11A. THE EFFECT OF FERTILIZER TREATMENTS UPON THE QUANTITY AND QUALITY OF PASTURE VEGETATION:
I. MINERAL TREATMENTS

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The treatments discussed under this heading deal for the most part with carriers of lime, phosphoric acid, and potash. No doubt, other minerals are essential for a good growth of pasture plants, but no data showing their importance have come to the writer’s attention. Under a reasonable system of management, the soil is expected to, and evidently does, furnish whatever other mineral nutrients are necessary.

The experimental evidence bearing on this question will be considered in chronological order. Therefore, the classic pasture experiment (4, 7), started in 1897 at Cockle Park, Northumberland County, England, will be discussed first. As this project is still on the active list, results are now available for 30 years, a really long period in comparison with other pasture experiments.

Ten 3-acre plats compose the layout at Cockle Park. The soil is described as a poor stiff clay, analyzing 4,000 pounds of nitrogen, 1,400 pounds of phosphorus, and 10,000 pounds of potash per acre. Bent grasses (Agrostis sp.) composed 61% of the vegetation and only scattering plants of white clover were in evidence when the experiment was started. Without any cultural treatment or additions of seed, the several plats have been fertilized with various materials at regular intervals since 1897. The effects of the fertilizers are measured by determining the increases in live weight of sheep, which are used to graze the plats.

The treatments in the first period, 1897 to 1905, included lime and phosphorus alone and together. Potash was applied with phosphorus and phosphorus and lime, but not alone. Two applications, each of