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THE AMARANTH CURCULIO, CONOTRACHELUS SENICULUS LEC.

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Some years ago, during the first week of September, the writer noticed that a variety of cultivated amaranth (*Amaranthus* sp.), growing at Washington, D. C., was dying, many large and otherwise beautiful plants being prostrate. Some, though rooted to the ground, had fallen over. Examination of the main roots disclosed large numbers of larvæ of what proved on rearing to be *Conotrachelus seniculus* Lec., working about the base. When the earth about the roots was examined later, larvæ were found to have issued from them and pupæ had also formed. Infestation through the entire planting was practically complete, 90 per cent. at a low estimate. Some plants showed a form of root rot which might have attacked the plants after the insects had been at work. By the third week of September, larvæ had become comparatively scarce and many pupæ were in the ground about the roots, and by the end of the month most of the adults had developed, numerous holes showing where they had emerged from the ground.

The first adult was reared September 28, but it was not completely hardened or mature until October 7. Beetles continued to mature until the end of October.

The larval habits of this species were recorded by the writer in 1898¹. During August, 1897, numerous larvæ and pupæ were found about the roots and in the earth around the stems of rough pigweed (*Amaranthus retroflexus*). Unfortunately, the species was mentioned in that record as *C. elegans* Say.

¹Bul. 18, n. s., Div. Ent., U. S. D. A., pp. 95, 96.

In two localities in Maryland that were visited, a large proportion of the wild *Amaranthus* examined was infested. Larvæ were most numerous on mature plants within an inch or two of the surface, and the stems were considerably eroded where larvæ were at work. A dozen or so individuals usually comprise a colony about each wild plant, but ornamental amaranths harbor many more.

The first larva transformed to a pupa August 11, and the first imago appeared on August 18, having passed six and a half days in the pupal condition. Larvæ and pupæ, as would naturally be inferred, very closely resemble those of *Conotrachelus nenuphar* Herbst., or the plum curculio. A cell is formed for the pupa, but is of such rude construction that it is scarcely noticeable. The beetles have been collected about Washington late in May and early in June and are not so frequently seen in September and October, although abundant at the later date. Dr. W. D. Pierce, who identified the species, says that he has found the larvæ in amaranth roots in Texas, but did not succeed in rearing the adult.

The close resemblance of this species to *elegans* Say., has undoubtedly caused the two to be somewhat generally confused in collections. The following distinctions have been pointed out to the writer by Dr. Pierce:

Upper surface with short, erect setæ; prothorax distinctly carinate from apex to base.

Posterior femora with a large acute tooth and a small denticle
seniculus Lec.

Upper surface without erect setæ; prothorax with feeble carina.

Posterior femora with two small denticles. **elegans** Say.

Of the latter species, which has been called the "pig-nut leaf-weevil", Packard has written:¹ "We have observed this weevil at Providence (R. I.) busily engaged the last of May laying its eggs in the partly rolled up leaves of the pig-hickory (*Carya glabra*), and, during the process, cutting off the leaves, which hang down, wither, and turn black."

¹Packard, A. S.—Fifth Rept., U. S. Entom. Comm., p. 316, 1890.

The difference in the larval food habits of the two species will be noted, the one being a root- and stem-feeder, the other, according to Hamilton², a leaf-roller.

MIGRATION OF PYRAMEIS CARDUI

The 1924 annual migration of *Pyrameis cardui* in this region is beyond doubt the largest on record. The butterflies began to struggle across the border from Baja, California, about February 27, and soon became very abundant for seventy miles or more, or from coast to Colorado River. Today, March 15, the migration is about completed in Los Angeles County, the mass having crossed successfully the mountain range varying from 3,000 to 8,000 feet and getting into the Mohave and Ventura valleys. Most of the specimens were much worn but occasionally one was seen evidently freshly emerged. Their path was on the whole from the southeast, probably their direction following the low lands as far as possible. Food was abundant, the apricot and orange trees averaging from 25 to 100 specimens at any hour of the day. In the air they were not as numerous as one sometimes sees *A. plexippus* in its similar migration in the east. They were, however, constant. At any given point in open space one could count from 50 to 300 a minute and the speed of flight averaged not far from 15 miles an hour. Moreover, these numbers hold good for at least 1,000 square miles and they were not less numerous at the 5,000 feet levels than in the low lands; besides, there was no diminution of numbers between sunrise and sunset. One can easily imagine that the total number of them living at one time in three counties is larger than the human population of the entire world.

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²Hamilton, J. A.—Trans. Am. Ent. Soc., vol. XXII, 1895, p. 376.