ABSTRACTS OF PAPERS

(*Abstracts of papers presented at the Monterey Meeting of the Institute, November 14–15, 1958*)

1. On Computing Expectations in Sequential Analysis. Fred C. Andrews, University of Oregon, and J. R. Blum, Indiana University.

Consider an arbitrary sequence of random variables $X_1, X_2, \cdots$, to be observed sequentially and a corresponding sequence of statistics $f_1(X_1)$, $f_2(X_1, X_2), \cdots$, $f_j(X_1, \cdots X_j), \cdots$ each of the latter with zero expectations. With m denoting the number of random variables observed, determined by a sequential stopping rule, a necessary and sufficient condition that $E(f_m) = 0$ for all truncated sequential stopping rules is that the sequence $f_1, f_2, \cdots$ be a martingale. Applications of this result is made to expectations of sums and products including a form of the fundamental identity of sequential analysis which is valid for unbounded stopping rules.

2. Exact Nonparametric Tests for Randomized Blocks. John E. Walsh, Systems Development Corporation, Santa Monica, California. (By title)

A class of nonparametric procedures for testing the statistical identity of treatments in randomized block experiments is suggested and discussed. The suggested procedures are squarely based on experimental within-block randomizations, and they may be chosen so as to have special power against particular alternatives. The blocks are assumed to be statistically independent but no assumption is made concerning the dependence within the various blocks. The basic idea is to obtain from each block a statistic that is, under the null hypothesis, symmetrically distributed about zero and then apply a nonparametric test of symmetry about zero. The observational data can be of any quantitative type.

3. On the Determination of Joint Distributions from the Marginal Distributions of Linear Combinations. Thomas S. Ferguson, University of California, Los Angeles.

Let $Z_n = \alpha_n X + \beta_n Y$ where $\gamma_n = \alpha_n/\beta_n$ are all distinct for $n = 1, 2, \cdots$. A sufficient condition that the joint distribution of (X, Y) be determined uniquely by the distributions of the Z_n is that there exist an integer m such that (1) $E \exp \{t\,|Z_m|\} < \infty$ for some $t > 0$ and (2) there is a limit point of the γ_n's (possibly $\pm\infty$) other than γ_m. Conversely when the joint distribution has a piece of positive continuous density somewhere, the distributions of a finite number of the Z_n's do not determine the joint distribution. Thus in particular the bivariate normal distribution is determined uniquely by any infinite collection of distinct linear combinations of the variables and by no finite number of them. These results extend to many dimensions, with suitable modifications.

4. Approximation to the Probability Density of Zero—Crossings Intervals of a Gaussian Process. Sylvain Ehrenfeld, New York University. (By title)

Let $x(t)$ be a stationary Gaussian process with a given spectrum $w(f)$, and let $P_O(t)$ be the probability density of the lengths of intervals between successive zeros in this process. In the present paper several approximations to $P_O(t)$ are obtained. This is achieved by the evaluation of multiple integrals whose evaluation are equivalent to finding