EDITORIAL

The Interdependence of Sampling and Frequency Distribution Theory

The object of the theory of sampling is to describe the phenomena exhibited by all the samples that can possibly arise from a parent population of known characteristics. In some cases the desired description can be obtained directly by employing elementary operations of combination theory, in others it is either expedient or necessary to use the indirect attack of the statistical theory of sampling. These two methods are quite different in application, and it is advisable to illustrate the respective peculiarities of the two methods.

Example 1. An auction bridge hand may be regarded as a single sample withdrawn from a parent population of 52 cards. The number of different hands that can be selected equals the number of combinations of 52 things taken 13 at a time, namely, $\binom{52}{13} = 635\ 013\ 559\ 600$. Of these

$$(1) \cdots\cdots\cdots f(z) = \binom{39}{13-z}\binom{13}{z}$$

will contain exactly z cards of any specified suit. Therefore if in this expression we successively place z equal to 0, 1, 2, . . . 13 we shall obtain the frequency of all possible samples ranked according to the number of cards of the specified suit contained in each sample. The results are presented in the following table.