$m_0, m_1, \cdots, m_n$. Subject to the requirements (a) and (b), the decision rule must control the chance of indecision. The case of three populations with known σ^2 is considered in detail, and the properties of a decision rule based on the auxiliary statistic $y = x_{(0)} - x_{(1)}$ are studied, where $x_{(0)} \geqq x_{(1)} \geqq x_{(2)}$ are the ordered sample means, the rule being to decide that $x_{(0)}$ comes from the population with the largest mean if $y > k$, and not to take a decision if $y \leqq k$. The general case when $n > 2$ and σ^2 is unknown is under consideration.

28. **Most Economical Multiple-Decision Rules,** William Jackson Hall, University of North Carolina.

Suppose x has an unknown distribution function F, belonging to one of m disjoint classes $\omega_1, \cdots, \omega_m$, and suppose $A_1, \cdots, A_m$ are corresponding alternative decisions. A decision rule D_N, based on a sample of size N, is said to be a "most economical multiple-decision rule (M.E. d.r.) relative to $(\alpha_1, \cdots, \alpha_m)$, $0 \leqq \alpha_i < 1$, for choosing among $A_1, \cdots, A_m$" if it satisfies (1) $\Pr(D_n \text{ chooses } A_i \mid F) \geqq \alpha_i$ for all $F \epsilon \omega_i (i = 1, \cdots, m)$ and if N is the least integer n for which (1) can be satisfied. It is proved that to obtain M.E. d.r.'s one need only consider d.r.'s in the sequence $\{D_n^0\}$, $n = 0, 1, 2, \cdots$, where D_n^0 denotes a minimax solution w.r.t. a certain weight function for samples of fixed size n. If ω_i contains but one distribution F_i $(i = 1, \cdots, m)$, D_n^0 is of the form: (2) choose A_i if $a_i L_i \geqq a_j L_j$ $(j = 1, \cdots, m)$ where $L_1, \cdots, L_m$ are the likelihood functions of the sample corresponding to $F_1, \cdots, F_m$ and $a_1, \cdots, a_m$ are positive constants. In the general case, D_n^0 is of a similar form where now $F_1, \cdots, F_m$ are "average" distribution functions, averaged w.r.t. least favorable conditional distributions over $\omega_1, \cdots, \omega_m$ (if existent). Similar results are obtained for "M.E. d.r.'s relative to (β_{ij}), $0 < \beta_{ij} \leqq 1$," defined as above with (1) replaced by (1') $\Pr(D_n \text{ chooses } A_i \mid F) \leqq \beta_{ij}$ for all $F \epsilon \omega_j (i \neq j; j = 1, \cdots, m)$; and (2) is replaced by: (2') choose A_i if $\Sigma_{k \neq i} b_k L_k \leqq \Sigma_{k \neq j} b_k L_k$ $(j = 1, \cdots, m)$, for some positive constants $b_1, \cdots, b_m$. Other properties of the d.r.'s are derived and various extensions and examples given.

NEWS AND NOTICES

Readers are invited to submit to the Secretary of the Institute news items of interest

Personal Items

Archie Blake is now employed as an Advisory Engineer in the Systems Analysis of Westinghouse Electric Corporation, Baltimore, Maryland.

E. L. Cox has left Operations Research Group, Case Institute of Technology, to take a position with Chemical Corps Biological Laboratories, Frederick, Maryland.

Harold Davis has transferred from Headquarters, United States Air Force to The Operations Analysis Office, Hq. Far East Air Forces.

Professor Hilda Geiringer is on leave of absence from Wheaton College in order to complete and prepare for publication on behalf of Harvard University some of the post-humous work of Richard von Mises.

Dr. S. G. Ghurye has accepted the position of Reader in Statistics, Department of Mathematics and Statistics, University of Lucknow, Lucknow, U.P., India.