

the odor of pine lumber in the extensive lumber yards of B Street N. W. As a consequence a large number of old Norway spruce trees on the Agricultural Grounds have died during the past three years, having been killed by three species of Scolytids—*Ips calligraphus*, *Ips grandicollis*, and *Ips avulsus*, the first attacking the lower trunk, the second the upper portion, and the third the tops and branches. Each species has its usual set of parasitic and predatory enemies, associates, and scavengers, making in all quite an extensive fauna.

A NEW TACHINID PARASITE OF *DIABROTICA VITTATA*.

BY W. R. WALTON, *Bureau of Entomology.*

One Tachinid parasite of *Diabrotica* has been known to science since 1871, in which year *Celatoria* (*Melanosphora*) *diabroticae* was described by Dr. Henry Shimer.¹ Subsequently the late D. W. Coquillett redescribed this species under other generic and specific names.²

Shimer's brief and characterless description of *diabroticae* together with his placing of the species in the genus *Melanosphora* of the Dexiidæ offer an excellent excuse for this redescription and synonymous specific name. Shimer's figure, depicting the wing venation fairly well, affords the one clue which preserves his diagnosis from oblivion.

In his redescription of *C. diabroticae* Mr. Coquillett unfortunately confuses the sexes as he says: "Venter in female normal: in the male, furnished with a large, longitudinally compressed process." As a matter of fact the female is the possessor of this process which is excellently shown in Dr. Marx's drawing accompanying his article. Mr. C. H. T. Townsend has previously commented upon this misinterpretation.³ Mr. Coquillett also describes here for the first time the peculiar spiny puparium which is quite distinctive of this group, for which Mr. Townsend proposes the name *Celatoriineæ*.

During the early part of June of the present year a wild cucumber vine on the premises occupied by the author at Hyattsville, Maryland, became heavily infested with the beetle, *Diabrotica vittata* Fabr. While observing the movements of the beetles on June 4, several minute tachinid flies were seen sitting upon the upper sur-

¹ American Naturalist, vol. v, p. 219, 1871.

² *Celatoria crawii*, Insect Life, vol. 11, p. 235, 1890.

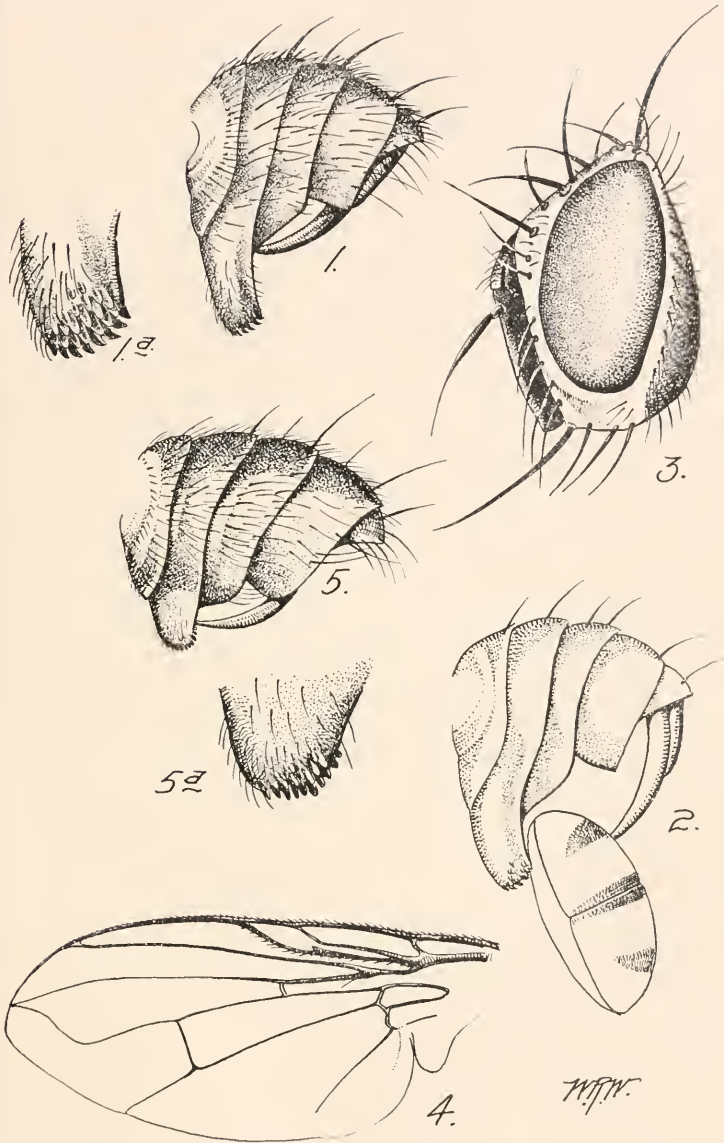
³ Annals Ent. Soc. of Am., vol. 1v, p. 140, June, 1911.

faces of the leaves. Suddenly one of these individuals dashed at a beetle, they grappled, the beetle rolled over upon its back. Then, almost instantly, the fly disengaged herself, resuming the pose upon the leaf, preening her body with the hind legs. The beetle rolled off to the ground and presently flew away. This was observed several times and finally a fly and the beetle attacked were captured for examination. The beetle was found to have a clean hole punched through the center of one elytron. An examination of the abdominal appendages of the fly (plate I, fig. 1) left little doubt as to the origin of this puncture. By referring to the figure it will be seen that the second abdominal segment is immensely prolonged downward into a laterally compressed tubercle, the apex of which is armed with short, flattened, somewhat pointed, spine-like, processes, directed slightly caudad. Opposed to this, with its base attached to apex of the abdomen, is a long curved, strongly chitinized piercer. This is normally held with its tip ensheathed in the posterior edge of the abdominal process described above. In life it is easily visible with the aid of a hand lens. Figure 2 of plate I shows the author's interpretation of the function of these two appendages.

The contact of the fly with the beetle is much too brief and the conflict too strenuous for the eye to observe what actually takes place. But taking into consideration the position of the punctures on the elytra of the beetle and the conformation of the puncturing apparatus, together with the fact that the beetle is turned upon its back during the conflict, this hypothetical figure seems quite plausible.

Several punctured beetles were collected and placed in a breeding jar and on July 10 one fly puparium was found therein. This resembles the puparium of *Celatoria* quite closely in that it is covered with short, spine-like processes. Owing to the writer's prolonged absence from the city, further results of this rearing were lost. But the facts outlined above indicate conclusively the parasitism of this fly on *Diabrotica*.

When first observed it was naturally supposed to be *Celatoria diabrotica* Shimer. In size and general appearance it closely resembles that species but a careful examination revealed important structural differences which make it necessary to propose not only a new species but also to erect a new genus for its reception. This latter action becomes necessary because the first vein is spiny for almost its entire length. It seems quite apparent that this character is wholly artificial, but as it has been utilized extensively as a primary generic and even group character, and is of undoubted convenience in spite of its apparent artificiality, the name *Neocelatoria ferox* n. gen. n. sp. is herewith proposed for this curious fly.



Neocclatoria ferox Walton; 1, Abdomen of female; 1a, Enlarged view of abdominal tubercle; 2, Hypothetical drawing showing probable functioning of appendages; 3, Head of female; 4, Wing.

Celatoria diabrotica Shimer; 5, Abdomen of female; 5a, Abdominal tubercle enlarged.

Neocelatoria n. genus.

First vein bristly on its apical two-thirds; face on lower half of sides bare; proboscis scarcely longer than height of head; apical cell ending at wing tip barely open or slightly closed; eyes bare; frontal vitta opaque; palpi subcylindrical; penultimate joint of arista slightly longer than broad; sides of face at narrowest point not nearly one-third as wide as median depression; head at vibrissæ shorter than at root of antennæ; horizontal diameter of occiput above neck less than one-half length of eye. With one or more frontal bristles below base of antennæ. Female with one or two pairs of orbitals. Female with second segment of the abdomen prolonged ventrally into a long setigerous tubercle, quite twice as deep as the fourth abdominal segment.

Neocelatoria ferox n. sp.

Minute, blackish, wings broad, hyaline, Eyes large, occupying nearly two-thirds of the head, each fully as wide as front. Front cinereous, sides nearly parallel. Vertex slightly black. Frontal vitta dark brown, nearly black, occupying about one-third of the front immediately over root of antennæ, gradually widening towards vertex where it occupies fully one-half of the width of front. Entire face including depression cinereous; sides at narrowest part not more than one-tenth as wide as depression; antennæ black, slightly cinereous, almost or quite as long as face. Third joint at least five times as long as second; arista thickened to the middle; second joint slightly longer than broad; post vertical and ocellar bristles strong. Usually two pairs of orbital bristles (in female), frontal bristles descending nearly to tip of second joint; proboscis short, fleshy, black; palpi yellow. Beard and hairs of lower occiput white; vibrissæ on oral margin; oral cavity large, occupying the entire width of face. Facial ridges bristly on more than lower half; thorax black, humeri and median vitta thinly gray pollinose to the transverse suture; posterior to this nearly bare. Abdomen black, shining, somewhat laterally compressed; bases of second, third and fourth segments thinly gray pollinose. First segment without marginals; second segment bearing marginals only; third segment bearing a pair of small discals and marginals; fourth with a marginal row only. Post sutural bristles three; sternopleurals three with some coarse hairs. Scutellum black, bearing three pairs of long marginals, the apical pair the smallest. Abdomen viewed from the side showing a deep, compressed, setigerous prolongation of the second segment, the lower end of which projects considerably below the level of the bottom of hind coxæ. Ovipositor and piercer black, strongly chitinized, slightly compressed laterally, curved forward with its tip ensheathed in the prolongation of the second segment. Legs rather stout, black; middle tibiæ with a single strong bristle on the front side near middle; hind tibiæ not ciliate; wings clear hyaline; hind cross vein nearly rectangular, straight; veins brown; halteres yellow; calypters whitish; length three to four mm.

Described from two females collected at Hyattsville, Maryland, June 4, 1913. Type a female deposited in U. S. National Museum, Washington, D. C. A figure of the abdomen of *Celatoria diabrotica* has been provided for the purpose of comparison (plate I, fig. 3).

NOTES ON THE ENTOMOLOGY OF THE ARIZONA
WILD COTTON.

BY W. D. PIERCE AND A. W. MORRILL.

Arizona wild cotton, *Thurberia thespesioides*, has been under observation for several years, by Prof. J. J. Thornber, of the University of Arizona, who has acquired specimens from many different localities in southern Arizona and has in fact recommended it as a flowering shrub. Possibly it first received attention from an entomological standpoint from one of us (Morrill), when, in August, 1912, in company with Prof. R. H. Forbes, director of the Arizona Experiment Station, several plants were found and examined near Fish Creek on the Roosevelt Road, where the plant had not previously been known to exist. A considerable number of bolls were examined, but no insect injury of any kind was noted. Believing that the cotton boll weevil would attack this as a food plant, a number of the bolls and squares were mailed to the laboratory of the Bureau of Entomology at Dallas, Texas, for testing with live weevils. This material was not received in good condition, however, so the testing of the attraction of the Arizona wild cotton for the typical *Anthonomus grandis* was deferred until the past summer.

The plant assumed economic importance when Mr. O. F. Cook made an announcement in February, 1913, of the finding of the Mexican cotton boll weevil in the bolls in Sabino Canyon, Santa Catalina mountains. This announcement was followed very shortly by the receipt at Washington of a sack of infested bolls from Stone Cabin Canyon, Santa Rita Mountains. Out of a total of 743 bolls, 220 weevil stages were obtained. Of these, 171 were dead but 18 live adults were found in their cells. In the bolls the mortality was provisionally classified as follows:

	<i>per cent</i>
Due to climatic causes.....	65.00
Due to predators.....	2.27
Due to parasites.....	1.82
Due to fungus.....	8.63
Total for all classes.....	77.72