which recourse may be had generally in attempts to reduce inductive definitions to explicit definitions in terms of recursive predicates and quantifiers. (Received March 3, 1942.)

Statistics and Probability

216. J. H. Bushey: *The distribution function of the mean under the type α hypothesis.*

An orthogonal expansion (type α series) with the Pearson type III function as weight function is obtained in a form suitable to utilize the tables of Salvosa in representing population frequencies. The expansion differs in certain respects from that of Romanovsky. The distribution function of the mean is obtained for samples of n drawn at random from a population represented by the type α series. In special cases this distribution function reduces to that obtained for the Charlier type A series by Baker and to that obtained by Church for the type III function. (Received March 6, 1942.)

217. J. H. Bushey: *The distribution function of the sample total under the type β hypothesis.*

The orthogonal polynomials $\phi_n(x)$ are defined by the weight function $p(x)=C_{s,x}p^x(1-p)^{s-x}$, $(x=0, 1, 2, \cdots, s)$ and the orthogonal relation $\sum_{x=0}^{s}p(x)\cdot\phi_m(x)\phi_n(x)=0$, $m\neq n$, or $=1$, $m=n$. The orthogonal expansion (type β series) $f(x)=\sum_{i=0}^{k}A_i p(x)\phi_i'x)$ may be used as a statistical hypothesis. The Charlier type A series is a special case of both the type β and the type α series (the type α series is reported in another abstract). Another special case of the type β series is the Charlier type B series with the Poisson weight function $p(x)=(e^{-sp}(sp)^x)/x!$. The distribution function for the total $z=n\bar{x}$ for samples of n drawn at random from a population represented by a type β series is obtained. This result includes, as special cases, the distribution function of z for the Charlier type B series and that obtained by Baker for the Charlier type A series. (Received March 6, 1942.)

218. J. H. Bushey: *The products of certain discrete and continuous orthogonal polynomials.*

The discrete orthogonal polynomials $\phi_n(x)$, $(x=0, 1, 2, \cdots, s)$, are defined by the weight function $p(x)=C_{s,x}\cdot p^x(1-p)^{s-x}$ and the orthogonal relation $\sum_{x=0}^{s}p(x)\cdot\phi_m(x)\phi_n(x)=0$, $m\neq n$, or $=1$, $m=n$. The polynomials $\phi_n(x)$ are closely related to the continuous polynomials of Jacobi, Hermite, and Laguerre and have applications in statistics. The product $\phi_m(x)\cdot\phi_n(x)$ is developed in terms of the polynomials $\phi_i(x)$ for $p=q=1/2$ (symmetric polynomials). This development permits the evaluation of the sum $\sum_{x=0}^{s}p(x)\phi_m(x)\phi_n(x)\phi_r(x)$. The corresponding results of Feldheim for Hermite polynomials follow as special cases. (Received March 6, 1942.)

Topology

219. E. G. Begle (National Research Fellow): *Intersections of absolute retracts.*

Aronszajn and Borsuk have shown (Fundamenta Mathematicae, vol. 18 (1932) pp. 193–197) that if A and B are compact metric spaces such that their intersection, $A\cap B$, is an absolute retract, then their sum, $A\cup B$, is an absolute retract if and only