most powerful, is extended to testing composite hypotheses where the forms of the distribution functions are entirely unknown (continuity is assumed) and where tests must be based on the order relations among the observations. Thus a general method for treating problems of this character is obtained. For the problem of two samples (Wald and Wolfowitz, Annals of Mathematical Statistics, June, 1940) the resultant statistic is $\prod_j l_j^{l_j}/(l_j)!$, where l_j is the length of the jth run. Its logarithm is asymptotically normally distributed. The result is immediately extensible to the problem of k samples. For the problem of independence (Hotelling and Pabst, Annals of Mathematical Statistics, March, 1936) a similar statistic is obtainable which differs from the commonly used rank correlation coefficient. The method used to prove the logarithms of these statistics asymptotically normally distributed is applicable to proving the asymptotic normality of a large class of functions of partitions of an integer, of functions of sequences where the subsequences of odd and even numbered elements are themselves partitions of different integers of fixed ratio, and to similar problems (Received January 13, 1941.)

Theory of Numbers

173. Paul Erdös and Joseph Lehner: *On the distribution of the number of summands in the partitions of a positive integer.*

Let $p_k(n)$ denote the number of partitions of n into not more than k summands. Then for $k=n^{1/2}(\log n/C)+xn^{1/2}$, $C=\pi(2/3)^{1/2}$, $p_k(n)/p(n)\sim\exp\{-2\exp(-Cx/2)/C\}$, where $p(n)$ is the number of unrestricted partitions of n. For $k=o(n^{1/3})$, $p_k(n)\sim C_{n-1,k-1}/k!$, uniformly in k. Let $P(n)$ be the number of partitions of n into different summands. Then for "almost all" partitions, the number of summands in a given partition not exceeding $xn^{1/2}$ lies between $2n^{1/2}\{\log 2/(1+\exp(-Dx))\}/D\pm\epsilon n^{1/2}$, $D=\pi(1/3)^{1/2}$. The methods used are elementary in character. (Received January 23, 1941.)

174. Gordon Pall: *The construction of positive ternary quadratic forms.*

A method is developed of writing down quickly the reduced integral positive ternary quadratic forms of a given determinant, order, or genus. (Received January 30, 1941.)

175. H. A. Rademacher: *Ramanujan's identities under modular transformations.*

If the Ramanujan identities which exhibit the divisibility of $p(5n+4)$ and $p(7n+5)$ by 5 and 7, respectively, are expressed in terms of the Dedekind function $\eta(\tau)$, they can be subjected to modular transformations. Each of the two identities goes over into a new one, which is noteworthy because of the occurrence of the Legendre residue symbol. These new identities lead to a direct proof of the Ramanujan identities. The same procedure can be applied to an identity given by Zuckerman, involving $p(13n+6)$. Other identities, proved by Watson and Zuckerman, lead to modular equations of "level" (Stufe) 5 and 7. (Received January 24, 1941.)

Topology

176. F. B. Jones: *Monotonic collections of peripherally-separable connected domains.*

It is shown that: *In a locally connected metric space, every monotonic collection of*