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Book Review

STATISTISCHE AUSWERTUNGSMETHODEN (Third revised and enlarged edition with a new bibliography), by Lothar Sachs. Springer-Verlag, Berlin, Heidelberg, New York. 1972. xx + 548 pp., 59 figs. (Paperback, DM 58)

This is a book for those who wish to learn inductive statistics, and is also a standard work in the German language for those who need to apply statistical evaluation techniques to a variety of problems in their work.

To those who have already used the second edition, the book itself needs no introduction; only the improvements introduced into the third edition need to be mentioned as a justification for buying it. The whole text has been set in type which makes the book easier and more pleasant to read. Not only have corrections been made, but also simplifications, additions which had become necessary, and many statements made more exact. Some of the many tables present in the previous edition have been extended, and seven new ones added, notably: one-sided lower and upper 95% and 99% confidence limits for given sample sizes and a zero or full result for attribute tests; critical 5% differences for the comparison of two percentages; Olmstead and Tukey's corner-test of association; and linearising transformations. The very extensive literature references have been fully revised, and are arranged according to authors within subject-groups. An index of authors has also been added.

To those who do not know this book it should be said that it is one of the best works in the German language on inductive and interpretative statistics for problems with both variables and attributes. In accordance with its title, the book describes the techniques of continuous quality control and of experimental design only very cursorily.

The book starts with 20 pages of recapitulation on the necessary arithmetical methods. Then follows a chapter (which is lacking in most books on statistical test methods) on probability theory, addition and multiplication of probabilities, Bayes' theorem, and the derivation of the normal distribution. Other important continuous and discrete distributions are also fully treated: the Poisson distribution is illustrated by the well-beloved classical example of the frequency of deaths of Prussian soldiers by horse-kicks (to be found by means of the excellent subject-index under "Pferdehufschlag, Tod durch—"). Type I

and type II errors are explained, as are also one-sided and two-sided tests, and the efficiency and significance of tests. Other chapters follow on some applications in medicine and technology, on the comparison of independent samples, on measures of dependence (correlation and regression), on the interpretation of contingency tables, and on the analysis of variance.

One advantage of statistics over thermodynamics for example is that the symbolism is to a great extent internationally uniform. At the beginning of the book is a list of 45 symbols which are used throughout. It seems a pity, however, that the symbols used for the moments-test for departures from the normal distribution (skewness and kurtosis) are not the same as those used in "Biometrika Tables". Another peculiarity is that the method of cumulative sums (*cf.* I.C.I. Monograph No. 3) is described only under "the reliability of laboratory methods", where it is certainly valuable, but is not referred to in the four pages devoted to in-process quality control.

The book is richly provided with worked illustrative examples. At the end of the book there are problems appropriate to each chapter for the reader to solve, and solutions with comments are given. A glossary of 29 English technical terms and their German equivalents is provided.

The book is a thesaurus of parametric, non-parametric, distribution-dependent, and distribution-free methods and tables. Your reviewer has used it with pleasure and profit during the last few months.

C. M. FINCH