cactus caterpillar. Since very little activity by the insect was observed by other investigators during the previous 3 years, weather conditions may exert considerable influence on its activity. The ecology of this insect has not been worked out for this area, but the evidence presented would indicate that the activity of the cactus caterpillar should be taken into consideration in range management of short-grass vegetation in this area.—M. W. Pedersen, Department of Agronomy, Nebraska Experiment Station, Lincoln, Nebr.

BROMEGRASS TOXICITY VS. NITROGEN STARVATION

The so-called “sod-bound” condition in bromegrass fields has been recognized by agriculturists for many years. The condition is especially serious on those fields used for seed production but is also a factor in lowering the carrying capacity of recently established pastures. For several years in Kansas this condition has been thought to be associated with a deficiency of available nitrogen since it had been shown both experimentally and by farm practice that nitrogen either in the form of commercial fertilizers, animal urine, or legumes improved the growth of bromegrass in an otherwise “sod-bound” field. The “sod-bound” condition is not peculiar to bromegrass alone but has been observed in other tame grasses and in native grasses when they were long established on cultivated areas.

The recent note by Benedict\(^1\) offering evidence, that a toxic substance produced by the growing or decomposing bromegrass roots, was responsible for the “sod-bound” condition stimulated additional investigations.

The areas selected for study were three fields lying in adjacent strips on the farm of A. M. Brunson located on a highly fertile silty clay loam, a terrace soil in the Kansas River valley. On one area bromegrass had been established in the fall of 1937. On the second area the bromegrass had been established in the fall of 1939. The third area has never grown bromegrass. It had been in annual non-legume crops for several years and had produced a wheat crop in 1941. The bromegrass areas were used both for early spring pasture and for the production of seed. The maximum seed yield, according to the farm records, was obtained the second year after the sod was established, following which the seed yield dropped rapidly.

During the year 1941 the sod established in 1937 was obviously “sod-bound”. The seed production was so low that only a part of the area was harvested. The seed yields for 1939 and 1940 were about 400 and 150 pounds per acre, respectively. In the early spring of 1941 the grass showed evidence of nitrogen deficiency and the cattle for the most part refused to graze on this portion of the pasture but stayed mostly on the area established in 1939. The sod established in 1939 showed no distinct evidence of a “sod-bound” condition in the spring of 1941.

\(^1\)Contribution No. 336 from the Department of Agronomy, Kansas Agricultural Experiment Station, Manhattan, Kans.