Note on the criterion that two samples are samples of the same Population.—By P. C. MAHALANOBIS.

1. The classical method consists in comparing the Mean values m and m', of the two samples, and finding the probablity of the difference m-m' (as measured in terms of its probable error). This method neglects altogether any difference in the general nature of the two distribution of frequencies.

2. Pearson's Coefficient of Contingency. The two samples are compared group by group, and their independence is measured by the probability (P) of χ^2, a certain defined function of the two series of frequency groups.

If $n_1, n_2, n_3 \ldots \ldots \ldots$ total N.

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be the two series of actually observed frequency groups,

$$\text{then} \qquad \chi^2 = NN' S \frac{\left('n\, N - {}^{n'}\big/N'\right)^2}{n+n'} \ldots \ldots \ldots (A).$$

3. In the first part of the present paper, the above two methods are compared, with special reference to anthropological data. It is shown that the second method (contingency coefficient) is the more appropriate method for the purposes of comparing different samples.

4. It is noted, however, that two difficulties arise in applying formula (A) to the case of small samples.

(i) The values of n and n', the group frequencies, depend to a considerable extent on the system of grouping adopted.