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Burke, Washington, D. C.; J. L. Webb, Washington, D. C.; T. B. Symons, Collegepark, Md.; R. I. Smith, Collegepark, Md.; G. W. Martin, Nashville, Tenn.; A. F. Conradi, Durham, N. H., and H. L. Price, Blacksburg, Va.

For foreign membership: Josef Jablonowski, Budapest, Hungary, and Yasushi Nawa, Gifu, Japan.

H. Osborn,
A. L. Quaintance,
Nathan Banks,
Committee.

Upon motion of Mr. Ashmead, the report was accepted and the secretary was instructed to cast an affirmative ballot for the Association.

The programme was then resumed, the first paper being by Mr. Alwood, as follows:

A NOTE ON THE OVIPOSITION OF THE SEVENTEEN-YEAR LOCUST (CICADA SEPTENDECIM).

By William B. Alwood, *Blacksburg, Va.*

In presenting this note I wish first to mention a rather curious observation made by me last year at the Virginia Agricultural Experiment Station at Blacksburg. We were expecting the locusts and had designed, if occasion warranted, to experiment upon some sprays with a view of preventing oviposition by the female in the fruit trees of the experiment-station orchards. At the proper season the insects appeared in great numbers, so abundantly, in fact, that one could gather up a quart in a few minutes at the time they were issuing from the earth. The young orchards at the station were then in the main 12 years old and fine vigorous young trees, but there were also trees ranging down to 2-years set, so that the insects had every opportunity to select suitable branches for oviposition if they were inclined to do so.

Careful observation from day to day revealed the fact that they seemed to be making no efforts whatever to oviposit in the trees of our test orchards, but after lingering for some days in the trees they flew away. Thus by the time the locust season was about half passed our orchards were practically clear of the insects. In no instance did we detect them ovipositing in the twigs or branches of our trees. However, the past summer we have noticed perhaps half a dozen instances where oviposition occurred.

Why they did not choose to oviposit in the branches of the orchard trees at the experiment station has been rather a puzzle to me. I have only one suggestion to make, and that is that, as we spray our orchards very thoroughly with Bordeaux mixture, and the limbs and

twigs were quite covered with a thin coating of the fungicide, this may have in some measure acted as a deterrent to the locusts. I would not like to make the assertion that Bordeaux mixture will deter this insect from oviposition, but the fact observed warrants one in suggesting that it will be an interesting experiment to make when opportunity again presents itself. Other orchards near us were very badly punctured by the female insects.

It occurred to me that it would be an interesting matter to collect data on the various plants chosen by the female insects for deposition of their eggs, consequently I had one of my students follow this matter up quite closely, and he collected the following list of plants, all of which showed the characteristic oviposition of this cicada:

List of Plants Punctured by the Cicada (Cicada septendecim).

1. Coniferæ—Pine Family.—Red Cedar (*Juniperus virginiana*).
2. Cornaceæ—Dogwood Family.—Dogwood (*Cornus Florida*).
3. Cupuliferæ—Oak Family.—Alder (*Alnus viridis*); Beech (*Fagus ferruginæus*); Birch (*Betula* spp.); Chestnut (*Castanea americana*); Red Oak (*Quercus rubrum*); White Oak (*Q. alba*).
4. Ebenaceæ—Ebony Family.—Persimmon (*Diospyrus virginiana*).
5. Ericaceæ—Heath Family.—Blueberry (*Vaccinium* spp.); Huckleberry (*Gaylussacia* spp.); Laurel (*Rhododendron maximum*).
6. Hamamelidiæ—Witchhazel Family.—Gum (*Liquidambar styraciflua*).
7. Juglandaceæ—Walnut Family.—Black Walnut (*Juglans nigra*); Hickory (*Carya alba*).
8. Leguminosæ—Pulse Family.—Locust (*Robinia pseudacacia*).
9. Oleaceæ—Olive Family.—Ash (*Fraxinus americana*); Lilac (*Syringa vulgaris*).
10. Platanaceæ—Plane Tree Family.—Sycamore (*Platanus occidentalis*).
11. Rosaceæ—Rose Family.—Apple (*Pyrus malus*); Blackberry (*Rubus occidentalis*); Hawthorn (*Cratægus* spp.); Peach (*Prunus persica*); Plum (*Prunus* spp.); Quince (*Pyrus cydonia*); Raspberry, red (*Rubus strigosus*); Raspberry, black (*R. occidentalis*); Wild Cherry (*Prunus serotina*).
12. Salicaceæ—Willow Family.—Poplar (*Populus* spp.); Willow (*Salix* spp.).
13. Sapindacæ—Soapberry Family.—Maple (*Acer rubrum*); Sycamore maple (*Acer pseudo-platanus*).
14. Tiliaceæ—Linden Family.—Basswood (*Tilia americana*); European Linden (*T. europæa*).

This list shows that 14 botanical families, comprising 30 genera and 33 species of plants, were used by the female cicadas as a nidus for their eggs at our place.

In the discussion of this paper Mr. Schwarz stated that he considered the seventeen-year locust to be one of the most interesting insects we had in this country, and desired that the economic entomologists should bear this in mind in their recommendations for the destruction of the insect. He did not consider the injury done by this species of any particular significance. He thought it to be the duty of economic entomologists to carefully map out the extent and number of broods

of this species, so that it would be possible to accurately indicate to orchardists the time when trees could be most safely planted. The full distribution of many of the broods had never been determined and he considered it very desirable that this should be done.

Mr. Alwood remarked that in his experience injury from the seventeen-year locust had frequently been quite severe. He mentioned an instance where 400 or 500 5-year-old trees in an orchard of 5,000 had been so injured by the cicada that they had been pulled out.

Mr. Marlatt spoke in behalf of the sentiment expressed by Mr. Schwarz, and emphasized the fact that the periodical cicada is our most interesting insect, and thought it would be unfortunate if it were exterminated. He considered that the damage occasioned by it, on the whole, was slight, but that in individual instances considerable injury had been done. He referred to an orchard belonging to Mr. M. B. Waite, near Washington City, where the cicadas had come out from the edge of a woods and had punctured a few of the adjacent rows quite badly, so that one year's growth was lost. Properly cut back, no lasting injury would be sustained.

Mr. Hopkins agreed with Mr. Schwarz as to the interest surrounding this species, and remarked in regard to the broods that he was beginning to be somewhat skeptical as to the propriety of using the term brood with its present significance. He thought that as the knowledge of this species increased it would be found that there was a great deal of intergrading, and also that representatives of so-called broods were likely to appear every year, even in the same State. He had evidence from West Virginia that the periodical cicada appeared annually in certain localities. He thought it would be very difficult, except where the intervals were marked, to designate them as distinct, or to refer each to a recognized brood.

Mr. Marlatt called attention to the work of Dr. Gideon B. Smith, who lived in the first half of the last century, and who had studied the cicada very extensively between 1825 and 1850, or thereabouts. Dr. Smith had prepared a very important paper, which he had never published. An abstract of Dr. Smith's record of broods had been published in the speaker's paper on the cicada (Bulletin 14, United States Division of Entomology). Dr. Smith had called attention to the idea just advanced by Mr. Hopkins, namely: The fact of the gradual breaking up of old broods, which in the course of time might cause the cicada to appear in every cicada-brood region every year. This did not mean that the seventeen-year period would be lost, but that there would be such a splitting up of the broods by acceleration and retardation that the marked periods of appearance in considerable numbers would cease.