ON THE LOGARITHMIC FREQUENCY DISTRIBUTION AND THE SEMI-LOGARITHMIC CORRELATION SURFACE*

By

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INTRODUCTION**

The method of treating frequency curves as developed chiefly by Edgeworth, Kapteyn, Van Uven and Wicksell occupies an important place in both theoretical and applied statistics. The essence of this method may be briefly summarized as follows:

Suppose a function of the variable z is distributed according to the normal law of error. Then, z certainly cannot be also normally distributed, unless the function is a linear function of z. Without losing generality, we shall write the normally distributed function in standard units as $x = f(z)$. Thus the origin of x is its mean and the unit of x is its standard deviation. The relative frequency of values of x between x and $x + dx$ is, therefore

$$\frac{1}{\sqrt{2\pi}} e^{-\frac{x^2}{2}} dx$$

and the relative frequency of values of z between z and $z + dz$ is

$$\frac{1}{\sqrt{2\pi}} f'(z) e^{-\frac{1}{2}\left[f(z)\right]^2} dz.$$

Thus if we have an observed frequency distribution of z and we know a normally distributed function of z, then we can

* A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy in the University of Michigan.

** Papers written by the writers mentioned in this introduction are listed under the writers' names in the Bibliography at the end of this paper.