IMPROVEMENT OF POOR PASTURE.

INVESTIGATION AT WALLACEVILLE LABORATORY FARM.

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INTRODUCTION.

PREVIOUS experiments on the improvement of poor sheep-pasture effected by top-dressing with various substances, and judged in the main by the live-weight increase of the animals grazed and the carrying-capacity of the pasture, and to a lesser degree by the yield and improved composition of the pasture, were initiated in England in 1896 and carried on for several years. The chief seat of these was at Cockle Park, a farm on the Duke of Portland's estate near Morpeth, Northumberland. The land is naturally poor, being valued in the natural state at 5s. per acre per annum.

The analysis of the unmanured soil from Cockle Park showed: Nitrogen, 0·2 per cent.; total phosphoric acid (P_2O_5), 0·07 per cent.; phosphoric acid soluble in 1-per-cent. citric acid, 0·005 per cent.; total potash (K_2O), 0·50 per cent.; potash soluble in 1-per-cent. citric acid, 0·013 per cent.; total lime, 0·70 per cent.

Dr. Sommerville, the initiator of the Cockle Park experiments, considers that this represents a perfectly normal soil, rather rich than otherwise in nitrogen and potash, but deficient in "available" phosphoric acid and rather low in lime. The "lime-requirement" method was not in use when the analysis of the Cockle Park soils was made, but a comparison of the other figures with the Wallaceville soil can be made, from which it will be seen that the Wallaceville soil is much richer in total nitrogen than that of Cockle Park, but is about the same in phosphoric-acid content ("available" and total), and, like that of Cockle Park, it contains plenty of potash (total and "available"), but is poorer than the Cockle Park soil in total lime. It is also to be noted that in the Cockle Park experiments the addition of 4 tons of quicklime produced no appreciable results on that soil, a strong boulder-clay situated at 300 ft. altitude, overlying the Millstone grit of the Carboniferous system. The land has been down in grass for some forty years, and was certainly not worth more than 5s. per acre per annum in the unimproved state—some farmers even said not more than 2s. 6d.

Contrary to what is found in New Zealand, burnt lime at 4 tons per acre was practically without effect at Cockle Park, even when repeated in the eleventh season. It became evident as time went on that it was hopeless to expect any profit from the use of this substance, and in the fifteenth season since the first dose of lime was applied its position is practically as hopeless as ever. When, however, smaller amounts of lime were applied in conjunction with phosphatic manures the