Hence the most general infinitesimal point transformation which leaves the family of all concentric conics invariant is

$$Uf \equiv \left\{ ax(x^2 + y^2) + \varkappa x + \frac{\lambda}{x} \right\} \frac{\partial f}{\partial x}$$

$$+ \left\{ ay(x^2 + y^2) + \mu y + \frac{\nu}{y} \right\} \frac{\partial f}{\partial y}.$$

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A SOLUTION OF THE BIQUADRATIC BY BINOMIAL RESOLVENTS.

BY DR. GEORGE P. STARKWEATHER.

(Read before the American Mathematical Society at the Meeting of April 30, 1898.)

THE solution of a given equation

$$f(x) = x^n + a_1 x^{n-1} + \cdots + a_n = 0$$

consists in making it depend upon a series of resolvent equations

$$R_1 = 0, \quad R_2 = 0, \cdots$$

whose solution may be effected by known methods. Thus the general quadratic is reduced to a binomial $x^2 = a$, the cubic to a quadratic and a binomial cubic, and the biquadratic to a cubic and three quadratic equations. In all the solutions of the biquadratic the writer has seen these resolvent equations are not binomial, although Galois' theory shows us that they may so be taken in an infinite variety of ways, according to the particular system of resolvent functions chosen. In selecting such a system it is of course desirable to find one which will give as simple results as possible, and after some trial the set employed in the following lines seemed to be the best. It is hoped this solution will be of interest from two points of view: 1° as giving a *new* solution of the biquadratic in which the roots are given explicitly, *i. e.*, ready for calculation; 2° as affording an interesting application of Galois' methods.