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Author(s): A. L. Bowley

Review by: A. L. Bowley

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On Collective Phenomena and the Scientific Value of Statistical Data. By ERNST G. F. GRYZANOVSKI. With an Introduction by FREDERIC TRICKERMAN. (American Economic Association, August, 1906.)

IT is but rarely that attention is given to the fundamental functions of statistics, and the republication of this thesis in accessible form is therefore to be welcomed. The place of statistics is strictly limited by the author; where knowledge can be perfect and causation certain it is only an auxiliary; where probability is involved, statistics finds its proper place; with complete uncertainty of causation statistics is a trespasser. Under the heading "Registration," the nature of averages is discussed, and the necessity of a measure of dispersion pointed out; under "Interpretation," causality is analysed. There are five grades of causal connection, from the Necessarily Connected to the Totally Unconnected; the intermediate grades, Presumable Connection, Indirect Connection, and Apparent Independence, form the sphere of statistics. These divisions cut across the ordinary classification of sciences into physical, biological, and ethical, and exclude on the one extreme probabilities in physics calculated from theoretical laws, and on the other historical records; and the resulting analysis cuts out a good deal which has formed the subject-matter of statistics. "Chance . . . is philosophically the reverse of accident," for the former is calculable, the latter not; the author, if we understand him rightly, wishes to limit statistics to cases where chances are calculable. But the statistical methods of criticising, establishing, and obtaining the significance of historical records are only remotely related to calculations of chance, and we do not find that this very important function of statistical science fits into any of the categories proposed. The pamphlet concludes with a discussion of the relation between freewill and the apparent inevitability of statistical coefficients; individuals can act on some of the many causes which produce the general result; when their action is not at random, but correlated, there is a definite and cumulative effect, which is shown by the gradual change of the coefficient. The fall in the birth-rate, observable since the author's death in 1888, forms a good illustration of this last analysis.

A. L. BOWLEY