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On the Wax Glands of the Pemphiginae

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Iowa. The more important facts gathered during the past summer bearing upon this subject were:

Egg laying began about the 25th of May and practically ceased by the last of June. Eggs began again to be deposited in considerable numbers about the 20th of July. Unhatched eggs were found constantly from July 22 to August 22. The number of eggs laid after July 20, on trees where counts were made, was over one-fifth as great as the number laid before that date. The beetles reared from early stung plums began appearing in the breeding cages as early as July 22. Beetles were seen pairing July 22. The eggs of the late punctures hatch as well as any and the larvæ develop in the plums.

ON THE DISTRIBUTION OF CERTAIN HEMIPTERA.

BY PROF. HERBERT OSBORN.

(Abstract.)

The *Hemiptera* present some instructing cases of special distribution, a few of which are considered. The relation of the distribution to distribution of food plants is discussed and cases cited where there is apparently entire independence of climate, latitude, altitude, etc. For several of the species localities are recorded which extend the range of the species as heretofore known. The species mentioned more particularly are: *Anasa armigera*, *Alydus pilosulus*, *Leptocoris trivittatus* (recorded for eastern Iowa), *Macrocoleus coagulatus*, *Emblethis arenarius*, *Calocoris rapibus*, *Pygolampis pectoralis*, *Melanocaryphus bicrucis*.

ON THE WAX GLANDS OF THE PEMPHIGINÆ.

BY PROF. HERBERT OSBORN.

(Abstract.)

After considering the accepted ideas concerning the wax glands of the *Coccidæ* and *Aphidæ*, the paper describes the

structure of these glands in *Pemphigus tessellata* Fitch as an illustration of the unicellular form, (apparently the only form hitherto recognized), and in *Schizoneura crataegi* Oestlund, as illustrating a complex gland. In the latter the waxy secretion is forced through chitinous rims to cup like glands, the glands arranged in clusters four to six or seven in a cluster and each composed of numerous cells.

ADDITIONS TO THE CATALOGUE OF IOWA HEMIPTERA.

BY PROF. HERBERT OSBORN,

The additions to my list of two years ago presented in this contribution number thirty and I have a few species undetermined that can probably be included by the time the full list is published.

LIFE HISTORY AND EMBRYOLOGY OF MONOSTEGIA (SELANDRIA) IGNOTIA (NOR).

BY PROF. FREDERICK W. MALLY, M. S.

(Abstract.)

This paper was a brief extract, giving the more important results of a study of the above named species as effecting the strawberry, and included in a Thesis prepared for the degree of Master of Science at the Iowa Agricultural College, Ames, Iowa, and is published in *Insect Life*, Vol. II.

The adults of this new strawberry pest appear about the 1st of April and begin egg deposition soon after. The period of greatest deposition being about the middle of April. In two weeks the eggs hatch. Larvæ are found from the middle of April, being most abundant during the first half of May, and by the 1st of June all the larvæ have matured and entered the earth.

The larvæ of *Monostegia ignota* (Nor.), are distinguished from those of *Harpiphorus maculatus* by having a uniform