THE WEEVILS OF VICTORIA COUNTY, TEXAS.

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Since the advent of the boll weevil (*Anthonomus grandis* Boheman) into Victoria County in 1894 many records have been made upon the weevils of the county. This county is very interesting from an entomological standpoint because of its great diversity of floral regions and the blending of eastern and western faunas. In addition to being able to present herewith an interestingly large list of weevils from a limited region, we are able to give biological notes on most of the species. Many of these records are here for the first time published and some have an important bearing upon the knowledge of our economic weevils. We believe that the possession of this useful knowledge warrants us in presenting a seemingly local list of insects. The senior writer, who has been a resident of Victoria for many years, is responsible for most of the original observations on the weevils. The junior writer has been familiarizing himself more or less with Victoria conditions since 1904 and is responsible for the determinations, arrangement, and description of the new species, as well as for the authenticity of the parasite records. The records have been made by the following agents of the Department of Agriculture: R. A. Cushman, W. E. Hinds, C. E. Hood, W. D. Hunter, C. R. Jones, A. McLachlan, J. D. Mitchell, A. C. Morgan, F. C. Pratt, W. D. Pierce, E. A. Schwarz, C. M. Walker, W. W. Yothers.

Victoria County is situated in central southern Texas, about 25 miles from the Gulf of Mexico, on the dividing line between the Austroriparian or humid division and the Lower Sonoran or semi-arid division of the Lower Austral life zone. It has an altitude of 90 to 200 feet above sea level. The Guadalupe River divides the county into nearly equal parts, eastern and western. The northwestern quarter of the county is sandy and well timbered with oaks; the northeastern quarter is a rolling sandy prairie with the Arenosa for its eastern border; the southeastern quarter is a level black prairie; and the southwestern quarter is a rolling black prairie bordered on the south and west by the San Antonio River. The county is drained by many creeks and branches, principal among which are the Garcitas, Placedo, and Colletto. The rich valley of the Guadalupe extends through the county and is about half a mile wide at the northern end and 2 miles at the southern end. Many bayous and sloughs, old beds of the

river, traverse the valley, especially in its southern part, and are margined with a large variety of water and marsh vegetation.

The Austroriparian flora of the county is of three types—the oak belt, the river woodlands, and the marsh lands. In other words, it contains both mesophytes and hydrophytes. The Lower Sonoran flora is all xerophytic and either prairie or chaparral brush. Of course there are many transition areas where the timber of the two floras is intermingled. The trees of the river valleys include *Populus deltoides*, *Salix*, *Hicoria pecan*, *Quercus breviloba*, *Q. marilandica*, *Q. macrocarpa*, *Q. minor*, *Q. virginiana*, *Ulmus*, *Celtis*, *Morus*, *Cratægus mollis*, *Prunus*, *Gleditsia triacanthos*, *Bumelia lanuginosa*. *Tillandsia usneoides*, the Spanish moss, and mistletoe (*Phoradendron flavescens*) are common on the bottom-land timber. Among the mesophytic weeds and shrubs are to be included *Rubus*, *Cassia occidentalis*, *Cardiospermum halicacabum*, *Callirrhoe involucrata*, *C. lineariloba*, *Ipomœa sinuata*, *Convolvulus*, *Cuscuta*, *Solanum rostratum*, *Iva ciliata*, *Ambrosia psilostachya*, *A. trifida*, *Xanthium*, *Rudbeckia amplexicaulis*, *Helianthus*, *Verbesina virginica*. Of the hydrophytes the following require mention: Wild rice, joint-grass, *Cyperus virens*, *Rynchospora corniculata*, *Polygonum*, *Ludwigia natans*, *Pluchea camphorata*.

The commonest crops are cotton (*Gossypium hirsutum*), corn (*Zea mays*), canteloupes (*Cucumis melo*), and sweet potato (*Ipomœa batatas*). Pecans (*Hicoria pecan*) are grown very extensively, as are also figs (*Ficus*), and peaches (*Amygdalis perscia*). The chinaberry tree (*Melia azedarach*) is very common in yards, and the palma christi bean (*Ricinus communis*), is also an introduced plant.

The Lower Sonoran flora comprises the following chaparral timber: *Ehretia elliptica*, *Acacia rœmeriana*, *Vachellia farnesiana*, *Prosopis glandulosa*, *Zanthoxylum clavaherculis* (planted along fences), *Guajacum angustifolium*, with the characteristic bunch mosses, *Tillandsia baileyi* and *T. recurvata*. The prairie vegetation comprises *Yucca*, *Cassia chamæchrista*, *Croton capitatus*, *C. engelmanni*, *Opuntia* spp., *Euphorbia marginata*, *Solanum eleagnifolium*, *S. rostratum*, *Amphiachyris dracunculoides*, *Leucosyris spinosa*, *Carduus spinosissimus*.

On the following pages we present a list of the weevil records for the county.

ANTHRIBIDÆ.

Ormiscus fissunguis Le Conte (?) (**Gonops**).

A species of *Ormiscus* very close to *fissunguis* has been taken April 16, 1908 on *Xanthium* sp. (Mitchell); April 23, 1907 (Hinds); July 15, 1907 (Mitchell) bred from *Xanthium* stem April 7, 1908.

Euparius lunatus Fabricius (**Cratoparis**).

By river bottom near town, October, 1904; November 4, 1908 (Hunter); under bark, November 27 (Mitchell); November 19 (Pratt). It generally breeds in white tree-fungus.

Brachytarsus sp.

Breeding in beans of *Guajacum angustifolium*, February 14, 1907, Mission Valley (Mitchell).

Brachytarsus limbatus Say.

On *Rudbeckia amplexicaulis* April 23, 1907 (Cushman).

Toxotropis fasciatus Le Conte.

On dead branches of *Celtis*, March and April (Schwarz).

Aræcerus fasciculatus De Geer.

The ubiquitous coffee-bean weevil breeds abundantly in china berries (*Melia azedarach*) May 13, 1907 (Cushman); in palma christi beans (*Ricinus communis*); in corn (*Zea mays*); stalks and stems of various weeds; and in pods of huisache (*Vachellia farnesiana*), July 22 (Mitchell). Bred from old cotton bolls October 22, 1910 (Mitchell). The weevils in china berries are abundantly parasitized by *Cerambycobius cushmani* Crawford, and *Eurytoma tylodermatis* Ashmead (Pierce).

CURCULIONIDÆ (SENSU LATIORE).

CYLADINÆ.

Cylas formicarius Fabricius.

The sweet potato weevil is found commonly in Victoria County and is the great pest of the sweet potato (*Ipomœa batatas*) crops. It breeds natively in the roots of a *Convolvulvus* sp., commonly known as "tie-vine," in which it has been taken in all three stages in January. The weevil breeds in the sweet potato tubers in the field and continues its work all winter in the stored roots, until every potato is honeycombed with its cells. The larvæ give the potatoes a bitter flavor, rendering them unfit for food, even for hogs. The dult is a slow insect and is dependent largely upon the assistance of man for transportation to new territory.

APIONINÆ.

Apion aculeatum Fall.

Bred from flower-head of huisache (*Vachellia farnesiana*), March 17, 1908 (Mitchell).

Apion æneipennis Smith.

On *Helianthus*, October 16, 1907 (Mitchell).

Apion impunctistriatum Smith.

On *Rudbeckia amplexicaulis*, April 8, 29, 1907 (Mitchell); May 13 (Morgan).

Apion occidentale Fall.

On *Helianthus*, April 8, 1907; April 12 (Mitchell).

Apion subornatum Fall.

Feeding on black chaparral (*Acacia rœmeriana*), and breeding in the pods, March 26, 1908 (Mitchell).

Apion subcinctum Fall.

September 16, 1907; November 15, 1906 (Mitchell).

TANYMECINÆ.

Tanymecus confertus Gyllenhal.

On *Ambrosia psilostachya*, April 30, May 13 (Morgan).

BRACHYDERINÆ.

Compsus auricephalus Say.

On *Phoradendron flavescens*, March 8, 1909 (Mitchell); April 15, 1903; on *Ambrosia*, April 30 (Morgan); on cotton (*Gossypium*), May 10, November 24 (Hinds); on *Ambrosia*, June 4, 1905; on *Acacia*, July 8, 1907 (Mitchell); July 16, 1906 (McLachlan); November 15, 1903.

Mitostylus tenuis Horn.

Feeding in large numbers on *Amphiachyris dracunculoides*, October 14; November 14, 1906 (Mitchell).

Epicærus sulcatus Casey (?).

Feeding on bloom of *Acacia rœmeriana*, March 26, 1908 (Mitchell).

Epicærus texanus Casey.

On *Iva ciliata*, March 14, 1908; March 15, 1907 (Mitchell); on *Ambrosia*, April 30, May 13 (Morgan); June 4, 1905, July 22, 1907 (Mitchell); on cotton (*Gossypium*) November 1, 1902 (Hinds).

Artipus texanus, n. sp., Pierce.

Light gray with brown vittæ on median line and sides, of the size and shape of *floridanus;* surface covered with rounded ochreous, and truncate white scales. Length 5 to 6.5 mm. Beak quadrate, slightly narrowed to tip, shallowly emarginate at tip, with median impressed line, surface flat continuous with front; scrobes narrow and deep, passing beneath in front of eyes. Funicular joints elongate, the first and second subequal and twice as long as any of the following joints. Eyes convex, prominent. Prothorax cylindrical, a little wider than long, base and apex truncate, sides very feebly convex, forming with the head and beak almost a straight line from middle of prothorax to tip of beak; disk very minutely punctate; scaly vestiture even darker on median line. Elytra oval, without humeri; striæ barely indicated, punctures fine, bearing slender squamules; scaly vestiture even, with the ochreous and white scales evenly mixed, with brown scales on the median line and on the sides forming three narrow vittæ, edges of elytra ochreous. Undersides clothed as above, but with the white scales more elongate. Second abdominal segment barely as long as the two following segments.

Described from two specimens collected at Victoria, Texas, October 14, 1906, and November 10, 1907, by J. D. Mitchell.

Type: In U. S. National Museum, Cat. No. 13546.

The two species of *Artipus* may be distinguished by the following characters:

1. Scrobes broad; beak deeply triangularly emarginate, with an apical lunular scaly area inclosed by a transverse ridge; second abdominal plainly longer than the two following segments ..... *floridanus* Horn
2. Scrobes narrow; beak shallowly emarginate, without transverse apical ridge; second abdominal barely as long as the two following segments..... *texanus* n. sp. Pierce

Aramigus tesselatus Say.

On weeds, July 15, 1905 (Mitchell).

Phacepholis elegans Horn.

On cotton (*Gossypium*) April 27, 1904 (Walker).

PACHYRHYNCHTIÆ.

Pandeleteius cavirostris Schaeffer.

On anachua tree (*Ehretia elliptica*), April, 1905 (Mitchell); on *Cratægus*, April 22, 1907 (Cushman); April 23, 1907; June 19, 1907 (Mitchell).

Pandeleteius ovipennis Schaeffer.
October 25, 1907 (Mitchell and Jones).

OTIORHYNCHINÆ.

Achrastenus griseus Horn.
On *Quercus*, March 26, 1908 (Mitchell).

PROMECOPINÆ.

Eudiagogus pulcher Fahræus.
Eudiagogus rosenschoeldi Fahræus.

These two species are always found in this county in abundance upon senna (*Cassia occidentalis*), which grows abundantly in the lowlands and on the prairies. They appear in such great abundance that they quickly defoliate the senna. Have also observed them defoliating prickly ash (*Xanthoxylum clavaherculis*). They hibernate around the roots, and sometimes just under the ground around the senna plants; also under bark of live oak trees (*Quercus virginiana*), and in hollow twigs of dead *Xanthoxylum* (Mitchell).

RHYTIRHININÆ.

Thecesternus albidus Pierce.
Crawling on margin of ditch at Point Comfort, Calhoun County, June, 1902; crawling on ground at margin of water hole November, 1902, Victoria (Mitchell).

HYPERINÆ.

Listronotus callosus Le Conte.
June 18, 1904 (Walker).

Listronotus obliquus Le Conte.
Caught at light, City Hall, September, 1904 (Mitchell).

Listronotus rotundicollis Le Conte.
On cotton (*Gossypium*) May 23, 1904 (Walker); (Mitchell).

Hyperodes echinatus Dietz (**Macrops**).
September 16, 1907 (Mitchell); on *Ludwigia natans*, June 29, 1909 (Mitchell).

Hyperodes humilis Gyllenhal (**Macrops**).
At trap lantern in cotton field, October 1, 1897 (Mitchell); November 15, 1906 (Mitchell).

Hyperodes obscurellus Dietz (**Macrops**).
Seven specimens at trap lanterns in cotton field, October 1, 1897 (Mitchell).

Hyperodes vittaticollis Kirby (**Macrops**).

On cotton (*Gossypium*) April 8, 1904 (Walker).

Hyperodes ulkei Dietz (**Macrops**).

April 23, 1907 (Mitchell).

CLEONINÆ.

Lixus musculus Say.

November 1, 1907 (Mitchell). Bred from *Polygonum punctatum* and *P. portoricense* stems. September 20, 1910 (Mitchell).

Lixus scrobicollis Boheman.

Breeds abundantly in the stems of *Ambrosia trifida*, mating in July, breeding from thence on, and hibernating in the cells in the stems (Mitchell). Breeding in stems of *Verbesina virginica*, June 11, 1907 (Cushman); December 29, 1908 (Mitchell). On April 1, 1905, Dr. W. E. Hinds, isolated 15 parasites of this weevil found in stems of *Ambrosia psilostachya*, which proved to be *Glyptomorpha rugator* Say and *Horismenus lixivorus* Crawford. From a lot of stems collected December 12, 1908 (Mitchell and Cushman), 154 parasites were isolated and bred out during the following spring. These parasites were *Horismenus lixivorus* Crawford, *Glyptomorpha rugator* Say, *Cerambycobius cyaniceps* Ashmead, *Neocatolaccus tylodermæ* Ashmead, *Eurytoma tylodermatis* Ashmead, and *Sigalphus curculionis* Fitch. During the winter of 1909-1910, 439 parasites were isolated (Mitchell), which belonged to these same species, and also a few specimens of *Ptinobius magnificus* Ashmead (Pierce).

ERIRHININÆ.

Dorytomus parvicollis Le Conte.

Bred from willow (*Salix*) catkin, March 6, 1908; at light May 4, 1905 (Mitchell). Bred *Sigalphus curculionis* Fitch, April 11 (Pierce).

Lissorhoptrus simplex Say.

The rice weevil has been taken on *Baptisia*, March 30, 1905 (Hinds); breeds in the roots of rice (*Oryza sativa*) and other water vegetation; flies to light (Mitchell).

Endalus aeratus Le Conte.

At trap lantern in cotton field, October 1, 1897 (Mitchell); May 30, 1905 (Yothers).

Endalus setosus Le Conte.

Four specimens at trap lantern in cotton field, October 1, 1897 (Mitchell).

Pachyphanes discoideus Le Conte.

At trap lantern in cotton field, October, 1, 1897 (Mitchell).

Pachyphanes corpulentus Le Conte.

On *Helenium* sp., October 28, 1907 (Mitchell).

Pachyphanes triangularis Dietz.

On *Rudbeckia amplexicaulis*, April 23, 29, 1907; May 19, 1907 (Mitchell).

Pachyphanes amœnus Say.

On weeds, August 1905 (Mitchell).

Desmoris constrictus Say.

August 31, 1907; on *Helianthus*, September 8, 1907 (Mitchell).

Smicronyx corniculatus Fabricius.

August 19 (Hinds).

Smicronyx spretus Dietz.

On cotton (*Gossypium*) April 26, 1904 (Hinds).

Smicronyx tychoides Le Conte.

On *Cuscuta*, July 21, 1910 (Mitchell and Pierce); breeding in stem galls on *Cuscuta*, August 1, 1906 (Morgan) and parasited by *Eutrichosoma albipes* Crawford (Pierce).

OTIDOCEPHALINÆ.

Otidocephalus carinicollis Horn.

On *Callirrhoe involucrata*, March 27, 1908 (Mitchell).

Otidocephalus chevrolatii Horn.

Breeding in walls of twig galls formed by *Amphibolips* on live oak (*Quercus virginiana*) March 15-17, 1907, Jackson County; also found in Victoria (Mitchell).

MAGDALININAE.

Magdalis barbita Say.

In dry bark of elm (*Ulmus*) log, February 12, 1907, Stearn's Pasture (Mitchell and Yothers).

BALANININÆ.

Balaninus pardalis Chittenden.

September 29, (auth. Chittenden).

Balaninus parvidens Chittenden.

September, October (auth. Chittenden).

Balaninus victoriensis Chittenden.

Took 1,129 specimens at trap lantern in cotton field, October 1, 1897. Caught in large numbers in fire traps set for cotton boll weevil in July, 1903. On October 2, 1904, gathered 167 acorns of live oak (*Quercus virginiana*). The larvæ began to come out October 7 and continued emerging until October 14, when 266 larvæ had issued. They were placed in jars in loose earth and immediately began to burrow, going down 3 to 5 inches. Seventeen larvæ formed cells against the glass, where they could be observed. Half of the jars were kept indoors and half outdoors. On March 7, 1905, the larvæ were noticed moving, and exhibited the first signs of pupation. On March 15, the first pupa was observed. The pupæ formed almost simultaneously in the jars indoors and outdoors; they moved around a great deal in their cells. Adults began to be observed April 2. On April 22 put in leaves of white elm, ash, rose; the weevils fed heartily on the elm leaves and then went to sleep. They sleep with the bill and feet curled up as if dead. From another lot of acorns collected in October, 1904, the larvæ emerged in November, were pupating between June 23 and 30, 1905, and first became adult July 1. Specimens from black jack (*Quercus marilandica*) acorns collected October 29, 1905, matured in June, 1906. Specimens from live oak (*Quercus virginiana*) acorns collected November 5, 1906, were pupæ April 29, 1907, and adult May 26. This weevil has been found breeding also in post oak (*Quercus minor*) and pin oak (*Quercus breviloba*). As many as three larvæ have been found in a single acorn. While the larvæ usually leave the acorns in October and November, some will emerge in September and some in December. The pupal cell is not formed until spring after the winter sleep is over. They pupate in April and May, and become adult in May and June. They feed once in every four or six days, preferring oak leaves. Between meals they curl up and sleep in some hiding place. Active life begins in August (Mitchell).

ANTHONOMINÆ.

Tachypterellus quadrigibbus Say.

The apple weevil larvæ are found in fruit of red haw (*Crataegus mollis*); found larvæ April 23, 1907, pupated April 30, and

matured May 7, passing all stages in the haw (Mitchell). This lot was parasitized by *Catolaccus incertus* Ashmead, and two unknown parasites (Pierce).

Macrorhoptus estriatus Le Conte.

On blooming anachua tree (*Ehretia elliptica*), April 19, 1905; feeding on *Callirrhoe*, April 30, 1905; it has since been found to breed in the pods of *Callirrhoe* (Mitchell).

Coccotorus scutellaris Le Conte.

Breeding in plums (*Prunus*), June 11, 1907 (Hood).

Anthonomus æneolus Dietz.

Breeds in the buds of *Solanum* spp.

Anthonomus albopilosus Dietz.

Larvæ in seeds of *Croton capitatus*, May 5, 1907, pupæ May 10, adults May 24 (Mitchell); on cotton (*Gossypium*) June 5, 1904 (Goes); breeding in seed of *Croton capitatus* and *C. engelmanni*, September 6, 1906 (Mitchell), and parasitized by *Bracon mellitor* Say (Pierce).

Anthonomus callirrhoe Pierce.

Breeding in the small buds of *Callirrhoe involucrata*, March 16, 1908 (Mitchell); on *Carduus spinosissimus*, April 17, 1907 (Hinds); on cotton (*Gossypium*), May 2, 1905 (Yothers).

Anthonomus fulvus Le Conte.

Larvæ in buds of *Callirrhoe involucrata*, March 4, 1907, pupæ March 17, adult April 1; April 23, 1907 (Mitchell); April 28 to May 15, 1906, on *Callirrhoe involucrata* (Morgan); in flowers of *Callirrhoe lineariloba*, May 21, 1905 (Mitchell).

Anthonomus grandis Boheman.

The cotton boll weevil first made its appearance in Victoria County in 1894, and has seriously injured cotton (*Gossypium*) culture ever since. In the winter of 1903-04 larvæ were found alive until February 7, 1904, and pupæ as late as February 14 (Mitchell). The following insects have been found to be enemies of the boll weevil at Victoria: *Bracon mellitor* Say, the most important parasite in south Texas; *Catolaccus hunteri* Crawford, also a good parasite; *Catolaccus incertus* Ashmead, equally good; *Cerambycobius cushmani* Crawford, attacking the weevil in great quantities some years; *Cerambycobius cyaniceps* Ashmead, less common; *Ectatomma tuberculata* Olivier, the Guatemalan kelep, which was unsuccessfully introduced as a predatory enemy, was first brought to Victoria; *Eurytoma*, new species, rare; *Eurytoma tylodermatis* Ashmead, a valuable parasite; *Hydnocera pubescens* Le Conte, a rather common

predator on the immature stages; *Lariophagus texanus* Crawford, rather rare parasite; *Microdontomerus anthonomi* Crawford, not very common parasite; *Pediculoides ventricosus* Newport, a parasitic mite; *Spilochalcis* sp., rare; *Stagmomantis limbata* Hahn, a predator on the adult weevil; *Tyroglyphus breviceps* Banks, a parasitic mite (Pierce).

Anthonomus ligatus Dietz.

Breeding in stem galls on *Leucosyris spinosus*, a very common weed in this county, October 14, 1906 (Mitchell).

Anthonomus rufipennis Le Conte.

Bred from *Cassia chamæcrista*, August 9, 11, 1909 (Mitchell).

Anthonomus signatus Say.

The strawberry weevil breeds in buds of blackberry and dewberry (*Rubus* sp.) (Mitchell).

Anthonomus texanus Dietz.

November 6, 1906 (Mitchell).

Tachyerges niger Horn (**Orchestes**).

On willow (*Salix*) (Mitchell).

Elleschus ephippiatus Say.

Common under fallen willow leaves during winter (Schwarz).

TYCHIINÆ.

Tychius species.

Breeding in flower-heads of huisache (*Vachellia farnesiana*), March 17, 1908 (Mitchell).

Tychius sordidus Le Conte.

March 25, 1904 (Walker); from flowers of *Baptisia cuneata*, March 29, 1905 (Mitchell); breeding in seed-pods of *Baptisia*, May 23, 1905; larvæ emerged from pods until June 1, pupate in ground.

CRYPTORHYNCHINÆ.

Conotrachelus anaglypticus Fahræus.

June 11, 1903 (Hinds).

Conotrachelus affinis Boheman.

Larvæ in fallen pecans (*Hicoria pecan*), July 12, 1909; adults August 19–22, parasitized by *Sigalphus curculionis* Fitch (Mitchell).

Conotrachelus cratægi Walsh.

Larvæ in fruit of *Cratægus mollis* October 15, 1907; adults April 18, 1908 (Mitchell).

Conotrachelus elegans Boheman.

The pecan gall weevil was found on *Verbesina virginica*, April 5, 1907 (Cushman); deposits eggs in galls of *Phylloxera devastatrix* on leaves of pecan (*Hicoria pecan*); found larvæ in the galls April 23, 1907; larvæ entered ground April 30; adults May 7; also bred adults as late as May 24 from other lots; found larvæ in young green blasted pecans; entered ground July 11; adult July 14 (Mitchell). From the weevils in galls, *Sigalphus curculionis* Fitch, *Myiophasia ænea* Wiedemann, and *Eurytoma tylodermatis* Ashmead, were bred (Pierce).

Conotrachelus erinaceus Le Conte.

On cotton, September 14, 1907 (Mitchell).

Conotrachelus leucophæatus Fahræus.

On cotton (*Gossypium*) May 2, 1904 (Hinds); on a ripe fig (*Ficus*), July 20, 1905 (Mitchell); it normally breeds in the stems of *Euphorbia marginata*, a common weed in the Guadalupe bottoms (Pierce).

Conotrachelus naso Le Conte.

At trap lantern in cotton field, October 1, 1897; gathered a pint of acorns of pin oak (*Quercus breviloba*) at Pridham's Lake, October 15, 1904, larvæ issued November 1, began to change to pupa March 13, 1905, first perfect pupa March 21, adults April 4; gathered 167 acorns of live oak (*Quercus virginiana*) at Sutton Mott, October 2, 1904, from which up to October 14, 266 larvæ issued; in ground 150 to 200 days; taken at light at City Hall, September, 1904; larvæ in acorns of post oak (*Quercus minor*), November 11, 1905, adult June, 1906; have also found the species breeding in black jack (*Quercus marilandica*) acorns; it works side by side with *Balininus victoriensis*, and has substantially the same developmental periods; as many as 7 larvæ have been found in a single acorn; the summer sleeping and feeding habits are the same as those described for *Balaninus victoriensis* (Mitchell).

Conotrachelus nenuphar Herbst.

Gathered a dozen wild plums (*Prunus*) stung by this weevil, May 18, 1905,; six larvæ emerged May 26 to June 2, first larva began to pupate June 13; five pupæ became adult June 20 (Mitchell); September 1, 1903 (Hinds). It breeds at Victoria in both wild and cultivated plums and in peaches. It is sometimes a very serious pest.

Conotrachelus posticatus Boheman.

July 14, 1905.

Conotrachelus similis Boheman.

Breeds in the fruit of *Bumelia lanuginosa*, August 6, 1907 (Mitchell). Bred one male braconid from this lot.

Rhyssematus palmacollis Say.

Three specimens on sweet potato (*Ipomœa batatas*) on Mitchell farm, May 27, 1903; larvæ in seed of *Ipomœa sinuata*, July 12, 1907, entered ground July 21, adults August 13 (Mitchell).

Chalcodermus collaris Horn.

On cotton, May 9, 1904 (Walker); on *Cassia chamœchrista* flowers, banks Dry Creek, July 8, 1905, October 25, 1907 (Mitchell).

Chalcodermus vittatus Champion.

Breeding in the seed of balloon vine (*Cardiospermum halicacabum*), September 17, 1907 (Mitchell); larvæ October 8, 1907, adults December 2 (Mitchell and Cushman).

Gerstæckeria nobilis Le Conte (**Acalles**).

On *Opuntia*, April 17, 1908; breeds in flat cells in the joints of broad-leafed species of *Opuntia* (Mitchell).

Tyloderma baridium Le Conte.

April 10, June 1, 1907 (Mitchell).

Tyloderma foveolatum Say.

On flowers, Voit's pasture, May 28, 1905 (Mitchell).

Tyloderma subpubescens Casey.

November 19, (Pratt); bred from *Polygonum punctatum*, September 24, 1910 (Mitchell).

Cryptorhynchus fallax Le Conte.

Breeding in dry stems and stumps of *Cassia occidentalis*, in all stages, March 17, 1909 (Mitchell).

Cryptorhynchus obtentus Herbst.

Not rare in winter time under loose bark of felled trees (Schwarz).

Acamptus rigidus Le Conte.

In red-rotten wood of *Populus*, March 15 (Schwarz).

ZYGOPINÆ.

Cylindrocopturus adspersus Le Conte.

Bred from stems of *Xanthium* March 30, 1908; bred from stems of *Helianthus*, May 3, 1908; July 31, 1907 (Mitchell). Breeding in the stems of *Ambrosia trifida*, December 12, 1908 (Mitchell) and parasitized by *Cerambycobius cyaniceps* Ashmead, *Horismenus lixivorus* Crawford, and an undetermined braconid (Pierce). Breeding in the stems of *Xanthium*, December 12, 1909 (Mitchell) and parasitized by *Cerambycobius cushmani* Crawford and a braconid (Pierce).

Cylindrocopturus longulus Le Conte.

Bred from the stems of *Iva ciliata* May 3, 1908 (Mitchell), October 9, 1907 (Mitchell and Cushman). Parasitized during winter by *Cerambycobius cyaniceps* Ashmead, *Cerambycobius cushmani* Crawford, *Eurytoma tylodermatis* Ashmead, *Neocatolaccus tylodermæ* Ashmead, and a braconid (Pierce).

Cylindrocopturus mammillatus Le Conte.

Bred from the stems of *Verbesina virginica*, June 11, 1907 (Mitchell). Bred from stems of *Eupatorium alternifolium*, September 17, 1910 (Mitchell).

CEUTORHYNCHINÆ.

Acanthoscelis griseus Dietz.

May 3, 1907 (Mitchell).

Craponius inæqualis Say.

Beaten from grape-vines, April 4 (E. A. Schwarz).

Auleutes nebulosus Le Conte.

On seed of joint-grass in marshy place July 11, 1905; August 1905 (Mitchell).

Auleutes tenuipes Le Conte.

August, 1905 (Mitchell).

Rhinoncus pyrrhopus Boheman.

Breeds in *Polygonum*, Miracle Mud Marsh, larvæ June 21, 1909, adults July 1 (Mitchell). Parasitized by *Cerambycobius* (Pierce).

Rhinoncus longulus Le Conte.

August, 1905 (Mitchell).

Perigaster cretura Herbst.

Breeds on the leaves of water purslane (*Ludwigia natans*). The larvæ are first noticed near the bud; they feed externally on

the foliage, exuding a sticky substance which holds them to the leaf; as they grow they work down the stem; when grown a dark shell grows over their back and finally covers them; they pupate in this cell (Mitchell).

BARIDIINÆ.

Baris ærea Boheman.

November 15, 1906 (Mitchell); November 18 (Pratt).

Baris subovalis Le Conte.

August 2, 1906 (Crawford).

Baris transversa Say.

On *Ambrosia* May 29, 1905 (Mitchell); May 30, 1905 (Yothers).

Onychobaris subtonsa Le Conte.

On *Ambrosia*, May 29, 1905 (Mitchell).

Madarellus undulatus Say.

November 3 (Schwarz).

Trichobaris texana Le Conte.

On cotton (*Gossypium*) April 20, 1904 (Walker); July 22, 1905 (Mitchell); breeds very commonly in the stems of *Solanum rostratum*. From a lot of infested stems of *Solanum rostratum* collected December 15, 1908 (Mitchell) there were bred during January, February, and March, 1909, many *Cerambycobius cushmani* Crawford, *Neocatolaccus tylodermæ* Ashmead, *Cerambycobius cyaniceps* Ashmead, *Eurytoma tylodermatis* Ashmead. During the winter of 1909–10, Mr. Mitchell isolated 424 parasites belonging to these four species (Pierce).

Stethobaris species.

September, 1905 (Mitchell).

Geræus albotectus Casey (**Centrinus**).

July 8, 1907, on *Acacia* (Mitchell).

Geræus penicellus Herbst (**Centrinus**).

On seed heads of joint-grass July 15, 1905 (Mitchell).

Geræus picumnus Herbst (**Centrinus**).

August, 1905 (Mitchell).

Odontocorynus denticornis Casey (**Centrinus**).

On seed heads of joint-grass, July 11, 1905 (Mitchell).

Odontocorynus scutellum-album Say (**Centrinus**).

Feeding on trailing mallow (*Callirrhoe lineariloba*), May 21, 1905, Stern's Pasture (Mitchell).

Limnobaris punctigera Le Conte.

In cotton field, September 1, 1902 (Hinds).

Barinus albescens Le Conte.

Breeds in stems of *Cyperus virens*, near the roots, July 19, 1909 (Mitchell).

Barinus squamolineatus Casey.

Breeding in the roots of *Rynchospora corniculata*, April 24, 1909 (Mitchell).

Zygobaris xanthoxyli Pierce.

Breeding in the seed of *Xanthoxylum clava-herculis*, July, 1910 (Mitchell and Pierce).

CALANDRINÆ.

Rhodobænus tredecimpunctatus Illiger.

On *Ambrosia*, April 30 (Morgan); May 13 (Morgan); breeding in *Helianthus* stalks, May 25; on *Ambrosia*, May 29 (Mitchell).

Sphenophorus compressirostris Say.

Found seven crawling on edge of ditch at Point Comfort, Calhoun County, June, 1902; they were mating when taken (Mitchell).

Sphenophorus ludovicianus Chittenden.

March 28, 1907 (Jones); April 8, 1907 (Mitchell); August 10, 1906 (Cushman); makes cells under logs in winter; is known as the chicken weevil because it is thought to kill chickens which try to eat it by getting stuck in their throats (Mitchell).

Sphenophorus pertinax Olivier.

Caught in cotton fields, rare (Mitchell).

Calandra oryza Linnæus.

Besides stored grain have found it breeding in overcup or bur oak acorns (*Quercus macrocarpa*). also found breeding in live oak acorns, November 12, 1909. Have found as many as 27 larvæ and pupæ in one acorn. Have also found them feeding on ripe peaches (*Amygdalis persica*), figs (*Ficus*), cantaloupes (*Cucumis*), and the pollen of many wild flowers. It is liable to be anywhere. Have collected them from oaks (*Quercus*), cot-

tonwood (*Populus deltoides*), hackberry (*Celtis*), pecan (*Hicoria pecan*), locust (*Gleditsia triacanthos*), and mulberry (*Morus*) trees. In October and November, 1907, while collecting boll weevils for hibernation, large numbers of this weevil were found in cotton fields near Victoria. They were in the cotton (*Gossypium*) squares and often associated with the boll weevil. In 1860 on the plantation in Lavaca County, Texas, we built a crib 8 feet in the ground, walled up with rock, and 8 feet above ground of logs. When this crib was opened in the spring, it was found that the weevil had severely injured the corn (*Zea mays*) above the ground, while that which was below the surface was entirely free of weevil. In 1859, Mr. B. Q. Ward, of Jackson County, piled 100 bushels of corn on the ground, covered it with hay, then put 1 foot of earth over all, heaping it to a point for drainage. When opened in the spring not a sound grain was to be found. In the winter of 1895, when the temperature went to 10 degrees above zero, and again in 1899, when it went to 6 degrees above zero, all the weevils in my barn at Victoria were killed. The corn was in the second story of a wooden building. As a rule weevils get into corn in the field before it is gathered. Mild winters and wet summers are conducive to the increase of the weevil, while cold winters and dry summers hinder it. Have seen corn gathered in September and October so heavily infested that by January it was unfit to feed to stock. It is seldom that corn can be kept in cribs in southern Texas later than May on account of the damage of weevils (Mitchell). Bred from stems of *Ambrosia trifida* March 24, 1909 (Mitchell).

COSSONINÆ.

Parahornia quercicola Horn.

Found in large numbers in decayed willow (*Salix*) log, on bank of Guadalupe River near town, February 12, 1910. They were in cells, tunnels, and chambers made by large wood beetles; some had just matured. They did not leave the log until after March 2 (Mitchell),.

Pseudopentarthrum robustum Casey.

In cell of dead limb of mulberry (*Morus*), March 3, 1910 (Mitchell).

IPIDÆ.

Ips pini Say.

At trap lantern in cotton field, October 1, 1897 (Mitchell). (Undoubtedly carried in by the railroads.)

Hypothenemus, new species, Hopkins.

In old corn (*Zea mays*) stalks, March 6, 1909 (Mitchell).

Hypothenemus species.

In huisache (*Vachellia farnesiana*) pods, April 22, 1907 (Mitchell); on *Cratægus*, April 22, 1907 (Cushman).

Stephanoderes, new species, Hopkins.

In corn (*Zea mays*) stalks, March 6, 1909 (Mitchell).

NOTES ON PTEROSTICHUS JOHNSONI ULKE.

By C. V. Piper.

Pterostichus johnsoni was first collected in July, 1878, by Prof. O. B. Johnson, on Mill Creek, near Mehama, Oregon. He found but three specimens, crawling over wet moss on boulders in a cool, shady canyon. Though he searched for it many times again in likely places, he never found the insect again until August, 1888, when he collected seven specimens on Rock Creek, which flows into the Santiam 12 miles above Mill Creek. With this additional material Ulke described the species in the March, 1889, number of Entomologica Americana.

The beetle had never been collected at any other place excepting Horsetail Falls, Oregon, where I collected a single specimen in August, 1904. This individual was crawling over the wet moss in the spray of the fall. I recognized it at once, and knowing its rarity spent more than an hour in searching for others, but without success. Two years later I visited these falls again and searched assiduously for the beetle, but found none.

Last summer, while visiting Professor Johnson, he told me that he was exceedingly anxious to obtain additional specimens, as he had given all his away. He explained to me minutely the places where he had found the insects—on Mill Creek, one of which was at the falls about 3 miles up the creek, and the other on mossy rocks in the canyon of the creek, a half mile below the falls, where one could no longer follow its bed but had to clamber around. As I had to spend several days in the Willamette Valley, I promised Professor Johnson to visit the spot if I possibly could and try to find his namesake again. Mehama is easily reached, being only 1 mile distant from the railroad station of Lyons. I reached Mehama on a hot August day with no other equipment than the suit I was traveling in and a pair of leggings bought for the occasion. There was no trail up the creek, so that one had the choice of wading up the creek or crawling through brush so thick that the creek was usually the preferable path. Before