

PRINCIPLES
OF THE
SOLUTION OF EQUATIONS OF THE HIGHER DEGREES,
WITH APPLICATIONS.

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CONTENTS.

1. Conception of a simple state to which every algebraical expression can be reduced. §6.

2. The unequal particular cognate forms of the generic expression under which a given simplified expression falls are the roots of a rational irreducible equation; and each of the unequal particular cognate forms occurs the same number of times in the series of the cognate forms. §9, 17.

3. Determination of the form which a rational function of the primitive n^{th} root of unity ω_1 and of other primitive roots of unity must have, in order that the substitution of any one of certain primitive n^{th} roots of unity, $\omega_1, \omega_2, \omega_3$, etc., for ω_1 in the given function may leave the value of the function unaltered. Relation that must subsist among the roots ω_1, ω_2 , etc., that satisfy such a condition. §20.

4. If a simplified expression which is the root of a rational irreducible equation of the N^{th} degree involve a surd of the highest rank (§3) not a root of unity, whose index is $\frac{1}{m}$, the denominator of the index being a prime number, N is a multiple of m . But if the simplified root involve no surds that are not roots of unity, and if one of the surds involved in it be the primitive n^{th} root of unity, N is a multiple of a measure of $n - 1$. §28.

5. Two classes of solvable equations. §30.

6. The simplified root r_1 of a rational irreducible equation $H(x) = 0$ of the m^{th} degree, m prime, which can be solved in algebraical functions, is of the form