

GUIDE TO THE INSECTS OF CONNECTICUT

PREPARED UNDER THE DIRECTION OF
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PART IV

The Hemiptera or Sucking Insects of Connecticut

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STATISTICS.

Statistics of the Connecticut Hemiptera given in this bulletin are as follows:

Suborder	Family	Number of Genera.	Number of Species and Varieties.	
			Listed.	Recorded from Connecticut.
Parasitica	Haematomyzidae	1	1	0
	Pediculidae	3	3	3
	Haematoplinidae	8	16	5
	Echinophthiridae	2	2	0
Homoptera	Fulgoridae	32	108	51
	Cicadellidae	47	266	192
	Membracidae	22	77	71
	Cercopidae	6	41	12
	Cicadidae	3	9	7
	Psyllidae	8	26	19
	Aphididae	65	234	95
	Aleyrodidae	5	12	10
	Coccidae	27	86	53
Heteroptera	Corixidae	4	14	10
	Ochteridae	1	2	0
	Nerthridae	1	2	0
	Belostomatidae	3	7	5
	Nepidae	2	4	2
	Naucoridae	1	1	1
	Notonectidae	3	10	5
	Saldidae	5	20	9
	Veliidae	3	22	1
	Gerridae	5	13	7
	Hydrometridae	1	1	0
	Miridae (Capsidae)	83	403	149
	Termitophylidae	1	1	0
	Anthocoridae	5	6	2
	Cimicidae	2	3	2
	Nabidae	2	11	6
	Mesoveliidae	1	1	1
	Naeogetidae (Hebridae)	2	3	1
	Reduviidae	23	35	14
	Phymatidae	1	2	2
	Enicocephalidae	1	1	0
	Piesmidae	1	1	1
	Tingidae	13	32	21
	Lygaeidae	36	53	42
	Neididae	2	2	2
	Aradidae	4	32	8
	Coreidae	7	11	8
	Alydidae	5	7	4
	Corizidae	2	6	3
	Pentatomidae	29	47	39
Cydnidae	6	10	7	
Scutelleridae	2	2	2	
Total		486	1,646	872

EXPLANATION OF COLLECTORS' INITIALS.

- W. E. B.—W. E. Britton, State and Station Entomologist, Agricultural Experiment Station, New Haven, Conn. Author of a portion of this Bulletin. Has collected in nearly all parts of the State.
- A. I. B.—Arthur I. Bourne, Assistant Entomologist, Agricultural Experiment Station, Amherst, Mass. In 1909, was assistant in Entomology, Agricultural Experiment Station at New Haven. Collected around New Haven.
- P. L. B.—Philip L. Buttrick, Assistant Professor of Forestry, Michigan Agricultural College, East Lansing, Mich. In 1904 and 1906 was employed temporarily as Assistant in Entomology, Agricultural Experiment Station, New Haven. Has collected around New Haven.
- K. F. C.—Kenyon F. Chamberlain, Cornwall, Conn. Employed as Assistant in Entomology, Agricultural Experiment Station at New Haven in 1918 and 1919. Has collected in various parts of the State, but chiefly around Cornwall and New Haven.
- A. B. C.—Alfred B. Champlain, Bureau of Plant Industry, Harrisburg, Pa. Assistant in Entomology, Agricultural Experiment Station, New Haven, in 1910 and 1911. Has collected in different parts of the State, but particularly around New Haven and Lyme.
- D. J. C.—Donald J. Caffrey, European Corn Borer Laboratory, U. S. Bureau of Entomology, Arlington, Mass. From 1910 to 1913 Assistant Entomologist, Agricultural Experiment Station, New Haven. Collected chiefly around Wallingford and Stonington.
- I. W. D.—Irving W. Davis, Assistant Entomologist, Agricultural Experiment Station, New Haven, Deputy in Charge of Gypsy Moth Work, 1913 to 1920. Resides in Danielson. Has collected mostly in Windham and New London Counties.
- D. M. D.—Dwight M. DeLong, Bureau of Plant Industry, Harrisburg, Pa. Author of the Cicadellidae of this Bulletin. Collected around New Haven, when in the Army Laboratory School in 1918.
- E. L. D.—E. L. Dickerson, Nutley, N. J., formerly Assistant in Entomology, Agricultural Experiment Station, New Brunswick, N. J. Has collected in Brookfield, Conn.
- C. R. E.—Charles R. Ely, Washington, D. C. Has collected at East River, where he spends his summer vacations.
- P. G.—Philip Garman, Assistant Entomologist, Agricultural Experiment Station, New Haven, Conn.
- J. A. H.—James A. Hyslop, U. S. Bureau of Entomology, Washington, D. C. Employed on gypsy moth work at Stonington in 1906.

Haemodipsus Enderlein.

Head short, widened behind, with antennae near the front.

H. ventricosus (Denny).

Mon. Anopl. Brit., 30, 1842.

Short and thick with the abdomen rounded. Occurs on the rabbit, apparently the same species being found on the common wood rabbit *Lepus sylvaticus*, the domestic hare, and the other species of the genus *Lepus*.

Neohaematopinus Mjoberg.

The antennae are five-jointed, very close to the front of the head and the basal segment has a stout spine or has the outer hind angle produced.

N. sciuropteri (Osborn).

Bull. 7, O. S., Div. Ent., U. S. Dept. Agr., 23, 1891.

This species was described from the flying squirrel and is not known from any other host.

N. antennatus (Osborn).

Bull. 7, O. S., Div. Ent., U. S. Dept. Agr., 25, 1891.

This species is easily recognized by the strong backwardly directed spine on the first antennal segment. It occurs on the squirrels of the genus *Sciurus*, and while not recorded from New England is almost certain to be found on the proper hosts.

Enderleinellus Fahrenholz.

Antennae five-segmented, fore and middle legs of equal size.

E. suturalis (Osborn).

Bull. 7, O. S., Div. Ent., U. S. Dept. Agr., 27, 1891.

This species, recognized by the prominent suture across the head just behind the antennae, occurs on the ground squirrels of the genus *Citellus*.

Euhaematopinus Osborn.

Antennae three-segmented,* the hind legs with broad disk like appendage on femur and tibia.

E. abnormis (Osborn).

Bull. 5, N. S., Div. Ent., U. S. Dept. Agr., 187, 1896.

The three-jointed* antennae and the peculiar processes on the femur and tibia of the hind legs distinguish this species readily. Moreover, it is known only from the mole *Scalops aquaticus* or its variety *argentatus*.

* Four, one microscopic, according to Ferris.

Family ECHINOPHTHIRIDAE.

Occurs on marine mammals only and the species that may be considered as possibly coming within the range of this list occurs on the seals.

Antarctophthirus Enderlein.

Antennae five-segmented, abdomen beset with fine scales.

A. trichechi (Boheman).

Vetensk. Akad. Forhandl., 12, 577, 1865.

Recorded from the walrus and of doubtful occurrence within our territory except on animals under confinement.

Echinophthirus Enderlein.

Antennae four-segmented, body without scales.

E. phocae (Lucas).

Mag. Zool., Ins., 121, 1842.

This species has been reported from seals in the New York Aquarium and may occur on straggling seals along the New England coast. Its normal host is the common harbor seal *Phoca*.

Suborder Homoptera.

Key to Families.

1. Proboscis attached back of the head apparently between the fore legs 2
- Proboscis plainly attached to the head 5
2. Tarsi two-jointed with two apical claws, wings when present four in number. Species capable of active movement 3
- Tarsi one-jointed with one apical claw. Males usually with one pair of wings. Females wingless, often without legs and immovably fixed to host plant COCCIDAE, p. 346
3. Hind femora not enlarged. Fore wings similar in texture to rear wings 4
- Hind femora enlarged for jumping. Fore wings thickened PSYLLIDAE, p. 243
4. Legs short, tarsal joints nearly equal in size. Wings usually opaque, whitish, or marked with spots or bands; pupa stage present ALEYRODIDAE, p. 335
- Legs long and slender, basal joint of tarsi often short; wings transparent, occasionally more or less colored...APHIDIDAE, p. 250 and CHERMESIDAE, p. 329
5. Ocelli two, rarely more; front femora not enlarged; species less than 25 mm. in length 6
- Ocelli three; front femora thickened and usually spined beneath. Comparatively large species over 25 mm. in length. CICADIDAE, p. 238
6. Antennae inserted in front of and between the eyes. Ocelli between the eyes, on the vertex or on the front 7
- Antennae inserted below the eyes, ocelli usually in cavities beneath or between the eyes FULGORIDAE, p. 24

7. Pronotum not extending back over the abdomen; not elevated .. 8
 Pronotum extending back over the abdomen, usually much
 elevated MEMBRACIDAE, p. 163
 8. Tibiae with but few spines, not in two rows ... CERCOPIIDAE, p. 206
 Tibiae with a double row of spines beneath. CICADELLIDAE, p. 56

Family FULGORIDAE.

By EDWARD PAYSON VAN DUZEE.

In its general facies this family is widely distinct from those that precede it. The head is usually large, sometimes produced anteriorly into more or less of a rostrum; the vertex, front and often the clypeus is furnished with three carinae; the pronotum is commonly narrow and often strongly angled, forming a mere collar to the front of the mesonotum, and is usually tricarinate, the lateral carinae frequently curving around behind the eyes. The

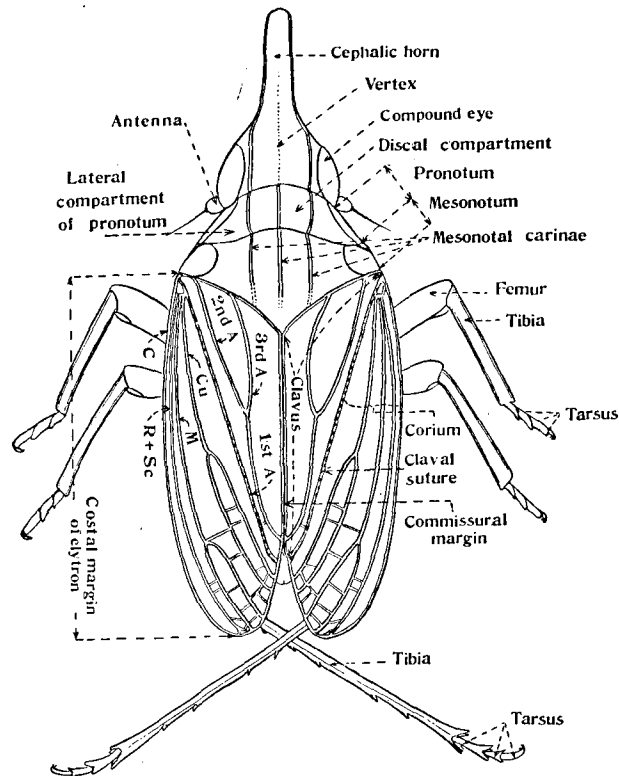


FIG. 1. *Scolops angustatus* Uhler,—dorsal view, showing parts used in classification. Greatly enlarged. Drawing by Dr. Philip Garman.

mesonotum is large, usually convex, tricarinate, with the suture separating its posterior sclerite, or scutellum from the anterior, more or less distinct. The elytra vary from membranous to coriaceous or nearly so; ordinarily they are folded roof-like when at rest but may be either vertical or nearly horizontal; they may be narrowed to a strap-like piece or very broad and rounded, and in venation they vary from the simplest form to the most complex; they are often short and the same species may show two or more distinct variations in this particular. The wings may be much aborted or entirely wanting even in forms with fully developed elytra and the same species may be apterous or fully

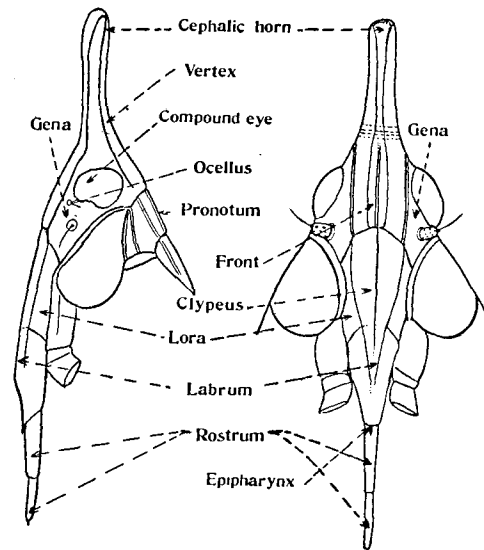


FIG. 2. *Scolops angustatus* Uhler,—lateral and ventral views of head showing structures used in classification. Greatly enlarged. Drawing by Dr. Philip Garman.

winged. The antennae usually have two segments and a terminal seta and these segments may be terete, flattened or greatly expanded, or the second may be split to its base into two or more filaments. The ocelli are ordinarily two, placed close to the eyes, near their lower angle, but there may be a third at the apex of the front. The legs are frequently flattened and the hind tibiae are usually two to five spined, and in one subfamily are furnished with a movable spur at apex.

Various attempts have been made to split this family up into several families; but in spite of form-diversity there is a certain uniformity of character running through the whole group that makes such a division undesirable, at least with our present knowl-

edge. Personally I deprecate the present tendency to raise subfamilies to family rank, for I think them just as useful and much more convenient as subfamilies, and after all, it is merely a matter of terminology.

The Fulgoridae as a whole is a tropical group, but thus far 77 genera and 357 species have been recorded from America north of Mexico.

Key to Subfamilies.

1. Anal area of the wings reticulated, sides of the clypeus carinate
FULGORINAE, p. 26
- Anal area of the wings rarely reticulated, clypeus in this case without lateral carinae 2
2. Posterior tibiae armed with a movable spur DELPHACINAE, p. 45
- Posterior tibiae without a movable spur 3
3. Clavus granulated; costa dilated, the costal membrane transversely venose FLATINAE, p. 39
- Clavus rarely granulated, costa in this case not dilated 4
4. Veins of the clavus not attaining the apex but united with the commissural margin before the apex 5
- Veins of the clavus either continued to the apex or united with the claval suture before the apex 6
5. Apex of the front without an ocellus; elytra reticulated toward their apex DICTYOPHORINAE, p. 27
- Apex of the front usually with a third ocellus; elytra not reticulated apically CIXIINAE, p. 32
6. Elytra ample, held vertical with the costal margin meeting below the abdomen, closely reticulated over the whole surface, the costal and apical margins without transverse veins; front continued over on to the superior aspect of the head without an apical transverse carina ACANALONIINAE, p. 38
- Elytra when broad held more horizontal, not meeting below nor closely reticulated over the whole surface; the front usually distinguished from the vertex by a transverse carina at the apex of the head 7
7. Head broad, with the eyes nearly or quite as broad as the mesonotum; pronotum without carinae or with median carina only ... 8
- Head usually much narrower than the mesonotum; if as wide the pronotum emarginate behind and tricarinate 9
8. Pronotum truncated behind or at most with a shallow rounded sinus ISSINAE, p. 35
- Pronotum angularly emarginate behind [RICANIINAE]
9. Elytra distinctly amplified within and overlapping beyond the apex of the clavus ACHILINAE, p. 29
- Elytra not amplified within nor overlapping at apex 10
10. Elytral membrane strongly differentiated from the corium with numerous simple longitudinal nervures [TROPIDUCHINAE]
- Elytral venation simple, without a distinct closely veined membrane; pronotum very short, deeply angularly emarginate behind
DERBINAE, p. 39

Subfamily FULGORINAE.

So far as I know no representative of this subfamily has been taken north of New Jersey and Ohio.

Subfamily DICTYOPHORINAE.

Key to Genera.

1. Vertex produced and angulate before, frequently forming a long cephalic process 2
- Vertex short, transverse; elytra in the short-winged form scarcely exceeding the abdomen, convex; anterior femora foliaceous ...
Phylloscelis, p. 28
2. Head moderately produced, depressed and carinate above; cephalic process when present not exceeding the base of the frontal compartments Dictyophora, p. 27
- Head greatly produced in a cephalic process which is extended much beyond the base of the frontal compartments, its superior surface sulcate but not carinate Scolops, p. 27

Dictyophora Germar.

These are elongated, frail looking insects with nearly hyaline elytra and more or less produced head. They are found in damp situations in the warmer parts of the country.

Key to Species.

- Vertex fully twice as long as its basal width; median carina extending a little more than half way to the apex, the three frontal carinae almost parallel throughout their length microrrhina
- Vertex scarcely longer than its width at base, its median carina almost attaining the apex; frontal carinae diverging basally (toward the apex of the head), forming a spatulate compartment, colorous at their extreme base where they meet in an acute angle lingula

D. microrrhina Walker.

List. Homop. ii, 315, 1851.

A southern form which has been taken as far north as the vicinity of New York City and may be taken in southern Connecticut.

D. lingula Van Duzee.

Proc. Acad. Nat. Sci. Phila., lix, 470, 1908.

This species has about the same distribution as the preceding and should be taken in Connecticut. The closely allied *florens* Stål has black carinae at the apex of the head. It has not been reported from north of Georgia.

Scolops Schaum.

A genus of rather small brown or gray leaping insects inhabiting meadows and weedy spots. Their long cephalic process and habit of standing well up on their hind legs gives them somewhat a bird-like aspect.

Key to Species.

1. Elytra with supernumerary cross-veins forming many small areoles beyond the middle; nervures slender sulcipes
- Elytra without supernumerary cross-veins toward their apex; nervures strong 2

- 2. Radial (outer) nervure forked some distance beyond the cubital (inner); cephalic horn short, not longer than distance from front of eye to hind margin of pronotum**angustatus**
Radial and cubital nervures forked on about the same line; cephalic horn about one-half longer than the distance from front of eye to hind margin of pronotum 3
- 3. Rostrum reaching the posterior coxae**spurcus**
Rostrum reaching nearly to apex of the venter**perdix**

S. sulcipes Say. (Pl. iv, 1.)

Jour. Acad. Nat. Sci. Phila., iv, 335, 1825.

A large brown species easily recognized by the numerous small areoles in the apical half of the elytra. It is the most abundant and widely distributed species of the genus.

Branford, 29 July, 1904 (P. L. B.); New Haven, 29 July, 1920 (M. P. Z.); 31 July, 1920 (B. H. W.); Cornwall, 23 Aug., 1920 (K. F. C.); Bridgeport, 20 Sept., 1920 (B. H. W.).

S. spurcus Uhler.

Trans. Md. Acad. Sci., i, 403, 1900.

This mottled gray and brown insect has been taken from New Jersey southward and should occur in Connecticut.

S. perdix Uhler.

Trans. Md. Acad. Sci., i, 405, 1900.

Similar to the preceding but with a longer rostrum. It is distributed from Massachusetts southward and must occur in Connecticut.

S. angustatus Uhler. (Figs. 1 and 2.)

Bull. U. S. Geol. Surv., i, 350, 1876.

A small pale form easily recognized by its short slender cephalic process.

New Haven, 19 July, 16 Aug., 1904 (P. L. B.); 16 Aug., 1904, 19 July, 1905, 17 July, 1908, 17 June, 1908 (B. H. W.); 23 Aug., 1906 (W. E. B.); 31 July, 5 Aug., 1920 (B. H. W.); Yalesville, 20 Aug., 1920 (M. P. Z.); North Haven, 4 Sept., 1921 (B. H. W.).

Phylloscelis Germar.

The brachypterous form of these insects, which is much the most common, is of an ovate or subhemispherical form and may be readily recognized by the broad leaf-like anterior femora.

Key to Species.

- 1. Elytra brown, the nervures fuscous dotted with pale**pallescens**
Elytra black, the nervures concolorous or pale and undotted 2
- 2. Nervures concolorous, black**atra**
Nervures pale**var. albovenosa**

P. atra Germar. (Pl. iv, 5.)

Zeit. f. Ent., i, 192, 1839.

The brachypterous form is a nearly globular, shining black insect with the face marked with pale dots and crossed by a pale

band near the apex of the cheeks. In the macropterous form the elytra are short and truncated at apex.

New Haven, 14 Aug., 1906 (W. E. B.), 21 Aug., 1906 (B. H. W.), 20 Aug., 1910 (A. B. C.), 20 Aug., 1910 (B. H. W.).

P. atra var. **albovenosa** Melichar.

Abh. K. K. Zool. Bot. Ges. Wien, iii, pt. 4, 179, 1906.

This variety differs from the type form only in having the elytral nervures pale, rufous, yellowish or almost white. Apparently it always occurs with the typical form.

New Haven, 21 Aug., 1906, 21 Aug., 1909, 28 Aug., 1910 (B. H. W.).

P. pallescens Germar.

Zeit. f. Ent., i, 192, 1839.

This species has the same form as the preceding but has a brown color and dotted nervures. Like that species it is distributed from Massachusetts to Florida and should be found in Connecticut.

Subfamily ACHILINAE.

This subfamily as represented in our fauna may be distinguished from the *Cixiinae*, which they most resemble, by having the claval nervure continued to its apex. They are elongated or oblong depressed insects with their folded elytra overlapping at apex and head often produced. From the *Issinae* they differ in having the head much narrower than the thorax with the pronotum emarginate behind, sometimes deeply so.

Key to Genera.

- Lateral compartments of the pronotum (behind the eyes) at least as long as the eye, sometimes much longer**Epiptera**, p. 29
- Lateral compartments of the pronotum, when distinguished, shorter than the eye, generally much shorter**Catonia**, p. 30

Epiptera Metcalf.*

(*Elidiptera* of Authors, not Spinola.)

(*Helicoptera* Amyot and Serville.)

Key to Species.

- 1. Head rostrate produced, the vertex surpassing the front line of the eyes by at least twice the length of the eye**colorata**
Head produced little if any more than the length of the eye 2
- 2. Black with a white band across the face and pleural pieces; elytra minutely dotted with pale**opaca**
More or less variegated with brown or pale 3
- 3. Vertex produced before the eyes for fully the length of the eye; front brown on base, whitish on apical one-half**pallida**
Vertex produced before the eye for about the width of the eye; front brown irrorate with pale, scarcely darker at base**variegata**

* Since this paper was set in type, Z. P. Metcalf has described the following new species from Connecticut, in Journal of the Elisha Mitchell Scientific Society, Vol. 39: *Epiptera brittoni*, *Liburnia waldeni*, *Megamelus distinctus*, *Criomorpha conspicuus*, *Herpis incisa* and *Cixius apicalis* (W. E. B.).

E. colorata Van Duzee.

Proc. Acad. Nat. Sci. Phila., lix, 476, 1908.

More slender than most of our species; black, vertex and front white, abdomen red; elytra minutely dotted and veined with pale. Described from about Buffalo, N. Y. and reported from near the Hudson River so it will probably be found in western Connecticut.

E. opaca (Say).

Jour. Acad. Nat. Sci. Phila., vi, 239, 1830.

A large blackish species with a broad clear-cut whitish vitta across the face and pectoral pieces. It has been reported from New Hampshire to South Carolina and should occur in Connecticut.

E. pallida (Say).

Jour. Acad. Nat. Sci. Phila., vi, 240, 1830.

Has the same distribution as the preceding and must occur in Connecticut.

E. variegata Van Duzee.

Proc. Acad. Nat. Sci. Phila., lix, 479, 1908.

Found throughout the eastern states and Canada.

Rainbow, 30 Sept., 1908 (W. E. B.).

Catonia Uhler.

Shorter and more slender insects with shorter and more deeply emarginate pronotum than we find in *Elidiptera*.

Key to Species.

- | | |
|---|--------------------|
| 1. Face distinctly transversely banded | 2 |
| Face without transverse bands | 6 |
| 2. Front black; clypeus white; elytra testaceous, almost immaculate | <i>dimidiata</i> |
| Front banded with black and white | 3 |
| 3. Front whitish on basal one-half, fuscous on apical half; disk of mesonotum with a fuscous cloud | <i>nava</i> |
| Front blackish with a transverse white median band | 4 |
| 4. Elytra almost uniformly testaceous | <i>impunctata</i> |
| Elytra varied with whitish and brown or fuscous | 5 |
| 5. Discal compartment of mesonotum fuscous with four pale dots; elytra fuscous varied with whitish | <i>cinctifrons</i> |
| Mesonotum castaneous; elytra varied with ferruginous and pale | <i>picta</i> |
| 6. Median compartments of the mesonotum marked with an ocellate spot at apex; elytra whitish testaceous varied with fuscous and marked with white transverse veinlets | <i>grisea</i> |
| Median compartments of the mesonotum without eye-spots; elytra whitish testaceous obscurely varied with white veinlets | <i>pumila</i> |

C. dimidiata Van Duzee.

Trans. Am. Ent. Soc., xxxvi, 85, 1910.

Easily distinguished from all other described species by having the front entirely black with the clypeus abruptly white. The head

and pronotum are more or less fulvous and the elytra uniformly testaceous-brown. It has been reported from New York and Rhode Island.

Danbury, 29 Aug., 1920 (B. H. W.).

C. impunctata (Fitch).

Homop. N. Y. St. Cab., 46, 1851.

This species and *cinctifrons* have the front black with a broad white transverse band opposite the antennae and the clypeus white; here, however, the mesonotum is fulvous and the elytra testaceous-brown with paler nervures. It has been reported from Rhode Island to Iowa.

East River, 5 Aug., 1908 (C. R. E.); Ellington, 25 Sept., 1920 (B. H. W.).

C. cinctifrons (Fitch).

Trans. N. Y. St. Agr. Soc., xvi, 451, 1856.

A much smaller species than the preceding with the mesonotum and elytra varied with fuscous-brown. It occurs from New York to Maryland.

New Haven, 22 Aug., 1920, Plainfield, 2 Sept., 1920, East Hartford, 14 Sept., 1920 (B. H. W.).

C. picta Van Duzee.

Proc. Acad. Nat. Sci. Phila., lix, 481, 1908.

A little larger and more ferruginous than *cinctifrons* with the elytra more obscurely varied. The front is normally white and black-banded like the foregoing but often the black is replaced by castaneous. It has been found from New Jersey to Florida.

Guilford, 24 July, 1921 (B. H. W.).

C. nava (Say).

Jour. Acad. Nat. Sci. Phila., vi, 238, 1830.

This is a larger variegated species with the front more narrowed basally where it is gray and more or less mottled. It has been reported from Ontario to Maryland and Iowa and must occur in Connecticut.

C. grisea Van Duzee.

Proc. Acad. Nat. Sci. Phila., lix, 482, 1908.

This is a gray, slightly mottled insect with numerous white veinlets on the elytra, a pair of small ocellate spots on the mesonotum and a pale, nearly unicolorous front which becomes a little darker at base. It has about the same distribution as *nava*.

Portland, 8 Aug., 1913 (B. H. W.).

C. pumila Van Duzee.

Proc. Acad. Nat. Sci. Phila., lix, 483, 1908.

A small pale fulvous-brown species having a pallid front and obscurely variegated elytra without white veinlets; the mesonotum also wants the ocellate spots. It has been taken in Ohio and on Long Island and must occur in Connecticut.

Subfamily CIXIINAE.

Oblong depressed insects usually with rather broad elytra which are frequently more or less mottled with fuscous and dotted along the veins. The females have a cottony substance either side of the oviduct.

Key to Genera.

- | | |
|---|------------------------|
| 1. Hind tibiae armed with two or three spines | 2 |
| Hind tibiae unarmed | 3 |
| 2. Base of the vertex angulate-emarginate; mesonotum normally five-carinate | <i>Oliarus</i> , p. 32 |
| Base of the vertex broadly arcuate; mesonotum tricarinate | <i>Cixius</i> , p. 33 |
| 3. Vertex very narrow, its sides parallel or slightly divergent anteriorly; front and clypeus elongated | <i>Oecleus</i> , p. 34 |
| Vertex broader, narrowed anteriorly; front and clypeus together elliptical | <i>Myndus</i> , p. 34 |

Oliarus Stål.

This genus has the vertex quite broad, about as wide as the eyes, with its base angulately emarginate, and the mesonotum in our species furnished with five carinae. It is distributed over nearly all parts of the world and is rich in species.

Key to Species.

- | | |
|---|------------------------|
| 1. Elytra pellucid or nearly so, sometimes varied with brown | 2 |
| Elytra smoky-fuscous, at least at apex | 3 |
| 2. Larger, 6-7 mm.; elytra more or less maculated; the veins white, dotted with brown at their apex | <i>quinquelineatus</i> |
| Smaller, 4-5 mm.; elytra immaculate, their veins heavy and fuscous on apical third | <i>franciscanus</i> |
| 3. Smaller, 4-6 mm.; elytra clouded on apical third only | <i>humilis</i> |
| Larger, 6-7 mm.; elytra entirely fuscous, the stigma and costal nervure whitish | <i>cinnamomeus</i> |

O. quinquelineatus (Say).

Jour. Acad. Nat. Sci. Phila., vi, 241, 1830.

This large maculated species is common throughout the eastern states and Canada, and extends its range westward to Colorado, but it does not seem to have been reported from Connecticut, where, however, it must occur.

O. franciscanus (Stål). *complexus* Ball.

Freg. Eugen. Resa., Ins., 273, 1859; Can. Ent., xxxiv, 152, 1902.

This small black species with whitish-hyaline elytra is found from Maine to California.

Scotland, 27 July, 1904 (B. H. W.); New Haven, 26 June, 23 July, 1910, 9 July, 1911, 11 July, 1920, 18 June, 1921 (B. H. W.).

O. humilis (Say). (Pl. iv, 2.)

Jour. Acad. Nat. Sci. Phila., vi, 241, 1830.

This has much the aspect of the preceding except that it is a little broader and has the apical one-third of the elytra infuscated.

It occurs in old pastures and meadows from Ontario to Maryland and Ohio.

Stratford, 1 July, 1908 (B. H. W.) (W. E. B.); 9 July, 1920 (B. H. W.).

O. cinnamomeus Provancher.

Pet. Faune Ent. Can., iii, 223, 1889.

Easily recognized by its larger size and uniformly bluish color with a slender pale costa. I have taken it only on bogs where huckleberries grow.

Colebrook, 20 July, 1905 (W. E. B.).

Cixius Latreille.

The insects of this genus have much the aspect of *Oliarus* but may be distinguished by their having the hind margin of the vertex truncated or but feebly arcuated, not at all angularly emarginate. The mesonotum seems always to be tricarinate.

Key to Species.

- | | |
|--|-------------------|
| 1. Front and clypeus black with pale carinae, the clypeus obviously as long as the front; vertex nearly as long as broad | <i>miscellus</i> |
| Front black with pale carinae, the clypeus nearly always paler and obviously shorter than the front; vertex transverse, considerably broader than long | 2 |
| 2. Elytra tinged with fulvous or testaceous, unspotted except for the fuscous stigma; nervures dotted; outer fork of the first sector and the inner sector forked about in line with the fork of the claval vein | <i>pini</i> |
| Elytra whitish-hyaline, more or less maculated; outer branch of the first sector forked much nearer the base than the fork of the inner sector | 3 |
| 3. Larger, 7 mm.; plates of male transverse, less than one-half the length of the pygofer; base of the elytra usually fuscous in the female | <i>basalis</i> |
| Smaller, 6 mm.; plates of the male rounded, almost attaining the apex of the pygofer; base of the elytra of the female without a fuscous band | <i>coloeptium</i> |

C. basalis Van Duzee.

Proc. Acad. Nat. Sci. Phila., lix, 489, 1908.

This, our largest *Cixius*, resembles in size and marking *Oliarus quinquelineatus*. In the female and sometimes in the male the base of the elytra is infuscated to or beyond the apex of the scutellum. In this species the anal tube of the male is produced far beyond the plates and sides of the genital segment. It is distributed throughout the United States and Canada.

Portland, 8 Aug., 1913, 24 July, 1921 (B. H. W.); Litchfield, 22 July, 1920 (P. G.); East Haven, 21 July, New Haven, 17 July, Hamden, 20 July, 1920, Milford, 13 June, 1921, Cornwall, 18 July, 1921 (B. H. W.).

C. miscellus Van Duzee. *stigmatus* Uhler.

Bull. U. S. Geol. Geog. Surv. Terr., i, 352, 1876.

This species may be distinguished from the next by the longer and more nearly square vertex and longer and narrower front and clypeus which are black with pale carinae.

Dr. Ball has kindly called my attention to the fact that my *Cixius lepidus* is the true *stigmatus* of Say, which is distributed from the Mississippi Valley west to the Rocky Mountains. I have therefore in my Check List renamed this species which has been sufficiently characterized by me in the Canadian Entomologist, Vol. xxxviii, page 408, 1906, and Proceedings Academy of Natural Science of Philadelphia, Vol. lix, pages 488 and 490, 1907. So far as I now know its range is confined to the northern states and Canada.

Stonington, 7 July, 1914 (I. W. D.); Middlebury, 20 June, 1916; Hamden, 12 June, 1919 (M. P. Z.).

C. coloepium Fitch.

Trans. N. Y. Agr. Soc., xvi, 452, 1856.

Differs from *miscellus* in having the vertex short and distinctly transverse, and the front and clypeus proportionately shorter and broader. Here, however, the elytra are whitish-hyaline and more or less maculated. This species occurs from Ontario and New York west to Colorado.

Scotland, 27 July, 1904, Hamden, 20 June, 1920, New Haven, 17 June, 1920 (B. H. W.).

C. pini Fitch.

Homop. N. Y. St. Cab., 45, 1851.

Size and form of *coloepium* but readily distinguished by the elytra having a faint fulvous tinge and wanting the spots usually present in the allied species. This form lives on huckleberry bushes in the northern states and Canada.

Goshen, 4 July, 1919 (M. P. Z.); Cornwall, 18 July, 1921 (B. H. W.).

Oecleus Stål.

Stål established this genus for a group of the smaller *Cixiids* having a more slender form and a linear deeply sulcate vertex which is nearly or quite closed posteriorly. One species occurs in Connecticut.

O. borealis Van Duzee.

Bull. Buff. Soc. Nat. Sci., x, 495, 1912.

Black or nearly so with the carinae pale and the mesonotum lineate with fulvous and furnished with five carinae; elytra hyaline, the nervures fulvous and minutely dotted with fuscous.

New Haven, 18 June, 1902 (E. J. S. M.); 5 July, 1920 (B. H. W.).

Myndus Stål.

Differs from *Oecleus* in having the vertex as broad as or broader than the eyes and distinctly wider at base. Here the mesonotum is tricarinate.

Key to Species.

1. Uniformly fulvous-yellow with the elytra whitish-hyaline *fulvus*
Front banded with black; various dark markings 2
2. Elytra with a longitudinal fuscous vitta at apex *pictifrons*
Elytra without a fuscous vitta *sordidipennis*

M. pictifrons Stål.

Berl. Ent. Zeit., vi, 307, 1862.

Front broad marked with a conspicuous black band at base and another at apex; color a dull fulvo-testaceous, the outer angles of the mesonotum marked with a fuscous vitta; elytra hyaline, the nervures heavy and distinctly dotted; a sinuous fuscous vitta from the base of the inner anteapical areole to the inner apical angle of the elytra. Length 5 mm. This species has been reported from New York to the District of Columbia and must occur in Connecticut.

M. sordidipennis Stål.

Berl. Ent. Zeit., vi, 308, 1862.

Differs from the preceding in being more strongly tinged with fulvous, in having a wider vertex, and in having no apical fuscous vitta on the elytra and the nervures more slender. It lives throughout the eastern United States and Canada.

New Haven, 4-9 July, 1921 (B. H. W.).

M. fulvus Osborn.

Ohio Nat., iv, 46, 1903.

A small pale fulvous species with immaculate front and whitish hyaline wings. It is known to inhabit from Massachusetts to Ohio.

Rowayton, 9 Aug., 1908 (C. W. J.); New Haven, 23 July, 1910, 9 July, 1911, 11 July, 1920 (B. H. W.).

Subfamily ISSINAE.

Thick-set insects usually with broad heads, more or less truncated before but occasionally produced a little. The elytra when fully developed are often convex and more or less gibbous near their base.

Key to Tribes.

- Head rostrate-produced, or having the clypeus strongly inflexed and shouldered, thus forming nearly a right angle with the line of the front *Caliscelini*
Head not rostrate-produced, the clypeus on nearly the same plane as the front *Issini*

Tribe CALISCELINI.

In this tribe the elytra are usually short, rarely surpassing the middle of the abdomen; long-winged individuals may, however, be found in any of the species.

Key to Genera.

1. Front vertical or inferior, not visible from above, the head not at all produced **Aphelonema**, p. 37
Front more or less superior, visible from above, the head more or less rostrate-produced 2
2. Anterior tibiae moderately foliaceous along its whole upper edge; apex of the produced head forming a nearly spherical polished knob **Fitchiella**, p. 36
Anterior tibiae simple; apex of the produced head sometimes knob-like, in that case with a sharp median carina; macrop-
terous elytra with a series of heavy transverse veins before the apical arcoles **Bruchomorpha**, p. 36

Fitchiella Van Duzee.*Naso* Fitch.**F. robertsoni** (Fitch).

Trans. N. Y. St. Agr. Soc., xvi, 396, 1856.

Testaceous, veined and dotted with black; the knob-like apex of the head, two vittae on either side of the apex of the front, another pair on the vertex and one on the mesonotum, black; beneath and legs black, varied with pale. Length 2-3 mm. New York to Florida and must be taken in Connecticut.

Bruchomorpha Newman.*Key to Species.*

1. Head produced in a rounded, compressed and carinate, knob-like rostrum 2
Head rounded at apex, not produced in a rostrum; color black, more or less metallic, the coxae only pale, the median carina of the front scarcely paler **tristis**
2. Black, with a conspicuous, percurrent, dorsal vitta and the legs and coxal region almost white **dorsata**
Black, narrow median vitta on the front and vertex, legs and coxal region pale or castaneous **oculata**

B. dorsata Fitch.

Trans. N. Y. St. Agr. Soc., xvi, 396, 1856.

This species has distinct coppery reflections and may be distinguished from the more western *suturalis* by having the dorsal vitta continued to the apex of the abdomen. It has been reported from New York westward and should be found in Connecticut.

B. oculata Newman.

Ent. Mag., v, 399, 1838.

Color of the preceding but with the dorsal vitta narrow and confined to the head. Common in grassy places throughout the eastern United States and Canada.

Colebrook, 21 July, 1905 (H. L. V.); Cromwell, 18 July, 1921 (B. H. W.); Portland, 24 July, 1921 (M. P. Z.) (B. H. W.).

B. tristis Stål.

Berl. Ent. Zeit., vi, 309, 1862.

More bluish or greenish black, with the dorsal carina of the head scarcely paler. It has the same distribution as the preceding and should be found in Connecticut.

Brookfield, 27 July, E. L. Dickerson.

Aphelonema Uhler.

Short thick-set little insects with a square head and nearly vertical front, marked on the sides of the head, thorax and abdomen with pitted granules; the front oval and truncated at base.

Key to Species.

Whitish, lineate with black; front ovate **histrionica**
Testaceous, nearly immaculate; front nearly circular **simplex**

A. histrionica (Stål).

Berl. Ent. Zeit., vi, 310, 1862.

Readily distinguished by two parallel dorsal lines and broader lateral vittae on the abdomen; the sides of the face, pro- and mesonotum are black with the carinae and granules pale. Massachusetts westward and doubtless in Connecticut.

A. simplex Uhler.

Bull. U. S. Geol. Geog. Surv. Terr., i, 356, 1876.

Nearly uniformly soiled- or yellowish-testaceous. Recorded from New Jersey westward.

Plainville, 2 Sept., 1921 (B. H. W.).

Tribe **ISSINI**.

But one genus of this tribe has a distribution that would be likely to bring it into Connecticut.

Thionia Stål.

Stout oblong insects with wings well developed; elytra oblong with strong veins, the front hardly longer than wide, sometimes with three distinct discal carinae.

Key to Species.

1. Pale greenish-testaceous; elytra parallel, semivitreous, the longitudinal veins strong and fuscous, the transverse very faint; front with but one discal carina **simplex**
More infuscated and maculated; elytra broad with distinct cross-veins 2
2. Elytra brown, dotted with round fuscous points, the veins fuscous; face with a pale band crossing the base of the clypeus **elliptica**
Elytra more thickened and distinctly maculated, the marks usually forming a transverse band before the middle; disk of the front distinctly tricarinate **bullata**

T. simplex (Germar).

Thon's Ent. Archiv., ii, 51, 1830.

Distinct by its narrow form, greenish-testaceous color with darker venation, and the transverse black line on the apex of the head. New Jersey southward and westward. May occur in Connecticut.

T. elliptica (Germar).

Thon's Ent. Archiv., ii, 51, 1830.

Larger, broader and darker brown than *simplex* with the elytra closely dotted with brown and a transverse pale band on the face. Occurs from New Jersey southward and might occur in southern Connecticut.

T. bullata (Say).

Jour. Acad. Nat. Sci. Phila., vi, 240, 1830.

A more maculated species with three distinct discal carinae on the front. It is distributed from Ontario southward and westward and must occur in Connecticut.

Subfamily ACANALONIINAE.

Distinguished by having the broad vertical elytra closely reticulated all over, without a series of marginal parallel veins. But one genus occurs in our fauna. All are pretty, green insects.

Acanalonia Spinola.*Amphiscepa* Uhler.*Key to Species.*

Dorsum concolorous; vertex subconically produced *conica*
Dorsum marked with a double fuscous vitta, vertex short, truncate

bivittata

A. bivittata (Say). (Pl. iv, 3.)

Jour. Acad. Nat. Sci. Phila., iv, 335, 1825.

Clear green marked with two approximate dark brown dorsal vittae which converge to the tip of the clavus. United States and Canada east of the Rocky Mountains.

New Haven, 1 Aug., 1904 (P. L. B.), 16 Aug., 12 Sept., 1904 (B. H. W.), 27 Aug., 1914 (I. W. D.), 18 Aug., 1904 (W. E. B.); New Canaan, 1 Oct., 1903 (B. H. W.), 2 Oct., 1907 (W. E. B.), 5 Sept., 1914 (M. P. Z.); East Hartford, 9 Aug., 1904 (P. L. B.); Scotland, 8 Aug., 1905 (B. H. W.); Prospect, 15 Aug., 1906 (W. E. B.); East River, 29 Aug., 1908 (C. R. E.); Middletown, 23 Aug., 1912 (D. J. C.); Yalesville, 24 Sept., 1912 (H. B. K.).

A. conica (Say).

Jour. Acad. Nat. Sci. Phila., vi, 238, 1830.

A larger, uniformly pale green species well distinguished by having the vertex conically produced but flattened above. Recorded from Ohio to Virginia and Texas and may occur in southern Connecticut.

Subfamily FLATINAE.

Here the clavus is granulated at base and the costal area of the elytra has a series of transverse veins.

Ormenis Stål.

Differs from the preceding genus in having a granulated clavus and the apex of the elytra furnished with one or two series of regular parallel areoles.

Key to Species.

Color a uniform clear green *septentrionalis*
Color fuscous with the costa and claval suture pale *pruinosa*

O. pruinosa (Say). (Pl. iv, 4.)

Jour. Acad. Nat. Sci. Phila., vi, 237, 1830.

A dark fuscous-brown species marked with pale along the costa and suture and generally with about three dark points near the base of the elytra. When mature the whole insect is usually heavily white-pruinose. It occurs throughout the eastern United States and Canada.

New Haven, 14 July, 1899 (V. L. Churchill), 1 Aug., 1905 (B. H. W.), 21 Aug., 1904, 7 Aug., 1905, 9 Sept., 1907 (W. E. B.), 26 Aug., 1913 (Q. S. L.), 24 Aug., 1914 (M. P. Z.); New Canaan, 14 Sept., 1906 (W. E. B.); Hartford, 10 Sept., 1907 (G. H. H.), 12 Sept., 1907 (W. E. B.); East River, 6 Aug., 1908 (C. R. E.); Wallingford, 26 July, 1911 (J. K. L.); Brookfield (E. L. D.).

O. septentrionalis (Spinola). (Pl. iv, 6.)

Ann. Soc. Ent. Fr., viii, 436, 1839.

A nearly immaculate clear light green insect, often white-pruinose. It is distributed from New York south and west nearly to the Rocky Mountains.

New Haven, 29 Sept., 3 Oct., 1902 (B. H. W.), 24 Aug., 1904 (P. L. B.), 14 Aug., 1906 (W. E. B.), 28 Aug., 1913 (Q. S. L.), 13 Aug., 1914 (M. P. Z.), 27 Aug., 1914 (I. W. D.); New Canaan, 9 Oct., Stafford, 24 Aug., 1905, Westville, 5, 9 Sept., 1907, Hartford, 10 Sept., 1907, Stratford, 13 Sept., 1907 (W. E. B.); East River, 6 Aug., 1908 (C. R. E.); Portland, 15 Aug., 1913 (B. H. W.).

Subfamily DERBINAE.

Frail moth-like Fulgorids with the elytra and wings ample and often much elongated; head more or less compressed with the front often reduced to a mere sulcus; antennae often flattened, and, in *Otiocerus*, split into two or three filaments, inserted in cup-like cavities. They may be found on willows and other trees in late summer and early autumn.

Key to Genera.

1. Second antennal joint nearly globular, but little flattened, antennal sockets conspicuously expanded, equalling or exceeding the second antennal joint; front moderately broad 2

- Second antennal joint flattened and greatly expanded; antennal sockets small, rim-like; front reduced to a mere sulcus, the lateral carinae contiguous 3
- 2. Front broader, with a median carina usually indicated, its width at least one-third its length; vertex transverse, sloping into the base of the front *Lamenia*, p. 40
- Front narrow, without a median carina; its width never one-fourth its length; vertex horizontal, narrowed before, angled to the base of the front *Cenchrea*, p. 41
- 3. Second antennal joint split into two to four filaments *Otiocerus*, p. 43
- Second antennal joint entire 4
- 4. Second antennal joint hardly more than twice longer than broad *Cyclokara*, p. 41
- Second antennal joint obviously more than twice longer than broad 5
- 5. Ocelli absent; second antennal joint narrow, subterete, a little wider apically; rostrum short, reaching the base of the hind coxae *Anotia*, p. 42
- Ocelli present; second antennal joint broad, linear, with a sub-apical notch for the seta; rostrum long, reaching the middle of the venter *Amalopota*, p. 41

Lamenia Stål.

Shorter winged forms recalling *Ormenis* in miniature, and often pruinose as in that genus. Their broader and subglobose front will serve to distinguish them from our other Derbidae. I cannot agree with Mr. Muir in restricting *Lamenia* to oriental forms and placing our species in genus *Herpis* Stål.

Key to Species.

- 1. Color soiled white, maculated all over with fuscous and with a fuscous median line on the head, pro- and mesonotum *maculata*
Insects nearly uniform in color, without maculations 2
- 2. Color testaceous, becoming more or less fulvous on the head, pro- and mesonotum *edentula*
Color slaty-black, almost immaculate, white pruinose when fresh 3
- 3. Larger, 4-4.5 mm.; inner margin of the male plates entire or nearly so *vulgaris*
Smaller, 3-3.5 mm.; inner margin of the male plates distinctly notched near their base *obscura*

L. vulgaris (Fitch).

Homop. N. Y. St. Cab., 47, 1851.

A small blackish-fuscous insect, usually covered with a white bloom. Found throughout the eastern United States and Canada, usually on oaks.

East Wallingford, 6 July, 1904, Torrington, 7 July, 1905 (W. E. B.); Branford, 28 July, 1915 (H. L. V.).

L. obscura Ball.

Can. Ent., xxxiv, 262, 1902.

A smaller species than *vulgaris* but otherwise very similar. It has the same distribution but does not seem to inhabit the oak.

New Haven, 26 June, 1910, 4 July, 1920 (B. H. W.); East River, 4 Aug., 1910 (C. R. E.); North Branford, 23 June, 1912 (B. H. W.).

L. edentula Van Duzee.

Bull. Buff. Soc. Nat. Sci., x, 503, 1912.

A pale fulvous or testaceous species found from New Jersey southward and might occur in southern Connecticut.

L. maculata Van Duzee.

Bull. Buff. Soc. Nat. Sci., x, 503, 1912.

About the size of *vulgaris* but very distinct in its white and fuscous markings. It has been found in southern Ontario and New Jersey and probably will be taken in Connecticut.

Cenchrea Westwood.

Closely allied to *Lamenia* but sufficiently distinct in its well differentiated vertex, narrower front, and generally more elongated form. One species may reach Connecticut.

C. uhleri Ball.

Can. Ent., xxxiv, 261, 1902.

A pale fulvous insect, 5 mm. to tip of the elytra, marked with transmissural and subcostal vittae on the slightly smoky elytra. It has been reported from New Jersey southward and westward to Kansas.

Cyclokara Muir.

But one species has been found in our territory.
C. vanduzei (Ball).

Can. Ent., xxxiv, 260, 1902.

This insect has much the aspect of a small *Otiocerus degeeri*, but generically it is sufficiently distinct by its shorter head and simple antennae. It has been taken in New York, Pennsylvania and Ohio and will probably be found in Connecticut.

Amalopota Van Duzee.

Very near to *Anotia* but may be separated by the characters given in the table.

Key to Species.

- 1. Whitish-hyaline, marked with a fuscous band at base and another near the apex, the latter veined with sanguinous toward the costa *uhleri*
- 2. Creamy-white, marked with a longitudinal fuscous vitta along the clavus to the stigma where it is branched, one fork reaching the apex near the costa and the other near the internal angle .. *fitchi*

A. uhleri Van Duzee.

Can. Ent., xxi, 178, 1889.

This very pretty little species is found about open woodlands in the northern states and lower Canada and doubtless will be taken in Connecticut.

A. fitchi Van Duzee.

Can. Ent., xxv, 280, 1893.

This species has much the aspect of *Anotia bonnetii* but with a shorter head and broader antennae. It is intermediate in its characters between *Amalopota* and *Anotia*. It has the same distribution as *uhleri* and should be found in Connecticut.

Anotia Fitch.

As stated by Dr. Fitch the insects of this genus are found in swampy places on willows.

Key to Species.

1. Size larger (10 mm.); humeral dilations forming erect tongue-like processes about as long as the width of the elytra at that point; color whitish with a transverse fuscous band on the basal third of the elytra **sayi**
- Smaller (about 6 mm.); humeral dilation narrow, at most elliptical 2
2. Basal three segments of the abdomen with a dorsal black vitta .. **burnetii**
- Base of abdomen without a dorsal black vitta 3
3. Elytra tinged with yellow, marked with an oblique black line near the basal third and four blackish spots on the apical margin **bonnetii**
- Elytra whitish-hyaline, without a distinct oblique black vitta or four apical spots **westwoodi**

A. westwoodi Fitch.

Trans. N. Y. St. Agr. Soc., xvi, 394, 1856.

Paler and less clearly marked than the preceding, the elytra without the yellowish tinge and black markings. It has about the same distribution as the preceding and should be found in Connecticut.

A. bonnetii Kirby.

Trans. Linn. Soc. Lond., xiii, 21, 1819.

The four apical spots and oblique vitta seem to be the best characters by which to distinguish this species. It has been reported from Ontario to Georgia.

Cornwall, 18 July, 1921 (B. H. W.).

A. burnetii Fitch.

Trans. N. Y. St. Agr. Soc., xvi, 395, 1856.

Still paler and less distinctly marked than the preceding but readily distinguished by the short black stripe on the base of the abdomen. Inhabits the northern states and should occur in Connecticut.

A. sayi Ball.

Can. Ent., xxxiv, 259, 1902.

Very distinct by its large size and the ligulate appendage near the base of the elytra. It is known only from its type locality near Buffalo, N. Y., but there is no reason why it should not be found in suitable situations in Connecticut.

Otiocerus Kirby.

A genus of frail pretty insects remarkable for their strongly compressed foliaceous head, quite extinguishing the front, the lateral carinae of the vertex being greatly developed and continuous with those of the front. The division of the second antennal joint into two to four filaments is also peculiar to this genus so far as our fauna is concerned. These antennal filaments are generally shrivelled and tortuous so it is difficult to be sure of their relative lengths but they seem to be about equal. The ocelli are wanting.

Key to Species.

1. General color light or dark rufous 2
- General color pale yellow or whitish 3
2. Larger, 11 mm.; elytra with a short whitish line beyond the tip of the clavus **degeeri**
- Smaller, 8 mm.; elytra with an oval pale spot on the apical margin in addition to the commissural line **stollii**
3. Elytra hyaline with sanguinous veins but otherwise unmarked; length about 7 mm. **schellenbergii**
- Elytra with markings other than the colored veins 4
4. Elytra whitish, quite evenly dotted with fuscous points 5
- Elytra with few if any fuscous points, length 10-11 mm. 6
5. Elytra with many fuscous points but without other markings, length 8 mm. **abbotii**
- Elytra with a fuscous mark at the tip of the clavus, another at base of the membrane, and indications of an oblique vitta along the subapical transverse veins; fuscous points more variable in size; length 10 mm. **francilloni**
6. Elytra with a vitta from the apex of the clavus to the apex of the costal margin **kirbyii**
- Elytra with a vitta from the base of the corium to the apex of the clavus in addition to that found in *kirbyii* 7
7. Elytra clear yellowish white, without dots, the vittae sanguinous, the apical sending a branch along the sutural margin of the membrane to the middle of the apical margin; the radial vein with a short sanguinous vitta before the middle **coquebertii**
- Elytra with a few scattering dots, the vittae fuscous 8
8. Head with a red vitta from the eye to the tip where it ends in a short black line; elytral vittae faint **wolfii**
- Head with the red vitta below the line of the eye, sometimes obscure; elytral vittae distinct 9
9. Elytra beyond the transverse veins largely fuscous with a large apical pale spot; fuscous dots few, on the basal half of the elytra only **signoretii**
- Elytra with the apical vitta not at all expanded; fuscous dots small and confined to the apical areoles **amyotii**

O. degeeri Kirby.

Trans. Linn. Soc. Lond., xiii, 16, 1819.

This large sanguinous or dark red form is common in New York state and seems to be distributed throughout the eastern United States and Canada.

Canterbury, 14 Aug., 1905, Portland, 10 Aug., 1913, Cornwall, 18 July, 1911, North Branford, 1 Aug., 1922 (B. H. W.); Hamden, 15 Aug., 1921 (P. G.).

O. stollii Kirby.

Trans. Linn. Soc. Lond., xiii, 16, 1819.

Colored much as in *degeeri* but a much smaller species. I have taken it only on oaks. It is found from New York southward and should be taken in Connecticut.

O. schellenbergii Kirby.

Trans. Linn. Soc. Lond., xiii, 18, 1819.

A small pale species with the same distribution as the preceding and must be found in Connecticut.

O. abbotii Kirby.

Trans. Linn. Soc. Lond., xiii, 17, 1819.

This small dotted form is apparently rare in the North.

Guilford, 13 July, 1920 (B. H. W.).

O. franciloni Kirby.

Trans. Linn. Soc. Lond., xiii, 17, 1819.

Reported from New York to Georgia and probably lives in Connecticut.

O. kirbyii Fitch.

Homop. N. Y. St. Cab., 46, 1851.

Known only from New York but probably will be taken in Connecticut.

O. coquebertii Kirby.

Trans. Linn. Soc. Lond., xiii, 18, 1819.

The most abundant and the most beautiful species of the genus Hamden, 14 July, 1921 (P. G.); Brookfield (E. L. D.).

O. wolfii Kirby.

Trans. Linn. Soc. Lond., xiii, 19, 1819.

Another common species found on hickory trees from New York to Georgia and should be taken in Connecticut.

O. signoretii Fitch.

Trans. N. Y. St. Agr. Soc., xvi, 394, 1856.

Reported from New York to Texas and should be found in Connecticut.

O. amyotii Fitch.

Trans. N. Y. St. Agr. Soc., xvi, 394, 1856.

Same distribution as *signoretii*, but not common.

New Haven, 17 July, 1912, 28 June, 1920 (B. H. W.).

Subfamily DELPHACINAE.

Small insects readily distinguished by the presence of a large movable spur at the apex of the hind tibiae. They are usually abundant in low grassy meadows and about the borders of streams

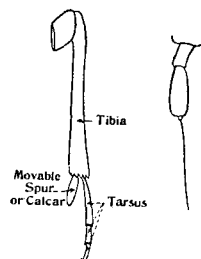


FIG. 3. *Liburniella ornata* Stål.—Leg and antenna greatly enlarged. Drawn by Dr. Philip Garman.

Key to Genera.

1. Lateral carinae of the pronotum attaining the hind edge or becoming obsolete a little within the margin 2
- Lateral carinae of the pronotum deflected outwardly behind the eyes, not directed toward the hind edge 8
2. Median carina of the front normally narrowly forked below the apex of the head, the branches usually obscure where they pass over the apex; lateral carinae of the pronotum sometimes abbreviated at about the middle of the pronotal disk; face with a pale band crossing the base of the clypeus *Pissonotus*, p. 48
- Median carina of the front running to the apex of the head; face without a transverse pale band on the base of the clypeus 3
3. Front narrow or a very little wider below; the sides rectilinear 4
- Front broader below or oblong 5
4. Vertex produced for nearly or quite one-half its length before the eyes; lateral carinae of the pronotum rectilinear *Stenocranus*, p. 46
- Vertex scarcely surpassing the eyes; lateral carinae of the pronotum bowed outward on the disk *Stobaera*, p. 51
5. Front oblong, a little wider above the antennae; apex of the head rounded, the carinae nearly obsolete there *Kelisia*, p. 46
- Front ovate or distinctly wider below near its apex; apex of the head produced, sharp, the carinae there prominent 6
6. Form slender, linear; vertex produced before the eye for nearly or quite the length of the eye, conical at apex; the median carina obsolete and not continued over to the front; front elliptical, its base acute, the apex truncated, the median carina obsolete or nearly so *Megamelanus*, p. 47
- Form sometimes slender; vertex less produced, truncated at apex, the lateral carinae of the front continued over on to the vertex 7
7. Front ovate, its sides much arcuated below, nearly rectilinear above to the narrow base; form slender *Prokelisia*, p. 47
- Front less widened to its apex; form broader ovate *Megamelus*, p. 48
- * Front with one median carina 9
- Front with two median carinae 12
9. Anterior and sometimes the intermediate tibiae foliaceous *Phyllodinus*, p. 50
- Anterior and intermediate tibiae slightly if at all expanded 10

10. Lateral carinae of the pronotum and the front on either side with a row of crater-like pits; front broad, but little exceeding the eyes **Laccocera**, p. 51
Crater-like pits wanting on the front and lateral pronotal carinae 11
11. Oblique apical carinae of the vertex obsolete or nearly so, leaving the lateral compartments of the vertex continuous with those of the front; median dorsal line white, bordered with black; elytra with a broad angled fuscous vitta **Liburniella**, p. 52
Oblique carinae at apex of the vertex more or less obvious, when obsolete the median carina also obsolete, the lateral compartments of the vertex not continuous with those of the front ... **Liburnia**, p. 52
12. Mesonotum with five carinae; insect large, green [**Pentagramma**]
Mesonotum with three carinae, sides of the pronotum and face with pitted granules; insects brachypterous, larvae of **Megamelus**, p. 48

Stenocranus Fieber.

Slender flavo-testaceous insects with a median white dorsal vitta and on each elytron a longitudinal fuscous vitta in the median apical cell. Length 4-5 mm. They live on the various meadow carices.

Key to Species.

Front black with white carinae **dorsalis**
Front brown with white carinae **dorsalis** var. **vittatus**
Front concolorous **felti**

S. dorsalis (Fitch).

Homop. N. Y. St. Cab., 46, 1851.

A familiar object about Carices everywhere east of the Rocky Mountains, and must be common in suitable locations in Connecticut. These insects and the *Cymus* found with them mimic the chaff of the *Carex* so perfectly that they are hard to detect when seen together in the collecting net.

S. dorsalis var. **vittatus** (Stål). **lautus** Van Duzee.

Berl. Ent. Zeit., vi, 315, 1862.
Collinsville, 8 Sept., 1916 (W. E. B.); Hamden, 25 Sept., 1921 (B. H. W.).

S. felti Van Duzee.

Trans. Am. Ent. Soc., xxxvi, 88, 1910.

A shorter and broader form with less strongly contrasting colors. It was described from New Hampshire, has been taken in New York and may occur in the hilly portions of Connecticut.

Kelisia Fieber.

Similar to the preceding genus in form and color but distinct by its broader form and shorter blunt vertex.

Key to Species.

Brownish-testaceous with a fuscous vitta behind each eye which is continued along the axis of the elytron **axialis**
Pale flavo-testaceous with a dorsal white line which is reproduced on the front **crocea**

K. axialis Van Duzee.

Bull. Buff. Soc. Nat. Sci., v, 232, 1897.

Like all its relatives this is found in swampy meadows. The wingless form is common with the elytra shorter and more lanceolate. It is less abundant than *Stenocranus dorsalis* but like that is distributed throughout the eastern United States and Canada.

New Haven, 20 Aug., 1909 (B. H. W.).

K. crocea Van Duzee.

Bull. Buff. Soc. Nat. Sci., v, 233, 1897.

This pale yellowish species is most at home in the Mississippi Valley but it has been taken at Faneuil, Mass. In certain characters it recalls *Stenocranus*.

New Haven, 8 Aug., 1920 (B. H. W.).

Megamelanus Ball.

Small slender insects with a long pointed head. They are found on *Sparta* and related grasses. Length 3-4 mm.

M. spartini Osborn.

Ohio Nat., v, 375, 1905.

The females are pale yellowish while the males are darker with the apex of the elytra smoky. They are common about New York City and must occur in southern Connecticut.

Prokelisia Osborn.

I am separating this genus from *Megamelus* by its more slender form and more ovate front with the sides more strongly arcuated. Some individuals in this genus, as in *Kelisia* and *Megamelanus*, have the elytra shorter and more lanceolate with the wings aborted.

Key to Species.

Testaceous marked with black on the abdomen, the frontal carinae lined with black; length 3-3.5 mm. **marginata**
Flavo-testaceous, nearly unicolorous or with the head a little smoky; length 2.5-3 mm. **setigera**

P. marginata (Van Duzee).

Bull. Buff. Soc. Nat. Sci., v, 234, 1897.

Common throughout the United States and Canada.

Stratford, 21 July, 1908 (B. H. W.).

P. setigera Osborn.

Ohio Nat., v, 373, 1905.

Described from Louisiana but common in Massachusetts and undoubtedly occurs in Connecticut. Apparently a sea-coast species and probably lives on some shore grass.

Megamelus Fieber.

In this genus the vertex is produced before the eyes but less so than in *Stenocranus*, the carinae are sharp and prominent over the apex of the head and the front is broader below with the sides sometimes a little arcuated. Crawford's use of this generic name in 1914 is unwarranted and unscientific.

Key to Species.

1. Flavo-testaceous varied with fuscous or brown; face with a transverse brown band covering the clypeus **notulus**
2. Fuscous or blackish, varied with pale 2
2. Tibial spur normal; color almost uniformly piceous-brown **piceus**
- Tibial spur very large, ovate, flat, wider than the front and nearly as long; frontal carinae pale **davisi**

M. notulus (Germar).

Thon's Ent. Archiv., ii, 57, 1830.

I have taken this species on marshy fields in New York, New Hampshire and Ontario and it must occur in Connecticut. The young have the median frontal carina forked almost to its base and the head and pronotum ornamented with "crater-pits."

M. piceus Van Duzee.

Mich. Agr. Expt. Sta., Bull. 102, 8, 1894.

A small piceous species marked with pale on the vertex, venter and about the coxae. It has been taken from Long Island to Michigan and may occur in Connecticut.

M. davisi Van Duzee.

Bull. Buff. Soc. Nat. Sci., v, 235, 1897.

A little larger than *piceus* with pale facial carinae and a dark mark at apex of the clavus. It has the front broader and more ovate below and is remarkable in its greatly enlarged and flattened tibial spurs. Its home is on water plants and its large spurs undoubtedly support it when by a mischance it lands on the water. Those who consider the form of the spur a character of primary importance would undoubtedly found a new genus for this species but I can see no occasion for so doing. The enlarged spur occurs independently in *Stenocranus* and might be found in any of the related genera having species that live about the water.

Pissonotus Van Duzee.

The members of this genus are easily recognized by the transverse black band that crosses the base of the clypeus; usually the apex of the front is paler bringing the dark band into still stronger

contrast. There are two series of species found in this genus. In the first or typical group the insect is pale yellow to piceous, polished; apex of the head smooth with the carinae there obscure. This group of species much resembles *Megamelus* but has the median carina of the front forked distinctly below the apex of the head although the two branches are close together and obscure. The second division of the genus includes opaque brown species with pale carinae and elytral nervures and the frontal carinae distinct over the apex of the head. This genus and the more southern *Perigrinus* are amply distinct from *Dicranotropis* and there is no occasion for confusing them as has been done by Mr. Crawford.

Key to Brachypterous Forms.

1. Polished, fulvo-testaceous to piceous-black; elytral nervures concolorous and indistinct 2
- Opaque brown species with the elytral nervures usually pale 6
2. Color piceous or almost black 3
- Color fulvous or fulvo-piceous, at least on the elytra 5
3. Apical margin of the elytra pale 4
- Apical margin of the elytra concolorous, piceous **ater**
4. Anterior and intermediate tibiae black or nearly so **marginatus**
- Anterior and intermediate tibiae pale, lineate with brown **pallipes**
5. Head concolorous or paler than the pronotum and elytra **delicatus**
- Head and pronotum black or nearly so **guttatus**
6. Face with a broad white band crossing the apex of the front, base of front maculated **aphidioides**
- Face without a white band above the usual transverse black band 7
7. Lower surface and a broad longitudinal vitta on the tergum pale yellowish; elytral nervures concolorous **dorsalis**
- Coxae and apex of the front only pale; median vitta of the tergum but obscurely pale **brunneus**

P. marginatus Van Duzee.

Bull. Buff. Soc. Nat. Sci., v, 236, 1897.

The black anterior and intermediate tibiae seem to be characteristic of this species and will serve to distinguish it from the closely related *pallipes*. It seems to be distributed throughout the United States and Canada and should be found in Connecticut. *Pissonotus basalis* Van Duzee will probably be found to be but the macropterous form of this species.

P. pallipes Van Duzee.

Bull. Buff. Soc. Nat. Sci., v, 238, 1897.

Smaller than the preceding with the feet entirely pale, lineate with brown. It also is a widely distributed form and must occur in Connecticut.

P. ater Van Duzee.

Bull. Buff. Soc. Nat. Sci., v, 237, 1897.

The concolorous hind margin of the elytra is the best superficial character by which to distinguish this species. It has been reported from New York to Florida.

Westville, 4 July, 1904 (W. E. B.).

P. delicatus Van Duzee.

Bull. Buff. Soc. Nat. Sci., v, 237, 1897.

Distinct by its pale fulvous color with the legs lineate with brown and the elytra bordered behind with white. It is distributed from New Jersey to California and might be found in southern Connecticut.

P. guttatus Spooner.

Can. Ent., xlv, 233, 1912.

As suggested by Mr. Spooner, this will probably prove to be a distinct species from *delicatus*. It differs in having the head and pronotum nearly black, the latter bordered behind with white, the white on the apical margin of the elytra fading out toward either angle, and the legs without brown lines. It has been taken from southern Ontario to Florida and must occur in Connecticut.

P. dorsalis Van Duzee.

Bull. Buff. Soc. Nat. Sci., v, 239, 1897.

This species is intermediate between the two sections of the genus and serves to connect them. It has the opaque body of the *brunneus* group with the polished elytra and obscure neuration found in the *marginatus* group. It has been reported from New York and Ohio and may occur in Connecticut.

P. brunneus Van Duzee.

Bull. Buff. Soc. Nat. Sci., v, 239, 1897.

A plain looking little species well distinguished by the pale elytral neuration and bears no resemblance to *pallipes* as suggested by Mr. Crawford. It is found throughout the eastern states and Canada.

Huntington, 9 July, 1920, New Haven, 14 June-3 Oct., 1920 (B. H. W.).

P. aphidioides Van Duzee.

Bull. Buff. Soc. Nat. Sci., v, 239, 1897.

A large species much resembling *brunneus* but well distinguished by the maculated face. It inhabits the other eastern states and doubtless Connecticut. *Pissonotus frontalis* Crawford is a closely related western species.

Phyllodinus Van Duzee.

Readily distinguished from related genera by the foliaceous tibiae. The typical species is opaque brown with a broad head and maculated front, while *flabellatus* is somewhat polished and has a narrower head.

Key to Species.

Elytra of the brachypterous form concolorous with white veins .. **nervatus**
 Elytra of brachypterous form brown with the apical margin white,
 the nervures concolorous **flabellatus**

P. nervatus Van Duzee.

Bull. Buff. Soc. Nat. Sci., v, 241, 1897.

A stout square-looking insect which cannot well be confused with any other described Delphacid. It is found throughout the eastern United States and must occur in Connecticut.

P. flabellatus Ball.

Can. Ent., xxxv, 232, 1903.

A brown species with most of the pronotum, the scutellum and the apical margin of the elytra white, and the tergum with a series of short marks on either side and the dorsal line white. It has been reported from New York to the District of Columbia and should occur in Connecticut. *Phyllodinus koebleri* Osborn, described a few months later, seems to differ very little if at all from this species.

Laccocera Van Duzee.**L. vittipennis** Van Duzee.

Bull. Buff. Soc. Nat. Sci., v, 242, 1897.

This very distinct species has the short square head of the preceding genus but can at once be distinguished by the row of pitted granules on the front and pronotal carinae. It is mostly black, with a broad white vitta on either side below and a broader one on the dorsum, leaving the basal angles of the scutellum deep black. The milky elytra have a fuscous vitta along the suture and a short discal one at apex. This species is found in New Hampshire and may occur in Connecticut.

Stobaera Stål.

This genus can be roughly distinguished by the maculated elytra with conspicuously punctated nervures; the rather large and pustulated antennae, the narrow and sometimes transversely banded front. The lateral carinae of the pronotum follow nearly the contour of the eye until they bend abruptly to the hind margin.

Key to Species.

Face crossed by a brown band between the eyes followed by a creamy white one and that by a black one on the apex of the front;
 clypeus pale **tricarinata**
 Face pale brown, darker between the eyes, marked with a transverse white line at the lower angle of the eyes and a few white points
 **pallida**

S. tricarinata (Say).

Jour. Acad. Nat. Sci. Phila., iv, 237, 1825.

In this species the elytra are marked with an oblique fuscous vitta from the pterostigma to the inner apical angle. This vitta gives off two branches to the apical margin, the inner broader and returning along the margin toward the inner angle. Mr. Craw-

ford sinks *concinna*, *affinis* and *minuta* as synonyms of this species but with our present knowledge of the life history of these insects we must keep them distinct. This species is distributed over nearly the whole of the United States and Canada.

New Haven, 16 Oct., 1903 (H. L. V.).

S. pallida Osborn.

Ohio Nat., v. 375, 1905.

Here the elytra are marked with a brown vitta from near the base to a fuscous mark at the apex of the clavus where it is deflected to the stigma then back to the inner apical angle and again along the apical margin. This species has the broad short vertex of *concinna* and somewhat the same elytral markings. It has been recorded from New York to Florida and should be found in Connecticut.

Liburniella Crawford.

This genus has the narrow front of *Stenocranus*, the elytral markings nearly of *Stobacra*, while the pronotal carinae are those of *Liburnia*.

L. ornata (Stål). (Fig. 1.)

Berl. Ent. Zeit., vi, 315, 1862.

Easily distinguished by the narrow white dorsal vitta bordered on either side by a black line, the black front with white carinae, and the broad fuscous vitta on the elytra from the stigma to the inner apical angle and back to the outer apical angle; there is also a brown cloud on the base of the corium. It is a very pretty species and is found throughout the United States and Canada.

New Haven, 4 Nov., 1903 (H. L. V.), 4 July, 1920 (B. H. W.); Hamden, 5 July, 1920 (P. G.); Cornwall, 22 Oct., 1920 (B. H. W.).

Liburnia Stål.

This is a large and difficult genus that is badly in need of revision.

Key to Species.

1. Frontal carinae prominent and continued over the apex of the head to connect with those of the vertex 2
- Frontal carinae interrupted at the apex of the head, not continuous with those of the vertex 9
2. Front pale with the carinae bordered by a black line; insects pale yellowish-testaceous; tergum black, at least in part **detecta**
- Frontal carinae not bordered by a black line on a pale ground .. 3
3. Front black with pale carinae 4
- Front pale 7
4. Larger (3 mm. to tip of abdomen); vertex and pronotum white; body black varied with fulvous **pellucida**
- Small (2 mm. to tip of abdomen) 5
5. Apex of the clavus with a short fuscous line; pronotum white posteriorly **puella**
- Apex of the clavus without a fuscous line 6

6. Color mostly dark brown or black, the base of the tergum with a fulvous vitta; frontal carinae slenderly pale **basivitta**
- Pale colors more extended; vertex, pronotum and scutellum whitish, the former with two black points; basal fulvous band of the tergum carrying a median black spot and behind the band a pale dorsal line; frontal carinae conspicuously white **foveata**
7. Color of the scutellum fulvous or with the basal angles black in the male; tergum without a dorsal pale vitta **osborni**
- Color, including scutellum, soiled or testaceous-yellow; dorsal line of the tergum pale 8
8. Tergum brown or blackish brown, darker along the sides; margin, apex and slender dorsal line pale yellowish **lateralis**
- Tergum black; margin, apex and a broad dorsal vitta whitish **kilmani**
9. Front narrow, the sides straight, parallel or nearly so; color pale yellowish, female nearly immaculate, male with the basal angles of the scutellum and disk of the pleural pieces black, the abdomen deep orange, marked with black **campestris**
- Front broad, its sides distinctly arcuated 10
10. Color black in the male, pale yellowish in the female, with the frontal carinae margined with pale **lineatipes**
- Color obscure brown varied with paler in both sexes 11
11. Male stiles but little divergent, their slender tips approximate above **lutulenta**
- Male stiles above strongly divergent, their apical two-thirds broad and nearly horizontal **vanduzeei**

L. pellucida (Fabricius).

Ent. Syst., iv, 7, 1794.

A rather large stout species of a testaceous-white color with the face, pleural pieces and abdomen mostly black. The male generally has a transverse fulvous vitta on the base of the tergum. The clear white frontal carinae on a black ground are a conspicuous character. This imported species is distributed throughout the northern states and Canada from the Atlantic to Colorado and British Columbia.

New Haven, 8 July, 1912.

L. puella Van Duzee.

Bull. Buff. Soc. Nat. Sci., v, 250, 1897.

A small slender species, mostly black with the frontal carinae and hind margin of the pronotum white. The elytra are whitish-hyaline with a longitudinal fuscous mark on the apex of the clavus. This species is distributed throughout the United States and sub-tropical America and has been reported from the Hawaiian Islands and Australia.

New Haven, 16 Oct., 1903 (H. L. V.), 23 June, 1904 (P. L. B.).

L. basivitta Van Duzee.

Bull. Buff. Soc. Nat. Sci., ix, 202, 1909.

Has the general aspect of *puella*, but here the frontal carinae and hind margin of the pronotum are scarcely paler and the commissure wants the fuscous mark at the apex of the clavus. Found throughout the eastern states and undoubtedly occurs in Connecticut.

L. foveata Van Duzee.

Bull. Buff. Soc. Nat. Sci., v, 257, 1897.

Much like the brachypterous form of *basivitta* and like that species marked with a fulvous band on the base of the tergum. It may be distinguished by having the vertex, pronotum and scutellum whitish-testaceous and the frontal carinae more conspicuously pale. Reported from New York and may occur in Connecticut.

L. osborni Van Duzee.

Bull. Buff. Soc. Nat. Sci., v, 250, 1897.

A pretty yellowish or fulvous species with conspicuous black spots on the lateral angles of the male scutellum. It need not be confounded with *campestris* which has the carinae obscure on the rounded apex of the head. It is found throughout the eastern states and should inhabit Connecticut.

L. lateralis Van Duzee.

Bull. Buff. Soc. Nat. Sci., v, 253, 1897.

In this species the front is light brown with pale yellowish lines and dots; the dorsum is pale with a broad brown or blackish vitta on either side. It may be distinguished from the next by its having the median one-third of the tergum pale brown with a slender whitish median line. It inhabits the northern states and Canada.

New Haven, 23 June, 1904 (P. L. B.).

L. kilmani Van Duzee.

Bull. Buff. Soc. Nat. Sci., 253, 1897.

Near the preceding but differs in having a slightly broader front, the pro- and mesonotum pale, and the broad dorsal vitta on the tergum without a slender whitish median line. The male genital characters are also very distinct, the stiles being narrow, pointed and widely divergent in the present species while they are much wider and more parallel in *lateralis*. In both species the brachypterous elytra are brown and polished, with a pale marginal nervure. Like *lateralis* this species inhabits the northern states and probably Connecticut.

L. detecta Van Duzee.

Bull. Buff. Soc. Nat. Sci., v, 248, 1897.

This species has a broader front on which the white carinae are conspicuously bordered with black, leaving a median fulvous line in the axis of each compartment; the vertex and pronotum are whitish with the foveae more or less blackish, and the scutellum is fulvous. As in many of our *Liburnias* the abdomen is black with the base of the tergum marked with a fulvous vitta. It is distributed from New York to Florida and must occur in Connecticut.

L. campestris Van Duzee.

Bull. Buff. Soc. Nat. Sci., v, 254, 1897.

A small pale yellowish species in which the female is almost immaculate while the male has a conspicuous black spot on the pleural pieces and basal angles of the scutellum, and the abdomen is fulvous-red marked with black. It is common on grass lands and is widely distributed in the United States and Canada. This species has been sunk as a synonym of *arvensis* by some, and the Fitch collection at Albany does have a typical male *campestris* placed among the *arvensis* material. Dr. Fitch, however, gives the length of his species as .17 of an inch while this is but .12 of an inch, and he states that his is immaculate while including both sexes in his description. So for the present, at least, nothing can be gained by sinking *campestris* as a synonym of *arvensis*. There is a large pale species, not uncommon in New York State, which answers entirely to Fitch's description but I have not been able satisfactorily to locate its male and it may prove to be a dimorphic form of *pellucida*.

New Haven, 13, 30 May, 1911 (B. H. W.).

L. lineatipes Van Duzee.

Bull. Buff. Soc. Nat. Sci., v, 255, 1897.

A small nearly unicolorous species of which the males are black and the females pale yellowish. The front is rather broad, oval, and truncated at apex as well as at base, and the legs are testaceous, lineate with brown. It is distributed from New York to California and undoubtedly occurs in Connecticut.

L. lutulenta Van Duzee.

Bull. Buff. Soc. Nat. Sci., v, 252, 1897.

This is a dull brown species, varied with paler brown, with a rather broad oval front, marked, as in *lineatipes*, by black lines next the carinae in pale examples. It ranges from Massachusetts to Colorado.

New Haven, 3 Oct., 1902, 13 May, 1 June, 1911 (B. H. W.).

L. vanduzeei (Crawford).

Proc. U. S. Nat. Mus., xlv, 622, 1914.

Very near *lutulenta*, apparently a little larger with different male genitalia. Described from Massachusetts and should be found in Connecticut.