tives of a general polygenic function. This leads to the geometry of the related circles, limaçons, and cardioids. (When the function is monogenic, these related curves degenerate into points.) In addition to summarizing the already published material, many new theorems are included. (Received October 26, 1944.)

39. V. G. Grove: *Quadrics associated with a curve on a surface.*

The quadrics of Darboux, Moutard and Davis, the conjugal quadrics, the asymptotic osculating quadrics and many other quadrics belong to a certain family of quadrics. This paper seeks to characterize all of the members of this family in terms of cross-ratios. In so doing a generalization is obtained for Bell's R-associate of a line in the tangent plane. Some special quadrics of the pencil are characterized and new characterizations of the pan-geodesics are obtained. (Received October 7, 1944.)

40. C. C. Hsiung: *A ternary of plane curvilinear elements with a common singular point.*

This paper studies three curves having a common singular point of different kinds and a common tangent at the point. A projective invariant is found and characterizations are found for the invariant for various kinds of singularities. (Received October 7, 1944.)

41. Edward Kasner: *Multi-valued symmetries.*

The author studies conformal symmetry in a general algebraic curve. This is equivalent to Schwarzian reflection for an analytic curve. For an algebraic curve of degree n, the operation T is in general of degree n^2. The degrees of the powers of T are studied in detail. In the special case of a conic, the results are noteworthy. If the base curve is a potential curve (obeys the Laplace equation), symmetry is easily constructible. Satellite curves discussed in a previous paper are related to the present theory. (Received October 26, 1944.)

42. E. J. Purcell: *Some Cremona involutions in n-dimensional space.*

A previous paper (E. J. Purcell, *Variety congruences of order one in n-dimensional space*, Amer. J. Math. vol. 66 (1944) pp. 621–635) discusses linear k-parameter systems of varieties in n-dimensional projective space (k any positive integer not greater than n). Each variety of such a system is of dimension $n-k$ and order h (h any positive integer). Through a generic point of $[n]$ one and only one variety of the system passes. When $n=k$ and $h=2$, a generic variety of the system is a pair of points. Each point determines the pair to which it belongs and the system consists of the pairs of a rational Cremona involution in $[n]$. This paper treats a type $(n)_n$ Cremona involution in $[n]$. When $n=2$, the involution is Geiser's. When $n=3$, the involution is due to Sharpe and Snyder. (Received October 25, 1944.)

Statistics and Probability

43. T. R. Hollcroft: *The probability of repetitions.*

The probability of repetitions is concerned with repetitions only and not with the particular numbers that are repeated. For example, let one number be drawn at a time from ten and replaced after each draw. Eight may be drawn as follows: 4 3 7 6 4 7 6 7. This set contains one triple and two double repetitions. The double