2. Given three unrelated involutions of rays in the plane, with centers at A, B, and C, then for any point P in the plane the rays at A, B, and C that correspond in the involutions at those points to the rays PA, PB, and PC will not generally meet in a point. If, however, they do meet in a point P', then the points P and P' are said to be conjugate with respect to all three involutions. The locus of points that have conjugate points with respect to three involutions is found to be the general plane cubic. Professor Lehmer studies the curve from this point of view and connects the theory with the theory of the curve as developed by Schroeter in his Ebene Kurven dritter Ordnung (Leipzig, 1888).

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A NEW PROOF OF THE THEOREM OF WEIERSTRASS CONCERNING THE FACTORIZATION OF A POWER SERIES.

BY DR. W. D. MACMILLAN.

IN the BULLETIN for April, 1910, Bliss gives a simplified proof of the following theorem due to Weierstrass:

Let $f(y;\ x_1, \cdots, x_p)$ be a convergent power series in y and $x_1, \cdots, x_p$, such that $f(y;\ 0, \cdots, 0)$ begins with a term of degree n. Then $f(y;\ x_1, \cdots, x_p)$ is factorable in the form

$$f(y;\ x_1, \cdots, x_p) = [y^n + a_1 y^{n-1} + \cdots + a_n] \cdot g(y;\ x_1 \cdots, x_p),$$

where $a_1, \cdots, a_n$ are convergent power series in $x_1, \cdots, x_p$ vanishing for $x_1 = x_2 = \cdots = x_p = 0$, and g is a convergent power series in $y;\ x_1, \cdots, x_p$ which has a constant term different from zero.

Since $g(y;\ x_1, \cdots, x_p)$ has a constant term, we may denote its reciprocal by $\phi(y;\ x_1, \cdots, x_p)$ and state the theorem in the following form:

Let $f(y;\ x_1, \cdots, x_p)$ be a convergent power series in $y;\ x_1, \cdots, x_p$ such that $f(y;\ 0, \cdots, 0)$ begins with a term of degree n. Then a convergent power series $\phi(y;\ x_1, \cdots, x_p)$, having a constant term different from zero can be found such that the product