Statistics and Probability

101. Irving Kaplansky: *The asymptotic distribution of runs of consecutive elements.*

In a random permutation of $1, \cdots, n$ let r be the number of instances in which i is next to $i+1$. Wolfowitz (Ann. Math. Statist. vol. 15 (1944) pp. 97–98) proved that asymptotically r has the Poisson distribution with mean 2. In this paper an asymptotic series is derived for the distribution, beginning with $2^r e^{-2}(r!)^{-1} \cdot [1-(r^2-3r)/n \cdots]$. (Received April 2, 1945.)

Topology

102. R. L. Moore: *Concerning tangents to continua in the plane.*

Among other things it is shown that if in the plane a compact dendron has a tangent at each of its points then the set of all its end points is a countable inner limiting set and the closure of the set of all its junction points is totally disconnected. (Received February 3, 1945.)

103. G. T. Whyburn: *Extensions of plane continua mappings.*

In this paper a study is made of conditions under which a given non-alternating transformation of locally connected continuum on a plane or sphere can be extended monotonically to the whole plane or sphere. The problem is completely solved for mappings into dendrites. Also conditions are found under which the extended transformation will be interior, assuming that the given mapping is interior. (Received February 23, 1945.)

104. G. T. Whyburn: *On uniqueness of the inverse of a transformation.*

Given a continuous mapping $f(A)=B$ on a metric (compact) continuum A, it is shown (i) that if the images of cut points of A are dense in B and, for each $y \in B$, any two points of $f^{-1}(y)$ are conjugate, then the set G of points in B with unique inverses are uncountably everywhere dense in B; (ii) the same conclusion holds if f is monotone and the images of the local separating points of A are dense in B, provided no point locally separates any $f^{-1}(y)$ locally in A. Also for non-alternating interior mappings $f(A)=B$, it is shown that any nondegenerate A-set, cut point, or end point in A is necessarily an inverse set. (Received February 23, 1945.)