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SILVER-TOP IN GRASS AND THE INSECTS WHICH MAY PRODUCE IT.*

BY HERBERT OSBORN, AMES, IOWA.

The common affection of various grasses, commonly known as "Silver-top," has received the attention of such well-known investigators as Professors Comstock, Lintner, Forbes, Fletcher and others, and it is not with the expectation of completely solving the problem which has perplexed these careful students that I venture to present my experience, but in the hope that by comparisons of experience and observation we may arrive at a better knowledge of a subject at once important and complex.

The appearance of affected grass has been often stated and can be described briefly as a whitening of the upper portion of the stalk of grass, especially the head, which withers without maturing seed, while the basal portion is shrivelled. The causes assigned for this whitening have been various, but, I believe, generally referred to the injury produced by some kind of insect operating at the base of the terminal node of the stalk.

The various observations upon the insects suspected of causing the injury, or found associated with it, are admirably summed up by Mr. James Fletcher, Entomologist to the Dominion of Canada, in his report for 1888, pp. 59-62. Briefly, the species credited with the most certainty so far have been species of *Meromyza*, *Chlorops* and *Thrips*, while Mr. Fletcher mentions suspecting species of Hemiptera, and records an attempt to produce Silver-top by caging such Hemiptera (species not designated) upon grass plants.

The species which can perhaps be considered as having been most positively connected with the disease is a *Thrips* called *Limothrips poaphagus* by Prof. Comstock, and while, as will be shown later, I feel certain that but little if any of the trouble which has come under my

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