartic can be expressed as one-valued functions of one or two parameters, thus filling up a number of lacunae contained in former presentations of the subject.

After having explained the system of notation we are to apply, we proceed, partly following Cayley, to define a system of irrational covariants. These being known, we compare these quantics with the elliptic θ-functions; and thus we will be enabled to express the connection in question in very simple terms.

Of course we must suppress here not only the proofs, but also quite a number of details; a full exposition will be published shortly in the *American Journal of Mathematics.*

1. *Notation.*

Denoting the quartic $f(x)$ symbolically by $f = (ax)^4 = (a_1x_2 - a_2x_1)^4$, the following forms constitute, as is well known, what is termed the complete system of f:

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* This paper, which Professor Study kindly transmitted for presentation at the Brooklyn meeting of the AMERICAN MATHEMATICAL SOCIETY, arrived too late for that purpose.