The length of the arc of an asymptotic curve is given by the integral

$$s = \sqrt{\lambda} \int_v^\lambda \frac{dv}{\sqrt{(\lambda - v)(1 + \lambda - v)(1 - \lambda + v)}}.$$

Introducing the $\wp$-function with the invariants $g_2 = \frac{1}{4\lambda^2}$, $g_3 = 0$, and $e_1 = \frac{1}{4\lambda}$, $e_2 = 0$, $e_3 = -\frac{1}{4\lambda}$, $\left(k^2 = \frac{e_2 - e_3}{e_1 - e_3} = \frac{1}{2}\right)$, we obtain:

$$\lambda - v = \frac{1}{4\lambda} \cdot \frac{1}{\wp s}.$$

UNIVERSITY OF CHICAGO, *August* 23, 1895.

ON A GENERALIZATION OF WEIERSTRASS'S EQUATION WITH THREE TERMS.

BY PROFESSOR F. MORLEY.

THE expression

$$\prod_{\lambda=1}^{n} \sigma(u - b_\lambda)/\sigma(u - a_\lambda)$$

is an elliptic function of u if

$$\Sigma a_\lambda = \Sigma b_\lambda.$$

The sum of the residues is zero; that is,

$$(1) \qquad \sum_{\lambda=1}^{n} \frac{\sigma(a_\lambda - b_1) \ldots \sigma(a_\lambda - b_\lambda) \ldots \sigma(a_\lambda - b_n)}{\sigma(a_\lambda - a_1) \ldots \quad 1 \quad \ldots \sigma(a_\lambda - a_n)} = 0.$$

Being now only concerned with differences, we can, by a suitable addition to each a and b, write

$$(2) \qquad \Sigma a_\lambda = \Sigma b_\lambda = 0.$$

When $n = 2$, the equation (1) is in no way characteristic of the σ-function, but is true of any odd function.

When $n = 3$, (1) becomes

$$(3) \qquad \begin{aligned} &\sigma(a_1 - b_1)\sigma(a_1 - b_2)\sigma(a_1 - b_3)\sigma(a_2 - a_3) \\ +\ &\sigma(a_2 - b_1)\sigma(a_2 - b_2)\sigma(a_2 - b_3)\sigma(a_3 - a_1) \\ +\ &\sigma(a_3 - b_1)\sigma(a_3 - b_2)\sigma(a_3 - b_3)\sigma(a_1 - a_2) = 0. \end{aligned}$$