

Though the number of observations is small ($n = 84$) and hence the probable error of r rather high, considerable significance should nevertheless be attached to most of the above coefficients. This is clearly indicated by the diagrams illustrating the correlations.

The meaning of the above coefficients can easily be explained in plain non-mathematical language as follows:

1. The density of population and the density of draft animals per 100 ha. of cultivated land increase or decrease simultaneously. Diagram № 1, on which each individual district is marked with a dot and the corresponding regression lines drawn, suggests that the correlation is rather close and fairly rectilinear. One should rather think that the increase in human workers does not call forth a proportional increase in the number of draft animals, since technically it would appear that the amount of work per unit of land for draft animals need not increase with the increase of the number of workers per unit of land.

2. The density of the population and the value of the harvest per head move in opposite directions: the value of the harvest is *highest* when the density of the population is lowest and vice-versa. The correlation coefficient in this case confirms the law of diminishing returns. These relations are illustrated in diagram № 2.

3. The density of population per 100 ha. of exploited land increases with the decrease in the average size of the farms. Diagram № 3 shows that the correlation is rather skew, but fairly well expressed.

4. The relation between the number of draft animals per 100 ha. of cultivated land and the average size of the farms is precisely the same as that in the above paragraph (diagram № 4).

5. If the value of the harvest per head of population decreases as the density of the active population increases (2), and if the density of draft animals increases with the increase in the density of population (3), it follows that the value of harvest per head of agricultural population must diminish with the increase in the number of draft animals per 100 ha. This relation is expressed by the correlation coefficient № 5 and, read in conjunction with (4) above, confirms the conclusion that a large number of draft animals on the farms are economically unnecessary and superfluous (diagram № 5).

6. The value of the harvest per head of agricultural population increases with the increase in the average size of the farms. Read in conjunction with (3) above it represents another formulation of the law of diminishing returns applied to Bulgaria (diagram № 6).

7. The production of cereals per head of population falls as the density of agricultural population rises. Diagram № 7 shows that this correlation is rather skew and the fall not quite proportional.

8. The production of cereals per head increases with the increase in the percentage of fields sown to cereals, but this obtains from the

fact that the percentage of cereals is higher on bigger farms ($r = +0.28$ — correlation between the percentage of the area sown to cereals from total fields and the size of the farms). Both of these correlations are rather low and may be of no significance.

9. The percentage of the area under industrial plants from total sowings increases with the increase in the density of the agricultural population, and, contrariwise —

10. The percentage of fields under cereals decreases with an increase in the density of population, though the correlation is rather small and of little significance.

It is not claimed that these correlations can be taken as absolute proofs of certain structural features of farming in Bulgaria. The fact that purely geographical factors interfere with structural factors should not be left out of account. A comparatively large number of draft animals are kept in the small farms of the Rhodopa mountains. They are, however, used mainly in the transportation of timber. The timber industry accounts for the fact that the small farms in the Rhodopa mountains actually carry a larger number of people. This explains the low level of the production of cereal foods and — the Rhodopa mountains being a tobacco-raising district — the high percentage of the area under industrial plants. These factors may influence and alter the general coefficients of correlation.

Other geographical factors of similar nature are present in different parts of the country which may influence the correlation coefficients. Thus, for instance, the percentage of the area under industrial plants in Southern Bulgaria simply indicates the tobacco regions, and in Northern Bulgaria — the districts cultivating sunflower. Since the average land-holding per farm in Southern Bulgaria is smaller than in the Northern, the correlation coefficient between the percentage of industrial plants and the size of the farms is rendered insignificant. In order to ascertain the significance of these coefficients it is necessary to examine the influence of the size of the farm, or the influence of the density of population within smaller areas with similar geographical conditions.

The solution of some of the problems which are raised, e. g., the value of the harvest per head, etc., can be approached only along the lines indicated above, as no other material is available for such investigations. In other directions, however, a verification is possible and the implication is that the correlations so calculated may be used as indicators of structural features. In this connection reference should be made to diagram № 4, which shows not only the usual regression lines, but also the density of cattle per 100 ha. of cultivated land in farm groups of different sizes calculated from the data for the whole country. Since the average size of the farm in any district lumps together big farms with small ones, the curve fits the densities per districts fairly well.