All the terms in the product of these two series, after the second term, vanish. Putting the sum of the first two terms $= N = 0$, we have $a_0 - d(a_0 + 1) = 0$. If we assume $a_0 = -\frac{10}{9}$, then $d = 10$, and the two factor series become

$$U = -\tfrac{10}{9} - 11\tfrac{1}{9} - 112\tfrac{2}{9} - \cdots$$
$$U' = 1 - 11 + 9 + 11 - 9 - 11 + 9 + 11 - \cdots$$

Since $U \cdot U' = 0$, we have $U^p \cdot U'^p = 0$. As all the terms in U are of the same sign, it is easily seen that U^p is divergent for all positive integral values of p. U' and U'^p are also divergent.

§ 8. If we assume $t = 2$, $s = 1$, $c = -1$, $a_0 = 1$, $b_0 = 1$, $N = 0$, then the condition that the sum of the product of (5) and (6) shall vanish becomes $d^2 + 1 = 0$ and (letting $i = \sqrt{-1}$) the factor series thus obtained are the two complex divergent series

$$1 + (1 + i) + i + 0 + 1 + (i + 1) + i + 0 + \cdots$$
$$1 - (1 + i) + (i - 1) + (i + 1) - (i - 1) - (i + 1) + \cdots$$

COLORADO COLLEGE, COLORADO SPRINGS,
April 12, 1902.

THREE SETS OF GENERATIONAL RELATIONS DEFINING THE ABSTRACT SIMPLE GROUP OF ORDER 504.

BY PROFESSOR L. E. DICKSON.

(Read before the American Mathematical Society, October 25, 1902.)

1. CONSIDERABLE interest attaches to the simple group of order 504. The existence of this simple group was discovered by Professor Cole.* This was one of the facts that lead Professor Moore † to his investigation of the linear fractional group in the general Galois field, resulting in the discovery of a new doubly infinite system of simple groups.

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* "On a certain simple group," Mathematical Papers, Chicago Congress of 1893.

† BULLETIN, December, 1893; Mathematical Papers, Congress of 1893.