where p is the proportion of the complete population which is eliminated by truncation. In this chart, a extends from -3.0 to 0.5, b extends from -0.5 to $+3$, $p = .05$, .10(.10)1.0, $\mu_{ab} = -1.0(.1)1.0$, $\sigma_{ab} = 0(.1).9$. A second chart contains a set of five curves for selected values of n and r to be used in determining a and p as a function of h, where $h = (\mu - \text{LAL})/\sigma$. Values of a extend from -1.4 to 0.4, h extends from -1.0 to 0.4, and p from .10 to .65.

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47[K].—W. H. CLATWORTHY, *Contributions on Partially Balanced Incomplete Block Designs with Two Associate Classes*, NBS Applied Mathematics Series, No. 47, U. S. Government Printing Office, Washington 25, D. C., 1956, iv + 70 p., 26 cm. Price $.45.

This publication contains six papers dealing with various aspects (enumeration, dualization, and tabulation) of partially balanced incomplete block designs with two associate classes, and with the construction of some new group divisible designs, triangular incomplete block designs, and Latin square type designs with two constraints. Approximately 75 new designs not contained in the monograph of Bose, Clatworthy, and Shrikhande [1] are given in the present paper. A number of theorems are proved in the six papers. Two of the theorems give bounds on the parameters v, p_{11}^1, and p_{12}^1 in terms of the parameters r, k, n_1, n_2, λ_1, and λ_2 of the partially balanced incomplete block design with two associate classes. The two theorems on the duals of partially balanced designs are useful in identifying certain partially balanced incomplete block designs.

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1. R. C. BOSE, W. H. CLATWORTHY & S. S. SHRIKHANDE, *Tables of Partially Balanced Designs with Two Associate Classes*, North Carolina Agricultural Experiment Station Technical Bulletin No. 107, 1954.

48[K].—W. J. DIXON, "Estimates of the mean and standard deviation of a normal population," *Ann. Math. Stat.*, v. 28, 1957, p. 806–809.

Four estimates of the mean in samples of N from a normal population are compared as to variance and efficiency. These are (a) median, (b) mid-range, (c) mean of the best two, (d) $\bar{X}_{)1,N(} = \sum_{i+2}^{N-1} [X_i/(N - 2)]$. The sample values are denoted $X_1 \leqq X_2 \leqq \cdots \leqq X_N$. The results for the median and mid-range are given primarily for comparison purposes, since results are well known. The mean of the best two is reported as the small sample equivalent of the mean of the 27th and 73rd percentiles.

The variance and efficiency are given to $3S$ for $N = 2(1)20$. The estimate (d) is compared to the best linear systematic statistics (BLSS) as developed in [1] and [2]. It is noted that the ratio Var (BLSS)/Var $(\bar{X}_{)1,N(})$ is never less than 0.990.

Two estimates of the standard deviation are given in Table II. One, the range, is well known. The quantity k which satisfies $E(kW) = \sigma$ is tabulated to $3D$ for $N = 2(1)20$. Denote the subranges $X_{N-i+1} - X_i$ by $W_{(i)}$ and $W_{(1)} = W$. The estimate $S' = k'(\sum W_{(i)})$, where the summation is over the subset of all $W_{(i)}$ which gives minimum variance, is the other estimate. Table II compares variances and efficiences of these two estimates to $3S$ for $N = 2(1)20$. Also a column gives the ratio of the variance of (BLSS) as given in [2] to the variance of S' to $3D$ for $N = 2(1)20$.

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1. A. K. GUPTA, "Estimation of the mean and standard deviation of a normal population for a censored sample", *Biometrika*, v. 39, 1952, p. 260–273.
2. A. E. SARHAN & B. G. GREENBERG, "Estimation of location and scale parameters by order statistics from singly and doubly censored samples. Part I", *Ann. Math. Stat.* v. 27, 1956, p. 427–451.

49[K].—H. F. DODGE & H. G. ROMIG, *Sampling Inspection Tables*, Second Edition, John Wiley & Sons, Inc., New York, 1959, xi + 224 p., 29 cm. Price $8.00.

The first feature one notices about the second edition of the Dodge-Romig tables, as compared to the first edition, is its size. Measuring $8\frac{1}{2}''$ x $11''$, with a total of 224 pages, it stands in bold contrast to the pocket-sized $5\frac{1}{2}''$ x $8\frac{1}{2}''$, 106-page first edition,—a four-fold increase, in a sense indicative of the growth of statistical quality control since the first edition was published in 1944.

There are 60 pages of text covering an introduction, and four chapters which describe the principles, procedure for application, and the mathematics of the sampling plans. The titles of these chapters are, respectively: A Method of Sampling Inspection; Single Sampling and Double Sampling Inspection Tables; Using Double Sampling Inspection in a Manufacturing Plant; and Operating Characteristics of Sampling Plans. The remaining 158 pages include a table of contents, seven appendices, and an index. The last four appendices give the same four sets of tables as appear in the first edition; these are respectively entitled: Single Sampling Tables for Stated Values of Lot Tolerance Per Cent Defective (LTPD) with Consumer's Risk of 0.10; Double Sampling Tables for Stated Values of Lot Tolerance Per Cent Defective (LTPD) with Consumer's Risk of 0.10; Single Sampling Tables for Stated Values of Average Outgoing Quality Limit (AOQL); Double Sampling Tables for Stated Values of Average Outgoing Quality Limit (AOQL). The first three appendices are devoted to 120 pages of operating characteristic curves; these are, respectively, OC Curves for all Single Sampling Plans in Appendix 6; OC Curves for all Double Sampling Plans in Appendix 7; and OC Curves for Single Sampling Plans with $c = 0, 1, 2, 3$, and $n \leqq 500$ (based on binomial probabilities).

As can be seen from the above list of contents, the largest part of the increase in size is due to the inclusion of three sets of operating characteristic curves,—two sets for the AOQL plans, and one set for a separate inventory of single sampling plans. This separate inventory has a wide enough range in sample size and acceptance numbers to provide a useful independent reference of OC curves for those who prefer to derive their own single sampling plans (charts to derive such plans have been retained from the first edition). Although separate sets of OC curves are not given for the LTPD plans, the authors point out how these may be obtained or estimated from the OC curves which are given.

It is heartening to see this inclusion of OC curves and the authors' comment