

ing brown ; pile of abdomen erect and largely black. Front and middle femora destitute of bristles. Wings yellowish gray, a hyaline streak in base of marginal cell, a darker gray cloud in apex of first submarginal and along front edge of the second submarginal cell ; stigma and a small spot at base of the second submarginal and of each posterior cell, dark brown ; fourth posterior cell closed and short petiolate.

Length, 10 mm. Washington. Received from C. W. Johnson, and collected by Prof. O. B. Johnson, after whom the species is named.

### SOME NOTES ON MICHIGAN INSECTS, PRINCIPALLY COLEOPTERA, AFFECTING FOREST TREES.

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The following notes were presented to the Entomological Society of Washington, May 1, 1890, under the title of "Some insects affecting certain forest trees." They are herewith somewhat revised and sifted for publication, since the matter which follows is of some value.

The paper furnishes a record of certain insects mostly coleopterous, which I found many years ago in Michigan affecting either the trunks or foliage of forest trees and shrubs and which I have since been able to identify in connection with my notes. All are southern Michigan records, and belong to the vicinity of Constantine. Many coleoptera found under dead bark, but which feed merely on decaying vegetable tissue, have been omitted. Such are *Prionochæta*, *Scaphidium*, *Ditoma*, *Bactridium*, *Melanotus*, *Cis*, *Tenebrioides*, *Melandrya*, *Ułoma*, *Platydemia*, *Penthe*, *Cratoparis*, and many others.

#### COLEOPTERA.

*Brontes dubius*, F.—Under bark of linden (fall) ; elm and butternut logs (May).

*Paromalus aequalis*, Say.—Under bark of decaying butternut and linden logs (May).

*Hister lecontei*, Mars.—In burrows under decaying bark of butternut, elm, and linden.

*Adelocera aurorata*, Lec.—One under bark of old oak log (Jan.)

*Alaus oculatus*, L.—Boring stumps and dead trunks of oak, hickory, poplar and linden.

- Cardiophorus gagates*, Er.—On oak leaves (May).  
*Elater manipularis*, Cand.—Under decaying linden bark (Nov.)  
*Elater nigricollis*, Hbst.—In hickory stump (Oct.); and poplar stump (Dec.)  
*Elater linteus*, Say.—In decaying poplar stump (fall).  
*Elater apicatus*, Say.—In decaying poplar stump (Dec)  
*Agriotes oblongicollis*, Melsh.—On leaves of hazel (May); and beech (May, June).  
*Limonius auripilis*, Say.—On beech foliage (May, June).  
*Limonius basillaris*, Say.—On new oak and beech growth (May, June).  
*Acmæodera culta*, Web.—On cut oak wood (July).  
*Agrilus ruficollis*, F., *otiosus*, Say, *bilineatus*, Web.—On cut oak wood and rails (July).  
*Brachys ovata*, Web.—On foliage of beech and oak (May to July).  
*Brachys aerosa*, Melsh.—Eating oak and hazel leaves (May); leaves of beech, elm, ironwood (*Carpinus*), (May, June).  
*Brachys aeruginosa*, Gory.—On leaves of beech, elm, ironwood (*Carpinus*), (May, June).  
*Thanasimus dubius*, F.—In numbers on piles of oak wood (May). In coitu (May 20).  
*Thaneroclerus sanguineus*, Say.—Under bark oak stumps (Oct.); under bark butternut log (May).  
*Dichelonycha elongata*, Fab.—On leaves of oak (May).  
*Lachnosterna prunina*, Lec.—On foliage of red oak (May, June).  
*Lachnosterna crenulata*, Fröh.—On foliage of red oak (May).  
*Lachnosterna tristis*, F.—Swarming in red oaks (May).  
*Anomala undulata*, Melsh.—Swarming in red oaks (May).  
*Strigoderma arboricola*, F.—On red oaks (May). The last five species occur mostly in the evening.  
*Cotalpa lanigera*, L.—Eating leaves of dwarf willows (*Salix cordata*), (May, June).  
*Parandra brunnea*, F.—Under bark of linden and butternut logs.  
*Smodicum cucujiforme*, Say.—Many specimens found on a white oak fence post, beside small holes in post from which they had emerged (June, July).

- Dorcaschema nigrum*, Say.—On hickory foliage (May, June).
- Goes pulverulenta*, Hald.—Dead beetle found in a cell in cut hickory.
- Liopus alpha*, Say.—On oak rails, and on fence posts under red oak tree (June).
- Lepturges querci*, Fitch.—On oak posts of fence under red oak tree (June).
- Hyperplatys maculatus*, Hald.—Same as preceding.
- Saperda vestita*, Say.—In sapwood, also in bark of dead linden trunk in all stages (May).
- Saperda tridentata*, Oliv.—Beetles and pupæ under bark of elm logs (May).
- Donacia flavipes*, Kby.—Twenty-seven taken on leaves of new oak growth (May 23).
- Chlamys plicata*, F.—On witch hazel (June).
- Exema gibber*, Oliv.—On witch hazel (June).
- Cryptocephalus venustus*, F.—On oak and hickory foliage.
- Pachybrachys othonus*, Say, *carbonarius*, Hald., *infaustus*, Hald.—On oak foliage.
- Noda (Colaspis?) convexa*, Say.—On beech foliage.
- Chrysomela scalaris*, Lec.—On leaves of low sumac, hazel, linden.
- Chrysomela multipunctata*, Say. var. *bigsbiana*, Kby.—On leaves of low sumac (*Rhus*).
- Lina lapponica*, L.—In numbers eating leaves of dwarf willow (*S. cordata*), (May, June).
- Blepharida rhois*, Forst.—On low sumac.
- Haltica inarata*, Lec.—On foliage of ironwood (*Carpinus*), beech and elm (May, June).
- Odontota rubra*, Web.—On beech, elm and oak foliage (May, June).
- Diaperis hydni*, F.—Twenty-five or thirty taken, Feb. 16, in groups in small passages in the inner wood of an old oak stump. Also found in same places later in the spring. When disturbed, they emit a yellowish

fluid which stains the skin, has a pungent odour, and turns alcohol to a crimson colour. The heads and legs of some worker termites dropped in the same alcohol became of a deep violet colour, but the heads of soldier termites, from their harder integument, remained unstained. These beetles exhibited considerable variation in the disposition of the black markings on their orange-red elytra. I could find no communication with their galleries from the outside. Their social hibernation is interesting.

*Synchroa punctata*, Newm.—Beetles and pupæ under bark of linden and elm logs (May).

*Attelabus analis*, Illig., *bipustulatus*, F., *rhois*, Boh.—On leaves of young hickory.

*Magdalis arnicollis*, Say.—On elm foliage (June).

*Anthonomus cratægi*, Wlsh.—On beech foliage.

*Mononychus vulpeculus*, F.—On witch hazel (June).

*Cæliodes acephalus*, Say.—On witch hazel (June).

*Balaninus nasicus*, Say, *rectus*, Say.—Very numerous under an isolated red oak (Sept. 15 to 22 only).

*Eupsalis minuta*, Drury.—In dead oak and linden.

*Cossonus platalæa*, Say.—Fifty-four taken under bark of an old butter-nut log (May).

Determinations of above coleoptera were made by Dr. Horn and Mr. Schwarz.

LEPIDOPTERA.—A sesiid (*Sannina*, sp.?) was bred from large knotty galls common on trunks of red oaks. These are rough excrescences of the bark and wood, frequently attaining a diameter of several feet. The moths are about the size of *S. acerni*.

DIPTERA.—The pine-cone gall of *Cecid. s.-strobiloides*, O. S., occurs commonly on *Salix cordata* (June, July). It remains conspicuous through the winter, when these shrubs are otherwise bare.