and arranged for the convenience of the auditors. Printed syllabi of both courses were distributed, so that every opportunity was offered for intelligent participation. At the close of the courses, the members present, by a rising vote, unanimously expressed their appreciation of the value of the lectures, and of the self-sacrificing labor of the lecturers.

Friday evening the participants of the colloquium dined together at the Glenwood Hotel, and afterwards enjoyed a cruise around Cayuga Lake. During the remaining evenings there were social gatherings at the Town and Gown Club, whose privileges were thrown open to members of the Society. The hospitality of Cornell University, and of the mathematical department in particular, deserves the most grateful acknowledgment.

Detailed reports of the courses, prepared by the lecturers themselves, will appear in later numbers of the BULLETIN.

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UPON THE NON-ISOMORPHISM OF TWO SIMPLE GROUPS OF ORDER 8!/2.

BY MISS IDA M. SCHOTTENFELS.

(Read before the American Mathematical Society, August 20, 1901.)

1. *Introduction.*—The proof offered in this paper of the non-isomorphism of the ternary linear fractional group Galois field [2^2] and the alternating group of degree eight is shorter, simpler and more direct than that presented by the author in the *Annals of Mathematics*, volume 1, No. 3, April, 1900.

In a paper read December 29, 1900, before the Chicago Section of the AMERICAN MATHEMATICAL SOCIETY, by making use of the present method involving the three conjugate sub-groups (1) G_{168}, (2) G_{168}', (3) G_{168}'', the identity was established between the ternary group $G.F.$ [2^2] and the literal substitution group of degree 21, $G^{21}_{8!/2}$.

2. *The Ternary Group.*—In the above mentioned paper the group was defined as a group of fractional matrices, access being had to the group by means of the following matrices :

$$
{}^{*}\quad \overset{A}{\begin{bmatrix} 010 \\ \overline{001} \\ \overline{100} \end{bmatrix}},\quad
\overset{B}{\begin{bmatrix} 010 \\ \overline{001} \\ \overline{110} \end{bmatrix}},\quad
\overset{C}{\begin{bmatrix} 010 \\ \overline{001} \\ \overline{1\rho 0} \end{bmatrix}},\quad
\overset{D}{\begin{bmatrix} 010 \\ \overline{001} \\ \overline{1\rho^2 0} \end{bmatrix}},\quad
\overset{I}{\begin{bmatrix} 100 \\ \overline{010} \\ \overline{001} \end{bmatrix}};
$$

where

$$\{A^3 = B^7 = C^7 = D^7 = I\}.$$

In this group there exist at least three conjugate subgroups of order 168, say (1) G_{168}, (2) G_{168}', (3) G_{168}'', such that (1) is transformable into (2) and (3) by elements of period three which leave A invariant; these groups are holoedrically isomorphic to the literal substitution group upon seven letters G_{168}^7 and are thus defined

(1) $\quad G_{168}: \quad \{A^3 = B^7 = (BA^2)^2 = (AB^2)^4 = I\}$,

(2) $\quad G_{168}': \quad \{A^3 = C^7 = (CA^2)^2 = (AC^2)^4 = I\}$,

(3) $\quad G_{168}'': \quad \{A^3 = D^7 = (DA^2)^2 = (AD^2)^4 = I\}$,

where the elements B, C possess the following properties

$$(B^2C)^5 = (BC)^4 = (CB^6)^2 = I.$$

3. *The Alternating Group.*—The alternating group of degree eight and order $8!/2$ or 20160 has a simple subgroup of order 168 upon seven letters which may be defined thus

$$G_{168}^7: \qquad \{a^3 = b^7 = (ba^2)^2 = (ab^2)^4 = i\},$$

where i is the identity element, and $a = (234)\,(567)$, $b = (1346752)$.

There exists a group of order 36 upon eight letters which leaves $a = (234)\,(567)$ invariant, which group G_{36}^8, *if the alternating group is identical with the ternary group*, must possess an element of period three which transforms $b = (1346752)$ into c ($c^7 = i$) where b, c satisfy the relations

$$(b^2c)^5 = (bc)^4 = (cb^6)^2 = i;$$

but *no such element exists*, therefore the two above mentioned groups *are non-isomorphic.*

CHICAGO,
December, 1900.

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* 0, 1, ρ and ρ^2 are the marks of the Galois field $[2^2]$.