curve-elements) are the group of point transformations and the union-preserving transformations from curve-elements of order n into lineal-elements, or the extensions of these two types. An additional theorem is that any transformation from curve-elements of the (x, y, z)-space into lineal-elements of the (X, Y, Z)-space, by which any union of the (X, Y, Z)-space corresponds to exactly $\infty^{2(n-1)}$ curves of the (x, y, z)-space, is union-preserving. (Received August 11, 1943).

299. L. A. MacColl: *Geometrical characterizations of some families of dynamical trajectories.*

This paper deals with a certain five-parameter family of curves, which can be regarded as the family of trajectories of an electrified particle in an arbitrary static magnetic field. A set of geometrical properties is given which completely characterizes the family of curves. Certain other related families of curves, including the four-parameter family of trajectories of the particle moving with an arbitrarily prescribed value of the energy, are also discussed and characterized by sets of geometrical properties. (Received October 1, 1943.)

300. Alice T. Schafer: *Two singularities of space curves.*

This paper uses the methods of projective differential geometry to study an analytic space curve in the neighborhood of an inflexion point and, second, a planar point. Canonical power-series expansions representing the curve in the neighborhood of each singular point are deduced by suitably choosing the projective coordinate system. These canonical expansions are then used to study properties of the curve in this neighborhood. Particular emphasis is placed on the surfaces osculating the curve, sections of the tangent developable of the curve made by the faces of the tetrahedron of reference, and projections of the curve onto the faces of the tetrahedron of reference. (Received October 1, 1943.)

Statistics and Probability

301. W. K. Feller: *On a general class of "contagious" distributions.*

This paper is concerned with some properties of a class of contagious distributions which contains, among others, some distributions studied by Greenwood and Yule, Polya, and Neyman, respectively. (Received August 3, 1943.)

302. H. B. Mann and Abraham Wald: *On the statistical treatment of linear stochastic difference equations.*

For any integer t let $x_{1t}, \cdots, x_{rt}$ be a set of r random variables which satisfy the system of linear stochastic difference equations $\sum_{j=1}^{r}\sum_{k=0}^{p_{ij}}\alpha_{ijk}x_{j,t-k}+\alpha_i=\epsilon_{it}(i=1, \cdots, r)$. The coefficients α_{ijk} and α_i are (known or unknown) constants and the vectors $\epsilon_t=(\epsilon_{1t}, \cdots, \epsilon_{rt})$ $(t=1, 2, \cdots)$ are independently distributed random vectors each having the same distribution. It is assumed that $E(\epsilon_{it})=0$. The problem dealt with in this paper is to estimate the unknown coefficients α_{ijk} and α_i on the basis of Nr observations $x_{it}(i=1, \cdots, r; t=1, \cdots, N)$. The statistics used as estimates of the unknown coefficients are identical with the maximum likelihood estimates if ϵ_t is normally distributed. The joint limiting distribution of these estimates is obtained without assuming normality of the distribution of ϵ_t. (Received August 7, 1943.)