Value of Timothy Hay as Sheep Feed in Response to the Soil Treatment (A. G. Hogan, W. A. Albrecht, Geo. Norwood). This project is in cooperation with the department of animal husbandry. The effects of soil treatment usually are measured in terms of increased yield of grain, of forage, or of both. Changes in chemical composition of the crop often are given in terms of concentration as percentage, or even as total, of the different nutrient elements within the crop. Such measures of values of soil treatments have seemed inadequate in relation to the purposes for which most grains and forages are grown, namely animal nutrition. An attempt has been made to use animal growth behaviors as more responsive indexes of the changes in crop qualities in response to soil treatment.

Timothy hay was cut from plots receiving: (a) no treatment, (b) superphosphate, (c) limestone, and (d) nitrogenous fertilizers. Four lots of sheep were given a constant grain ration with these different hays as their roughage.

In terms of animal growth or average weight increase per lot the soil treatments on the timothy were of no great effect. The average gains per head during the winter were as follows: hay fertilized with nitrogen, 21.5 pounds; no treatment, 29.0; and with limestone, 31.2. There were, however, decided differences in individual weights, general thriftiness, conformation, and bone development in favor of the limestone treatments. Deficiencies and two fatalities appeared within three months in the sheep fed hay from the phosphate plot. Deficiencies occurred in about four months in the sheep fed hay from the plots receiving nitrogenous fertilizers, and the plots receiving no treatment. However, fatalities were prevented by intravenous injections of calcium gluconate. No deficiencies or deformities were evidenced in the lot of lambs fed hay grown on limed soil. This lot was uniform, active, and thrifty when dry lot feeding ceased in May.