parison of the limits given by (2) and by Tchebycheff's theorem, Fig. 2 has been prepared. This shows the values of $1-P_{t\sigma}$ plotted against t, the several curves corresponding to various values of ρ as indicated. The dotted line gives the limits from Tchebycheff's theorem.

BELL TELEPHONE LABORATORIES

CHARACTERISTICS OF MULTIPLE CURVES AND THEIR RESIDUALS*

BY T. R. HOLLCROFT

Salmon† obtained formulas relating the characteristics of two curves which together form the complete intersection of two algebraic surfaces when one of the curves is double on one of the surfaces. In this paper, by a generalization of Salmon's method, the relations between the characteristics of two such curves are found when one of the curves is of given multiplicity on each of the two surfaces. Such a formula is useful in studying a system of surfaces with a multiple basis curve. It was this need for it that led to its derivation.

Consider two algebraic surfaces f_1 and f_2 of orders μ_1 and μ_2, respectively, whose complete intersection consists of two curves C_1, C_2 of orders n_1, n_2; ranks r_1, r_2; genera p_1, p_2; and with h_1, h_2 apparent double points, respectively. Assume that C_1 is of multiplicity i_1 on f_1 and i_2 on f_2 and also that C_1 itself is the complete intersection curve of two surfaces. C_1 (counted simply) and C_2 have t actual intersections and n_1n_2-t apparent intersections.

Consider a third surface f_3 of order μ_3 passing simply through C_1 but not through C_2. The equivalence E of C_1 on the three surfaces f_1, f_2, f_3 is‡

$$E = n_1(i_2\mu_1 + i_1\mu_2 + i_1i_2\mu_3 - 2i_1i_2) - i_1i_2r_1.$$

*Presented to the Society, April 14, 1933.

† Salmon, *Geometry of Three Dimensions*, 4th ed., 1882, p. 322.

‡ M. Noether, *Sulle curve multiple di superficie algebriche*, Annali di Matematica, (2), vol. 5 (1871), p. 166.