7. **Minimax Variance Strategies, Information and Randomized Factorial Experiments.** S. ZACKS, Israel Institute of Technology and Columbia University. (By title)

The problem of estimating a set of pre-assigned parameters by a randomly chosen fractional replicate of a full factorial system, previously studied by S. Ehrenfeld and S. Zacks, *Ann. Math. Statist.* 1961, is reduced into a decision framework. The loss function adopted is the sum of variances of the estimators. A strategy consists of a randomization procedure and an estimator. It is proven that the class of *conditional least squares* estimators is complete with respect to all linear unbiased estimators. The variances of these conditional least squares estimators depend only on the nuisance parameters and not on the pre-assigned ones. The class of conditional least squares estimators is characterized by *adjusting* the usual least squares estimator, according to treatments sampled and the available information concerning nuisance parameters. *Minimax* estimators are derived for various states of information. The types of information studied relate to the situations where: nuisance parameters are bounded, *some* or *all* of their signs are known, relative magnitudes are known within limits. The relative gain in minimax risk, in connection with these various states, being a measure of information, is studied.

CORRECTION TO ABSTRACT

The Editor regrets that the authorship of Abstract No. 2, these *Annals* **32** 1346, was incorrectly given. It should have read: 2. **Unbiased Estimation of Probability Densities** (Preliminary Report). S. G. GHURYE AND INGRAM OLKIN, University of Minnesota.