

likely, and although it could hardly account for the persistence of a human disease carried exclusively by a specific insect vector, it renders possible the transfer of diseases by a contaminative carrier during certain short periods alternating with longer periods of inactivity.

NOTE ON THE AVOCADO WEEVIL (*HEILIPUS LAURI*
BOHEMAN).

BY HERBERT S. BARBER.

Bureau of Entomology, U. S. Dept. of Agriculture.

Last month (March 1912) some aguacate seeds (avocado or alligator pear) were planted for germination in one of the greenhouses of the Department of Agriculture in Washington, and while inspecting importations against noxious insects, Mr. E. R. Sasser had his attention drawn to one of these seeds showing injury which, when the seed was opened, proved to be the result of a large weevil larva therein contained. Unfortunately the seed lay for a time on his desk subject to the attack of the ant-pest (*Solenopsis debilis*) from which the Bureau of Entomology suffers, before he brought it to me. When examined further the seed was found to contain, in addition to the half-devoured larva, two fine pupæ, each in a thin-walled cell of excrementous material, the three together almost completely filling the space formerly occupied by the two great cotyledons.

In the same greenhouse and at about the same time (March 19, 1912) an attendant had picked up and handed to Mr. Sasser a large weevil that was feeding on the leaves and stem of a seedling aguacate and which had undoubtedly issued from another seed of the same lot. A few days later some one in passing through the greenhouse picked up another adult weevil for a friend interested in insects, who, in turn, brought it to me for determination.

The species was described by Boheman in 1845 (Schönherr, Gen. et sp. Cure. vol. 8, pt. 2, p. 443) under the name *Heilipus lauri*, stating that it was found in the fruit of *Laurus drymifolia*.¹

In the *Biologia Centrali-Americana* Champion mentions two specimens of this weevil from Capulalpam, Mexico, in

¹Having been much confused by the different names assigned to the Aguacate and thinking several species might be involved, it may be well to explain that this name is now considered a synonym of what Small calls *Persea persea* (L.) Ckil. and equals, as far as I can learn, *Laurus persea* Linn., *Persea gratissima* Gaertn., and *Persea americana* Mill., but is a distinct species from the recently described *Persea pittieri* Mez.

the Sallé collection. Two other specimens are in the U. S. National Museum collection, one of which was found on an aguacate at Ontario, California, November 22, 1911, by Mr. S. A. Pease, while the other was found in an aguacate seed in St. Louis, Missouri, by Mr. Clay E. Jordan.

Subsequent to the presentation of this note, further observations were made which would best be added.

On May 2, the greenhouse attendant found another adult in a spider web near a pot containing several avocado seeds and noticed an apparently fresh exit hole over one of them. I visited the greenhouse the following morning and tried to trace up all receipts of *Persca* seeds from which weevils might have issued. It seems only one lot was infested. This was received from a dealer in San Jose, Costa Rica, December 26, 1911, consisting of 26 seeds of *Persca pittieri*, which were then noted as being in poor condition. Five of these seeds had germinated and grown to plants from a foot to a foot and a half in height, and from the cotyledons of three of these plants weevils had issued, leaving a still very obvious exit hole in the soil close to the plant stem. These three plants were taken up and the cotyledons showed the same injury that had appeared from the other seeds, but, of course, this injury had not affected the germ. On May 23, four additional plants that had been grown at Miami, Florida, from seeds of the same lot were examined and the cotyledons showed no exit holes.

A plant grown in the local greenhouse which when examined three weeks earlier had shown no sign of infestation, now had an apparently fresh exit hole in the soil about an inch from the stem, which led down into the pupal chamber in the cotyledon. This plant seemed less robust in its growth than the others. Another adult, dismembered by ants, was found on a ledge in the greenhouse, but may have been there for weeks.

A specimen of this weevil was taken early in July at Whittier, California, in a grove of avocados about 2 years old, in the nursery of Mr. Rideout. Mr. P. H. Dorset, of the Bureau of Plant Industry, who found the weevil, believes it came from Mexican seed, but states that no seed had been planted in that part of the nursery for nearly a year.

Seven adults, two pupæ, and a larva of this species are now in the National collection. Of the adults the four that issued in the Washington greenhouse from the seed of *Persca pittieri* from Costa Rica are of a decided red ground-color, with red femora, and lack the two transverse white fascia of the elytra, while the other three are dark brown, have unicolorous legs, and display the prominent patches of white scales mentioned and figured in the *Biologia Centrali-Americana*.



THE AVOCADO WEEVIL (*HEILIPUS LAURI* BOH.).

Coupled with the different host plant, these characters may later lead to the splitting up of this species.

From these records it is quite obvious that the species may become of some economic importance to tropical horticulturalists and its transportation to other countries where the avocado is grown should be more closely guarded against. Further observations are urgently needed to determine the probable extent of its depredations. Plate ix represents a pinned adult and lateral and ventral views of the pupa.

Mr. Schwarz said that the genus *Heilipus*, with its several hundred species, naturally will have quite a variety of food habits. One species, *H. guttatus* Boh., was bred by him last year from a section of a felled tree (probably a *Ficus*) at Paraiso, Panama, and was also collected at wounds on tree trunks in Guatemala. *H. albovenosus* was found by him at Tampico, Mex. in December, 1910, on the fruit of *Nectandra sanguinea*? (as determined by Dr. Rose), which has been formerly included in the genus *Persea*, with its probable larva within the fruit. Another species, *H. elegans*, breeds under the bark of camphor trees in Jamaica, as he noted some years ago (Proc. Ent. Soc. Wash., vol. ix, 1909, p. 15). Only one species of the genus, *H. squamosus*, is native in the United States (Georgia and northern Florida). It is extremely rare in collections and its habits are still unknown, but it may be found to develop in the fruit of *Persea borbonia* (*P. carolinensis*). A genus allied to *Heilipus*, *Calvertius araucariæ*, has been described by Dr. D. Sharp (Ann. and Mag. Nat. Hist., Jan., 1891, p. 150) from Chile, where its larvæ bore in the trunks of *Araucaria imbricata*. It may be added that three other small rhynchophorid beetles have been found to live in the seeds of the avocado. One of them is a calandrid beetle, *Caulophilus latinus* Say, found in seed of the "Trapp" variety of avocado from Miami, Florida, in November, 1909. The second is a small undescribed scolytid of which a few specimens were found in the seed of an undescribed wild species of *Persea*, discovered by Dr. Henry Pittier at Boquete, 2,100 meters altitude, on the slopes of the Volcan de Chiriqui, in Panama, in April, 1911. The third is the cosmopolitan coffee weevil, *Aræcerus fasciculatus* De G., which appeared in numbers in old seeds from Livingston, Guatemala.