nomials in y, viz. $P_1^{(k)}, P_2^{(k)}, \ldots, P_N^{(k)}$ such that $f_1^{(k)} : f_2^{(k)} : \cdots : f_N^{(k)} = P_1^{(k)} : P_2^{(k)} : \cdots : P_N^{(k)}$, there will exist such polynomials in which the lowest powers of y are respectively equal to the lowest powers of y in the series $f_1^{(k)}, f_2^{(k)}, \ldots, f_N^{(k)}$. Hence there will exist a series $\Phi^{(0)}(y)$ with non-vanishing constant term satisfying (6). It is then easy to construct the polynomial $P^{(k)}$ satisfying the relation $\Phi^{(0)} f^{(k)} = P^{(k)}$. In view of the homogeneity of f this relation may be written in the form $\Phi f = P$. From this may be obtained the equivalent form (1).

If $f(y; x_1, \ldots, x_n)$ is not homogeneous in $x_1, x_2, \ldots, x_n$ the condition of the theorem is *not sufficient.*

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THE CLASS NUMBER RELATIONS IMPLICIT IN THE DISQUISITIONES ARITHMETICAE*

BY E. T. BELL

1. *Introduction.* The point of this note is its moral, which is to the effect that in arithmetic attention to trifles sometimes leads to beautiful and recondite truths. In particular, certain important expansions of Kronecker and Hermite relating to the number $F(n)$ of uneven classes of binary quadratic forms of negative determinant $-n$ are implicit in § 292 of the *Disquisitiones Arithmeticae* of Gauss, and might have been read off from there at a glance by anyone familiar with the *Fundamenta Nova* of Jacobi, thirty years before Kronecker first came upon them by the devious route of complex multiplication. The relevant trifle in this instance is changing the sign of an arbitrary constant throughout an algebraic identity.

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