in the holomorph of A. In general, this substitution transforms the holomorph of G into itself; and when G is non-abelian this substitution and the holomorph of G generate the double holomorph of G. In regard to the given simple isomorphism between G and G' it may be added that if we let every operator of any group correspond to its inverse we get a simple isomorphism only when the group is abelian; but if we multiply in one of these two corresponding groups on the right and in the other on the left there always results a certain kind of simple isomorphism. Moreover, it is easy to verify that if this kind of simple isomorphism can be established between two groups these groups must be actually simply isomorphic.

As regards the theorems relating to conjugate subgroups and invariant subgroups which were developed in § 2, it should perhaps be emphasized that these theorems enable us to determine at a glance all the conjugates of a given subgroup, or of a given operator, provided the potential and the antipotential representation of the group are before us. Similarly they enable us to see at a glance what substitutions and what subgroups are invariant. On the other hand, it should be observed that the representation of a given group in the potential and the antipotential form is laborious, so that these theorems appear to be of more theoretical than practical interest.

THE EQUATION OF PICARD–FUCHS FOR AN ALGEBRAIC SURFACE WITH ARBITRARY SINGULARITIES.

BY DR. S. LEFSCHETZ.

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1. LET $F_m(x, y, z) = 0$ be the equation of an algebraic surface of order m with *arbitrary singularities*, the axes having an arbitrary position, and let

$$\int \frac{P(x, y, z)dx}{F_z'}$$

be an abelian integral of the second kind attached to the