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## OBSERVATIONS ON INSECTS.

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AGROMYZA SETOSA Loew—The larvæ of several species of the genus *Agromyza* are known to mine the leaves and stems of various plants. Cabbage, potatoes, corn, clover, strawberries, verbenas, chrysanthemums and sunflowers are among the cultivated plants from which various species of the genus have been reared; while plantain, round-leaved mallow, golden-rod, aster, cockle-

bur, rag-weed and wild-rice are given as their food-plants. In some cases a single species of fly has been reared from a half dozen or more different plants. *Agromyza setosa* Loew, as determined by Coquillett, was reared in numbers from leaves of wild-rice, *Zizania aquatica*, at Sandusky during August of each of the years 1900 and 1901. Professor Osborn studied the species and its work in 1900, while my observations were made a year later. Although I include the notes taken by both of us, many points are needed before a detailed account of the habits and life history of the species can be given.

The eggs are conspicuous on account of their abundance and white color, and are deposited chiefly on the upper surface of the leaves of the food plant.

The larvæ upon hatching bore into the leaf and feed beneath its upper covering. When full grown they measure about 6 mm. in length, are white, or greenish on account of chlorophyl taken in with their food, and are furnished with strongly chitinous mouth parts. The mines which they make in the leaves are irregular in width and extend for varying lengths on one side or the other of the mid-rib. These variations in extent are usually explainable from the fact that a variable number of larvæ occupy the different mines. The work of the larvæ is apparent from the first on the upper side of the leaf, and may be seen beneath after a few days because of the fact that the parts beneath the mine sooner or later turn yellow.

The pupa is to be found either in the mine or clinging to the surface of the leaf. It is brown in color, with two prominences anteriorly where the attachment with the leaf is effected, and is contained within the last larval skin so that the legs and wing-pads are at no time visible from the outside.

*BIBIO ALBIPENNIS* Say—Larvæ observed in colonies under fallen logs, and boards which were lying on the ground. Specimens taken April 4th pupated May 5th and the adults appeared May 13th. The adults were unable to fly for several hours after they emerged on account of their wings remaining soft. I observed the first males flying out of doors on the 23d of May.

*CHRYSOPILA ORNATA* Say—Larva about an inch and a half in length, white in color, cylindrical, with an enlargement at the posterior end bearing a number of fleshy elongations which are about the length of their basal breadth. Found under rotten wood May 1st. Pupa brown, last segment armed with six spinose teeth, the two on the ventral side arising from the same base, the remaining abdominal segments furnished with a circlet of spines near the posterior third. The adult emerged the 18th of June.