AN INTERESTING SENSORY ORGAN IN CERTAIN PLANT LICE.

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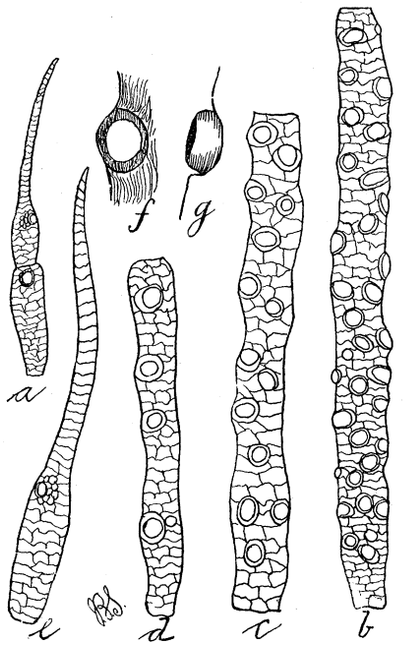
DURING the season of 1890 plant-lice were unusually abundant and destructive on a number of cultivated crops in New Jersey, and I devoted some little time to the study of the more troublesome species, presenting the results, in popular form, in Bulletin No. 72 of the New Jersey Agricultural College Experiment Station. One of the matters that attracted my attention more particularly was the peculiar pitting of the antennæ. These pits and tubercles, as they have been indifferently called, are well known; but they have been often treated as merely sculptural features, and no special importance has been attributed to them. In my examinations of the structures I recognized them as sensory in character; but was not then and am not now able to specify their exact function, since they differ from what are usually described as the tactile and olfactory organs. The appended figure, showing the pittings of the antenna of the peach-louse, will serve to illustrate the appearance of the structures.



PEACH LOUSE: — *a*, Antenna of young louse; *b*, First long joint of winged form; *c*, Second long joint; *d*, Third long joint; *e*, Whip-joint; *f*, Sensory pit of antenna, from top; *g*, Same, from side.

I found that in all the wingless forms of all the species examined by me one type only was present. There is a single large pit, surrounded by a little group of small pits, on the last or whip-joint and, usually, a single large pit near the tip of the penultimate segment. This structure never changes in character while the insect remains wingless, whether it is newly-born or has reached a point where it reproduces its kind agamically. It continues also throughout the pupa state; but as soon as the winged form is assumed a very decided change appears, and every species shows a pitting peculiar to it. It may involve all the joints or only one may be modified; but, whatever the type, it is invariable within specific limits, and I have not found thus far any two species in which the pitting is identical. It may be that where a species is dimorphic, or where there are migratory and sedentary forms, that each form may have peculiarities of structure; but this I do not know.

At the time I made the studies above mentioned, I had neither males nor oviparous females of any species before me, and not until the fall of 1892 was I in position to examine sexed individuals carefully. I was curious to find whether any further modifications appeared in the true sexes, and whether the wingless, oviparous females shared in the larval type of structure. I obtained males and females of *Aphis brassicæ*, *Siphonophora cucurbitæ*, *S. rosæ*, *Myzus cerasi*, and *Phorodon humuli*. In the males of all, as I expected, I found the antennal pittings present, and was not unprepared to find that they differed from the viviparous winged forms in their somewhat greater number and distinctness. I was disappointed to find in the oviparous female no modification of the simple larval type; but, as I was in search of some character that would always distinguish this particular form without recourse to the primary sexual structures, I examined all parts of the insects minutely, and was rewarded by finding on the posterior tibiæ a series of sensory pittings exactly similar in structure to those of the antennæ in the male. I found that these structures differed in each of the species examined, in size, arrangement, and number, and the character is probably as little variable here as it is in the antenna. *Myzus cerasi* was the only species in which I had any number of specimens for examination, and in this I found that the tibial pitting does not appear until the insect becomes sexually mature.

To ascertain whether other species showed the same structure, I wrote Dr. C. V. Riley, asking whether he had observed it or could inform me as to its presence or absence in other species. Recently he very kindly replied as follows: "I have not yet been able to examine all the material at hand, but I can say that I have verified your interesting discovery in the following species: The pits are present in *Aphis mali*, *A. pruni*, *Myzus nahaleb*, *Siphonophora rosæ*, *Siphonophora sp.* on rose, *Callipterus sp.?* on oak, in *Phyllaphis fagi*, and in *Melanoxanthus salicti*. I do not find them present in the following genera: *Schizoneura*, *Glyphina*, *Pemphigus*, and *Phylloxera*, while in *Lachnus* they are not at all well developed or distinctly observable. This list, so far as it goes, would, therefore, show that they occur in what may be looked upon as the higher forms, and are absent in the *Pemphiginæ* and *Phylloxerinæ*."

I have not seen any mention of the structures above described, and am less than ever able to attribute a function to them. Finally, I desire to express my obligation to Dr. Riley, who not only examined the species mentioned in his letter, but also sent me the sexed specimens on which my studies were first made.

THE INDIANA ACADEMY OF SCIENCE.

THE eighth annual meeting of the Indiana Academy of Science convened in the rooms of the State Board of Agriculture, Capitol Building, Indianapolis, Ind., Dec 28, 1892, and continued through the 29th. The president was Professor J. L. Campbell of Wabash College, Crawfordsville, Ind. The meeting was one of universal interest. The attendance was large; the list of papers showed 92 titles, almost all of which were read.

The officers chosen for the year were: President, J C. Arthur, Purdue University, Lafayette, Ind.; vice-president, W. A. Noyes, Rose Polytechnic Institute, Terre Haute, Ind.; secretary, Amos W. Butler, Brookville, Ind.; assistant secretary, Stanley Coulter, Purdue University, Lafayette, Ind.; treasurer, C. A. Waldo, DePauw University, Greencastle, Ind.; auditors, Thomas Gray, Rose Polytechnic Institute, Terre Haute, Ind.; W. S. Blatchley, High School, Terre Haute, Ind.; programme committee, L. M. Underwood, DePauw University, Greencastle, Ind.; W. A. Noyes, Rose Polytechnic Institute, Terre Haute, Ind.

The arrangements for the spring meeting the third week in May contemplate a two days' session in the picturesque and interesting region in Park County, closing with a session Friday evening at Terre Haute.

The editors presented their report and also the first volume of the Academy's Proceedings ready for distribution. The volume contains the papers of the last preceding meeting together with an account of the field meetings, a bibliography of all papers read before the Academy since its organization in 1885, together with reference to the place of publication of each.

The following papers were presented: —

Notes on the Reproduction and Development of *Grinnellia Americana* Harv., M. A. Brannon; Evidences of Man's Early Existence in Indiana, from the Oldest River Gravels along the White Water River, A. W. Butler; On the Construction of a Sensitive Galvanometer, Benj. W. Snow; Some Facts as to the Varying Conditions of Rock Deposits as Observed in the Hudson River