

## SHORTER NOTICES

*Les Fondements Expérimentaux de L'Analyse Mathématique des Faits Statistiques.* By Georges Hostelet. (Actualités Scientifiques et Industrielles, no. 552.) Paris, Hermann, 1937. 71 pp.

In the first division the author points out that theorists, who desire to produce theory from a few axioms by purely logical reasoning, often are led to conclusions which are experimentally incorrect. He defines the empirical-experimental method, the deductive-abstract method, and the abstract-experimental method and states that they are used in the study of statistics. Statistical facts are classified as singular, as aggregative, and as those connected with species and typical groups. The author gives the meaning of the law of large numbers, discusses the theory of criteria, defines objective and subjective judgments, and mentions Laplace's attempts to apply mathematical probability to human witnessing. Indexes are mentioned. Statistics discovers genera with many species.

The second chapter contains a brief discussion of the Gaussian Law, which the author calls the binomial frequency law, and a statement that this law arose from the axiom concerning the arithmetic mean being the best value of the quantity measured. It is pointed out that the arithmetic mean should come from the law instead of the law coming from the mean.

The third division, which is very philosophical, treats of the meaning and problems of causality, defines in many details absolute independence and dependence of cause and effect, the principle of scientific causality, experimental induction, the abstract experimental method, a conditional experimental law, experimental reasoning, experimental statistics, discriminate and abstract analyses, and states how the relations between mathematical and experimental statistics are used in examining mathematical statistics. The author concludes this division by giving the equation and some of the properties of the correlation frequency surface pertaining to two variables.

The first chapter of the second part presents definitions of the probable, logical, and mathematical probability. The author states that empirical-intuitive ideas form the basis of the calculation of probability, explains in some detail the fundamentals which enter into games of hazard, and relates how *a posteriori* probability has created confusion with regard to causal and non-causal events. He states that the accepted ideas concerning hazard came from the natural order of things and from human intelligence. The notion of hazard can be explained through the experimental notions of causality and finality.

The next chapter treats of a critical study of the theory of contingency and correlation from the point of view of the scientific methodology of investigation. This contains most of the meat of the book, for here the author discusses Karl Pearson's ideas of contingency and correlation and takes issue with Pearson's views concerning correlation, especially with the degree of association. He concludes this section by stating that he has never found a precise and adequate experimental definition of the degree of association or correlation, and because of this fact all formulas furnish only arbitrary values, or values without experimental foundation.

The last chapter contains an excellent summary of what is in the book.

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