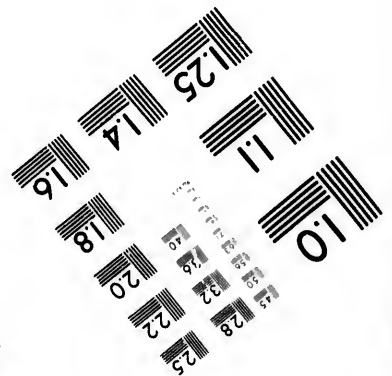
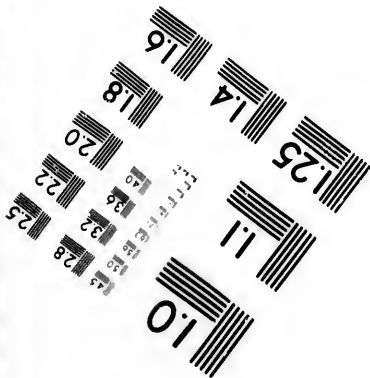
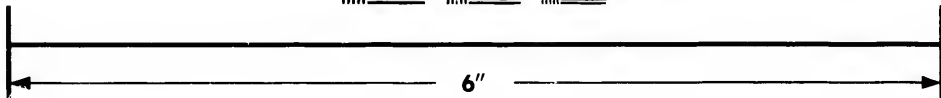
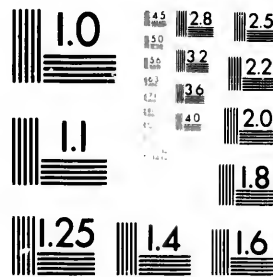


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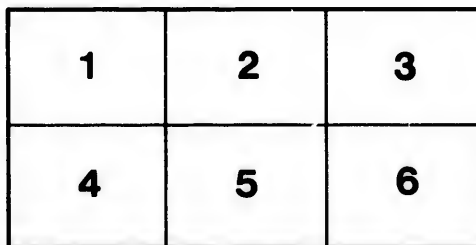
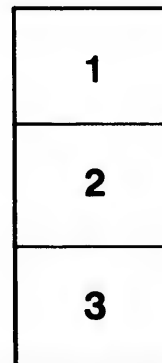
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SMITHSONIAN MISCELLANEOUS COLLECTIONS.

CLASSIFICATION

OF THE

COLEOPTERA

OF

NORTH AMERICA.

PREPARED FOR THE SMITHSONIAN INSTITUTION.

BY

JOHN L. LECONTE, M. D.

PART I.



WASHINGTON:
SMITHSONIAN INSTITUTION.

MAY, 1861—MARCH, 1862.

OL 581. L4
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ADVERTISEMENT.

THE present work is one of a series to be published by the Smithsonian Institution for the purpose of facilitating the study of certain branches of the Natural History of North America which appear to require special aid. It has been prepared, at the request of the Institution, by Dr. LeConte, to whom science is much indebted for thus devoting his time to the preparation of an elementary book, intended to introduce others to a field in which he has himself been so successful a pioneer.

JOSEPH HENRY,
Secretary S. I.

SMITHSONIAN INSTITUTION,
WASHINGTON, May, 1861.

The preceding advertisement was written and published with page 1—208, in May, 1861. Since then, pages 209—278, completing Part I of the present work, have been prepared and are now published.

The second and concluding part of the work will contain the families embraced in the divisions Tetramera and Trimera of the older authors. Some time will, however, necessarily elapse before it can be prepared by Dr. LeConte.

J. H.

February, 1862.

ACCEPTED FOR PUBLICATION, OCTOBER, 1860.

PHILADELPHIA:
COLLINS, PRINTER.

PREFACE.

THE science of Entomology, in this country, is to a very considerable degree traditional. The series of specimens which are arranged and named have assumed their scientific value entirely from the labors of four or five individuals, who, from peculiarly favorable circumstances, have been enabled to lay a groundwork for scientific investigation by conference or correspondence with European students.

The present small treatise, prepared at the request of the Smithsonian Institution, is intended, so far as relates to the determination of genera of Coleoptera, to obviate the necessity for this traditional knowledge, and to enable those who have a desire beyond that of the mere collection of specimens to acquire sufficient information to enable them to consult with profit the various works in which are found scattered the descriptions of our species.

At the same time it is designed to present in as compact a form as possible the most recent results of scientific analysis, as applied to the classification of those genera of Coleoptera which have been found in that portion of America north of Mexico. In presenting these results, I have by no means adhered to the opinions expressed by those who have previously written on the classification of the order of insects which will occupy our attention; but where it has seemed to me possible to change with advantage the schemes already proposed, I have not hesitated to alter them.

The work is, therefore, intended for two classes of persons—for those *who wish* to obtain a knowledge of this branch of science, and for those who have already acquired that knowledge, and who now occupy the position of investigators.

The first class, or beginners, will here find the elementary

results obtained from a long course of reading and the observation of abundant materials. A knowledge of these results will enable them to understand the more special memoirs which they will find it necessary to use in the prosecution of their future studies, and eventually to correct any errors which are contained in the present treatise. The second class, or investigators, will find herein certain views proposed for their adoption, which, with the material afforded by our fauna, seem to the author to be preferable to those presented in previous works. Many of the presumed improvements will no doubt be rejected, but it is hoped that at all events they will help, like those which have gone before them, to establish a basis for future progress.

Bibliographical references have been avoided in the body of the work; they would increase considerably the size, without rendering the work more useful. The beginner does not need them; the investigator knows where to find them in more general works.

I have derived great aid in the preparation of this work from the *Genera des Coléoptères*, by my learned friend Prof. Th. Lacordaire, and from the *Genera des Coléoptères d'Europe*, by Jacquelin du Val, both admirable works, which, except in some very intricate cases, render any reference to the earlier authors on the subject of genera almost unnecessary.

In conclusion, I would repeat that the present work is not expected to inspire any one with a love for this branch of Entomology, but to satisfy, so far as I am able, the desires which have arisen in the minds of those in whom the sacred fire of science has already been kindled.

JOHN L. LECONTE.

PHILADELPHIA, April, 1861.

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INTRODUCTION.

THE articulate branch of the animal kingdom contains animals composed of simple rings, more or less similar to each other, which contain and support the organs necessary to animal life.

According to the method in which this plan of structure is exemplified, articulate animals are divided into three classes:—

Body permeated by air vessels.	INSECTA.
Body without air vessels ;	
Thoracic region distinct from abdominal.	CRUSTACEA.
Thoracic region not distinct.	VERMES.

The class Insecta are again divided by subordinate modifications in the plan of structure into three sub-classes:—

Head, thorax and abdomen distinct, legs 6.	INSECTA.
Head and thorax usually agglutinated, legs 8.	ARACHNIDA.
Head distinct, legs numerous.	MYRIAPODA.

The first sub-class Insecta (genuina) alone occupy our attention at present.

In examining the transformations of those which pass from a larval form, which is very different from the adult, we find that the changes may be grouped as follows:—

1. Greater concentration of the central organs, and diminution of the number of external segments.
2. Greater complication of the peripheral organs.
3. Hardening of the integument.

We also find that certain forms, when hatched from the egg, resemble in appearance the parent, and finally assume the characters of the adult after growth, and repeated changes of skin. In others the individual emerging from the egg bears no resemblance to the adult, but after growth, accompanied with several changes of skin, passes into a condition in which a body similar to that of

the perfect insect is covered by an integument, which is finally shed. This condition is called the *pupa*, during which the animal is sometimes active, and sometimes inactive. The three thoracic segments are in the perfect insect either similar (except that the middle and posterior ones bear the wings) or agglutinated, or the anterior one, or *prothorax*, is freely movable, and the other two closely connected with each other and with the abdomen. The parts of the mouth are also modified in form, so that the mandibles and maxillæ are either free moving lateral organs fitted for mastication and prehension, or are elongated, forming a sucking tube. In the former case the mouth is said to be *mandibulate*, in the latter *haustellate*. The wings are also of various structure.

The embryological studies of insects are as yet not sufficiently progressed to enable us to subordinate these complications of structure, in such manner as to determine which forms are higher and which lower. We can merely state in general terms that those having a perfect metamorphosis are the highest; and those having the thoracic segments agglutinated, or the prothorax separate, are to be considered above those in which the larval character of similarity among the thoracic segments is preserved.

By a parity of reasoning, those orders in which the appendages of the thoracic organs (the wings) are remarkably different in form must be considered as higher than the most nearly allied forms in which they are similar.

The sub-class therefore divides into orders as follows:—

§ Metamorphosis distinct; wings usually present;

Pupa inactive;

Mouth mandibulate;

Prothorax free; anterior wings corneous.

I. COLEOPTERA.

Thorax agglutinate; wings 4, membranous; posterior ones smaller.

II. HYMENOPTERA.

Mouth haustellate; thorax agglutinate;

Anterior wings membranous, posterior abortive.

III. DIPTERA.

Wings 4, membranous, usually covered with scales.

IV. LEPIDOPTERA.

Pupa variable, sometimes active,* sometimes inactive; thorax variable;
mouth mandibulate; wings 4, membranous, nearly equal.

V. NEUROPTERA.

* Those having an active pupa (BIOMORPHOTICA, Westwood) are now called Pseudoneuroptera, and are united by some authors with Orthoptera, with which, however, they appear to have but little affinity. The habits, as observed to me by Baron R. Osten Sacken, are quite different, the

Papa active; wings 4; prothorax free;

Mouth mandibulate.

Mouth haustellate.

§§ Metamorphosis none; wings wanting;

Abdomen without appendages.

Abdomen with anal appendages.

VI. ORTHOPTERA.

VII. HEMIPTERA.

IX. ANOPLURA.

X. THYSANOURA.

The order Neuroptera is very difficult to define, though the sub-orders composing it are very readily distinguished from any of the other orders.

Several so-called orders will by this scheme become attached to the orders here recognized, by possessing a majority of the characters above mentioned; thus the Strepsiptera become the Coleopterous family Stylopidae; the Thysanoptera and Euplexoptera unite with the Orthoptera; the Aphaniptera with the Diptera, and the Trichoptera become a sub-order of Neuroptera.

Having thus exhibited the elementary characters upon which the orders are based, the special subject of the present treatise may now occupy the attention of the student.

In order that the body of the work may be made intelligible to the beginner, it will be necessary to make a brief exposition of the external anatomy of Coleopterous insects, before attempting to define the numerous families which compose the order. The three regions, the head, thorax, and abdomen, will therefore be taken up in succession.

HEAD.

The anterior portion of the body is called the *head*; it varies greatly in form, and is joined by membrane to the thorax. Usually the hind portion is but slightly narrowed, and enters the anterior part of the thorax; sometimes the part behind the eyes is suddenly narrowed, and constricted, forming the *neck*.

The surface of the head consists of a solid horny plate; above it is frequently marked by a single suture, running transversely between or in front of the antennæ; this is called the *clypeal* or *frontal suture*. The portion in front of this suture, when dilated so as to project over the mouth, as in many Scarabæidæ, is called the *clypeus*; when small, it is named *epistoma*, and is sometimes

Orthoptera being *terrestrial*, and using their wings only as accessories in progression, while the Pseudoneuroptera are essentially *aerial*, passing the greater portion of the time on the wing.

membranous, or coriaceous, instead of horny like the rest of the surface. The upper surface is divided into regions, the back part being called the *occiput*, the middle the *vertex*, and the anterior the *front*; on each side are the *eyes*.

The eyes of Coleoptera are very variable in form and shape, and are composed of aggregated small lenses; rarely they are entirely wanting; equally rarely accessory eyes are seen, in the form of one or two simple lenses; they are situated between the compound eyes, on the upper surface, and are called *ocelli*.

The under surface of the head is widely excavated, forming the mouth; the parts beneath the eyes and behind the mandibles are called the *genæ*; behind the mouth the region is called the throat, or *gula*; the suture separating the *gula* from the *mentum* (hereafter described) is called the *gular suture*; from the opening of the mouth may be seen two sutures, which sometimes unite at the medial line, running backwards; these are called *buccal sutures*; they are of but small interest in classification, but I have made use of their position to define the groups of the sub-family Telephoridæ.

ANTENNÆ.—The *antennæ* are articulated appendages inserted in front of, or more rarely, between the eyes—usually under the side margin of the front; they vary in form and number of joints, the latter attaining, in our fauna, the minimum in Adranes, of the family Pselaphidæ, in which genus they consist of but two joints; the maximum is reached in certain species of Prionus, of the family Cerambycidæ, where 25—27 joints are seen. The usual number of joints is eleven; the joints nearest the head are usually of denser consistence than the outer ones, which possess a peculiar structure, intended for special sensibility. It consists in an immense number of pores, visible only under a very high magnifying power, and covered by a very delicate transparent membrane. These pores vary in situation in different families, but it is not yet known how far these variations may be used for purposes of classification. Lacordaire has found them of service in grouping the genera of Buprestidæ.

The forms of antennæ may be reduced to the following types:—

1. *Filiform*, where the joints are cylindrical, and the outer ones are not, or scarcely enlarged; when the outer ones are somewhat more slender, the antennæ are said to be *setaceous*.

2. *Serrate*, where the joints are triangular and compressed, presenting therefore a serrate outline on the inner margin; the outer joints (usually three in number) are sometimes enlarged, forming a serrate club; the form varies by insensible gradations (as in the family Cleridæ), from the regularly serrate form, and the very flattened serrate club, to the small and more compact club of Corynetes; whereby we pass to the next type. Other variations of the serrate type are:—

a. The joints are short, and very much prolonged on the inner side, giving the *pectinate*, or on both sides, giving the *bipectinate* form; when these prolongations are very long compared with the antennæ, the *flabellate* form results.

b. The joints emit from the base or apex, sometimes on one, rarely on both sides, cylindrical branches; the antennæ are then called *ramose*; if the branches are very long and flexible, they are called *plumose*.

3. *Clavate*, where the outer joints are more or less enlarged, but not triangular, nor leaf-like. This is one of the most usual forms of antennæ, and its modifications connect insensibly with all the other types; names are therefore necessary for the purpose of more definite description. The principal forms are as follows:—

a. *Moniliform* or *granose*, when the joints, not differing greatly in size, are rounded, resembling a string of beads; this leads to the filiform type.

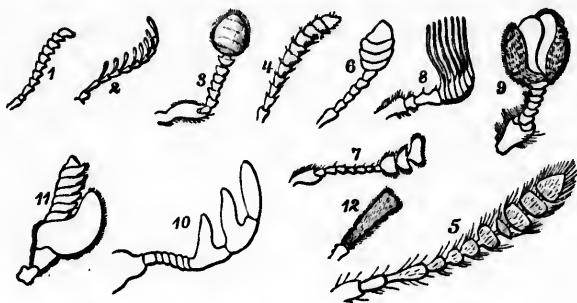
b. *Clavate*, where the outer joints are gradually larger, forming an elongate club.

c. *Capitate*, where the outer joints are suddenly larger, forming a compact rounded club; this leads gradually to the last type,

4. *Lamellate*: in this the outer joints are prolonged internally, opposing flat surfaces to each other, which may be brought closely in contact, forming thus a transverse, or rarely rounded, club, supported at one side by the stem of the antennæ. This form obtains in all Searabæidæ.

Antennæ are called *geniculate* when the second joint is affixed so as to make an angle with the first; the following joints continue in the line of the second.

Other names have been applied to modifications in the form of antennæ, but they are of rare occurrence in the literature of the science, and are not used in the present treatise.



ANTENNÆ: 1. Serrate; 2. Pectinate; 3. Capitate (and also geniculate); 4, 5, 6, 7. Clavate; 8, 9. Lamellate; 10. Serrate (*Dorcatoma*); 11. Irregular (*Gyrinus*); 12. Two-jointed antenna of *Adranes coccus*.

MOUTH.—The mouth of Coleoptera is mandibulate; that is to say, it possesses two pairs of horizontally moving pieces for the purpose of seizing the food. Above it is seen a small piece articulating with the front or epistoma, which is called the upper lip, or *labrum*.

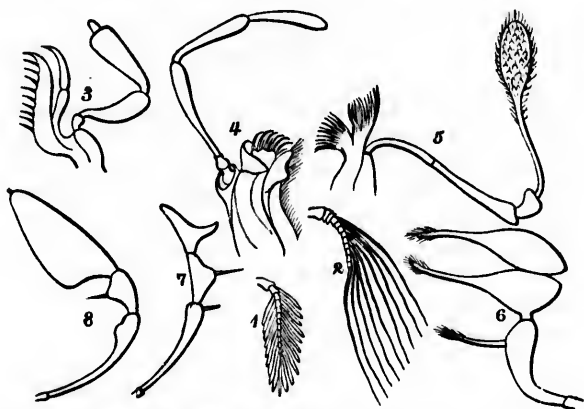
Immediately below the labrum are the jaws, or *mandibles*; they are of various shapes, but are generally curved and of moderate size; exceptionally, in certain Lucanidæ, they are very long and branched, like the antlers of a deer; at other times, as in certain Scarabæidæ, they are very small and partly membranous. The form of the joint between the mandibles and the head varies somewhat, and has been used by Duval for the purpose of defining some genera of Buprestidæ.

Below the mandibles is a second pair of horizontally moving pieces, called *maxillæ*; they are complex in structure, and are of great moment in classification, and therefore demand a special paragraph.

MAXILLÆ.—The hind portion or base of the maxillæ is composed of two pieces; the one articulating with the head is called the *cardo*, the second piece the *stipes*; attached to the stipes are the appendages, which are normally two *lobes* and one *maxillary palpus*; the lobes are varied in form, according to the families and genera, and sometimes one or the other is so small as to be indistinct; the outer lobe is occasionally, as in Cicindelidæ, Cara-

bidæ, and Dytiscidæ, slender, and usually divided into two joints like a palpus, whence in the older books the insects of those families are said to have six palpi. The inner lobe is, by a rare exception, as in most Cicindelidæ, terminated by a movable hook.

The maxillary palpi are usually 4-jointed, rarely 3-jointed, and in the genus *Aleochara* alone 5-jointed, by the addition of a very minute terminal piece; they vary in form, being filiform or dilated, and are occasionally of great size, as in most *Pselaphidæ*; sometimes very long and slender, as in most *Hydrophilidæ*; the last joint is frequently much smaller and more slender than the penultimate, in which case the palpi are called *subulate*.



ANTENNÆ: 1. Bipectinate; 2. Flabellate. MAXILLÆ: 3. Bembidium; 4. Hydrophilus; 5. Pselaphus. MAXILLARY PALPI: 6. Ctenistes; 7. Tmesiphorus; 8. Tychus.

MENTUM AND LIGULA.—Beneath the maxillæ, and between them, is seen a small movable piece called the *ligula*, which supports two articulated appendages called the *labial palpi*; behind them is a large or small corneous plate, forming the floor of the mouth—it is called the *mentum*, and articulates with the lower surface of the head by the *gular suture*, which is rarely effaced; the openings each side of the mentum are called *buccal openings*. The mentum and ligula are very important organs in the system of classification.

The mentum is usually small, or moderate in size, and trapezoidal or quadrate, but frequently of large size, and varies accord-

ing to the family; rarely it is so large as to close over the buccal openings, and thus conceal the base of the maxillæ; it is frequently, as in Carabidæ and allied families, deeply emarginate in front, with a prominence called a tooth at the middle of the emargination; the presence and form of this tooth are of generic value. In many families, especially those with antennæ of the clavate and serrate types, the mentum appears to be divided into two portions; this results from a piece between the mentum and ligula, called the *hypoglottis*, and which is usually entirely concealed, coming into view by reason of increased development.

The *ligula* is either corneous or membranous, usually oblong, pointed, rounded, or emarginate, or even cleft and lobed at the anterior extremity; usually prominent, rarely concealed behind the mentum; near the tip is usually seen on each side a membranous process; these are called *paraglossæ*, but are frequently wanting. Between the body of the ligula and the mentum are the supports of the labial palpi; these sometimes are largely developed, and in certain Scarabæidæ are entirely united together, forming what appears to be the ligula; the genuine ligula in these cases is almost atrophied, and is concealed behind the corneous plate formed by the labial supports. In the following pages the term *ligula* is used in both cases, and is to be understood to mean the piece in front of the mentum bearing the palpi, whether it be the *ligula* proper or some other part.

The *labial palpi* are usually 3-jointed, but occasionally 2-jointed or even (certain Staphylinidæ) filamentous, and not divided into joints. In the genus *Aleochara* they become 4-jointed, by the addition of a very minute terminal joint. They vary in form.

THORAX.

The second division of the body is called the *thorax*, and consists of three segments which support legs, and which are variously modified as regards size and union in the different orders of insects.

In Coleoptera the first of these segments, the *prothorax*, is separate from the other two, and is freely movable; it consists of a dorsal surface, the *pronotum*, consisting normally of four pieces, which in Coleoptera are never distinct; two pairs of pieces form-

ing the sides of the under surface; and a middle piece, the *prosternum*, between and in front of the anterior legs. The side pieces are best seen in the Carabidæ; the anterior pair is called the *episterna*, and the hind pair the *epimera*. Most frequently the sutures between these pieces, and between them and the pronotum are entirely effaced, so that the dorsal surface and the flanks form a continuous piece; the sutures between the prosternum and the flanks are always distinct, and are called *prosternal sutures*. The cavities in which are inserted the anterior legs are called *anterior coxal cavities*, and are either *entire* when they are inclosed behind by the junction of the prosternum and the epimera, or *open*, when a space is left protected only by membrane; they are *separate* when the prosternum extends between them, or *confluent* when the prosternum is not visible between them.

For strengthening the anterior opening of the prothorax which receives the head, one pair of horny plates is included in the membrane; they are called *antecoxal plates*, and are usually invisible without breaking the insect; I have found them very largely developed in the genus *Chauliognathus* of the sub-family Telephoridæ.

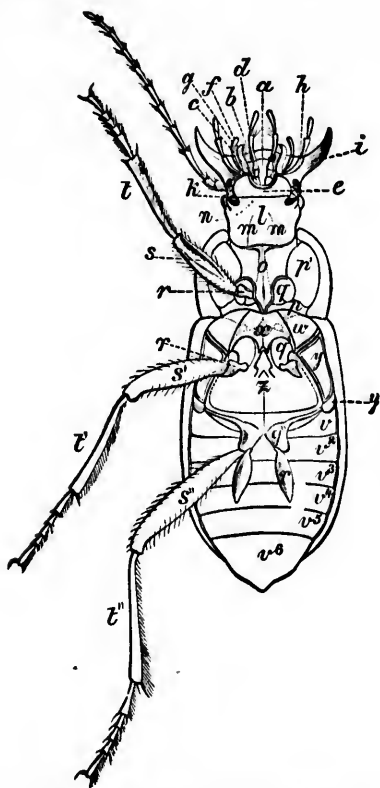
The second segment is called the *mesothorax*, and in Coleoptera is very closely united with the third segment or the *metathorax*, which is also closely connected with the abdomen; these parts together form the trunk, or main body of the insect.

These two segments support on the inferior surface the middle and hind legs, and at the sides of the dorsal surface the *wings*.

The dorsal surfaces of these two thoracic segments are covered by the elytra, consequently invisible without dissection; they are called *mesonotum* and *metanotum*, and consist each of four pieces, separated by sutures, and named, commencing with the anterior one of each segment, *proscutum*, *scutum*, *scutellum*, and *post-scutellum*. No use is made of them in classification, except that the small triangular piece, usually visible between the elytra at their base, is sometimes mentioned under the name *scutellum*.

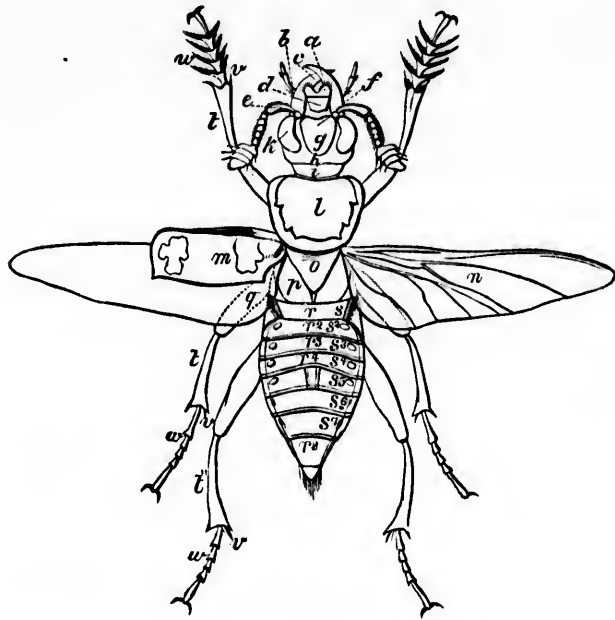
The under surfaces consist of the same pieces as the *prothorax*, viz: respectively, *mesosternum*, with its epimera and episterna, and *metasternum*, with its epimera and episterna; these pieces are distinct, except that rarely the epimera and episterna of the mesothorax are entirely united: the form of the epimera of meso-

thorax is of great importance in classification, according as they reach the middle coxæ, or are cut off from them by the junction of the episterna with the metasternum. The epimera of the metathorax are also of importance, being sometimes visible, sometimes covered by the elytra.



UNDER SURFACE OF HARPALUS CALIGINOSUS.

a. Ligula; b. Paraglossæ; c. Supports of labial palpi; d. Labial palpus; e. Mentum; f. Inner lobe of maxilla; g. Outer lobe of maxilla; h. Maxillary palpus; i. Mandible; k. Buccal opening; l. Gula or throat; m, m. Buccal sutures (ought to be more distinct); n. Gular suture; o. Prosternum; p'. Episternum of prothorax; p. Epimeron of prothorax; q, q', q'. Coxæ; r, r, r. Trochanters; s, s', s'. Femora or thighs; t, t', t''. Tibiæ; u, u', u'', &c. Ventral abdominal segments; u. Episterna of mesothorax (the epimera is the very portion immediately behind it, and does not touch q' the middle coxa, better represented on the left side of the figure); x. Mesosternum; y. Episterna of metathorax; y'. Epimeron of metathorax; z. Metasternum.



UPPER SURFACE OF NECROPHORUS AMERICANUS.

a. Mandible; b. Maxillary palpus; c. Labrum; d. Epistoma; e. Antenna; f. Front; g. Vertex; h. Occiput; i. Neck; k. Eye; l. Pronotum (usually called prothorax); m. Elytron; n. Wing; o. Scutellum (of mesothorax); p. Metanotum (or dorsal surface of metathorax); q. Femur or thigh; r, r², r³, &c. Dorsal abdominal segments; s, s², s³, &c. Spiracles or stigmata; t, t', t''. Tibiæ; v. Tibial spurs; w. Tarsl.

WINGS.—The anterior or mesothoracic pair of wings in Coleoptera are horny plates, called *clytra*, and vary greatly in shape and sculpture; faint traces of nervures are seen in many families in three or four lines of different sculpture; they usually cover the dorsal surface of the abdomen, but in many genera of widely differing families are very much shorter than the abdomen; the inflexed portions along the sides are called *epipleuræ*. The elytra are not entirely wanting in any species of our fauna, though in certain foreign genera of Lampyridæ and Scarabæidæ the females are destitute both of wings and clytra.

The posterior or metathoracic pair of wings are membranous, and have but few nerves; these are so arranged in most instances

us to form a joint near the extremity, whereby the wing can be folded entirely under the elytra; in some genera with short elytra the wings are extended straight along the dorsal surface of the abdomen. The venation is subject to variation in different genera, but no results of importance for classification have yet been obtained by the study of these organs. Frequently they are wanting, in which case the elytra are usually united closely, or *connate*.

LEGS.—The first joint of the legs, or that by which they are attached to the body, is called the *coxa*, and is received in appropriate cavities; the anterior coxal cavities are surrounded by the prosternum and adjoining pieces, and are frequently open behind, and rarely in such cases completed by the close apposition of the mesosternum.

The middle *coxæ* are surrounded by the meso- and metasternum, and by the episterna of the mesothorax; when these last do not reach the metasternum the intervening space is occupied by the inner extremity of the epimera of the mesothorax, which are then said to *attain the coxæ*.

The hind *coxæ* are placed between the metasternum and the first segment of the abdomen; the latter extends along the outer edge anteriorly so as to reach the side pieces of the metathorax, though frequently this junction can be seen only on raising the elytra.

The form of the *coxæ* is of the greatest importance in distinguishing the families.

At the outer extremity of the anterior *coxæ* is seen in some families an accessory piece called a *trochantin*; when the prothoracic breathing pore, or *stigma*, or *spiracle* is visible, it is in the same vicinity. Still more rarely the middle *coxæ* have a similar *trochantin*.

At the extremity of the *coxæ* is a small piece called the *trochanter*; it varies in form, being usually situated in the axis of the thigh, and is more or less obliquely cut off; in many families the trochanters of the hind pair are quite prominent at the inner margin of the thighs, and connected with them only at the base.

The first long piece of the legs is called the thigh, or femur; following it is the *tibia*. The form of the legs varies greatly in different families; being either fitted for walking, *ambulatorial*;

digging, *fossorial*; or swimming, *natorial*; in the latter form, the hind legs assume the form of oars in Dytiscidæ and some Hydrophilidæ; or the middle and hind legs become broad, short, and flat, as in Gyridæ. At the extremity of the tibiæ are two movable spines, called *tibial spurs*; rarely, one of these is absent, but frequently both are so small as to be indistinct.

Attached to the tibiæ is a series of from three to five pieces, constituting the foot, or *tarsus*; the last joint bears two claws, which, by a very rare exception, are sometimes wanting. The genus *Phanæus* of Sarabæidæ and the family of Stylopidæ are the only examples in our fauna in which this is the case. Between the claws is seen in many species a small appendage, called *onychium*, which usually bears at its extremity two bristles.

ABDOMEN.

The portion of body behind the metathorax is called the *abdomen*, and consists of a series of rings, the normal number of which is nine, though, by coalescence and disappearance, this number is not visible; these rings are divided into two portions; the *dorsal segments*, more or less covered by the elytra, and the *ventral segments*, visible on the under surface. The union between these takes place on the dorsal surface, and is by membrane, except in the last two, which are frequently very closely united.

The breathing pores, or *spiracles*, are situated in the connecting membranes, or in the upper inflexed portions of the ventral segments.

The ventral segments are not always opposed to and connected with the corresponding dorsal segments, but are situated differently in different families, though no use is made of these differences for systematic arrangement.

The anal aperture is between the last dorsal and ventral segments, and above it, in the same fissure, is situated the genital opening; each side of this are horny valves, rarely visible externally, but sometimes of very complex structure constituting the *genital armature*.

The last dorsal segment is called the pygidium, and the penultimate the *propygidium*, when they are exposed behind the elytra.

OTHER STRUCTURES.

Besides the parts of the body above described, there are certain structures occasionally seen, which, from being used for the discrimination of genera, need our attention.

Stridulating organs, or organs for producing sound, exist in various families, and consist of finely wrinkled surfaces, frequently with a pearly lustre; the sound is produced by friction with some other part in the neighborhood of these stridulating surfaces. The situation of these organs is inconstant; thus among the *Scarabæidæ* they are found in *Trox*, on the ascending portion of the first ventral segments; in *Strategus*, on the propygidium, and in *Ligyus* on the inner surface of the elytra.

Extensible membranous vesicles are observed in one tribe of the family *Malachidæ*; there are two pairs, one proceeding from a fissure beneath the anterior angles of the prothorax; the other pair emerging outside, and anterior to the hind coxæ.

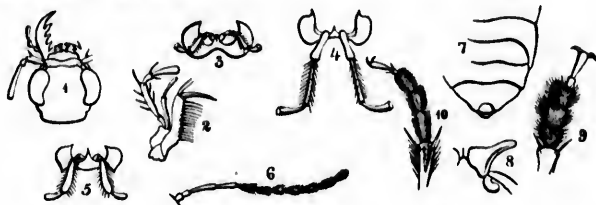
The above sketch of the external anatomy of Coleopterous insects contains all that is necessary to enable the student to comprehend the following pages, and in order to facilitate the determination of the family to which any given species must be referred, I will now attempt to display the relations, partly natural and partly empirical, between the different families recognized in our fauna.*

This synoptic table of families must, in the present state of science, be to a considerable extent artificial, for it is unwise to suppose that in an animal which passes through a complete metamorphosis, all the highest relations and analogies can be exhibited in any single phase of its development. And although the structure of the perfect insect enables us to refer the species to its proper family, yet in grouping the families together, some reference must be had to the characters seen in the development of the animal. Such information is at present too vague to be of service in the higher investigations of science, and for this

* For the purpose of illustrating to the student modifications of structure used in the tables of this work, I add the following wood-cuts illustrating

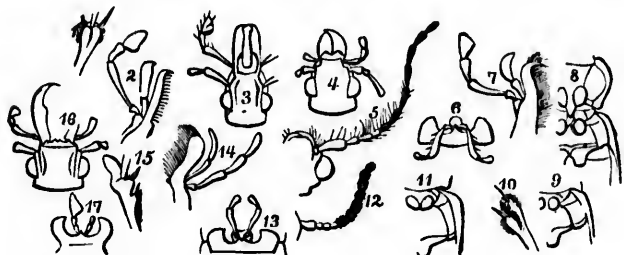
reason, although the families are perfectly defined, the attempts to combine them into higher groups, or to exhibit their relations to each other by characters common to several, have to a great degree failed.

generic differences in the family Cicindelidae, and in the first and second subfamilies of Carabidae.



CICINDELIDÆ.

1. Head of Cicindela; 2. Maxilla of Cicindela; 3. Mentum of Omus; 4. Mentum of Tetracha; 5. Mentum of Cicindela; 6. Antenna of do.; 7. Abdomen of ♂ of do.; 8. Posterior coxa of do.; 9. Anterior tarsus of Omus (♂); 10. Anterior tarsus of Cicindela (♂).



CARABIDÆ, FIRST AND SECOND SUB-FAMILIES.

1. Extremity of anterior tibia of Carabus, inner face; 2. Maxilla of Cycheus; 3. Head of Carabus; 4. Head of Carabus; 5. Antenna and part of head of Loricera; 6. Mentum of Carabus; 7. Maxilla of do.; 8. Under surface of meso- and metathorax of Metrius; 9. Under surface of meso- and metathorax of Physcia; 10. Anterior tibia of Metrius; 11. Under surface of meso- and metathorax of Physcia; 12. Antenna of Pasimachus; 13. Mentum of do.; 14. Maxilla of do.; 15. Anterior tibia of do.; 16. Head of Promecognathus; 17. Mentum of Pseudomorphus, showing the indistinct gular suture.

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TABLE OF FAMILIES.

§ Penultimate joint of tarsi not connate with the last joint;

† Hind tarsi with the same number of joints as the middle tarsi,* which are 5-jointed, unless otherwise stated :

First ventral segment visible at the middle and sides ;	4
First ventral segment visible only at the sides ;	2
2. Legs fitted for swimming ;	3
Legs fitted for running ;	
Mesosternum pointed behind, attaining the abdomen ;	
Antennæ inserted upon the front.	1. CICINDELIDÆ.
Antennæ inserted under the side of the front.	2. CARABIDÆ.
Mesosternum not attaining the abdomen.	3. AMPHIPOIDÆ.
3. Eyes two, antennæ slender.	4. DYTISCIDÆ.
Eyes four, antennæ short irregular.	5. GYRINIDÆ.
4. Dorsal segments of the abdomen partly membranous ;	5
Dorsal and ventral segments entirely corneous ; elytra short ;	
Abdomen flexile, ventral segments eight.	10. STAPHYLINIDÆ.
Abdomen not flexile, ventral segments five or six.	9. PSELAPHIDÆ.
5. Antennæ not having a lamellate club, or legs not fossorial.	6
Outer joints of antennæ forming a lamellate club ; legs fossorial ;	
Joints of the club fixed.	31. LUCANIDÆ.
Joints of the club movable.	32. SCARABÆIDÆ.
6. Ventral segments free.	7
Ventral segments five, 1—4 connate ; tarsi 4-jointed ;	
Antennæ regular, legs not fossorial.	18. COLYDIDÆ.
Antennæ irregular, legs fossorial.	30. HETEROCERIDÆ.
Ventral segments 1—3 connate ; tarsi 5-jointed, not lobed beneath ;	
Last joint of tarsi very long.	29. PARNIDÆ.
Last joint of tarsi moderate.	12. RHYSODIDÆ.
First and second ventral segments connate ; antennæ serrate ; tarsi	
5-jointed, with membranous lobes beneath ;	
Anterior coxæ small, rounded.	33. BUPRESTIDÆ.

* Except in certain males in Families 20 and 21, and one genus of 11.
xxii

- Anterior coxæ large, transverse. 38. SCHIZOPODIDÆ.
7. Antennæ more or less serrate, the outer joints frequently enlarged, but not forming a regular club. 12
- Antennæ clavate, (sometimes very slightly so);
- Tarsi 3-jointed; anterior coxæ conical, contiguous; onychium a clubbed bristle, wings fringed with long hairs. 13. TRICHOPTERYGOIDÆ.
- Onychium not distinct. 23. LATHRIDIDÆ.
- Tarsi 4-jointed;
- Prosternum membranous. 28. GEORYSSIDÆ.
- Prosternum corneous;
- First ventral segment very long. 45. PTINIDÆ.*
- First ventral segment not elongated;
- Head protected by the hood-like thorax. 46. CIOIDÆ.
- Head not covered by the thorax. 25. MYCETOPHAGIDÆ.
- Tarsi 5-jointed; (except in certain genera of Families 15 and 7);
- Labial palpi approximate at base; 8
- Labial palpi very distant at base; palpi long. 6. HYDROPHILIDÆ.
8. Anterior coxæ large, conical, prominent, cavities open behind. 9
- Anterior coxæ conical, cavities confluent, closed behind. 10
- Anterior coxæ rounded or oval, not prominent. 11
- Anterior coxæ transverse, not prominent;
- Hind coxæ sulcate behind for reception of thighs. 27. BYRRHIDÆ.
- Hind coxæ flat;
- Antennæ geniculate. 11. HISTERIDÆ.
- Antennæ straight;
- Tarsi more or less dilated, first joint not short. 15. NITIDULIDÆ.
- Tarsi not dilated, first joint short. 17. TROGOSITIDÆ.
9. Hind coxæ sulcate behind for reception of thighs. 26. DERMESTIDÆ.
- Hind coxæ not prominent, last ventral segment long. 12. SCAPHIDIDÆ.
- Hind coxæ somewhat conical, and prominent, not sulcate;
- Tarsi lobed beneath. 25. MYCETOPHAGIDÆ.†
- Tarsi not lobed beneath;
- Eyes finely granulated or wanting. 7. SILPHIDÆ.
- Eyes coarsely granulated. 8. SCYDMENIDÆ.
10. Hind coxæ not sulcate behind, simply transverse. 24. OTNIDÆ.
- Hind coxæ concave behind, for reception of thighs;
- Front scarcely margined. 22. DERODONTIDÆ.
- Sides of the front broadly dilated. 17. TROGOSITIDÆ.‡
11. Antennæ geniculate. 11. HISTERIDÆ.§
- Antennæ straight;
- Hind coxæ sulcate behind for reception of thighs. 34. THROSCIDÆ.||
- Hind coxæ not sulcate behind.
- First and fifth ventral segments very long. 16. MONOTOMIDÆ.

* Sub-family Lyctidæ.

† Sub-family Diphylldæ.

‡ Sub-family Peltasticidæ.

§ Sub-family Murmididæ.

|| Tribe Throscini.

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DEIDÆ.
ARADIDÆ.
PHIZOIDÆ.
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rial;
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POLYDIDÆ.
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PARNIDÆ.
YSSODIDÆ.
rrate; tarsi

PRESTIDÆ.

genus of 11.

- Fifth ventral segment not elongated;
 Hind coxæ more or less distant; ventral segments subequal;
 Epimera reaching the middle coxæ, which are distant from anterior ones. 20. CUCUJIDÆ.
 Epimera not reaching the middle coxæ, which are close to anterior ones;
 Anterior coxal cavities open behind. 21. CRYPTOPHAGIDÆ.
 Anterior coxal cavities closed. EROTYLIDÆ.*
 Hind coxæ flat; first ventral segment longer. 14. PHALACRIDÆ.
12. Hind coxæ not sulcate; 14
 Hind coxæ sulcate for reception of thighs;
 Anterior coxæ transverse or conical. 13
 Anterior coxæ globose;
 Anterior coxal cavities closed by mesosternum. 34. THROSCIDÆ. †
 Anterior coxal cavities open behind;
 Spurs small, ventral segments usually five. 35. ELATERIDÆ.
 Spurs large, ventral segments six. 36. CEBRIONIDÆ.
13. Onychium large, hairy. 37. RHIPICERIDÆ.
 Onychium small or wanting;
 Head not constricted behind;
 Epimera of mesothorax attaining the coxæ. 39. DASYLLIDÆ.
 Epimera of mesothorax not attaining the coxæ. 45. PTINIDÆ. ‡
 Head suddenly constricted behind. 44. CUPESIDÆ.
14. Tarsi with membranous lobes; hind coxæ flat. 42. CLERIDÆ.
 Tarsi not lobed beneath; hind coxæ more or less prominent;
 Anterior coxæ long, without trochantin. 43. LYMEXYLIDÆ.
 Anterior coxæ long, with distinct trochantin;
 Ventral segments seven or eight. 40. LAMPYRIDÆ.
 Ventral segments six (rarely apparently five). 41. MALACHIDÆ.
 Anterior coxæ large, rounded, without trochantin. 45. PTINIDÆ. §

* Sub-family Engidæ. † Tribe Lissomini.

‡ Sub-families Ptinidæ and Anobiidæ.

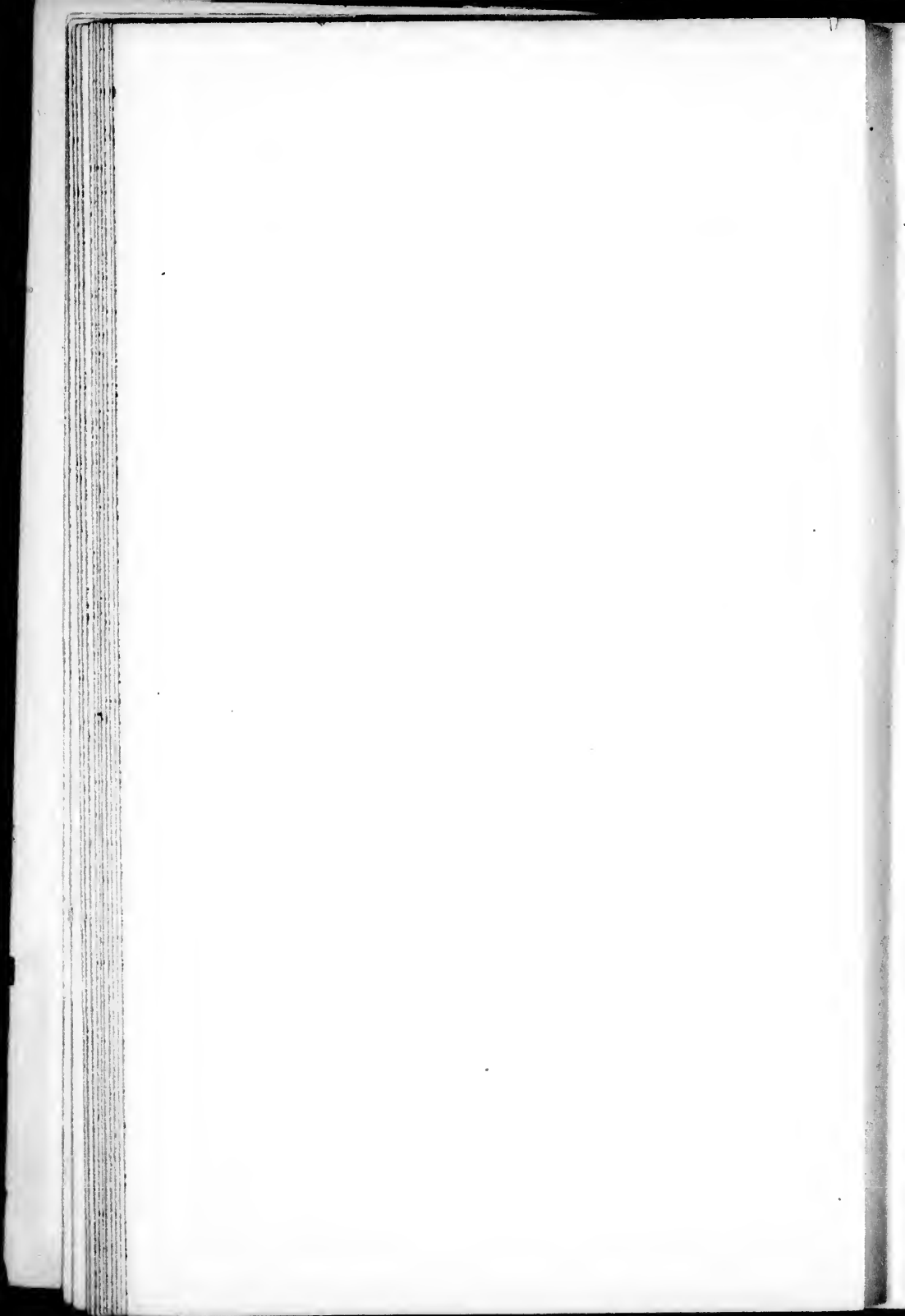
§ Sub-family Bostrichidæ.

bequal;		
istant from	†† Hind tarsi* with a less number of joints than the middle	
CUCUJIDÆ.	tarsi; 4-jointed.	
are close to		
OPHAGIDÆ.	Anterior coxal cavities closed behind.	2
OTYLIDÆ.*	Anterior coxal cavities open behind.	3
ALACRIDÆ.	2. Tarsal claws simple;	
14	Ventral segments five;	
	Penult. joint of tarsi not spongy beneath.	47. TENEBRIONIDÆ.
	Penult. joint of tarsi spongy beneath.	50. LAGRIDÆ.
13	Ventral segments six.	48. AEGIALITIDÆ.
	Tarsal claws pectinate.	49. CISTELIDÆ.
ROSICIDÆ.†	3. Head not strongly and suddenly constricted behind.	4
	Head strongly constricted at base.	6
LATERIDÆ.	4. Middle coxæ large, conical;	5
EDRIONIDÆ.	Middle coxæ not very prominent; head horizontal;	
IPICERIDÆ.	Penultimate joint of tarsi cylindrical;	
	Antennæ received in grooves.	51. MONOMMIDÆ.
	Antennæ free.	53. PYTHIDÆ.
	Penult. joint of tarsi with a membranous lobe.	54. MYCTERIDÆ.
ASCYLLIDÆ.	5. Lateral margin of prothorax distinct.	52. MELANDRYIDÆ.
PTINIDÆ.‡	Lateral margin of prothorax wanting.	55. OEDEMERIDÆ.
CUPESIDÆ.	6. Head gradually narrowed behind the eyes.	56. CEPHALOIDÆ.
CLERIDÆ.	Head suddenly narrowed behind;	
t;	Lateral suture of prothorax wanting.	7
MEXYLIDÆ.	Lateral suture of prothorax distinct; base as wide as the elytra;	
	Antennæ filiform;	
AMPYRIDÆ.	Hind coxæ not laminiform.	52. MELANDRYIDÆ.†
ALACHIDÆ.	Hind coxæ laminiform.	57. MORDELLIDÆ.
PTINIDÆ.§	Antennæ flabellate.	61. RHIPIPHORIDÆ.†
	7. Tarsi perfect with distinct claws; eyes normal;	
	Prothorax at base narrower than the elytra;	
	Hind coxæ not prominent.	58. ANTHICIDÆ.
	Hind coxæ large, prominent;	
	Claws simple.	59. PYROCHROIDÆ.
	Claws cleft or toothed.	60. MELOIDÆ.
	Prothorax at base as wide as the elytra.	61. RHIPIPHORIDÆ.
	Tarsi without claws; eyes pedunculated.	62. STYLOPIDÆ.

* Except in Stylopidae, which is an entirely anomalous family.

† Tribe Scaptiini.

‡ Tribe Evaniocerini.



CLASSIFICATION
OF THE
COLEOPTERA OF NORTH AMERICA.

FAM. I.—CICINDELIDAE.

MENTUM deeply emarginate; ligula small, concealed; base of labial palpi free.

Maxillæ with the outer lobe biarticulate, the inner usually terminated by an articulated hook.

Antennæ inserted on the front, above the base of the mandibles.

Prothorax with the epimera and episterna distinct.

Metasternum pointed behind, reaching the abdomen.

Abdomen with the three anterior segments connate; 6-articulated in the female, usually 7-articulated in the male.

Legs slender, formed for running; posterior coxæ dilated internally, not reaching the margin of the body; tarsi 5-jointed.

The species composing this family are the most predaceous of Coleoptera, and in some of them activity as well as brilliancy of coloring is carried to its greatest perfection. The genera found in the United States are all terrestrial, but within the tropics are many which alight only on leaves of trees. More full descriptions of the habits will be given below, under the particular groups.

The head is large; the mandibles long and sharply toothed; the maxillæ have two lobes; the interior is armed with spines on its inner margin, and in our genera is terminated by an articulated hook, which is wanting in some foreign genera; the mentum is large, deeply emarginate with the lateral angles acute, armed in the middle with a large acute tooth, and is separated from the gula by a distinct suture; the ligula is small, hidden under the mentum tooth; the base of the labial palpi is free and prominent, appearing like a separate joint.

The antennæ are inserted upon the front, above the mandibles; they are always 11-jointed, with the four inferior joints glabrous and polished, the others pubescent; they are usually filiform, rarely thickened externally.

The thorax is usually cordate, sometimes cylindrical, rarely quadrate; the dorsal surface is marked by an anterior and posterior transverse impression, and a dorsal line connecting the two transverse impressions; the lateral margin is not well defined, as in most of the genera of the next family; the prosternum is narrow, not produced behind; the episterna and epimera are distinctly defined by sutures, and the anterior coxæ are globular, with the cotyloid cavities entire.

The mesosternum is obliquely declivous, deeply emarginate behind; the epimera and episterna are sometimes connate, without suture, and sometimes distinct; in the latter case the suture runs diagonally, and the epimera extend to the middle coxæ, which are globular.

The metasternum is pointed in front and behind, reaching the middle of the second ventral segment; the epimera are large in the winged species, small in the apterous ones; the episterna are small, and frequently indistinct. The posterior coxæ are triangular, dilated and prominent internally, concave behind for the motion of the thighs; they do not extend to the margin of the body, but are inclosed by the side pieces of the metathorax, and the first ventral segment.

The elytra cover the body, and are rounded at the tip; sometimes they are connate, and sometimes (as in *Amblychila*) embrace widely the flanks of the abdomen; the wings are usually well developed, sometimes wanting.

The legs are slender, usually long; the tibiæ have two distinct terminal spurs; the tarsi in our genera are filiform, the first three joints of the anterior ones of the male usually dilated, and densely clothed with hair beneath. The claws are acute, and simple.

The abdomen is composed in the female of six ventral segments; in the male the sixth segment is usually deeply emarginate, and a small seventh segment is thus seen, but in *Amblychila* the abdomen is alike in both sexes; the three anterior segments are closely connate, the first is visible only on the sides, the second is acute in the middle, and reaches the point of the metasternum; the others are movable. The dorsal segments, as first observed by Dr. Schann,

are eight in the male and seven in the female, the seventh in the latter sex being elongated so as to conceal the eighth.

This family is divided by Lacordaire into five tribes, of which but three are found within the limits of the United States, and are distinguished in the following manner:—

A. Third joint of maxillary palpi longer than the fourth.

First joint of labial palpi very short.

MANTICORINI.

First joint of labial palpi elongated.

MEGACEPHALINI.

B. Third joint of maxillary palpi shorter than the fourth. CICINDELINI.

Tribe I.—MANTICORINI.

The species of this tribe are apterous, with the elytra connate; the eyes are small, and in this respect they differ from all other members of the family; the first joint of the labial palpi is very short, and hardly extends beyond the emargination of the mentum.

These insects are probably crepuscular or nocturnal in their habits. I am informed by Dr. Wm. A. Hammond, that specimens of *Amblychila* were found by him running about in the early morning of cloudy days. The only specimens of *Omus* found by me were drowned in a rain-pool near San Francisco. In *Amblychila* the usual differences between the sexes fail; the tarsi of the male are not dilated, and the abdomen has only six ventral segments. In *Omus* the anterior tarsi of the male are widely dilated, and the 7th ventral segment is distinct.

Two genera of this tribe are found in our country, and both are peculiar to it. *Amblychila*, having wide epipleuræ, occurs in Kansas, New Mexico, and probably in California. (1 species.)

Omus, having narrow epipleuræ, is found in California, Oregon, and Washington Territory. (3 species.)

Tribe II.—MEGACEPHALINI.

The native species of this tribe are but two in number, and belong to the genus *Tetracha*. *T. virginica* is crepuscular in its habits; *T. carolina* extends from the Atlantic to the Pacific coast.

Tribe III.—CICINDELINI.

Of this tribe the species are very numerous. Those of our fauna belong, with one exception, to *Cicindela*, and many of them are seen on roads exposed to the sun, flying actively on the least alarm, and again alighting at the distance of a few paces. The

species are more numerous in the temperate and warm regions of the country, and gradually disappear towards the north, until in the latitude of Lake Winnipeg but two or three species remain.*

Our species all belong to the genus *Cicindela*.†

The larvæ of *Cicindela*, like the perfect insects, live in holes, which they excavate with their jaws and feet, in sandy localities, using, as stated by Westwood, their broad head for bringing the particles to the surface. They are easily procured in spring by placing a fine straw down the hole, when the larva will gradually push it out, and rising to the surface, may be captured. They are whitish grubs, with a large, flat, metallic-colored head, with long toothed mandibles; the prothoracic segment is protected above by a large, lunate, corneous scute; the ninth segment has two dorsal hooks; the tarsi are terminated by two claws. They lie in wait for prey at the mouth of the burrow, the head and thorax closing the opening, and seize with the long mandibles any insect which approaches within reach.

FAM. II.—CARABIDÆ.

Mentum deeply emarginate; ligula more or less prominent, usually furnished with paraglossæ.

Maxillæ with the outer lobe palpiform, usually biarticulate, the inner usually curved, acute, ciliate with spines.

Antennæ inserted behind the base of the mandibles, under a frontal ridge.

Prothorax with the epimera and episterna usually distinct.

* For a synopsis of the native species of *Cicindela*, see Transactions of the American Philosophical Society, vol. XI.

† While this sheet is passing through the press, Mr. Ulke has kindly loaned me a female specimen of *Dromochorus Pilatei* Guérin, which he has recently received. It has not the third joint of the labial palpi any thicker than in ordinary *Cicindela*, but differs, however, by the wings being entirely wanting. In several species of *Cicindela*, the wings are very feeble, and in that case the humeral angles of the elytra are not distinct, so that the form of *Dromica* is assumed. I am disposed, therefore, to consider *D. Pilatei* as constituting merely an aberrant group of *Cicindela*, in the neighborhood of *C. dromicoides*, and our own *C. celeripes*. It is a black insect, about half an inch long, without lustre. The eyes are moderately large, and the front is scarcely concave, with but few wrinkles. The elytra are convex, oval, narrowed in front, and covered with not very deep bluish punctures; there is no sutural spine, and the apex is entirely without serrature. The tarsi are more pubescent than in other species. The labrum is armed with three acute teeth. It is found in Texas.

Metasternum pointed behind, usually meeting the second ventral segment.

Abdomen with the three anterior segments connate; usually with six, rarely (Brachinini) with seven or eight ventral segments; the first visible only at the sides.

Legs slender, formed for running; anterior and middle coxæ globular, posterior dilated internally, not attaining the margin of the abdomen (except in Trachypachini); tarsi 5-jointed.

One of the most numerous families of Coleoptera, and generally predaceous in character, although some species of *Amara*, *Zabrus*, and *Harpalus* also use vegetable food. The larva of *Omophron labiatum* is also very destructive to young corn in our Southern States.

The characters above mentioned being almost the only ones common to all the members of the family, it will be unnecessary to enter into a detailed description of the different parts of the body, as I have done in the preceding family.

Numerous efforts have been made to indicate a rational distribution of the genera, and the attempts commenced by Latreille and Bonelli, and successively improved by the suggestions of Dejean, Erichson, Schiödte, Lacordaire, and myself, have finally, in the expert hands of Schaum, assumed a form in which probably permanent results have been attained.

Following, then, the suggestions of these later authors, with still further modifications, the whole family may be divided into three series, which might be almost termed sub-families.

Middle coxæ distant;

Epimera of the mesothorax reaching the coxæ.

CARABIDÆ.

Epimera of the mesothorax not reaching the coxæ.

HARPALIDÆ.

Middle coxæ contiguous.

OZENIDÆ.

Sub-Family I.—CARABIDÆ (genuini).

Epimera of the mesothorax extending to the coxæ; mesosternum broadly separating the middle coxæ.

In this sub-family are contained nearly all the anomalous forms of Carabidæ. They consequently may be arranged in several tribes, among which are to be found the osculating points with the preceding and following families, as well as the direct lines of affinity to the second and third sub-families. No general characters except the one above given will apply to all of them, but the special

characters of the tribes found in the United States may be thus expressed:—

(Gular suture distinct in all of our tribes.

Antennæ inserted under frontal plates; anterior tibiæ palmate.

	VIII. SCARITINI.	
Antennæ with the base free; anterior tibiæ not palmate.		2
2 Mesosternum covered; scutellum wanting.	I. OMOPHRONINI.	
Mesosternum visible; scutellum distinct.		3
3 Anterior coxal cavities closed behind by the prosternum.		4
Anterior coxal cavities open behind.		7
4 Maxillæ covered at the base.	VII. PROMECOGNATHINI.	
Maxillæ exposed at the base.		5
5 Prosternum produced behind.	VI. METRINI.	
Prosternum not produced behind the coxæ.		6
6 Antennæ ordinary; anterior tibiæ slightly emarginate.	II. ELAPHINI.	
Antennæ verticillate, basal articulation prominent; anterior tibiæ strongly emarginate.	III. LORICERINI.	
7 Posterior coxæ attaining the margin of the body; mesosternum not carinate.	IV. TRACHYPACHINI.	
Posterior coxæ normal; mesosternum carinate anteriorly.	V. CARABINI.	

Tribe I.—OMOPHRONINI.

This tribe consists of but a single genus, remarkable for its round convex form and the absence of scutellum.

The head is broad, pointed in front; the labrum flat, the mandibles also flattened above; the clypeal suture makes an angle between the antennæ; the latter are filiform, with the four basal joints smooth. The palpi are filiform. The mentum is deeply emarginate, toothed in the middle, with the gular suture distinct; the anterior coxæ are surrounded by the prosternum, which is broad, and prolonged behind so as to cover the mesosternum; the side pieces of the latter are very transverse, and the epimera reach inwards to the coxal cavity; the episterna of the metathorax are short and broad, without visible epimera. The striæ of the clytra are beyond the usual number; in our species there are fifteen, including the marginal. The anterior tibiæ are obliquely sulcate at the apex internally, one spine is apical, the other is placed above the apex. The first joint of the anterior and middle tarsi of the males is strongly dilated in our species, and covered with hair beneath.

The species are found in wet sand, near the margin of streams or ponds; two are found on the Pacific, four on the Atlantic slope of the continent.

Tribe II.—**ELAPHRINI.**

In this tribe, as restricted by me, there are but two genera, both of which are represented in North America. *Elaphrus* having the eyes large and prominent, and the elytra with rows of large, shallow, ocellate foveæ; *Blethisa* having the eyes small, the elytra with nine dorsal striæ, with a few scattered foveæ.

The head is pointed in front; the clypeal suture straight; the antennæ filiform, with four glabrous joints; the mentum is deeply emarginate, with a bifid tooth, gular suture distinct; the anterior coxæ are entirely surrounded by the prosternum, which is not prolonged behind. The mesosternum is declivous; the side pieces are diagonally divided, and the epimera reach the coxæ; the episterna of the metathorax are short and broad, without visible epimera. The wings are well developed. The anterior tibiæ are obliquely sulcate at the apex internally, somewhat emarginate, with the inner spur considerably above the apex; the anterior tarsi of the males have three or four joints dilated, and covered with hairs beneath, and in *Blethisa quadricollis* the anterior thighs of the same sex are armed beneath with an acute tooth.

Species of both genera are found on both sides of the continent. *Elaphrus* has considerable resemblance to *Cicindela* in form and habits, and is found running on mud-flats near streams or pools. *Blethisa* occurs also near water (usually marshes), under stones.

Tribe III.—**LORICERINI.**

This tribe contains two genera, of which but one is found in North America, and its affinities are very differently represented by authors. By most of them it is placed near *Panagæus*, the form of the anterior tibiæ, which is altogether that of the ordinary Carabidæ of the second series, being considered to outweigh the other characters.

From all other Carabidæ the species of the present tribe differ in having the antennæ inserted so as to expose the globular base of the first joint; the latter is very long; four joints are glabrous, and the 2—6 are furnished with long diverging bristles; the mandibles are flattened; the base of the maxillæ is very prominent, and armed, as in *Nebria*, with long bristles; the palpi are long and slender; the mentum is emarginate, with a bifid tooth

and distinct gular suture. The head is strongly constricted behind the eyes into a neck; the clypeal suture is transverse. The anterior coxæ are entirely enclosed, and the prosternum is not prolonged behind; the mesosternum is declivous, the side pieces are diagonally divided, and the epimera reach the coxæ; the episterna of the metathorax are moderately broad; their epimera are visible in the Maderan genus *Elliptosoma*, but are not seen in *Loricera*. The clytra have fourteen striæ, and a few impressed foveæ. The anterior tibiæ are very slightly thickened, deeply sulcate and emarginate internally, with the inner spur far above the apex. Three joints of the anterior tarsi of the males are dilated, covered with a brush of hairs beneath.

Several species are found near the Pacific coast; one also occurs in Nova Scotia and at Lake Superior, which does not appear to differ from the European *L. pilicornis*.

Tribe IV.—TRACHYPACHINI.

This tribe is represented by two genera. *Trachypachys*, of which one species is found in Northern Europe, and another on the Pacific coast, north of Columbia River, and *Sistolosoma*, found in Chile.

It differs from all other Carabidæ by having the posterior coxæ, though not unusual in size, extended to the margin of the body, so as to separate the side pieces of the metathorax from the first ventral segment. The form of body is that of a small Harpalide. The head is rather blunt, the eyes not prominent, the clypeal suture transverse; the antennæ are shining and glabrous, having only a few hairs about the sides of the outer joints. The palpi are filiform; the mentum deeply emarginate, with bifid tooth and gular suture distinct; the anterior coxæ are not closed behind; the prosternum is produced behind the coxæ, and passes over the mesosternum; the sutures between the epimera and the prosternum are not visible; the mesosternum is declivous, not carinate in front, though, by an error of observation, I have stated in the *Pacific Railroad Reports and Explorations*, vol. XI., that it is formed as in *Notiophilus*; the side-pieces are diagonally divided, and the epimera reach the coxæ; the episterna of the metathorax are long and narrow, without visible epimera. Elytra with striæ composed of small punctures, visible only near the suture. The anterior tibiæ thickened gradually, and armed with short spines externally, obliquely sulcate and slightly emarginate internally at the apex,

with the inner spur above the apex; anterior tarsi of the male with two joints moderately dilated.

By this group is made a transition to the following family, Amphizoidæ.

Tribe V.—CARABINI.

A numerous tribe, containing some of the largest and most beautiful species of the family, and also some very small ones; they agree in habits, being found in shady situations in forests, under stones and pieces of wood, or under leaves. They also agree in the following characters:—

The prosternum and prothoracic side pieces do not entirely surround the anterior coxæ, whereby the latter are in part protected by concavities of the mesosternum, which is carinate at the middle anteriorly, and frequently concave beneath; the prosternum (except in *Cychnus*) is more or less produced behind the coxæ, so as sometimes almost to cover the mesosternum; the anterior tibiæ are somewhat grooved internally at the apex; the spurs are either both terminal, or, from the apex being obliquely truncate, the inner one is above the apex.

The characters in this group are otherwise quite variable; the labrum is emarginate, toothed, or even deeply bilobed; the mandibles are sometimes toothed, sometimes simple, in *Cychnus* more elongate than usual; the maxillæ of the same genus are also much prolonged; the palpi are sometimes very much dilated; the mentum is deeply emarginate, with the gular suture distinct. The clypeo-frontal suture is straight, and usually distinct, but is wanting in the European genus *Procerus*. The antennæ have usually four basal smooth joints, but in *Nomaretus* there are only two.

The outer joints are usually entirely pubescent, but in certain species of *Calosoma* are so only at the margins.

The sutures of the under surface of the prothorax are distinct, the epimera project along the posterior part of the coxæ, but do not reach the prosternum; the coxal cavity is thus open for a greater or less extent at the hinder part. I cannot agree with Schaum* that this is owing to a simple depression of this hind margin; and, moreover, the fact that it accompanies the carinate mesosternum is sufficient to mark it as a natural character, even

* Ins. Deutschl., I. 60.

though it should separate genera so similar in sculpture as *Opisthius* and *Elaphrus*.

The sculpture of the elytra is very variable; sometimes (*Nehrla*) the striae have the normal number (nine), usually, however, they are more numerous; in *Notiophilus* the inner striae are separated from the outer ones by a very wide smooth space; in *Opisthius* the sculpture consists of rows of shallow ocellate foveae; in certain species of *Cychrus* and *Carabus* the elytra are ornamented with rows of tubercles.

Our genera may be thus arranged:—

- A. Head triangular; prosternum prolonged behind the anterior coxæ; epipleuræ narrow.
- a. Mentum bidentate;
- Anterior tibiæ obliquely truncate. NOTIOPHILUS.
 Anterior tibiæ with both spurs terminal; elytra with ocellate foveæ. OPISTHIUS.
 Elytra with nine striae, the outer one frequently obliterated; (inner spur of anterior tibiæ not quite terminal);
 Maxillæ armed beneath with bristles. NEHRIA.
 Maxillæ armed beneath with spines. LEISTUS.
- b. Mentum tooth simple (elytra with numerous striae);
 Third joint of antennæ strongly compressed. CALOSOMA.
 Third joint of antennæ cylindrical. CARABUS.
- B. Head elongate; labrum deeply bilobed; epipleuræ very broad.
 Antennæ with two glabrous joints; striae of the elytra not exceeding thirteen. NOMARETUS.
 Antennæ with four glabrous joints; striae of the elytra numerous, sometimes replaced by tubercles. CYCHRUS.

Of these genera, *Opisthius* contains a single species, found in Oregon and at Mackenzie River; *Leistus* one species from Russian America, and is also found in Europe. *Nomaretus* is confined to the Atlantic slope; the other genera are widely diffused.

Tribe VI.—METRINI.

This tribe contains but a single Californian species (*Metrius contractus* Esch.), of singular form, found under stones in forests. The head somewhat obtuse, the clypeal suture transverse, the eyes small, not prominent; the mandibles are trigonal, concave externally, as in most Carabidæ; the antennæ have four glabrous joints. The mentum is deeply emarginate, with a bifid tooth; gular suture distinct; palpi moderately stout. Anterior coxæ en-

tiely enclosed, prosternum prolonged behind; mesosternum small, deeply depressed, side pieces diagonally divided, epimera reaching the coxæ; metasternum very short, side pieces broad, with distinct epimera. Elytra connate, with very faint striæ, the external ones entirely obliterated. Anterior tibiæ gradually thickened, hairy externally, deeply sulcate and emarginate near the apex internally, with the inner spur remote from the apex. Middle tibiæ pubescent; posterior tibiæ pubescent internally. Anterior tarsi of the male with two dilated joints densely covered beneath with hair.

The genus *Metrius* is placed by Schaum in the preceding tribe, which he defines as having the mesosternum carinate in front. Such is not the case with this genus, which it therefore becomes necessary to remove. It cannot certainly enter any other tribe known to me, and I have therefore been compelled to separate it as distinct.

Tribe VII.—PROMECOGNATHINI.

This tribe is represented in the United States by a single Californian species (*Promecognathus levissimus*). It is an elongate, shining insect, with entirely smooth elytra, and long, narrow mandibles.

The head is narrow, with the eyes small, and the clypeal suture transverse; the mandibles are very long, slender, and decussating; the labrum is bisinuate; the mentum is very transverse, filling up the fissure usually seen each side of the gular suture, so as to cover the base of the maxillæ (as in *Scarites*), not deeply emarginate, with a large medial tooth; gular suture distinct. Four joints of the anteanæ are smooth, the first much longer and stouter than the others; the remaining joints are less densely pubescent than usual. The anterior coxæ are entirely enclosed; the prosternum is not produced behind. The trunk is pedunculated in front. The mesosternum is declivous, the side pieces diagonally divided, with the epimera extending to the coxæ. The metasternum is very short, the side pieces small, without visible epimera. The elytra are connate, without dorsal striæ, and the marginal stria and its punctures are very close to the margin. Anterior tibiæ gradually thickened, obliquely sulcate and deeply emarginate internally, with the inner spur remote from the apex. Middle tibiæ pubescent. The tarsi are not dilated in the male.

I have been compelled to dilate upon this, and some other tribes

represented by a few species of great rarity, beyond what is to be desired in an elementary work like the present; but I trust it may not be without profit to the student, for upon a correct appreciation of the respective importance of the characters given depends the rational arrangement of the entire family of Carabidæ; the tribes in question are precisely those of the most anomalous character, and concerning the affinities of which the most diverse opinions have been expressed. The present genus, for instance, was associated by Chaudoir with *Stomis*, with which it has no character in common, except the elongate mandibles; Lacordaire has adopted the group *Stomides* as established by Chaudoir; Schaum has placed the present genus in the group *Broscidæ*,* from which, however, it departs both by the absence of the epimera of the metathorax, and by the epimera of the mesothorax reaching the coxæ. To me it seems most natural to consider it as the passage from the preceding to the following tribes. I found the insect under stones at an elevation of 2,500 to 3,000 feet, near San Jose, California.

Tribe VIII.—SCARITINI.

Readily distinguished from all other tribes of this sub-family by the anterior tibiæ being more or less produced at the apex, and toothed, giving the form called palmate, and by the abdomen being pedunculate anteriorly.

The head is pointed in front, from the mandibles being longer than usual; the latter are sometimes strongly toothed internally, sometimes slender and unarmed (*Ardistomis*, *Aspidoglossa*). The eyes are small; the edge of the front is dilated over the insertion of the antennæ, the base of which is capable of being received in a hollow extending below the eyes; two basal joints and the base of the third are glabrous; the first joint is elongate in some (*Scarites*, *Pasimachus*), short in others. The mentum affects two different forms; when the first joint of the antennæ is long, the base of the mentum covers the base of the maxillæ, filling the fissure each side of the gular suture; when the basal joint of the antennæ is short, the base of the maxillæ is uncovered, as in most Carabidæ; the mentum is frequently trilobed, with the lateral lobes hardly longer than the medial one. The maxillæ sometimes (*Pasimachus*) have

* But has corrected this error on a subsequent page; *vide* *Ins. Deutschl.*, I, 773.

the inner lobe rounded at the apex, entirely destitute of the usual terminal hook.

The thorax is usually much narrowed behind, without posterior angles, the chief exception being in *Pasimachus*, where the angles are distinct; the margin is frequently obsolete; the posterior coxæ are entirely enclosed. The trunk is pedunculate in front, the mesosternum declivous, the side pieces diagonally divided, with the epimera reaching the coxæ; the side pieces of the metathorax are sometimes short, without epimera (*Pasimachus*), sometimes long, with distinct epimera. The anterior tibiæ are dilated, produced at the apex, and frequently toothed externally; they are deeply emarginate internally, with the inner tooth remote from the apex. The anterior tarsi of the male are rarely dilated.

This tribe contains two groups, as follows:—

Group I.—*Scarites*.

Basal joint of antennæ very long; base of maxillæ covered.

These are insects of moderate or large size, found under stones, or (*Pasimachus elongatus* Lec.) running on the ground. The genus *Pasimachus* is confined to North America; most of the species are margined with blue.

Maxillæ rounded at tip; hind angles of thorax distinct.	PASIMACHUS.
Maxillæ hooked; posterior angles of thorax none.	SCARITES.

Group II.—*Clivinae*.

Basal joint of antennæ not elongated; base of maxillæ exposed.

Species of small size, mostly found in moist places, though some occur under bark of trees.

Ligula not prolonged into a point.	DYSCHIRIUS.
Ligula prolonged.	
Lateral lobes of the mentum entire.	
Mandibles slender, prolonged; clypeus truncate.	ARDISTOMIS.
Mandibles flat, acute; clypeus emarginate.	ASPIDOGLOSSA.
Mandibles flat, acute; clypeus not emarginate.	CLIVINA.
Lateral lobes of the mentum emarginate.	SCHIZOGENIUS.

In *Ardistomis* and *Aspidoglossa* the anterior tarsi are dilated, but more strongly in the males than in the females. These two genera do not occur on the Pacific coast; the others are widely distributed. *Acephorus* Lec. is suppressed, as not sufficiently

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distinct from *Dysebirius*. The head in *Schizogenius* is remarkably sculptured, with deep longitudinal grooves.

Sub-Family II.—OZÆNIDAE.

Mesosternum very narrow; middle coxæ contiguous.

On this single character I have separated as a sub-family two small tribes. They differ from each other by the form of the mesothoracic epimera, which in *Ozænini* reach the coxæ, and in *Pseudomorphini* do not. Nevertheless, these groups are related, and the transition is clearly shown by *Physeæ*, which, with all the essential characters of *Ozæna*, has the dilated frontal plates and the excavated femora of the other tribe.

I have observed certain anomalies in the form of the eyes in these tribes, which I do not find in other *Carabidæ*.

In *Ozæna* the eyes are truncated behind, and in *Physeæ* even emarginated by the inflated portion of the sides of the head. In *Pseudomorphus* the eyes are distinctly angulated on the outer margin, where they are limited by the corneous under-surface of the head, so as to be confined entirely to the upper surface.

Tribe I.—OZÆNINI.

The species of this tribe differ from all the preceding genera in having the mesosternum very narrow, so that the middle coxæ are almost in contact. There are considerable differences in other respects between the two genera before me, neither of which have yet been found within our limits, though either may be hereafter discovered in Texas.

In *Ozæna* the antennæ are inserted as usual, slightly thickened externally, with four basal joints more smooth than the rest; the legs are not compressed, the anterior tibiæ deeply emarginate internally, with the upper spur represented only by a few bristles; the mentum is broad, with the middle lobe nearly as long as the lateral portions; the gular suture not very evident.

In *Physeæ* the sides of the front are broadly dilated, and the antennæ are inserted under these plates; the antennæ are filiform, with smooth joints, loosely clothed with hair. The mentum is deeply emarginate, with the middle tooth moderate in size; the gular suture not very evident. The legs are compressed, with the

thighs deeply excavated beneath; the anterior tibiæ are but slightly emarginate internally; the upper spur is a single bristle.

In all the genera of this tribe the margin of the elytra at the point where the posterior curvature commences is interrupted by an oblique ridge marked with a furrow, at which the epipleura suddenly ceases. Dorsal striæ are wanting; the submarginal ocellate punctures are few, and not distinct. The suture between the epimera and episterna of the prothorax is not distinct. The side pieces of the mesosternum are diagonally divided, and the epimera reach the coxæ; the side pieces of the metathorax are long and very narrow, with the epimera larger than usual.

The species of *Ozæna*, as noticed by Lacordaire, eject from the extremity of the abdomen, with explosive force, a pungent fluid, in a manner similar to *Brachinus*.

Tribe II.—PSEUDOMORPHINI.

This tribe, of which most of the species are found in Australia, has but a single representative (*Pseudomorphus excrucians* Kirby; *Drepavus Lecointei* Dej.) in our country; it is one of the rarest of our Coleoptera, and is found in Georgia and Carolina.

The genera of this group are among the most anomalous of the family, and at first sight would not be considered as belonging to it. Our species has almost the appearance of *Ips*; other genera resemble *Gyrinus* in form.

The mentum is entirely connate without suture with the gula, a character otherwise found in only one tribe of the first sub-family (*Stagonini*), foreign to North America. The mesosternum is extremely narrow, as in *Ozænini*, so that the middle coxæ are in contact; the episterna are large, the epimera very small, and do not reach the coxal cavity; the episterna of the metathorax are long, with distinct epimera.

The sides of the front are dilated, and the antennæ are inserted beneath the dilatation; three basal joints are smooth in our species; the mentum is deeply emarginate, without gular suture.

The legs are somewhat compressed, the femora are deeply excavated beneath; the anterior tibiæ feebly emarginate, with the upper spur remote from the apex.

The anterior coxæ are very narrowly enclosed behind, and the prosternum is somewhat prolonged; the sutures between the pro-

sternum and episterna are nearly effaced. The hind coxæ are small, contiguous, and separate the metasternum from the middle of the abdomen.

Sub-Family III.—HARPALIDÆ.

Epimera of the mesothorax not extending to the coxæ; mesosternum broadly separating the middle coxæ.

In this sub-family is contained the greater number of species of Carabidæ. But few striking anomalies exist among them, and the tribes, with few exceptions, are connected together by insensible modifications of structure, so that all attempts to isolate them distinctly have thus far proved unsatisfactory.

The following characters are useful in enabling the student to recognize genera belonging here:—

The eyes are usually present, rarely (*Anophthalmus* and *Anilus*) wanting. The mentum is deeply emarginate, sometimes with, sometimes without a medial tooth; the gular suture is always distinct, and the base of the maxillæ never covered; the inner lobe of the maxillæ is always hooked, the outer lobe biarticulate (except in the European genus *Callistus*); the sutures of the under surface of the prothorax are always distinct; the prosternum rarely is prolonged; the anterior coxæ entirely enclosed. The mesosternum always separates the middle coxæ, is declivous, sometimes concave; the side pieces are rarely diagonally divided, usually with epimera very narrow and posterior, never extending to the coxæ (the epimera and episterna are entirely connate, without suture, in the foreign *Graphipterini*); the mesosternum attains the middle of the second ventral segment (except in the foreign tribe *Orthogonini*, where the posterior coxæ are contiguous, and separate the metasternum from the abdomen), and is pointed behind. The abdomen consists of six ventral segments, except in the tribe *Brachinini*.

The anterior tibiæ are always deeply emarginate internally, with the upper spur remote from the apex, sometimes slightly prolonged at the apex; the tarsi are frequently dilated in the male, differently in different groups and genera. The ungues are sometimes serrate, but more frequently simple.

The elytra have never more than nine dorsal and a marginal stria, adjacent to which is a row of ocellate punctures (except in *Panagæini*); there is also usually a short basal stria by the scutellum,

or between the first and second striæ; the interval between the second and third striæ is usually marked with one or more deep punctures. The apex of the elytra is truncate, sinuate, or rounded.

The numerous genera found in the United States indicate the following tribes, which, with the exception of the first four and the last, are separated by very indistinct and indefinite characters:—

Abdomen with seven (♀) or eight (♂) ventral segments. I. BRACHININI.

Abdomen with six ventral segments in both sexes;

A. Elytra without ocellate punctures (paraglossæ wanting).

II. PANAGÆINI.

B. Elytra with ocellate marginal punctures;

a. Paraglossæ wanting; antennæ much compressed, or moniliform; anterior tibiæ dilated;

Elytra entire.

III. MORIONINI.

Elytra truncate.

IV. HELLUONINI.

b. Antennæ filiform, or nearly so; paraglossæ free or connate;

a. Head with a slender neck; antennæ with the first joint elongate; elytra truncate.

V. DRYPTINI.

b. Antennæ with the first joint not elongate, joints 1—3 glabrous;* Elytra truncate or rounded; head usually with a slender neck; ligula free at the apex.

VI. ODACANTHINI.

Elytra truncate; neck either indistinct or moderately slender; ligula not free at the apex.

VII. LEBUINI.

Elytra obliquely sinuate; abdomen not pedunculated;

Anterior tarsi of ♂ with two series of papillæ.

VIII. PTEROSTICHINI.

Anterior tarsi of ♂ densely spongy-pubescent;

Labrum emarginate and impressed.

IX. LICININI.

Labrum not impressed.

X. CHELONINI.

c. Antennæ with the first joint not elongate; joints 1—4 glabrous;

Elytra rounded; abdomen pedunculated.

XI. BROSCINI.

d. Antennæ with the first joint not elongated, third joint more or less pubescent;

Anterior tarsi of ♂ (?) with one joint dilated.

XII. STENOMORPHINI.

Anterior and middle tarsi of ♂ with four joints or none dilated.

XIII. HARPALINI.

Anterior tarsi of ♂ with two joints obliquely dilated;

Palpi with the last joint cylindrical, truncate.

XIV. PATROBINI.

Palpi with the last joint conical acute.

XV. TRECHINI.

Palpi with the last joint small subulate.

XVI. BEMBIDINI.

* Except in certain foreign species of Pterostichini, and in Trechicus.

Tribe I.—**BRACHININI.**

The increased number of ventral segments (seven in the female, eight in the male) will readily distinguish the members of this tribe. Additional characters are: The paraglossæ are scarcely longer than the ligula; the elytra are truncate at tip, and shorter than the abdomen; the anterior tibiæ are slender, not spinous at the tip, and the anterior tarsi of the male have three slightly dilated joints, with squamiform papillæ on the under surface. Of the antennæ the first and second joints are smoother than the others, but not altogether without hair. The head and thorax are narrower than the elytra, and the thorax is cordate.

These insects are found in damp and shady places, under stones, &c., and are remarkable for discharging, in an explosive manner, a pungent fluid secreted by anal glands.

But one genus, *Brachinus*, is found in the United States. The species are numerous, and the specific characters are indistinct. They all have reddish-yellow head, thorax, and legs, and blue or bluish-green elytra.

Tribe II.—**PANAGÆINI.**

Besides the absence of the usual ocellate punctures near the margin of the elytra, the following characters enable this tribe to be recognized; the ligula is short, without distinct paraglossæ; the last joint of the palpi is dilated and truncate; the elytra are entire, neither truncate nor sinuate at the tip; the anterior tarsi of the male, when dilated, are spongy beneath. The first and second joints of the antennæ are glabrous, the third not so, although smoother and less hairy than the fourth. The mentum is toothed in our species, and smaller than usual. The thorax is constricted at base, and the abdomen almost pedunculated. The epimera of the metathorax are not very distinct. The body above and beneath is coarsely punctured and pilose.

Two genera are found in our territory:—

Head constricted behind the eyes; mandibles short, acute. **PANAGÆUS.**
 Head not constricted behind; mandibles thick, obtuse. **MICRIXYS.**

Of the first, two species are found in the Atlantic States. The second genus is known only by one species, *M. distinctus* Lec. (*Panagæus distinctus* Hald.), from New Mexico. The genus was

formerly established by me under the preoccupied name *Eugnathus*, but afterwards* changed.

Tribe III.—MORIONINI.

The ligula in this tribe is dilated, and without paraglossæ; the antennæ are moniliform; the four basal joints are glabrous, and even the outer joints are less pubescent than usual; the last joint of the palpi is cylindrical, truncate; the elytra are entire, rounded at tip, with the usual series of ocellate punctures, which, however, diverge from the margin behind. The anterior tibiæ are compressed and dilated, and the tarsi not dilated in the male. The under surface of the head behind the eyes is somewhat sulcate, for the reception of the antennæ; the parapleuræ of the mesothorax are very short, whereby, as well as by the form of the anterior tibiæ and ligula, this tribe is separated from the Psydrini, with which it has been confounded by many authors.

But one genus, *Morio*, is represented by a single species, *M. Georgia*, in the Southern States. The head is suddenly and slightly constricted behind. It is commonly found under bark, and is an elongate, shining black insect, with deeply striate elytra.

Tribe IV.—HELLUONINI.

The ligula in this tribe is without paraglossæ; the antennæ are much compressed and thickened externally, with the three basal joints smoother than the others, and sparsely hairy. The anterior tibiæ are compressed and dilated, the anterior tarsi scarcely dilated in the males. The elytra are shorter than the abdomen, broadly rounded and almost truncate at the tip. The head is constricted behind, forming a short neck.

From Dryptini this tribe is distinguished by the shorter first joint of the antennæ, the broad anterior tibiæ, and the ligula without paraglossæ.

One genus (*Helluomorpha*) only is represented in the fauna of the Atlantic region by six species; the labrum is large, concealing the mandibles, and the antennæ very much compressed. The species are elongate, hairy, strongly punctured, brown insects, found under stones and bark.

* Proc. Acad., VII. 220.

Tribe V.—**DRYPTINI.**

The ligula is here furnished with distinct paraglossæ, more or less free at the apex; the antennæ are setaceous, filiform, or even moniliform, the first joint as long as the three following, and the basal joints are scarcely less hairy than the others. The anterior tibiæ are not dilated, and not spinous at the tip. The anterior tarsi have three moderately dilated joints, with squamiform papillæ beneath; the elytra are broadly truncate at tip, and shorter than the abdomen. The head is constricted behind, forming a neck.

The species are hairy and densely punctured insects, found under bark and stones. *Galerita*, *Thalpius*, and *Diaphorus* are found on both sides of the continent; *Zuphium*, thus far, only in the southern province of the Atlantic district. The species of *Galerita* have red thorax and blue or black elytra.

Neck slender;

Antennæ setaceous.

GALERITA.

Antennæ filiform.

ZUPHIUM.

Neck large.

Antennæ filiform; third joint shorter than the fourth; thorax truncate at base.

DIAPHORUS.

Antennæ more or less moniliform; joints 2—4 equal; thorax subpedunculate.

THALPIUS.

This tribe commences a series so closely allied as to be with difficulty defined. The essential characters of this tribe, however, are given above, and the combination of them will enable its members to be recognized, although individually the same characters reappear in other tribes.

Tribe VI.—**ODACANTHINI.**

The ligula with distinct paraglossæ, free at the apex; the antennæ are filiform, sometimes with three basal joints nearly glabrous, sometimes with only one; the first joint is more elongated than usual, but less so than in the preceding tribe. The palpi are acute at the apex. Head constricted behind into a neck, which, however, disappears in some foreign genera. The anterior tibiæ are not thickened or spinous at the apex; the anterior tarsi of the male are scarcely dilated. The elytra are truncate in some genera, rounded and entire in others. According to the form of the head

and thorax, three groups may be formed, which are, however, merged together by certain foreign genera.

Head rhomboidal, with a narrow neck; thorax cylindrical. CASNONIÆ.

Head rounded; thorax convex cordate, pedunculated. LACHNOPHORI.

Head not narrowed behind; thorax flat, ovate. EUCÆRI.

Group I.—Casnoniæ.

The large rhomboidal head, narrow thorax, and truncate elytra, enable this group to be known at first sight. We have in it the first occurrence of bilobed fourth joint of tarsi, and (in foreign genera) of serrate unguis, characters recurring afterwards in other tribes. The species are small, and found under stones; *Leptotrachelus* also on plants. They fly at night, and are attracted by lamps into houses. One species of *Casnonia* occurs in California, and two in Atlantic America; one *Leptotrachelus* in the Atlantic region.

Tarsi filiform.

CASNONIA.

Tarsi with fourth joint bilobed.

LEPTOTRACHELUS.

Group II.—Lachnophori.

The head is large and rounded; the thorax small, cordate, convex, and turned into a peduncle at base. The elytra broadly rounded at tip, the unguis always entire.

The species are small insects, living in the mud near water-courses, and are gregarious. One species of each genus is found in the southern part of the Atlantic district, and another in the valley of the Colorado and Gila. *Ega* is remarkable for the outer joints of the antennæ being white, and the elytra with several deep grooves extending from the base to the middle. In both of our genera the last joint of the palpi is ovoid, and sharply acuminate at the apex.

Head strongly contracted behind.

EGA.

Head slightly contracted behind.

LACHNOPHORUS.

This group osculates so completely with the *Pterostichini* that no distinctive character can be given, except that the three basal joints of the antennæ are not entirely glabrous. But no doubt can result in the mind of the student of our fauna, since the osculant forms are all foreign.

Group III.—**Eucæri.**

This group, so far as known to me, contains but a single species, found in Louisiana, *Eucærus varicornis* Lec., a small brown shining insect, of the form of *Trechus*, but with the elytra truncate, and the outer joints of the antennæ white. I formerly placed it in *Harpalini*, but the anterior tibiæ are slender, and not at all spinous. It cannot be placed with the *Lebiini*, since the ligula is free at the apex for a short distance. The pubescence of the antennæ extends upon the third joint, and even the second is not entirely free from it. The last joint of the palpi is oval and acuminate. The mentum is not toothed.

I have placed it in the present tribe for want of a more convenient position. It is, however, an osculant form which is equally out of place in any tribe here defined. The basal margin of the elytra is more strongly defined than in any of the other genera having truncate elytra.

Tribe VII.—**LEBINI.**

The ligula in this tribe has the paraglossæ connate to the apex, and somewhat variable in form. The maxillary palpi are filiform, the labial sometimes dilated. The antennæ are filiform, with three basal glabrous joints, except in *Trechicus*. The head is sometimes constricted behind into a neck, but usually not; the anterior tibiæ are not thickened at the tip, and rarely have any spines at the apex. The elytra are truncate at tip, and shorter than the abdomen; though in *Tetragonoderus* they are obliquely subsinuate, almost as in certain *Pterostichini*; the margin is not angulated at the humeri, and the basal margin is sometimes wanting. The anterior tarsi of the male are usually but slightly, rarely strongly dilated, with squamiform papillæ beneath. The unguæ are frequently serrate.

Two groups may be formed:—

Labrum short, mandibles exposed.

LEBIÆ.

Labrum large, covering in great part the mandibles.

PERICALLI.

Group I.—**Lebiæ.**

The genera of this group form three sub-groups, according to the form of the mentum and head.

Sub-Group 1.—LEBIAE (genuinæ).

Head constricted behind; mentum not distinctly toothed, emargination more or less filled with a basal membrane;* palpi not dilated.

Tarsi dilated, spongy beneath;

Thorax truncate at base.

Thorax pedunculate.

Tarsi filiform; thorax broader behind, truncate.

PLOCHIONUS.

LEBIA.

NEMOTANUSUS.

Of the last genus one species is found in the Southern and Western States, on flowers. The Lebiæ are found mostly on flowers, the Plochioni under bark. The unguis are serrate in our genera.

Sub-Group 2.—DROMI.

In these genera the head is not narrowed behind; the emargination of the mentum is filled with a basal membrane nearly concealing the tooth, when it exists; the palpi are usually acuminate, though the labial are sometimes thickened. Each genus, except Trechicus, which is confined to the Southern States, has representatives on both sides of the continent. The tarsi are filiform in all of our genera. The species are found under stones.

Middle tibiæ with small spines; unguis simple;

Palpi with last joint oval; third joint of antennæ glabrous.

TETRAAGONODERUS.

Palpi with last joint conical; third joint of antennæ pubescent.

TRECHICUS.

Middle tibiæ not spinous;

Labial palpi slender;

Thorax truncate at base;

Mentum not toothed, unguis serrate.

DROMIUS.

Mentum slightly toothed, unguis simple.

APRISTUS.

Thorax slightly lobed at the base; unguis more or less toothed;

Mentum not toothed.

BLECHRUS.

Mentum with a small emarginate tooth.

METABLETUS.

Labial palpi thick, dilated; unguis more or less serrate.

AXINOPALPUS.

The species of Blechrus and Metabletus are very small, shining, black insects, and were confounded together by me under the name

* This basal membrane is the anterior portion of the mentum, which is rarely seen in Carabidæ, but is very obvious in many of the following families.

Bomius. *Trechicus* was formerly placed by me in *Harpalini*, but the paraglossæ are connate with the ligula, and the anterior tibiæ are not at all thickened or spinous; it differs from all the other genera of this tribe known to me by the second joint of the antennæ being equal to the third, which is pubescent, and the eighth stria of the elytra anteriorly confluent with the ninth, as in certain *Bembidia*. The elytra are broadly rounded at the tip, and scarcely striate.

Sub-Group 3.—*CYMINDES*.

The mentum tooth is large and distinct, not obscured by a basal membrane; the head is not constricted behind; the labial palpi are more or less dilated and truncate, and the maxillary cylindrical, truncate; the fourth joint of the tarsi is triangular or bilobed.

These species are of larger size, and found under stones and bark; some species of *Callida* are also found on flowers.

Ungues serrate;

Thorax lobed at the base, labial palpi thick.

APENES.

Thorax undulated at the base, labial palpi thick.*

GLYCIA.

Thorax truncate at base, labial palpi moderate;

Tarsi with the fourth joint emarginate;

Labial palpi with the last joint dilated, body hairy.

CYMINDIS.

Labial palpi with the last joint elongate, body glabrous.

PINACODERA.

Tarsi with fourth joint bilobed, body glabrous.

CALLIDA.

Ungues simple, thorax truncate at base.

PHILOTECHNUS.

The last genus is confined to the Pacific coast; *Glycia* to the central district; *Cymindis* is widely distributed; the other genera are represented only in the Atlantic district. *Pinacodera* is established by Schaum upon *Cymindis limbata* Dej. and its allies, and differs from *Cymindis* by the male having four joints of the anterior tarsi dilated, while in genuine *Cymindis* there are but three. *Apenes* is remarkable for the depth of the clypeal suture.

This sub-group osculates very closely with the *Platynus* group of the *Pterostichini*.

* Motschulsky (Bull. Mosc., 1859, ii. 143) has proposed a genus *Phlophuga* for *Cymindis viridis* Dej. and another Californian species. It is said to differ from *Glycia* by the bilobed fourth tarsal joint, and from *Callida* by the larger lobes of the mentum. I have not had an opportunity of seeing either of the species referred to by the author.

Group II.—**Pericalli.**

These are distinguished from genuine Lebiæ by the larger size of the labrum, which covers in great part or entirely the mandibles. The palpi are slender, and the tarsi filiform. Two genera are found in the Atlantic district:—

Head constricted behind, thorax pedunculate.

RHOMBODERA.

Head not constricted behind, thorax truncate.

COPTODERA.

The mentum is toothed in both; in the second genus the unguis are serrate, in the first they have only a basal dilatation.

Didetus Lec. is synonymous with *Rhombodera*.

Tribe VIII.—**PTEROSTICHINI.**

Ligula free at the extremity, with distinct paraglossæ (except in one foreign genus); antennæ with three glabrous basal joints, the apex of the third rarely pubescent in foreign species. Head not contracted into a neck, though sometimes narrowed behind. Elytra obliquely sinuate at the apex, never truncate; the basal margin is distinct in all of our species, and forms an angle at the humeri. Anterior tibiæ either slender and scarcely spinous, or thickened and spinous at tip; anterior tarsi of the male with three dilated joints furnished beneath with squamiform papillæ.

Schaum includes in this tribe genera having the third joint of the antennæ partly pubescent, and less than three joints of the anterior tarsi of the male dilated (as *Stenomorphus*, *Patrobus*, &c.). By admitting these, however, it becomes impossible to fix distinct limits to the tribe, and I have therefore removed these heterogeneous elements to form other tribes, to be found below. According to the form of the anterior tibiæ, two groups may be formed of our genera:—

Anterior tibiæ slender, dilated joints of the tarsi narrow.

PLATYNI.

Anterior tibiæ thickened at the extremity, dilated joints of the tarsi triangular or cordate.

PTEROSTICHINI.

Group I.—**Platyni.**

By the slender form of the antennæ and legs this group osculates with the last members of the first group of Lebiini. And this resemblance is further increased by the occurrence of serrate unguis in some members of the present group.

I have combined *Pristodactyla Dej.* with *Calathus*, and *Anchus Lec.* with *Platynus*, the differences becoming evanescent by the comparison of many species. *Colpodes* should probably not be separated from *Platynus*;* the characters are by no means distinct. The species are quite numerous, and found under stones, mostly in moist places.

Our genera, as thus reduced, are as follows:—

Tooth of the mentum emarginate; unguis more or less serrate.

CALATHUS.

Tooth of the mentum entire; unguis simple;

Third joint of the antennæ very long.

RHADINE.

Third joint of the antennæ moderate;

Fourth joint of the tarsi emarginate, with long apical hairs, at least of the anterior pair.

COLPODES.

Fourth joint of the tarsi nearly entire.

PLATYNUS.

Mentum without any tooth; unguis simple.

OLISTHOPUS.

Group II.—*Pterostichi.*

The anterior tibiæ are gradually thickened towards the apex, and armed externally with small spines. The unguis are always simple. The anterior tarsi of the male have the three dilated joints triangular or cordate, sometimes (*Loxandrus*) oblique, as in *Galerita*. The characters separating the genera are of but slight importance, and in several (*Lophoglossus*, *Holciophorus*, and *Loxandrus*) depend upon sexual peculiarities of the male. Although the species of *Amara* would never be confounded with *Pterostichus* by a practised eye, there is no difference capable of being used in a synoptic table for the purpose of distinguishing the two genera. For this reason the assemblage of characters common to all species of *Amara*, but which are only individually present in some species of *Pterostichus*, must be used. They are given below. According to the latest researches, *Pœcilus* cannot be retained separate from *Pterostichus*.

Mentum tooth emarginate, last joint of palpi dilated.

MYAS.

Mentum tooth emarginate, last joint of palpi cylindrical (rarely oval);

Episterna of metathorax short; elytra with one dorsal puncture; prosternum not margined, but channelled.

EVARTHUS.

* This genus is called *Anchomenus* by most foreign authors. I have detailed in other places the reasons which induce me to retain the name here adopted.

Episterna of metathorax variable; elytra with none or several dorsal punctures;*

Ligula flat or slightly convex; prosternum not channelled, sometimes margined. PTEROSTICHUS.

Ligula carinate; episterna of metathorax elongate; prosternum not margined nor channelled. LOPHOGLOSSUS.

Ligula carinate; episterna of metathorax short; prosternum margined and channelled. HOLCLOPHORUS.

Mentum tooth obtuse, scarcely concave; palpi slender, last joint cylindrical; episterna of metathorax elongate; elytra with one dorsal puncture. LOXANDRUS.

Mentum tooth emarginate, rarely entire; head not at all narrowed behind; labrum slightly emarginate; last joint of palpi slightly oval; elytra without dorsal punctures. AMARA.

Tribe IX.—LICININI.

The paraglossæ in this tribe are variable in form, sometimes (Badister) entirely connate with the ligula, sometimes (Diplochila, Diælus) free at the apex. The head is large and obtuse; the labrum is emarginate, and deeply impressed; the mandibles are obtuse. Three basal joints of the antennæ are smooth (the third is slightly hairy in some species of Badister, but not rough like the following joints). The anterior tibiæ are somewhat thickened and spinous at the tip; the anterior tarsi of the male have three (in some foreign genera only two) joints strongly dilated, covered beneath with a dense brush of hair. The elytra are slightly and obliquely sinuate at the apex; one dorsal puncture is seen on the third interval. The body is never hairy.

In our genera the clypeus is divided into an anterior subcoriaceous, and a posterior corneous portion, and the mentum is not toothed.

Last joint of palpi oval;

Paraglossæ connate with the ligula, and longer than it. BADISTER.

Ligula free at the apex. DIPLOCHILA.

Last joint of palpi slightly securiform. DIÆLUS.

The species of the first genus are small, frequently prettily spotted insects, found under stones; they are rare, and occur on both

* Except in *Pterostichus honestus* (*Fer. fastidita* Dej.), in which a single dorsal puncture is seen. This species is, however, of the same form as *P. adorus*, and would not be confounded with the very characteristic forms of any of the groups of *Evarthrus*.

sides of the continent. *Diplochila* (*Rembus* Latr.) is represented only east of the Rocky Mountains, while *Dicælus* is confined exclusively to Eastern North America. The species of the latter are usually large; some are of a beautiful violet color, and in all of them the eighth interval is carinated from the base for at least one-third the length. They are found under stones and pieces of wood, and are more numerous in the Southern States.

Tribe X.—CHLÆNIINI.

The ligula is free at the apex, with distinct paraglossæ; the labrum is flat, rarely deeply emarginate; the mentum strongly toothed (except in *Anomoglossus*). The antennæ have three basal joints smooth and glabrous. The anterior tibiæ are scarcely thickened externally, and but slightly spinous. The anterior tarsi of the male have three (rarely four) joints dilated, square with rounded angles, and covered beneath with a dense brush of hair. The elytra are regularly rounded behind, and not sinuate; the third interval has a single puncture.

The systematic difference between this tribe and *Pterostichini* is wholly sexual, yet the genera may be easily recognized, since the *Chlæni* are densely pubescent, and the *Oodes* have the ocellate punctures of the elytra very near the margin, and the eighth and ninth striæ confluent, characters not found among the *Pterostichini*.

Two groups are contained in this tribe.

Group I.—*Chlæni*.

Body densely pubescent, outer striæ of the elytra normal.

These are usually prettily colored metallic species, found under stones and pieces of wood in moist or shady places; they evolve a strong odor, which recalls that of a mixture of camphor and creasote.

Mentum not toothed; labrum deeply emarginate.

ANOMOGLOSSUS.

Mentum tooth distinct, emarginate;

CHLÆNIUS.

Last joint of palpi truncate.

ATRANUS.

Last joint of palpi oval, nearly pointed.

To *Anomoglossus* belongs, besides the two species *Chl. emarginatus* and *Chl. pusillus*, upon which the genus was founded by Chaudoir, also *Chl. amœnus* Dej. Of these genera, *Chlænius* alone is represented in the western part of the continent.

Group II.—*Oodes*.

Body glabrous, usually elliptical; eighth and ninth striæ of the elytra confluent, ocellate punctures very close to the margin. No species has yet occurred in the Pacific district, although one *Oodes* is found in the Gila valley.

Our genera are thus related:—

All the tarsi pubescent beneath (anterior tarsi ♂ with four dilated joints).

LACHNOCREPIS.

Posterior tarsi not pubescent beneath;

Body finely punctulate; anterior tarsi ♂ with four dilated joints.

ANATRICHIS.

Body above smooth; anterior tarsi ♂ with three dilated joints;

Antennæ slender, filiform.

ODES.

Antennæ stout, compressed.

EVOLENES.

The species of *Oodes* have been divided into two genera by Chaudoir, as follows:—

Anterior tarsi ♂ with the first joint entirely spongy beneath. OODES.

Anterior tarsi ♂ with the first joint spongy only at the tip. STENOUS.

But these differences seem to me to indicate only natural groups of species.

Tribe XI.—**BROSCINI**.

Ligula connate with the paraglossæ, which are sometimes elongated. Antennæ with four glabrous basal joints. Elytra entire; abdomen connected with the thorax by a cylindrical peduncle (as in *Scaritini*); anterior tibiæ slightly enlarged and spinous at the tip. Anterior tarsi of the male are dilated in a variable number of joints, clothed beneath sometimes with a dense brush of hair, sometimes with squamiform papillæ; in some genera the middle tarsi are also dilated in the same sex.

Two groups may be indicated in this tribe, according as the posterior angles of the thorax are distinct or not.

Group I.—*Broscl*.

Abdomen strongly pedunculated, posterior angles of thorax indistinct.

This group is represented only by two Russian American species of *Miscodera*, which are unknown to me. The genus has entirely

the form of *Dyschirius* among the *Scaritini*; three joints of the anterior tarsi and two of the middle tarsi are dilated in the male, and furnished beneath with squamiform papillæ. The mentum has a distinct tooth.

Group II.—*Psydri*.

Abdomen moderately pedunculated; posterior angles of the thorax distinct; mentum not toothed.

Two genera showing a tendency to revert to *Morio* are comprised in this group. They differ, however, from that tribe by the not compressed anterior tibiæ and distinct paraglossæ, as well as by the large epimera of the mesothorax. The statement of Schaum, that the epimera of the metathorax are indistinct in the *Morionini* (in which tribe he places *Haplochile*), I do not find correct, either of the genera here placed or of *Morio* itself.

Haplochile pygmæa has a remarkable distribution, being found in the Atlantic district and also in Oregon. It is a small, brown, subcylindrical insect, which, when disturbed, emits a very powerful fetid odor, quite disproportioned to the size of the animal. I have found it under pieces of wood, in moist places, at Lake Superior. The anterior tarsi are scarcely dilated in the male.

Eyes extending to the margin of the oral opening; body convex.

HAPLOCHILE.

Eyes small, rounded; body depressed.

PSYDRUS.

Tribe XII.—*STENOMORPHINI*.

The ligula is free at the apex, with distinct paraglossæ; the antennæ have but two glabrous joints. The last joint of the palpi is cylindrical, subtruncate. The mentum is deeply emarginate, not toothed. The anterior tibiæ are thickened and slightly spinous at the tip; the first joint of the anterior tarsi is broadly dilated in one sex, but has beneath neither squamiform papillæ nor hairs; in the other sex it is not dilated, but is as long as the two following. The elytra are deeply striate, without any dorsal punctures. The epimera of the mesothorax are very short.

The species are few in number, and are South American, with the exception of the two which are found in our territories. *Agasoma californicum* is found in salt-marshes in California, *Stenomorphus rufipes* in Texas. They are very slender, elongated insects.

Anterior tibiæ densely fimbriate internally, with long hairs. *AGAESOMA*.
 Anterior tibiæ sparsely pubescent internally. *STENOMORPHUS*.

The relations of this tribe are usually considered as with *Pterostichini*; but, in consequence of the third joint of the antennæ being almost entirely covered with pubescence, I regard it as closely allied with the *Harpalini*, and cannot help suspecting that the dilated first joint of the anterior tarsi may be a female rather than a male character, such as is seen in *Gynandropus*, &c., in the next tribe. In this case there would be no satisfactory reason for considering it as a distinct tribe, but it would be merged into the next.

Tribe XIII.—*HARPALINI*.

The ligula in this tribe is free at the apex, with distinct paraglossæ. The antennæ have the first and second joints, and sometimes one-half of the third, smooth and glabrous. The palpi have the last joint sometimes cylindrical, sometimes acuminate. The anterior tibiæ are more or less thickened and spinous towards the apex, sometimes almost palmated; the anterior and middle tarsi have frequently four joints dilated in the male, and clothed beneath with hairs or papillæ; in other genera the male tarsi are not at all dilated; the first joint of the same tarsi in the female is sometimes dilated. The epimera of the mesothorax are very short; the elytra are rounded and sinuate at the apex, sometimes without, but usually with a single dorsal puncture, rarely with three series of punctures.

Three groups may be formed on sexual characters:—

Anterior tarsi of the male not dilated.

DAPTI.

Anterior and middle tarsi of the male dilated, with a brush of hairs beneath.

EURYTRICHI.

Anterior and middle tarsi of the male dilated, with squamiform papillæ beneath.

HARPALI.

Group I.—*Dapti*.

The head behind the eyes is larger than in the other two groups; the legs are thicker and better fitted for digging, and the third joint of the antennæ has a smaller portion covered with pubescence. Although the genera may individually be readily recognized, I can give no other characters to separate the group.

Anterior tibiæ subpalmate (elytra with three series of dorsal punctures).

NOTHOPUS.

Anterior tibiæ expanded at the apex (elytra without dorsal punctures).

GEOPINUS.

Anterior tibiæ normal in form ;

Mentum strongly toothed ;

Apical angles of the joints 1—3 of the anterior tarsi prolonged into spines ; hind angles of thorax rounded. MELANOTUS.

Apical angles of the joints of the anterior tarsi not prolonged ; hind angles of thorax distinct. CRATACANTHUS.

Mentum not toothed ;

Hind tarsi with the joints 1—4 equal ;

Labrum emarginate.

CRATOGNATHUS.

Labrum not emarginate.

AGONODERUS.

Hind tarsi with the joints 1—4 decreasing in length, labrum not emarginate.

DISCODERUS.

These genera do not occur on the Pacific slope, with the exception of a single species of *Agonoderus* found in California. *Melanotus* has been found in Arizona. *Cratognathus* (including *Piosoma* Lec.) is represented by two species from Kansas and New Mexico. Of *Nothopus* but a single species from Kansas is known. *Discoderus** is remarkable for its resemblance to species of *Harpalus* (group *Selenophorus*), and has three rows of punctures on the elytra ; the middle tibiæ of the male are serrate within.

Group II.—*Eurytrichi*.

The anterior tarsi are strongly, the middle tarsi usually strongly, sometimes only slightly, dilated, and covered beneath with a dense brush of hair. The head is somewhat narrowed behind the eyes. The first joint of the dilated tarsi of the male is more or less narrower than the second.

Ligula dilated at tip ; mentum not, or only obsoletely, toothed.

ANISODACTYLUS.

Ligula not dilated at tip, truncate, or subtruncate ;

Paraglossæ narrow, curved, not longer than the ligula ;

Mentum not toothed.

XESTONOTUS.

Mentum toothed.

SPONGOPUS.

Paraglossæ broad, rounded, longer than the ligula ;

Mentum not toothed (body pubescent).

AMPHASIA.

Mentum toothed (body glabrous).

EURYTRICHUS.

* *Pangus americanus* Motsch. (Bull. Mosc., 1859, ii. 137), from California, seems to belong to *Discoderus*. The genus is not, however, known to me as occurring west of the Rocky Mountains.

Of these genera only the first is represented on the Pacific coast, and there, besides the normal form, is found a group of species (*Dichirus* Mann.), having the body clothed with long hairs, and the intervals between the striæ of the elytra marked with two rows of punctures; in them, too, the middle tarsi of the male are scarcely dilated.

Group III.—Harpall.

The anterior and middle tarsi usually strongly, sometimes only slightly dilated, clothed beneath with two rows of squamiform papillæ. The head is usually slightly narrowed behind the eyes. I have found it necessary to reduce the number of genera indicated in my synoptical table of this group,* an undue prominence being there given to the form of the ligula and paraglossæ.

Mentum not toothed; anterior tarsi with the first joint elongated and dilated in the female;

Elytra with three rows of punctures.

GYNANDROPUS.

Elytra with a single dorsal puncture.

GYNANDROTARSUS. †

Anterior tarsi of the female not dilated;

Mentum strongly toothed.

BRADYCELLUS.

Mentum tooth very small, or none;

Last joint of maxillary palpi slightly elongated;

Thorax subquadrate.

HARPALUS.

Thorax rounded.

STENOLOPHUS.

Last joint of maxillary palpi nearly twice as long as the preceding (thorax flat, subcordate, with prominent hind angles). PHILODES.

Harpalus includes *Selenophorus* Dej., which consists of the species having three rows of punctures on the elytra. Hairy and punctured Harpali (forming the division *Ophonus*) are not represented in North America. There is no special difference between Harpalus and Stenolophus, except the smaller size and rounded thorax of the species of the latter; in most of the species of Stenolophus the fourth joint of the dilated tarsi of the male is deeply bilobed, and the palpi are acuminate; but among the species of Harpalus proper there is much variation in this respect, as well as in the length of the first joint of the hind tarsi.

Philodes contains two species, *Stenolophus alternans* Lec. (*Badister testaceus* and *Aepus testaceus* Lec.), having three rows of

* Trans. Am. Phil. Soc., x. 384.

† It is quite possible that this genus will be found to belong to the preceding group.

punctures on the elytra, and the Californian *S. tener* Lec., without rows of punctures. The form is more elongated than that of any true *Harpalus* or *Stenolophus*, and the last joint of the maxillary palpi, besides being longer, is more conical, almost forming with the preceding a fusiform mass, as in *Trechus*. They are found in wet places, and are quite rare.

Tribe XIV.—**POGONINI.**

The ligula is free at the apex, with distinct paraglossæ; the palpi are slender, and the last joint is nearly cylindrical; the mentum tooth is distinct, emarginate at tip. The anterior tibiæ are slightly thickened, with a few apical spines; the two basal joints of the anterior tarsi are dilated in the male, with two rows of papillæ beneath. The antennæ have but two basal joints glabrous, the third is elongated and pubescent. The head has deep frontal impressions, and is slightly constricted behind. The epimera of the mesothorax are short, and but very slightly widened externally.

This tribe is represented in our fauna by the genus *Patrobus* alone;* one species, *P. longicornis* Say, is found commonly under stones in the Atlantic region, the others are northern, and species are found on both sides of the continent.

The position of these insects is disputed by different authors. Schaum, the latest authority, ranges them with *Pterostichini*; but the difference in the number of dilated tarsal joints in the male seems to warrant their separation, and indeed almost their union with the next tribe, with which they were associated by Erichson. The pubescence of the antennæ nearly covers the third joint, a character found exceptionally (according to Schaum) in the tribe *Pterostichini*, but which is not seen in any of the species in our fauna.

The species of *Patrobus* having convex thorax have the eighth stria of the elytra confluent with the margin anteriorly; in those with flat thorax the stria is separate from the margin for its whole length.

Tribe XV.—**TRECHINI.**

In this tribe the ligula has eight bristles, and is free at the apex, with distinct and long paraglossæ; the palpi have the last

* *Pogonus minutus* Dej. is not found in the United States, as stated by him.

joint acuminate, not shorter than the penultimate joint. The mentum is toothed; the third joint, and even the second joint, of the antennæ is pubescent. The head has the frontal impressions long and deep, curved behind the eyes, forming a slight posterior constriction. The anterior tibiæ are either linear (*Anophthalmus*) or slightly dilated, not spinous at the tip. The anterior tarsi of the male have two somewhat obliquely dilated joints, furnished beneath with squamiform papillæ. The epinera of the mesothorax are short, and somewhat triangular. The elytra are rounded at the apex, with the eighth stria anteriorly confluent with the margin, and most frequently interrupted at the middle.

Two genera are represented in our fauna; both have the first stria of the elytra recurved at the apex.

Eyes wanting; anterior tibiæ linear.

ANOPHTHALMUS.

Eyes large; anterior tibiæ slightly thickened.

TRECHUS.

Anophthalmus Tellkampfi is found in the Mammoth Cave, Kentucky; other species will be found in our other caves, when scientific zeal shall cause them to be properly explored. *Trechus* is found on both sides of the continent, but only in northern regions. The European *T. rubens* has recently been found by Mr. H. Ulke in Nova Scotia. *Trechus* includes *Epuphius*.

I formerly placed *Tachys* in this tribe; by the definitions here given it belongs more properly to the next; but with the European genus *Perileptus Schaum* there is a very close osculation between the two tribes.

Tribe XVI.—BEMBIDIINI.

The ligula has but two bristles at the apex, which is free for a very short distance; the paraglossæ are distinct, scarcely longer than the ligula; the penultimate joint of the palpi is obconical, and the last joint much narrower and shorter, so as to be subulate. The mentum is strongly toothed, and the tooth is usually emarginate. The two basal joints of the antennæ are glabrous, the third is pubescent. The form of the head and frontal impressions are variable. The anterior tibiæ are slightly spinous at tip, either squarely truncate as usual, or slightly dilated and obliquely truncate, with the outer angle a little prominent. The anterior tarsi of the male are usually somewhat obliquely dilated in the first and second joints, the first being much larger than the second, but in

Anillus, Pericompsus, and certain Tachys the tarsi of the male are not at all dilated. The epimera of the mesothorax are more or less triangular. The elytra are entire, and rounded at tip, with the eighth stria usually confluent anteriorly, or nearly so, with the margin sometimes widely interrupted, but usually entire.

Like the other genera of Carabidæ containing very numerous species, Bembidium consists of groups of species differing greatly in form, and even in the structure of the parts of the mouth; but the characters being evanescent, cannot be used for the definition of genera.

Our genera are as follows:—

Eyes wanting.

ANILLUS.

Eyes small, flat.

LYMNÆUM.

Eyes large or moderate, convex;

Anterior tibiæ not dilated at the apex; elytra with scutellar stria; sutural stria not recurved at the apex.

BEMBIIDIUM.

Anterior tibiæ slightly dilated and obliquely truncate at the apex; elytra without scutellar stria; sutural striæ recurved at the apex;

Elytra with the eighth stria interrupted or less deep at the middle.

TACHYS.

Elytra with eighth stria very deep.

PERICOMPSUS.

Of Anillus and Lymnæum but single Californian species have yet been found; the other genera are widely diffused. *Blemus anescens* Lec. must be placed in Tachys, the smaller proportional size of the third joint of the antennæ not being sufficient for generic separation.

FAM. III.—AMPHIZOIDÆ.

Mentum deeply emarginate, with a medial tooth; lobes obtusely rounded; ligula large, quadrate, corneous; gular suture none.

Maxillæ with the outer lobe narrow, glabrous, palpiform, but not biarticulate; the inner lobe curved, acute at the apex, sparsely ciliate, with spines internally.

Antennæ inserted under the front, behind the base of the mandibles; entirely glabrous, polished.

Prothorax with the epimera and episterna moderately distinct; prosternum produced behind over the mesosternum.

Metasternum truncate behind, not reaching the abdomen.

Abdomen with six ventral segments, the anterior three connate.

Legs slender, formed for running; anterior and middle coxæ small; globular cavities of the former not closed; posterior dilated internally, contiguous at the inner margin, extending also to the margin of the body, separating the side pieces of the metasternum from the first ventral segment.

Notwithstanding the searching analysis of the characters of *Amphizoa insolens*, made by Dr. Schaum in his *Insecten Deutschlands*, I must differ with my eminent friend regarding the interpretation of the characters, and still regard it as representing a distinct family, and not as a very aberrant Carabide. It is true that the characters it shows, with the exception of the metasternum truncate behind, individually are found in various anomalous Carabidæ, but the concentration of all of them in one object, with the addition of yet another, entirely unknown otherwise in the series of land carnivorous beetles, surely constitutes sufficient reason for regarding this single species as the representative of a distinct type, equal in value to the families which precede or those which follow.

In addition to the characters given above, I would mention: the head is broad, obtuse; the eyes very small; the labrum very transverse, sinuate in front; the palpi short, cylindrical; the side suture of the under surface of the prothorax is distinct, the others are nearly obliterated; the prosternum is broadly produced behind the coxæ, and obtusely rounded at tip; the coxæ are not entirely enclosed, but are protected behind by the mesosternum. The latter is deeply concave behind, perpendicular in front, and is almost covered by the prosternum when the thorax is deflexed. The side pieces are diagonally divided, and the epimera reach the coxæ, which are small and round. The metasternum is prolonged and obtusely rounded between the middle coxæ, transversely truncate behind; the side pieces are triangular, without visible epimera; the posterior coxæ are large, flat, rounded behind, extending to the margin of the body, internally contiguous for a space nearly equal to the length of the metasternum, with a quadrate internal dilatation for the insertion of the legs, as in Carabidæ.

The legs are slender, rough with granulated points; the anterior tibiæ are not in the least degree sulcate internally, and have two small terminal spurs; the tarsi are glabrous, the joints rounded beneath; the claws simple. The elytra are twice as broad as the

thorax, connate, rounded, not convex, with nine dorsal furrows, and no marginal one; the apex is slightly sinuate.

The surface is rough, without lustre, and moderately coarsely punctured.

This very singular insect is found in northern California, probably near the Sierra Nevada; of its habits nothing is known.

FAM. IV.—DYTISCIDAE.

Mentum deeply emarginate, broadly toothed in the middle; lobes somewhat acute; sides rounded, converging in front; gular suture distinct; ligula large, quadrate, corneous.

Maxillæ with the outer lobe biarticulate, the inner curved, acute at the apex, ciliate internally.

Eyes rounded, never emarginate.

Antennæ inserted under the front, behind the base of the mandibles, glabrous, polished, usually filiform, 11-jointed (rarely 10-jointed).

Prothorax with the epimera and episterna distinct; prosternum compressed, produced behind and fitting into a cleft or emargination of the metasternum; anterior coxæ protected behind by the mesosternum, subconical.

Metasternum short, pointed behind, but very closely connate with the posterior coxæ.

Posterior coxæ very large, usually oblique, contiguous at the inner margin, reaching the side of the body, entirely cutting off the ventral segments from the metathorax; internally with a small dilatation for the insertion of the legs, or a broad plate (Haliplini) extending over their whole surface, and also covering the greater part of the abdomen.

Abdomen with six ventral segments, the three anterior ones connate, the sixth rounded at tip, usually permitting the seventh internal but corneous one to be slightly visible.

Legs ciliate with long hairs, posterior usually compressed, elongated, formed for swimming; tarsi 5-jointed, the fourth joint of the anterior and middle tarsi sometimes obsolete.

In this family are contained aquatic carnivorous insects, as will be seen by the above characters, a close relationship to Carabidæ, and in fact only differing by the form of the posterior coxæ, and the natatorial legs. The particular portion of the Carabidæ which approaches most nearly these insects is found in the

first sub-family. In common with that series, the Dytiscidæ have the side pieces of the mesosternum diagonally divided, with the epimera reaching the coxæ; the side pieces of the metasternum are narrow, without visible epimera. The middle portion of the mesosternum is entirely covered; on separating the prothorax, it is found to be deeply sulcate for the reception of the prolongation of the prosternum, which thus firmly unites the different parts of the body, so as to give the stability necessary for rapid motion through the water.

The body is rounded, sometimes elongated, usually elliptical, rarely very convex. The species are more numerous in the northern parts of the country; they are all winged, and the elytra are always marked with three discoidal, irregular rows of punctures; rarely the elytra are sulcate (*Copelatus*, females of certain *Dytiscus*), frequently punctured, sometimes sculptured with transverse lines (certain *Colymbetes*).

The genera represented in our country form two sub-families, so distinct that they might with much propriety be considered separate families.

Sub-Family I.—HALIPLIDÆ.

Antennæ 10-jointed; abdomen covered with large plates of the posterior coxæ, which are small and transverse; metasternum almost truncate behind, scarcely emarginate in front; legs scarcely natatorial.

This series consists of a single group, containing but two genera, *Haliphus* and *Cnemidotus*, of small size; the body is very convex, somewhat acute before and behind, yellow shining, spotted with black or gray. The elytra are covered with rows of punctures; in *Haliphus* there are nine and a marginal series, in *Cnemidotus* there are eleven or twelve. The scutellum is not visible. The insects of this sub-family swim but feebly, and with little activity.

Palpi subulate.
Palpi filiform.

HALIPLUS.
CNEMIDOTUS.

Sub-Family II.—DYTISCIDÆ (genuini).

Antennæ 11-jointed; posterior coxæ without plates, very large (except in the European genus *Pelobius*); legs very natatorial (except in the same genus).

Four tribes are represented in our fauna, which may be thus distinguished:—

Anterior and middle tarsal with the third joint bilobed, the fourth scarcely visible.	I. HYDROPORINI.
Tarsal with five distinct joints;	
Prosternum dilated behind, truncate.	II. NOTERINI.
Prosternum compressed;	
Anterior tarsal of ♂ dilated, joints oblong.	III. COLYMBETINI.
Anterior tarsal of ♂ forming a large disk.	IV. DYTISINI.

Tribe I.—HYDROPORINI.

This group contains only small species, having the usual form of this family, but rarely very broad, and sometimes nearly globose. But two genera are found with us: *Hydroporus*, of varied form, having no visible scutellum; *Celina*, with elongate body, obtuse before, pointed behind, with a distinct scutellum.

More than eighty species of the former genus are known to me,* and species are found in every part of the country.

Tribe II.—NOTERINI.

The form of the prosternum in *Noterus* and the three genera below mentioned is so remarkably different from that seen in the rest of the members of this family, that they seem to be naturally placed in a special tribe; the prosternum is elevated, very much dilated behind the anterior coxæ, and truncate; it reaches the metasternum, which is also widely truncate in front.

The form of body in these genera is likewise peculiar. In *Colpium Lec.* it is almost globose, as in certain *Hydroporus*; in others it is oval, very convex, acutely pointed behind; the labial palpi are dilated in our genera, sometimes very much so; the antennæ have the middle joints more or less dilated. The scutellum is not visible. No species has yet occurred in the Pacific district.

Our three genera may be thus distinguished:—

Prosternum deeply concave; body globose; palpi emarginate at tip.	COLPIUS.
Prosternum flat;	
Last joint of maxillary palpi emarginate.	SEPIUS.
Last joint of maxillary palpi truncate.	HYDROCANTHUS.

Colpius contains but a single species, found in Louisiana.

* For a synopsis of them, *vide* Proceedings of the Academy of Natural Sciences of Philadelphia, vii. 290.

Tribe III.—**COLYMBETINI.**

The only character by which this tribe is distinguished from the next is the form of the dilated anterior tarsal of the males. The dilated joints are here oblong and of equal width, covered beneath with cups of equal or nearly equal size. The prosternum, as in it, is narrow, compressed, and pointed behind. The form of body is oval, not very convex. The species are small or moderate in size.

Our genera may be thus tabulated:—

Scutellum distinct.	2
Scutellum invisible.	LACOPHILUS.
2 Last joint of palpi truncate or rounded.	3
Last joint of palpi emarginate.	COPTOTOMUS.
3 Prosternum not sulcate.	4
Prosternum with a deep groove.	MATUS.
4 Claws of posterior tarsi unequal, the outer one fixed.	COLYMBETES.
Claws of posterior tarsi equal, movable.	5
5 Elytra striate.	COPELATUS.
Elytra smooth.	6
6 Thorax narrowed at the base.	ANISOMERA.
Thorax as wide at the base as at the middle, or wider.	AGABUS.

I have included in *Colymbetes* the genus *Hybius* *Er.*, and entirely agree with Lacordaire that the difference is too slight to enable them to be retained as distinct.

I am also inclined to believe that *Copelatus* and *Anisomera* should be united with *Agabus*; the difference of the first is merely in the striate elytra; that of the second in the thorax, being narrowed from the middle to the base.

Tribe IV.—**DYTISCINI.**

This tribe contains in the genera *Cybister* and *Dytiscus* all the large species, and in the other genera species of moderate size. As before mentioned, it only differs from the last group in having the joints 1—4 of the anterior tarsi of the male of unequal width, so as to form a round disk, furnished beneath with cups of very unequal size. The scutellum is always visible. The body is oval not very convex, usually broader behind the middle, rarely elliptical; the elytra of females of certain *Dytiscus* and *Acilius* are sulcate. All the genera of the tribe are represented in our fauna, and may be distinguished thus:—

Posterior tarsi with two claws.	2
Posterior tarsi with a single fixed claw.	CYBISTER.
2 Claws equal, or nearly so; movable;	3
Claws unequal, the upper one fixed (last joint of palpi not elongated); 4	DYTISCUS.
3 Last joint of palpi not elongated.	EUNECTUS.
Last joint of palpi elongated.	ACILIUS.
4 Body ovate, intermediate tarsi of male not dilated.	HYDATIUS.
Body elliptical, intermediate tarsi of male dilated.	

FAM. V.—GYRINIDAE.

Mentum deeply emarginate; lateral lobes rounded; gular suture distinct.

Ligula large, quadrate, corneous, filling the emargination of the mentum.

Maxillæ with the outer lobe usually wanting, sometimes slender, not articulated, the inner curved, ciliate internally, acute at tip.

Eyes divided by the sides of the head, upper and lower parts both rounded.

Antennæ inserted under the sides of the front, behind the base of the mandibles, short, thick, third joint auriculate, subsequent ones indistinct, last joint elongate.

Prothorax with the prosternum short and carinated, episterna and epimera distinct, the latter large.

Mesosternum very large, rhomboidal, posterior angle emarginate for the reception of the point of metasternum; episterna and epimera entirely connate, attaining the middle coxæ.

Metasternum very short, pointed before and behind; episterna very large; epimera not visible.

Coxæ, anterior, small, globular; middle, flat, oblique, almost reaching to the posterior coxæ behind; the latter are large, truncate anteriorly, contiguous at their inner margin, extending to the margin of the body, and thus separating entirely the ventral segments from the metasternum; they are dilated internally, and broadly excavated behind for the motion of the hind legs.

Abdomen 7-jointed, the three anterior segments connate, the first almost obsolete; the seventh longer than the sixth, rounded at tip.

Anterior legs very long, received in oblique grooves of the pro- and mesosternal segments; tibiæ slender, with one terminal spur; tarsi 5-jointed, of the male sometimes dilated.

Middle and posterior legs short, broad, very much compressed; tibiæ without spurs; tarsi 5-jointed; first joint of middle feet large, triangular; second and third very short; fourth large, triangular; fifth triangular, with two approximate claws. Of the posterior feet of *Dineutes* the first joint is very large; the others are small, and diminish gradually in size, the last with two very small claws. In *Gyrinus* the posterior and middle tarsi are nearly alike.

This family is one of the best defined and most distinct of any in the whole order of Coleoptera, and contains a moderate number of species, of an oval form, somewhat attenuated at either end, usually of a very brilliant bluish-black color above, with the punctures reflecting a golden tint.

Their habits are aquatic, but remarkably different from those of the Dytiscidæ; they are usually seen in large numbers on the surface of the water, circling about in labyrinthine curves, and diving but rarely, and only to escape from an immediate danger; when caught, many exhale a milky fluid, having an odor of apples.

The elytra are in two of our genera striate, with rows of punctures; in *Gyretes* they are without striæ, smooth and shining on the disk, finely punctured and pubescent on the sides. The species of *Dineutus* and *Gyrinus* frequently resemble each other very closely, and ours have not yet been investigated with success. Of *Gyretes* one species is found in the Colorado River of California, and another in Illinois.

Our three genera are thus separated:—

Last ventral segment of abdomen depressed, rounded at tip;

Scutellum distinct.

GYRINUS.

Scutellum wanting (labrum transverse).

DINEUTES.

Last ventral segment of abdomen elongated, conical (labrum prominent, scutellum wanting).

GYRETES.

FAM. VI.—HYDROPHILIDÆ.

Mentum large, quadrate; gular suture distinct.

Ligula broad, very short, usually concealed, with labial palpi very distant at base.

Maxillæ with two lobes ciliated at the extremity.

Eyes round in all of our genera (emarginate or even divided by the side of the head in some foreign genera).

Antennæ inserted under the sides of the front, behind the base of the mandibles, moderately short, having from six to nine joints, the outer joints forming a sudden club, of which all the joints except the first one are pubescent.

Prothorax with the episterna and epimera not distinct; prosternum very short; anterior coxæ globose, conical, exerted.

Mesosternum moderate, frequently longitudinally elevated; side pieces not divided, extending to the coxæ, which are large, oblique, and flat, prominent only inside of the insertion of the thigh.

Metasternum large, frequently carinate, and produced into a long spine behind; side pieces large, epimera not visible.

Posterior coxæ oblique, flat, extending to the sides of the abdomen.

Abdomen usually with five ventral segments, in the foreign genus *Limnebius* with seven, and in *Cyllidium* with but apparently four; segments not connate.

Legs moderate; tibiæ terminated by two large spurs; tarsi five-jointed, the middle and posterior ones sometimes compressed and fimbriate, for swimming. Trochanters not prominent on the inner part of the thigh.

This group contains insects which live on decomposing vegetable matter, though the larvæ are carnivorous and quite voracious; the majority of them are aquatic. Except those of the tribe Helophoridae, they are of an oval, convex form, sometimes hemispherical; the elytra are sometimes striate, sometimes without dorsal striæ, but with a distinct sutural stria; sometimes the latter is also effaced. In the species with smooth elytra three faint series of punctures may be seen on each elytron, as in Dytiscidae. The scutellum is never wanting. The palpi in most of the genera are very long, but always slender, whence the name *Palpicornes*, given by Latreille to these insects.

According to the proportions of the joints of the tarsi, four tribes are apparent, which may be separated as follows:—

Middle and hind tarsi with the first joint short;

Prothorax narrowed behind, narrower than the elytra. HELOPHORINI.

Prothorax at base as wide as the elytra;

Tarsi compressed; metasternum prolonged into a spine.

HYDROPHILINI.

Tarsi not compressed; metasternum not prolonged.

HYDROBII.

Middle and hind tarsi with the first joint elongated.

SPHERIDIINI.

Tribe I.—HELOPHORINI.

In this tribe are small aquatic species, of an oblong or elongate form, usually of a pale gray color, more or less tinged with bronze or silver. They are found in small pools, and rise to the surface when the water is made turbid.

Maxillæ with both lobes corneous; antennæ 9-jointed, rarely 7-jointed. Tarsi not natatorial; first joint subconnate with the second, frequently indistinct; 2—4 moderate, subequal, the second in *Helophorus* somewhat longer than the first. Thorax narrower at the base than the elytra; in *Helophorus* and *Oelthebius* marked with five sinuous longitudinal striæ; elytra with ten striæ or rows of punctures, except in *Hydræna*, where the rows are more numerous.

But one genus (*Epimetopus*, having the eyes emarginate) of this tribe has not occurred in the United States; the others are thus related:—

Last joint of maxillary palpi longer than the preceding;

Antennæ 9-jointed; all the palpi moderately long.

HELOPHORUS.

Antennæ 7-jointed; labial palpi short.

HYDROCHUS.

Last joint of maxillary palpi shorter than the preceding, subulate.

OELTHEBIUS.

Maxillary palpi exceedingly long.

HYDRÆNA.

The last genus has occurred as yet only in the Atlantic States; the other three are found generally distributed over our territories.

Tribe II.—HYDROPHILINI.

Aquatic species, of an oval or elliptical convex form, olive black, rarely with the sides of the thorax and elytra yellow, the latter not striate.

Maxillæ with both lobes coriaceous; antennæ 9-jointed; middle and posterior tarsi strongly compressed, fringed internally with long hairs; first joint short, second elongated; meso- and metasternum forming a continuous keel, which posteriorly is prolonged into an acute spine; last joint of the anterior tarsi of the male in many species distorted, with very unequal claws; in the same sex the club of the antennæ is sometimes irregular.

Our two genera may be separated as follows:—

Prosternum small, sulcate; metasternal spine long.	HYDROPHILUS.
Prosternum acutely carinate; metasternal spine short.	HYDROCHARIS.

Both genera are represented on each side of the continent: the latter genus is called *Hydrous* by many European authors, which name is more properly a synonym of *Hydrophilus*: the species of *Hydrophilus* differ in the proportion of the last joint of the maxillary palpi: in the large species the last joint is shorter than the penultimate; in the small ones (*Tropisternus* Sol.) the joints are equal, or the last is a little longer than the penultimate.*

The females of this tribe construct a silky cocoon, attached to plants, under the surface of the water.

Tribe III.—HYDROBIINI.

Aquatic species, of an oval or hemispherical form; the elytra have sometimes ten striae (*Berosus*), or a large number of rows of punctures (*Laccobius*), but usually only a sutural stria. A foreign genus (*Amphiops*) is remarkable for having four eyes, like *Gyrinus*.

Many of the species of this tribe have the same general appearance as those of the preceding tribe, but are readily distinguished by the metasternum not being prolonged behind into a sharp spine. They are all of small size.

Maxillæ with both lobes membranous or coriaceous; antennæ sometimes 7- or 8-jointed, usually 9-jointed; middle and posterior tarsi scarcely compressed, sometimes slightly ciliate, with hairs; first joint short, oblique; second elongated; meso- and metasternum not forming a continuous carina, the latter not prolonged into a spine.

The following genera, all having five ventral segments, are found in our country:—

Posterior tibiæ and tarsi ciliate; antennæ 7-jointed (scutellum elongated).

BEROSUS.

Posterior tarsi slightly ciliate; antennæ 8-jointed; posterior trochanters large.

LACCOBIUS.

Tibiæ and tarsi not ciliate; trochanters moderate; antennæ 9-jointed;

* *Vide* Proceedings of the Academy of Natural Sciences, vol. vii. p. 368, where may be also found a synopsis of the species of this family inhabiting the United States.

Antennæ with first joint very long.	CYLLIDIUM.
Antennæ with first joint moderate ;	
Maxillary palpi with last three joints equal.	SPERCHOPSIS.
Maxillary palpi with last joint longest.	PHILHYDRUS.
Maxillary palpi with the 3d joint longer than the 4th.	HYDROBIUS.

The type of Sperchopsis is *Spercheus tessellatus* Ziegler, a very rare insect of the Atlantic district.

In *Hydrobius subcupreus* the third and fourth joints of the antennæ are closely united, so that I formerly described them as 8-jointed. Cyllidium contains small hemispherical species, remarkable for having the first and second ventral segments covered by large plates, ciliate with hairs proceeding from the base of the abdomen, which thus appears to have but four ventral segments ; the hind tarsi are short, by which they are distinguished at first sight from Laccobius.

Tribe IV.—SPHÆRIDINI.

Small terrestrial species, of an oval, convex, or hemispherical form, living in the excrements of herbivorous mammals ; the color is usually black, with the elytra frequently spotted or margined with yellow ; the elytra have ten rows of punctures or striæ, but in *Cyclonotum* are entirely without striæ. Our species of *Cereyon* are not yet properly investigated ; several of them have been imported from Europe.

Maxillæ with lobes coriaceous, or submembranous ; antennæ 9-jointed in our genera ; second joint of maxillary palpi thickened ; legs not natatorial ; first joint of middle and posterior tarsi elongated.

Except *Sphæridium*,* all the known genera of this tribe have been found in the United States. They are distinguished as follows :—

Mesosternum narrow ;	
Mesosternum produced in front.	CYCLONOTUM.
Mesosternum not produced ; prosternum carinate.	CERCYON.
Mesosternum very wide ;	
Prothorax margined.	MEGASTERNUM.
Prothorax not margined.	CRYPTOPLEURUM.

* I have a specimen of the European *Sphæridium scarabæoides*, found in Canada. The species is undoubtedly introduced, and accidental in occurrence. It is described by Beauvois under the name *S. crenatum*. The genus differs from *Cercyon* by the antennæ having only eight joints.

FAM. VII.—SILPHIDÆ.

Mentum quadrate, sometimes slightly emarginate, frequently with a transverse piece between it and the ligula, which is prominent, emarginate, or bilobed; gular suture distinct.

Maxillæ with two lobes, inner one sometimes with a terminal hook.

Eyes finely granulated, sometimes absent.

Antennæ inserted under the margin of the front, behind the base of the mandibles; 11-jointed, rarely 9 or 10-jointed: gradually or suddenly clubbed at the apex, sometimes nearly filiform.

Prothorax with the epimera and episterna not distinct.

Mesosternum very short, side pieces attaining the coxæ.

Metasternum large, nearly truncate behind; episterna long; epimera large, distinct.

Anterior coxæ large, conical, contiguous; middle coxæ oblique, not prominent, except in *Brathinus*; posterior contiguous (except in the foreign genus *Leptoderus*), not extending to the margin of the body, prominent internally, rarely (*Clambini*) laminate.

Abdomen with six free ventral segments, except in *Sphærites*, which has but five.

Legs sometimes thick, subfossorial (*Necrophorus*), sometimes very slender (*Pteroloma*); tibiæ with large terminal spurs, the anterior ones of the male usually dilated; tarsi usually 5-jointed; posterior trochanters prominent, or not.

The anomalous form of the middle coxæ in *Brathinus Lec.* requires the division into two sub-families:—

Middle coxæ oblique, not prominent.

SILPHIDÆ.

Middle coxæ conical, prominent.

BRATHINIDÆ.

Sub-Family I.—SILPHIDÆ (genuini).

This sub-family contains species which live on decomposing animal matter or on fungi; some species of *Catops* are found only in ants' nests, while the wonderful genus *Leptoderus*, not yet found in America, lives in caves; it differs remarkably from other genera of the family by the long cylindrical thorax, the globose, connate

elytra, and the widely separated posterior coxæ. Like nearly all cave insects, it is destitute of eyes. Doubtless, species of this genus remain to reward the scientific explorers of our large western caves.

According to the form of the body, and the position of the posterior trochanters, the following tribes are defined:—

Posterior coxæ simple ;	
Posterior trochanters prominent (body not globose).	SILPHINI.
Posterior trochanters not prominent (body nearly globose).	
	ANISOTOMINI.
Posterior coxæ laminate, covering the legs.	CLAMBINI.

Tribe I.—SILPHINI.

Body never globose, sometimes elongate, usually oval, or even nearly circular, and then usually with a thin margin of the thorax and elytra extending beyond the body; the antennæ are 11-jointed, but with the second joint in one genus (*Necrophorus*) almost obsolete; with a globose 4-jointed club in that genus, gradually clubbed in the others, with the eighth joint in some genera smaller than the contiguous ones. Epimera of metathorax not covered by the elytra. Posterior coxæ contiguous, or nearly so; their trochanters prominent internally, frequently emarginate or toothed. Tarsi 5-jointed, except in the female of *Adelops*, where the anterior ones are only 4-jointed.

This sub-family contains the largest insects of the family; the species of *Necrophorus* are remarkable for the black elytra, truncate at tip, and ornamented with large red spots. They live on dead animals, and a pair of them will bury the body of a small mammal with wonderful rapidity. *Silpha* is also easily recognized by the rounded outline and thin margin.

Our genera may be thus arranged, in two sub-tribes:—

Abdomen with six visible ventral segments.	SILPHINI.
Abdomen with five visible ventral segments.	SPHÆRTINI.

Sub-Tribe 1.—*Silphini* (genuini).

Nothing general can be stated in regard to the genera of this sub-tribe; which may be divided, according to the position of the head, into two groups.

Head separated from the thorax, movable.	SILPHÆ.
Head immersed in the thorax.	CATOPES.

Group I.—**Silphæ.**

Insects of large or moderate size, living on carrion, compose this group. *Pteroloma* (which includes *Lyrosoma* Mann.) and *Necrophilus* occur only in the Pacific district; the other two genera are found on both sides of the continent.

Our genera are:—

Antennæ with ten apparent joints, club globose, 4-jointed.	NECROPHORUS.
Antennæ with eleven distinct joints;	
Antennæ clubbed,* tibiæ armed with spines;	
Third joint of antennæ not longer than the second, shorter than the first.	SILPHÆ.
Third joint of antennæ as long as the first.	NECROPHILUS.
Antennæ nearly filiform, tibiæ not spinous.	PTEROLOMA.

Group II.—**Catopes.**

Insects of small size and usually ovate form; some live on carrion, others in fungi, others in ants' nests. The 8th joint of the antennæ is smaller than the 7th, except in *Colon*.

Our genera are as follows:—

Eyes wanting (anterior tarsi of ♀ 4-jointed.)	ADELOPS.
Eyes distinct;	
Antennæ serrate.	CATOPTRICHUS.
Antennæ clubbed;	
Eighth joint of antennæ small.	CATOPS.
Eighth joint of antennæ larger than the seventh.	COLON.

Catoptrichus Frankenhaueseri, the type and only species known, is found in Sitkha. *Adelops hirtus*, the only species yet found in the United States, occurs in the Mammoth Cave, Kentucky; the other western caves will yet furnish other species.

Sub-Tribe 2.—**Sphæritini.**

This sub-tribe contains but a single genus, *Sphærites*, of which but one species in Europe and another (*S. glabratus* Mann.) in Russian America are known. The form is oblong oval, convex;

* In *Necrophilus tenuicornis*, however, the antennæ are as slender as in *Pteroloma*.

the elytra are strongly truncate, and striate; the antennæ are slightly geniculated, with the first joint much elongated; the club is rounded, composed of three joints. The appearance is very similar to *Hister*.

This genus has been placed by Redtenbacher in Nitidulidæ, but the form of the anterior coxæ is altogether different, and entirely similar to that seen in the present family, in which it is retained by other systematists. But the difference in the abdomen seems to me to indicate a separate sub-tribe.

Tribe II.—ANISOTOMINI.

Body oval, convex, sometimes hemispherical, sometimes capable of being contracted into a ball. Mandibles with a basal molar tooth. Antennæ 11-jointed, clubbed, the eighth joint frequently smaller than the contiguous ones. Epimera and episterna of metathorax covered by the elytra. Posterior coxæ contiguous; their trochanters not prominent inwardly. Tarsi variable.

This tribe consists of small species, which live either in decomposing fungi, or under the bark of dead trees.

A. Tarsi with the same number of joints in both sexes; body not at all contractile;

All the tarsi 5-jointed; eighth joint of antennæ small. *HYDNOBIUS*.*

Anterior and middle tarsi 5-jointed, posterior 4-jointed;

Mesosternum carinate; eighth joint of antennæ small. *ANISOTOMA*.

Mesosternum flat; eighth joint of antennæ hardly distinct.

CYRTUSA.

Anterior tarsi 5-jointed, middle and posterior 4-jointed; club of antennæ 3-jointed.

COLENIS.

B. Tarsi dissimilar in the two sexes; body more or less contractile;

Club of antennæ 5-jointed, eighth joint small.

LIODES.

Club of antennæ 3-jointed.

AGATHIDICUM.

Tribe III.—CLAMBINI.

Body oval, capable of being more or less contracted into a ball. Antennæ 9- or 10-jointed, clubbed. Episterna of metathorax not

* I introduce this genus on the authority of Erichson, who referred (*Wiegum. Archiv*, 1847, il. 100) to it *Liodes alternata* Mels., which, however, I find to have only 4-jointed posterior tarsi, and have accordingly placed it in *Anisotoma*. Nevertheless, it is quite possible that Erichson may have had before him a genuine species of *Hydnobius*, unknown to me.

covered by the elytra. Posterior coxæ contiguous, dilated into laminae covering the posterior thighs; trochanters not prominent.

This tribe consists of very minute species, living in decomposing vegetable matter. On account of the extreme minuteness of the insects, the generic descriptions have been very imperfect, and indeed inaccurate; it is only in the works of Redtenbacher, Lacordaire, and Duval that the full characters have been detailed. This fact will account for the confusion regarding the genus *Sternuchus*, established by me in Agassiz's work on Lake Superior, which I afterwards united with *Clambus*.

Club of antennæ 3-jointed; coxal plates narrow, dilated internally (body glabrous). EMPELUS.

Club of antennæ 2-jointed; coxal plates very broad (body usually pubescent);

Antennæ 10-jointed; abdomen with 6 ventral segments. CALYPTOMERUS.

Antennæ 9-jointed; abdomen apparently with 5 ventral segments.

CLAMBUS.

The type of *Empelus* is *Litochrus brunnipennis* Mann. from Sitkha. Having the anterior coxæ contiguous, transverse, conical, and prominent, it cannot be placed in the family Phalaeridæ, to which *Litochrus* belongs, but seems to me to be a very obvious connecting link between *Agathidium* and *Clambus*. To *Calypotomerus* belongs *Clambus oblongulus* Mann., also from Russian America.

Sub-Family II.—BRATHINIDÆ.

But one genus, *Brathinus*, is known of this sub-family, which is remarkably distinguished from the genuine Silphidæ by the prominent conical middle coxæ. The two species known to me are found about grass-roots in wet places, from Lake Superior to Nova Scotia, and are small shining insects, of graceful form, less than one-fifth of an inch long.

The head is oval, strongly constricted behind, with the front concave; eyes moderately prominent, oval, somewhat coarsely granulated; the gula behind the mentum is deeply channelled; the maxillary palpi are long and slender, the third joint is one-half the length of the second, and the fourth is longer than the second; the labial palpi are moderately short, with the last joint a little longer. The antennæ are slender, almost filiform, with

three basal joints shining. Mesosternum square, side pieces not visible; metasternum short, side pieces covered by the elytra. Anterior and middle coxæ large, conical, prominent, contiguous; hind coxæ conical, transverse, prominent, contiguous. Legs long and slender; tibial spurs obsolete; tarsi short, 5-jointed; the joints 1—4 of the hind tarsi closely united, diminishing in length; claws moderate, simple.

The head is suddenly constricted behind, forming a neck; the thorax is ovate, convex, not much larger than the head. Elytra ovate, convex, dilated from the base for two-thirds of their length, then broadly rounded. Abdomen with six free ventral segments, the first almost covered by the prominent hind coxæ.

I formerly placed this genus in Scydmanidæ, but the different form of the posterior coxæ and palpi prevents it from retaining that position; while it appears, on the other hand, to constitute a very aberrant form of the present family, or possibly even a distinct family.

FAM. VIII.—SCYDMÆNIDÆ.

Mentum transverse, trapezoidal; ligula small, corneous, emarginate.

Maxillæ with two ciliate unarmed lobes; palpi long, with the last joint very small.

Antennæ inserted upon the front, at the inner margin of the eyes (except in one foreign genus, *Chevolatia*), gradually thickened or slightly clavate.

Eyes composed of large lenses.

Prothorax with the side pieces not distinct; prosternum not visible between the coxæ.

Mesosternum elongate, triangular, more or less carinate, side pieces reaching the coxæ.

Metasternum large, side pieces narrow, epimera distinct.

Elytra convex, covering the abdomen; wings sometimes wanting.

Abdomen with six free ventral segments.

Anterior coxæ conical, prominent, contiguous; middle coxæ conical, slightly prominent, somewhat distant; posterior coxæ small, conical, widely separated.

Legs moderate, thighs usually clavate, tarsi 5-jointed, claws simple.

These are small, shining, usually ovate, sometimes slender insects, of a brown color, more or less clothed with erect hairs. They are found variously, near water, under stones, in ants' nests, and under bark, and are frequently seen flying in the twilight.

The general form is that of Pselaphidæ, from which they differ by the long elytra and the conical distant posterior coxæ.

Our genera are :—

Antennæ geniculate; first joint as long as the two following. *MICROSTEMMA*.

Antennæ straight;

First joint of labial palpi very short;

Posterior trochanters long, situated in the axis of the thighs.

EUMICRUS.

Posterior trochanters small, on the internal face of the thighs.

SCYDMÆNUS.

First joint of labial palpi distinct;

Prothorax quadrate, not wider than the elytra.

EUTHEIA.

Prothorax transverse, wider than the elytra.

CEPHENNISM.

Eutheia has occurred in Russian America, and *Cephennium* in the Atlantic States. *Scydmænus* is represented by numerous species on both sides of the continent. *Eumicrus* is represented by *Eu. Zimmermanni* in the Southern States.

FAM. IX.—PSELAPHIDÆ.

Mentum small, corneous, more or less quadrate; ligula very small, membranous, with large diverging paraglossæ; labial palpi very small.

Maxillæ with membranous ciliated lobes, the outer much larger than the inner; palpi usually very long, and 4-jointed.

Mandibles usually broad and short, with the tip curved and acute.

Antennæ 11-jointed (rarely 10-jointed) in the second sub-family; 1- to 6-jointed in the first, usually clavate, rarely moniliform.

Eyes composed of large lenses, sometimes wanting.

Prothorax with the side pieces not distinct; prosternum almost obsolete between the coxæ, coxal cavities open behind.

Mesosternum short, obsolete between the coxæ.

Metasternum large, side pieces simple.

Elytra truncate, short, leaving the abdomen exposed; wings, when present, folded beneath the elytra.

Abdomen with five or six free but not flexible ventral

segments; dorsal segments entirely corneous, free in the second sub-family, the anterior ones connate in the first.

Anterior coxæ conical, prominent, contiguous; middle coxæ rounded, contiguous; posterior coxæ narrow, transverse, usually not contiguous.

Legs long; femora stout; tibiæ usually slender, and without spurs; tarsi short, 3-jointed, the first joint very short, the second long, except in *Clavigeridæ* and in *Faronus*; claws simple, sometimes equal, sometimes unequal, and frequently single.

The species of this family are very small, not exceeding one-eighth of an inch, and of a chestnut-brown color, usually slightly pubescent; the head and thorax are most frequently narrower than the elytra and abdomen, which is convex, and usually obtuse at tip. Many are found flying in twilight; their habits at other times are various, some being found in ants' nests, while others occur under stones and bark. North America seems to be rich in this family; more than fifty species are known to me, and several of the genera have not occurred in other countries.

This family approaches closely the *Staphylinidæ*, but the ventral segments are fewer in number, and not freely moving, and the eyes are composed of large lenses.

According to the structure of the antennæ and abdomen, I divide them into two sub-families, which are regarded as tribes by Lacordaire, groups by Duval, and as families by the German authorities.

Antennæ with less than six joints.

CLAVIGERIDÆ.

Antennæ 11-jointed, rarely 10-jointed.

PSELAPHIDÆ.

Sub-Family I.—CLAVIGERIDÆ.

This sub-family is represented in our fauna, thus far, only by *Adranes cæcus* Lec., found in ants' nests in the upper part of Georgia. The genus *Adranes* is distinguished by the antennæ having but two joints, and by the absence of eyes.

The genera of this sub-family have the head narrow, and the palpi rudimentary, of but one joint; the three anterior dorsal segments are connate, and deeply excavated, forming a large cavity, at the sides of which, and at the external apical angle of the elytra, are tufts of hair. The ants which support these

insects, by caressing these tufts of hair with their antennæ cause the exudation of a fluid, which they greedily swallow. The first and second joints of the tarsi are very short; the third is long, with a single claw.

Sub-Family II.—PSELAPHIDÆ (genuini).

In these the abdominal segments are all separate, and the antennæ have eleven distinct joints, except in certain species of *Bryaxis*, where but ten joints exist; they are usually gradually clavate, but in *Ceophyllus* are composed of equal globular joints.

Two tribes are indicated, as follows:—

Posterior coxæ transverse, not prominent, not contiguous.	PSELAPHINI.
Posterior coxæ conical, prominent, contiguous.	EUPLECTINI.

Tribe I.—PSELAPHINI.

These species are always narrowed in front, and have the characteristic form of this family, while those of the next tribe are slender, linear, and frequently depressed, so as to resemble *Staphylinidæ*, of the tribe *Oxytelini*. The form of the hind coxæ at once distinguishes them from the next tribe. The second joint of the tarsi is always long.

According to the insertion of the antennæ, I divide this tribe into two groups:—

Antennæ inserted on two approximate tubercles.	PSELAPHI.
Antennæ distant, inserted at the side of the head.	BRYAXES.

Group. I.—*Pselaphi*.

In this group the antennæ are approximate, and inserted under a large frontal elevation, which is channelled. The abdomen is strongly margined.

Tarsi with ungues two, equal;

Antennæ moniliform;

Maxillary palpi with the last two joints very transverse and lamelliform.	CEOPHYLLUS.
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Antennæ clavate; last joints gradually larger;

Maxillary palpi with the third joint transverse, triangular: the fourth larger, convex.	CEDUS.
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Maxillary palpi with lateral setiform appendages;

Last joint lunate; abdomen carinate.	THESIPHORUS.
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Last joint transverse, similar to the penultimate. CTENISTES.
Maxillary palpi with the last joint oval, with a small terminal seta. TYRUS.

Antennæ with the last joint large, rounded ;
Maxillary palpi with the third joint very small ; the fourth long, cylindrical. CERCO CERUS.

Tarsi with a single unguis ; maxillary palpi excessively long ;
Maxillary palpi with the last joint club-shaped. PSELAPHUS.
Maxillary palpi with the last joint hatchet-shaped. TYCHUS.

The anterior trochanters and thighs are armed with acute spines in *Ceophyllus* and *Cedius*. Hamotus was founded by Aubé on a species (*H. humeralis*) which I cannot consider as properly separated from *Tyrus*, and, misled by his description, I subsequently described it as *T. compar*. The genera are all represented in the Atlantic States ; thus far only *Ctenistes* and *Tychus* have been found in California.

Group II.—*Bryaxes*.

The antennæ are distant at base, and inserted at the sides of the head. The palpi have not the extraordinary development seen in the previous group, but the last joint is oval or fusiform.

Abdomen margined ; tarsi with a single unguis ;
Antennæ with the last three joints larger (body pubescent). BRYAXIS.
Antennæ short, with the last joint very large (body glabrous).

Abdomen not margined ; unguis two, unequal. EUPSENIUS.
 BATRISUS.

With *Batrisus* I have combined *Arthmius* Lec., described as having but a single unguis ; renewed examination, with a powerful microscope, has shown me that there is a second very small unguis present. The antennæ are frequently very different in form in the sexes of the same species of *Bryaxis* and *Batrisus* ; these two genera are also represented in the Pacific district.

Tribe II.—EUPLECTINI.

The insects of this tribe have a more depressed and linear form than is seen in the preceding tribe, and approach thus to the next family. The antennæ are always distant, and the abdomen strongly margined. The posterior coxæ are conical, prominent, and contiguous. The abdomen has six distinct ventral segments.

Antennæ geniculate ; tarsi with a single unguis. RUHEXTUS.

Antennæ straight;

Tarsi with a single unguis;

Second ventral segment elongated; last joint of antennæ very large.

TRIMIUM.

Second ventral segment not longer than the third.

EUPLECTUS.

Tarsi with two equal unguis.

FARONUS.

The last genus is represented by *F. Tolulæ* in the southern Atlantic States, by *F. Isabellæ* in California, and by *F. parviceps* (*Euplectus parviceps* Mäklin) in Russian America. *Trimium* has been found in Russian America. The other genera are not represented near the Pacific coast.

FAM. X.—STAPHYLINIDÆ.

Mentum quadrate, usually trapezoidal, the anterior part separate; ligula rarely corneous, usually membranous or coriaceous; paraglossæ usually distinct; palpi usually 3-jointed, rarely (in certain Aleocharini) with four, two, or even one joint.

Maxillæ with two lobes, usually ciliate; palpi 4-jointed, except in Aleochara, where there are five joints.

Antennæ variable in insertion and form, 11-jointed, rarely 10-jointed.

Eyes usually finely granulated.

Prothorax with the side pieces not separate, prosternum variable in form, coxal cavities usually open behind.

Mesosternum short, side pieces large, epimera distinct.

Metasternum moderately large, side pieces narrow, epimera distinct.

Elytra truncate, leaving a great part of the abdomen exposed, except in certain Onalini; wings, when present, folded under the elytra.

Abdomen with seven or eight visible segments, freely movable, and entirely corneous both above and beneath.

Legs variable in length and form; anterior coxæ usually large, conical, prominent, and contiguous, rarely (*Piestidæ*) rounded, not prominent, or (*Micropeplidæ*) transverse, not prominent; middle coxæ conical, oblique, not prominent, sometimes contiguous, sometimes distant; hind coxæ variable in form, contiguous, except in *Micropeplidæ*, where they are small, rounded, and distant.

Tarsi usually 5-jointed, rarely 4-jointed, and in *Micropeplidæ* and certain *Oxytelini* 3-jointed; in many genera of

Aleocharini the anterior tarsi are 4-jointed, while the middle and hind tarsi have five joints.

This family embraces a very large number of species, mostly of small size, and in many parts of the body shows a very great range of variation. Genera with short elytra occur in several families of Coleoptera, but in no other are they associated with an entirely corneous abdomen having seven or eight visible segments.

I have separated the family into the same divisions as those adopted by Kraatz in the second volume of the *Insecten Deutschlands*, but I am not in accord with him in considering them all as of equal value in classification. The form of the anterior coxæ seems to me of greater significance than the other characters used in separating the different groups which have been previously called tribes, and I have made the primary division on the form of those organs into sub-families.

The prothoracic breathing-pores (stigmata) are visible in certain tribes (Aleocharini, Tachyporini, Staphylinini), but invisible in the rest of the family. This character is sometimes difficult to perceive; but I have not been able to follow the example of Duval, in excluding it from a primary place in the synoptic table of tribes.

I would divide the family into three sub-families:—

Anterior coxæ prominent; anterior coxal cavities open behind.

STAPHYLINIDÆ.

Anterior coxæ not prominent; anterior coxal cavities entire;

Anterior coxæ globose, posterior contiguous.

PIESTIDÆ.

Anterior coxæ transverse, posterior distant.

MICROPEPLIDÆ.

Sub-Family I.—STAPHYLINIDÆ (genuini).

This sub-family contains the great bulk of the species, and is much less homogeneous than the other two; the tribes composing it are as follows:—

A. Prothoracic stigmata visible; insertion of the antennæ—

Upon the front, at the internal margin of the eyes. I. ALEOCHARINI.

Under the sides of the front, behind the mandibles. II. TACHYPORINI.

At the anterior margin of the front, inside of the mandibles.

III. STAPHYLININI.

B. Prothoracic stigmata not visible, covered by the sides of the pronotum;

Posterior coxæ conical, anterior coxæ large.

IV. PÆDERINI.

Posterior coxæ conical, anterior coxæ small.

V. STENINI.

Posterior coxæ transverse ;

Anterior coxæ large, antennæ geniculate.

VI. OXYTELINI.

Anterior coxæ large, antennæ straight, ocelli two.

VII. OMALINI.

Anterior coxæ transverse, not very prominent.

VIII. PROTEININI.

Anterior coxæ large, antennæ straight, ocelli none.

IX. PNECHARINI.

Tribe I.—**ALEOCHARINI.**

The prothoracic stigmata in this tribe are not covered by the inflexed portion of the pronotum; but, without reference to this character, the insertion of the antennæ upon the front will distinguish the genera from those of all other tribes except the first group of *Stenir*, and these will be readily known by the small anterior coxæ.

Groups are indicated by the following characters:—

Internal lobe of the maxillæ membranous internally, and ciliate ;

Eyes not prominent ; third joint of maxillary palpi moderately elongated.

ALEOCHARÆ.

Eyes prominent ; third joint of maxillary palpi thickened.

GYROPHLEXÆ.

Internal lobe of the maxillæ elongated, entirely corneous, hooked at the tip, and serrate internally.

GYMNUSÆ.

Group I.—*Aleocharæ.*

In this group the interior lobe of the maxillæ has the internal margin membranous and ciliate; the maxillary palpi are moderate in length, with the second and third joints moderately elongated, the fourth small, subulate, distinct, and in *Aleochara* with an additional very small fifth joint. The eyes are never very convex.

The genera of this group are very numerous, and frequently cannot be distinguished without the most close examination, or even dissection; it is consequently impossible, within the limits of a work like the present, to give such characters as will enable the student to recognize them with certainty. Those who are sufficiently advanced to study this group must, therefore, refer to the works of Erichson, Duval, and Kraatz for full information. Several of the genera recently established by Kraatz will probably be found represented in our fauna; but I have confined myself in the table to those actually known to me as occurring.

A. Anterior tarsi 4-jointed; middle and hind tarsi 5-jointed;

Head constricted behind into a narrow neck; first joint of hind tarsi elongated (thorax cordate, usually deeply channelled.) *FALAGRIA.*

Head not constricted into a narrow neck ;

- A. Joints of hind tarsi equal, or slightly decreasing in length ;
Anterior and middle tibiae strongly spinous externally.

PHYTOSUS.

Tibiae not spinous ;

Labial palpi 3-jointed ;

Ligula long, slender, bifid at the extremity ; joints of hind tarsi 1—4 equal. HOMALOTIA.

Ligula short, bifid ; joints of hind tarsi 1—4 decreasing in length. HOMALOTA.

Labial palpi very long, two-jointed ; joints of hind tarsi 1—4 equal. STENUSA.

- B. Hind tarsi with the first joint decidedly longer than the second ;

a. Maxillæ with inner lobe ciliate internally, with small spines ;

Labial palpi short, 2-jointed. PLACUSA.

Labial palpi 3-jointed, joints quite distinct ;

Antennæ slender ; abdomen narrowed in front ; ligula short, bifid ; labial palpi with the first joint longer, second and third equal. TACHYUSA.

Antennæ thick ; ligula long, bifid at the tip ; labial palpi with the second joint shorter. BOLITOCARA.

Antennæ thick ; ligula elongate, narrow, entire at tip ; labial palpi with the first joint shorter and wider than the second. PHILOTERMES.

b. Maxillæ with the inner lobe ciliate, with hairs ; at the apex with some corneous hooks ;

Hind angles of thorax indistinct ; abdomen of the usual form.

MYRMEDONTA.

Hind angles of thorax distinct ; sides of thorax and abdomen widely reflexed, the latter with tufts of hair on the sides above. ATIMELES.

- B. All the tarsi 5-jointed ;

Palpi with a small additional terminal joint. ALECHARA.

Maxillary palpi 4-jointed, labial 3-jointed ;

Head not narrowed behind ; first joint of hind tarsi distinctly elongated.* OXYPODA.

Head narrowed behind ; first joint of hind tarsi scarcely elongated. PHLEOPORA.

The species of Homalota are very numerous ; the other genera are moderate in size, or represented only by single species.

Group II.—Gyrophænæ.

The species of this group are small, of an oval form, much

* Here belongs the genus *Myrmecochara Kraatz* (Linn. Ent., xi. 40), but from the description I am unable to discover any distinctive character between it and *Oxyroda*.

broader than those of the previous group, and are easily distinguished by the prominent eyes, and by the third joint of the maxillary palpi being thickened. They live exclusively in fungi, and are gregarious; they are remarkable for the smooth shining surface, almost destitute of hairs or punctures. The anterior tarsi are 4-jointed, and the middle and posterior ones 5-jointed; the first joint of the hind tarsi is elongated; the thorax is distinctly margined. The labial palpi have but two joints.

Our species belong to *Gyrophæna*, which is distinguished from the other genera of the group by the entire ligula, and the very short second joint of the labial palpi.

Group III.—*Gymnusæ*.

In this group the lobes of the maxillæ are long and slender, the inner one is entirely corneous, serrate internally, and hooked at the apex. The maxillary palpi have the second and third joints very long, and the fourth not very distinct. The head is deflexed, pointed in front; the antennæ slender; the thorax and elytra broad, and the abdomen strongly but gradually narrowed behind, so that a form is assumed approaching that of some members of the next tribe.

Labial palpi setaceous, with two indistinct joints; anterior tarsi 4-jointed, posterior ones 5-jointed; ligula short, entire. MYLLENA.

Labial palpi large, 3-jointed, last joint very small; tarsi 3-jointed; ligula large, bifid; lobes nearly as long as the palpi. DINOPSIS.

Thus far species have occurred only in the Atlantic States; they are but three in number (one *Myllæna*, two *Dinopsis*), and are found in very wet places.

Tribe II.—*TACHYPORINI*.

The prothoracic spiracles are visible; the anterior coxæ are large, conical, and prominent, with the trochanters very distinct. The antennæ are inserted under the lateral margin of the front.

The species are usually convex, with the thorax always ample, arched, and highly polished, and the abdomen conical, sometimes very short. They are found partly in fungi, partly under bark.

Our genera are easily distinguished by the following table:—

A. Antennæ 10-jointed, tarsi 4-jointed (body very small, convex).

HYPCYPTUS.

- B. Antennæ 11-jointed (tarsi 5-jointed in all of our genera) ;
- A. Elytra longer than the breast, equably punctured ; ligula not narrowed anteriorly ;
 Abdomen margined ;
 Mesosternum carinate ; maxillary palpi filiform ;
 First joint of hind tarsi very long. LEUCOPARYTHUS.
 First joint of hind tarsi not elongated. COPROPORUS.
 Mesosternum not carinate ;
 Maxillary palpi filiform. TACHINUS.
 Maxillary palpi subulate. TACHYPORUS.
 Abdomen not margined ; body finely pubescent. CONOSOMA.
- B. Elytra as long as the breast, smooth, or with three rows of punctures ;
 ligula narrowed at the apex ;
 Maxillary palpi filiform. BOLITOBUS.
 Maxillary palpi with the last joint conical, acute. BRYOPORUS.
 Maxillary palpi subulate. MYCETOPORUS.

The species of *Bolitobius* usually have the head much elongated ; when, however, the head is oval, they approach closely to the genus *Quedius* of the next tribe, but are recognized by the antennæ being inserted at the lateral margin of the front, near the eyes, and not at the anterior angle of the frontal margin, as in *Quedius*.

Tribe III.—STAPHYLININI.

In this tribe the spiracles of the prothorax are visible, but the antennæ are situated at the anterior margin of the front, and differ in position in the three sub-tribes. The anterior coxæ are large and conical ; the trochanters of the hind legs are prominent ; the abdomen is strongly margined.

Lateral margin of the thorax simple.	QUEDIINI.
Lateral margin of the thorax double ;	
Antennæ distant.	STAPHYLININI.
Antennæ approximated.	XANTHOLININI.

Sub-Tribe 1.—*Quediini*.

The antennæ are inserted at the anterior point of the lateral margin of the front ; the thorax is smooth and glabrous, with but few dorsal punctures (except in *Euryporus*), and its lateral margin is single and acute, as usual.

The body is usually fusiform, sometimes linear. The species are found in various situations ; *Quedius* under stones and bark in damp forests, *Euryporus* and *Acylophorus* near water. The

labrum is usually margined with membrane, and usually, though not always, bilobed.

This sub-tribe is very closely related to the preceding tribe, but the difference in the position of the antennæ will enable the student to avoid confounding them together.

The tarsi are 5-jointed, the middle coxæ contiguous, the hind tarsi not dilated, and the maxillary palpi not dilated, in all of our genera.

Antennæ geniculate, the first joint elongated.	ACYLOPHORUS.
Antennæ geniculate, first joint moderate; anterior tarsi narrow.	
	EURYFORUS.
Antennæ straight, first joint moderate; anterior tarsi dilated;	
Prothoracic spiracles uncovered; palpi subulate.	HETEROTROPHUS.
Prothoracic spiracles covered, palpi filiform.	QUEBUS.

Sub-Tribe 2.—**Staphylinini** (genuini).

The antennæ are inserted on the anterior margin of the front, inside of the base of the mandibles, but distant from each other. The thorax is more or less convex, frequently densely punctured, with the lateral margin double; the prothoracic spiracles are always visible and uncovered; the labrum is always bilobed; the antennæ are never geniculate. The suture is imbricate only in *Thinopinus*.

The species live on decomposing animal and vegetable substances, or on excrements; rarely (*Thinopinus*) on the shores of the ocean, below high-water mark. Some of them are the largest of the family.

The genus *Staphylinus*, as set forth by Erichson, has been dismembered by later authors, to form several of the genera below mentioned.

- A. Maxillary palpi with the fourth joint shorter than the third;
 Thorax smooth, narrowed at the base;
 Middle coxæ contiguous, suture imbricated, wings none.
THINOPINUS.
 Middle coxæ distant, suture straight. CREOPHILUS.
 Thorax punctured, pubescent, narrowed at the base. LISTOTROPHUS.
- B. Maxillary palpi with the fourth joint equal to or longer than the third;
 Marginal lines of the thorax separate, wings none. HADROTES.
 Marginal lines of the thorax separate, wings distinct, last joint of labial palpi truncate. TRIGONOPHORUS.
 Marginal lines of the thorax united near the apex, body winged;
 Ligula emarginate;

Middle coxæ slightly separate; abdomen narrowed at tip (thorax punctured, pubescent). STAPHYLINUS.*

Middle coxæ contiguous; abdomen very long, parallel. OCYPUS.

Ligula entire;

Femora unarmed.

PHILOTHUS.

Femora spinous beneath.

BELONUCHUS.

Sub-Tribe 3.—**Xantholinini.**

The antennæ are inserted near the middle of the anterior margin of the front, and approximated; they are geniculate in our genera; the thorax is long and rectangular, with rows of punctures, of which the outer ones are curved; the lateral margin is double, and the prothoracic spiracles are uncovered. The head is usually equal in size to the thorax, and is narrowed behind into a small neck. The suture of the elytra is imbricated in our genera when the antennæ are strongly geniculate.

The species are found under moss in woods, under stones, and bark.

A. Antennæ strongly geniculated; suture imbricated; middle coxæ distant;

Palpi filiform, last joint longer.

XANTHOLINUS.

Palpi with the last joint subulate.

LEPTACINUS.

Palpi with the last joint very small, subulate; upper marginal line of prothorax obsolete.

LEPTOLINUS.

B. Antennæ feebly geniculated; suture entire;

Thorax oblong, elytra with the sutural stria obsolete.

OTHUS.

Thorax oblong, elytra with a deep sutural stria.

BAPTOLINUS.

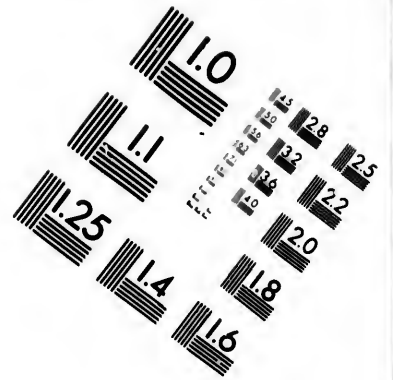
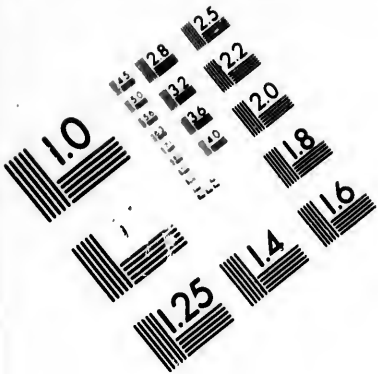
Thorax narrowed in front, elytra with a deep sutural stria.

DIOCNUS.

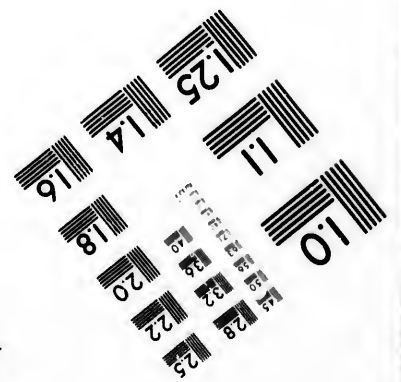
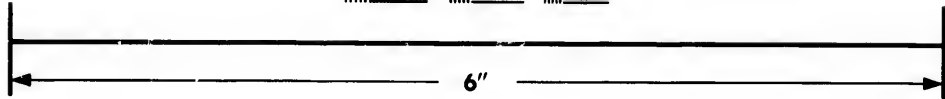
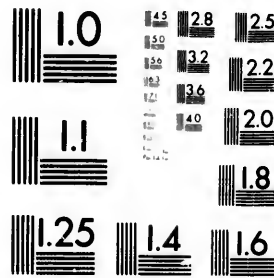
Tribe IV.—**Pæderini.**

In this tribe the prothoracic spiracles are invisible, being covered by the sides of the pronotum; the space behind the coxæ is corneous in some, membranous in others; the anterior coxæ are large, conical, and prominent; the posterior coxæ also conical and prominent; the antennæ are inserted under the sides of the front; the mandibles are long and slender; the palpi with the last joint usually minute. The abdomen is margined in all of our genera, and the tarsi are 5-jointed. The hind trochanters project inwards but slightly. The head is always narrowed suddenly behind, forming a distinct neck.

* The acetabula are always separated by the mesosternum, which is, however, frequently exceedingly narrow; they are confluent in Ocypus.



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Two groups, considered by Erichson as tribes, and rennited by Kraatz (Insecten Deutschlands, II), may be formed :—

Palpi with the last joint very small, subulate. PÆDERI.
 Palpi with the last joint equal to the preceding. PINOPHILI.

Group I.—Pæderi.

The genera of this group are numerous, and are found under bark, under stones, and near water. The form of the palpi readily distinguishes them from the second group.

- A. Hind tarsi with the fourth joint not lobed (prosternum behind the coxæ membranous);
- Antennæ geniculate. CRYPTOBIUM.
 Antennæ straight;
- Hind tarsi with the joints 1—4 nearly equal;
 Thorax subquadrate; labrum bilobed. LATHROBIUM.
 Thorax narrowed in front; labrum 4-toothed. SCOPÆUS.
- Hind tarsi with the joints 1—4 decreasing gradually in length;
 Thorax narrowed in front;
 Labrum 4-toothed (last two segments of abdomen elongated).
 ECHIASTER.
 STILICUS.
- Labrum with two acute teeth.
 Thorax subquadrate;
 Labrum with two small teeth. LITHOCHARIS.
 Labrum rounded, emarginate at tip. DACNOCHILUS.
 Labrum entire, elytra very short. LIPAROCEPHALUS.
- B. Hind tarsi with the fourth joint lobed;
 Last joint of maxillary palpi slender, very minute;
 Elytra longer than the thorax. SENIUS.
 Elytra shorter than the thorax. STILICOPSIS.
 Last joint of maxillary palpi obtuse. PÆDERUS.

Group II.—Pinophili.

Very elongated cylindrical species, sometimes of large size, and found under bark of trees; some species of Palaminus are also found on leaves of trees. Our genera are but two, both of wide distribution :—

Abdomen distinctly margined. PINOPHILUS.
 Abdomen not margined. PALAMINUS.

Tribe V.—STENINI.

In this tribe the prothoracic spiracles are concealed by the inflexed portion of the pronotum; the anterior coxæ are small,

conical, and prominent, and the posterior ones are conical and prominent. The antennæ are straight, with the last three joints larger than the preceding; the insertion varies in the different groups; the trochanters are simple. The second ventral segment is marked with two short ridges. The first joint of the maxillary palpi is nearly as long as the second.

Three groups, according to the insertion of the antennæ, are obvious:—

Antennæ 11-jointed, inserted on the front, between the large eyes. STENI.

Antennæ 11-jointed, inserted on the front, in front of the moderate eyes.

EUÆSTHETI.

Antennæ 10-jointed, inserted under the lateral margin of the front.

MEGALOPES.

Group I.—Steni.

The eyes are very large and prominent in this group, so that the head resembles that of Cicindela; the antennæ are inserted upon the front, between the eyes. The labrum is entire, and rounded anteriorly. The tarsi have five distinct joints.

Two genera, both represented in our fauna, are known:—

Paraglossæ connate, indistinct (body finely punctured). DIANOUS.

Paraglossæ dilated, rounded (body coarsely punctured). STENUS.

The species of this tribe are found running on mud near water; those of Stenus are numerous, and, according as the abdomen is margined or not, and the fourth tarsal joint simple or bilobed, may be arranged in natural groups; the genus is represented on both sides of the continent. Of Dianous but two species are known; one is European, the other was found by me on the southern shore of Lake Superior.

The ligula is attached by a loose membrane in Stenus, and after death is frequently protruded to a distance equal to half the length of the body.

Group II.—Euæstheti.

But two genera, containing only a few species, compose this group. They are insects of very small size, found on flowers.

The eyes are moderate in size, and but slightly prominent; the antennæ are inserted on the front, before the eyes, at the base of the labrum, which is denticulate anteriorly. The tarsi are 4-jointed.

Body punctured.

EUÆSTHETUS.

Body smooth.

EDAPHUS.

The species, thus far, are found only in the Atlantic district. *Edaphus* possesses but one species, *E. nitidus*, from Louisiana; it is remarkable for simulating in appearance a *Pselaphide* of the tribe *Euplectini*. The head is marked with two deep foveæ, and at the base of the thorax are three others. The upper surface is smooth, and the elytra are slightly pubescent; the color is uniform, yellowish red.*

Group III.—*Megalopes*.

This group contains but a single genus, *Megalops*, having the eyes yet larger than in *Stenus*, and the thorax coarsely, irregularly punctured, and marked with a few lateral transverse furrows. The antennæ are inserted (as in the next tribe) under the lateral margin of the front, but are formed as in *Stenus*, except that they have but ten joints; the tarsi are 5-jointed.

Two species are known to me from the Atlantic district; they are found under the bark of trees, and are very rare.

Tribe VI.—*OXYTELINI*.

The prothoracic stigmata are covered by the inflexed portion of the pronotum; the anterior coxæ are large, conical and prominent; the second ventral segment is without any ridges. The antennæ are more or less geniculated, 11-jointed, and are inserted under the lateral margin of the front; the first joint of the maxillary palpi is short.

I would arrange our genera in three groups, as follows:—

Middle coxæ at the sides of the breast.	<i>OXYPORI</i> .
Middle coxæ contiguous, or nearly so;	
Abdomen not margined.	<i>OSORII</i> .
Abdomen margined.	<i>OXYTELI</i> .

Group I.—*Oxypori*.

But a single genus is known, *Oxyporus*, found in fungi. The head is very large, with the eyes small, not prominent, the mandibles long and decussating, not dentate; the mentum is armed

* In a hind leg of this species, mounted by me in Canada balsam, there is an appearance, under the lens of a compound microscope, that the first joint of the tarsi projects beneath, in the form of a membranous lobe. This structure is so anomalous in the present family, that I can scarcely believe my eyes; but not having the power of examining other specimens, I here simply state the apparent fact, for the observation of future students.

with a medial bifid tooth; the last joint of the labial palpi is lunate; the middle coxæ are very widely separated, and the tarsi are 5-jointed. The abdomen is strongly margined.

Thus far the species have been found only in the Atlantic region.

Group II.—*Osozil.*

The group is represented by a single species, *Osozil latipes*, found under bark on the Atlantic slope, as far as the Rocky Mountains.

The body is cylindrical, the middle coxæ are contiguous, the tarsi are 5-jointed, and the abdomen is not at all margined. The ligula is corneous. The mandibles are stout, but not toothed.

The genus *Osozil* is distinguished from the foreign *Holotrochus* by the anterior tibiæ being armed with spines.

Group III.—*Oxytel.*

The body is either cylindrical or depressed, and the abdomen is strongly margined; the middle coxæ are contiguous, or nearly so; the tarsi are 3-jointed in all of our genera, except *Syntomium*. The ligula is membranous, and the mandibles are toothed. The species are found partly in wet places, partly (*Platystethus* and certain *Oxytelus*) in dung and other decomposing material.

Tarsi 3-jointed;

Front tibiæ with two rows of spines, (body cylindrical). *BLEDIUS.*

Front and middle tibiæ with one row of spines, (body depressed).

PLATYSTETHUS.

Front tibiæ with one row of spines, (body depressed);

Middle coxæ separated.

OXYTELUS.

Middle coxæ contiguous.

HAPLODERUS.

All the tibiæ without rows of spines;

Hind tarsi longer than half the tibiæ, (body glabrous). *APOCELLUS.*

Hind tarsi shorter than half the tibiæ, (body pubescent);

Scutellum not visible.

TROGOPHLEUS.

Scutellum distinct;

Maxillary palpi with the last joint conical acute, ocelli none.

ANCYROPHORUS.

Maxillary palpi with the last joint elongate, ocelli distinct.(!)

DISTEMNUS.

Tarsi 5-jointed; antennæ with the last three joints wider. *SYNTOMIUM.*

To *Ancyrophorus* I refer *Trogophleus planus* Lec.; the last joint of the maxillary palpi is as long, or nearly so, as the third, and is conical and acute. *Distemnus* is founded upon *T. Argus*

Lec. Both of these species are from Lake Superior. *Syntomium* is represented in Russian America. The other genera are found on both sides of the continent.

Tribe VII.—OMALINI.

In this tribe the prothoracic spiracles are concealed by the inflexed portion of the pronotum; the prosternum behind the coxæ is membranous; the anterior coxæ are conical and prominent, the posterior ones transverse; the hind trochanters are on the internal margin of the thighs; the tarsi are 5-jointed; the palpi are filiform, except in *Coryphium*, where they are subulate; the head is furnished behind with two simple lenses or ocelli, which are usually placed on a line joining the posterior margins of the eyes. The antennæ are inserted under the lateral margins of the front. The second ventral segment is carinate at the base.

The genera are numerous, and are best distinguished by the parts of the mouth, which are not to be examined without dissection. For a full account of the differences between the genera the student must refer to the second volume of the *Insecten Deutschlands*, by Kraatz. The following characters may enable him to recognize those of our fauna:—

- A. Maxillary palpi with the last joint long or moderate; posterior tarsi with joints 1—4 of unequal length; elytra moderate;
Mandibles toothed; tibiæ not spinous; hind tarsi with the first joint elongated;
Maxillary palpi with the last joint not elongated. ANTHOPHAGUS.
Maxillary palpi with the last joint three times as long as the preceding. LESTEVA.
Mandibles not toothed;
Tibiæ spinous; hind tarsi with the first joint elongated. ACIDOTA.
Tibiæ not spinous; hind tarsi with the first and second joints equal;
Lobes of the maxillæ elongate, corneous. OLOPHRUM.
Lobes of the maxillæ membranous. LATHRIMÆUM.
Tibiæ spinous; hind tarsi with the first and second joints elongated, not equal, first very long. AMPHICHRUM.
Tibiæ not spinous; hind tarsi with the first joint slightly elongated; one mandible toothed. PORRHODITES.
B. Maxillary palpi with the last joint small, subulate. CORYPHIUM.
C. Maxillary palpi with the last joint long; hind tarsi with the joints 1—4 short, equal;
Tibiæ very finely spinous; elytra long. OMALIUM.
Tibiæ not spinous; elytra long. ANTHOBIVM.
Elytra very short. MICHALYMA.

Lathrium Lec. is not sufficiently distinct from *Olophrum*, and the species *L. convexicollis* from Lake Superior greatly resembles *O. convexum* Müllin from Russian America.

Tribe VIII.—PROTEININI.

This tribe contains a very small number of species, approaching closely to the preceding tribe, but differing by the prosternum being corneous behind the coxæ, and by the head having no ocellus in our genera, and but one in certain foreign genera. The antennæ are inserted under the sides of the front; the anterior coxæ are transverse, subconical, and somewhat prominent; the hind coxæ are transverse; the hind trochanters are at the inner margin of the thighs; the tarsi are 5-jointed. The species live in fungi and under bark.

Our two genera without frontal ocellus are distinguished by the form of the antennæ.

Antennæ with the joints 9—11 larger.

PROTEINUS.

Antennæ with the eleventh joint only larger.

MEGARTHUS.

The latter genus is further remarkable for having the sides of the thorax frequently with an angle behind the middle; the thorax is also always channelled.

Tribe IX.—PHLEOCHARINI.

This tribe consists also of a very small number of species, of slender, depressed form, and is represented in our fauna only by the genus *Olisthærus*, found in the northern regions, from Canada to Russian America, under bark.

The prothoracic spiracles are covered; the thorax behind the anterior coxæ is membranous; the latter are conical and prominent, and the hind coxæ are transverse; the hind trochanters are on the internal margin of the thighs; the tarsi are 5-jointed.

The antennæ are inserted under the sides of the front, straight, 11-jointed, scarcely thickened externally. The second ventral segment is longitudinally elevated at the middle.

It will thus be seen that this tribe differs from *Omalini* by the absence of ocelli, and from *Tachyporini* only by the prothoracic spiracles being covered.

In *Olisthærus* the anterior tarsi are not dilated, and the maxillary palpi are filiform.

Sub-Family II.—PIESTIDÆ.

Insects having a slender and frequently very depressed form, living under bark. The prothoracic spiracles are covered, and the whole prosternum is corneous, and in some genera separates the anterior coxæ so that the coxal cavities become entire. The antennæ are situated under the sides of the front, straight, slightly thickened externally. The second ventral segment is longitudinally elevated at the middle.

In this sub-family the present family shows its strongest tendency towards the collective Clavicorn families in Cucujidæ; in the next we will find this tendency towards another member of the same series. Our genera are as follows:—

A. Anterior coxæ contiguous;

Abdomen margined, tarsi 5-jointed;

Anterior tibiæ spinous, abdomen broadly margined;

Maxillæ with the outer lobe dilated; (elytra striate).

PROGNATHA.

Maxillæ with the outer lobe not dilated; (elytra punctate).

HYPOTELUS.

Anterior tibiæ not spinous, abdomen narrowly margined.

ISOMALUS.

Abdomen not margined, tarsi 3-jointed; (thorax and elytra costate).

GLYPTOMA.

B. Anterior coxæ separated, abdomen not margined, tarsi 5-jointed.

LISPINUS.

Sub-Family III.—MICROPEPLIDÆ.

This sub-family consists of a single genus, containing small subquadrate species, having the thorax, elytra, and abdomen ornamented with acutely elevated ribs; the antennæ are inserted under the sides of the front, 9-jointed, and terminate in a small club received into cavities on the under surface of the prothorax; the prosternum is entirely corneous. The anterior coxæ are transverse, not prominent, the hind ones distant, rounded; the tarsi are 3-jointed. The second ventral segment is broadly dilated at the middle, and separates the hind coxæ.

This sub-family thus completes the approach of the Staphylinidæ towards the Clavicorn series in Histeridæ.

FAM. XI.—HISTERIDÆ.

Mentum corneous, sometimes large and covering the base of the maxillæ, flat or slightly concave, subquadrate, sometimes emarginate or tridentate in front; ligula almost concealed behind the mentum; palpi 3-jointed, cylindrical.

Maxillæ with two ciliated lobes, the internal one much smaller; palpi 4-jointed, cylindrical.

Antennæ geniculate, capable of being retracted, short, in the second sub-family with the first joint thick, but in the first with the first joint long, the eighth and following ones forming a compact, annulated, rounded, or (rarely) triangular club.

Prothorax closely applied to the elytra; side pieces not distinct;* in most of the genera with two cavities to receive the club of the antennæ; prosternum frequently lobed in front, produced behind, articulating with the mesosternum; coxal cavities open behind.

Mesosternum separating widely the middle coxæ; side pieces large, not divided, sometimes visible from above.

Metasternum very large, almost connate with the mesosternum anteriorly; episterna sometimes narrow, sometimes broad, occasionally curved; epimera broad, large, separated by a fine suture, which is sometimes effaced.

Elytra truncate behind, leaving two segments of the abdomen uncovered; scutellum small in the first sub-family, entire in the second.

Abdomen with five free ventral segments, the first very large, the fifth very short, closely applied to the last dorsal segment, which is triangular and deflexed.

Anterior coxæ transverse and not prominent in the first sub-family, globose in the second; middle and posterior coxæ widely separated, not prominent, rounded, or rather subquadrate, the latter not extending to the sides of the body.

Legs short, retractile; tibiæ compressed, anterior ones usually toothed, posterior sometimes toothed; spurs distinct, those of the anterior pair very unequal. Tarsi slender, short, 5-jointed in the first sub-family (except in *Acritus*, where the posterior ones are 4-jointed), 4-jointed in the second sub-family; claws (in all of our genera) two, simple; anterior tarsi usually received in grooves on the anterior face of the tibiæ.

* In some species there is an elevated line, simulating a suture.

A very well defined family of insects, moderately numerous, nearly all of a shining black color, with the elytra variously sculptured with striæ; some few species of *Hister* and *Suprinus* have the elytra marked with red, and a few of the latter genus are metallic in color. The form of body is variable; those of the first group are oblong and flat, with prominent mandibles; the others are round, oblong, oval, globose, some depressed and some convex. The species live under bark of trees, in excrements, and in carcasses. When touched, the insects retract the antennæ and feet, appearing as if dead.

The metasternum is marked by two distant lines diverging posteriorly, and the first segment of the abdomen with two similar ones.

The genera in this family appear to me to have been multiplied unnecessarily by later authors. I accordingly have made, when necessary, two tables, one of the genera as understood in the great monograph of Marseul, the other of those which appear to me to be entitled to real generic distinction.

The family may be divided into two natural sub-families, as follows:—

Antennæ with the first joint very long; elytra truncate.	HISTERIDÆ.
Antennæ with the first joint very thick; elytra entire.	MURMIDIDÆ.

Sub-Family I.—HISTERIDÆ (genuini).

The geniculate antennæ, with the first joint elongated, and the truncate elytra permitting the last two dorsal segments of the abdomen to be visible, sufficiently distinguish this sub-family from the next.

It is divided, following the example of Lacordaire, into two very natural tribes, according to the position of the head in repose:—

Head protracted.	HOLELEPTINI.
Head retracted, bent downwards.	HISTRINI.

Tribe I.—HOLELEPTINI.

Body very much depressed above and below; head extended, with long, prominent mandibles; antennæ inserted under the sides of the front, the club not received in definite prosternal cavities;

mentum emarginate, entirely covering the base of the maxillæ in our species; prosternum not lobed in front.

These species live under the bark of trees; some of them I have found in California in decomposing stems of Cactaceæ.

The genus *Hololepta*, the only one within our territories, is distinguished by the mandibles not toothed, the pygidium small and perpendicular. It is divided into two by Marseul, according to the following characters:—

Prosternum not narrowed in front, mentum flat.	HOLOLEPTA.
Prosternum narrowed in front and rounded, mentum with an M-shaped elevated line.	LIONETA (Liederma).

If, however, these characters be considered as valid, then other genera must be established for Californian species. I prefer regarding them as one genus, in which are five groups:—

- a. Mentum nearly flat; prosternum broad, flat. *H. fossularis*, &c.
- b. Mentum flat; prosternum narrowed and rounded at tip. *H. princeps*.
- c. Mentum concave, without elevated lines; prosternum slightly narrowed, truncate, and slightly emarginate at tip. *H. vicina*.
- d. Mentum slightly concave, with fine lines; prosternum slightly narrowed, broadly rounded at tip. *H. platysma*.
- e. Mentum concave, with strongly elevated lines; prosternum narrowed, almost acute at tip. *H. cacti*.

Tribe II.—HISTRINI.

Head retracted, deflexed; mandibles capable of being applied to the anterior edge of the prosternum, so as to conceal the mouth; mentum subquadrate, not covering the base of the maxillæ.

This tribe is again formed of two sub-tribes, which differ by the presence or absence of an anterior prosternal lobe; nevertheless, in our species of *Tribalus*, the lobe is so short and broad that they were considered by me as a distinct genus, *Cærosternus*, and placed in the second sub-tribe. *Oonthophilus* is placed by Marseul and Duval in the first, by Lacordaire in the second sub-tribe.

Prosternum lobed in front.	HISTRINI.
Prosternum truncate in front.	SAPRINI.

Sub-Tribe 1.—*Histrini* (genuini).

The genera of this sub-tribe live in excrements, or under the bark of trees; one genus (*Hetærius*) is found only in the nests of ants, early in spring. According to my views, modified by consulting the authors above mentioned, they may be thus arranged:—

- A. Antennal cavities on the anterior part of the prosternum; (all the tarsi have two claws in our genera);
 Antennæ inserted under the margin of the front; mandibles prominent; 2
 Antennæ inserted upon the front; mandibles retracted; 4
 2 Mesosternum emarginate, rarely truncate; club of antennæ round, annulated. HISTER.
 Mesosternum slightly prominent at the middle, received by the prosternum; 3
 3 Club of antennæ round, annulated. PHELISTER.
 Club of antennæ obconical, truncate, solid. HETÆRIUS.
 4 Antennal cavities under the angle of the thorax; club round, annulated; 5
 Antennal cavities at the angle of the thorax itself; club of antennæ annulated, truncate. TRIBALUS.
 5 Pygidium inflexed, thorax and elytra costate, prosternal lobe obsolete. ONTHOPHILUS.
 Pygidium deflexed, elytra striate. EPIERUS.
- B. Antennal cavities at the middle of the inflexed portion of the prothorax, near the sides.
 Mesosternum emarginate, receiving the base of the prosternum; 3
 Mesosternum truncate, slightly prominent at the middle, received by the prosternum; 2
 2 Prosternal lobe short, broad; pygidium inflexed; body globular. BACANIUS.
 Prosternal lobe long, rounded; pygidium vertical; body globular, margined. SPHÆRODERMA.
 3 Posterior tibiæ broad; anterior tibiæ with a small terminal spur; body oval, convex. DENDROPHILUS.
 Posterior tibiæ narrow; anterior tibiæ with a very large terminal spur; body oblong, sometimes depressed. PAROMALUS.

To *Sphæroderma* must be referred *Bacanius marginatus* Lec.* The occurrence of the genus here is remarkable, as the only other species is found in Madagascar. The genus *Hister*, as above defined, includes all the divisions of my scheme in Proc. Acad. Nat. Sci., vi. 39, except 12 and 13, which form *PHELISTER*, regarding the generic value of which group I still entertain some doubts. *Hister corticalis* Lec., placed by me in division 12, has been very properly removed by De Marseul to *Carcinops*, a division of *Paromalus*. *Hister*, as above defined, contains several of the genera adopted by De Marseul, which are separated by the following characters:—

Anterior tibiæ with the tarsal groove well defined, often sinuate; (a single range of small spines on the middle and posterior tibiæ);

* Proc. Acad. Nat. Sci. Philad., vi. 292.

- Prosternal lobe very prominent;
 Anterior tibiæ with an internal tooth near the base. CYLISTIX.
 Anterior tibiæ without any internal tooth. PLATYSOMA.
 Prosternal lobe narrow, not very prominent. OMALODES.
 Anterior tibiæ with the tarsal groove badly defined, straight;
 Middle and posterior tibiæ with a single range of spines. PSILOSCELIS.
 Middle and posterior tibiæ with two ranges of spines. HISTER.

The student who will consult my paper above cited will see that there are good reasons for regarding the characters here given as not of generic value.

The genus *Paromalus*, as above defined, is divided by Marseul into two:—

- Elytra striate; body oval, subconvex. CARCINOPS.
 Elytra not striate; body oblong, subdepressed. PAROMALUS.

But these divisions are not adopted by Lacordaire and Duval.

Sub-Tribe 2.—*Saprinini*.

Some of the genera of this sub-tribe live under bark and in excrements, also under stones; but the numerous species of *Saprinus* are found mostly in carcasses.

Our genera are the following:—

- Antennæ inserted under the margin of the front; antennal cavities at the sides of the prosternum proper. SAPRINUS.
 Antennæ inserted on the front; antennal cavities at the sides of the under surface of the prothorax;
 Body cylindrical; tibiæ toothed. TERETRIUS.
 Body oblong; thorax with a deep groove each side; tibiæ not toothed. PLEGADERUS.
 Body round; posterior tarsi 4-jointed; tibiæ not toothed. ACRITUS.

The species of the last genus are the most minute of the family, and are quite numerous in North America.

The European species, formerly enrolled in *Saprinus*, *S. rotundatus* and *piceus*, were found by Duval to have the inner lobe terminated by a corneous hook, and were therefore placed as a distinct genus, *Gnathoneus*; to the same genus belong *S. detetus* Lec., identical with the European *rotundatus*, and *S. interceptus* Lec.; they differ from genuine *Saprinini* by the head having no stria; the sutural stria does not join the first dorsal, and is very short; the epipleuræ have three striæ. I have not adopted the genus, as these differences do not appear to me of sufficient consequence.

Sub-Family II.—MURMIDIIDÆ.

This sub-family consists of but a single species, *Murmidius ovalis* (*Ceuthocerus advena* Germar), diffused by commerce over the whole globe; it is a very minute, brown, slightly pubescent insect, of a rounded, depressed form, with rows of large punctures on the elytra.

The antennæ have but ten joints; the first joint is large and thick, the second somewhat narrower; the club is received in a cavity excavated at the anterior angle of the thorax; the anterior coxæ are globose; the prosternum is very wide, flat, and its anterior lobe is very short; the mesosternum is very wide, truncate in front, fitting closely to the prosternum; elytra rounded at tip, entirely covering the dorsal segments of the abdomen.

This insect is very rare. I have seen but two specimens found in this country, and for the one in my possession I am indebted to Mr. Ulke. It is said by European authors to live in old rice.

FAM. XII.—SCAPHIDIIDÆ.

Mentum large, quadrate; ligula membranous, without paraglossæ; palpi 3-jointed.

Maxillæ exposed at the base, with two membranous lobes; palpi short, 4-jointed, with the last joint conical.

Antennæ inserted at the margin of the front, which is suddenly contracted and prolonged into a short beak, capillary, or slightly clavate, the last five or six joints wider than the preceding ones, the eighth sometimes smaller than the seventh and ninth, the first and second thicker than the third.

Prothorax with the side pieces not separate; prosternum not prolonged; coxal cavities rounded, widely open behind, completed by the mesosternum.

Mesosternum frequently prominent or carinate, side pieces usually divided by an oblique line; metasternum very large, side pieces narrow, epimera not visible.

Elytra broadly truncate behind, not covering entirely the abdomen.

Abdomen with five free ventral segments; the fifth conical, as long as the three preceding ones; sixth usually visible, and when emarginate, as in certain males, permitting the

seventh or even the eighth internal ones to be seen; the last three or four dorsal segments are entirely corneous.

Anterior coxæ large, cylindrical, prominent, contiguous; middle coxæ small, rounded, widely separated; posterior coxæ oval, usually widely separated.

Legs slender; tarsi 5-jointed, long, filiform; claws slender, simple.

This family contains small oval or rounded oval, convex, very shining insects, living in fungi. The sides of the thorax are oblique, and the head small, so as to make the body somewhat pointed in front; the thorax is very closely applied to the trunk, and the elytra are broadly truncate, permitting the tip of the conical abdomen to appear. All the known genera of the family, except *Amalocera*, are represented in our Atlantic fauna, but *Scaphisoma æone* has yet been obtained on the Pacific slope.

I. Scutellum distinct; antennæ clavate;

Posterior tibiæ not spinous;

First joint of posterior tarsi longest; eyes emarginate. SCAPHIDIUM.

First joint of posterior tarsi scarcely longer than the second; eyes entire. SCAPHIUM.

Posterior tibiæ with rows of small spines; eyes entire. CYPARIUM.

II. Scutellum covered by the base of the thorax; antennæ capillary;

Posterior coxæ widely distant;

Antennæ with the joints 9—11 wider. BEOCERA.

Antennæ with the joints 6 or 7—11 wider. SCAPHISOMA.

Posterior coxæ not widely distant; body narrow, compressed.

TOXIDIUM.

FAM. XIII.—TRICHOPTERYGIDAE.

Mentum quadrate.

Maxillæ exposed at the base, which is large, with two lobes, the inner one ciliate and hooked; palpi 4-jointed, last joint acicular.

Antennæ inserted at the margin of the front, 11-jointed, verticillate with long hairs, the first and second joints thick, 3—7 slender, 8—11 thicker, forming a loosely articulated, elongate club.

Prothorax with the side pieces not distinct.

Elytra sometimes entire, sometimes abbreviated; wings long, narrow, margined with very long hairs; sometimes wanting.

Abdomen with seven free ventral segments.

Anterior coxæ prominent, subglobular, contiguous; middle coxæ oval, not contiguous; posterior transverse, more or less separated, sometimes dilated over the feet into a flat plate.

Legs moderate, slender; tarsi 3-jointed, last joint with a long bristle with a clubbed tip between the ungues.

The insects of this family are the smallest Coleoptera known; those found in this country have not yet been studied with care, and but few are described, although there are in my collection twenty-eight species.

All the genera of the family are represented in our fauna, as follows:—

Posterior coxæ approximated, laminate; first ventral segment acuminate in front. NOSSIDIUM.*

Posterior coxæ widely distant; first ventral segment truncate in front;

Antennæ with the last three joints thickened;

Posterior coxæ laminate (body pubescent).

TRICHOPTERYX.

Posterior coxæ simple (body pubescent).

PTILIUM.

Antennæ with the last two joints thickened.

PTENIDIUM.

FAM. XIV.—PHALACRIDÆ.

Mentum corneous, flat, of a different form in each genus, but all derived from the quadrate form.

Maxillæ with two lobes, internal one coriaceous, with two small terminal teeth; the outer corneous, ciliate at the tip, which is coriaceous.

Antennæ inserted under a slight frontal margin, 11-jointed, the last three joints forming an oval club.

Prothorax with the side pieces not distinct; prosternum prolonged, entering the emarginate mesosternum behind; coxal cavities not closed behind.

Mesosternum very short, side pieces large, not distinctly divided.

Metasternum large, produced anteriorly, side pieces narrow, partly concealed by the sides of the elytra.

Elytra rounded at tip, entirely covering the abdomen.

Abdomen with five free ventral segments, not differing much in length, the first somewhat longer.

Anterior coxæ globular; middle coxæ transverse, separated by the sternum; posterior contiguous, transverse, flat.

* I do not possess any species of this genus. One was discovered by Mr. Motschulsky, in Alabama.

Legs short, stout; thighs broad, compressed; tarsi 5-jointed, with the first three joints hairy beneath, and more or less dilated, the fourth very small, fifth moderate; claws with a basal tooth.

A small number of oval or rounded oval, convex, shining insects constitute this family. They are found on flowers, and sometimes under bark. The elytra have sometimes approximate rows of small punctures, but more usually only a sutural stria. The scutellum is larger than usual, triangular. One of the four genera (*Tolyphus*) of this family is wanting in our fauna. The other three are separated by the form of the posterior tarsi.

Anterior and posterior tarsi of the same length (tibiæ without spurs).

PHALACRUS.

Posterior tarsi elongated (tibiæ with distinct spurs);

First joint of posterior tarsi shorter than the second.

OLIBRUS.

First joint of posterior tarsi longer.

LITOCHRUS.

FAM. XV.—NITIDULIDAE.

Mentum transverse, subquadrate, composed of two pieces closely united together, frequently rounded, sometimes sinuate or emarginate in front.

Maxillæ usually exposed, rarely covered at the base; usually with only one lobe, the outer lobe being wanting; but in the first tribe the outer lobe is distinct.

Antennæ inserted under the margin of the front, 11-jointed (the eleventh indistinct in *Rhizophagus*), terminated by a round or oval club, composed of three, rarely of two joints.

Prothorax sometimes closely applied to the elytra, sometimes passing over their base; prosternum frequently produced behind, side pieces not distinct; coxal cavities open or closed.

Mesosternum separating the middle coxæ, side pieces with the epimera large, extending to the coxæ.

Metasternum short, side pieces narrow, epimera not visible.

Elytra sometimes truncate, sometimes entire.

Abdomen with five free ventral segments, the first a little longer, widely produced between the posterior coxæ.

Anterior coxæ transverse, separated, not prominent; middle and posterior ones transverse, flat, distant, the latter extending almost to the margin of the body.

Legs short, somewhat stout, retractile, or subretractile;

tarsi short, dilated (except in some genera of the third tribe), hairy beneath, usually 5 jointed, with the fourth joint very small; the posterior of the males of the sixth tribe 4-jointed, and in the foreign genus *Cybocephalus* all the tarsi 4-jointed.

The species of this family are usually oval, depressed, or slightly convex, but sometimes almost globular, sometimes elongate; they live on decomposing substances, both animal and vegetable. The head is suddenly narrowed before the antennæ, forming a short beak; the antennæ are retractile, and their basal joints frequently pass into grooves under the eyes.

Six tribes compose this family, and are all represented in our fauna.

- A. Antennæ with eleven distinct joints, club 3-articulate;
 Labrum distinct; epistoma not prolonged;
 Two or three dorsal segments of the abdomen exposed;
 Maxillæ with two lobes. BRACHYPTERINI.
 Maxillæ with one lobe. CARPOPHILINI.
 The last dorsal segment (pygidium) alone exposed;
 Prothorax not covering the base of the elytra. NITIDULINI.
 Prothorax covering the base of the elytra. CYCHRAMINI.
 Labrum concealed by the epistoma, which is prolonged. IPINI.
 B. Antennæ apparently 10-jointed, club solid. RHIZOPHAGINI.

Tribe I.—BRACHYPTERINI.

The species composing this tribe are few in number, found on flowers, and are more convex than those of the next tribe. Besides the characters above specified, the anterior coxal cavities are not closed behind, the tarsi are 5-jointed in both sexes, and the prosternum is not prolonged behind the posterior coxæ. No antennal grooves are seen below the eyes, and by this character the genera may be distinguished from all of those of the next tribe which occur in our fauna. The two genera are:—

- Ungues simple. CERCVS.
 Ungues toothed at the base. BRACHYPTERUS.

The males of the last genus have a small apical dorsal segment.

Tribe II.—CARPOPHILINI.

The species of this tribe are usually flattened, though some of the species of *Carpophilus* are moderately convex. They are known (at least our genera) from those of the first tribe by the head having beneath the eyes two converging grooves for the reception

of the basal joints of the antennæ, and from those of the following tribe by two or three dorsal segments of the abdomen being visible behind the elytra; in *Carpophilus* and *Conotelus* the males have a small dorsal sixth segment. The ungues are simple. The species live some on flowers, some under bark.

Ventral segments 1—4 short, fifth as long as the others united. *COLASTUS*.

Ventral segments 1—3 short, fourth and fifth long. *TRIBRACHYS*.

Ventral segments 2—3 short, first, fourth, and fifth longer. *CARPOPHILUS*.

Ventral segments 1—2 short, 3—4 elongate, fifth elongate, conical.

CONOTELUS.

The last genus has an elongate form, and resembles certain *Staphylinidæ*.

Tribes III.—NITIDULINI.

Elliptical, usually depressed, and frequently widely margined species; sometimes moderately convex, and even (*Pocadius*) rounded. Distinguished from the previous tribes by the elytra covering the entire abdomen, or leaving only the pygidium exposed, and from the next by the thorax not being movable over the base of the elytra. All of our genera have antennal grooves on the under surface of the head.

These insects live on flowers (*Meligethes*), in fungi (*Pocadius*), under bark and stones (*Epurea*), or on dried animal matter.

Our genera are as follows:—

- A. Prosternum not prolonged behind the anterior coxæ, dilated, rounded, or truncate;
- a. Antennal grooves converging behind, remote from the eyes;
- Mentum not covering the base of the maxillæ;
- Last joint of labial palpi large, thick; males with a small sixth dorsal segment. *EPUREA*.
- Last joint of labial palpi not thicker than the preceding, males with no distinct sixth dorsal segment. *NITIDULA*.
- Mentum covering the base of the maxillæ. *PROMETOPHA*.
- b. Antennal grooves diverging behind, following the outline of the eyes;
- First joint of antennæ large, broadly dilated. *LOBIOPA*.
- First joint of antennæ moderate;
- Males without a sixth dorsal segment. *OMOSITA*.
- Males with a sixth dorsal segment;
- Middle and posterior tarsi not dilated. *PHENOLIA*.
- All the tarsi dilated. *STELIDOTA*.
- B. Prosternum prolonged behind the anterior coxæ;
- All the tarsi dilated. *MELIGETHES*.
- Posterior tarsi not dilated (elytra deeply striate). *PSILOPYGA*.
- None of the tarsi dilated (elytra scarcely truncate). *POCADIVS*.

The genus *Psilopyga* is remarkable for its close resemblance, in appearance, to *Hister*.

Tribe IV.—CYCHRAMINI.

The species of this tribe are rounded or oval, convex insects, living in fungi. One genus (*Cybocephalus* *Er.*), not yet found with us, has the power of contracting into a ball, like *Agathidium* and *Clambus*, from which it will be distinguished by the anterior coxæ not being prominent.

- I. All the tarsi equal in length ;
 Tarsi all dilated ; prosternum scarcely produced. CYCHRAMUS.
 Hind tarsi not dilated. AMPHICHOSSUS.
- II. Hind tarsi elongated ; prosternum but slightly produced. PALLODES.

Tribe V.—IPINI.

The species of this tribe are oblong, sometimes elongate species, usually prettily variegated with red spots on the elytra. They are readily known by the epistoma being prolonged between the mandibles ; the elytra of *Cryptarcha* are rounded, of *Ips* and *Pityophagus* are truncate. The species live upon fungi and under bark.

Prosternal prolongation reaching the metasternum ; first joint antennæ covered by the front ; body oval, pubescent. CRYPTARCHA.

Prosternal prolongation not reaching the metasternum ; body glabrous ;
 Head immersed in the thorax to the eyes ; no sixth abdominal segment
 in the males ; body oblong, rarely elongate. IPUS.

Head not immersed as far as the eyes ; males with a sixth abdominal segment ; body elongate, subcylindrical. PITYOPHAGUS.

The species of the last genus entirely resemble in form those of the next tribe, but are distinguished by the antennal club, composed of three joints.

Tribe VI.—RHIZOPHAGINI.

Small cylindrical or slightly flattened species, having the club of the antennæ solid and composed of the tenth joint, the eleventh being closely connate with it ; the labrum, as in the preceding tribe, is concealed by the prolonged epistoma ; the elytra are truncate, leaving the pygidium exposed ; the anterior coxal cavities are entirely closed, while in most of the genera of the preceding tribes they are open behind ; the posterior tarsi are 4-jointed in

the males, 5-jointed in the females; the males have also a sixth dorsal segment. They are found under bark. One genus, *Rhizophagus*, constitutes the tribe, and is represented on both sides of the continent.

FAM. XVI.—MONOTOMIDÆ.

Mentum moderate, subquadrate, rounded or subangulated in front; ligula partly corneous, prominent; labial palpi short, 3-jointed, first joint very small.

Maxillæ exposed at the base, with two lobes, the outer one long, slender, scarcely ciliate at tip, the inner one larger, ciliate internally and at the tip; maxillary palpi 4-jointed, the first joint very short.

Eyes strongly granulated, rounded.

Antennæ inserted under the sides of the front, behind the mandibles, 10-jointed, the last one or two joints forming a club.

Head tolerably large, flat, suddenly but slightly constricted behind; front broadly lobed between the mandibles, which are short, acute, and fringed with membrane internally; labrum very short, not distinct; mandibles short, robust, acute at tip, with a small subapical tooth; internal margin fringed with hair.

Prothorax with the side pieces not separate, prosternum entire, coxal cavities small, broadly closed behind.

Mesosternum short, emarginate behind; side pieces large, diagonally divided; epimera attaining the coxæ

Metasternum large, side pieces narrow.

Elytra truncate behind, leaving the last dorsal segment exposed.

Abdomen with five free ventral segments, the first and fifth elongated.

Coxæ, anterior small, rounded, separated; middle rounded, separated by the sternum; posterior transverse, separated.

Legs moderate; tibiæ nearly linear, with distinct terminal spurs, and a few small spines about the tip; tarsi 5-jointed, the joints 1—3 slightly dilated, and covered beneath with long hair, the fourth narrower and smaller, the fifth longer than the others united, with simple ungues.

Small, depressed insects, found mostly under bark of trees. They resemble closely in characters and appearance the tribe

Rhizophagini of Nitidulidæ, and, like them, the males have a small terminal dorsal segment; the form of the anterior coxæ at once separates them from all Nitidulidæ.

The genera are:—

Antennæ with the ninth and tenth joints enlarged;

Ninth joint of the antennæ as wide as the tenth;

Sides of the head slightly dilated before the eyes; surface finely punctured and pubescent. PHYCONOMUS.

Sides of the head not dilated; body glabrous, coarsely punctured; elytra punctured in striæ. NOMOPHÆUS.

Ninth joint of the antennæ not as wide as the tenth; body coarsely punctured; elytra punctured and pubescent in striæ. HESPEROBÆNUS.

Antennæ with the ninth joint scarcely larger than the eighth;

Head short; body sparsely, coarsely punctured; elytra punctured and pubescent in striæ. BACTRIDIMUM.

Head long; body irregularly, densely punctured. MONOTOMA.

The type of Phyconomus is *Monotoma marinum* Lec.*; it is found in California, under decaying kelp on the sea-shore.

Nomophæus is founded on *N. pallipennis* Lec., a small reddish-brown insect, 11 inch long, found in Pennsylvania. The elytra are pale, with the suture and tip dusky. The head and thorax are sparsely punctured; the latter is quadrate, scarcely serrate on the sides, with a broad smooth dorsal vitta, limited behind by a curved impression.

Hesperobænus contains *Monotoma rufipenne* Lec.† from California, and a nondescript from the Atlantic States. *Rhizophagus capito* Fairemaire, from Honolulu, also belongs to it.

Bactridium comprises *Rhizophagus nanus* Er. from the Atlantic States, and *Monotoma striatum* Lec.‡ from the Colorado Desert.

FAM. XVII.—TROGOSITIDÆ.

Mentum transverse, subquadrate; ligula small, corneous.

Maxillæ with two lobes, the inner one sometimes very small; palpi short, 4-jointed.

Eyes usually reniform (divided in some foreign genera).

Antennæ inserted under the frontal margin, 11-jointed, rarely 10-jointed (in some foreign genera); the last three joints widened, forming a loose club, of varied form.

* Proc. Acad. Nat. Sciences, Philad., 1858, p. 64.

† Ibid., p. 64.

‡ Ibid., p. 65.

Prothorax not passing over the base of the elytra; side pieces not distinct; coxal cavities closed in the first and third sub-families, usually open behind in the second; prosternum separating the coxæ (except in *Peltastica*).

Mesosternum separating the coxæ, side pieces extending to the coxæ.

Metasternum emarginate behind, for junction with the first ventral segment; side pieces long, narrow; epimera not visible.

Elytra never truncate, always covering the abdomen.

Abdomen with five free ventral segments.

Anterior coxæ transverse, separated, and not prominent (except in *Peltastica*); middle and posterior ones transverse, flat (except in *Peltastica*), the former separated, the latter rarely contiguous.

Legs moderate; tarsi 5-jointed, not dilated; joints 1—4 with a brush of hair beneath; first joint very short, second usually slightly elongated, last joint very long; claws simple, with a broad but short bisetose onychium.

The insects of this family were classed by Erichson with Nitidulidæ, but, as very properly observed by Lacordaire, although the characters are mostly the same as in that family, the different plan of structure in the maxillæ and tarsi is sufficient to mark them as a distinct family.

The species live under bark; but some *Trogositæ* are found in houses, living on grain, by the transportation of which they have been distributed over the entire globe.

Of the four recognized tribes of this family but two are found in our fauna; I consider them as indicating sub-families, and I have added a third for the anomalous genus *Peltastica*.

Anterior coxæ separate, not prominent;

Internal lobe of the maxillæ unarmed.

TROGOSITIDÆ.

Internal lobe of the maxillæ armed with a corneous hook.

PELTIDÆ.

Anterior coxæ prominent, contiguous.

PELTASTICIDÆ.

Sub-Family I.—TROGOSITIDÆ (genuini).

Elongate insects, having the thorax narrowed posteriorly, and somewhat distant from the elytra; the epistome is trisinate or emarginate in front; the last three joints of the antennæ form a loose club, usually dentate internally; they are 11-jointed, except

in two foreign species of *Nemosoma*. The anterior coxæ are entirely enclosed.

Eyes rounded.

NEMOSOMA.

Eyes transverse;

Ligula bilobed, tibiæ not spinous, anterior angles of thorax not prominent.

TEMNOCHILA.

Ligula bilobed, tibiæ spinous.

ALINDRIA.

Ligula entire, tibiæ not spinous, anterior angles of thorax prominent.

TROGOSITA.

Trogosita and *Temnochila* are represented on both sides of the continent; the other two genera only in the Atlantic district.

Sub-Family II.—PELTIDÆ.

Oval, flattened, or rounded convex insects, having always a flattened margin; the front is truncate; the last three joints of the antennæ form a loose perfoliate club. The anterior coxal cavities are open behind, except in *Nosodes*.

Mentum transverse, emarginate; antennal grooves feeble;

Anterior coxal cavities closed; tibiæ without terminal hooks. *NOSODES*.

Anterior coxal cavities open; anterior tibiæ with a terminal hook.

PELTIS.

Mentum minute, oval; antennal grooves deep;

Anterior coxal cavities widely open; tibiæ without terminal hooks.

THYMALUS.

The species of the first and second genera are flattened; the elytra are striate, with square punctures, in the first tuberculate, in the second with the sides of the body serrate; the third genus is convex, with the elytra irregularly punctured.

Sub-Family III.—PELTASTICIDÆ.

Peltastica tuberculata Mann., a small oval pale-brown insect found in Russian America, presents so many anomalies, that it is doubtful to what family it properly appertains. I have placed it in the present, as a sub-family in preference to establishing for it a separate family; which is, indeed, the only other course practicable, unless it be received as a sub-family of Silphidæ.

The form is oval, with depressed margins, like a miniature *Peltis*. The body is coarsely punctured, and the elytra are marked with four rows of small black tubercles, separated by pale spots.

The maxillæ are not seen in my specimens. The antennæ are 11-jointed, with 3-jointed club; antennal grooves short; the front truncate, sides widely dilated.

The anterior coxæ are transverse, but prominent and contiguous; the coxal cavities are closed behind. The posterior coxæ are transverse, but prominent internally, and concave behind. The tibial spurs are obsolete. The joints 1—4 of the tarsi are very short and equal, hairy beneath; the last joint is very long, with moderate-sized simple claws. The fifth ventral segment is rounded behind, but the sixth projects slightly.

FAM. XVIII.—COLYDIIDAE.

Mentum subquadrate, rarely covering the base of the maxillæ; ligula corneous; palpi 3-jointed, short.

Maxillæ with two lobes; palpi short, 4-jointed.

Antennæ inserted under the margin of the front, 10- or 11-jointed, rarely 8-jointed, sometimes gradually thickened, usually terminated by a small sudden club.

Prothorax with the side pieces not distinct; anterior coxal cavities almost always closed behind, sometimes distant, sometimes confluent; prosternum scarcely ever prolonged behind the coxæ.

Mesosternum small, side pieces not attaining the coxæ.

Metasternum large; side pieces long, narrow; epimera not visible.

Elytra never truncate, always covering the abdomen.

Abdomen with five ventral segments, the three or four anterior ones more or less connate.

Anterior and middle coxæ small, globular, not prominent; posterior transverse, either distant or contiguous, not prominent.

Legs short; tibiæ not dilated; terminal spurs usually small, frequently indistinct; tarsi 4-jointed, not dilated; ungues simple.

Small insects, usually of an elongate or cylindrical form, living under the bark of trees, in fungi, or in the earth. The small globular anterior and middle coxæ, and the 4-jointed simple tarsi, will enable them to be readily distinguished from any of the neighboring families.

Five tribes, established by Erichson, and all represented in our fauna, constitute this family:—

- | | |
|---|--|
| I. Posterior coxæ contiguous ;
Ventral segments equal in length.
First ventral segment elongated. | SYNCHITINI.
COLYDIINI. |
| II. Posterior coxæ distant ;
Last joint of palpi not acicular ;
First ventral segment elongated.
Ventral segments equal in length.
Last joint of palpi small, acicular. | BOTHRIDERINI.
PYCNOMERINI.
CERYLINI. |

Tribe I.—SYNCHITINI.

Most of the species of this tribe are remarkable for being covered with asperities, usually bearing erect bristles; the form is sometimes elongate, but frequently oval, resembling *Peltis*. In our genera the first three tarsal joints are nearly equal, and the tibiæ have no terminal spurs, or only very small ones.

- | | |
|---|------------------------|
| A. Tibiæ filiform, not spinous, without terminal spurs ;
a. Antennæ not retractile under the head, 11-jointed (body elongate, costate) ;
Antennæ thick, perfoliate ; eyes very narrow, remote from the margin of the head.
Antennæ moderate ; eyes round, lateral. | ANCHOMMA.
RHAODEMA. |
| b. Antennæ received in grooves under the head ;
Prosternum not produced behind ; antennæ with 2-jointed club ;
antennal grooves short. | COXELUS. |
| B. Tibiæ filiform, not spinous, with small terminal spurs ;
a. Antennæ 11-jointed, with 2-jointed club ;
Antennal grooves wanting ; first and second joints of antennæ distinctly thicker ; body costate. | DITOMA. |
| b. Antennæ 10-jointed, club solid ;
Antennal grooves wanting.
Antennal grooves distinct, subparallel. | SYNCHITA.
CICONES. |
| C. Tibiæ slightly thickened, with small terminal spurs, and a few small spines at the extremity ; antennæ 11-jointed, with 3-jointed club ; (body costate) | LASCONOTUS. |

Tribe II.—COLYDIINI.

Species having a cylindrical, sometimes very slender, form ; found under bark. The European genus *Aglenus* has no eyes, but in all of ours the eyes are distinct. The elytra are striate, rarely ribbed. The first joint of the tarsi is elongate in all of our

genera, except *Oxylæmus*, in which also the anterior coxal cavities are open behind.

- A. Frontal margin broad, covering the insertion of the antennæ ;
 Club of antennæ 3-jointed ; (thorax with impressed lines) ;
 Anterior tibiæ with one spur enlarged, hooked ; elytra finely or scarcely striate. AELONICUM.
 Anterior tibiæ with small spurs ; elytra ribbed. COLYDIUM.
 Club of antennæ 2-jointed ; body costate. EULACHUS.
- B. Frontal margin not dilated ; base of antennæ exposed ;
 Anterior coxæ distant ;
 Eyes flat ; spurs of the tibiæ small, outer angle prolonged ; (elytra striate, body very elongate). NEMATIDIUM
 Anterior coxæ contiguous ;
 First joint of tarsi long ; club of antennæ with two distinct joints ; (elytra costate). PLEURIDIUM.
 First joint of tarsi short ; club of antennæ globular, composed of two connate joints ; elytra coarsely punctured in rows. OXYLÆMUS.

Tribe III.—BOTHRIDERINI.

In this tribe the posterior coxæ are widely separated, and the first ventral segment is elongated. The species are somewhat flattened, and the elytra are ribbed ; the buccal cavity is deep, and the oral organs are retracted ; the mentum is transverse and concave, and the inferior margin of the mandibles is dilated at the base ; the eyes are not prominent ; the antennæ are short, 11-jointed, with the club 2-jointed.

Two species of *Bothrideres* are known to me. The genus is distinguished by the anterior coxæ being very widely separated.

Tribe IV.—PYCNOMERINI.

Elongate, somewhat flattened species, covered with coarse punctures, having on the elytra rows of very large punctures. The palpi are cylindrical, and the posterior coxæ, as in the preceding tribe, are distant, but the ventral segments are equal in length.

- Antennæ with eleven distinct joints, club 2-jointed. ENDECTUS.
 Antennæ with ten apparent joints, club solid. PYCNOMERUS.

Endectus contains *Lyctus hæmatodes* Fabr. and *L. reflexus* Say, previously enrolled in *Pycnomerus*, and one nondescript ; of the latter genus but one species is known to me. They are all from the Atlantic States.

Tribe V.—**CERYLINI.**

Small, oblong or oval, flattened insects, having all the coxæ widely separated, the first ventral segment elongated, and the last joint of the palpi small and acicular, the penultimate thick; lobes of the maxillæ long and slender.

Antennæ 11-jointed; (body pubescent).

PHILOTHERMUS.

Antennæ 10-jointed; (body glabrous).

CERYLON.

FAM. XIX.—RHYSSODIDAE.

Mentum very large, quadrate, bisinuate in front, covering entirely the mouth beneath; palpi short, 3-jointed.

Maxillæ with two small lobes; palpi short, 4-jointed.

Antennæ inserted under the frontal margin, 11-jointed, joints nearly equal, rounded, the first larger, but also rounded.

Prothorax beneath with the side pieces distinct, the suture running parallel with the lateral margin; coxal cavities closed behind, widely separated.

Mesosternum very short, side pieces diagonally divided, epimera reaching the coxæ.

Metasternum very large; side pieces very narrow, almost concealed by the elytra.

Elytra rounded at tip, covering the abdomen, with six or seven deep furrows, or rows of punctures; scutellum wanting.

Abdomen with six ventral segments; the first visible only between the coxæ, broadly triangular; the three anterior ones closely connate.

Anterior coxæ small, globular, not prominent; middle coxæ globular, small; posterior coxæ small, subtriangular, prominent internally, all of them widely separated.

Legs short; anterior tibiæ somewhat dilated, terminated by two hooks, on the under surface sulcate towards the tip, subemarginate, and armed above the tip with a spine; middle and posterior tibiæ with an internal terminal spine, spurs distinct; tarsi 5-jointed, very slightly pubescent beneath; posterior trochanters prominent, oval.

Two genera, of singular form, found under bark, constitute this family, which in several of its characters resembles the Carabidæ, but yet not so as to belong to the same series. The antennæ are

composed of equal globular joints; the head is strongly constricted behind into a neck, and is sculptured with two deep grooves, converging behind; the thorax is long, has three entire grooves, and two short posterior broader ones (*Clinidium*), or three deep entire ones, and two finer lateral lines (*Rhyssodes*); the elytra are deeply grooved in *Clinidium*, coarsely striato-punctate in *Rhyssodes*.

Eyes lateral, rounded, distinctly granulated.

RHYSSODES.

Eyes superior, narrow, scarcely granulated (sometimes wanting?).

CLINDIUM.

FAM. XX.—CUCUJIDAE.

Mentum small, subquadrate, usually transverse; ligula corneous, prominent; palpi short, 3-jointed.

Maxillæ with two lobes; palpi 4-jointed.

Antennæ inserted at the margin of the front, 11-jointed, sometimes long and slender, sometimes with the outer joints slightly enlarged, the first joint usually elongated.

Prothorax with the side pieces not separate from the upper piece; coxal cavities separated by the prosternum, widely open behind, with a fissure externally leading to the episternal suture in the second and third sub-families, entirely closed in the first, fourth, and fifth.

Mesosternum moderate; epimera reaching the coxæ.

Metasternum large, quadrate; episterna long, narrow, covered.

Elytra rounded at tip and covering the abdomen, except in the fourth sub-family; usually flat, strongly margined; scutellum distinct.

Abdomen with five free ventral segments, equal in length.

Anterior coxæ small, globular, not prominent; middle coxæ small, subtriangular, not prominent; posterior coxæ nearly contiguous, transverse, slightly prominent.

Legs moderate, tibiæ slender, with two small terminal spurs; tarsi with the first joint usually small, sometimes 5-jointed in both sexes; the posterior tarsi sometimes 4-jointed in the males.

The species which constitute this family are, with one exception (*Narthecius*), very depressed, and usually of an elongate form. They live under bark.

Monotoma, included in this family by Duval, should never have had a place in it.

This family divides into five sub-families, of which the second is considered by Du Val as forming a distinct family. The sole character, the concealment of the maxillæ by corneous plates, does not appear of sufficient importance to warrant such a conclusion, and I therefore follow the example of Erichson and Lacordaire in considering it as a member of the present family.

Anterior coxal cavities closed behind; tarsi not lobed beneath, with the fourth joint small. SYLVANIDÆ.

Anterior coxal cavities open behind;
Maxillæ covered by corneous plates. PASSANDRIDÆ.
Maxillæ exposed. CUCUJIDÆ.

Anterior coxal cavities closed behind; tarsi with the third joint lobed;
Fourth tarsal joint not smaller than the third. HEMIPERLIDÆ.
Fourth tarsal joint very small. TELEPHANIDÆ.

Sub-Family I.—SYLVANIDÆ.

In this sub-family are contained but two genera, having the genæ prominent and acute; the antennæ with the first joint not elongated, and the outer ones enlarged; the anterior coxal cavities are broadly closed behind, and the tarsi, 5-jointed in both sexes, have the fourth joint small.

The genera are two in number, and the species, which are of small size, are found under bark or in grain.

Antennæ with the joints 9—11 somewhat suddenly larger. SYLVANUS.
Antennæ with outer joints gradually enlarged. NAUSICUS.

The type and only species of the last genus is *N. dentatus*, having several large teeth on the sides of the thorax. It has been diffused over the whole globe in articles of commerce.

Sub-Family II.—PASSANDRIDÆ.

This sub-family is represented in the United States by a single species, *Catogenus rufus*, of very variable size, found in the Middle, Southern, and Western States. It is dark-brown, elongate, depressed; the elytra are striate, and the antennæ moderately thick; the tarsi are 5-jointed in both sexes; the anterior coxal cavities are open behind; the genæ are prolonged into plates covering the maxillæ.

Sub-Family III.—CUCUJIDAE (genuini).

In this sub-family the anterior coxal cavities are open behind, and the base of the maxillæ is exposed. The tarsi are filiform, either 5-jointed, or with the hind ones of the males 4-jointed.

Two tribes are indicated by our genera:—

Antennæ with the first joint moderate.

CUCUJINI.

Antennæ with the first joint elongated.

BRONTINI.

Tribe I.—CUCUJINI.

The typical genus *Cucujus* is represented in our country by two species. They are bright scarlet-colored, depressed insects, less elongate than *Catogenus*, with the elytra punctured, with three faintly-marked smooth lines. *C. clavipes* is found on the Atlantic slope, *C. puniceus* in Oregon and Russian America. *Narthecius* contains a small species from Pennsylvania, which is very remarkable for its cylindrical form and very large head, which, with the thorax, more than equals in length the elytra. The other genera are composed of small insects, occurring on both sides of the continent. The posterior tarsi are 4-jointed in the males.

Posterior angles of the head prominent, rounded; antennæ not thickened externally.

CUCUJUS.

Posterior angles of the head none; prosternum narrow; antennæ with the last three joints wider, the intermediate ones unequal; elytra not striate.

PEDIACUS.

Posterior angles of the head none; prosternum very wide; antennæ usually long, slender, the last three joints sometimes slightly dilated; elytra obsolete striate; head and thorax with a fine elevated line or one or two striae near each side; spurs of the anterior tibiae unequal;

Body much depressed.

LÆNOPHLEGUS.

Body cylindrical; head very large (antennæ less elongated).

NARTHECIUS.

Tribe II.—BRONTINI.

This tribe consists of two genera, found on both sides of the continent, and also in Europe. *Brontes* is generally diffused, *Dendrophagnus* only in the northern regions. The elytra are striate in both.

Body very elongate; sides of thorax parallel; mesosternum truncate in front.

DENDROPHAGUS.

Body less elongate; sides of thorax strongly serrate, anterior angles prolonged; mesosternum broadly emarginate in front.

BRONTES.

Sub-Family IV.—HEMIPEPLIDÆ.

In this sub-family the anterior coxal cavities are nearly confluent, and narrowly closed behind; the elytra are rounded at tip, but shorter than the abdomen. The anterior and middle tarsi are somewhat dilated, and the fourth joint is not smaller than the third, and is slightly lobed beneath; the hind tarsi (of the males alone?) are 4-jointed. The body is very elongated, linear, and depressed; the head is narrowed behind the eyes, which are large. The thorax in our species is somewhat narrowed behind, with a large puncture each side, near the base; the antennæ are a little longer than the head and thorax, very slightly thickened at the extremity, with the first joint as long as the three following; the maxillæ are not covered, and the genæ are but slightly prominent.

Hemipeplus marginipennis, the only representative in our fauna, is a very rare insect, found under bark in the Southern States.

Sub-Family V.—TELEPHANIDÆ.

In this sub-family the anterior coxal cavities are broadly closed behind, as in the first sub-family, but the third joint of the tarsi is lobed beneath; the maxillæ are exposed, and the genæ but slightly prominent. The genus *Telephanus* is found under stones; of *Pseudophanus* the habits are not known.

Our two genera, each containing a single species, represent two tribes:—

Antennæ with the first joint elongated.

TELEPHANINI.

Antennæ with the first joint short.

PSEUDOPHANINI.

Telephanus velox (*Heterodromia velox* Hald.) is found in the Atlantic district; *Pseudophanus signatus* Lec. in Oregon.

FAM. XXI.—CRYPTOPHAGIDÆ.

Mentum moderate, trapezoidal, sinuate in front; ligula corneous, usually with distinct paraglossæ; labial palpi short, 3-jointed.

Maxillæ exposed at the base, with two coriaceous lobes,

the inner one with a terminal hook; maxillary palpi 4-jointed, short.

Eyes rounded, moderately strongly granulated.

Antennæ 11-jointed, with the joints 9—11 larger, forming a club.

Head usually moderate in size, not narrowed behind, front sometimes moderately prolonged; labrum distinct, transverse.

Prothorax with the side pieces not separate; prosternum separating the coxæ, usually prolonged behind; coxal cavities open behind.

Mesosternum articulating with the prosternum, frequently emarginate in front; side pieces not attaining the coxæ.

Metasternum large, side pieces narrow.

Elytra rounded behind, entirely covering the abdomen.

Abdomen with five free ventral segments, the first somewhat longer than the others.

Coxæ, anterior oval or rounded; middle ones rounded; posterior ones transverse; all of them separated by the respective sterna.

Legs short; tibiæ nearly linear, with small terminal spurs; tarsi sometimes 5-jointed, with the fourth joint smaller; the hind ones are only 4-jointed in the males of several genera; the joints are clothed beneath with long hair, and the first three of the anterior pair are frequently dilated in the male.

Insects of small size and of variable form, but never very depressed, and with the thorax nearly or quite as wide as the elytra. They live on fungi and other decomposing vegetable matters. Some are found flying in the evening twilight, and upon board-piles.

I have limited this family in the same manner as Lacordaire, and cannot adopt the views of Duval, who has joined with it Sylvanus, and excluded Telmatophilus. I do not find the anterior coxæ globose, as described by Erichson, Lacordaire, and Duval, except in Atomaria and the allied genus Epistemus.

The characters of the family are nearly those of Cucujida, but the greater length of the first ventral segment, and different form of body, enable the genera to be readily distinguished.

Three tribes are indicated as follows:—

Tarsi with fourth joint very small, the second and third lobed.

TELMATOPHILINI.

Tarsi with the joints not lobed beneath;

Antennæ inserted at the sides of the front.

CRYPTOPHAGINI.

Antennæ inserted at the anterior part of the front.

ATOMARIINI.

Tribe I.—**TELMATOPHILINI.**

The antennæ are inserted at the sides of the front, which is narrowed and prolonged; the clypeal suture is not visible; the anterior coxæ are slightly oval; the prosternum is prolonged, meeting the concave mesosternum. The tarsi are 5-jointed in both sexes, the fourth joint is very small, and the third is prolonged beneath into a lobe; the second joint is slightly lobed.

Telmatophilus, and a new genus, constitute this tribe; the species are found on plants near water. One species of each genus is known to me from the Atlantic district; they are found on plants near water. Loberus resembles, at first sight, a small Haltica of the group Crepidodera; the color is shining black, the thorax but sparsely punctured, with a transverse impression very near the base; the elytra have striæ of fine punctures, from which proceed very short fine hairs.

The genera are thus distinguished:—

Ninth joint of antennæ scarcely wider than the eighth; body densely punctured and pubescent. TELMATOPHILUS.

Ninth joint of antennæ as wide as the tenth; body scarcely pubescent; elytra with striæ of punctures. LOBERUS.

Tribe II.—**CRYPTOPHAGINI** (genuini).

The antennæ are inserted at the sides of the front, which is sometimes prolonged; the ninth joint of the antennæ is scarcely narrower than the tenth. The anterior coxæ are decidedly transverse. The tarsi are sometimes 5-jointed in both sexes, but usually the hind tarsi of the male are 4-jointed; the joints are not lobed beneath, and the fourth is but little smaller than the third. The anterior tarsi of the males are slightly dilated, and hairy beneath.

Two groups are known by the following characters:—

Mesosternum deeply emarginate, receiving the prosternum.

ANTHEROPHAGI.

Mesosternum not emarginate.

CRYPTOPHAGI.

Group I.—**Antherophagi.**

The genus Antherophagus alone, represented by one species in the Atlantic district, and one in Russian America, constitutes this group, which differs from the next not only by the prosternum

being more prolonged, with the tip received into the deeply emarginate mesosternum, but by the very different form of the body, which is oval, and resembles considerably a Nitidulide of the genus *Eपुरæa*. The head is flat, the front not prolonged, and in the male is deeply incised at tip, exposing a membranous triangular epistoma. The antennæ of the female are clubbed, as usual; those of the male are stout, and scarcely thickened at the end. The mandibles are prominent, and suddenly incurved at the tip. The hind tarsi of the male are 4-jointed. The genus lives on flowers. Our species is finely punctured, and densely clothed with fulvous hair.

Group II.—*Cryptophagi*.

Small insects, of an elongated form, living in decomposing vegetable matter; usually of a brown color, and clothed with rather coarse hair. The sides of the thorax are usually toothed. The prosternum is slightly prolonged, but the mesosternum is not emarginate for its reception. The antennæ and front are alike in both sexes, and the latter is somewhat prolonged.

The posterior tarsi of the male of *Cryptophagus* have but four joints; in *Paramecosoma* and *Tomarus* the tarsi are 5-jointed in both sexes.

Body pubescent; sides of the thorax toothed or serrate;

Mentum with an obtuse emarginate medial tooth.

CRYPTOPHAGUS.

Mentum with an acute medial tooth.

PARAMECOSOMA.

Body glabrous; sides of the thorax smooth.

TOMARUS.

The two first-mentioned genera are represented in every portion of our territory; the third only in the Atlantic district, and resembles in appearance *Atomaria*, but differs from it by the insertion of the antennæ, and the absence of pubescence.

Tribe III.—*ATOMARIINI*.

The antennæ are inserted between the eyes, at the anterior part of the front, and are usually very closely approximated. The mentum is tridentate in front. The anterior coxæ are rounded. The tarsi are 5-jointed in both sexes, and not lobed beneath; the fourth joint is smaller than the third. The species are of very small size, and are found flying in the evening, and about wood-piles. The two groups of *Atomaria* recognized by previous

authors seem, from the form of the body and difference in position of the antennæ, almost entitled to rank as distinct genera.

Body pubescent; antennæ very approximate, or somewhat distant.

ATOMARIA.

Body ovate, convex, glabrous; antennæ somewhat distant. EPISTEMUS.

FAM. XXII.—DERODONTIDÆ.

Mentum small, trapezoidal; ligula corneous, with distinct paraglossæ; labial palpi 3-jointed, with the last joint oval.

Maxillæ exposed at the base; inner lobe corneous, hooked at the end, and ciliate near the tip; outer lobe equal in size, ciliate at tip; maxillary palpi 4-jointed, cylindrical, last joint elongate oval.

Head suddenly but not strongly constricted behind; eyes small, rounded, prominent, finely granulated; labrum transverse, rounded, separated from the front by a transverse membranous epistoma; mandibles short, curved, acute, with a tooth very near the apex.

Antennæ inserted before the eyes, upon the sides of the front, 11-jointed, first and second joints thicker than the following, 9—11 not suddenly larger.

Prothorax with the side pieces not separate, the margin strongly toothed; coxal cavities confluent, closed behind.

Mesosternum short, scarcely separating the middle coxæ; side pieces diagonally divided.

Metasternum large, side pieces narrow.

Elytra entirely covering the abdomen, with ten rows of large quadrate punctures, besides a marginal series and a short one near the scutellum.

Abdomen with five free equal ventral segments.

Coxæ, anterior, transverse, conical, prominent, contiguous; middle, oval, oblique, slightly prominent; posterior, transverse, slightly separated, dilated internally, forming a small plate, which protects the insertion of the thigh.

Legs moderate; tibiæ not dilated, with small terminal spurs; tarsi 5-jointed, clothed beneath with long hairs, the fourth joint somewhat smaller than the preceding; claws simple.

This family contains only the genus *Derodontus*, represented by two species—*Cryptophagus maculatus* Mels., from the At-

lantie district, and *Corticaria trisignata* Mann., from Russian America.

The form of the anterior and posterior coxæ distinguishes it from all the preceding families, and approximates it somewhat to the families following the Elateridæ.

The two species are small, testaceous, or brown, coarsely punctured insects, having the head deeply impressed, with a small smooth tubercle each side inside of the eye, which at first sight resembles a large ocellus. The thorax is comparatively small, channelled, and its lateral margin is strongly toothed; the elytra are wider than the thorax, with striæ composed of large punctures, and are variegated with darker spots.

FAM. XXIII.—LATHRIDIIDÆ.

Mentum large, transverse; ligula indistinct; labial palpi short, with two or three joints; second joint large, rounded.

Maxillæ with two lobes; palpi 4-jointed, last joint large.

Antennæ inserted in front of the eyes in our genera, 9—11-jointed, the first and second joints thicker than the third, the outer ones enlarged.

Front with elypeal suture distinct; labrum short, covering the small, not prominent mandibles.

Prothorax with the side pieces not separate; prosternum more or less visible between the coxæ; coxal cavities entire; mesosternum separating the middle coxæ; metasternum moderate, side pieces narrow.

Elytra entirely covering the abdomen.

Abdomen with five free ventral segments, not remarkably differing in length.

Anterior coxæ conical, prominent, more or less separated; middle ones separate, rounded; posterior coxæ transverse, widely separated.

Legs moderate; tibiæ slender, without terminal spurs; tarsi 3-jointed, the third joint equal in length to the other two, with small simple claws.

Insects of very small size, found flying in twilight, and also under bark and stones; they are of graceful form, the elytra being usually wider than the thorax; the species of *Bonvouloiria* and most *Lathridius* are very remarkably sculptured, with elevated lines on the thorax.

The genus *Monotoma*, introduced into this family by many authors, does not belong to it, and will be found in the family Monotomidæ.

I have also excluded from the family *Corticaria trisignata* Mann., which, with *Cryptophagus maculatus* Mels., must form a new genus, *Derodontus*; its systematic place is in a new family.

Our genera are related as follows:—

Antennæ with a distinct 2-jointed club; labial palpi 3-jointed.

HOLOPARAMECUS.

Antennæ with the outer joints enlarged; labial palpi 2-jointed;

Antennæ gradually thickened, last joints confused;* thorax wide.

BONVOULOIRIA.

Antennæ 11-jointed; club 3-jointed; thorax narrower than the elytra;
Thorax strongly margined; second joint of tarsi not shorter than the first.

LATHRIDII.

Thorax not margined; second joint of tarsi shorter than the first.

CORTICARIA.

To *Bonvouloiria* belongs the Californian *Lathridius parviceps* Lec.† A species of *Holoparamecus* was found by me at Fort Yuma, California. The other two genera are represented on both sides of the continent.

FAM. XXIV.—OTHNIIDÆ.

Mentum trapezoidal, truncate in front; ligula corneous; palpi cylindrical, 3-jointed, third joint longer than the others.

Maxillæ exposed at the base (lobes not seen); palpi 4-jointed, cylindrical, last joint longer than the others.

Antennæ inserted under the sides of the front, before the eyes, 11-jointed, first joint thicker than the following, third longer than the first and second together, 9—11 broader, forming a loosely articulated club.

Head large and flat, sides of the front oblique in front of the eyes; labrum very short, closely articulated with the front, ciliate anteriorly; mandibles short, emarginate at tip; eyes large, prominent, finely granulated.

Prothorax quadrate, not wider than the head, feebly serrate on the sides, with the angles rounded; side pieces

* Duval describes the antennæ of the European species as 9-jointed; those of the American species appear to have ten joints.

† Proc. Acad. Nat. Sci., vii. 304.

not distinct; coxal cavities small, rounded, confluent, closed behind.

Mesosternum short, narrow; side pieces divided by an almost longitudinal suture.

Metasternum moderate, side pieces narrow.

Elytra elongate, rounded at tip, leaving the tip of the abdomen uncovered; scutellum small, triangular.

Abdomen with five free ventral segments, slightly diminishing in length.

Coxæ, anterior small, conical, prominent, and contiguous; middle ones rounded, prominent, slightly separated by the mesosternum; hind ones transverse, not prominent, slightly separated, extending to the sides of the body.

Legs slender; tibiæ linear, with minute terminal spurs; tarsi slender, tolerably long, joints diminishing in length, anterior and middle 5-jointed, hind ones (of the male only?) 4-jointed; claws simple.

A small insect (.22 unc. long), of elongate form and brownish-black color, with slight brassy tinge, coarsely punctured, and irregularly clothed with short whitish hairs, presents the above assemblage of characters, irreconcilable with any family known to me. The punctuation and character of pubescence resemble those of certain species of Dasytini from California; and the prominent anterior and middle coxæ would seem to give weight to the affinity thus indicated. But the anterior coxal cavities are completely closed behind, and are much smaller than in any of the families of Serricorn Coleoptera allied to Dasytes. The simple structure of the claws, the 4-jointed hind tarsi, and the entire absence of a visible sixth ventral segment, besides many other characters, forbid the association with Dasytes. There is consequently no course left but to place it as a distinct family, in the neighborhood of Cryptophagidæ.

I found under decomposing *Opuntia* leaves, at San Diego, California, a second species of this genus, of rather broader form, with the elytra yellowish testaceous, variegated with small black spots. The specimen has been lost, and I am therefore unable to describe it more closely. If rediscovered, and recognized by the notes here given, it may be called *Othnius guttulatus*.

The species from which the description of the family is taken is found in Nebraska, near the Rocky Mountains. I have named it *Othnius umbrosus*. The flat head and large front give it

somewhat the outline of certain Monotomidæ, especially Phyconomus.

FAM. XXV.—MYCETOPHAGIDÆ.

Mentum transverse, trapezoidal; ligula usually corneous, without paraglossæ; labial palpi 3-jointed.

Maxillæ with two lobes, ciliate at the extremity; maxillary palpi 4-jointed.

Eyes tolerably large, transverse or rounded, strongly granulated.

Antennæ inserted immediately in front of the eyes, 11-jointed, the outer joints gradually or suddenly enlarged.

Head short; frontal suture distinct in the first sub-family, wanting in the second; labrum short, covering the mandibles, which are short, acute, and not prominent.

Prothorax with the side pieces not separate, as wide as the elytra at the base; anterior coxal cavities open behind in the first sub-family, closed in the second.

Mesosternum narrowly separating the middle coxæ.

Metasternum moderate, side pieces narrow.

Elytra entirely covering the abdomen, rounded at tip.

Abdomen with five free and equal ventral segments.

Coxæ, anterior oval, rounded, somewhat prominent; middle rounded; posterior transverse, not contiguous.

Legs slender; tibiæ nearly linear, with small terminal spurs; tarsi filiform, 4-jointed in the first sub-family, in which the anterior ones of the male have but three joints; lobed beneath, and 5-jointed, with the fourth joint small, in the second sub-family; ungues simple.

The insects of this family live on fungi and under bark. They are oval, rarely elongate, slightly convex, densely punctured, and hairy. Many have the elytra handsomely variegated with spots.

Tarsi filiform, 4-jointed.

MYCETOPHAGIDÆ.

Tarsi lobed beneath, 5-jointed.

DIPHYLLIDÆ.

Sub-Family I.—MYCETOPHAGIDÆ (genuini).

The species of this sub-family are finely punctured insects, clothed with prostrate hair. The anterior coxal cavities are open; the tarsi are 4-jointed and filiform, the anterior pair in the

male having but three joints. The frontal suture is always distinct, and usually deep.

Our genera are:—

Eyes transverse;

Antennæ gradually enlarged externally.

MYCETOPHAGUS.

Antennæ with joints 9—11 suddenly larger.

TRIPHYLLUS.

Eyes rounded; antennæ with joints 9—11 suddenly larger;

Clypeal suture not deeply impressed.

LITARGUS.

Clypeal suture deep.

TYPILÆA.

Eyes rounded; antennæ with joints 10—11 suddenly larger.

BERGINUS.

Mycetophagus and Litargus are generally diffused; *Typhæa fumata* has been imported by commerce, and is found in houses; *Triphyllus ruficornis* Mels. is found in the Atlantic district. Berginus occurs in Pennsylvania.

Sub-Family II.—DIPHYLLIDAE.

This sub-family contains a very small number of species, agreeing in form with those of the preceding sub-family, but coarsely punctured, with less fine and less prostrate pubescence. The anterior coxal cavities are closed. The tarsi are 5-jointed, but the fourth joint is small, and the third prolonged beneath, forming a membranous lobe.

The genus *Diphyllus* has but the tenth and eleventh joints of the antennæ enlarged, and has not yet occurred in our fauna. Our genera have the club of the antennæ 3-jointed, and are known as follows:—

Thorax without elevated lines.

MARGINUS.

Thorax with two fine longitudinal lines near the sides.

DIPLOCÆLUS.

The last joint of the antennæ is somewhat narrower than the tenth in *Marginus*, and is of the same breadth in *Diplocælus*. They are each represented by one species in the Atlantic States. I found a species of either *Diplocælus* or *Diphyllus* in Arizona, but the specimen has been lost.

FAM. XXVI.—DERMESTIDAE.

Mentum quadrate, usually corneous; ligula simple; palpi short, 3-jointed.

Maxillæ with the base exposed, with two lobes of variable form; palpi small, slender, 4-jointed.

Antennæ inserted in front of the eyes, usually 11-jointed, variable in *Anthrenus*, 9-jointed in *Dearthrus*, and 10-jointed in certain foreign genera, with the last three joints forming a large club.

Head small, deflexed; epistoma very short, coriaceous; labrum distinct; mandibles short; eyes rounded, front usually with a single ocellus or simple lens.

Prothorax short, with the side pieces not separate, sometimes excavated beneath for the reception of the antennæ; coxal cavities large, transverse, closed behind by the mesosternum, except in *Byturus*; prosternum prolonged behind, except in *Dermestes* and *Byturus*, and usually lobed in front.

Mesosternum prominent, rounded or subacute in front in *Dermestes*, emarginate in the others; side pieces attaining the coxæ.

Metasternum short, truncate in front; side pieces wide.

Elytra covering the abdomen, not striate; epipleuræ obsolete behind.

Abdomen with five free ventral segments.

Anterior coxæ conical, prominent, with small trochantin; middle coxæ oval, oblique, excavated externally, with large trochantin, usually distant; posterior slightly separated, transverse, not extending to the margin of the body (except in *Orphilus*), dilated into a plate partly protecting the thighs, which is, however, almost obsolete in *Byturus*.

Legs short, somewhat contractile; tibiæ with distinct spurs; tarsi 5-jointed, joints 1—4 short, usually equal, fifth longer; claws simple in the second sub-family, toothed in *Byturidæ*.

This family comprises small oval insects, some of which are found on dried animal remains, others only on plants. Several of them are very destructive to furs and objects of natural history.

The genera indicate two sub-families:—

Tarsi with second and third joints lobed beneath.

BYTURIDÆ.

Tarsi simple.

DERMESTIDÆ.

Sub-Family I.—BYTURIDÆ.

This sub-family consists of a single genus, *Byturus*, represented by one species from the Atlantic district and one from the Pacific. It departs remarkably from the next sub-family by the mandibles having several teeth, by the tarsi having the second and third

joints prolonged beneath into a membranous lobe, and the fourth joint small, and by the claws being armed with a large basal tooth; the plate of the hind coxæ is very feebly developed. The species are found on flowers. They are small, oval, brown, pubescent insects. The prosternum is not lobed in front, and the coxal cavities are narrowly closed behind, and not completed, as in the next sub-family, by the mesosternum.

The position of this genus is much disputed. Erichson placed it in Melyridæ, with which it seems to have but small affinity; Duval places it in his family Telmatophilidæ, which is composed of heterogeneous elements, having no relation with each other; but by Redtenbacher and Lacordaire it is considered as belonging here, though the characters seem to me to warrant its being considered as a separate sub-family. The Cilian genus *Diodontolobus* has the unguis also armed with a tooth, but the description leaves it uncertain whether the place for it is in this or the next sub-family.

Sub-Family II.—DERMESTIDÆ (genuini).

The tarsi are not lobed beneath, the fourth joint is scarcely smaller than the third, and the unguis are simple. The anterior coxal cavities are widely open behind, and are completed by the mesosternum, which is usually protuberant. The prosternum generally is lobed in front.

Four groups are indicated:—

No frontal ocellus.	DERMESTES.
Frontal ocellus distinct;	
Middle coxæ not very distant; prosternal fossæ obsolete.	ATTAGENI.
Middle coxæ widely separated;	
Mouth protected by sternum.	ANTHRENI.
Mouth protected by anterior legs.	ORPHILI.

Group I.—*Dermestes*.

The single genus *Dermestes* constitutes this group. It is represented in every part of our territory by several species. The head is without frontal ocellus; the prosternum is not lobed in front; the cavities for the reception of the antennæ are large, and placed at the anterior portion of the sternum; it is not prolonged behind the coxæ; the mesosternum is acute in front, and protuberant, so

as to meet the prosternum; the hind coxæ do not attain the sides of the body. The species live on dried animal matter.

Group II.—**Attageni.**

The frontal ocellus is distinct; the cavities for the reception of the antennæ are faint; the prosternum is prolonged behind, and its point enters the channelled mesosternum, which is protuberant in *Attagenus megatoma*, and declivous in the other species, but not very wide; the middle coxæ are consequently not very widely separated; the hind coxæ almost attain the sides of the body. The species live on dried animal matter.

Our species are two, and in neither is the prosternum lobed:—

Antennæ 11-jointed; first joint of tarsi short, second longer. **ATTAGENUS.**

Antennæ 9-jointed; first joint of tarsi longer than second. **DEARTHUS.**

Dearthus is founded upon a small, elongate, finely pubescent insect from the Southern and Western States; the color is black; the legs are ferruginous. Of *Attagenus* two species, *A. pellio* and *A. megatoma*, have been introduced from Europe; two others are found in New Mexico.

Group III.—**Anthreni.**

In this group the frontal ocellus is distinct; the prosternum is prolonged behind, and fits into the very short and sometimes divided mesosternum; the antennal cavities are very deep and distinctly limited in *Anthrenus* and *Cryptorhopalum*, shallow in *Trogoderma*, and badly defined in *Apsectus*; the middle coxæ are widely separated by the anterior part of the metasternum; the hind coxæ do not attain the sides of the body. The larvae of most of the species feed on dried animal matter, the perfect insects are found in flowers.

Our genera are thus separated:—

Mesosternum emarginate or divided; prosternum pointed behind;

Mandibles and labrum not covered by the prosternum;

Antennal cavities extending along the margin; body pubescent.

TROGODERMA.

Mandibles covered, labrum not covered;

Antennal cavities extending along the margin; body pubescent.

CRYPTORHOPALUM.

Antennal cavities at the anterior angles; body clothed with scales.

ANTHRENUM.

Mesosternum entire; prosternum truncate behind; body clothed with long erect hairs.

APSECTUS.

The number of joints of the antennæ is variable in *Anthrenus*. *Apsectus* has but one species, found in the Atlantic States; one specimen in my possession was hatched from a tumor on a stem of *Rhus radicans*. The other genera are represented on both sides of the continent. The antennæ of the males of certain species of *Trogoderma* are strongly serrate.

Group IV.—*Orphilus*.

This group consists of a single genus, *Orphilus*, of which one species is found in Europe, one in the Atlantic district, and one in California. The frontal ocellus is distinct; the prosternum is very short, not lobed in front, pointed behind, but not reaching the mesosternum, which is horizontal, rounded in front, and separates widely the middle coxæ; the anterior coxæ are very large and prominent, and, with the anterior legs, serve to protect the under surface of the head; the antennal cavities are deep, but not very sharply defined, and are behind the middle of the thorax; the hind coxæ extend to the sides of the body; the ventral segments gradually diminish in length, and the last is quite short.

The Atlantic species, *O. ater* Er., is dull black, somewhat coarsely punctured; the Californian one, *O. subnitidus* Lec., is shining black, finely punctured, and is somewhat larger than *O. ater*. They are found on flowers.

FAM. XXVII.—BYRRHIDAE.

Mentum transverse (except in *Nosodendron*), corneous; ligula usually prominent, simple.

Maxillæ exposed at base, with two unarmed lobes.

Antennæ rarely 10-, usually 11-jointed, the outer joints forming an elongate club in most genera, nearly filiform in *Amphicyrta*.

Head prominent in *Nosodendron*, retracted in the other genera, with the parts of the mouth more or less protected by the prosternum; epistoma usually wanting, sometimes short, coriaceous, sometimes corneous; labrum distinct; mandibles short, not prominent.

Prothorax with the side pieces not separate; coxal cavities large, transverse, open behind, separated by the prosternum, which is short, truncate in front, slightly prolonged behind, fitting into the mesosternum.

Mesosternum small, prominent, emarginate, or excavated; side pieces largely attaining the coxæ.

Metasternum short, broad; side pieces narrow; epimera not visible.

Elytra covering the abdomen; epipleuræ obsolete behind.

Abdomen with five ventral segments, the anterior three subconnate in some genera.

Anterior coxæ transverse, not prominent, with large trochantin; middle coxæ flat, transverse, oval, with large trochantin; posterior coxæ subcontiguous, extending to the margin of the body, transverse, dilated into a plate partly protecting the hind thighs.

Legs short, stout, retractile; tibiæ dilated, usually sulcate externally for the reception of the tarsi; tibial spurs distinct; tarsi short, 5-jointed, the third joint frequently prolonged into a membranous lobe beneath, last joint nearly as long as the others united; claws simple.

This family comprises three sub-families, as follows:—

Antennæ inserted at the side of the head;

Head prominent, mentum large.

Head retracted, mentum small.

Antennæ inserted on the front; head retracted.

NOSODENDRIDÆ.

BYRRHIDÆ.

CHELONARIIDÆ.

Sub-Family I.—NOSODENDRIDÆ.

But a single genus, *Nosodendron*, constitutes this sub-family. It is represented in Europe by one species, and in the Atlantic States by another, *N. unicolor* Say. It is sufficiently distinguished by the large, elongate, semi-elliptical mentum, entirely closing the mouth below, leaving only a very narrow portion of the maxillæ to fill the fissure on each side; the head is advanced; the antennæ 11-jointed, situated under the side of the head; the labrum is indistinct; the tarsi not lobed.

The insect is less than one-fourth of an inch long, oval, convex, black, densely punctured, and is found under bark of trees.

Sub-Family II.—BYRRHIDAE (genuini).

In this sub-family the head is retracted; the mentum small, quadrate; the base of the maxillæ largely exposed; the labrum distinct; the antennæ inserted under the sides of the head.

I would arrange these genera in three tribes:—

Epistoma short, coriaceous; antennæ 11-jointed.	AMPHICYRTINI.
Epistoma not distinct; antennæ clavate, 11-jointed.	BYRRHINI.
Epistoma corneous, separated by a fine suture; antennæ 10-jointed.	LIMNICHINI.

Tribe I.—AMPHICYRTINI.

These are distinguished by the front being finely margined, and broadly rounded anteriorly, leaving a short coriaceous epistoma, which serves as the base of the labrum. The labrum and mandibles are never concealed. The legs are scarcely contractile, and the antennæ are half the length of the body in *Amphicyrta*, a genus confined to the Pacific maritime slope. They are found under stones, and are very convex, ovate, smooth, black bronzed insects, very different in appearance from the other members of the family.

Antennæ nearly filiform; third tarsal joint lobed.	AMPHICYRTA.
Antennæ gradually but strongly clavate;	
Tarsi not retractile.	SIMPLICARIA.
Anterior tarsi retractile (third joint of tarsi usually lobed).	PEDILOPHORUS.

The tarsi of *Amphicyrta* are stated by Erichson to be not retractile; the posterior ones are in effect not retractile in *A. chrysomelina*, but very distinctly so in *A. dentipes*. Erichson has substituted the name *Morychus* for *Pedilophorus*, on the ground that the latter is not applicable to some of the species.

Simpliocaria tessellata Lec. is found at Lake Superior; all the other species of the tribe belong to the Pacific slope.

Tribe II.—BYRRHINI (genuini).

Oval or rounded, very convex, dull black or bronzed insects, covered with a fine, easily removed pubescence, forming varied patterns.

The head is strongly retracted, and the antennæ are always

clavate; the labrum is distinct, and fits closely to the front, leaving no epistoma.

The species are found under stones; on the Pacific coast none have occurred south of Oregon.

Mandibles concealed by prosternum in repose, labrum visible;

Anterior tarsi retractile.

CYTILUS.

All the tarsi retractile.

BYRRHUS.

Mandibles, eyes, and labrum concealed in repose.

SYNCALYPTA.

The species of the last genus have on the upper surface long, clavate, upright bristles.

II.—LIMNICHINI.

Very small species, found on the margin of watercourses, where they burrow in the ground, and emerge when the water is thrown on the banks. A transverse suture divides the front, but, owing to the dense punctuation, is frequently scarcely visible; the labrum is distinct; the antennæ, inserted at the sides of the front, are only 10-jointed, and the three outer joints form a club, almost solid in *Physemus*, feebly defined in *Limnichus*. The head is strongly retracted in both genera; the tarsi are free.

Eyes, labrum, and mandibles concealed in repose.

LIMNICHUS.

Eyes, labrum, and mandibles free; club of antennæ received in cavities at the anterior angles of the thorax, on the upper surface.

PHYSEMUS.

The second genus is represented by a very small species from the Colorado desert: the first by several species in the Atlantic States.

Sub-Family III.—CHELONARIIDÆ.

This sub-family is represented in our fauna by a single species of *Chelonarium* (*C. Lecontei* Dej. Cat.), as yet undescribed, and unknown to me. The tropical species are found on leaves of plants. They are elongate, oval, moderately convex insects, with the thorax strongly margined on the sides and front; the head retracted flatly upon the breast, leaving, however, the eyes, mandibles, and labrum visible; the antennæ are inserted upon the front, closely approximated, 11-jointed, filiform; epistoma not separate from the front. Legs very contractile; tarsi with the

third joint lobed; claws dilated at base. Epipleuræ very narrow, extending to the apex, grooved to fit the margin of the body.

It might perhaps be properly considered as a distinct family, but its affinities with the Byrrhidae are none the less evident; though it is a transition form to the Helodidae, below described.

FAM. XXVIII.—GEORYSSIDÆ.

Mentum quadrate, corneous, moderately large; ligula coriaceous, slightly bilobed.

Maxillæ with two unarmed lobes.

Antennæ inserted under the sides of the front, near the eyes, 9-jointed, the first and second joints thick, the last three forming an oval club.

Head deflexed; labrum distinct; mandibles small; eyes rounded, lenses large.

Prothorax with the side pieces not distinct; prosternum membranous, not visible between the coxæ; flanks excavated for the reception of the antennæ.

Mesosternum short and wide, perpendicularly declivous in front.

Metasternum moderately large, side pieces very narrow.

Elytra entire, descending widely on the flanks; epipleural fold narrow, extending to the apex.

Abdomen with five free ventral segments.

Anterior coxæ prominent, flattened at tip, forming two small, subquadrate, contiguous plates, with a deep fissure between them, in which is concealed the prosternum; middle coxæ oval, distant; posterior transverse, not contiguous.

Legs short, slender; tarsi filiform, 4-jointed, the first joint longer than the following two; claws simple, small.

This family consists of but one genus, *Georyssus*; of it several species are found in Europe and Asia, and one in Kansas, *G. pusillus* Lec.

They are small, rounded, convex, roughly sculptured, black insects, found at the margin of streams, on wet sand; they cover themselves with a mass of mud, so that no part of the insect is visible.

FAM. XXIX.—PARNIDÆ.

Mentum corneous, trapezoidal, or emarginate in front; ligula large, not lobed.

Maxillæ exposed at the base, with two unarmed lobes.

Antennæ variable in form and position.

Head usually retractile; labrum distinct; mandibles small; eyes rounded.

Prothorax with the side pieces not separate; coxal cavities widely open behind, completed by the mesosternum, variable in form; prosternum prolonged behind the coxæ.

Mesosternum sometimes excavated, sometimes emarginate; side pieces attaining the coxæ.

Metasternum with side pieces wide or narrow; epimera (except in *Psephenus*) not visible.

Elytra entire; epipleuræ narrow, sometimes extending to the apex.

Abdomen with five, in *Psephenus* with seven ventral segments, the anterior ones connate.

Anterior coxæ transverse, with large trochantin, or rounded, without trochantin; middle coxæ oval, not contiguous; posterior coxæ transverse, dilated into a plate partly protecting the thighs, and contiguous in the first and second sub-families; distant and not forming a plate in *Elmidæ*.

Legs slender, usually long; tibiæ without distinct terminal spurs; tarsi 5-jointed, joints 1—4 short, equal, fifth longer than the others conjoined, large, with large simple claws.

A family containing three very distinct sub-families, and showing very diverse affinities not only with the preceding and following families, but also, by the form of the antennæ of various members, with the *Gyrinidæ*, and with some families of the *Serricorn* series, especially the *Helodidæ* and *Dascyllidæ*; a more distant relationship with the *Donacia* tribe of the *Chrysomelidæ*, by the form of the tarsi of *Hæmonia*, has also been pointed out by *Lacordaire*.

Abdomen with seven ventral segments; anterior coxæ with very large trochantin.

PSEPHENIDÆ.

Abdomen with five ventral segments;

Anterior coxæ transverse, with distinct trochantin.

PARNIDÆ.

Anterior coxæ rounded, without trochantin.

ELMIDÆ.

Sub-Family I.—PSEPHENIDAE.

The only member of this sub-family known is *Psephenus Lecontei* Hald., a flattened, blackish, finely pubescent insect, with testaceous legs, found in the Middle States, on bushes overhanging streams. It differs remarkably from the other members of the family; but the other two sub-families are also distinguished by so many characters, that I prefer regarding this also as a sub-family, to placing it as distinct.

The head is free, not retractile; the mouth inferior; the maxillary palpi very long, gradually dilated, the last joint securiform; the anterior part of the front is very prominent, and the upper face concave; the antennæ are inserted at the sides of the front, distant, longer than the head and thorax, serrate; the eyes are large, convex, finely granulated. The anterior coxæ are large and globular, the coxal cavities prolonged externally, showing a very large trochantin; the prosternum is carinate, and its posterior process is long and narrow; the mesosternum oblique, channelled; the side pieces of the metasternum are wide, and the epimera visible; the posterior coxæ dilated into a plate; the epipleuræ are narrow, and continue to the apex; the abdomen has seven ventral segments, the first and second connate, the fifth broadly emarginate, the sixth deeply bilobed, only visible around the emargination of the fifth, seventh rounded, entire, filling the emargination of the sixth. The body is clothed with the same fine pubescence that characterizes the other sub-families, enabling a film of air to be preserved beneath the water.

The larva is an elliptical object, with the margins widely extended beyond the body, and is seen on stones under the water of rapid streams; it is especially abundant in the rapids of Niagara, and differs in no important particular from the larva of *Helichus*, of the next sub-family. It respire by branchial filaments.

Sub-Family II.—PARNIDAE (genuini).

The anterior coxæ are transverse, with a distinct trochantin; the posterior coxæ dilated into a plate; the abdomen has five ventral segments, the fifth rounded at the tip; the front is not prominent, as in *Psephenidae*, and the oral organs are anterior;

the palpi are short. The other characters are still variable, and will furnish occasion for the division into tribes.

Head not entirely retractile; prosternum not lobed in front; antennæ serrate, with the first and second joints not enlarged. LARINI.

Head retractile, protected by a prosternal lobe; antennæ short, first and second joints enlarged. PARNINI.

Tribe I.—LARINI.

The only representative known to me is *Lara avara* Lec., from California, an elongate, blackish insect, finely pubescent, with the elytra punctured in rows, impressed behind the base, and the thorax strongly narrowed in front, somewhat uneven; the antennæ are distant from each other, and what remains of them indicates them to be serrate, and not irregular or short; the elytral suture is distinct; the head is not protected beneath by a lobe of the prosternum; the anterior coxæ are somewhat prominent, the trochantin large, free, and very distinct; the prosternal process is narrow; the mesosternum is prominent, deeply excavated; the middle coxæ are widely separated, and have distinct trochantin; the side pieces of the metathorax are narrow, the epimera slightly visible behind; the epipleuræ are narrow, and continue to the apex.

Tribe II.—PARNINI.

The head is capable of being retracted, and is then protected beneath by the prosternum, which is lobed in front; the antennæ are inserted on the front, distant and free at the margin of the eyes in *Lutrochus*, approximate and at the inner extremity of transverse grooves, and remote from the eyes, in the other two genera; they are short, 11-jointed, and more or less irregular in form. The anterior coxæ are not prominent, the trochantin small, connate with sternum; the prosternal process is wide; the mesosternum broad, emarginate, the middle coxæ with trochantin; the side pieces of the metathorax wide, with the epimera not visible, except in *Lutrochus*, where they are narrow, with small epimera. The epipleuræ are narrow, and variable in form; they are suddenly lobed in front, and extend to the apex in *Lutrochus*; they are not suddenly lobed, but extend to the apex, in *Pelonomus*; while in *Helichus* they are not lobed, and extend much less distinctly to the apex.

Body rounded; antennæ distant, club slender.

LUTROCHUS.

Body oblong, elongate;

Antennæ approximate, second joint moderate, club pectinate.

PELONOMUS.

Antennæ distant, second joint much dilated, club lamellate.

HELICUS.

Lutrochus luteus is found in Texas; *Pelonomus obscurus* in the Southern and Western States; *Helichus* is widely distributed, and is found clinging to stones under water, in rapid streams; the other two genera are found at the margin of streams, under stones, &c.

Sub-Family III.—ELMIDAE.

The anterior coxæ are rounded, without trochantin; the abdomen has five ventral segments, the fifth rounded at tip; the front is not prominent; the palpi are short; the antennæ inserted upon the front, near the eyes, slender, slightly thickened externally; middle coxæ widely distant; posterior coxæ separated, transverse, not dilated into a plate protecting the thighs; legs exceedingly long; side pieces of the metathorax narrow, epimera not visible; epipleuræ narrow, extending to the apex.

These insects are only found adhering to stones or plants beneath the surface of the water; the larvæ are similar in form to those of the other sub-families, except that the segments are not united to the margin, which thus appears incised.

Head protected beneath by a lobe of the prosternum;

Antennæ 11-jointed;

Anterior tibiæ pubescent internally.

LIMNIUS.

Anterior tibiæ glabrous internally.

STENELMIS.

Antennæ 6-jointed.

MACRONYCHUS.

Head free; prosternum not lobed beneath; antennæ 11-jointed.

ANCYRONYX.

No species of this sub-family has occurred in our fauna, except in the Atlantic district.

FAM. XXX.—HETERO CERIDAE.

Mentum large, oblong, deeply emarginate in front; ligula coriaceous, prominent, bilobed, without paraglossæ; palpi 3-jointed, moderately long.

Maxillæ exposed at the base, which is elongated; lobes two, coriaceous, not armed, but sparsely ciliate; palpi 4-jointed, short.

Antennæ inserted at the internal margin of the eyes, but in front, short, 11-jointed, joints 5—11 forming an oblong serrate club.

Head large; eyes rounded, finely granulated; front prominent; labrum large, rounded, ciliate over its whole surface; mandibles stout, prominent, fringed internally with a ciliate membrane, and furnished externally with a strong earina.

Prothorax transverse, with rounded angles, side pieces not separate; prosternum lobed in front, acute behind; anterior coxal cavities widely open behind.

Mesosternum very short, deeply emarginate; side pieces small, diagonally divided.

Metasternum moderate, meeting the first ventral segment; side pieces wide.

Elytra entirely covering the abdomen.

Abdomen composed of five nearly equal ventral segments, the fifth only being movable, the others connate; the first marked each side with an elevated curved line reaching the posterior margin.*

Coxæ, anterior oval, transverse, with a distinct trochantin; middle ones rounded, angulated externally, separated by the anterior part of the metasternum; hind ones transverse, nearly contiguous.

Legs stout; tibiæ dilated, armed with rows of spines, and fitted for digging; tarsi 4-jointed, second and third joints shorter than the others, not lobed beneath, but fringed with long hairs; claws simple.

This family consists of but a single genus, *Heterocerus*; it is represented in every portion of our territory. The species are numerous, but are very similar in form and color, so that care is necessary in distinguishing them. They are oblong or sub-elongate, oval, densely clothed with short silky pubescence, very finely punctuate, and of a brown color, with the elytra usually variegated with undulated bands or spots of a yellow color. They live in galleries which they excavate in sand or mud at the margin of bodies of water, and, when disturbed, run from their galleries and take flight, after the manner of certain species of *Bembidium*.

* This elevated line is finely striate transversely, and is a stridulating organ; the hind legs, by friction against it, produce a quite distinct sound.

FAM. XXXI.—LUCANIDÆ.

Mentum large, corneous, quadrate, rarely (*Passalus*) deeply emarginate; ligula usually placed behind the mentum.

Maxillæ usually covered, with two lobes, the inner one usually, the outer one sometimes, with a fixed corneous terminal hook.

Mandibles frequently very large.

Labrum frequently connate with the epistoma; clypeal suture wanting.

Antennæ inserted under the margin of the front, before the eyes, usually geniculate, 10-jointed; the first joint very long in the first tribe, moderate in the second; the outer ones prolonged internally, forming a pectinate club, the joints of which cannot be brought closely together.

Prothorax with the side pieces not separate; coxal cavities separated by the prosternum, transverse, closed behind.

Mesosternum short, separating the coxæ; side pieces large, diagonally divided; epimera attaining the coxæ.

Metasternum large, closely connate with the mesosternum in front, receiving the apex of the first ventral segment in a minute emargination behind; side pieces narrow; epimera nearly concealed by the elytra.

Elytra rounded at tip, covering the abdomen.

Abdomen with five free ventral segments; the sixth (internal) slightly prominent in *Platycerus*; spiracles situated in the membrane between ventral and dorsal segments, but different in position in the two tribes; in *Lucanini* they are at the bottom of the lateral concavity of the dorsal surface of the abdomen; in *Passalini* they are situated on the crest of the margin.

Legs fossorial; anterior coxæ large, transverse, not prominent, without trochantins; middle coxæ usually transverse, sometimes nearly rounded; posterior coxæ transverse, flat; trochanters not prominent internally; anterior tibiæ more or less toothed externally, frequently palmate, with one terminal spur; middle and posterior tibiæ with two external teeth, terminal dilatation, and two spurs; tarsi slender, 5-jointed, last joint long; claws simple, with a short intermediate onychium bearing two bristles.

The insects of this family live on the juices of decomposing wood, and are very closely allied to the *Scarabæidæ*; the prin-

cipal distinguishing character is that the outer joints of the antennæ, though somewhat lamellate, cannot be placed closely so as to form a compact club. In the position of the abdominal spiracles the tribe Lucanini resembles the first sub-family of the Scarabæidæ, in which alone occur tribes with the pygidium entirely covered by the elytra, as in the present family. In fact, for a distinguishing character from some of the tribes, reliance must be had on the large size of the mentum, and the form of the antennal club.

They form two tribes, distinguished by the form of the mentum and position of the ligula. Those portions of the body in the second tribe recall strikingly the form already seen in the Carabidæ, with which, however, the insects have no other resemblance.

Mentum entire, ligula behind or at the apex of the mentum. LUCANINI.

Mentum deeply emarginate, ligula filling the emargination. PASSALINI.

Tribe I.—LUCANINI.

Ligula membranous or coriaceous, usually behind the mentum, which is entire; mandibles without a basal molar tooth, usually elongated in the males; external lobe of the maxillæ unarmed, penicillate; labrum connate in the first sub-tribe, free in the other two; scutellum between the elytra; middle coxæ somewhat transverse.

The species are usually large oblong insects, glabrous above, sometimes cylindrical.

Sub-tribes, all having the thorax not closely applied to the elytra, are represented in our fauna as follows:—

Ligula and maxillæ covered by the mentum;

Anterior coxæ approximate; antennæ geniculate.

LUCANINI.

Anterior coxæ contiguous; antennæ straight.

CERUCHINI.

Ligula and maxillæ not covered; antennæ straight.

SINODENDRINI.

Sub-Tribe 1.—Lucanini (genuini).

The typical genus is represented by three large species from the Atlantic States, one of which (*L. elaphus*), by the very long mandibles of the male, resembles the stag-beetle of Europe, and one from New Mexico. Of *Dorcus* two species are found in the Atlantic States; of *Platycerus* we have two eastern species, and two from California and Oregon. The genera are thus distinguished:—

Eyes strongly emarginated by the margin of the head ;

Labrum subtriangular, rounded in front.

Labrum very short, broad, truncate, or emarginate.

Eyes almost entire ; sixth ventral segment visible.

LUCANUS.

DORCUS.

PLATYCERUS.

Sub-Tribe 2.—**Ceruchini.**

One genus is represented in our fauna, *Ceruchus*, of cylindrical form, with the head and mandibles of the male enlarged. There are two species, *C. piceus* from the Atlantic, *C. striatus* from Oregon.

Sub-Tribe 3.—**Sinodendrini.**

This sub-tribe consists of but a single genus, *Sinodendron*, of cylindrical form ; the male has the head armed with a long horn, and the anterior part of the thorax suddenly declivous ; the mandibles are short in both sexes ; the eyes are not emarginate ; the maxillæ and ligula are not concealed by the mentum.

S. rugosum Mannh. inhabits California and Oregon. A species, *S. americanum*, is described by Beauvois, from Atlantic America, but is unknown to me.

Tribe II.—**PASSALINI.**

Ligula large, corneous, filling a quadrate emargination of the mentum ; antennæ straight, first joint of moderate length ; mandibles with a basal molar tooth, and an anterior movable one ; maxillæ with both lobes hooked ; labrum movable ; scutellum in front of the base of the elytra ; middle coxæ nearly globular.

This tribe contains but a single genus, of which many species exist in the warmer parts of the earth ; it is represented in our fauna by but one, *Passalus cornutus*, an elongate, somewhat flattened, shining beetle, of large size, having the head armed with a short bent hook, and the elytra deeply striate. It is quite frequently seen in old stumps of trees.

FAM. XXXII.—SCARABÆIDÆ

Parts of the mouth variable in form.

Antennæ inserted under the sides of the front, before the eyes, 7- to 11-jointed, usually 10-jointed, the external joints, usually three in number (sometimes as many as seven), pro-

longed internally, forming a club of lamellæ, which may be brought close together; first joint always elongated, second thicker than the following.

Prothorax with the side pieces not separate; anterior coxal cavities transverse, very large, closed behind.

Mesosternum short, frequently very narrow; side pieces attaining the coxæ, except in Trogini.

Metasternum large; side pieces variable in form.

Abdomen with six, rarely five, ventral segments.

Legs fossorial; anterior coxæ large, transverse, sometimes subconical and prominent, sometimes not prominent; middle coxæ large, transverse, not prominent; posterior coxæ flat, transverse; anterior tibiæ palmate, toothed, with a single terminal spur; middle and posterior tibiæ variable in form, with two spurs, except in Coprini, where there is but a single one; tarsi 5-jointed, the anterior ones sometimes wanting; claws generally equal, rarely wanting, usually with an intermediate bisetose onychium.

A very large and distinctly limited family of insects, the members of which exhibit great variations in the form and arrangement of the various organs of the body, while preserving a characteristic appearance, and, conjoined with it, the lamellate antennal club and the fossorial legs.

For reasons mentioned in the prefatory remarks to my synopsis of the Melolonthidæ of the United States,* I prefer dividing the family into three sub-families, according to the position of the abdominal spiracles. Erichson and Lacordaire establish but two sub-families, while Burmeister arranges the genera in a totally different manner.

- I. Abdominal spiracles situated in the membrane connecting the dorsal and ventral corneous plates, the last one covered by the elytra. Ligula always separate from the mentum; (larvæ with the lobes of the maxillæ separate). LEPAROSTICTI.
- II. Abdominal spiracles in part situated on the superior portions of the ventral segments, the last one usually visible behind the elytra; the rows of spiracles feebly diverging. Ligula sometimes free, usually connate with the mentum. MELOLONTHIDÆ.
- III. Abdominal spiracles (except the anterior ones) situated in the dorsal portion of the ventral segments, forming rows which diverge strongly; last spiracle usually visible behind the elytra. Ligula always connate with the mentum; (larvæ with the lobes of the maxillæ connate). PLEUROSTICTI.

* Journ. Acad. Nat. Sci., 2d ser., iii. 225.

Sub-Family I.—SCARABÆIDAE LAPAROSTICTI.

Besides the characters given by the position of the abdominal spiracles in the membrane connecting the ventral and dorsal segments, and the ligula separate from the mentum, these insects, or at least a portion of them, exhibit characters not found in the other families.

In many of them the upper surface of the head is much dilated on the front and sides (but never reflexed, as in most Melolonthidæ); the clypeal suture is distinct, and ascends towards the vertex, forming an angle; the mandibles are usually thin plates, frequently membranous, small, and invisible, except on dissection; sometimes, however (*Geotrupes*, &c.), they are well developed. In some of the genera the antennæ are 11-jointed. The club of the antennæ consists of but three joints, except in *Pleocomma*, and in some the first joint of the club is hollowed out so as to receive the second or even the last joint. The tarsi are armed with simple claws in all of our genera, except *Phanaeus*, where the claws are wanting; in some genera of *Copriini* the anterior tarsi are wanting. The usual bisetose onychium is wanting in *Acanthocerini*, *Trogini*, *Aphodiini*, and some *Copriini*.

The arrangement of this sub-family is adopted nearly as in Lacordaire's work, with the exception of the removal of the tribe *Glaphyrini* to the next sub-family, and the establishment of two new tribes.

The species all live on decomposing animal matter, and most of them in excrements.

The tribes are as follows:—

Abdomen with six visible ventral segments;	
Antennæ 9- or 10-jointed (club always 3-jointed);	
Posterior tibiæ with a single spur.	COPRIINI.
Posterior tibiæ with two spurs;	
Side pieces of metathorax simple;	
Antennæ 9-jointed.	APHODIINI.
Antennæ 10-jointed.	ORPHINI.
Epimera of metathorax visible.	HYBOSORINI.
Antennæ 11-jointed;	
Club 3-jointed, mandibles and labrum prominent.	GEOTRUPINI.
Club many-leaved, mandibles and labrum small.	PLECOMINI.
Abdomen with five visible ventral segments;	
Epimera of mesothorax attaining the oblique coxæ;	

Body contractile, legs broad.	ACANTHOCERINI.
Body not contractile, legs normal.	NICAGINI.
Epimera of mesothorax not attaining the rounded coxæ.	TROGINI.

Tribe I.—**COPRINI.**

These insects are of rounded form, and live almost exclusively in excrements. The clypeus is expanded so as to cover entirely the oral organs; the lobes of the maxillæ are large, ciliated, and of a membranous or coriaceous structure; mandibles lamelliform, principally membranous, with only the outer margin corneous; the mentum is emarginate; antennæ 8- or 9-jointed, club 3-jointed; epimera of metathorax covered; mesosternum very short; middle coxæ oblique, widely separated; posterior tibiæ with a single terminal spur; tarsi usually without the bisetose onychium; elytra subtruncate, leaving the pygidium exposed; ventral segments six, all connate.

It is in this tribe alone that species occur in which the anterior tarsi are wanting in the females, or in both sexes; the claws of the tarsi are also sometimes wanting. Organs of stridulation are found on the dorsal surface of the abdomen of certain species.

According to the form of the posterior tibiæ, two sub-tribes are indicated:—

Middle and posterior tibiæ slender, scarcely enlarged.	ATEUCHINI.
Middle and posterior tibiæ dilated at the extremity.	COPRINI.

Sub-Tribe 1.—**Ateuchini.**

These species deposit their eggs in balls which they construct of the materials on which they live, and roll these balls to a considerable distance, a labor for which their long, slender, and slightly curved posterior tibiæ fit them. The head and thorax never bear horns, and the sexes are alike in appearance, except in *Deltachilum gibbosum*, where the elytra of the male are each armed with a large dorsal tubercle. The anterior coxæ are slightly prominent internally. The onychium between the claws is wanting.

Our genera are but two in number, and each represents a separate group of this sub-tribe; the groups of genuine Ateuchi and Minthophilii not occurring in our fauna.

Epipleure of the elytra narrow, or wanting; anterior tarsi distinct.
Group I. GYMNOPLEURI.

- Epipleuræ distinct, narrow; scutellum none. CANTHOS.
 Epipleuræ of the elytra wide; anterior tarsi wanting.
Group II. DELTOCHILA.
 Anterior tibiæ not prolonged at the extremity. DELTOCHILUM.

Sub-Tribe 2.—**Coprini** (genuini).

The gradually thickened middle and hind tibiæ unfit these insects for transporting the balls of material which serve for the food of the larvæ; though some of the species do construct balls, they bury them in the place where they are formed. The sexual differences are frequently strongly marked, the male having horns on the head or thorax. The epipleuræ are always narrow, and the first joint of the tarsi is elongated. The anterior tarsi are wanting in some species of *Phanæus*, and the claws are all wanting in the same genus.

The following groups are represented in our fauna:—

- Third joint of labial palpi distinct;
 Anterior coxæ very transverse, not prominent. SCATONOMI.
 Anterior coxæ short, prominent;
 Labial palpi dilated. COPRES.
 Labial palpi subfiliform. ONITES.
 Third joint of labial palpi obsolete. ONTHOPHAGI.

Group I.—**Scatonomi**.

Our only representative of this group is *Chœridium capistratum*, a moderately small, convex, shining, bronzed black insect, resembling a Histeride, with finely striate elytra, found in dung. The 3-jointed labial palpi, and the transverse, not prominent, anterior coxæ, readily distinguish it from the other groups. The claws are small, without onychium, but the tip of the last joint of the tarsi is prolonged beneath into an obtuse process one-half as long as the claws.

Group II.—**Copres**.

The labial palpi are 3-jointed, broad, and compressed; the anterior coxæ are conical, large, and prominent. The last joint of the tarsi has no onychium, and in one genus the claws are wanting; in *Copris* the claws are small, and the inferior portion of the joint is prolonged into a process as long as the claws. The anterior tarsi are wanting in certain foreign *Phanæus*; and in one genus, *Deudropæmon*, from Brazil, the tarsi have only two joints.

Our genera are but two; neither is represented on the Pacific coast.

First joint of antennal club not receiving the others; metasternum rectangular; claws distinct. COPRIS.

First joint of antennal club hollowed, receiving the others; metasternum rhomboidal; claws wanting. PHANEUS.

In both of these genera sexual characters are usually obvious in tubercles and horns on the head and thorax. The species of *Phaneus* are brilliantly colored, and *P. carnifex*, with its rough copper-colored thorax and green elytra, is familiar to every collector.

Group III.—**Onites.**

Onitis Nicanor Fabr., a very rare insect of the Southern States, alone represents this group in our fauna.

The anterior coxæ are large, conical, and prominent; the labial palpi are 3-jointed, and nearly filiform; the claws are distinct, the onychium small, and the inferior part of the last joint of the tarsi is not prolonged.

The genus *Onitis* is distinguished by the scutellum being small, but distinct; it resembles in form a large *Onthophagus*.

Group IV.—**Onthophagi.**

Several small species of *Onthophagus* from the Atlantic slope represent this group.

The anterior coxæ are large, conical, and protuberant; the labial palpi are but 2-jointed, the third joint being obsolete; the tarsal claws are distinct, and the onychium is long, with the two usual setæ.

In some of the species the head or thorax of the males is armed with horns.

The genus is known by the antennæ having but nine joints, and by the scutellum not being visible.

Tribe II.—**APHODINI.**

Species of small size, and oblong, convex, or cylindrical form, living chiefly in excrements. The clypeus, as in *Coprini*, is dilated so as to cover the oral organs, but in one genus, *Ægialia*, they are visible beyond the apex of the clypeus; the maxillæ and mandibles are variable in form; antennæ 9-jointed, club 3-jointed; epimera

of metathorax covered; middle coxæ oblique, contiguous in our genera; posterior tibiæ with two spurs; elytra covering the pygidium entirely or in part; ventral segments six, all free; tarsi with distinct claws and small bisetose onychium.

The sexual differences are usually none; in a few species the head, and more rarely the thorax, of the male are marked with one or more small tubercles. Our genera are as follows:—

Mandibles and labrum concealed;

Lobes of the maxillæ membranous or coriaceous, unarmed;

Upper part of the eyes visible in repose.

APHODIUS.

Upper part of the eyes invisible in repose;

Posterior tibiæ prolonged externally into a spine.

EUPARIA.

External lobe of the maxillæ corneous, hooked.

PSAMMODIUS.

Mandibles and labrum visible beyond the clypeus.

ÆGIALIA.

Euparia embraces many species, of which *Eu. castanea* inhabits ants' nests in the Southern States. *Psammodius* is recognized by the transverse grooves of the thorax, and *Ægialia* by the thick convex body; the species of the last-named genus are found near the ocean or large lakes.

Several species of *Aphodius* have been introduced from Europe, but are now entirely naturalized, especially in the northern parts of the country; e. g. *A. fossor*, *fmelurius*.

Tribe III.—ORPHINI.

Oval, convex species, of brown color, covered above with short erect hair; the elytra are striate; the mandibles and labrum are corneous, not covered by the clypeus, which is not dilated as in the two preceding tribes; antennæ 10-jointed, club 3-jointed, somewhat rounded; anterior coxæ prominent; middle coxæ oblique, contiguous; epimera of the metathorax covered; ventral segments six, not connate; tarsi with a small setigerous onychium.

The species in our fauna are three, belonging to *Ochodæus*. They are found from the Mississippi westward to Arizona, and are very rare. *Ochodæus* is distinguished from the other genera of the tribe by the eyes being not emarginate. The habits are unknown.

Tribe IV.—HYBOSORINI.

A single species of *Hybosorus* found in the Southern States, identical with the European *H. arator*, and probably imported,

alone represents this tribe in our fauna. It is an oval, convex, shining black insect, about a quarter of an inch long, with fine rows of punctures on the elytra.

The mandibles and labrum are corneous, prominent; antennæ 10-jointed, the club 3-jointed, the first joint hollowed and receiving the second; anterior coxæ conical, prominent; middle coxæ oblique, contiguous; epimera of the metathorax visible; ventral segments six, all but the last connate. Tarsi with a short bisetose onychium.

Tribe V.—**GEOTRUPINI.**

Insects of rounded convex form, some living in excrements, others found wandering about without visible means of support; the elytra strongly striate in nearly all; the thorax of the males, and more rarely the head, armed with horns or tubercles.

The mandibles and labrum corneous, prominent; antennæ 11-jointed, club 3-jointed, variable in form; anterior coxæ prominent; middle coxæ more or less oblique, usually contiguous, but separated in *Athyreus*; epimera of the metathorax visible; ventral segments six, free; the elytra covering the pygidium; tarsi with a bisetose onychium.

With the exception of one species of *Odontæus* from California, our species are all found east of the Rocky Mountains.

Club of antennæ large, lenticular;	
Middle coxæ separated.	<i>ATHYREUS.</i>
Middle coxæ contiguous;	
Eyes partially divided.	<i>BOLBOCERUS.</i>
Eyes entirely divided.	<i>ODONTÆUS.</i>
Club of antennæ lamellate.	<i>GEOTRUPES.</i>

Tribe VI.—**PLEOCOMINI.**

This tribe contains but a single Californian species, *Pleocoma fimbriata* Lec., of moderately large size, black, rounded, not very convex, with the body, parts of the mouth, and legs clothed with very long hair. The elytra are irregularly punctured, and the head is armed with a perpendicular horn between the eyes, and the front is prolonged and bifurcated; above the insertion of the antennæ is an acute lobe. The antennæ have eleven joints, of which the last five or six form a large lamellated mass; the labrum is elongated, rounded at the apex, and deflexed. The mandibles

are pyramidal and short; the inner lobe of the maxillæ is very small, and hooked at the tip; the outer one is larger, but still small, rounded at tip, and hairy; the maxillary palpi are long and slender, the second joint equal to the third and fourth, the third being only half as long as the fourth. The mentum is nearly semicircular; the ligula is entirely concealed by the base of the labial palpi, which are moderate in length, the third joint being as long as the first and second together. The anterior coxæ are large, conical, prominent; the middle ones contiguous, prominent, conical, oblique; the elytra cover the pygidium almost entirely. The anterior tibiæ are 3-toothed, and have two small teeth above the upper tooth; the middle and hind tibiæ are expanded at tip, and have two acute teeth placed transversely about the middle on the external surface. The tarsi are longer than the tibiæ, and slender, the joints 1—4 equal, the fifth longer than the two preceding; the claws slender, with a narrow bisetose onychium. Ventral segments free, the sixth retracted within the fifth.

Of the habits of this remarkable insect nothing is known.

Tribe VII.—ACANTHOCERINI.

Mandibles and labrum corneous, prominent; antennæ 9- or 10-jointed, club 3-jointed; anterior coxæ conical, prominent; middle coxæ transverse, contiguous; epimera of the mesothorax attaining the coxæ; epimera of the metathorax covered; ventral segments five, not connate; body contractile into a ball; pygidium entirely covered by the elytra; tarsi with slender claws and no onychium.

Oval, convex, smooth, shining insects, living under bark and in rotten wood. They have been considered by Lacordaire and previous authors as forming a sub-tribe of Trogini; but the difference in the side pieces of the mesothorax, which extend to the coxæ, as in all other Scarabæidæ, requires them to be separated. Other differences are found in the large size of the scutellum, and the tarsi fringed with long hairs.

Our genera are two, both having 10-jointed antennæ:—

Body partially contractile; middle and posterior tibiæ thick.

ACANTHOCERUS.

Body perfectly contractile; middle and posterior tibiæ compressed.

SPHÆROMORPHUS.

Two species of the first genus, and one of the second, from the Atlantic States.

Tribe VIII.—**NICAGINI.**

Nicagus obscurus (*Ochodæus obscurus* Lec.) is the only member of this tribe known to me. It is an oval, convex insect, more than a quarter of an inch long, brown, densely punctured, and covered with very short pale hair. It resembles in appearance some of the Sericæ, or a nearly smooth Trox. It is found throughout the Atlantic district.

The head is rounded, moderately convex, the front finely margined; the labrum is broadly rounded, hairy; the mandibles short, pyramidal, not very prominent; the mentum is thick, triangular, hairy, pointed in front; the palpi short, the last joint oval. The antennæ are 10-jointed, the club 3-jointed, longer in the male than in the female. The anterior coxæ are large, conical, prominent; the middle ones nearly contiguous, oblique; the epimera of the mesothorax attain the coxæ. The elytra cover the pygidium. The abdomen has five free ventral segments. The legs are normal in form; the anterior tibiæ are 4-toothed, the middle and hind ones gradually thickened towards the tip in the female, but slender in the male, with one small sharp tooth and some small denticles on the outer face; the spurs of the hind tibiæ are acute in the male, obtuse in the female; the tarsi are long and slender in the male, but shorter and stouter in the female; the onychium is narrow, and bears two long bristles, as in Lucanidæ.

I have been very much at a loss where to place this curious insect. The joints of the club of the antennæ do not appear to be capable of being brought into absolute contact, as in other Scarabæidæ, and the club therefore appears pectinate. I was, therefore, inclined to consider it as allied to the European *Æsalus*, among the Lucanidæ, which genus it resembles somewhat in form; but the small size of the oral organs, and the triangular mentum, have induced me rather to place it as a tribe of the Laparostict Scarabæidæ, and the position here given it well corresponds both with its external form and Melolonthine sexual characters. Of its habits I know nothing.

Tribe IX.—**TROGINI.**

Mandibles and labrum corneous, prominent; antennæ 9- or 10-jointed, club 3-jointed; anterior coxæ rounded, subconical, prominent; middle coxæ nearly round, not oblique, contiguous; epimera of the metathorax covered; epimera of the mesothorax widely separated from the coxæ by the sternum; ventral segments five, not connate; abdomen covered by the elytra; tarsi with moderate claws, but no onychium.

The insects of this tribe are oblong, convex species, living in dried decomposing animal matter. The feet are scarcely fossorial in form; the surface is usually rough, and covered with a crust of dirt, removed with great difficulty. Our species are numerous, and belong to the genus *Trox*. The larger species, having the sides of the thorax not ciliate with hairs, were placed by Erichson as a separate genus, *Omorgus*; but the characters, as observed by Lacordaire, are indefinite, and it is not retained.*

The genus *Trox* possesses a distinct stridulating organ; it is an elliptical plate, with pearly reflections, occupying the upper part of the external face of the ascending portion of the first ventral segment, and is covered by the elytra; on the inner surface of the elytra, near the margin, about opposite the metathorax, is an oval, smooth, polished space, which has probably some connection with the stridulating organ.

Sub-Family II.—**MELOLONTHIDÆ.**

This sub-family holds an intermediate position between the laparosticti and pleurosticti. The second pair of abdominal spiracles is placed in the membrane connecting the ventral and dorsal segments, as in other Scarabæidæ; in most species the third, and sometimes the fourth, at the outer limit of this membrane; the fifth and sixth pairs are in the dorsal portion of the ventral segments, but the lines connecting them do not diverge strongly, as in the pleurosticti; the seventh or last pair is usually visible behind the elytra, but variable in position; in other species, forming the first two tribes, however, the spiracles are placed as in the laparosticti, all being in the connecting membrane.

* For a synopsis of our species, see Proc. Acad. Nat. Sci., VII, 211.

The clypeus is usually prolonged and margined in front, so that the mouth is inferior, but in Glaphyrini the mandibles and labrum are prominent; the mandibles are corneous, short, pyramidal; the mentum large, quadrate, with the ligula usually corneous and connate with the mentum, though sometimes free and membranous, as in the laparosticti; the elypeal suture is usually distinct, transverse; the antennæ have from seven to ten joints, and the club is always lamellate, sometimes consisting of six or five, but usually of three joints, and is frequently longer in the males; the tarsi are always perfect, 5-jointed, with the claws variable in form, and the bisetose onychium is present in all the tribes except Hoplini.

The species feed exclusively on living vegetable matter, and it will be seen that the distinctions between it and the other sub-families are of a negative character; the posterior spiracles do not diverge strongly, as in the pleurosticti; the middle coxæ are not oblique, as in the laparosticti (except Trogini), nor rounded and separated from the side pieces, as in that tribe. There is also a considerable difference in the adaptation of the last abdominal segments. In Melonthidæ the fifth ventral is very frequently connate with the penultimate dorsal, and the sixth segment, usually visible, is rendered so merely by its size and firm consistence causing it to be pushed out into view. Even when the fifth ventral is not connate with the dorsal segment, they form together a regular ring.

In the preceding sub-family the sixth ventral segment is normally visible, although sometimes of small size and retracted; in this case the pygidium or last dorsal segment is covered by the elytra, and in a manner lies upon the fifth ventral. The fifth ventral is never connate with the penultimate dorsal, and does not form with it a regular ring.

In the first tribe of Melonthidæ (Glaphyrini) the sixth ventral is quite visible, and the fifth is not connate with the penultimate dorsal, but still they are adapted together so as to form a regular ring, to which is articulated the protuberance formed by the pygidium and sixth ventral, in the same position as in Melolonthidæ of other tribes in which the sixth ventral segment is external.

According to the position of the abdominal spiracles, the tribes of this sub-family divide into two sets.

A. LAPAROSTICT MELOLONTHIDÆ.

Two tribes form in this division, and only differ from the tribes of the preceding sub-family by individual peculiarities of moment, though by no general character.

Mandibles and labrum prominent; ventral segments six, free.

GLAPHYRINI.

Mandibles and labrum beneath the clypeus; ventral segments connate.

ONCERINI.

Tribe I.—GLAPHYRINI.

Oblong, not convex insects, frequenting flowers, and remarkable for the long hairs of the legs and under surface; the head and thorax are also usually densely covered with long hair. The elytra are flat, frequently dehiscent, and do not cover the pygidium; the abdominal spiracles are all situated in the connecting membrane; the fifth ventral joins the propygidium, to form a ring, but is not connate with it, as in the genuine Melolonthidæ; the sixth ventral is somewhat triangular, and unites with the pygidium to form a freely moving conical mass. The epimera of the mesothorax are very large; the metasternum is short; the side pieces broad, with the epimera large; the anterior coxæ are large, prominent; the middle ones transverse, contiguous; claws long, diverging. Antennæ with 3-jointed club.

The legs and tarsi of these insects are formed as in other Melolonthidæ, and the claws of *Lichnanthe* are slightly toothed at base.

Lichnanthe is found in the Atlantic States, *Dasydera* in California; both have 10-jointed antennæ.

Maxillary palpi with the last joint oval, deeply excavated; labrum slightly emarginate; claws scarcely toothed, broader at base. DASYDERA.

Maxillary palpi with the last joint cylindrical; labrum deeply emarginate; claws with a broad basal tooth. LICHNANTHE.

Tribe II.—ONCERINI.

This tribe corresponds with the group *Lasiopodes* of my synopsis of Melolonthidæ.* Its characters are very distinct, as follows:—

* Journ. Acad. Nat. Sci., 2d ser., III, 282.

Anterior coxæ large, prominent, conical; mandibles and labrum beneath the reflexed clypeus; antennæ 9-jointed, short; club small, 3-jointed; abdomen very small, with the ventral sutures entirely effaced, last segment free, conical; pygidium slightly prominent; elytra rounded at tip; epimera of mesothorax small, extending to the coxæ; side pieces of metathorax narrow, epimera covered; legs stout, posterior thighs large; tibiæ thick, conical; tarsi very long; claws diverging, slender, with a small bisetose onychium; anterior tibiæ without spurs, posterior tibiæ with two spurs.

Clypeus concave, rounded; mentum linear; claws simple. LASIOPCS.
Clypeus flattened, parallel, incised each side, and marked with a transverse suture; mentum trapezoidal; claws divided. ONCERUS.

Lasiopus is found in Texas, Oncerus in California, each represented by one species. They are the smallest Melolonthidæ known to me, and live on flowers; the upper surface is glabrous, but the legs are fringed with long hairs. Oncerus resembles in form the European Chasmatopterus, but the clypeus is double as in Diphuerania. Lasiopus exactly resembles in appearance Aclopus *Er.*, which, however, has the labrum and mandibles porrected as in the preceding tribe.

B. PLEUROSTICT MELOLONTHIDÆ.

The mandibles and labrum are placed under the clypeus in all of our genera, although prominent in some foreign genera; the posterior pair of spiracles varies in position; in some groups it is external to the suture between the propygidium and the fifth ventral segment, in others it is placed directly on the suture, which in Diplotaxes is almost obliterated. Although the sub-tribes appear to be quite natural groups, and of equal value, it is difficult, on account of the absence of many typical forms from our fauna, to combine them in such manner as to form well-defined tribes, such as are seen in the previous sub-family; there would appear, however, to be three indicated, which, with their sub-tribes, may be thus tabulated, all represented in our fauna having normally developed oral organs.*

A. Tibiæ with one spur, which is sometimes obsolete; tarsi without onychium; claws chelate, unequal; last spiracle placed on the suture

* In the foreign tribe Pachypodini the oral organs are very feebly and imperfectly developed.

between the fifth ventral and propygidium, which are connate; ventral segments connate; side pieces of metathorax broad.

I. HOPLIINI.

Middle coxæ contiguous.

1. HOPLINI.

B. Middle and hind tibiæ with two spurs; tarsi with distinct bisetose onychium and equal claws;

a. Last spiracle in the fifth ventral, which is not connate with the propygidium; side pieces of metathorax narrow; ventral segments six, free; anterior coxæ conical, prominent. II. SERICINI.

Labrum separate from the clypeus; claws chelate.

2. DICHELONYCHINI.

Labrum connate with the clypeus; claws not chelate.

3. SERICINI.

b. Last spiracle placed on the suture between the fifth ventral and the propygidium, which are closely connate.

III. MELOLONTHINI.

Anterior coxæ prominent, conical;

Ventral segments six, not connate;

Hind legs slender.

4. MACRODACTYLINI.

Hind legs thick.

5. SERICOIDINI.

Ventral segments five, subconnate.

6. DIPLTAXINI.

Anterior coxæ transverse, not prominent; ventral segments six;

Ventral segments connate.

7. MELOLONTHINI.

Ventral segments not connate.

8. MACROPHYLLINI.

Sub-Tribe 1.—**Hopliini** (genuini).

Oblong, flattened insects, living on flowers, and having the body more or less covered with flat scales of a yellowish, brownish, or silvery color. But one genus, *Hoplia*, is found in the United States, and is represented by species in every part of our territory; the males frequently differ from the females by color as well as size, and even by the texture of the scales and hair, so that, whenever opportunity occurs, the sexes of the specimens found should be carefully noted.

The sub-tribe is known by the ligula being corneous, and connate with the mentum, as in the other Melolonthidæ of our fauna; by the small scutellum, and by the middle coxæ being nearly contiguous.

The characters of the tribe are: the side pieces of the metathorax are always broad; the club of the antennæ is 3-jointed; the mandibles have an interior plate; the labrum is very short, and concealed under the clypeus; the anterior coxæ are large, conical, and prominent; the tibiæ have but a single small terminal spur; the claws are chelate and very unequal, and the onychium

is entirely wanting; the ventral segments are connate, and the sixth is indistinct; the last spiracle is on the suture between the propygidium and fifth ventral.

Sub-Tribe 2.—**Dichelonychini.**

The genus *Dichelonycha* alone represents this sub-tribe in our fauna, but is universally distributed. It is distinguished from various foreign sub-tribes having prominent anterior coxæ, distinct labrum, and separate ventral segments, by the ligula connate with the mentum, the large vertical and deeply emarginate labrum, and by the sternum not being prominent. The last spiracle is placed outside of the suture between the propygidium and the fifth ventral segment, which are not connate to form a solid ring.

From *Macrodaetylini* it differs by the position of the last abdominal spiracle; by the claws being chelate, or capable of being folded along the last joint of the tarsi, though they are not usually seen in that position; and by the large, prominent eyes.

In *Dichelonycha* the thorax has a narrow anterior membranous margin, and the claws are equal and cleft at tip.

They are elongate hairy insects, usually of metallic color, sometimes found in large numbers on leaves of trees.

Sub-Tribe 3.—**Sericini** (genuini).

This sub-tribe is also represented in our fauna by a single genus, *Serica*, of universal distribution. They are oblong, convex insects, of a brown color, usually with iridescent reflections; the elytra are indistinctly sulcate; the pygidium is sometimes partly covered by the elytra.

It is readily distinguished from all others of this family by the labrum being connate with the under surface of the clypeus, and therefore indistinct.

The fifth ventral segment and the propygidium are separated by a distinct suture, and the spiracle is placed external to this suture, half way between the anterior and posterior margin of the ventral segment. The posterior coxæ are flat, and broadly dilated.

Sub-Tribe 4.—**Macrodaetylini.**

Three species of *Macrodaetylus*, distributed from the Atlantic to Arizona, alone represent this group in our fauna; they are

commonly known as rose-bugs, and are very destructive to roses when in bloom. They are elongate, brownish insects, densely covered with ochreous scales, so as to appear yellow; the tarsi are very long; the claws long, slender, diverging, cleft at tip; the fifth ventral segment and propygidium are connate, forming a solid ring, and the last spiracle is placed on the suture. The labrum is not connate with the clypeus; the mentum is narrow, and channelled; the anterior coxæ are conical and prominent; the ventral segments are not connate, and the legs are slender.

Sub-Tribe 5.—**Sericoidini.**

This sub-tribe, as defined by Lacordaire, differs from the others having conical, prominent anterior coxæ, by the labrum being distinct, and the mentum not elongate and channelled, as in *Macrodaetyli*. I have separated a portion having chelate unguis to form the sub-tribe *Dichelonychini*, and refer to the genuine *Sericoides*, a curious genus found in Florida, although I am not able to determine to what foreign genera it is allied.

The ligula is connate with the mentum, which is concave; the labrum is short and emarginate; the mandibles not prominent; the clypeus very thick, margined in front; the antennæ 10-jointed, the third, fourth, and fifth joints closely connected; the club 3-jointed, elongated in the males; the last spiracle is placed on the suture between the connate fifth ventral and the propygidium; the ventral segments are six, not connate; the legs are stout, the hind femora and tibiæ much thickened; the inner claw of the anterior tarsi, and the outer claw of the middle tarsi (at least of the male), is suddenly and broadly dilated at base into a large rounded prominence.

I have named this genus *Hypotrichia*. It is an oval, elongate insect, half an inch long, of a piceous color, finely punctured above, with the thorax transverse, rounded, covered with short grayish hair; body beneath densely clothed with long hair; elytra finely punctured and pubescent. The species is *H. spissipes*.

Sub-Tribe 6.—**Diplotaxini.**

Small, oblong, slightly convex species, usually brown, with the elytra most frequently marked with rows of punctures alternately approximate, with the wider spaces irregularly punctured. They

are distinguished from all other groups having the anterior coxæ prominent and the side pieces of the metathorax narrow, by the sixth ventral segment not being visible; the fifth and propygidium are closely connate, with the suture indistinct, and the spiracle is placed midway between the anterior and posterior margins; the ventral sutures are distinct in all of our genera, and the apical margin of the thorax is membranous, except in *Alobus*; the antennæ are 10-jointed, except in *Diazus*.

Anterior claws with a slightly prominent tooth near the tip; middle and posterior claws cleft. ORSONYX.

Claws alike on all the feet;

Last joint of maxillary palpi oval, somewhat pointed;

Antennæ 9-jointed; claws entire. DIAZUS.

Antennæ 10-jointed; claws cleft or toothed. DIPLOTAXIS.

Last joint of maxillary palpi elongate, cylindrical; claws with a very large tooth. ALOBUS.

Sub-Tribe 7.—**Melolonthini** (genuini).

This is the first of the sub-tribes in which the anterior coxæ are not prominent, but simply transverse, and contained entirely in the coxal cavities. It is distinguished from the other sub-tribes having this character, by the labrum being deeply emarginate, and the ventral segments connate, though the sutures are frequently not effaced.

The apical margin of the thorax is never membranous; the fifth ventral segment is connate with the propygidium by an angulated suture, sometimes partly obliterated; the spiracle is placed at the angle of this suture, nearer the posterior than the anterior margin. The genera indicate three groups, distinguished as follows:—

Side pieces of metathorax narrow;

Labial palpi on the under surface of the ligula. RHIZOTROGI.

Labial palpi at the sides of the ligula. TOSTEGOPTERÆ.

Side pieces of metathorax wide. MELOLONTHÆ.

Group I.—**Rhizotrogi**.

This group is sufficiently distinguished by the labial palpi* being inserted on the under surface of the ligula near the sides.

* For an important note concerning the structure of the ligula and position of the labial palpi in various groups of Melolonthidæ, vide Duval, Gen. Col. Europe, 111, 44.

The species are glabrous, or pubescent above; the thorax is margined in front. The side pieces of the metathorax are narrow, with the epimera moderate in size, or small. One spur of the hind tibiæ is frequently connate with the tibiæ in the males. The third joint of the antennæ is not elongated.

The genera are not well defined, and in those having many species considerable variation in the generic characters is seen.

Some of the species of *Lachnosterna*, known familiarly under the name June bugs, are very abundant, and do much harm by destroying the leaves of fruit-trees.

Claws never serrate, with a single tooth beneath;

Ligula deeply emarginate;

Antennæ 10-jointed.

Antennæ 9-jointed.

Ligula nearly truncate;

Labrum bilobed.

Labrum concave, not bilobed.

Claws more or less serrate, sometimes toothed.

EUGASTRA.

ENDROSA.

LACHNOSTERNA.

GYNNIS.

LISTROCHELUS.

Eugastra (two species) belongs to the interior part of Texas; *Listrochelus* to the interior of the continent, from Platte River to the Colorado of California. One species of *Lachnosterna* is known from California; the others all belong to the Atlantic slope of the continent.

Group II.—*Tostegoptera*.

In this group the labial palpi are inserted at the sides of the ligula, as in the next group, but the side pieces of the metathorax are narrow, as in the *Rhizotrogi*. The third joint of the antennæ is not elongated. The thorax is margined in front.

The genus *Tostegoptera* contains two species, *T. lanceolata* from Kansas and Texas, and *T. æqualis* from Texas. The females are ovate and very convex, the males oblong; they are clothed with small scales; the spurs of the hind tibiæ are free in both sexes; the fourth and fifth ventral segments of the male are furnished each with a small longitudinal crest at the middle. The antennæ are 10-jointed, with 3-jointed club; the joints 3, 4, and 5, are closely connected. The claws are slender, with a tooth near the base.

Group III.—*Melolonthæ*.

Large species, frequently ornamented with spots or stripes of squamiform hair, and distinguished by the broad side pieces of the metathorax, the epimera of which are large. The fifth ventral segment and the propygidium are connate by an angulated suture, the spiracle is placed exactly at the angle; the thorax has no anterior marginal line.

The club of the antennæ of *Polyphylla* assumes an enormous development in the male, and consists of six joints; in the female it is smaller.

Two genera are in our fauna, both having a spur on the anterior tibiæ; *Polyphylla* has universal distribution, *Thyce* is found in New Mexico.

Antennæ with the third joint elongated, club many-jointed. *POLYPHYLLA*.

Antennæ with the third joint not elongated; club (♀) small, 3-jointed.

THYCE.

Sub-Tribe 8.—*Macrophyllini*.

The genera of this sub-tribe were known only from Africa, Australia, and Polynesia, until the discovery of *Phobetus* Lec., a Californian genus, allied, apparently, to the South African *Trysus* Er., the characters of which are very indefinitely made known; but, from the difference of locality, the two genera cannot be supposed to be identical.

The only character by which this sub-tribe is distinguished from the preceding is that the ventral segments are not connate. The anterior coxæ are a little more prominent, and the side pieces of the metathorax are equally wide.

The generic characters of *Phobetus* are: antennæ with the club of the male 3-jointed, as long as the rest of the antenna; labrum transverse, concave, somewhat emarginate; prothorax margined in front, and fringed with membrane; claws with a broad tooth near the tip, and an indistinct one near the base.

The species are robust in form, nearly seven-tenths of an inch long, with the margins of the thorax and body, and the whole of the breast, covered with very long hair; the elytra are glabrous, nearly smooth, with a deep sutural stria.

In *Phobetus comatus* the anterior part of the thorax is clothed with long hairs, and the antennæ are 9-jointed; in *P. testaceus*

the disk of the thorax is free from hair, and the antennæ have ten joints.

Sub-Family III.—SCARABÆIDÆ PLEUROSTICTI.

In this sub-family the abdominal spiracles are arranged; the second pair in the membrane connecting the dorsal and ventral segments, the third on the outer limit of the membrane, and the others in the dorsal portion of the ventral segments; the last two pairs diverge strongly, and are usually visible on the sides of the abdomen, below the elytra, which do not cover the pygidium. The clypeus is sometimes prolonged, but rarely concave, as in most Melolonthidæ, and in many the mandibles, though always short, project beyond the clypeus. The mentum is sometimes quadrate, sometimes pointed, with the ligula always corneous and connate; antennæ 9- or 10-jointed, with the club 3-jointed, rarely elongated in the males; the epimera of the mesothorax reach the coxæ, and are variable in form; the tarsi are perfect, and the onychium is distinct.

Three tribes, separated by the following characters, exist; in all of them the last spiracle is placed on the suture between the fifth ventral segment and the propygidium, which are closely connate, and is usually nearer the anterior than the posterior margin, though in certain genera of the third tribe the reverse is the case.

Claws of the tarsi unequal.

RUTELINI.

Claws of the tarsi equal;

Anterior coxæ transverse, not prominent.

DYNASTINI.

Anterior coxæ conical, prominent.

CETONIINI.

Tribe I.—RUTELINI.

These insects have entirely the form of certain Melolonthidæ, and are only distinguished from them by the position of the spiracles, and the unequal size of the tarsal claws, which are chelate. In our genera the tarsi are short, with the joints cylindrical and closely connected; the epimera of the mesothorax have in some genera a tendency to ascend between the thorax and elytra, as in Cetonia; the side pieces of the metathorax are narrow, with the epimera visible. The species live on leaves of trees; some are ornamented with metallic colors, and one of them, *Plusiotis glo-*

riosa, from the copper-mines of the Gila, of a pale green color, with the margins of all the parts of the body and broad stripes on the elytra of a pure polished gold color, is the most beautiful Coleopterous insect known to me.

But two groups are found in our country, and in both the labrum is horizontal, short, and sinuate, and the mentum quadrate.

Elytra with a membranous margin.
Elytra without membranous margin.

ANOMALÆ.
RUTELÆ.

Group I.—Anomalæ.

These insects are of small size, have 9-jointed antennæ, and the mandibles in repose do not project beyond the clypeus. Only two genera occur in our fauna, and neither has yet been found on the maritime Pacific slope of the continent. One of the anterior and middle claws is cleft in all of our species.

A. Epimera of the mesothorax inferior; elytra not emarginate at base;
Prosternum not prominent behind the coxæ; clypeus parabolic.

ANOMALA.

B. Epimera of the mesothorax ascending; elytra emarginate at base;
Clypeus parabolic; prothorax sulcate or impressed. STRIGODERMA.

The species of the last-named genus have the elytra flattened and deeply sulcate; but two are included in our territory.

Group II.—Rutelæ.

Insects of moderately large size, having 10-jointed antennæ, and prominent mandibles; none have yet been found on the Pacific slope. Our genera belong to the sub-groups Pelidnotæ and Areodæ, both having the thorax margined at base, and may be tabulated thus, all of our species having entire simple claws:—

Clypeus separated from the front by a suture.

PELIDNOTÆ.

Mandibles externally bidentate at tip.

PELIDNOTA.

Mandibles not toothed externally.

PLUSIOTIS.

Clypeus not separate from the front.

AREODÆ.

Last joint of tarsi without any inferior prominence.

COTALPA.

Pelidnota is represented only by the common *P. punctata*, a reddish-yellow insect, with three black spots on each elytron; Plusiotis by the species from the Gila River before mentioned; Cotalpa by the common *C. lanigera*, of a pale yellow color above, with a golden reflection, beneath dark metallic green, covered with white hair; *C. granicollis* Hald., a smaller, coarsely punc-

tured, and more hairy species, of a dark green color, with reddish-brown elytra, is found in Utah.

The genus *Antichira* (*Macraspis* McLeay) may be expected to occur in Texas; a species is found in the neighboring parts of Mexico, and is oblong, of a brilliant emerald-green metallic color. It will be known by the thorax not margined behind, and the very large scutellum. It belongs to the group *Antichiræ*.

Tribe II.—**DYNASTINI.**

Insensible transitions through foreign genera connect closely this tribe with the preceding, but those found in our fauna will not produce much difficulty in the mind of the student.

The mentum is usually narrowed and subacuminate in front, rarely truncate. The claws of the tarsi are equal, and simple, except in the male of *Ligyrrus relictus*, where the inner claw of the anterior tarsi is thickened, dilated, and suddenly incurved, and in *Polymæchus Lec.*, where the outer claw of the middle and hind tarsi of the male is armed with a strong tooth. The labrum, always visible in the preceding tribe, is here almost invisible, and sometimes in part membranous.

This tribe, among its foreign members, numbers the largest Coleoptera existing; some of the genera are remarkable for the size and form of horns on the thorax and head of the males.

Organs of stridulation are found in many genera; they consist of rugose spaces, usually on the propygidium, sometimes on the inner surface of the elytra. The fifth ventral segment and the propygidium are connate, and the spiracle is on the suture nearer the anterior than the posterior margin.

The sub-tribes represented in our fauna are as follows:—

Labial palpi inserted at the sides of the mentum;	
Head and prothorax unarmed in both sexes.	CYCLOCEPHALINI.
Head and prothorax armed, or at least tuberculate, in both sexes;	
Anterior feet of the males not elongated.	ORYCTINI.
Anterior feet of the males elongated.	DYNASTINI.
Labial palpi inserted behind the mentum.	PHILEURINI.

Sub-Tribe 1.—**Cyclocephalini.**

But two genera of this sub-tribe exist in our fauna; they have the appearance of Melolonthidæ, and are readily distinguished from the following sub-tribes by the thorax and head being en-

tirely destitute of tubercles, and by the clypeus being flat, parabolic and finely margined; the mandibles project but slightly, and are not toothed externally. The males have the fifth joint of the anterior tarsi much enlarged, and the club of the antennæ is sometimes longer than in the female. Stridulating organs none; posterior tibiæ not festooned nor expanded at tip; mentum truncate in front; antennæ 10-jointed (9-jointed only in certain species of *Cyclocephala*); the thorax is only partially margined at the base; the prosternum is prominent behind the coxæ; the tarsi are cylindrical.

Our two genera have the mesosternum scarcely visible between the middle coxæ; *Cyclocephala* has the mandibles narrow, scarcely curved; *Chalepus* has them broad, rounded externally, and curved.

Cyclocephala is generally diffused; *Chalepus* has not yet been found on the Pacific slope.

Sub-Tribe 2.—**Oryctini.**

The insects of this sub-tribe vary much in size and form, but have the following characters in common:—

Labial palpi inserted at the sides of the mentum; mandibles prominent, usually toothed externally; head more or less tuberculate (except in *Strategus*), always with some elevations, sometimes armed with a horn; thorax usually tuberculate or horned; anterior feet not elongate in the males; clypeus not parabolic, but rather triangular, reflexed with one or two small apical teeth; mentum narrowed in front; posterior tibiæ expanded at the extremity (except in *Polymæchus*), sometimes digitate; first joint of hind tarsi more or less elevated at its upper extremity. Stridulating organs are found except in *Aphonus* and *Polymæchus*.

The sexual characters are usually in the greater development of horns or tubercles in the male, rarely (*Ligyris relictus*) in the thickening of the outer claw of the anterior tarsi; and, in *Polymæchus*, in the elongation of the antennal club, and the outer claws of the middle and hind tarsi being armed with a strong tooth.

Three groups are represented:—

Posterior tibiæ expanded (sometimes but slightly) at the extremity, truncate, and ciliate;

Antennæ alike in both sexes.

PENTODONTES.

Club of antennæ elongated in the male.
Posterior tibiae digitate or festooned at the extremity.

ORYCTOMORPHI.
ORYCTES.

Group I.—**Pentodontes.**

Moderate-sized, robust, convex species, having the head slightly tuberculate, or rather, in our species, with small anterior ridges or teeth, alike in both sexes; thorax sometimes with a small acute tubercle near the anterior margin, sometimes entirely uniform, convex.

Two genera occur in our fauna: *Ligyris*, generally diffused; *Aphonus*, from the Atlantic and Central districts.

Stridulating organs on the inner surface of the elytra; mandibles toothed externally. LIGYRUS.

Stridulating organs entirely wanting; mandibles not toothed. APHONUS.

For the description of our species, see Proc. Acad. Nat. Sci., Philadelphia, VIII, 19.

Group II.—**Oryctomorphi.**

I would refer to this group the very anomalous genus *Polymæchus Lec.*,* although, in the opinion of Prof. Lacordaire, it may be placed in the sub-tribe *Cyclocephalæ*, near *Pachylus*, a very anomalous genus found in Brazil. It is manifestly a transition form from *Dynastini* to *Melolonthidæ*; but, on account of the form of the clypeus, which is trilobed, strongly margined, with two small apical teeth, and a short transverse carina each side behind, it would seem to belong more naturally in the present sub-tribe, with which also the narrow mentum agrees. It resembles the foreign genera of this group in having the club of the antennæ elongated in the males, but differs by the thorax not impressed, and the strongly toothed outer claw of the middle and hind tarsi. It also agrees with them in the hind tibiae scarcely enlarged at the extremity, and the first joint of the hind tarsi not elevated. It has no organs of stridulation. The mandibles are not toothed externally.

The only species, *P. brevipes*, is found in New York and Pennsylvania, but is quite rare. It is oblong-oval, dark brown, seven-tenths of an inch long, with the elytra punctured in rows, becoming confused towards the suture.

* Proc. Acad. Nat. Sci., Phil., VIII, 23.

Group III.—**Oryctes** (genuini).

Large insects, having, in our genera, the mandibles prominent, and sometimes toothed externally, sometimes simple; the middle and hind tarsi expanded at tip, and truncate in some, digitate in others; first joint of hind tarsi elevated. Our genera possess stridulating organs, covering the greater part of the propygidium. The head is horned in the male and tuberculate in the female of *Xyloryctes*, but has only two very minute tubercles in *Strategus*.

Mandibles not toothed externally.

XYLORYCTES.

Mandibles strongly toothed.

STRATEGUS.

No species has been found west of the Rocky Mountains.

Sub-Tribe 3.—**Dynastini** (genuini).

One species, *Dynastes Tityus*, of large size, found in the Southern States, alone represents this sub-tribe in our fauna. It is of a greenish-gray color, with black spots scattered irregularly over the elytra. The characters of the tribe are:—

Labial palpi inserted on the sides of the mentum, which is acuminate in front; mandibles prominent; head armed with horns in the male, tuberculate in the female; thorax horned in the male, simple and not impressed in the female; anterior feet longer in the males. In *Dynastes* the first joint of the posterior tarsi is not elevated, and there are no stridulating organs.

Sub-Tribe 4.—**Phileurini**.

This sub-tribe, of which we possess but the genus *Phileurus*, is at once distinguished from the others by the labial palpi inserted behind the mentum. Other characters are: the mandibles prominent; head and prothorax alike in both sexes, the former with two short horns or tubercles, the latter tuberculate in our species, though not so in certain foreign ones; legs alike in both sexes; hind tibiae digitate or truncate at tip, not expanded; first joint of hind tarsi elevated; stridulating organs on the inner surface of the elytra, along the lateral margin.

In *Phileurus* the mentum is of moderate size, oval, slightly emarginate in front, and the first joint of the hind tarsi is prolonged into a spine at the extremity.

Four species are known in our fauna, one of which, *P. valgus*,

is also found in South America; of the others, *P. truncatus* inhabits the Southern States, *P. cribrosus* Texas, and *P. illatus* California.

Tribe III.—CETONIINI.

In addition to the conical prominent anterior coxæ, this tribe is distinguished by the occurrence in it of certain peculiarities not found at all, or only exceptionally, in the other tribes of pleurosticti.

In the majority of genera the mandibles are feebly developed, and in great part membranous; they and the labrum are always under the clypeus; the antennæ are always 10-jointed, with 3-jointed club; the internal lobe of the maxillæ is obsolete; the elytra do not cover the pygidium, and the epipleuræ are not distinct; the side pieces of the mesothorax are large, and ascend between the thorax and base of the elytra so as to be usually visible from above; the last pair of spiracles is situated on the suture between the connate fifth ventral and propygidium, but is variable in position, being sometimes near the posterior margin, sometimes near the anterior one; the claws are always equal and simple, with a distinct onychium, which, however, is very small in *Cremastochilus*; the ventral segments are six, not connate, although very slightly movable; the mesosternum is usually prominent between the coxæ; the side pieces of the metathorax are variable in size, but the epimera are always visible. The genuine *Cetoniæ*, in flying, do not raise or expand the elytra, as most *Coleoptera* do, but pass the wings out from the side, under the elytra, which do not embrace at all the sides of the body.

Both sub-tribes are found in our fauna.

Epimera of the mesothorax visible from above.

CETONIINI.

Epimera of the mesothorax not visible from above.

TRICINI.

Sub-Tribe 1.—*Cetoniini* (genuini).

The elytra in the genera here placed are always sinuate on the side, and the mesosternum is almost always prominent; the epimera of the mesothorax ascend between the prothorax and elytra, and are visible from above. The foreign genera exhibit an intricate network of affinities, which all the labor of Burmeister and Lacordaire has failed to represent in a synoptic form; our fauna is so limited, however, that our groups may be thus defined:—

Mandibles feeble, in great part membranous; last spiracle midway between the anterior and posterior margin of the segment;

Prothorax lobed at the base, covering the scutellum. GYMNETES.

Scutellum not covered by the thorax. CETONIÆ.

Mandibles with the outer part thickened; last spiracle near the posterior margin of the segment, the suture nearly effaced. CREMASTOCHILI.

Group I.—Gymnetes.

But two genera of this group occur in our fauna. *Allorhina* having the clypeus armed with a short horn; *Gymnetis* with the clypeus flat.

Allorhina nitida extends over the Atlantic slope, and is a well-known green, velvety insect, nearly an inch long, somewhat pointed in front, with the sides of the thorax and elytra usually brownish yellow. Other species will probably be found in our southwestern territories.

Gymnetis Sallei is found in Louisiana, Texas, and Mexico. It is a beautiful velvety, olive-colored insect, of the same form as *Allorhina*, three-fourths of an inch long, variegated with pale yellow marks, which unite on the margin of the thorax and elytra.

No species of this group has yet been found on the Pacific slope.

Group II.—Cetoniæ.

Our species, although arranged by Burmeister in three genera—*Euphoria*, *Eriehipsis*, and *Stephanucha*—have been united by Lacordaire with other foreign forms, and for the combined genus he retains the name *Euryomia*, distinguished from the other genera by the maxillæ not toothed, and the clypeus usually parabolic, sometimes parallel, and rarely emarginate in front. They are all of moderate size, nearly parallel behind, and pointed in front.

None have yet been found on the Pacific slope.

Group III.—Cremastochili.

Besides the greater development of the mandibles, and the position of the last spiracle near the posterior extremity of the obliterated suture between the fifth ventral and propygidium, the mentum in our species affects a very unusual form; it is, in fact, a large cup-shaped body, sometimes acute behind, sometimes incised, but passing by gradation from one to the other form. The mesosternum is not protuberant.

The species are elongate, dull black or brown, coarsely punctured insects, with the upper surface flattened, and entirely destitute of the varied colors which render the species of the two previous groups so ornamental.

I regard our species as all belonging to one genus, *Cremastochilus*, although the differences in form of the mentum are considerable; *Psiloenemus Burm.* is one of these variant forms, but is established on a species (*P. leucosticta*) unknown to me.

True *Cremastochilus*, having the mentum deeply concave, and incised behind, is confined to the Atlantic slope, as far as the Platte River; the groups with the mentum pointed behind are distributed from the Platte River to the Pacific Ocean.

Sub-Tribe 2.—*Trichiini*.

These insects are readily distinguished by the side pieces of the mesothorax not rising so as to be visible above, and by the elytra not being sinuate on the sides; the thorax is narrower than the elytra, and usually rounded on the sides, giving the insects a different appearance from those of the preceding sub-tribe; the last spiracle is nearer the anterior than the posterior margin of the segment in *Osmoderma*, about the middle in *Trichius* and *Gnorimus*, and near the posterior margin in *Valgus*.

No species of this sub-tribe has yet been found on the Pacific slope.

Our four genera may be thus arranged, none having the mesosternum protuberant:—

Posterior coxæ contiguous;

External lobe of maxillæ corneous.

OSMODERMA.

External lobe of maxillæ coriaceous, lamelliform:

Elytra longer than wide, thorax sinuate at base.

GNORIMUS.

Elytra not longer than wide, thorax rounded at base.

TRICHIVS.

Posterior coxæ widely separated.

VALGUS.

I have strong doubts whether *Gnorimus* should be retained as distinct from *Trichius*.

FAM. XXXIII.—BUPRESTIDAE.

Mentum moderate, subquadrate, or triangular, sometimes transverse, the anterior part in many genera membranous; ligula frequently not prominent; labial palpi short, 3 jointed.

Maxillæ exposed at the base, with ciliate, unarmed lobes; palpi short, 4-jointed.

Antennæ inserted upon the front, 11-jointed, serrate, the outer joints usually furnished with pores, which are diffused on the sides, or concentrated in a fovea on the inferior margin or at its extremity.

Head immersed in the thorax to the eyes, which are elliptical, and never emarginate; labrum small, prominent; mandibles short, stout.

Prothorax with the side pieces not separate from the upper piece; coxal cavities separated by the prosternum, widely open behind; prosternum prolonged behind, fitting into the mesosternum, or even the metasternum.

Mesosternum short, excavated, so that the visible part is frequently divided into two portions, which complete the anterior coxal cavities; side pieces large, diagonally divided; epimera narrowly attaining the coxæ.

Metasternum with the side pieces narrow; epimera visible.

Elytra covering the abdomen, or leaving only the pygidium exposed; epipleuræ narrow; wings large.

Abdomen with five ventral segments, the first and second connate, the others free; the fifth joint frequently emarginate in the males, leaving a small sixth joint visible.

Anterior coxæ separate, small, globular, received between the pro- and mesosternum, with the trochantin distinct; middle coxæ separate, globular, with the trochantin distinct; posterior coxæ transverse, usually nearly contiguous, concave behind, dilated into a plate partially covering the femora when retracted.

Legs short; tibiæ usually slender, with two small terminal spurs; tarsi 5-jointed, the first four joints with more or less developed membranous appendages beneath; onychium none.

The species of this family are, in general, elongate in form, and ornamented with metallic colors; the larvæ perforate the stems of living plants, and the perfect insects are found partly on flowers, partly sunning themselves on trees, during the hotter seasons of the year.

A monograph of the species belonging to our fauna has been published by me in the Transactions of the American Philosophical Society, vol. XI, in which, with slight modifications, I adopted the classification of Lacordaire; the characters of the groups have been farther modified by the views of Duval, and the divisions here proposed are based upon renewed observations, though the

groups themselves are scarcely different from those previously adopted by me.

I would arrange the groups represented in our fauna into the following tribes:—

- A. Hind coxæ with the plates distinctly dilated internally, cut off externally by the prolongation of the abdomen; their anterior margin straight, the hind margin oblique;
 Mesosternum divided. BUPRESTINI.
 Mesosternum emarginate, not divided. TURINOPYGINI.
- B. Hind coxæ with the plates scarcely dilated internally;
 Front not narrowed by the insertion of the antennæ; thorax truncate at base;
 Mesosternum emarginate, not divided. JULODINI.
 Mesosternum scarcely visible. HAPLOSTETHINI.
 Front narrowed by the insertion of the antennæ; thorax lobed at the base. AGRILINI.

Tribe I.—BUPRESTINI.

The front is usually not contracted by the insertion of the antennæ, but in *Chrysobothres* is as much so as in the tribe *Agri-
 lini*; the prosternum is sometimes obtusely, sometimes acutely angulated on the sides, behind the coxæ, and its lateral sutures are oblique; the mesosternum is always divided, so that the cavity for the reception of the prosternum is formed both by the meso- and metasternum; the side pieces of the latter are always visible, and the epimera are triangular, with the hind margin sometimes straight, and applied to the coxæ, sometimes partly covered by the prolongation of the abdomen, which intervenes between the coxæ and the margin of the body. The hind coxæ are broader internally; their anterior margin is straight and transverse; the hind margin is oblique. The antennal pores are diffused on the sides of the joints in the first group, concentrated in marginal foveæ in the others. The species are more or less flattened in form.

Our groups are the following:—

- Epimera of metathorax triangular, uncovered; prosternum obtusely angulated behind the coxæ;
 Mesosternum and metasternum closely united. CHALCOPHOREÆ.
 Mesosternal suture distinct. BUPRESTES.
- Epimera of metathorax partly covered by abdomen; prosternum acutely angulated behind the coxæ;
 Front not contracted by insertion of antennæ. ANTHAXIÆ.
 Front contracted by insertion of antennæ. CHRYSOBOTHRÆ.

Group I.—*Chalcophoræ*.

Insects of large size, readily known by the antennal pores being diffused on the sides of the joints, but sometimes only near the inferior margin, and by the mesosternal suture being indistinct.

Chalcophora is generally distributed through our territory, and some of the species are abundant in the Middle States; the other two genera are found in Texas, New Mexico, and Arizona. The male of *Chalcophora* has a distinct sixth ventral segment.

Antennæ inserted under a ridge; mentum rounded in front; posterior tarsi with the first joint elongated. GYASCUTUS.

Antennæ inserted in small foveæ; mentum broadly emarginate in front; posterior tarsi with the first joint elongated. CHALCOPHORA.

Antennæ inserted in large foveæ; mentum broadly rounded in front; posterior tarsi with the first joint not elongated. PSILOPTERA.

Group II.—*Buprestes*.

Species of moderate size and usually of elongate form; the antennal cavities are small, and the front is not lobed before the antennæ; the pores of the latter are placed in foveæ situated on the inferior margin of the joints, except in *Cinyra*, where they are terminal. The species of *Dicerca* and *Pœcilonota* are of a dull bronze color; some are abundant; they are remarkable for the tips of the elytra more or less prolonged, forming a kind of tail. Sexual characters vary in the different genera, and in the groups of species of each genus; they are found in the form of the anterior or middle tibiæ, in the outline of the tip of the fifth ventral segment. I have not observed a distinct external sixth segment in the male of any species. *Dicerca* and *Aneylochira* are generally diffused; the other two genera are not yet found west of Platte River.

Prosternum obtusely rounded behind;

Mentum entirely corneous;

Scutellum small, rounded.

Scutellum very transverse, truncate.

Mentum membranous anteriorly.

Prosternum acute at tip.

DICERCA.

PÆCILONOTA.

ANCYLOCHIRA.

CINYRA.

Group III.—*Anthaxiæ*.

Species of small size, usually flattened, rarely linear; the prosternum is acutely angulated on the sides behind the coxæ, and

acute at tip; the mesosternum is consequently narrowly divided; the suture separating it from the metasternum is distinct; the antennal pores are placed in foveæ at the extremity of the inferior margin of the joints; the front is not lobed before the antennæ.

But two genera, both diffused over our whole territory, are found in our fauna:—

Mentum coriaceous in front; prothorax sinuate at base. MELANOPHILA.

Mentum entirely corneous; prothorax truncate at base. ANTHAXIA.

The sculpture of *Anthaxia* is peculiar, consisting on the head and thorax of shallow punctures, with the intervening lines forming a fine network.

Group IV.—*Chrysobothres*.

This is the first of the groups in which the antennæ are inserted at the inner extremity of two short oblique grooves, by which the front is narrowed; before these grooves it again is widened, and the anterior margin is emarginate in an angular form, so as to produce a bilobed appearance. The mentum is corneous at base, membranous at apex; the prosternum is acutely angulated on the sides behind the coxæ, and is also acute at tip; the mesosternum is larger than usual, and only narrowly divided; the scutellum, small in all the preceding groups, is here large and acuminate; each elytron is rounded or subangulated at base, and enters the base of the thorax, which thus becomes lobed. The anterior femora in our species are strongly toothed; the membranous lobes of the first and second joints of the tarsi are obsolete.

The species are of a rather broad and usually flattened form, with the elytra impressed in the form of bands or spots, sometimes of a brilliant metallic color; the sexual differences are in the form of the anterior or middle tibiæ, and in the tip of the abdomen. The species of *Chrysobothris* are numerous, found in our entire territory, and many of them closely allied; *Actenodes* is found on the Atlantic slope, from New York to Texas. We have now but two species in our fauna; but as the genus is well represented in Mexico, other species may be expected to occur in Texas.*

Third joint of tarsi: truncate; hind tarsi with the first joint elongated.

CHRYSOBOTHRIS.

* Motschulsky (Bull. Mosc., 1859, II, 184) has described *Belionota californica*. The other species of the genus known inhabit the East Indies and Madagascar. It is distinguished from *Actenodes* by the scutellum being large, and the metasternum deeply emarginate.

Third joint of tarsi much prolonged at the side; hind tarsi with the first and second joints equal; scutellum small.

ACTENODES.

Tribe II.—**THRINCOPYGINI.**

This tribe contains but a single genus, *Thrincopyge* *Lee.*, with two species from New Mexico; the general form is elongate and depressed.

The front is not contracted by the insertion of the antennæ; the mandibles are short, thick, and obtuse; the mentum is entirely corneous; the antennal pores are situated in small marginal foveæ. The scutellum is distinct. The prosternum is broad, with the sutures oblique; the sides are not angulated behind the coxæ, and the tip is obtusely rounded, fitting into the emarginate mesosternum; the mesosternal suture is distinct. The hind coxæ are just as in the preceding tribe, dilated inwards, with the anterior margin straight, the posterior oblique; the epimera of the meta-thorax are triangular, not covered at all by the abdomen. The last ventral segment has a deep groove running around the sides and tip. The tarsi are broad; the ungues simple and distant.

Tribe III.—**JULODINI.**

The species of this tribe are convex, and of a conical form, narrowed behind, rarely cylindrical or very elongated; nearly all are clothed with erect hair. The front is not contracted by the insertion of the antennæ; the mentum is entirely corneous; the antennal pores are diffused in the foreign genus *Julodis*, but contained in marginal foveæ in our genera. The thorax is truncate at base, and closely applied to the elytra. The prosternum is broad, with the sutures oblique; the sides are not angulated behind the coxæ, and the tip is obtusely rounded. The mesosternum is deeply emarginate, rarely divided; the mesosternal suture sometimes distinct, sometimes obsolete. The hind coxæ are narrow, not dilated internally; the anterior margin is straight or slightly concave, the hind one scarcely oblique; externally they are slightly wider than at the middle, and the usual prolongation of the abdomen, which limits them, is covered by the elytra. The epimera of the metathorax are triangular and small, but not covered by the abdomen. The first joint of the hind tarsi is elongated in our genera; the claws are either simple or toothed.

Our four genera belong to the group *Acmæoderæ*, and might be considered as types of as many sub-groups.

Hind coxæ with the anterior margin somewhat concave; side pieces of metathorax not covered; scutellum visible; claws simple. *POLYCESTA*.

Hind coxæ with the anterior margin straight;

Claws with a broad basal tooth;

Scutellum indistinct; side pieces of metathorax partly visible.

ACMÆODERA.

Scutellum visible; side pieces of metathorax covered by the elytra.

PTOSIMA.

Claws simple; scutellum visible; side pieces of metathorax visible.

CHRYSOPHANA.

Polycesta and *Acmæoderæ* are found on both sides of the continent, *Ptosima* in the Atlantic States, and *Chrysophana* in Oregon; the last genus is entirely glabrous above, the others are clothed more or less densely with erect hair.

Tribe IV.—**HAPLOSTETHINI.**

This tribe contains but a single species from the Atlantic States, *Haplostethus subcyaneus* Lec., and is the smallest *Buprestide* known. The form is cylindrical, and resembles somewhat certain *Acmæoderæ*; the color is bluish black.

The antennæ are inserted in cavities narrowing the front, which does not expand again anteriorly, as in the next tribe; the mouth is small, deflexed, but not applied to the prosternum; the mentum is entirely corneous. The prothorax is truncate at base, closely applied to the elytra. The prosternum is broad, truncate before and behind, with the lateral sutures parallel. The mesosternum is not visible; the metasternum is broadly truncate in front, and applied to the prosternum; the epimera of the metasternum are triangular, not covered by the abdomen. The hind coxæ are not dilated inwards, slightly broader outwards, and extend to the elytra; the anterior margin is slightly concave, the hind one not oblique. The legs are not contractile; the claws are broadly toothed.

Tribe V.—**AGRILINI.**

In this tribe the body is usually slender, sometimes, however, very broad and flat; in both cases it is narrowed behind. The species are found on leaves and flowers.

The front is strongly narrowed by the insertion of the antennæ,

and is then expanded again, forming two diverging lobes; the anterior part of the head is vertical; the mouth inferior, and applied to the prosternum in repose; the mentum is large, triangular, and corneous. The prothorax is lobed at the base, receiving the convex bases of the elytra. The prosternum is broad in front, with oblique sutures, cuneate behind, and scarcely angulated behind the coxæ; the mesosternum is small, completely and frequently widely divided; the metathoracic epimera are small, and frequently not visible. The hind coxæ are but slightly dilated internally, narrowest at the middle, and broader externally, with the anterior margin more or less concave, and the hind margin not oblique. The legs are contractile, and the claws are strongly toothed, or even cleft, except in *Taphrocerus*, where they are connate at base, and simple.

Two groups exist in our fauna, as follows:—

Antennæ free.

AGRILL.

Antennæ received in grooves.

BRACHES.

Group I.—Agrill.

The body is always elongated; the prosternum is pointed behind; the anterior and middle coxæ are separated by about the same distance; the anterior margin of the hind coxæ is very distinctly concave, and the prolongation of the abdomen reaches, but does not extend along, the side pieces of the metathorax; there are no grooves on the under surface of the prothorax, for the reception of the antennæ; the tarsi are long or moderate; the scutellum is transverse and acuminate in our genera, which are but two in number: *Agrilus* is generally diffused; *Coræbus* is represented by but one species, *C. cogitans*, in the Atlantic States.

Hind tarsi with first joint scarcely elongated.

CORÆBUS.

Hind tarsi with first joint as long as the three following.

AGRILUS.

Group II.—Braches.

I formerly considered this as identical with the European group *Traches*, but the characters are sufficient to warrant its being placed as distinct. The body is rarely elongated, usually broad and ovate; the middle coxæ are a little more distant than the anterior ones, and the mesosternum is very widely divided; the prosternum is very variable in form; the anterior margin of the

hind coxæ is but slightly concave, and the prolongation of the abdomen extends a short distance along the side pieces of the metathorax; the sides of the prothorax beneath are deeply grooved near the margin, for the reception of the antennæ; the legs are very contractile, the tibiæ usually sulcate for the reception of the tarsi, which are very short; the scutellum is triangular. Three of the four forms, which, following the example of Lacordaire, I considered as groups of species, have been regarded by others as genera, and may be distinguished as follows:—

Body elongate; scutellum small; prosternum pointed behind.

TAPHROCERUS.

Body ovate; scutellum small; prosternum obtuse behind; tibiæ linear.

BRACHYS.

Body triangular; scutellum large; prosternum very broad, almost truncate behind; tibiæ dilated.

MEONICUS.

FAM. XXXIV.—THROSCIDAE.

Mentum small, narrowed in front; ligula membranous, not prominent; palpi short, 3-jointed.

Maxillæ exposed at the base, with two lobes, inner one very small; palpi 4-jointed.

Antennæ inserted on the front, received in grooves extending along the inferior margin of the prothorax, 11-jointed; sometimes serrate, sometimes with a loose serrate 3-jointed club.

Head immersed in the thorax to the eyes, which are elliptical; mouth inferior, applied to the prosternum; mandibles small; labrum prominent.

Prothorax with the side pieces not separate, deeply sulcate along the sternal suture, for the reception of the antennæ; coxal cavities small, open behind, being completed by the mesosternum; prosternum with an anterior rounded lobe protecting the mouth, prolonged behind into a flat process received in the mesosternum.

Mesosternum short, excavated in the middle for the prosternum, completing on each side the anterior coxal cavities; side pieces very transverse, attaining the coxæ.

Metasternum with the side pieces very narrow.

Elytra entirely covering the abdomen; epipleuræ distinct.

Abdomen with five ventral segments, not connate, though closely connected.

Anterior and middle coxæ small, rounded, not prominent, without trochantins, the anterior ones received in cavities formed by the pro- and mesosternum; posterior coxæ transverse, contiguous, dilated into a plate partly covering the thighs.

Legs short, contractile; tibiæ slender, with indistinct spurs; tarsi short, 5-jointed, joints 1—4 furnished beneath with long membranous lobes; claws simple, onychium none.

This family contains only a few small species belonging to two genera, representing different tribes; they are found on flowers, and have been classed with Eucnemidæ by some recent authors, although the totally different construction of the anterior coxal cavities at once separates them. They do not possess the power of leaping, like most species of the next family, and the fixity of the prothorax on the trunk would show that any such act is mechanically impossible.

Species of both genera are found on the Atlantic and Pacific slopes. The tribes and genera are distinguished as follows:—

Antennæ terminated by a 3-jointed club.	THROSCUS.
Antennæ serrate from the third joint outwards.	DRAPETES.

The name *Triaxagus* Kugellann has priority over *Throscus*, but being applied to a genus composed of the one now under consideration and *Byturus*, it must be dropped for both.

FAM. XXXV.—ELATERIDÆ.

Mentum small, corneous, quadrate, sometimes rounded in front; ligula without paraglossæ; labial palpi 3-jointed.

Maxillæ exposed at the base, with two lobes, the outer one sometimes very small; palpi short, 4-jointed.

Antennæ inserted on the front in grooves, or under the margin of the front, 11-jointed, rarely 12-jointed, more or less serrate, sometimes flabellate or pectinate, the outer joints rarely in the first sub-family enlarged, forming a serrate club.

Head frequently retracted, sometimes advanced; usually applied to the prosternum beneath; mandibles small, corneous; labrum distinct in most species, indistinct in the first and second sub-families.

Prothorax with the side pieces not separate; coxal cavities small, rounded, not closed behind by the mesosternum;

prosternum long, usually lobed in front, prolonged behind, forming an acute process moving in the mesosternum.

Mesosternum short, excavated in the middle for the reception of the prosternal process; coxal cavities small, usually angulated externally; side pieces large, epimera reaching the coxæ.

Metasternum usually long, side pieces narrow, epimera slightly visible.

Elytra covering the abdomen (rarely abbreviated in the female); epipleuræ distinct, extending to the apex; scutellum visible.

Abdomen with five free ventral segments, fifth rounded at the apex (except in the female of *Euthysanius*), sixth visible in some of the tribe *Plastocerini*.

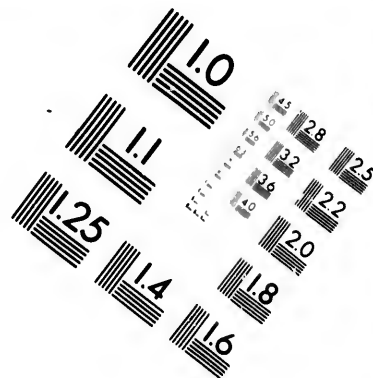
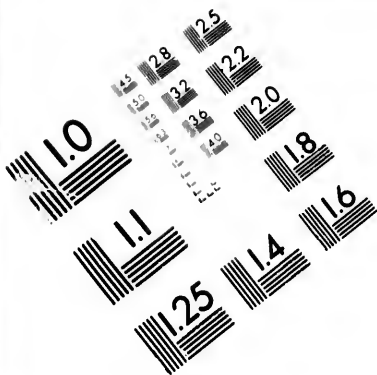
Anterior coxæ small, rounded, without trochantins, contained entirely in the prosternum, in cavities open behind; middle coxæ small, rounded or angulated externally, with a distinct trochantin* in the second sub-family, but none in the first; posterior coxæ transverse, oblique, contiguous, dilated into a plate covering in part or entirely the thighs (except in *Cerophytum*).

Legs short, sometimes contractile; tibiæ usually slender, with the spurs very small, or scarcely visible; tarsi 5-jointed, simple or lobed beneath; claws simple, toothed, or pectinated; onychium none, or very short and bisetose.

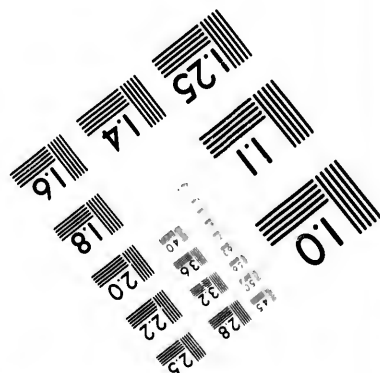
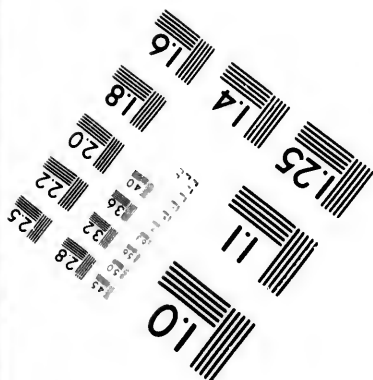
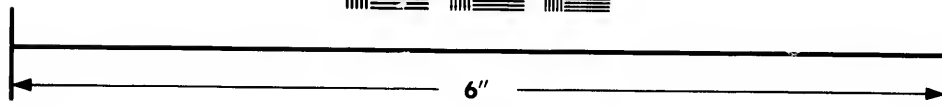
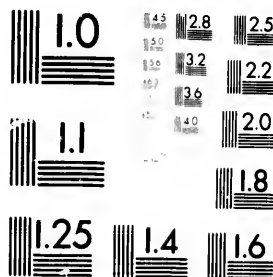
A very large family, and including the *Eucnemidæ* (regarded by many as a distinct family), very sharply defined by the above characters. A few of the species of the first sub-family, and the majority of those of the third, possess the singular power of springing in the air when placed on the back. This is effected by extending the prothorax so as to bring the prosternal spine to the anterior part of the mesosternal cavity, then suddenly relaxing the muscles so that the spine descends violently into the cavity; the force given by this sudden movement causes the base of the elytra to strike the supporting surface, and by their elasticity the whole body is propelled upwards.

It is consequently obvious that the existence of this leaping power is dependent on a loose articulation between the pro- and mesothorax; and, in fact, this is a remarkable character in the majority of the genera of the family, though not apparent in most

* Lacordaire states that no trochantin is visible; but I find it distinct in all the genera examined of genuine *Elateridæ*, but in no other except *Perothops*, in which it is merely rudimentary.

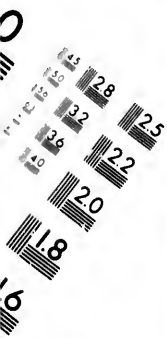


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genera of the first sub-family. I know, however, from observation, that our small species of *Eucnemis* actually possess this springing power.

All the species are vegetable feeders; and the larvæ live, some in the earth, others in rotten wood, others prey upon living plants.

Three sub-families may be defined, as follows:—

Labrum indistinct;

Antennæ inserted in grooves; claws not serrate.

EUCNEMIDÆ.

Antennæ very approximate; claws serrate.

CEROPHYTIDÆ.

Labrum distinct.

ELATERIDÆ.

Sub-Family I.—EUCNEMIDÆ.

The only character separating this from the genuine Elateridæ is found in the insertion of the antennæ upon the front, at the inner extremity of transverse grooves, before which the front is expanded again; the labrum is indistinct; the prosternum is nearly truncate in front, and the head is always deflexed, and applied to the sternum in repose.

The species are rare, and are found under bark, or on leaves of plants. Two tribes are indicated:—

Antennæ moderately distant; maxillary palpi with the last joint acute.

MELASINI.

Antennæ approximate; maxillary palpi with the last joint large, dilated.

EUCNEMINI.

Tribe I.—MELASINI.

Two genera, of slender form, represented in our Atlantic fauna and in Europe, alone constitute this tribe. They differ in several respects from all other members of the family, and particularly by the large size of the head, so that the eyes are entirely disengaged from the thorax; the mouth is not perfectly applied to the prosternum, as in the next tribe; the prosternum is truncate in front, and its sutures are parallel, not running to the anterior angles of the thorax, as in the other genera of this sub-family; the middle coxæ are small, not angulated externally, and without trochantin; the epimera are very transverse.

Tibiæ broad, compressed.

MELASIS.

Tibiæ slender.

THAROPS.

Tribe II.—EUCNEMINI.

Several genera, usually cuneiform, sometimes subcylindrical, and easily recognized by the situation of the antennæ in approxi-

mate grooves, which narrow the clypeus. The middle coxæ are small, rounded, not angulated externally, and without trochantin; the epimera of the mesothorax are very transverse. *Eucnemis* possesses a feeble leaping power, which I have not observed in our other genera, although several of them probably may exhibit the same movement. The antennæ are frequently received in grooves, which run sometimes along the under side of the prothorax, sometimes along the prosternal suture; the latter position is assumed among our genera only in *Microrhagus*, and in that the grooves are quite shallow. The claws have a broad tooth in certain species of *Fornax*.

The following table expresses the relation of genera:—

Antennal grooves at the margin of the thorax beneath;	
Joints of the tarsi 2—4 lobed beneath.	DENDROCHARIS.
Tarsi not lobed beneath;	
Antennæ serrate.	EUCNEMIS.
Antennæ filiform.	FORNAX.
Antennal grooves usually wanting, never marginal;	
Prosternal sutures double, excavated.	MICRORHAGUS.
Prosternal sutures single;	
Posterior coxal plates gradually but widely dilated internally;	
Joints of antennæ 9—11 conspicuously longer.	PHLEGON.
Joints of antennæ 8—11 conspicuously longer.	EPIPHANIS.
Outer joints of antennæ scarcely longer; inflexed part of prothorax feebly sulcate in front.	NEMATODES.
Posterior coxal plates narrow, not dilated internally.	HYLOCHARIS.
Posterior coxal plates narrow, very suddenly dilated internally.	ANELASTES.

Phlegon Lap. is synonymous with *Euryptychus* Lec.; its geographical distribution is remarkable; one species in Madagascar, one in the Atlantic States, and one in California. *Anelastes* contains two species, one on the Atlantic and another on the Pacific slope. *Epiphanis cornuta* extends from Sitka to Canada. The other genera are found only in the Atlantic district. Three species which I refer to *Nematodes* are *Euc. atropos* Say, *Emathion penetrans* Lec., and *Euc. frontosus* Say. At the time that I wrote my revision of Elateridæ the genera were very obscurely defined in the books, which will account for my failure to refer these species to the proper genus. The six outer joints of the antennæ are slightly enlarged in the male, as in *Emathion*, and it is quite possible that the latter genus should be entirely suppressed.

Sub-Family II.—CEROPHYTIDÆ.

This sub-family consists of a very small number of species, found under bark, in which the labrum is indistinct, the antennæ closely approximated, but not inserted in grooves contracting the front, as in the preceding sub-family. The middle coxæ have no visible trochantin; the prosternum is lobed in front, the sides are parallel, and the prolongation behind the coxæ is quite short; the lateral margin of the thorax is obsolete in front. The side pieces of the mesosternum in the first tribe are very transverse, in the second less so; the epimera attain both the coxæ and mesosternum, the episterna being cut off from the coxal cavity. The tarsi are rather short, densely pubescent beneath, and the claws are serrate.

The two genera each represent a separate tribe:—

Hind coxæ flat, without plates.
Hind coxæ with the usual plates.

CEROPHYTINI.
PEROTHOPINI.

Tribe I.—CEROPHYTINI.

Two species of *Cerophytum*, one European, the other *C. pulsator* Hald., from the Middle States, are contained in this tribe. The antennæ are very approximate, situated each side of an elevation, which causes the front to become gibbous; the mandibles are small, and retracted; the last joint of the palpi is dilated, with curved margins; the mouth is protected beneath by the lobe of the prosternum; the hind coxæ are entirely flat, and the trochanters are nearly as long as the thighs; the tarsi are somewhat broad, and the fourth joint is prolonged beneath into a short lobe; the claws pectinate, with the tip simple.

The species is very rare, and produces a slight leaping motion by the hind legs moving suddenly upon the edge of the elytra. The antennæ of the male are pectinate, of the female merely serrate. On account of the flat hind coxæ this genus is considered as a separate family by Lacordaire.

Tribe II.—PEROTHOPINI.

Perothops mucidus, from the Atlantic States, and *P. Witticki* Lec., from California, constitute this tribe, which differs from the

preceeding by so many important characters, that it might almost be considered as a separate sub-family. The antennæ are feebly serrate, and very approximate, situated in cavities limited posteriorly by oblique ridges; the front is deflexed before the antennæ, and then flattened out; the mandibles are slender and prominent; the palpi with the last joint securiform. The lobe of the prosternum is very short, and protects the mouth partly; it is separated by a transverse groove, almost as in *Anclastes*. The plate of the hind coxæ is suddenly dilated internally; the trochanters are broad, and of the usual size; the joints 1—4 of the tarsi gradually diminish in length and breadth; the claws are finely pectinate to the apex.

Sub-Family III.—ELATERIDÆ.

The antennæ in this sub-family are widely separated, inserted in small foveæ under the margin of the front, before the eyes. The mouth is usually anterior; the mandibles are small and retracted, except in the last tribe, in which, too, are found the only genera having the labrum connate with the front. The middle coxæ are always angulated externally, with a small, but distinct, trochantin, so that the episterna are not cut off from the coxal cavity. In a few genera of the last tribe the anterior and middle coxæ are conical. The tibiæ are slender in all the genera.

The tribes appear to me to be naturally arranged as follows:—

Antennæ received in deep prosternal grooves.	AGRYPNINI.
Antennæ not received in prosternal grooves;	
Meso- and metasternum connate.	CHALCOLEPIDINI.
Mesosternal suture distinct (side pieces of metathorax narrow in our tribes);	
First joint of antennæ very long.	HEMIRHIPINI.
First joint of antennæ moderate;	
Apex of mandibles obtuse or emarginate.	ELATERINI.
Mandibles with the tip slender, prolonged, acute.	PLASTOCERINI.

Tribe I.—AGRYPNINI.

These insects are easily recognized by the antennæ received in grooves excavated along the prosternal sutures; the mandibles are emarginate at tip, or toothed; the front flat or coneave; the mesosternum not, or but slightly, protuberant; the coxal plates

are gradually, but slightly, dilated internally; the tarsi in our genera have the joints slightly inflated beneath, not furnished with membranous lobes; the prosternal lobe is large; the antennæ are serrate in our genera. The species are found under bark of dead trees.

Antennal grooves occupying the whole, or nearly the whole, of the prosternal suture;

Third joint of the antennæ smaller or narrower than the fourth.

AORYPNUS.

Third joint of the antennæ equal to, or larger, than the fourth.

ADELOCERA.

Antennal grooves much abbreviated behind.

LACON.

Of *Agrypnus* two species are found in Texas; *Adelocera* is found in our whole territory, and *Lacon* in the Southern States and Kansas.

Tribe II.—CHALCOLEPIDINI.

The genus *Chalcolepidius* is represented by four species, one (*C. viridipilis*) found in the Atlantic States, two in Arizona, and one in southern California. They are very large insects, clothed with depressed scales; the mesosternum is protuberant, and entirely connate with the metasternum, the suture being obliterated. The antennæ are pectinate in the male of *C. viridipilis* and *smaragdinus*. The genus *Alaus* is represented by three species in the Atlantic district; it is commonly separated widely from *Chalcolepidius*, but the protuberant mesosternum, closely connected with the metasternum, with scarcely a trace of suture, indicates its affinity with that genus. The form of body, too, is not unlike. In both genera the coxal plates are gradually dilated inwards, and strongly toothed at the insertion of the thighs; the mandibles have the tip entire, but not prolonged; the front is concave, not margined behind the labrum, but deflexed; the tarsi are not lobed beneath, but very densely pubescent, and the claws are simple.

Scutellum obcordate; margin of elytra obsolete in front. CHALCOLEPIDIUS.

Scutellum oval; elytra strongly margined.

AL AUS.

Tribe III.—HEMIRHIPINI.

In this tribe, represented only by *Hemirhipus fascicularis*, the front is concave, margined anteriorly; the mandibles are acute at

the tip; the antennæ (flabellate and 12-jointed in *Hemirhipus*) have the first joint very long, and the others small and equal in size; the prosternal lobe is large, the sutures are concave outwards and double; the coxal plates are equally broad at the inner and outer portion, with a tooth at the origin of the thighs; the tarsi are not lobed beneath, but densely clothed with fine pubescence.

The species extends from New York to Brazil, is of large size, densely clothed with short brown pubescence; black, with the elytra muddy yellow, varied with small dusky spots.

Tribe IV.—**ELATERINI.**

This tribe comprises the great bulk of the species, and contains many genera differing in various peculiarities of structure, but all agreeing in having the antennæ not received in prosternal grooves, the mesosternal suture distinct, and the side pieces of the metathorax narrow. The mandibles are short, and never extend far beyond the labrum; they are usually emarginate, rarely subacute, but not much prolonged at the apex; in the latter case, however, the metasternum is not acute in front, as in the next tribe.

Sub-tribes may be defined as follows:—

Coxal plates suddenly dilated inwards.
Coxal plates gradually dilated inwards.

ELATERINI.
CORYMBITINI.

Sub-Tribe 1.—**Elaterini** (genuini).

No other character can be given to separate this sub-tribe from the next but the form of the plates of the hind coxæ, which are suddenly dilated about the middle, with the outer part much narrower than the inner; there is always a strong tooth at the insertion of the thighs; the front is margined anteriorly in all of our groups except the last; the prosternum is always lobed in front; the prosternal sutures are double, except in the first two groups, where they are entirely simple; the mandibles emarginate or toothed at the tip; the tarsi are variable in form, but the claws are never serrate.

The following groups are represented in our fauna:—

Margin of the front elevated behind the labrum;

Prosternal spine truncate behind; scutellum cordiform. **CARDIOPHORI.**

Prosternal spine acute; scutellum oval;

Prosternum broad, sutures single, convex outwards. **CRYPTOPHYPTI.**

Prosternum moderate, sutures double, straight or concave ;	
Tarsi not lobed beneath.	ELATERES.
Third joint of tarsi lobed.	PHYSORHINI.
Fourth joint of tarsi lobed.	MONOCREPIDII.
Second and third joints of tarsi with long lobes.	DICREPIDII.
Margin of the front not elevated.	LUDII.

Group I.—*Cardiophori*.

The species are usually small, and convex in form, remarkably distinguished by the prosternal spine being truncate behind, and fitting like a wedge into the mesosternum; the scutellum is cordiform; the front is margined, but not concave; the coxal plates are suddenly dilated inwards.

Several species of *Cardiophorus* represent this group in every part of our country.

Group II.—*Cryptohypni*.

This group contains only small species, and is easily known by the margined front, the suddenly dilated coxal plates, and the broad prosternum, with the sutures single, and convex outwards; the coxal plates are scarcely toothed at the insertion of the thighs; the tarsi are filiform.

Cryptohypnus is generally diffused; *Cedostethus* contains but one species from the Atlantic district.

Claws simple; tarsi moderate, clothed with stiff hairs. *CRYPTOHYPNUS*.
Claws with a tooth at the middle; tarsi long, pubescent. *CEDOSTETHUS*.

Group III.—*Elateres*.

In this group are species having the front convex and margined; the thorax always narrowed in front; the prosternum not very wide, with the sutures distinctly double, and sometimes excavated in front, straight or concave outwards; the posterior coxal plates narrow externally, suddenly dilated internally, and toothed at the origin of the thighs; the tarsi not dilated or lobed (the anterior ones in *Blauta* very slightly so), and the claws entire.

Our genera are:—

Prosternal sutures excavated in front ;	
Tarsi spongy beneath, the anterior ones slightly lobed.	BLAUTA.
Tarsi ciliate beneath, entirely simple.	ELATER.
Prosternal sutures not excavated in front ;	
Third joint of antennæ longer than the second.	DRASTERIUS.
Second and third joints of antennæ small, equal.	MEGAPENTHES.

Drasterius is united by Duval with *Cryptohypnus*, but the narrower prosternum, with double sutures, distinguish it very strongly from that genus. Our species (*Elater dorsalis* Say, *El. elegans* Fabr., *M. amabilis* Lec., *M. comis* Lec., and *M. vivens* Lec.) were included by me in *Monocrepidius*, but are distributed, with some new ones, by Caudéze, between the genus now under consideration and *Æolus*.

The species of *Megapenthes* were placed in *Elater* by me, but very properly separated by Candéze. There is not an entire agreement between them in the form of the coxal plates; thus, the outer portion is much narrower in *M. stigmatosus* than in the nearly allied *M. caprella*. I would also include in this genus *El. limbalis* Herbst, though the coxal plates are much less suddenly dilated internally; hardly more so, in fact, than in *Corymbites æthiops*.

Group IV.—*Physorhini*.

The small number of species constituting this group have the third joint of the tarsi furnished beneath with a membranous lobe, the fourth being small, and received upon the fourth. The front is very convex, its anterior margin rounded; the posterior coxal plates very narrow externally, suddenly dilated and strongly toothed internally; the claws are simple; the mesosternum always oblique; the prosternal sutures double, and in our genera excavated in front.

Coxal plates very suddenly, almost rectangularly, dilated;

Second and third joints of antennæ together equal to the fourth.

CREPIDOTRITUS.

Third joint equal, or nearly equal, to the fourth.

BRACHYCREPIS.

Coxal plates obliquely, but very strongly, dilated; second and third joints of antennæ together nearly equal to the fourth.

ANCHASTUS.

To *Crepidotritus* belong *Cryptohypnus cinereipennis* Mann. (*Anchastus recedens* Lec.) and *C. tantillus* Manu., both from California. To *Brachycrepis* I would refer, besides the type *B. bicarinatus* Lec., also *Elater binus* Say.; the latter may, however, constitute a new genus, as the joints of the antennæ are carinate on the middle of the broad surface.

Group V.—*Monocrepidii*.

In this group the front is convex, margined in front; the first joint of the antennæ is longer than usual; the prosternal sutures

are double, straight or concave, and scarcely excavated in front; the coxal plates are suddenly dilated internally, with the angle rounded, as in *Drasterius*, and a tooth at the origin of the thighs; the fourth joint of the tarsi is obliquely prolonged into a membranous lobe.

The genera *Aolus* and *Heteroderes*, as adopted by Candèze, appear to be untenable, and heterogeneous, as already observed by Duval; I therefore continue to refer all of our species to *Monocrepidius*, removing to *Drasterius* those with simple tarsi, which were formerly included by me in the same genus.

Group VI.—*Dicrepidii*.

The strongly margined front, the prosternal sutures, excavated in front, and concave outwards, and the tarsi with lobes beneath the second and third joints, will distinguish this group. The species are elongate, brown, hairy insects, with strongly serrate antennæ, sometimes even pectinate in the males. The coxal plates are strongly dilated inwards, and toothed. They are found in the Southern States and Texas, and belong to two genera:—

Mesosternum horizontal; anterior part of front with two crests, uniting above with the frontal margin. DICREPIDIUS.

Mesosternum oblique; front not crested. ISCHODOSTUS.

To the latter genus belong *Elater soleatus* Say, *Dicrepidius ferreus* Lec., and *D. simplex* Lec.

Group VII.—*Ludii*.

This group has the front convex, but not margined behind the labrum; the prosternal sutures concave outwards; the tarsi simple, pubescent beneath, and the posterior coxal plates less suddenly dilated internally, but still distinctly angulated at the middle of the hind margin, and strongly toothed at the insertion of the thighs. The species are usually of large, though one species, which I place in *Ludius*, is of moderate size; it is the Oregon *L. tartareus*, formerly included by me in *Elater*.

Our genera are three, thus distinguished:—

Angle of the hind coxæ acute, prominent;

Mesosternum declivous, not prominent. LUDIUS.

Mesosternum protuberant. ORTHOSTETHUS.

Angle of the hind coxæ obtuse, broadly rounded. CRIGMUS.

To *Orthostethus Lac.* belongs *Aphanobius infuscatus Germ.*, a large brown species found in the Southern States.

Sub-Tribe 2.—**Corymbitini.**

In this sub-tribe the coxal plates are gradually or sometimes scarcely dilated inwards, frequently not toothed over the insertion of the thighs, with the hind margin nearly rectilinear. In other characters there are found great differences between the groups; the prosternal sutures are frequently straight and simple, and the prosternal lobe is sometimes entirely wanting. The claws are pectinate in certain genera.

The following groups are represented in our fauna:—

Front convex; mouth inferior.	AGRIOTES.
Front flattened, margined; mouth anterior;	
Claws pectinate.	MELANOTI.
Claws simple.	ATHOI.
Front flattened, not margined; mouth anterior;	
Mesosternum declivous.	CORYMBITES.
Mesosternum protuberant.	MELANACTES.

Group I.—**Agriotes.**

This group, composed of species of moderate or small size, is distinguished by the convex front, the edge of which is higher than the labrum; the mouth is situated on the inferior surface of the head, and is applied to the prosternum in repose; the latter is lobed in front; the sutures are double, either concave outwards or nearly straight, somewhat excavated in front; the antennæ are slender, scarcely serrate, and the first joint is a little longer than usual; the coxal plates are but slightly broader internally, although sometimes almost suddenly dilated; the tooth at the insertion of the thighs is large.

Our genera are:—

Front truncate, not margined behind the labrum, although higher than it;	
claws simple;	
Margin of prothorax deflexed in front.	AGRIOTES.
Margin of prothorax straight.	DOLOPIUS.
Front margined;	
Claws and tarsi simple.	BETARMON.
Claws pectinate, tarsi slightly lobed.	ADRASTUS.

To *Dolopius*, as here defined, belong *D. macer Lec.*, *pauper Lec.*, and *subustus Lec.*; to *Betarmon* belongs only *Elater bige-*

minatus Randall. The genus *Sericosomus*, placed by European authors near *Dolopius*, appears to me more nearly allied to *Corymbites*.

Group II.—*Melanoti*.

In this group are contained species of moderate or small size, having the front moderately convex, margined anteriorly; the mouth anterior; the antennæ serrate, with the first joint of the usual size; the prosternum is lobed in front; the sutures are double, and concave outwards; the coxal plates are gradually dilated inwards, and toothed at the origin of the thighs; the tarsi are not lobed beneath, and the claws are strongly pectinate.

Our species are numerous, and all belong to *Melanotus*, for which I unfortunately adopted the more recent name *Cratonychus* in my revision of the Elateridæ of the United States.

Group III.—*Athoi*.

Here are to be placed all species having the front margined; the mouth anterior; the coxal plates narrow, gradually dilated inwards, scarcely toothed; the claws simple; and the prosternal sutures nearly straight, double, though rarely excavated in front; the first joint of the antennæ is moderate. The front is sometimes not only margined, but deeply concave, by the margin being reflexed; in some species of *Limonius* the margin is almost obsolete at the middle, establishing thus a transition to the group *Corymbites*; the prosternal lobe is sometimes obsolete, and the middle coxæ are in *Campylus* very approximate, so that the metasternum becomes acute in front. The tarsi have sometimes the second and third joints slightly lobed beneath.

The body is usually slender, and rarely (*Pityobius*) of large size.

Our genera are:—

Tarsi with the first joint scarcely longer than the second.	LIMONIUS.
Tarsi with the first joint elongated;	
Prosternal lobe very short;	
Metasternum acute; antennæ 11-jointed.	CAMPYLUS.
Metasternum obtuse; antennæ 12-jointed.	PITYOBIUS.
Prosternal lobe long.	ATHOUS.

Gambrinus Lec. is not sufficiently distinct from *Limonius*, nor *Pedetes* from *Athous*. The males of *Pityobius* are remarkable for the antennæ having on each side a row of branches. Two

species are known to me: *P. anguinus*, from the Atlantic States, of a dull black color, with short brown hair, with but single branches proceeding from beyond the middle of the joints of the antennæ 4—11 each side; and *P. Murrayi* Lec., from California, of a more shining black color, much less hairy, with one inner and two outer basal branches from the joints of the antennæ.

Group IV.—*Corymbites*.

This group is so closely connected with the last by intermediate forms, that its separation may be considered to be rather a matter of convenience than of natural difference; thus, the discussion of the question whether *Limonius vagus* and *estriatus* Lec., which form the new genus *Eanus* Lec., and *L. dubitans*, which forms *Nothodes*, should enter this or the preceding group, is a matter of but small consequence.

The front is not margined behind the labrum, and is usually slightly concave; the mouth is anterior, though somewhat deflexed in *Sericosomus* (which differs from the group *Agriotes* in this respect, as well as by the less convex front, and shorter first joint of the antennæ); the prosternum is either lobed or truncate in front; the sutures are double, not excavated in front, except in *Bladus* and *Nothodes*, usually nearly straight; the mesosternum is not protuberant, sometimes acute in front; the coxal plates are gradually dilated inwards, sometimes toothed at the insertion of the thighs.

Our genera are:—

Thorax without luminous vesicles;

Tarsi filiform;

Prosternum not lobed in front;

Prosternal sutures straight; third joint of antennæ small. *BLADUS*.

Prosternal sutures concave outwards; third joint of antennæ equal to fourth. *GESTODES*.

Prosternum with a short lobe; front suddenly deflexed at tip, but not margined at the middle;

Elytra not striate; prosternal sutures not excavated. *EANUS*.

Elytra striate; prosternal sutures excavated in front. *NOTHODES*.

Prosternum with a long lobe;

Front convex; coxal plates scarcely narrower externally.

SERICOSOMUS.

Front usually more or less flattened; coxal plates narrow externally.

CORYMBITES.

Tarsi with the second and third joints lobed beneath.

ASAPHES.

Thorax with luminous vesicles.

PYROPHORUS.

The genus *Corymbites* contains a great number of species, and, as is usual in large genera, is quite polymorphous; some of the species (*C. æthiops* and *C. maurus*) have the coxal plates almost as suddenly dilated internally as in *Crigmus*, of the group *Ludii* of the preceding sub-tribe. Some of the species are very narrow, resembling *Athous* and *Campylus*, others very stout. They may be divided into many groups, which are natural, but not entitled to rank as genera.

Group V.—*Melanactes*.

This group is represented in our fauna by the genus *Melanactes* alone, which, while confined to temperate North America, is diffused on both sides of the continent. The species are large shining black insects, found under stones. They are distinguished from other groups having the coxal plates gradually dilated inwards, by the horizontal protuberant mesosternum, which is not connate, as in *Chalcolepidiini*, but separated by a distinct suture from the metasternum. The front is depressed at the middle, and not margined; the mandibles are toothed near the tip; the prosternum is furnished with a long lobe in front; the sutures are double, nearly straight, slightly excavated in front; the coxal plates are gradually dilated inwards and toothed at the origin of the thighs; the tarsi are not lobed, but very densely pubescent beneath, with the joints 1—4 gradually decreasing in length; the claws are simple.

Tribe V.—*PLASTOCERINI*.

In this tribe I comprise certain genera which recede from the true *Elaters* to approach the *Cebrionidæ*; thus, the sixth ventral segment is usually slightly visible, and in the female of *Euthysanus* becomes equal to the other segments. The same insect is further remarkable for the elytra being very short, and the wings wanting; in the female of *Plastocerus* the elytra are somewhat deliſcent, but the wings are present.

The following characters distinguish this tribe: The mandibles are curved and slender at the tip, and project more than in other *Elateridæ*; the labrum is more closely connected with the front; the prosternum is truncate in front, not at all lobed, and its lateral sutures are straight, slightly oblique, not excavated in front;

the mesosternum declivous; the middle coxæ more conical and prominent than usual, nearly contiguous; the metasternum is very acute in front; the coxal plates are dilated inwards, but not suddenly, and differ slightly in form in the respective genera; they are toothed at the origin of the thighs. The tarsi are simple, and pubescent beneath; the claws are simple; the tibial spurs are more developed than in other tribes.

Two natural groups are obvious:—

Front margined; mandibles very prominent.
Front depressed; mandibles not very prominent.

APHRICI.
PLASTOCERI.

Group I.—**Aphrici.**

Aphricus californicus, a small species having the appearance of a slender *Cardiophorus*, is the only member of this group known. The mandibles are long and slender, and project so as to leave an open space between them and the front which is margined, and projects over the labrum; the antennæ are moderately serrate; the prosternum is very slightly lobed; the sutures are single, and not excavated; the middle coxæ are prominent; the metasternum is obtuse in front; the coxal plates are scarcely toothed at the insertion of the thighs; the first joint of the tarsi is not longer than the second; the sixth ventral segment is not visible.

Group II.—**Plastoceri.**

The mandibles are thick at the base, toothed at the middle, slender and curved at the tip, but embrace more or less closely the labrum, which is on the same plane with the depressed front, and closely connected with it, almost as in certain *Cebriionidæ*. The antennæ are long and serrate in *Aplastus*; in the other genera short, and pectinate with long branches in the males, in the females serrate, and slightly pectinate; the prosternum is slightly lobed in *Aplastus*, not at all lobed in the other genera; the sutures are double, slightly oblique, and not excavated; the middle coxæ are prominent, with the mesosternum acute in front; the coxal plates are gradually and sometimes strongly dilated inwards, and toothed at the origin of the thighs; the first joint of the tarsi is as long as the two following united; the sixth ventral segment projects beyond the fifth, which is round at the apex. In the female of *Euthysanius*, however, the elytra are short, the

wings wanting, and the abdomen greatly elongated; the hind coxæ also become so prominent, as to leave the genuine first ventral segment (invisible in all other Elateridæ) free; following this are the usual five equal to each other, then the sixth, equal to the fifth, but rounded at tip, and followed by a prominent obtusely triangular seventh (really the eighth) ventral segment; of these, all but the last two are margined behind with membrane.

Antennæ long, serrate, 11-jointed.

APLASTUS.

Antennæ short, in the males pectinate;

Antennæ 11-jointed.

PLASTOCERUS.

Antennæ 12-jointed.

ECHYSANIUS.

FAM. XXXVI.—CEBRIONIDÆ.

Mentum corneous, quadrate; ligula distinct, without paraglossæ.

Maxillæ exposed at base, with two lobes (in our genera).

Antennæ inserted under the frontal margin, 11-jointed, serrate.

Head not deflexed; eyes convex rounded.

Labrum closely connected with the front, slightly emarginate, transverse; mandibles (in our genera) slender, long and prominent, leaving an open space between them and the mouth.

Prothorax with the side pieces not separate; coxal cavities large, rounded, open behind; prosternum very short, prolonged behind into a spine.

Mesosternum short, oblique, excavated to receive the prosternal spine; side pieces attaining the coxæ.

Metasternum short, pointed in front; side pieces narrow in *Cebrio*, wide in *Scaptolenus*, epimera visible.

Elytra covering the abdomen in the males, sometimes shorter in the females; epipleuræ very narrow behind; wings wanting in the females.

Abdomen with six free ventral segments.

Anterior coxæ large, globose, without trochantin; middle coxæ rounded, with a small trochantin; hind coxæ transverse, dilated into a plate, partly protecting the thighs.

Legs sub-fossorial; anterior tibiæ more or less dilated or expanded at the apex; terminal spurs large; tarsi 5-jointed, not lobed (in our genera); claws simple, onychium none.

A family of small extent; three genera of the tribe of genuine Cebrioidæ are represented in our fauna; Cebrio, in the Southern States; Anachilus in Florida; Scaptolenus in Texas; they are found flying about at night. The females are found at the entrance of holes which they excavate in the ground.

Labrum entirely connate with the front.

ANACHILUS.

Labrum separated by suture from the front;

Anterior tibiæ entire.

CEBRIO.

Anterior tibiæ emarginate externally.

SCAPTOLENUM.

The principal differences between this and the preceding family is in the greater number (six) of ventral segments, the well developed tibial spurs, the expansion of the anterior tibiæ at the apex, and the close connection between the front and the labrum. By the intermediate forms of the group Plastoceri, of the previous family, all the differences, except those of the anterior tibiæ, become evanescent; and I place the Cebrioidæ as a distinct family, only in deference to the views of the most distinguished foreign authorities.

FAM. XXXVII.—RHIPICERIDÆ.

Mentum quadrate, corneous; ligula small, not prominent; palpi 3-jointed.

Maxillæ exposed at the base; usually with but one lobe; palpi 4-jointed.

Antennæ inserted before and inside of the eyes, under ridges, 11-jointed (in our genera), serrate in the females, frequently flabellate in the males.

Head prominent; eyes round; epistoma not distinct; labrum indistinct; mandibles large, stout and prominent in Sandalus, small in Zenoa.

Prothorax with the side pieces not separate; coxal cavities large, transverse, open behind; prosternum not prolonged.

Mesosternum short, oblique, flat; side pieces attaining the coxæ.

Metasternum short in Sandalus, moderate in Zenoa; side pieces wide in the first, narrow in the second; epimera large in Sandalus, not visible in Zenoa.

Elytra covering the abdomen; epipleuræ extending to the apex.

Abdomen with five (in our genera) free ventral segments. Anterior and middle coxæ conical, prominent, the former with large trochantinus; posterior coxæ transverse, dilated into a small plate partly covering the thighs.

Legs moderate, tibiæ with small terminal spurs; tarsi 5-jointed; claws simple; onychium long, hairy.

A family containing a small number of species, found on plants; Sandalus especially affecting various cedars; it is represented both in the Atlantic and Pacific districts; Zenoa contains but one species in the Atlantic district.

Tarsi not lobed; antennæ moderately long, serrate.

ZENOA.

Tarsi lobed; antennæ short (♀ serrate, ♂ filabellate).

SANDALUS.

These two genera indicate different tribes, distinguished as above stated, by the form of the side pieces of the metathorax.

FAM. XXXVIII.—SCHIZOPODIDAE.

Mentum quadrate, corneous; ligula short, transverse, coriaceous; palpi 3-jointed.

Maxillæ exposed at base, lobes —? palpi 4-jointed, short, cylindrical.

Antennæ inserted immediately in front of the eyes, under a slight prominence; 11-jointed, serrate from the fifth joint outwards.

Head deflexed, closely affixed to the prothorax, eyes elliptical; epistoma not distinct from the front; labrum emarginate; mandibles stout, emarginate, not prominent.

Prothorax with the side pieces not separate; coxal cavities rounded, almost confluent with the middle coxal cavities; prosternum slightly prolonged, truncate at tip.

Mesosternum short, oblique; epimera attaining the coxæ.

Metasternum short, side pieces wide; epimera slightly visible.

Elytra covering the abdomen; epipleuræ obsolete behind.

Abdomen with the first and second ventral segments connate; the fifth emarginate, sixth deeply emarginate, seventh contained in the emargination of the sixth, slightly visible.

Anterior coxæ conical, without trochantin; middle coxæ rounded, without trochantin; posterior coxæ transverse, somewhat separated, extending to the margin of the body, dilated into a plate partly covering the thighs.

Legs moderate, slender; anterior tibiæ with one short apical

spur; other spurs obsolete; tarsi 5-jointed, joints 1—3 spongy beneath at the apex and slightly lobed, fourth with two long membranous lobes; last joint as long as the three preceding; claws strongly toothed near the apex; onychium none.

This family contains but the single species, *Schizopus latus* Lec., an insect found in Arizona, resembling in form a *Galleruca*; it is of a metallic green color, coarsely punctured with red elytra, and is nearly six-tenths of an inch long.

FAM. XXXIX.—DASCYLLIDAE.

Mentum quadrate, corneous; ligula large, membranous, frequently divided into narrow lobes; palpi 3-jointed.

Maxillæ exposed at base, with two lobes, variable in form, but not armed with hooks, except in *Eucinetus*; palpi 4-jointed.

Antennæ distant, inserted immediately in front of the eyes, under a slight ridge, 11-jointed, more or less serrate, rarely pectinate.

Head sometimes prominent, but usually deflexed, with the epistoma sometimes distinct from the front; mandibles not prominent.

Prothorax with the side pieces not separate; coxal cavities transverse, widely open behind; prosternum sometimes extending behind the coxæ, but usually not.

Mesosternum small, sometimes excavated, sometimes oblique and flat, frequently very narrow; coxal cavities transverse, excavated behind; epimera large, attaining the coxæ.

Metasternum moderate, side pieces tolerably wide; epimera usually visible.

Elytra covering the abdomen; epipleuræ extending to the apex.

Abdomen with five free segments, the fifth rounded at tip.

Anterior coxæ transverse, frequently prominent; in the first sub-family, with large trochantin, in the second without; middle coxæ smaller, sub-transverse, rarely with, usually without trochantin; posterior coxæ transverse, nearly contiguous, dilated into a plate partly covering the thighs.

Legs short, tibiæ slender, with small, and sometimes obsolete terminal spurs; tarsi 5-jointed, frequently with membranous lobes beneath; claws simple or pectinate; onychium (in some genera) very short, with two terminal bristles, sometimes wanting.

A family which, although of small size, contains genera widely differing in many of their characters; they all live on plants usually near water.

They naturally divide into two sub-families:—

Anterior coxæ with distinct trochantin.

DASYLLIDÆ.

Anterior coxæ without trochantin.

HELODIDÆ.

Sub-Family I.—DASYLLIDÆ (gennini).

The presence of an anterior trochantin will readily distinguish the genera of this sub-family, the species of which are of larger size than those of the following sub-family. The anterior coxæ are very transverse, rarely prominent. The prosternum is always quite well developed in front of the coxæ, and is usually visible between them. The spurs of the tibiæ are distinct.

The genera may be arranged in tribes as follows:—

Prosternum prolonged, entering the mesosternum.

MACROPOGONINI.

Prosternum not prolonged.

DASYLLINI.

Tribe I.—MACROPOGONINI.

The head is convex, without clypeal suture; the antennæ are scarcely serrate; the prosternum is flat, with distinct side margins converging behind; the mesosternum is emarginate and receives the tip of the prosternum; the plates of the hind coxæ are very narrow; the second and third joints of the tarsi are slightly lobed beneath, and the fourth joint has two long narrow lobes; the claws are simple, and the onychium is wanting.

Two genera are recognized by Motschulsky.

Antennæ with the second and third joints small.

EURYPOGON.

Antennæ with the second, third, and fourth joints small.

MACROPOGON.

Eurypogon nigra (*Ochina nigra* Mels.) is the only species of the genus known; it is found in the Atlantic States on plants. *Macropogon* occurs in California and Oregon.

Motschulsky has placed these genera in Elateridæ, from which the large trochantins and different form of the anterior coxæ at once distinguish them.

Tribe II.—**DASYLLINI.**

The clypeal suture is sometimes visible, and sometimes behind the labrum may be seen a membranous epistoma. The prosternum does not articulate with the mesosternum; the plates of the hind coxæ are gradually dilated internally; the onychium is small, bisetose, and sometimes wanting. Our genera are:—

Tarsi not lobed beneath;

Claws simple; antennæ strongly serrate.

STENOCOLUS.

Claws simple; antennæ nearly filiform.

ANCHYTARSUS.

Claws serrate; antennæ nearly filiform.

ODONTONYX.

Tarsi with membranous lobes beneath;

Tarsi dilated; first joint not elongated.

DASYLLUS.

Tarsi slender; first joint longer.

ANORUS.

Stenocolus and *Anorus* are found only in California; *Dasyllus* on both sides of the continent; *Anchytarsus* and *Odontonyx* in the Atlantic States; *Stenocolus* is remarkable for the middle coxæ having a large trochantin.

Sub-Family II.—**HELODIDÆ.**

This sub-family contains a number of small species found on plants in moist situations, and readily recognized by the anterior and middle coxæ having no trochantin. They are divided into four tribes, the first of which resembles in many points the tribe *Chelonariini* of *Byrrhidae*, while the second recalls the sub-family *Psephenidæ* of the *Parnidæ*.

Tarsi with fourth joint very small, third lobed beneath. **PTILODACTYLINI.**

Tarsi with fourth joint not smaller than the third;

Posterior coxæ moderate;

Prosternum distinct before and between the coxæ.

EUBRINI.

Prosternum very short before the coxæ.

HELODINI.

Posterior coxæ very large.

EUCINETINI.

Tribe I.—**PTILODACTYLINI.**

Represented in the Atlantic district by three species of *Ptilodactyla*; they are oval, brown, finely pubescent insects of convex form; the antennæ of the males have arising from the base of the joints 4—10 a slender cylindrical appendage, equal in length to the joint itself; the clypeal suture is very distinct, and the front rises

slightly above the epistoma; the labial palpi are normal in form. The prosternum is quite distinct before the coxæ, but not visible between them. The middle coxæ are not covered by the front coxæ, which are conical and prominent, and the hind coxal plates are suddenly dilated internally; the tibiæ are cylindrical, with long slender spurs; the tarsi are rather short, the second joint slightly, the third broadly lobed beneath, the fourth small, the fifth a little longer than the third, with the claws broadly toothed or appendiculate. Fifth ventral segment emarginate.

Tribe II.—**EUBRIINI.**

Broadly ovate convex, finely punctured and pubescent insects found on plants near water. The head is deflexed as in the other tribes, but the antennæ are more approximate, contracting the front which forms a narrow beak; I do not observe any frontal suture; the maxillary palpi are slender, and much elongated; the labial palpi are short; the prosternum is very well developed in front of the coxæ, and is quite visible between them, and pointed behind, though not prolonged; the mesosternum is nearly square, somewhat concave. The anterior coxæ are transverse, and not very prominent; the middle coxæ are distant; the plates of the hind coxæ are very narrow, slightly dilated internally. Spurs of the tibiæ obsolete, tarsi filiform, with the fourth joint slightly smaller than the third, fifth as long as the three preceding united. The fifth ventral segment is rounded at tip; claws dilated at the base.

There is a small fissure at the front margin of the anterior coxæ, which produces the appearance of a trochantin, but under a very high lens, it is seen that this fissure does not extend across the coxa, so as to separate the outer portion.

Our species are found only in the Atlantic States, and belong to the genus *Ectopria Lec.* It differs from the European *Eubria* by the mesosternum being oblique and slightly concave, instead of flat and emarginate in front as in that genus. *Eurea Lec.*, founded upon *Eubria nervosa* Mels., must be suppressed into *Ectopria*. The typical specimen was in very bad condition and the small lobes which appeared to exist under the tarsi are not visible in well-preserved individuals.

Tribe III.—HELODINI.

Sometimes elongate, usually oval species, of varied color, covered with a very deciduous pubescence; the clypeal suture is not visible; the last joint of the labial palpi is frequently inserted at the side of the preceding joint and not at the apex as in other insects. The thorax is usually very small; the prosternum in front of the coxæ is very short, and not visible between them. The anterior coxæ are long, oblique, and conical, and lap over a portion of the middle coxæ; the hind coxal plates are strongly dilated internally. Tibiæ sulcate externally, usually with small spurs, in *Seyrtes* with longer ones. Tarsi with the fourth joint larger than the third, bilobed; claws simple. The antennæ of the male of *Prionocyphon discoidea* have the joints 4—10 furnished on each size with a cylindrical appendage longer than the joint. The fifth ventral segment is rounded at tip.

Our genera, all having the fifth joint of the tarsi short, are:—

Labial palpi with the third joint inserted on the side of the second;

Hind legs large, saltatorial.

SEYRTES.

Hind legs moderate;

First joint of antennæ much dilated.

PRIONOCYPHON.

First joint of antennæ moderate.

HELODES.

Labial palpi with the third joint at the end of the second.

CYPHON.

In *Helodes* the hind coxæ are suddenly dilated internally, and in our species, the head is covered by the thorax, which is rounded in front; these species form *Sacodes* Lec., which must be suppressed. In *Prionocyphon* and *Cyphon* the hind coxæ are strongly but gradually dilated internally. *Seyrtes* and *Cyphon* occur on both sides of the continent; the other two genera, thus far only on the Atlantic slope.

Tribe IV.—EUCINETINI.

Eucinetus, a genus of wide distribution, composes this tribe; the mouth is prolonged; the head deflexed, without distinct clypeal suture; the prosternum is exceedingly short in front of the coxæ, which are long and conical; the middle coxæ are large and flat; the posterior ones are dilated into immense oblique plates, concealing the hind legs in repose; the metasternum is consequently short, and rhomboidal; the tibial spurs are distinct, the tarsi somewhat elongated, filiform, joints 1—4 decreasing in

length; claws simple. Ventral segments six. The body is elongate oval, convex, brown or black, pubescent.

The internal lobe of the maxillæ is armed with a terminal hook.

FAM. XL.—LAMPYRIDÆ.

Mentum quadrate, moderate in size, frequently formed of two pieces separated by a transverse suture; ligula not corneous, prominent, without paraglossæ; palpi 3-jointed.

Maxillæ exposed at the base, with two ciliate lobes, the internal of which is sometimes obsolete; palpi 4-jointed.

Antennæ serrate, rarely pectinate or flabellate, usually 11-jointed, inserted on the front, more or less distant, according to the sub-family.

Head sometimes prominent, sometimes protected by the thorax; eyes rounded.

Prothorax with the side pieces not separate; coxal cavities large, transverse; prothoracic spiracle usually visible; prosternum very short.

Mesosternum triangular, not excavated; side pieces large, attaining the coxæ.

Metasternum with side pieces large; epimera visible.

Elytra never embracing strongly the sides of the abdomen, sometimes short, sometimes (in the female of foreign genera) entirely wanting.

Abdomen with seven or eight free ventral segments.

Anterior coxæ contiguous, conical, with large trochantin; middle coxæ oblique, contiguous (except in *Lycini*), conical, with or without trochantin; posterior coxæ transverse, prominent, internally forming a conical protuberance.

Legs slender, or compressed, long or moderate; trochanter in the axis of the thigh; tibiæ with short or indistinct terminal spurs; tarsi 5-jointed, not lobed beneath, uniformly pubescent in the first, spongy pubescent in the second sub-family, fourth joint more or less bilobed; claws variable in form.

Insects of moderate, or small size, of elongate form, and soft consistence, found on plants. Many of the species of the second tribe of the first sub-family possess the remarkable power of emitting light, and are hence called fireflies.

Two sub-families may be separated:—

Side pieces of metathorax slightly curved internally.

Side pieces of metathorax sinuate internally.

LAMPYRIDÆ.

TELEPHORIDÆ.

Sub-Family I.—LAMPYRIDÆ (genuini).

The head is usually immersed in the thorax, so as to conceal the gular portion; the antennæ are generally closely approximate, and the labrum is nearly always quite distinct. The side pieces of the metathorax are wide; the epimera are large, and the inner outline of the episterna is straight or slightly convex.

Three tribes are represented in our fauna :—

Antennæ approximate;

Middle coxæ separate; head uncovered.

LYCINI.

Middle coxæ contiguous; head covered by thorax.

LAMPYRINI.

Antennæ distant; head prominent.

PHENODINI.

Tribe I.—LYCINI.

In this tribe we have species in which the sides of the thorax are commonly foliaceous, but the head, though small, deeply immersed in the thorax, and deflexed, is not covered by a prolongation of the thorax; the antennæ are approximate, much compressed and inserted upon the front, or at the base of a more or less distinct beak. The mandibles are small and simple; the maxillary palpi tolerably long and dilated. The side pieces of the metathorax are very wide, and the inner margin is slightly curved. The trochanters are situated entirely in the axis of the thighs, and are generally longer than in the other sub-families. Our species represent only one tribe, Lycini, distinguished by the deflexed head, distinct labrum, and distant middle coxæ.

Our genera are :—

Antennæ in front of the eyes, at the base of the beak;

Head prolonged into a long beak.

LYCUS.

Head with a short broad beak.

DICTYOPTERUS.

Antennæ between the eyes;

Head with a very short beak; (thorax carinate).

CALOPTERON.

Head without beak;

Antennæ flabellate, thorax carinate.

CAENIA.

Antennæ serrate, thorax not carinate.

EROS.

Tribe II.—LAMPYRINI.

We here have species in which the head is deeply immersed in the thorax, and protected by the hood-like thorax; the antennæ are approximate and inserted upon the front; the eyes usually

very large; the mandibles very slender, not toothed; palpi elongated, compressed; the middle coxæ are contiguous, and the trochanters are less elongated than in the first subfamily. The side pieces of the metathorax are very wide, and the inner margin is straight, or slightly curved. The last ventral segments of the abdomen are provided with a phosphorescent apparatus in the greater number of the species.

Two sub-tribes exist as follows:—

Head entirely covered by the prothorax.
Head partially covered by the prothorax.

LAMPYRINI.
LUCIOLINI.

Sub-Tribe 1.—**Lampyrini** (genuini).

The genera found in our territory belong to the group LUCIDOTÆ, distinguished from the LAMPYRÆS, by the females having wings, or at least elytra, though the latter are sometimes very short.

Second joint of antennæ transverse;

Antennæ bipectinate;

Antennæ very short, 14-jointed.

PLEOTOMUS.

Antennæ half as long as the body, 11-jointed.

CALYPTOCEPHALUS.

Antennæ serrate, broad, 11-jointed.

LUCIDOTA.

Antennæ serrate, 12-jointed, the last joint small.

PHÆUSIS.

Second joint of antennæ not transverse, antennæ compressed or nearly filiform.

PHOTINUS.

Pleotomus occurs in Texas.

Groups of species in *Photinus* are strongly marked, but according to Lacordaire are not characterized by differences of generic value. Our species are numerous, and it is in some of those of the third division of *Photinus* alone, that the females are without wings, and have the elytra much abbreviated. But one species of the first division of *Photinus* has yet been brought from the Pacific district; the other genera are not represented in that region.

Sub-Tribe 2.—**Luciolini**.

The wings and elytra are complete in both sexes of all the genera of this tribe, which is represented in our fauna by four species of *Photuris*, a genus forming by itself a group distinguished by the head being narrowed behind, and by the labrum being indistinct, characters which approximate to the *Telephoridæ*. The species are confined to the Atlantic district.

Tribe III.—**PHENGODINI.**

The characters of this tribe are that the head is not covered by the thorax; it is deeply immersed in the first, but less so in the second sub-tribe; the mentum is very small; the antennæ are inserted in front of the eyes, under frontal elevations, and are distant at base. The side pieces of the metathorax are wide, and the inner margin is slightly curved as in Lampyrini. The middle coxæ are contiguous, or very nearly so; the trochanters are moderate in length. The tarsi are uniformly pubescent beneath, as in Lycini and Lampyrini. The females are not known to me.

Our two genera represent distinct sub-tribes:—

Prosternum well developed in front of coxæ.

PTEROTINI.

Prosternum very narrow before the coxæ.

PHENGODINI.

Sub-Tribe 1.—**Pterotini.**

The singular Californian genus, *Pterotus Lec.*, alone constitutes this sub-tribe. The mandibles are long, slender, and prominent, as in Phengodes; the antennæ are 11-jointed, with the joints 3—10 furnished internally with a flattened branch, three times as long as the joint itself. The prosternum before the coxæ is well developed, a character not seen in any other American genus of this family. The maxillary palpi are cylindrical, as long as the mandibles, with the joints equal.

P. obscuripennis, the only species known, is less than half an inch long, reddish yellow, with the head, antennæ (except the base) and the clytra blackish. The female is unknown.

Sub-Tribe 2.—**Phengodini.**

The prosternum is very narrow in front of the coxæ, as in other Lampyridæ; the maxillary palpi are long and slender; the labrum is not very distinctly separated from the front; the head is prominent, and the gular region is not concealed.

In the genus *Phengodes*, the third and following joints of the antennæ emit two very long, slender, and flexible, pubescent branches from near the base; the second and third joints are very short. The clytra are one-third the length of the abdomen, and

strongly divergent and subulate; the wings are laid along the dorsal surface of the abdomen. The female is unknown to me.

Two species are found in our country. *P. plumosa*, testaceous, with the antennæ, excepting the base, and the narrow tips of the elytra fuscous, and the sides of the thorax broadly depressed, is found from New York to Texas; *P. fusciceps* Lec., from Texas, of the same size, form, and color, but with the head fuscous, and the sides of the thorax only narrowly depressed.

Lacordaire states that the species of *Phengodes* emit light; I have never seen a living specimen, but no appearance of phosphorescent structure is visible in any of the specimens before me.

Sub-Family II.—TELEPHORIDÆ.

The head, though sometimes slightly protected by the thorax, is never covered by it as in *Lampyrini*; it is narrowed behind the eyes, not immersed in the thorax, and its gular region is exposed. The eyes are never very large. The antennæ are serrate or filiform, inserted upon the front, and somewhat distant at base. The labrum is very closely connected with the front. The side pieces of the metathorax are moderately wide, and the epimera are frequently covered in part; the episterna are strongly narrowed behind, and their inner margin is sinuate. The legs are slender, not compressed; the trochanters moderate; the soles of the tarsi are flat or concave and spongy pubescent, except in the groups *Ometes* and *Malthini*, and the fourth joint is bilobed.

The sides of the thorax are never foliaceous; and the females are not very different in form from the males.

Our tribes may be separated thus:—

Mentum very long, wider in front.

CHAULIOGNATHINI.

Mentum small, quadrate.

TELEPHORINI.

Tribe I.—CHAULIOGNATHINI.

In this tribe the head is prolonged before the eyes; the maxillæ are very large at the base, and the outer lobe in the living insect can be protruded, forming a long thread-like process. The maxillary palpi are long, and but slightly dilated; the mentum is elongate, and wider in front. The head is prolonged behind the eyes, and the gular sutures coalesce at the median line. The prosternum is small, broadly triangular, and the antecoxal plates

are large and prominent. The middle coxæ are separate, but the mesosternum proper appears to be of a membranous consistence. The claws of the tarsi are simple.

Chauliognathus has been found in the Atlantic and Central districts; the antennæ are filiform; the elytra are as long or nearly as long as the abdomen, and rounded at tip. The anterior margin of the thorax is rounded.

Tribe II.—TELEPHORINI.

The head is but slightly prolonged before the eyes; the maxillæ are moderate in size, and the mentum is moderate, or small and quadrate; the maxillary palpi are moderately long, and of variable form. The antecoxal plates are small, not conspicuous, and the prosternum is distinct before the coxæ. The middle coxæ are contiguous, and the mesosternum is corneous.

I would divide our genera into four groups:—

Elytra entirely covering the wings;

Third joint of tarsi prolonged beneath.

OMETHES.

Third joint of tarsi simple;

Cervical sutures confluent; thorax truncate in front.

PODABRI.

Cervical sutures separate; thorax rounded in front.

TELEPHORI.

Elytra abbreviated, wings exposed.

MALTHINI.

Group I.—Omethes.

A singular little insect, found in the Atlantic States, constitutes this group. The head is short; the sutures from the buccal cavity are widely separated; the palpi are moderately long, and the last joint is oblong, not dilated, rounded and almost truncate at tip; the mandibles are long, slender, curved and acute; the sides of the thorax are rounded, and strongly margined; the anterior margin is slightly emarginate. The antennæ are long, rather stout, and feebly serrate, with the second joint a little shorter than the third. The under surface of the first joints of the tarsi is not spongy; the third joint is prolonged beneath, and the fourth joint considerably lobed; the claws are dilated at base into a broad tooth.

The species *Omethes marginatus* is nearly one-fifth of an inch long, elongate, black, clothed with short erect hair; the thorax, legs and base of the antennæ are reddish yellow; the elytra are punctured, and feebly striate, with the suture and margin pale.

I have been much at a loss where to place this insect; the form of the head, and oral organs, the structure of the under surface, and the number of ventral segments, all point clearly to the present family; the episterna of the metathorax are sinuate internally, as in *Telephorus*, and the epimera in great part covered, but the prolongation beneath of the fourth joint of the tarsi is altogether abnormal. An approach to this may be recognized in a small sucker at the tip of the third joint of the tarsi in *Phengodes*; and *Ometes* may, therefore, be regarded, like that genus, as one of the links connecting the two subfamilies of this family.

Group II.—*Podabri*.

The head is more elongated than in the next group, and gradually narrowed behind the eyes; the sutures from the buceal opening coalesce on the medial line, and then run backwards. The anterior margin of the thorax is truncate or emarginate, not rounded as in the next group. The last joint of the palpi is always dilated, triangular or securiform, but narrower than in the next group; the mandibles are slender, curved, pointed and unarmed. The soles of the tarsi are spongy pubescent.

I consider our species as belonging to but one genus, *Podabrus*; they may be divided into two groups, according as the claws are armed with a long acute tooth, giving them the appearance of being cleft, or with a broad basal tooth. The first division corresponds to *Brachynotus Kirby (Malthacus Motsch.)*, and the second to *Malthacus Kirby (Dichelotarsus Motsch.)*.

Group III.—*Telephori*.

The head is shorter in this than in the preceding group, and the sutures from the buceal opening run backwards, without uniting at the medial line. The thorax is always rounded from the sides along the anterior margin. The genera are not separated by very definite characters, and it would perhaps be advisable to unite together all but the last. The palpi are moderate in length, and the last joint is usually securiform, rarely suboval. The claws are commonly toothed or bifid, or at least broader at the base, but in *Ditemnus* are slender. The soles of the tarsi are spongy pubescent.

- Last joint of maxillary palpi dilated, and securiform ;
 Hind angles of thorax rounded ;
 Head moderately long ;
 Front broadly rounded at tip ; claws cleft. RHAGONYCHA.
 Front emarginate at tip ; claws toothed, rarely cleft. TELEPHORUS.
 Head short and broad ; claws not cleft. POLEMICUS.
 Hind angles of thorax incised ; head short and broad. SILIS.
 Last joint of maxillary palpi suboval, obliquely truncate ;
 Sides of thorax biincised ; antennæ strongly serrate. DITEMNUS.

The type and only species of *Ditemnus* is *Silis lepida* Lec. ; the female is unknown. The hind angles of the thorax in the male are deeply incised ; the posterior portion forms a long obtuse process ; the anterior portion a long spine, in front of this the sides are emarginate, and the anterior angles are prominent laterally and rounded.

Group IV.—*Malthini*.

The head is moderately short, frequently large and strongly narrowed behind the eyes ; the gular sutures coalesce on the median line ; the anterior margin of the thorax is broadly rounded. The elytra are much shorter than the abdomen, and the wings are exposed and folded along the dorsal surface of the abdomen. The mandibles are shorter and stouter than in the preceding groups, and are toothed in some genera, simple in others. The tarsi are not spongy pubescent beneath, and the first joints are compressed.

- Maxillary palpi with the last joint triangular ;
 Mandibles strongly toothed ; claws with broad tooth, contiguous at base. TRYPERUS.
 Mandibles ; claws small, acute, not toothed. LOBETUS.
 Maxillary palpi with the last joint oval pointed ;
 Antennæ strongly serrate. TYTHONYX.
 Antennæ filiform, distant from the eyes ; mandibles toothed. MALTHINUS.
 Antennæ filiform, very near the eyes ; mandibles simple. MALTHODES.

Lacordaire describes the mandibles of *Tryperus* as slender and simple. It is very difficult in these insects to see the form of the mandibles without dissection, and I find, in the present case, that they are stouter than usual in this family, and armed near the tip with a strong tooth. Renewed observations will therefore be necessary to establish the difference between *Tryperus* and the East Indian genus, *Ichthyurus* *Westwood*.

The species I refer doubtfully to *Lobetus* is *Malthinus abdominalis* Lec., but the specimen is in very bad condition.

Of these genera *Malthodes* alone has yet occurred on the Pacific slope.

FAM. XLI.—MALACHIDÆ.

Mentum small, quadrate, corneous; ligula prominent; palpi 3-jointed.

Maxillæ exposed at the base, with two unarmed lobes; palpi moderately long, 4-jointed.

Antennæ inserted upon the front at the sides, generally before the eyes; usually serrate, and 11-jointed.

Head exserted, prolonged into a short broad beak; eyes rounded (emarginate in some foreign genera); mandibles small; labrum distinct; epistoma separated from the front by a transverse suture, and frequently, in whole or in part, membranous.

Prothorax not foliaceous at the sides; prosternum short, not extending between the coxæ; coxal cavities large, transverse, open behind.

Mesosternum short, oblique, flat, side pieces attaining the coxæ.

Metasternum short, side pieces usually wide, epimera scarcely visible.

Elytra sometimes entire, sometimes abbreviated.

Abdomen with six free ventral segments; the sixth indistinct in some genera of the second tribe.

Anterior coxæ large, conical, contiguous, with distinct trochantin; middle coxæ contiguous, conical, prominent; posterior coxæ transverse, conical, and prominent internally; not covered by the thighs.

Legs moderately long, slender; tibiæ with indistinct terminal spurs; tarsi 5-jointed (the anterior ones in the males of certain foreign genera, 4-jointed), filiform; the fourth joint entire (except in a few foreign genera); claws usually each with a large inferior membranous appendage.

This family was first established by Erichson, under the name *Melyridæ*, and though considered by Lacordaire as only a portion of his family *Malacodermes*, it appears to me fully capable of taking rank as distinct. The different position of the antennæ, and the presence of the separate piece between the labrum and the front, distinguish it from the *Lampyridæ*, as herein defined.

It is, moreover, remarkable for exhibiting certain characters not seen in the neighboring families; thus in one tribe the body is furnished with soft extensible vesicles, and the ventral segments of the abdomen are frequently in part membranous; in the second, the apparent ventral segments are sometimes but five in number; the occurrence of membranous appendages between the claws of the tarsi is almost universal; and the fourth joint of the tarsi is bilobed, only by a very rare exception.

The affinities of the family appear to conduct directly from the Lampyridæ to the Cleridæ, with a strong tendency to inoseulate, through Byturus, with the Dermestidæ. We have already observed in the Byrrhidæ and Parnidæ on the one side, and the Dascyllidæ and Schizopodidæ on the other, similar affinities between the Serriicorn and Clavicorn series.

I would consider our genera as indicating three tribes:—

Body with extensible vesicles.

MALACHINI.

Body without vesicles;

Eyes finely granulated;

DASYTINI.

Eyes coarsely granulated.

RHADALINI.

Tribe I.—MALACHINI.

Body with lateral vesicles capable of distension; the anterior pair proceeding from a fissure beneath the anterior angles of the prothorax: head short; mandibles toothed at the extremity; eyes entire, finely granulated; palpi moderate, in our genera slender; last joint of the tarsi with two membranous appendages beneath the claws; ventral segments six, always distinct.

The species of this tribe are small insects found on flowers, and on the ground near water; many of them are of pleasing colors, but all are of small size. The form is varied, some resembling at first view certain Staphylinidæ.

The sexual characters are various; in Collops the third joint of the antennæ is much enlarged and distorted in the male. In Anthocomus, Attalus, and Ebæus, the elytra at the extremity are impressed, prolonged, and distorted; the second joint of the anterior tarsi is obliquely prolonged and dilated in the males of Attalus, Microlipus, and Endeodes.

Our genera are numerous, and may be tabulated thus:—

Antennæ apparently 10-jointed.

COLLOPS.

Antennæ evidently 11-jointed;

inserted on the front, nearly between the eyes;

- Head elongated. TANAOPS.
 Head short;
 Epistoma large, in part corneous. MALACHIUS.
 Epistoma short, entirely membranous. HAPALORHINUS.
 inserted at the sides near the anterior margin of the front;
 Elytra nearly or quite covering the abdomen;
 Anterior tarsi slender and simple in both sexes;
 Epistoma membranous, ventral segments partly membranous. ANTHOCOMUS.
 Anterior tarsi slender, second joint oblique and prolonged in ♂;
 Epistoma membranous; ventral segments partly membranous. ATTALUS.
 Epistoma corneous, indistinct; ventral segments entirely corneous. ACLETUS.
 Anterior tarsi stouter, not conspicuously deformed in the male; epistoma not very distinct; ventral segments corneous;
 Body oval, or ovate, legs moderate. EBAEUS.
 Body elongate, legs long. MICROLIPUS.
 Elytra short; anterior tarsi of the ♂ with the second joint obliquely dilated and prolonged; epistoma large membranous; abdominal segments entirely corneous. ENDEODES.

Tanaops, Hapalorhinus, Microlipus, and Endeodes are found only in California; Acletus has occurred only at Lake Superior. The other genera are widely diffused except Malachius, of which one European species, *M. aeneus*, has been introduced in Massachusetts.

The female of Microlipus is without wings, and was described by me as belonging to Charopus, from which it differs by having the joints 1—4 of the anterior tarsi equal in length. The species of Endeodes were formerly considered by me as belonging to Atelestus.

The species here referred to Attalus correspond to groups 2 and 3 of Anthocomus as established by Erichson, and to *Scalopterus* Motsch. Duval has shown that they do not differ generically from the type of Attalus, and has very properly combined them with that genus. Tanaops corresponds with *Cephalistes* Motsch.

Tribe II.—DASYTINI.

Body without lateral vesicles; angles of the prothorax not fissured beneath; front prolonged into a short beak in our species; antennae inserted on the sides of the head, in front of the eyes, which are finely granulated. Claws of the tarsi either with or without membranous appendages.

In some genera of this tribe, the middle and hind coxæ resemble those of *Byturus*, which, however, differs by the anterior coxæ being separated by the prosternum, and by the tarsi being lobed beneath. To add to the resemblance, the sixth ventral segment is frequently by no means distinct.

Our genera are as follows, all having the last joint of the maxillary palpi nearly cylindrical.

First joint of tarsi not shorter than the second; (body punctured);

Claws of the tarsi with membranous appendages,
which are broad and connate entirely or in great part with the claws;
thorax without impressed lines;

Anterior tibiæ with a range of spines on the outer margin; thorax
not serrate or ciliate at the sides. PRISTOSCELIS.

Anterior tibiæ not spinous; thorax ciliate at the sides which are
usually serrate. LISTRUS.

which are narrow and free almost to the base; thorax with an im-
pressed line near the lateral margin;

Both claws with appendages ESCHATOCREPIS.

One claw with an appendage, the other toothed at base. ALLONYX.

Claws of the tarsi broadly toothed, without appendages. DASYTES.

First joint of tarsi shorter than the second; claws without appendages;
(body cribrate-punctate, edge of thorax and elytra serrate.) MELYRIS.

The species in my collection appertain as follows, to the genera above mentioned. Those of *Pristoscelis* may be divided into three groups: 1. Pubescence not erect, appendages of claws rounded at tip (*Byturosomus* and *Emmenotarsus* *Motsch.*); *D. rufipes* *Motsch.*, (*griseus* *Lec.*); *brevicornis* *Lec.*: 2. Pubescence not erect, appendage of one claw truncate (*Trichochrous* *Motsch.*); *D. fuscus* *Lec.*: 3. Pubescence erect, appendages of claws rounded at tip (*Emmenotarsus* *Motsch.*); *D. rufipennis* *Lec.*, *D. quadricollis* *Lec.*, and the remaining species of my group A—a. (*Proc. Acad. Nat. Sc., Philadelphia, VI, 169.*)

To *Listrus* *Motsch.*, belong *D. canescens* *Mann.*, and allied species; this and the preceding genus is distributed from Kansas to the Pacific.

Of *Eschatocrepis* but one Californian species, *D. constrictus* *Lec.*, is known to me; it is closely allied to the European *Haploenemus* in characters, but differs in appearance. Of *Allonyx* also, but one Californian species, *D. sculptilis*, is known. A single nondescript species of *Dasytes*, from California, is in my collection; *D. brevisculus* *Motsch.*, is nearly related to it.

To *Melyris* belong two species from the Atlantic States, *D. basalis* and *cribratus* Lee.

Tribe III.—**RHADALINI.**

A single species, *Rhadalus testaceus* Lec., from California and Arizona, by its strongly granulated eyes, and much elongated maxillary palpi, with the last joint large and securiform is capable of being received as a distinct tribe. It is a transition form from the present to the next family, from which it differs by the joints of the tarsi not being lobed or spongy beneath, and by the claws being provided with long membranous appendages which are free, except at base.

FAM. XLII.—**CLERIDAE.**

Mentum quadrate, moderate in size; ligula membranous, or coriaceous, without paraglossæ; labial palpi 3-jointed, frequently very long and dilated.

Maxillæ exposed at the base, with two ciliate unarmed lobes; palpi 4-jointed, with the last joint frequently securiform.

Head prominent, eyes usually emarginate; epistoma distinct from the front, membranous or coriaceous anteriorly; mandibles short, labrum distinct.

Antennæ inserted at the sides of the front, usually 11-jointed, serrate, or pectinate, or with the outer joints enlarged forming a serrate, or rarely a compact club.

Prothorax with the side pieces not separate, though in one tribe they are defined by a side margin; coxal cavities open behind, sometimes round, sometimes transverse; prosternum short, not prolonged.

Mesosternum flat, side pieces extending to the coxæ.

Metasternum with long narrow side pieces; epimera scarcely visible.

Elytra entire, or nearly so, with the epipleuræ distinct, narrow.

Abdomen with five or six free ventral segments.

Anterior coxæ conical, prominent, contiguous, or very slightly separated, trochantin sometimes distinct; middle coxæ rounded, not or very slightly prominent, and not contiguous in many, but conical and prominent in *Enopliini*,

usually with distinct trochantin; hind coxæ transverse, not prominent, covered by the thighs in repose.

Legs slender, frequently long, trochanters on the internal margin of the thighs; tibiæ with the terminal spurs small or indistinct; tarsi 5-jointed; the fourth joint in Enopliini very small and indistinct; joints 1—4 furnished beneath with membranous appendages; claws simple or toothed, never with membranous appendages as in Melyridæ.

A tolerably numerous family of insects found on plants, or on the trunks of trees, but which in the larva state are carnivorous, preying upon other insects like the Lampyridæ and Melyridæ. The larvæ of various Trichodes are found in the nests of bees. A few (*Corynetes*, *Neerobia*,) live on dead animal matter. Many of the species are of beautiful color and graceful form.

The genera may be arranged in two tribes.

Tarsi with fourth joint of normal size; pronotum continuous with the flanks of the thorax. CLERINI.

Tarsi with the fourth joint very small and indistinct; pronotum separated from the flanks by a marginal line. ENOPLIINI.

Tribe I.—CLERINI.

The fourth joint of the tarsi equal to the third, and the flanks or the prothorax continuous with the back, are sufficient to cause the members of this tribe to be recognized: I will only say farther, that the middle coxæ are scarcely prominent, and are moderately distant. Three groups are indicated by the genera represented in our fauna:—

First joint of tarsi distinct, at least equal to the second. TILLI.

First joint of tarsi covered by the second;
Eyes emarginate in front. CLERI.
Eyes entire. HYDROGERI.

Group I.—TILLI.

Insects of a very long and slender form; the head is large; the eyes transverse, emarginate in front: the prothorax long, with the coxal cavities smaller than usual; the middle coxæ are round, slightly prominent; tarsi with five distinct joints, the first frequently longer than the second; claws toothed; maxillary palpi with the last joint cylindrical.

Antennæ 10-jointed, the last joint very long and flat. ELASMOCERTS.
Antennæ 11-jointed; serrate;

Eyes finely granulated ;

Labrum entire.

Labrum emarginate, posterior thighs elongated.

Eyes coarsely granulated.

TILLUS.

PERILYPUS.

CYMATODERA.

Elasmocerus inhabits the Atlantic district, *Cymatodera* is widely diffused, the representatives of the other genera are unknown to me. *Tillus collaris* is found in Georgia, and *Perilypus* is said to be from California.

Group II.—*Cleri*.

Head large, eyes not very prominent, emarginate in front ; middle coxæ rounded, slightly prominent ; tarsi with the first joint much shorter than the second, and covered by it, so as not to be visible from above ; the species are more numerous than in the other groups.

Eyes strongly granulated.

Antennæ serrate, maxillary palpi cylindrical.

PRIOCERA.

Antennæ with the joints 9—11 larger ; all the palpi dilated.

TARSOSTENTUS.

Eyes finely granulated.

Maxillary palpi somewhat dilated, antennal club triangular.

TRICHODES.

Maxillary palpi not dilated ;

Posterior tarsi short, not dilated.

THANEROCLERUS.

Posterior tarsi moderate, broadly dilated.

CLERUS.

Posterior tarsi longer, scarcely dilated ;

Body hairy, opaque.

THANASIMUS.

Body less hairy, shining.

CLERONOMUS.

The last genus, identical with *Colyphus* Spinola, is unknown to me, the species are said to be from California ; the characters are declared by Lacordaire to be very similar to those of *Thanasimus*, but the appearance of the species is very different.

Trichodes and *Clerus* are widely extended ; the other genera are represented only in the Atlantic district.

Group III.—*Hydnoceri*.

Head large, eyes very prominent, entire ; middle coxæ not prominent, slightly separated ; tarsi with the first joint shorter than the second, principally inferior ; maxillary palpi cylindrical.

But one genus of this group, *Hydnocera*, exists in our fauna. It is widely diffused ; the species are small, and have the form of *Cicindela* ; they are found on leaves of trees, and are active, taking

wing easily. The antennæ are short, slender, and terminated by a small rounded mass composed of two joints.

Tribe II.—**ENOPLIINI.**

In this tribe the fourth joint of the tarsi is very small, and rudimentary, forming merely a slight enlargement at the base of the last joint; the pronotum is separated from the flanks (except in *Iehnea*) by a more or less distinct elevated margin. The middle coxæ are prominent, conical, and contiguous in the first group, but not prominent and slightly separate in the second, in which too are found the only species which devour dead animal matter.

Antennæ with the external joints large, flattened, triangular. **ENOPLIA.**

Antennæ with the last three joints forming a small club. **CORYNETES.**

Group I.—**Enoplia.**

The last joints of the antennæ in these insects are flat, much dilated and triangular, thus forming a serrate mass; in the male the inner angle of the triangular joints is frequently prolonged greatly. Finding that in *Phyllobænus* the pronotum is defined by a distinct lateral line, I have been obliged to remove it to the present tribe, instead of constituting with it a group of the previous tribe. The structure of the tarsi is also as in *Enoplium*, the fourth joint being very small. *Iehnea*, with the tarsi and antennæ of this tribe and group, presents a thorax having the pronotum entirely continuous with the flanks, as in the preceding tribe.

A. Eyes emarginate internally;

Antennæ 10-jointed,* club 3-jointed, not longer than the other portion.

PHYLLOBÆNUS.

Antennæ with intermediate joints indistinct and very short, club 3-jointed, with each joint as long as the basal part of the antennæ. **IEHNEA.**

B. Eyes emarginate in front;

First joint of tarsi equal to the second, antennæ 11-jointed;

Anterior tibiæ serrate externally.

CHARIËSSA.

Anterior tibiæ not serrate.

CRËGYA.

First joint of tarsi shorter than the second, inferior;

Eyes finely granulate, antennæ 10-jointed.

ENOPLIUM.

Eyes coarsely granulate, antennæ 11-jointed.

ORTHOPLERIA.

* Lacordaire and Spinola both describe the antennæ as 11-jointed; I have, after examining several individuals, found the number of joints to be only ten.

I have combined with *Chariessa*, *Pelonium* Spin., as there does not appear to be any sufficient character to separate them. The species having the sides of the thorax sinuate, differ by the anterior tibiæ not being serrate externally, and I have therefore separated them to form the new genus *Cregya*: they are *Pelonium vetustum* Spin., *Enoplium fasciatum* Lec., and *Clerus oculatus* Say. Of these genera *Chariessa* and *Cregya* are represented in the Pacific as well as in the Atlantic districts.

Group II.—*Corynetes*.

Insects of small size, with the antennæ 11-jointed, the last three joints forming a small club; the maxillary palpi are longer than the labial, which are only of ordinary length, and not of large size as in the preceding members of this family. Our species of *Necrobia* have been introduced from Europe, and live on animal materials in houses, and in dried carrion in the open air.

The genera are as follows:—

First joint of tarsi equal to the second;

Club of antennæ elongated, loose.

LEBASIELLA.

Club of antennæ small, compact.

LARICOBUS.

First joint of tarsi shorter and partly covered by the second, club of antennæ compact;

Palpi with the last joint elongate, truncate.

NECROBIA.

Palpi with the last joint subulate.

OPETIOPALPUS.

The genus *Laricobius* is remarkable for the elytra having rows of large quadrate punctures: the thorax is smaller than usual, transverse, marked with large scattered punctures. Our species is one-tenth of an inch long, of a brownish-red color, clothed with short black hairs: I have named it *L. rubidus*; it was found near Washington, D. C., by Mr. H. Ulke.

FAM. XLIII.—LYMEXYLIDÆ.

Mentum small, quadrate, corneous; ligula coriaceous, small; palpi 3-jointed.

Maxillæ exposed at base, with two small ciliate lobes; palpi 4-jointed, stout, in the male very large, flabellate.

Antennæ inserted at the sides of the head, 11-jointed. serrate.

Head deflexed, narrowed behind; eyes usually very large; mandibles moderate, labrum and clypeus distinct.

Prothorax with the lateral margin well defined, side pieces not separate; prosternum short; coxal cavities round, confluent in our genera, open behind.

Mesosternum small, flat, side pieces large, attaining widely the coxæ.

Metasternum long, with narrow side pieces; epimera not visible.

Elytra nearly as long as the abdomen in our genera, much abbreviated in *Atractocerus*.

Abdomen with five free ventral segments in *Lymexylon*, with six or seven in *Atractocerus* and *Hylocoetus*.

Anterior coxæ conical, large, prominent, contiguous in our genera, distant in *Atractocerus*; middle coxæ also large, conical, contiguous; posterior coxæ transverse, conical, prominent internally, contiguous.

Legs slender, moderately long; tibiæ with small terminal spurs; tarsi 5-jointed, filiform; claws simple.

This family contains but three genera, of which one, *Atractocerus*, has not yet occurred in our fauna, but may be expected in Arizona or Texas, as I have already seen specimens from Chihuahua. A species of *Lymexylon* is very destructive to ship timber in northern Europe, but no danger is to be apprehended from our species, which is very rare. The genus *Hylocoetus* is remarkable for having a small ocellus at the middle of the front.

Abdomen with six ventral segments, elytra entire.

HYLOCOETUS.

Abdomen with five ventral segments, elytra entire.

LYMEXYLON.

FAM. XLIV.—CUPESIDAE.

Mentum small, transverse, corneous; ligula small bilobed; palpi 3-jointed.

Maxillæ uncovered at the base, but concealed in the deep buccal cavity, with two lobes, the outer one corneous, hooked; palpi 4-jointed, short.

Antennæ inserted upon the front, approximate, rigid, filiform, moderately elongated, 11-jointed.

Head porrected, tuberculate, suddenly constricted behind; eyes round, prominent, very finely granulated; lower surface with the genæ large and prominent, forming a deep buccal cavity; mandibles small; labrum very short, truncate.

Prothorax small, quadrate, lateral margin well defined, side pieces not separate; prosternum entire, with a slight point behind fitting into the mesosternum; coxal cavities small, transverse, open behind; under surface excavated for the reception of the anterior legs.

Mesosternum large, quadrate, receiving in front the extremity of the prosternum; side pieces excavated for the middle legs, and attaining the coxæ.

Metasternum moderate, side pieces narrow, epimera not visible.

Elytra entire, with rows of large square punctures, and intermediate ribs; epipleura narrow, extending to the apex.

Abdomen with five free ventral segments.

Anterior coxæ small, not prominent, slightly separated; middle coxæ quadrate, flat, contiguous; posterior transverse, flat, sulcate posteriorly, receiving the thighs in repose.

Legs slender, contractile; tibiæ without terminal spurs; tarsi 5-jointed, slightly dilated, spongy beneath; claws small, simple.

A family containing a single very anomalous genus, of which but two species inhabit the United States; one of them, *C. capitata*, is black, with the head red; the other, *C. cinerea*, is pale gray, with darker lines. They are found under bark of decaying trees, and also occasionally in houses.

The affinities of this family are very obscure; in the form and insertion of the antennæ it is similar to the first genera of the next family, but other characters, such as the form of coxæ and retractility of the legs, are at variance. The body is covered with small scales as in the genera alluded to.

In this condition of doubt, I leave the family where it was placed by Lacordaire.

FAM. XLV.—PTINIDÆ.

Mentum usually small and quadrate, sometimes larger and transverse, corneous; ligula membranous or coriaceous, without paraglossæ; palpi 3-jointed, short.

Maxillæ exposed at base, with two ciliate lobes, the internal one sometimes very small; palpi 4-jointed, short.

Antennæ inserted upon the front in the first sub family, at the sides of the front in the others, having from 9—11 joints, variable in form.

Head retractile, frequently protected by the prothorax; oral organs usually small; epistoma sometimes distinct; labrum distinct in all of our genera.

Prothorax with the side pieces not separate; lateral margin none in the first tribe, distinct in the second; coxal cavities rounded, open behind.

Mesosternum small, oblique; side pieces not attaining the coxae.

Metasternum moderate or long, side pieces narrow.

Elytra entire; epipleura distinct, sometimes very broad.

Abdomen with five ventral segments, the first not elongated.

Anterior and middle coxae cylindrical, or subglobose, moderately or but slightly prominent, without trochantins; posterior coxae transverse, not prominent or dilated internally in the first; sulcate basally for the reception of the thighs in the second; slightly prominent internally in the third and fourth sub-families.

Legs contractile in the second sub-family, frequently long; trochanters in the axis of the thighs; tibiae slender, with the terminal spurs sometimes small, sometimes large; tarsi 5-jointed, but with the first joint small in the third and fourth sub-families.

A family containing species, mostly of small size which live on vegetable matters in an incipient stage of decay; many are therefore found about houses, and have been transported by commerce over the whole globe. The form varies greatly according to the sub-family.

Four sub-families are indicated as follows:—

Antennae inserted upon the front.	PTINIDAE.
Antennae inserted before the eyes;	
Tibiae without spurs.	ANOBIDAE.
Tibiae with distinct spurs;	
First ventral segment scarcely longer.	BORTRICIDAE.
First ventral segment elongated.	LYCTIDAE.

Sub-Family I.—PTINIDAE.

These insects are of small size, with the head and thorax comparatively small. The antennae are inserted upon the front, long, not serrate, and rather stout. The legs are long, not contractile, with the trochanters large; the tibiae have the spurs obsolete; in

the first tribe the first joint of the tarsi is not shorter than the second. The hind coxæ are transverse, and are covered by the thighs, in repose. The flanks are continuous with the pronotum.

Two tribes may be separated thus :—

Antennæ very approximate.

PTININI.

Antennæ distant.

EUCRADINI.

Tribe I.—PTININI.

The antennæ are very approximate at base, long and filiform ; the elytra when glabrous are very much inflated, and embrace the sides of the trunk very widely, leaving the ventral segments very small and narrow.

Our genera are :—

Antennæ approximated, filiform ; head tuberculate ;

Elytra inflated, smooth, shining, glabrous ;

Thorax smooth, glabrous.

GIBBIUM.

Thorax tuberculate, pubescent.

MEZIUM.

Elytra punctured, pubescent ;

Teeth of the mentum rounded, labrum emarginate.

NIPTUS.

Teeth of the mentum acute ; labrum rounded.

PTINUS.

The first joint of the tarsi is long in *Ptinus*, but only equal to the second in the other genera.

Gibbium scotias is imported from Europe, as are some of the species of *Ptinus*, which genus is however generally diffused. *Niptus* is represented by one New Mexican species.

Tribe II.—EUCRADINI.

Eucrada humeralis Lec. (*Hedobia humeralis* Mels.), while evidently related to the preceding tribe, differs by having the antennæ widely separated at the base, serrate in the female, but with the tip of the 3—10 joints prolonged in the male, so that the organs become pectinate ; the thorax is tuberculate, the elytra are cylindrical, and do not embrace the flanks. The trochanters are moderate, the tibiæ are terminated by a single large spur ; the first joint of the tarsi is long.

Sub-Family II.—ANOBIIDAE.

The insects of this sub-family are generally of a cylindrical form, though some of the species of *Dorcatoma*, and especially

Tylistus, are nearly globular. The antennæ are distant at base and inserted immediately in front of the eyes; they are either simply serrate, or have the three outer joints longer; rarely (male of *Ptilinus*) they are flabellate. The hind thighs in repose are received by the hind coxæ, which are deeply sulcate behind for that purpose, and form a plate, which is not dilated inwards. The trochanters are short; the legs are retractile, the tibiæ have obsolete spurs, and the first joint of the tarsi is not shorter than the second. The lateral margin of the pronotum is distinct in all of our genera.

Two tribes are represented in our fauna:—

Eyes almost in contact with the prothorax.

ANOBIINI.

Eyes distant from the prothorax.

PTILININI.

Tribe I.—**ANOBIINI.**

The form is less regularly cylindrical than in the next tribe; the head is usually very retractile and deflexed, so as to be not visible from above, in a state of repose, and the eyes are in contact with the anterior margin of the thorax.

Three groups may be formed, thus:—

Prothorax much excavated beneath, for the protection of the mouth;

Mandibles dilated at base.

Xyletini.

Mandibles not dilated at base.

Anobia.

Prothorax not excavated beneath.

Dryophil.

Group I.—**Xyletini.**

The insects of this group are more robust than those of the other groups, and the contractile power here attains its highest perfection. The genera form two sub-groups, according to the form of the antennæ. The large and stout mandibles are dilated at the base; the first joint of the antennæ is frequently large; the head is received closely on the breast, and the legs are tightly contracted in a state of repose. An oblique line, sometimes elevated so as to form a margin, runs from the eyes to the base of the labrum; the plates of the hind coxæ are moderately wide.

Our genera may be separated thus:—

Metasternum advanced between the middle coxæ;

Three outer joints of antennæ very large;

Metasternum emarginate, eyes entire.

Eupactus.

Metasternum truncate, eyes divided or emarginate.

Tylistus.

Metasternum not advanced between the coxæ, eyes entire (body less perfectly contractile);

Three outer joints of antennæ very large. DORCATOMA.
 Antennæ serrate, 11-jointed; outer joints not larger. XYLETINUS.

In *Eupactus* and *Tylistus* the epistoma is separated from the front by a deep line; in the other two genera the line is quite faint. The vacant space between the anterior legs in *Eupactus*, which terminates in the emargination of the metasternum, is filled in repose by the last joints of the antennæ. The type of *Tylistus* is *Dorcatoma simile* Say; the mandibles in repose are applied to the metasternum.

Group II.—*Anobia*.

In this group the mandibles are less dilated at base, and the prothorax is deeply excavated beneath, for the protection of the mouth, which in repose is received upon and between the anterior legs, which are not contiguous at base. The contractile power is less developed than in the preceding group, and the species are oblong or sub-cylindrical in form. The antennæ are 10- or 11-jointed, and vary in form, according to the genera. The elytra are always punctured in rows; the plates of the hind coxæ are narrow, and the last joint of the tarsi is broad and depressed.

Our genera are:—

- Antennæ 11-jointed;
 Mesosternum deeply and broadly excavated;
 Groove extending upon the metasternum;
 Antennæ serrate, outer joints not larger. TRYPOPIYUS.
 Antennæ with the joints 9—11 much longer. COELOSTETHUS.
 Groove not extending upon the metasternum; antennæ with the joints 9—11 much longer;
 Thighs not clavate. HEMICOELUS.
 Thighs strongly clavate. PINODES.
 Mesosternum flat or scarcely concave; antennæ with the joints 9—11 much longer.
 Anterior coxæ widely separated;
 Claws with a large broad tooth. TRICHODESMA.
 Claws slightly dilated at base. NICOBUM.
 Anterior coxæ nearly contiguous. ANOBIMUM.
 Antennæ 10-jointed, joints 4—7 very short, 8—10 very long;
 Mesosternum not protuberant;
 Anterior coxæ nearly contiguous. OLIGOMERUS.
 Anterior coxæ widely separated. CACOTEMNUS.
 Mesosternum dilated into a large plate. PETALIUM.

The type of *Coelostethus* is *Anobium notatum* Say; *A. quadrulum* Lec. also belongs to it; of *Ptinodes*, *Anobium setiferum* Lec.; of *Trichodesma*, *Anobium gibbosum* Say. To *Hemicocelus* belong *A. gibbicolle* Lec., and *carinatum* Say.

The type of *Nicobium* is *A. sericeum* Mels., and of *Cacotemnus* is *A. errans* Mels. To *Oligomerus* belongs *A. thoracicum* Mels. The type of *Petalium* is *Anobium bistriatum* Say, a very small elongated species; the antennæ are 10-jointed, the 4th joint is triangular, and the 5—7 small and closely connected; the three outer ones are larger. The mesosternum forms a large transverse plate, rounded in front, covering the anterior coxæ and almost meeting the head in repose, and the middle tarsi are received in a deep groove each side between it and the metasternum; the second ventral segment is very long; the elytra have but two striæ near the margin.

Group III.—*Dryophilus*.

The mandibles are not dilated at the base; the head is wider than in the preceding group, and the eyes are sometimes very large and prominent. The antennæ are 11-jointed, and the outer three joints are longer, and sometimes (*Dryophilus*) attain a very great length. The prothorax beneath is not hollowed out for the protection of the under surface of the head, which is not applied so closely to the breast in repose as in the preceding group. The prosternum is sometimes more developed in front of the coxæ, than in the *Anobia*; there is never any pectoral excavation. The elytra are not punctured in rows; the plates of the hind coxæ are very small and almost vanish externally; the last joint of the tarsi is short and dilated in *Xestobium*, but is longer and narrow in the others.

Our genera are four, and may be thus distinguished:—

Prosternum very short in front of the coxæ;	
Anterior coxæ separated by the prosternum.	XESTOBIUM.
Anterior coxæ contiguous.	PHILOXYLON.
Prosternum well developed in front of the coxæ;	
Anterior coxæ contiguous.	DRYOPHILUS.
Anterior coxæ separated by the prosternum.	OZOGNATHUS.

Of *Xestobium* we have only the European *X. tessellatum*, which has been introduced. *Dryophilus* and *Philoxylon* occur on both sides of the continent. *Ozognathus* is founded upon the Califor-

nian *Anobium cornutum* Lec.; the mandibles of the male are armed at the base, each with a long slender horn, ascending and curving inwards, so as to meet its fellow at the tip. To Philoxylon belong *Anobium convexifrons* Mels., and *A. punctulatum* Lec.

Tribe II.—PTILININI.

But one genus, *Ptilinus*, of accurate cylindrical form, represents this tribe. The head is deflexed, less retractile than in the preceding groups; the eyes are small, rounded, and distant from the thorax in the female, but larger in the male; the antennæ are serrate in the female, branched in the male, and 11-jointed. The last joint of the palpi is oval. The thorax is convex, rounded in front, protecting the head, and granulate with small tubercles toward the sides; it is not excavated beneath, and the prosternum is unusually developed in front of the coxæ, which are large and contiguous. The plates of the hind coxæ are exceedingly narrow. The legs are moderately retractile, and the first joint of the tarsi is longer than the second. The genus is represented on both coasts of our country; it approaches closely in form certain members of the tribe of the next sub-family, and establishes a transition between the two. A slight relation with *Melasis* of the sub-family Eucnemidae is likewise quite obvious.

Sub-Family III.—BOSTRICHIDÆ.

The insects of this sub-family are elongate in form; the head is usually deflexed, and protected by the thorax, which is then hood-like in form; in one tribe, *Psoini*, it is prominent, and not covered. The mentum is usually small, but in *Psoini* is large and transverse. The antennæ are distant, and inserted immediately in front of the eyes, upon, or under the frontal margin, and the three outer joints are always larger. The eyes are small, convex, rounded, and distant from the prothorax. The pronotum is not separated from the flanks by a marginal line, except in the first tribe. The anterior coxæ are large, globose or sub-conical; the hind coxæ are not sulcate behind, and project at the inner part; the spurs of the middle and hind tibiæ are distinct, and the anterior tibiæ are terminated by one long spur, and usually serrate; the trochanters are short; the first joint of the tarsi is very short,

sometimes obsolete; the fifth joint is long, with simple claws. The first ventral segment is but slightly longer than the second.

Three tribes are indicated:—

Thorax with distinct lateral margin.

ENDECATOMINI.

Thorax without lateral margin;

Head covered by prothorax; anterior coxæ contiguous.

BOSTRICHINI.

Head prominent; anterior coxæ distant.

PSOINI.

Tribe I.—ENDECATOMINI.

The genus *Endecatomus*, placed by previous authors in the family Cisidae, seems to me, for reasons indicated below, to belong rather to the present, in which it constitutes a distinct tribe.

The head is covered in part by the prothorax, which is distinctly margined at the sides. The epistoma is separated from the front by a very distinct suture; the antennæ are 11-jointed, with a loosely articulated 3-jointed club. The anterior coxæ are prominent, and contiguous; the terminal spur of the anterior tibiæ is large and hooked. The last joint of the tarsi is very long.

The species known to me, *Endecatomus rugosus*, is an oblong convex blackish-brown dull insect, covered with inequalities and small erect brown hairs; it is less than one-fifth of an inch long, and is found in fungi. It seems to have but little relation to the Cisiidae, but to be rather a connecting link between *Bostrichus* and *Anobium*.

Tribe II.—BOSTRICHINI.

The insects of this tribe are moderate in size, or small, of a cylindrical form, with the head deflexed, prolonged behind the small prominent eyes, and covered by the hood-like prolongation of the prothorax; the epistoma is separated by a moderately distinct suture; the anterior portion of the latter is usually rough with tubercles, and in the genus *Bostrichus* is frequently prolonged, forming two short horizontal horns; the anterior coxal cavities are confluent; the hind part of the elytra is frequently obliquely declivous. The antennæ have 10 joints in our genera, and the club is 3-jointed. The external margin of the anterior tibiæ is more or less serrate in all of our genera.

Our genera are found in fungi, and under bark:—

Intermediate joints of antennæ shorter than the first and second;

Joints 8—10 very long, forming a serrate club.

SINOXYLON.

Intermediate joints of antennæ longer than the first and second ;

Tarsi as long as the tibiæ, 2d joint elongated ;

Front margined at least at the sides.

BOSTRICHUS.

Front not margined at the sides.

AMPHICERUS.

Tarsi short, 2d joint not elongated ;

Joints 8 and 9 of antennæ transverse, rounded.

DINODERUS.

Joints 8 and 9 of antennæ triangular.

RHIZOPERTHA.

The only species known of the last genus, *Rhizopertha pusilla*, has been introduced in specimens of wheat distributed from the Patent Office. To *Amphicerus* belong *Apate bicaudata* Say, *A. aspericollis* Germ., and *Bostrichus punctipennis* Lec.

Tribe III.—PSOINI.

The insects composing this tribe are of large or moderate size ; the thorax is oval, not margined at the sides, truncate in front, not protecting the head, which is large and prominent. The club of the antennæ is 3-jointed. The anterior coxæ are separated by the prosternum.

Our genera are two in number, and are represented only in maritime California.

Antennæ 11-jointed.

POLYCAON.

Antennæ 10-jointed.

ACREPIS.

Polycaon *Lap.* has for synonyms *Exops* *Curtis*, and *Allæocnemis* *Lec.* The original unique specimen of *Acrepis maculata* *Lee.* has been lost at sea, and I cannot now determine the difference between the genus and *Psoa*. It is quite possible that it should be united either with *Psoa* or *Exopsoides*.

Sub-Family IV.—LYCTIDAE.

The head is prominent, somewhat narrowed behind the eyes, not covered by the prothorax, which is trapezoidal in form, and has a fine lateral margin. The antennæ are 11-jointed, and the club is rounded, and consists of but two joints ; the epistoma is separated from the front by an indistinct suture. The anterior coxæ are entirely inclosed and separated by the prosternum ; the middle ones are also moderately separated, and the hind coxæ are widely distant ; the first ventral segment is much longer than the others.

Our genera are two, both containing species of small size :—

Anterior tibiæ with the outer apical angle prolonged. LYCETUS.
 Anterior tibiæ with the outer apical angle not prolonged. TROGOXYLON.

The type of Trogoxylon is *Xylotrogus parallelipedus* Mels., from the Middle States.

Lycetus is attached by Lacordaire to the Cioidæ, but he admits the difficulty of placing it properly in any family; from the 5-jointed tarsi, with the first joint very short, and the distinct terminal spur of the anterior tibiæ, I think it and Eudecatomus are more naturally placed in the present than in the next family.

Lacordaire states that the anterior and middle coxæ are contiguous in Lycetus; they are not so in any of our species, and although nearly in contact in *L. striatus*, they are widely separate in *L. planicollis*.

FAM. XLVI.—CIOIDAE.

Mentum trapezoidal, corneous; ligula without paraglossæ; palpi short, 3-jointed.

Maxillæ exposed at the base, with two flattened, ciliated lobes; palpi short, 4-jointed.

Antennæ inserted at the anterior margin of the eyes; 8—10-jointed, with the last three joints larger, forming a loose club.

Head more or less protected by the thorax; epistoma usually with a reflexed margin; labrum distinct; mandibles short in our genera; clypeal suture distinct; eyes rounded, somewhat coarsely granulated.

Prothorax with the lateral margin distinct; cylindrical, rounded in front, and prolonged over the head; occasionally toothed or horned; coxal cavities small, separate, narrowly closed behind.

Mesosternum short, triangular; side pieces scarcely extending to the coxæ.

Metasternum large; side pieces narrow, linear.

Elytra entirely covering the abdomen; epipleuræ narrow.

Abdomen with five free ventral segments, the first longer than the others.

Anterior and middle coxæ oval, not prominent, without trochantins; hind ones transverse, separated.

Legs moderately short; tibiæ either dilated and serrate,

or linear, spurs not distinct; tarsi 4-jointed, joints 1—3 very short, equal, 4th long, with simple claws.

Very small insects, found under bark of trees, and in the dry and woody species of fungus, such as Polyporus. They are usually gregarious. In some of the species the head and the anterior margin of the thorax are in the male ornamented with horns.

Our genera are but three in number, all having the tarsi free, not received in tibial grooves.

Antennæ 10-jointed, tibiæ not serrate.

Cis.

Antennæ 9-jointed.

ENNEARTHRON.

Antennæ 8-jointed, tibiæ not serrate.

CERACIS.

The last genus is not yet represented in the Pacific fauna. The other two are distributed on both sides of the continent.

FAM. XLVII.—TENEBRIONIDAE.

Mentum variable in form, sometimes entirely closing the opening of the mouth inferiorly; ligula usually visible, sometimes concealed; paraglossæ distinct; labial palpi 3-jointed.

Maxillæ with two lobes, the inner one smaller, sometimes armed with a terminal corneous hook; palpi 4-jointed.

Mandibles usually short, robust, and furnished with a basal tooth; emarginate at tip in the first and second sub-families; either emarginate or entire in the third.

Eyes usually transverse, with the anterior outline emarginate.

Antennæ generally inserted under the sides of the head, or at least under a small frontal ridge; usually thickened externally; sometimes subserrate, very rarely (male of *Rhipidandrus*) pectinate; usually 11-jointed, very rarely 10-jointed.

Prothorax with epimera and episterna not separate; coxal cavities separated by the prosternum (except in *Dacoderus*), and entirely closed behind.

Mesosternum short, side pieces usually attaining the coxæ, though in several tribes they are cut off by the sterna; in the latter case no trochantin is visible.

Metasternum variable in length, side pieces sometimes wide, sometimes narrow.

Elytra rounded at tip, covering the abdomen, frequently embracing its sides very far.

Abdomen with five ventral segments, of which the first three appear more closely connected than the others, though not decidedly connate.

Legs variable; anterior coxæ globose, rarely oval, not prominent, without trochantin; middle coxæ rounded, with or without trochantin; hind coxæ transverse, more or less separated; tarsi without membranous lobes; anterior and middle ones 5-jointed; hind tarsi 4-jointed, the first joint almost always longer than the second; claws simple.

This family contains a large number of genera, possessing in common very few characters, yet linked together by such gradual changes in structure that their classification presents almost insuperable difficulties. The division into tribes can scarcely be exhibited in a tabular form, on account of the varied relations exhibited by the members of some of the tribes.

The species live upon vegetable matter in various conditions; the habits of those contained in the respective tribes will be mentioned below.

The limits of the family are very well defined, although by Lacordaire certain genera have been retained, which I have found it necessary to exclude; these are *Boros*, *Cononotus*, and *Penthe*, in all of which the anterior coxal cavities are open behind.

The distribution of the genera of this family is very remarkable. Of those without wings scarcely any are common to the two continents. With the exception of three, they are not represented in North America, east of the longitude of the mouth of the Platte or Nebraska River; from that point they increase in number of genera, species, and individuals, until, in California, they form the characteristic feature of the insect fauna.

The representation of genera on this continent being thus imperfect, the characters given in the short synoptic tables will not always enable our genera to be distinguished from those of other countries. The student, for such purpose, must consult Lacordaire's *genera des Coléoptères*, vol. 5, a work not less admirable for the wonderful industry displayed in it, than for being the first successful effort towards a rational classification of this most difficult family. The recognition of the value of the form of the middle coxæ, and the vestiture of the tarsi in establishing natural divisions and tribes, we owe to his acute observation.

By combining with these characters another not before observed,

derived from the 3d and 4th ventral segments, this family may, in my opinion, be properly divided into three sub-families :*—

Ventral segments entirely corneous ;

Middle coxæ without trochantin.

TENTYRIDÆ.

Middle coxæ with distinct trochantin.

ASIDIDÆ.

Ventral segments 3 and 4 with the hind margin coriaceous.

TENEBRIONIDÆ.

Sub-Family I.—TENTYRIDÆ.

The species of this sub-family are distinguished by the middle coxæ being entirely inclosed by the sterna, without any trochantin ; the side pieces of the mesothorax consequently do not extend to the coxal cavities ; the ventral segments are entirely corneous, the 3d and 4th having no vestige of a posterior coriaceous margin. Besides these two distinguishing characters, common to all the tribes, there are others worthy of notice, which belong to individual tribes, and are not found to recur in the other two sub-families.

The species, with the exception of Epitragini and a few Thino-
batini, are apterous, and the metasternum is very short, except in the winged species. In Zopherini the eyes are very finely granulated, a singular exception in this family. The mentum is frequently very large, so as to fill entirely the gular cavity, and to cover completely the maxillæ and ligula, so that the gular process usually supporting it ceases to exist. This character recurs again only in certain Asidini of the next sub-family. The tarsi are sometimes spinous, sometimes pubescent beneath. The front is frequently trilobed.

The tribes represented in our fauna are as follows :—

Mentum concealing both maxillæ and ligula ;

Episterna of metathorax very wide ; front trilobed.

I. EPIPHYSINI.

Episterna of metathorax narrow ;

Pro- and mesosternum not articulating together ;

Front lobed, body apterous.

II. GNATHOSINI.

Front not lobed, body sometimes winged.

III. THINOBATINI.

* Two described insects cannot be placed in the arrangement of this family, from want of sufficient knowledge of their characters. The first, *Dysmathes Sahlbergii* Mann. Bull. Mosc. 1853, ii. 265, is said to be similar in form to *Nyctelia*, but to have antennæ like *Gnathosia* ; the form of mentum, if known, would determine its position. The second is *Pedinus suturalis* Say, Journ. Ac. Nat. Sc. Phil., iii. 263, which has not been identified in recent times.

Mesosternum emarginate, receiving the prosternum, body winged.

IV. EPITHAGINI.

Mentum large, concealing either the ligula or maxillæ, never both;

(Epistoma of metathorax narrow in our tribes;)

Tibial spurs distinct.

V. ANEPHINI.

Tibial spurs very minute;

Eyes very finely granulated.

VI. ZOPHERINI.

Eyes coarsely granulated, head constricted behind;

Anterior coxæ contiguous; antennæ 10-jointed.

VII. DACODERINI.

Anterior coxæ separated; antennæ 11-jointed.

VIII. STENOSINI.

Mentum small, maxillæ and ligula both exposed;

Prothorax globose, not margined; mesothorax pedunculated.

IX. APOCRYPHINI.

Tribe I.—EPIPIHYSINI.

Body short, convex, apterous; epistoma trilobed, labrum prominent; mentum very large, entirely filling the gular cavity; ligula and maxillæ concealed; thorax very short, anterior angles acute, prominent; elytra globose, sides embracing widely the flanks, epipleuræ narrow; anterior coxæ widely separated, prosternum closely fitting to the mesosternum; hind coxæ transverse, widely separated. Tarsi ciliate beneath.

This tribe contains but two genera, each characterizing a separate group. *Epiphysa*, with short tarsi and glabrous body, is found at the Cape of Good Hope. *Edrotes*, with slender tarsi and sparsely clothed with long hairs, contains two species: one (*E. rotundus*) found on the eastern slope of the Rocky Mountains; the other (*E. ventricosus* Lec.) in the Colorado valley, California.

Tribe II.—GNATHOSINI.

Body variable in form, apterous; epistoma trilobed in our genera, but with at least a prominent middle lobe, always leaving the base of the mandibles exposed; labrum prominent; mentum very large, entirely filling the gular cavity; ligula and maxillæ concealed; elytra widely embracing the flanks of the abdomen, or not; prosternum not adapted to the mesosternum. Tarsi (of the genera of America) with rigid hairs beneath.

The sixth tribe of Lacordaire, Tentyrides, appears to me to be capable of a natural division into two, according as the epistoma is lobed or not. The limits of these tribes seem, as far as I have been able to refer to foreign genera, to be well defined.

Our genera may be arranged—

Middle lobe of epistoma rounded; mandibles toothed above; eyes rounded.

TRIOROPHUS.

Middle lobe of epistoma truncate; mandibles not toothed;

Hind coxæ widely separated; eyes subtransverse.

CRANIOTUS.

Hind coxæ approximate; eyes emarginate.

TRIMYTIS.

Triorophus contains four species; three from California, and one from Texas. *Craniotus* is found in the interior of California, *Trimytis* in New Mexico and Nebraska. All are found on the ground, under stones, &c. The intercoxal process of the abdomen is parallel in the first two genera, but triangular and acute in *Trimytis*. Each genus may be considered as representing a separate group.

Tribe III.—THINOBATINI.

Body oval or rounded, sometimes winged; epistoma truncate, or feebly rounded; labrum prominent, or not; mentum very large, entirely filling the gular cavity; ligula and maxillæ concealed; elytra not widely embracing the flanks of the abdomen; prosternum not adapted to the mesosternum; metasternum sometimes elongated; middle coxæ without trochantin, inclosed by the sterna; hind coxæ approximate, intercoxal process of the abdomen acute. Tarsi ciliate beneath.

Although the unique specimens of *Cryptadius* and *Auchmobius* have been lost, I am quite certain about the position of these genera.

Our genera may be thus tabulated:—

Eyes with distinct superciliary ridges;

Anterior tibiæ with the outer angle prolonged;

Body inflated.

CRYPTADIUS.

Body elongate oval.

EURYMETOPON.

Anterior tibiæ truncate at tip.

EMMENASTUS.

Eyes without superciliary ridges, anterior tibiæ truncate.

AUCHMOBIUS.

In some individuals, both of *Eurymetopon* and *Emmenastus*, the labrum is retracted and almost concealed under the epistoma. In both genera are species with and without wings; in the former case the metasternum is longer than the first ventral segment.

To *Emmenastus* I would refer *Eurymetopon longulum*, *obesum*, and *atrum* Lec. All the species of this tribe are Californian, except a few *Emmenastus* from Nebraska, New Mexico, and Texas. The winged species are found under bark of *Prosopis*, the others under stones.

Tribe IV.—**EPITRAGINI.**

Body oval, winged; epistoma trilobed (in our species); labrum prominent; mentum very large, entirely filling the gular cavity; ligula and maxillæ concealed; elytra with narrow epipleuræ; prosternum (in our species) prolonged and pointed, fitting into the deeply emarginate mesosternum; metasternum long, with narrow side pieces; middle coxæ without trochantin, inclosed by the sterna; hind coxæ approximate, intercoxal process of the abdomen acute; tarsi pubescent beneath.

Our species are few in number, and belong to *Epitragus*; they are found on tall grass, in moist places. None have yet occurred in the Pacific district. *E. canaliculatus* Say, is remarkable for the thorax of the male having a broad, dorsal groove, limited by elevated ridges.

The characters here given do not apply to the tribe as received by Lacordaire, which might probably with advantage be divided.

Tribe V.—**ANEPSIINI.**

Body elongate oval, apterous, sparsely hairy; head received in the thorax as far as the eyes, which are almost divided, small and coarsely granulated; front dilated at the sides over the base of the mandibles, submarginate anteriorly, partly covering the labrum; mentum large, flat; maxillæ exposed, ligula concealed; gular peduncle broad, distinct; palpi not dilated; antennæ 11-jointed, very slightly thickened externally; thorax not applied closely to the trunk; metasternum with narrow episterna; middle coxæ surrounded by the sterna, without trochantin; hind coxæ not widely separated, intercoxal process of abdomen triangular; legs short, tibial spurs distinct, especially the anterior ones, anterior tibiæ strongly dilated and compressed; tarsi short, with small spines beneath.

Three small species, from the Colorado Desert, constitute this tribe. *Anepsius* was placed by Lacordaire with the *Ulomini*, from which it differs not only by the larger mentum and concealed ligula, but by the absence of any coriaceous margin on the third and fourth ventral segments.

The two genera are distinguished as follows:—

Antennæ slender, gradually thickened externally.	ANEPSIUS.
Antennæ short, four last joints slightly but suddenly larger.	BATULIUS.

Tribe VI.—**ZOPHERINI.**

Body elongate, apterous, rough, covered with elevations; epistoma truncate or broadly emarginate; labrum uncovered; mentum large, leaving the base of the maxillæ and sometimes the ligula exposed, inserted upon a very broad, short, gular process; head received by the prothorax as far as the eyes, which are very transverse and very finely granulated; antennæ with the outer two or three joints usually connate, elytra but feebly embracing the flanks, without distinctly defined epipleuræ. Metasternum short, with narrow side pieces; middle coxæ without trochantin, inclosed by the sterna. Anterior and hind coxæ very widely separated; intercoxal process of the abdomen broad, rectangular; tibial spurs very small, or wanting.

Our genera are as follows:—

Tarsi sulcate beneath; ligula concealed;

Antennæ received in very deep grooves;

Joints of antennæ 9—11 connate, truncate at tip.

ZOPHERUS.

Joints of antennæ 10—11 connate, pointed at tip.

PHLÆODES.

Antennal cavities obsolete behind, antennæ as in Phlæodes.

NOSERUS.

Tarsi not sulcate beneath; ligula prominent; antennæ not received in cavities;

Antennæ 11-jointed, 10th joint wider than the 9th and 11th.

PHELLOPSIS.

Zopherus occurs in Texas, New Mexico, and Colorado Desert. To Phlæodes belong *Nosoderma diabolicum* and *pustulosum* Lec., found in California; the genus is indicated but not named by Lacordaire. The type of Noserus is the Californian *Nosoderma plicatum* Lec. To Phellopsis belong *Boletophagus obcordatus* Kirby, from Canada and New England, and *Nosoderma porcatum* Lec., from Oregon.

The genus *Nosoderma* does not occur in our territory; it differs from *Phellopsis* by the antennæ having the 10th and 11th joints connate into a rounded mass.

Tribe VII.—**DACODERINI.**

This tribe contains but a single species *Dacoderus striaticeps* Lec., a singular insect, of small size, found under bark, at the junction of the Colorado and Gila Rivers.

Body elongate, not convex, apterous; head constricted behind into a narrow neck; eyes coarsely granulated, oval; mentum

large, innate, filling the gular cavity, and covering the base of the maxillæ, ligula prominent; antennæ 10-jointed, thick, joints rounded, equal; anterior coxæ contiguous, their cavities confluent, though closed behind;* middle coxæ without trochantin, entirely inclosed by the sterna; hind coxæ widely separated, intercoxal process of the abdomen obtuse, first ventral segment elongated; elytra embracing but slightly the flanks of the abdomen, epipleuræ narrow. Legs moderately short, tibial spurs scarcely distinct, tarsi pubescent. Side pieces of metasternum very narrow.

The elytra are shining and coarsely punctured, the thorax elongated, constricted at the middle, with a convex lateral tubercle just in the constriction.

Tribe VIII.—**STENOSINI.**

Body slender, apterous; head constricted behind into a neck; labrum covered by the epistoma; mentum large, inserted upon a gular peduncle; maxillæ exposed, ligula slightly prominent; eyes variable in form, coarsely granulated; antennæ 11-jointed; elytra embracing but slightly the flanks of the abdomen; anterior coxæ moderately separated; middle coxæ without trochantin, inclosed by the sterna; hind coxæ moderately distant; legs feeble, tibial spurs obsolete, tarsi ciliate. Side pieces of metasternum narrow.

Of this tribe but a single representative *Aræoschizus costipennis* Lec., is known from our territory; it is found on the borders of the Colorado Desert.

Aræoschizus is distinguished from foreign genera by the eyes being not divided, but very small and linear, situated on the upper surface of the head, between the margin and an elevated line; by the 11th joint of the thick antennæ, being small and partly received by the 10th; and by the thorax being long and feebly convex, not costate on the disk.

Tribe IX.—**APOCRYPHINI.**

Body slender, apterous; head not constricted behind; labrum prominent; eyes small, emarginate, coarsely granulated; mentum small, inserted upon a gular peduncle; maxillæ and ligula exposed; last joint of palpi strongly securiform; antennæ 11-jointed, slender, scarcely thickened externally; prothorax globose, flanks not separated from the sides; trunk pedunculated; elytra em-

* This character is known in no other Tenebrionide.

bracing widely the flanks of the abdomen; epipleuræ narrow. Anterior coxæ moderately separated; middle coxæ inclosed by the sterna, without trochantin; hind coxæ small, widely separated; legs long, thighs clavate; tibiæ slender, with very small spurs; tarsi pubescent, with long hairs.

This tribe consists of a single genus, *Apocrypha*, of which two species from California are known; they are about one-tenth of an inch long, and resemble in form certain *Dyschirius* of the family *Carabidæ*; the thorax is globose, and densely punctured; the elytra are sparsely punctured, with a few erect, long hairs; the whole body is sparsely pubescent; they are found on the ground, and are rare.

The genus *Cononotus*, formerly regarded by me as allied to *Apocrypha*, does not belong to this family.

The present tribe is considered by Lacordaire as being a group of the tribe *Helopini*; the absence of the membranous posterior margin to the third and fourth ventral segments, which is so evident in *Helopini* and all the allied tribes, induces me to remove it from the association in which it was placed to Lacordaire.

At the same time it must be said that the observation of such characters, as are relied on for the classification of this family, is sometimes very difficult in small species, unless specimens may be submitted to dissection; but whatever may be the affinities of *Apocrypha*, its claim to rank as a distinct tribe cannot be controverted.

Sub-Family II.—ASIDIDÆ.

In this sub-family the middle coxæ are contained in cavities which are open externally, so as to enable the epimera of the mesosternum to reach the cavities; there is also a distinct trochantin visible in the space thus formed. To these characteristics it may be added that the gular peduncle, for the support of the mentum, is visible, except in a few *Asidini*; the mesosternum is always very short, and the wings are wanting; the tarsi are always channelled beneath, spinous or setose along the margin, almost never pubescent. The species are all found walking on the ground in desert regions. Our tribes are only the following:—

Labrum partly covered by the front.

I. CRYPTOGLOSSINI.

Labrum prominent;

Mentum large, ligula partly concealed.

II. ASIDINI.

Mentum small, ligula entirely exposed, lunate ;

Gula with a short medial fissure.

Gula without fissure ; intercoxal process of abdomen acute.

III. BRANCHINI.

IV. COMIONTINI.

In a natural arrangement the last tribe will probably take place as a sub-tribe of Praocini, distinguished from the genuine Praocini by the form of the intercoxal process of the abdomen, which is broad in them. The genuine Praocini do not, however, appear in our fauna, and any discussion of the question would be, at present, irrelevant.

Tribe I.—CRYPTOGLOSSINI.

Body elongate, apterous ; head rarely deflexed, usually prominent, oval, and gradually narrowed behind the eyes, which are small, transverse, and reniform, coarsely or moderately finely granulated ; labrum entirely or partly covered by the epistoma ; mentum moderately large, inserted upon a broad gular peduncle ; maxillæ exposed, ligula not prominent ; elytra with moderate epipleuræ, not very widely embracing the flanks of the abdomen, middle coxæ with distinct trochantin, side pieces reaching the coxal cavities ; hind coxæ distant, intercoxal process truncate ; legs moderate or stout ; tibial spurs distinct.

I have removed from this tribe the genera *Eulabis*, *Epantius*, and *Cerenopus*, included in it by *Lacordaire*, since they have the hind margin of the 3d and 4th ventral segments coriaceous.

Our genera indicate two sub-tribes, so distinct that they should probably rank as separate tribes.

Genæ prominent ; tarsi pubescent.

Genæ not produced ; tarsi setose.

NYCTOPORINI.

CRYPTOGLOSSINI.

Sub-Tribe I.—Nyctoporini.

This sub-tribe consists of but a single Californian genus, *Nyctoporis*, found under bark. The body is elongate and rough, the elytra are sculptured with numerous rows of acute elevations, and frequently costate ; the epipleuræ occupy the whole of the inflexed portion of the elytra. The mentum is large, quadrate, and transverse, the gular peduncle is almost wanting, the sides of the head beneath are prolonged so as almost to touch the sides of the mentum, thus covering the maxillæ except at the base, where they are visible ; the last joint of the palpi is but slightly

dilated; the front is dilated, concealing the labrum. The side pieces of the metasternum are narrow; the 2d and 3d ventral segments are scarcely emarginate. The legs are moderate, the tibial spurs are small, and the tarsi are pubescent.

Sub-Tribe II.—**Cryptoglossini.**

Body oblong, with variable sculpture; the epipleuræ occupy only a portion of the inflexed portion of the clytra, which is wider than in the preceding sub-tribe; the mentum is moderately large, oval, and flat, in our genera, and the sides of the head are not prolonged beneath; the gular peduncle is distinct; the last joint of the palpi is slender or slightly dilated; labrum almost entirely concealed by the dilated front. The side pieces of the metasternum are tolerably wide; some of the ventral segments are strongly emarginate behind. Legs long and stout, tibial spurs not small, tarsi spinous beneath.

Our genera belong to the group Centrioptera, distinguished by the mesosternum being prominent.

Mesosternum perpendicular in front; last joint of antennæ oval, acute, not smaller than the preceding. CENTRIOPTERA.

Mesosternum broadly concave;

Last joint of antennæ oval, very little smaller than the 10th.

Oochila.

Last joint of antennæ truncate, one-half smaller than the 10th.

CRYPTOGLOSSA.

Centrioptera differs besides from the other genera by the hind thighs being roughened with little teeth. The type of Oochila is *Asbolus? infaustus* Lec. from Texas; *Asbolus* Lec. is synonymous with *Cryptoglossa* Sol.; Centrioptera is found in California, *Cryptoglossa* in Arizona and Utah.

Tribe II.—**ASIDINI.**

Body ovate, apterous; head scarcely narrowed behind the eyes, which are transverse, reniform, and moderately finely granulated; epistoma very short, not covering the base of the mandibles; labrum prominent; mentum large, either filling entirely the gular cavity or inserted upon a very short and wide peduncle, and thus leaving the base of the maxillæ exposed; in either case a space permits the lateral play of the palpi, the last joint of which is large and securiform; antennæ (11-jointed in our genera) with

the 11th joint smaller than the 10th; elytra embracing widely the flanks of the abdomen (except in *Microschatia*); epipleuræ indistinct, middle coxæ with distinct trochantin, side pieces of mesothorax scarcely reaching the cavities; metasternum very short, with the episterna wide, and epimera not visible; hind coxæ moderately separated; intercoxal process of abdomen obtuse; 4th and 5th ventral segments somewhat prolonged behind at the sides. Legs moderate, tibial spurs distinct; tarsi setose, but not sulcate beneath. Front transversely impressed in all the species known to me.

The shortness of the middle of the front, and the exposed base of the mandibles give a somewhat trilobed anterior outline, thus recalling for the last time, though feebly, the form seen in some of the earlier tribes of the family; the large size of the mentum is another reminiscence of the tribes alluded to, and this affinity is still more strongly indicated in the foreign genus *Machla*, which, while placed by Lacordaire in the present tribe, is remarkable for having the middle coxæ without trochantin and entirely inclosed by the sterna. Instances like the one here given show the impossibility of exhibiting even the most important affinities in a linear arrangement of a family constituted, like the present, of a very large number of tribes of equal value.

Our genera are :—

Mentum filling the gular cavity;

Last joint of maxillary palpi moderate; mentum and mandibles approximate, leaving room only for the palpi;

Inflexed portion of elytra narrow.

MICROSCHATIA.

Inflexed portion elytra wide;

Prosternum prominent, ant. tibiæ with the outer angle prolonged.

ASTROTUS.

Prosternum not prominent; anterior tibiæ truncate.

OLOGLYPTUS.

Last joint of maxillary palpi very large; mentum and mandibles separated by a wide space.

PELECYPHORUS.

Mentum inserted upon a broad peduncle, lateral fissures distinct; last joint of maxillary palpi very large;

Posterior angles of thorax distinct.

ASIDA.

Posterior angles of thorax obtuse or rounded.

EUSCHIDES.

The last two genera do not seem to be separated by any distinct characters: by combining them *Asida* would become protean in form like *Pelecyporus* and *Eleodes*.

The genera *Microschatia*, *Pelecyporus*, and *Euschides*, occur from Kansas to the Pacific coast; *Astrotus* is found in Texas;

Ologlyptus (*Pactostoma* Lec.) and *Asida* in Kansas and New Mexico.

Philolithus Lac. I have not adopted as it seems to merge imperceptibly into *Pelecyporus*.

Tribe III.—BRANCHINI.

Body oval, moderately convex, apterous; head flat, received in the thorax as far as the eyes, which are transverse and moderately coarsely granulated; epistoma emarginate in the middle, feebly trilobed (as in *Asida*), covering the base of mandibles; frontal suture indistinct; labrum prominent, emarginate; antennæ slender, 11-jointed, outer points broader; mentum moderate, trapeziform, emarginate in front, inserted upon a gular peduncle which is distinctly fissured at the middle owing to the coalescence of the gular sutures; maxillæ exposed, palpi very slightly dilated; ligula moderately prominent, emarginate. Prothorax bisinuate at base, hind angles slightly prolonged, embracing the humeri; elytra embracing widely the flanks of the abdomen; epipleuræ narrow, suddenly dilated at the base; anterior coxæ subtransverse, middle coxæ with distinct trochantin, side pieces attaining the coxal cavities; metasternum short, episterna wide, epimera distinct; hind coxæ separated, intercoxal process of abdomen truncate; tibial spurs distinct, tarsi setose beneath.

I have separated as a distinct tribe a new genus *Branchus*, which seems to combine characters belonging to the South American tribes *Nycteliini* and *Praocini*. With the former it possesses the medial gular fissure, with the latter the prominent emarginate ligula; the epipleuræ are suddenly dilated at the base in all three.

The species of *Branchus* somewhat resemble in form *Opatrum*, and are opaque, coarsely punctured, and slightly pubescent; on the elytra are rows of vague foveæ as in *Discodemus*, but more strongly marked. They are known to me from Nicaragua, Island of New Providence (Bahama), and Florida. A species from Honduras differs from the others by its anterior tibiæ being truncate, and will, therefore, constitute a distinct genus; in form it resembles a broad *Asida* rather than *Opatrum*; the tibiæ of the other species are prolonged at the outer angle, though less so than in *Eusattus* and allied genera of *Coniintini*. So far as I know, none of the species of this tribe are described. The species from Florida, .61 unc. long, with the thorax strongly narrowed in

front and rounded on the sides, coarsely punctured, with a faint smooth dorsal line, and the elytra with faint costæ between the rows of irregular foveæ, may be called *Branchus floridanus*.

Tribe IV.—**CONIONTINI.**

Body oval or globose, apterous; epistoma covering the base of the mandibles; labrum prominent; mentum moderate, emarginate; gular peduncle short or almost obsolete; ligula prominent, emarginate; maxillæ exposed; eyes transverse, small, moderately coarsely granulated; elytra usually with narrow epipleuræ; anterior coxæ subtransverse; middle coxæ with distinct trochantin, side pieces of mesothorax attaining the coxal cavities; metasternum very short, episterna wide, epimera visible; hind coxæ approximate; intercoxal process of abdomen acute; tibial spurs long, tarsi spinous beneath; the first joint of hind tarsi very long.

Antennæ very short; 1st joint of anterior tarsi prolonged into a large spine.

COELUS.

Antennæ long; tarsi simple;

Anterior tibiæ with the outer angle much prolonged;

Inflexed portion of elytra wide;

Epipleuræ suddenly dilated at the base.

DISCODEMUS.

Epipleuræ gradually wider in front.

EUSATTUS.

Inflexed portion of elytra narrow, limited by epipleural margin.

CONIPINUS.

Anterior tibia truncate at hip; inflexed portion of elytra narrow.

CONIONTIS.

Cœlus contains two species found on the California seashore. *Discodemus* is founded upon *Zophosis reticulata* Say., from Kansas and Arizona, and *Conipinus* upon *Eusattus dubius* and *productus* Lec., from Arizona; *Eusattus* is distributed from Kansas to Texas, California, and Oregon. *Coniontis* contains several Californian species, one from Oregon and one from Kansas. These insects are all found under stones, &c. on the ground.

Sub-Family III.—TENEBRIONIDAE (genuini).

In this sub-family the posterior margin of the third and fourth ventral segments is coriaceous; the middle coxæ are usually provided with a distinct trochantin, and their cavities extend outwards to reach the epimera; sometimes (*Ulomini*) the trochantin is absent, but in these cases it appears to me rather to be united

with the mesosternum, than to be absolutely wanting, as in the first sub-family; the middle coxæ are in no case so closely embraced by the sterna as in the Tentyriidæ. The body is more frequently winged than apterous, and, consequently, the metasternum is more frequently long than short; the mentum is small, or, at most, moderate in size, and does not conceal either ligula or maxillæ; the gular peduncle is always distinct. The anterior coxæ are sometimes oval or subtransverse, a character not seen in the other two sub-families; equally peculiar to this sub-family is the short, coriaceous clypeus seen between the front and labrum in certain tribes. It is here too that the first instances occur of genera with entire mandibles. The tarsi are pubescent beneath, sometimes silky, very rarely spinous or setose.

A large number of the species are found under bark; the first four tribes are, however, found on the ground.

Our tribes may be separated as follows:—

- | | |
|--|----------------------|
| Elytra embracing widely the flanks of the abdomen. | I. BLAPTINI. |
| Elytra not embracing widely the flanks of the abdomen; | |
| Front entirely corneous, articulating directly with the labrum; clypeus not visible; | |
| Middle and hind legs not fossorial; | |
| Front broadly dilated at the sides, emarginate anteriorly; | |
| Anterior tarsi of male dilated. | II. PEDININI. |
| Anterior tarsi of male not dilated. | III. OPATRINI. |
| Front moderately dilated at the sides, not emarginate anteriorly; | |
| Anterior coxæ rounded; trochantin of middle coxæ distinct; | |
| Tarsi spinous or setose beneath. | IV. SCAURINI. |
| Tarsi pubescent; | |
| Penultimate joint of tarsi entire. | V. TENEBRIONINI. |
| Penultimate joint of tarsi lobed. | VI. HETEROTARSINI. |
| Anterior coxæ subtransverse, trochantin of middle coxæ obsolete. | |
| | VII. ULOMINI. |
| Legs all fossorial. | VIII. TRACHYSCELINI. |
| Front partly coriaceous, or separated from the labrum by a short coriaceous clypeus; | |
| Tarsi spinous or setose beneath; | |
| Anterior tibiæ dilated. | IX. PHALERINI. |
| Anterior tibiæ not dilated. | X. CRYPTICINI. |
| Tarsi pubescent; anterior coxæ subtransverse, | |
| Genæ sulcate for the base of the antennæ. | XI. BOLETOPHAGINI. |
| Genæ not sulcate. | XII. DIAPERINI. |
| Tarsi pubescent, anterior coxæ rounded; | |
| Antennal ridges on the same plane as the front; (clypeus distinct); | |
| Middle coxæ without trochantin. | XIII. ADELININI. |
| Middle coxæ with distinct trochantin. | XIV. HELOPINI. |

Antennal ridges obliquely elevated; (anterior part of front coriaceous, but not separate as a clypeus);

Metasternum short.

XV. MERACANTHINI.

Metasternum long.

XVI. STRONGYLINI.

It will be observed by the general student that the above-mentioned tribes, with various foreign ones not represented in our fauna, fall into three natural divisions: 1. **BLAPTOIDES**, having the flanks of the abdomen widely embraced by the elytra, and the clypeus absent; important foreign tribes of this division are typified by *Pimelia* and *Scotobius*. 2. **TENEBRIOIDES**, having the inflexed portion of the elytra narrow, and the clypeus absent, containing in our fauna tribes II—VIII. 3. **HELOPOIDES**, having the inflexed portion of the elytra narrow, and a distinct, coriaceous clypeus between the front (or epistoma) and the labrum; this division includes the remaining tribes.

Tribe I.—**BLAPTINI**.

Body oblong, rarely oval, apterous; head prominent, slightly narrowed behind the eyes; epistoma covering the base of the mandibles at the sides; labrum prominent; mentum small, inserted upon a gular peduncle; maxillæ exposed; ligula partly concealed; maxillary palpi with the last joint securiform, not very large; eyes transverse, reniform, tolerably finely granulated; antennæ 11-jointed, with the outer joints rounded, equal; elytra embracing widely the flanks of the abdomen, epipleuræ narrow; middle coxæ with large trochantin, side pieces attaining the coxal cavities; metasternum very short, episterna narrow, epimera quite distinct; hind coxæ widely separated; intercoxal process of abdomen rectangular; third and fourth ventral segments not prolonged behind at the margin. Legs long; anterior femora frequently toothed; tibial spurs distinct; tarsi channelled and setose beneath.

In all of the genera found in our territory the mentum is trilobed, the middle lobe projecting over the ligula, and the lateral ones frequently bent inwards, so as to become scarcely visible. Another character common to all our genera is that only the joints 9—11 of the antennæ are rounded.

Our genera are but three, each representing a separate group.

Flanks of elytra not acutely margined;

ELRODES.

Flanks of elytra acutely margined;

Anterior tarsi of male not dilated; humeri of elytra not embracing the thorax. EMBAPHION.

Anterior tarsi of male with joints 1—2 slightly dilated, spongy beneath; humeri of elytra embracing the base of thorax. PROMUS.

The species of *Eleodes* are very numerous, and are found from the longitude of Platte River to the Pacific. *Embaphion* contains four species, found in Texas, Kansas, and Arizona. *E. muricatum* and *concauum* are of an elliptical form, with widely reflexed margin; *E. contusum* has the thorax distant from the elytra, its margins are still widely reflexed; in *E. depressum* (*Eleodes depressa* Lec.) the thorax is also distant from the elytra, but the margin is narrow and not reflexed, thus establishing a passage to *Eleodes*.

The type and only species of *Promus* is *Blaps opaca* Say, a very abundant insect on the plains east of the Rocky Mountains.

Tribe II.—PEDININI.

Body oval, not very convex; epistoma emarginate, covering the base of the mandibles; labrum prominent; mentum frequently trilobed in front, small or moderate in size; gular peduncle distinct; ligula prominent, entire or slightly sinuate in front; eyes transverse, sometimes divided; elytra embracing feebly the flanks of the abdomen; epipleuræ narrow; anterior coxæ subtransverse; middle coxæ with distinct trochantin, side pieces of mesothorax extending to the coxal cavities; metasternum very short, epimera distinct; hind coxæ distant; intercoxal process of abdomen truncate; tibial spurs small, distinct; anterior, and sometimes the middle tarsi of the male dilated, and spongy beneath; hind tarsi sometimes pubescent, sometimes spinous.

Two groups occur in our fauna:—

Eyes not divided.

PLATYNOTI.

Eyes completely divided.

BLASPINI.

Group I.—Platynoti.

This group, distinguished by the epistoma being emarginate, and the eyes not entirely divided, is represented in our fauna by only a few species of *Opatrinus* from the Atlantic district. *Opatrinus* is distinguished from foreign genera of the same group by the thorax being sinuate at base, and by the inflexed portion of the elytra being formed entirely of the epipleuræ; the mentum is trilobed in front, and the anterior tibiæ are not dilated.

Group II.—**Blapstini.**

In this group the eyes are completely divided; the epistoma is emarginate, and the inflexed part of the elytra is composed entirely of the epipleuræ; the mentum is not trilobed in front. In *Notibius* and *Conibius* the dilatation of the anterior tarsi of the male is very feeble, but in the genus last named the anterior tibiæ of that sex are bent and armed with a tooth, on the inner face, near the base.

Intercostal process of abdomen short, triangular;

Superior portion of eyes large, rounded.

Superior portion of eyes small, linear.

Intercostal process of abdomen broad, rectangular;

Superior portion of eyes small, rounded.

BLAPSTINUS.

CONIBIUS.

NOTIBIUS.

Blapstinus contains many species, and is found in every part of our territory; *Conibius* and *Notibius* occur only in California.

Tribe III.—**OPATRINI.**

Body oval, not convex; head received by the thorax as far as the eyes, which are transverse, strongly emarginate, and coarsely granulated; epistoma emarginate, covering the base of the mandibles; labrum prominent; mentum small, inserted upon a distinct gular peduncle; ligula prominent, not deeply emarginate; maxillæ exposed; elytra with not very wide epipleuræ, occupying the whole of the inflexed portion. Anterior coxæ subtransverse or rounded; middle coxæ with distinct trochantin, side pieces attaining the cavities; hind coxæ distant; intercoxal process truncate or acute; legs moderately stout, front tibiæ dilated in our genera; tibial spurs small; tarsi setose beneath. Metasternum with narrow episterna and distinct epimera. Hind margin of third and fourth ventral segments subcoriaceous.

The above definition applies not to the whole tribe, but rather to our genera, which are but two in number, each represented by a single species from the Northern Atlantic States, found near the sea-shore. Both belong to the group *Stizopodes*, which is distinguished by the last joint of the palpi being securiform; the anterior tibiæ dilated; the epipleuræ not reaching the tip of the elytra. *Anmodonus fossor* Muls. (*Opatrum* f. Lec.) has the wings well developed; *Ephalus latimanus* (*Heliopates* l. Lec.) is apterous; in the latter the antennæ are very short.

Anterior tibiæ slightly dilated, with the outer angle very much prolonged;
intercoxal process of abdomen acute. AMMODONUS.

Anterior tibiæ very broad, triangular, outer angle slightly prolonged; inter-
coxal process truncate. EPHALUS.

Tribe IV.—SCAURINI.

Body elongate, apterous; head prolonged behind the eyes, which are small, transverse, reniform, and coarsely granulated; front dilated at the sides and anteriorly; labrum covered; mentum small, with small inflexed lateral lobes; ligula prominent; gular peduncle distinct; palpi with the last joint dilated, triangular; antennæ 11-jointed, outer joints broader, rounded, subtransverse. Elytra not embracing widely the flanks of the abdomen; epipleuræ narrow, reaching the tip of the elytra; mesosternum very short, side pieces narrow; epimera distinct. Hind margin of third and fourth ventral segments subcoriaceous; third and fourth ventral sutures deeply impressed, the corresponding segments scarcely emarginate in *Eulabis* and *Apsena*, deeply emarginate in *Cerenopus*. Anterior coxæ rounded; middle coxæ with distinct trochantin; hind coxæ oval, very widely separated; legs moderate and simple (*Eulabis*), or long, variously toothed (*Cerenopus*); tibial spurs distinct or large; tarsi spinous beneath. Scutellum broad, not penetrating between the elytra.

But three genera represent this tribe in our fauna; they differ from all the neighboring tribes of the present sub-family by the tarsi being clothed beneath with spines instead of hair.

The genera may be distinguished as follows:—

Head short, legs simple;

Mentum with a sudden elevation at the middle (body glabrous).

EULABIS.

Mentum nearly flat; body slightly pubescent.

APSENA.

Head long; legs of ♂ toothed; mentum nearly flat.

CERENOPUS.

The last genus inhabits Arizona, Texas, and the Colorado Desert; in the males the anterior tibiæ are serrate internally, and the hind femora are armed with several small teeth. The other two genera are found in California; *Epantius* Lec. does not appear to be sufficiently distinct from *Eulabis*, but, on the other hand, *Eulabis pubescens* Lec., the type of *Apsena*, while having the form and sculpture of one of the species of *Eulabis* (*E. rufipes*), has the mentum as in *Cerenopus*, that is, nearly flat, with two impressions, separated by a faint medial elevation.

Tribe V.—**TENEBRIONINI.**

Body moderately elongated, apterous, or winged; head prolonged, but scarcely narrowed behind, not received in the thorax as far as the eyes, which are transverse and emarginate, moderately finely granulated; front dilated on the sides, covering the base of the mandibles; epistoma truncate or slightly emarginate, not separated from the labrum by a clypeus; antennæ 11-jointed, gradually thickened externally; mentum small, partly concealing the ligula, inserted upon a gular peduncle; elytra embracing feebly the flanks of the abdomen; epipleuræ narrow. Anterior coxæ globose; middle coxæ with distinct trochantin; legs long; tibial spurs small; tarsi clothed beneath with silky, golden pubescence, or with ordinary coarse pubescence. Hind margin of third and fourth ventral segments subcoriaceous.

This tribe embraces the *Cœlometopides* of Lacordaire, with a portion of his *Tenebrionides*; the vestiture of the tarsi appears to me to be of more structural importance than the length of the metasternum, by which merely apterous and winged species are distinguished. The affinity pointed out between some of the genera and the tribe *Scaurini* is very strong, and I am somewhat in doubt whether *Polypleurus* would not be equally well placed in the preceding tribe.

The genera may be divided into three groups:—

Tarsi silky pubescent beneath;

Epipleuræ not narrowed towards the apex of the elytra. **POLYPLEURI.**

Epipleuræ gradually narrowed towards the apex of the elytra. **UPES.**

Tarsi coarsely pubescent beneath.

TENEBRIONES.

Group I.—**Polypleuri.**

The genus *Polypleurus*, consisting of three species, found under stones in the Atlantic States, is alone contained in this group.

The hind coxæ are widely distant, the legs slender; the tarsi are silky pubescent beneath; the metasternum is very short, and the epipleuræ extend to the extreme tip of the elytra, and are not narrower there than at the middle. The body is elongate ovate in form, the thorax and elytra closely fitting together, the latter with rows of distant foveæ, the alternate spaces being slightly raised. The labrum and ligula are less prominent than in the other genera of the tribe; the mentum is subtrilobed, the middle lobe wide, the lateral ones small and inflexed.

The two species found in the Middle and Southern States are dull, opaque black. The genus has been recently increased by a larger (.65 inch) shining black species from Florida, *P. nitidus* Lee., in which the large punctures of the elytra are arranged in regular rows, and the intervals are not elevated. It also differs from the other two species by the outer joints of the antennæ not being transverse, and by the labrum being more prominent; the latter is possibly an accidental character, as I have observed in *Cibdelis*, *Eurymetopon*, and other genera of various tribes, that the labrum is capable of protrusion and retraction to a limited degree.

Group II.—*Upes*.

In this group the hind coxæ vary in position; the metasternum in the apterous species is very short, but in the winged ones long; the epipleuræ do not reach the tip of the elytra in most of the genera, and in others they are gradually narrowed, barely reaching the tip.

These species are found under bark of dead trees. Our genera are as follows:—

- Epipleuræ not attaining the tip of the elytra;
 Tibiæ grooved on the inner face; (metasternum short). *CÆLOCNEMIS*.
 Tibiæ not grooved on the inner face;
 Mentum flat, rounded in front; (metasternum short). *CIBDELIS*.
 Mentum generally convex, subtrilobate or broadly emarginate;
 Gula sulcate transversely; (metasternum short). *SCOTOBÆNUS*.
 Gula not sulcate;
 Margin of front reflexed. *CENTRONOPUS*.
 Margin of front not reflexed; (metasternum long);
 Thighs very thick, clavate;
 Mentum prominent at the middle. *MERINUS*.
 Mentum broadly emarginate. *PACHYURGUS*.
 Thighs slender, or slightly thickened;
 Mentum flat, broadly emarginate in front; hind tarsi long.
XYLOPINUS.
 Mentum slightly convex, almost truncate in front; hind tarsi short. *HAPLANDRUS*.
 Mentum prominent at the middle, strongly trilobed; hind tarsi long. *UPIS*.
 Epipleuræ reaching the tip of the elytra; metasternum long; hind tarsi short;
 Head with a deep postocular furrow;
 Mentum prominent at the middle. *GLYPTOTUS*.
 Head not grooved behind the eyes;
 Mentum flat, lateral lobes small, inflexed. *NYCTOBATES*.
 Mentum flat, lateral lobes wanting. *IPITHIMUS*.

Of these genera *Cæloenemis*, *Cibdelis*, and *Scotobænus* are Californian; *Centronopus* contains two species, *C. opacus* Lec., without wings, found near the Rocky Mountains; *C. calcaratus* Lec. (*Tenebrio calc.* Fabr.), winged, from the Atlantic States. The type and only species of *Merinus* is *Tenebrio lævis* Oliv., a large insect of a dull black color; that of *Pachyurgus* is *Iphthinius æreus* Mels.; to *Xylopinus* belong *Tenebrio anthracinus* Knoch, and *rufipes* Say, all from the Atlantic States. To *Upis* belongs *U. ceramboides* Fabr. (*reticulatus* Say), which is found throughout the northern portion of the continent; *Hapladrus* comprises *Trogosita femorata* Fabr. (*Upis fulvipes* Herbst.), and two other species.

Singular sexual characters are observed in the anterior and middle tibiæ of *Centronopus*, in the anterior tibiæ of *Xylopinus*, and in the anterior and hind tibiæ of *Merinus*; in the last named the hind femora are also armed with a small tooth. No very marked sexual differences are seen in *Upis*, *Hapladrus*, *Scotobænus*, or *Cibdelis*, nor in the genera with entire epipleuræ. In *Cæloenemis* the hind tibiæ of the male are furnished with a dense brush of hair on the inner face near the tip.

Group III.—TENEBRIONES.

In this group the body is elongate oval, or elongate, and winged; the hind coxæ are moderately distant, the legs are slender, and the tibial spurs are more conspicuous than in the other two groups, the tarsi are clothed beneath with a rigid pubescence; the epipleuræ are variable in length. The mentum is flat and trapezoidal.

Our genera are:—

Epipleuræ extending to the tip of the elytra.
Epipleuræ not reaching the tip of the elytra.

TENEBRIO.
BIUS.

Some of the species are found under bark, and others in articles of commerce. To *Bius* must be referred *Tenebrio estriatus* Lec., from California and Hudson's Bay Territory.

Tribe VI.—HETEROTARSINI.

This tribe contains a few winged species of small size, and ovate form; they are remarkable for the coarseness of the punctures, and are sparsely clothed with erect hair.

The head is not received in the thorax as far as the eyes, which are large and coarsely granulated; the front is slightly dilated over the base of the mandibles; the labrum articulates with the epistoma without any intervening clypeus; the antennæ 11-jointed, slightly thickened externally; the mentum is small; the epipleuræ are narrow and extend to the tip of the elytra. The anterior coxæ are globose, the middle ones have a distinct trochantin, the hind coxæ are slightly separated, and the intercoxal process of the abdomen is triangular; the legs are moderate; tibial spurs small; tarsi clothed beneath with long pubescence, the penultimate joint somewhat lobed. The hind margin of the third and fourth ventral segments is subcoriaceous.

Our genera are two:—

Antennæ gradually and slightly thickened externally.

ANÆDUS.

Antennæ with the joints 9—11 suddenly larger.

PARATENETUS.

Two species of *Anædus* are known in our fauna; one from the Atlantic States, the other from the Gila valley. *Paratenetus* occurs in the Atlantic States; it was placed by Spinola in *Cleridæ*, and is omitted by Lacordaire; Erichson referred it to the present family.

Tribe VII.—ULOMINI.

Body oval or elongate, winged; head slightly but suddenly narrowed behind, received in the thorax up to the eyes, which (in our genera) are transverse, emarginate, and coarsely granulated; the front is dilated so as to cover the base of the mandibles, and in part the mouth; the labrum is but slightly prominent; the mentum is small and trapezoidal, not concealing the ligula; gular peduncle distinct; antennæ 11-jointed, more or less thickened externally, perfoliate. Elytra with narrow epipleuræ. Anterior coxæ subtransverse; middle coxæ inclosed by the sterna, without trochantin; hind coxæ slightly separated; intercoxal process of the abdomen triangular; legs moderate; tibiæ sometimes dilated; tibial spurs distinct; tarsi pubescent beneath, the last joint much elongated. The hind margin of the third and fourth ventral segments is subcoriaceous.

The species are found under bark; a few also infest articles of commerce.

Our genera may be distinguished as follows :—

Antennæ with the last three joints suddenly larger.	TRIBOLIUM.
Antennæ with the outer joints gradually larger ;	
Epipleuræ not reaching the tip of the elytra ;	
Front tibiæ slender ;	
Outer joints of antennæ trapezoidal.	GNATHOCERUS.
Outer joints of antennæ transverse, rounded ;	
First joint of hind tarsi long.	CYNÆUS.
First joint of hind tarsi short.	THARSUS.
Front tibiæ dilated, serrate.	ULOMA.
Epipleuræ extending to the tip of the elytra ;	
Front tibiæ dilated, finely denticulate.	ALPHITOBIOUS.
Front tibiæ slender ;	
Mentum trapezoidal.	ULOSONIA.
Mentum with small, lateral, inflexed lobes.	NEATUS.
Front tibiæ dilated, not denticulate.	APHANOTUS.

Tribolium and Gnathocerus are represented by species carried by commerce over the whole globe. The type of Cynæus is *Platydema angustum* Lec., from the Colorado Desert of California ; it resembles in appearance and sculpture *Alphitobius*, but is much less convex, being, in fact, almost flat. Tharsus is founded on a sub-depressed, elongate species of dark ferruginous color (.20 unc. long) ; the thorax is almost as long as wide, strongly punctured, with the sides narrowly but strongly margined ; the striæ of the elytra are distinctly punctured, the intervals are slightly convex, and finely but not densely punctulate : it is found in the Southern States, and I have named it *T. seditiosus* ; it resembles in appearance *Uloma ferruginea* Say, but is smaller and narrower. To Ulosonia must be referred *Uloma marginata* Lec., from the Colorado Desert of California. Neatus is established upon *Helops tenebrioides* Beauv. (*Tenebrio badipes* Mels.), a common insect of the Atlantic States ; the middle coxæ are almost closely surrounded by the sterna, and the trochantin is obsolete, as in *Uloma*. The type of Aphanotus is *Eulabis brevicornis* Lec., from California ; it resembles very much in sculpture *Eulabis*, but differs by the metasternum being long and the body winged.

I have removed from this tribe several of the genera placed in it by Lacordaire, as they differ in having a distinct clypeus between the epistoma and the labrum.

Tribe VIII.—**TRACHYSCELINI.**

Body ovate, convex, winged; head received in the thorax as far as the eyes; front truncate, not dilated at the sides; labrum prominent; eyes emarginate, coarsely granulated; antennæ short, thick, 11-jointed; mentum small, inserted upon a gular peduncle; ligula prominent; maxillæ exposed; palpi not dilated; gular sutures confluent along the medial line; elytra with narrow epipleuræ. Anterior coxæ transverse; middle coxæ with distinct trochantin; hind coxæ approximate; intercoxal process of abdomen acute; legs stout, fossorial; tibial spurs distinct; tarsi short, spinous beneath.

Trachyscelis flavipes Mels., found on the sea-shore of the Southern States, represents this tribe in our fauna. It resembles in appearance a small *Ægialia*. The margin of the body and the prosternum are clothed with long hairs; the hind tibiæ are broad and thick, and densely covered externally with short spines, arranged without order.

Tribe IX.—**PHALERINI.**

Body oval or rounded, usually winged; head received in the thorax as far as the eyes; front somewhat dilated at the sides, covering the base of the mandibles; epistoma truncate, separated from the prominent labrum by a short, coriaceous clypeus; eyes transverse, scarcely emarginate, coarsely granulated; antennæ slightly thickened externally; mentum small, inserted upon a gular peduncle; ligula and maxillæ exposed; palpi not dilated; gular sutures diverging; elytra with narrow epipleuræ. Anterior coxæ transverse; middle coxæ with distinct trochantin; hind coxæ not widely separated; intercoxal process triangular, subtruncate; legs stout; anterior tibiæ dilated; tibial spurs distinct; tarsi setose beneath.

The species of *Phaleria* are found on the sea-shore on the Atlantic and Pacific coasts.

Tribe X.—**CRYPTICINI.**

Body oval, winged; head received in the thorax as far as the eyes, which are transverse, reniform, small, and moderately granulated; front moderately dilated at the sides, over the base of the mandibles, truncate anteriorly, with a very short coriaceous cly-

pens visible; antennæ tolerably long, slender, outer joints rounded, very slightly thicker; mentum small; gular peduncle distinct; ligula prominent; palpi with the last joint slightly dilated. Elytra with moderate epipleuræ occupying the whole of the inflexed portion. Prosternum prolonged behind; mesosternum concave; metasternum moderately long, with narrow side pieces. Anterior coxæ almost rounded; middle coxæ with distinct trochantin, the epimera exceedingly short; hind coxæ not widely separated; tibiæ not dilated; spurs distinct; tarsi with small spines beneath; first joint of hind tarsi very long.

This tribe is represented in our fauna by *Crypticus obsoletus* Say, found in the Atlantic district.

This and allied foreign genera are placed by Lacordaire as a group of Coniontini, with the remark that it should constitute more properly a distinct tribe. It differs very much from Coniontini, as will be seen by the characters given above, and still more by the hind margin of the third and fourth ventral segments, being very distinctly coriaceous.

Tribe XI.—BOLETOPHAGINI.

In this tribe the body is oblong and winged, opaque, with the surface rough, or at least with the elytra costate; head received in the thorax as far as the eyes; front variable; epistoma separated from the labrum by a short clypeus; eyes coarsely granulated; mentum inserted upon a gular peduncle; ligula prominent; palpi not much dilated; head under the eyes with a large groove for the reception of the base of the antennæ; elytra with narrow epipleuræ. Anterior coxæ transverse; middle coxæ with a small distinct trochantin; hind coxæ separated; intercoxal process triangular; legs moderate; tibial spurs small, tarsi pubescent beneath; the first joints very short, equal; the last joint longer than the others united.

I would divide the tribe into two groups according to the form of the epistoma and eyes.

Eyes deeply emarginated; epistoma much dilated.

BOLETOPHAGI.

Eyes entire; epistoma not dilated.

RHIPIDANDRI.

Group I.—Boletophagi.

In this group the front is prolonged and margined anteriorly and at the sides, covering the mouth above, and causing the eyes

to be deeply emarginated or even divided; the antennæ are gradually thickened externally, not differing according to sex.

The species live on fungi, which grow upon trees or under their bark. Our genera are two, both having the sides of the thorax broadly flattened.

Antennæ 10-jointed; eyes not entirely divided.

PHELLIDIUS.

Antennæ 11-jointed; eyes completely divided.

BOLETOPHAGUS.

No species of this group is yet known from the Pacific district. The type and only species of Phellidius is *Boletophagus cornutus* Fabr.; the genus is indicated but not named by Lacordaire, Gen. Col. v. 295. Of Boletophagus two species are known in our fauna.

Group II.—*Rhipidandri*.

Of this group but a single species is known to me, *Rhipidandrus flabellicornis* Lee. (*Xyletinus flabellicornis* Sturm), a small, oval, opaque black insect, with finely ribbed elytra and yellow legs and antennæ; it is found throughout the Middle and Western States.

The front is not dilated either in front or at the sides, and the base of the mandibles is exposed; the eyes are rounded, scarcely emarginate. The antennæ are 11-jointed; gradually thickened externally in the female with the middle portion sub-serrate; strongly pectinate in the male, the joints 5-11 being much prolonged anteriorly, the 5th, however, being less prolonged than the others.

Tribe XII.—*DIAPERINI*.

Body oval or rounded, winged; head received in the thorax as far as the eyes, which are transverse and coarsely granulated; front somewhat dilated at the sides, covering the base of the mandibles; epistoma truncate, separated from the labrum by a short coriaceous clypeus; antennæ more or less thickened externally, perfoliate; mentum small; gular peduncle distinct; elytra with narrow epipleuræ. Anterior coxæ transverse; middle coxæ with distinct trochantin; legs slender; tibial spurs small; tarsi pubescent beneath.

Two groups are thus distinguished:—

Eyes entire.

PENTAPHYLLI.

Eyes emarginated by the sides of the front.

DIAPERES.

Group I.—**Pentaphylli.**

Eyes entire, not emarginated by the sides of the front; antennæ with the last five joints abruptly larger than the preceding, forming a loose elongate club.

One species of *Pentaphyllus* from Pennsylvania is known to me. The genus is distinguished by the eyes being rounded, not transverse.

Group II.—**Diaperes.**

The transverse eyes are deeply emarginated by the sides of the front, and the antennæ, however much thickened externally, are not terminated by a club composed of abruptly larger joints. The species are numerous and live in fungi, either those of external growth, or those developed under bark.

1st joint of hind tarsi equal to the 2d.

1st joint of hind tarsi equal to 2d and 3d.

1st joint of hind tarsi longer than 2d and 3d;

Intercostal process of abdomen acute.

Intercostal process of abdomen broad.

DIAPERIS.

HOPLOCEPHALA.

PLATYDEMA.

SCAPHIDEMA.

These genera are all represented in the Atlantic States: *Platydemia* is the only one thus far known in the Pacific district. *Scaphidema* Redt. has for a synonym *Nelites* Lec.

Tribe XIII.—**ADELININI.**

Body of varied form; head received in the thorax as far as the eyes, which are coarsely granulated, transverse, and emarginate, except in *Diædus*; front dilated at the sides over the base of the mandibles, separated from the labrum by a sub-coriaceous clypeus; antennæ thickened externally; mentum small, trapezoidal; ligula prominent. Elytra with narrow epipleuræ. Anterior coxæ nearly rounded; middle coxæ without trochantin, inclosed by the sterna; hind coxæ slightly separated; intercoxal process triangular; legs moderate; tibial spurs distinct; tarsi pubescent beneath; the first joint short in *Hypophlœus* and *Diædus*, elongated in the other genera.

I have placed in this new tribe a few genera which cannot be associated with *Uromini* on account of the distinct clypeus, nor with *Diaperini* or *Helopini*, because of the absence of the trochantin of the middle coxæ. The form of body is very different in the different genera; thus, *Adelina* is very flat, almost like *Læmophlœus*

of the Cucujidæ; Hypophlœns is slender and cylindrical; Eutochia (*Aniara*|| Dej.) resembles in appearance *Uloa*, though stouter and more convex, and has, on the under surface of the prothorax, the peculiar rugous sculpture seen in *Helops*.

Pygidium not covered by the elytra; antennæ thick, perfoliate, epipleuræ not extending to the tip of the elytra. HYPOPHLÆNS.

Pygidium covered by the elytra; antennæ slender;

Outer joints of antennæ gradually larger;

Tibial spurs obsolete; epipleuræ entire. PRATEUS.

Tibial spurs distinct;

Epipleuræ not extending to the tip of the elytra. ADELINA.

Epipleuræ entire. EUTOCHIA.

Last two joints of antennæ suddenly larger; epipleuræ entire. DIÆDUS.

Adelina is represented by one species, *A. pallida* Lec. (*Pytho pallida* Say), from the Atlantic district, and another, *A. plana* Lec., from the Colorado Desert. The latter species is remarkable for the sides of the front of the male being dilated into an acute angle, under which is seen a short acute horizontal horn. The other genera are represented only in the Atlantic States.

In *Eutochia picca* Lec. (*Aniara picca* Mels.), the anterior tarsi of the male are dilated, and the anterior tibiæ are curved inwards.

The type of *Prateus* is a small brownish insect, *P. fuscus* Lec., of elongate form (.13 unc. long), coarsely but not densely punctured; the thorax is not wider than long, somewhat rounded, and finely margined on the sides, moderately convex, not narrower at tip than at base; the elytra are two and a-half times longer than the thorax, and without striæ; the epipleuræ extend to the tip of the elytra. It is found in the Middle and Southern States. The only species of *Diædus* known to me is a small (.10-.13 unc. long) oblong, reddish-brown, shining insect, with strongly punctured thorax, and deep punctured elytral striæ, found in the Atlantic States under pine bark. It resembles the European genus *Phthora*; but has only the last two instead of three joints of the antennæ large; the anterior tibiæ are slightly dilated and finely toothed. I have named the species *Diædus punctatus*; it resembles in appearance a miniature *Uloa*.

Tribe XIV.—HELOPINI.

Body generally oblong, sometimes oval, apterous or winged; head received in the thorax nearly as far as the eyes, which are

transverse, emarginate, and coarsely granulated; front dilated at the sides, covering the base of the mandibles, truncate anteriorly, separated from the prominent labrum by a short coriaceous clypeus; antennæ gradually thickened externally; mentum small, trapezoidal, anterior portion coriaceous; ligula prominent. Flanks of prothorax separated by a margin from the back. Elytra with narrow or moderate epipleuræ. Anterior coxæ rounded; middle coxæ with distinct trochantin; hind coxæ sometimes widely, sometimes narrowly separated; legs tolerably long; tibial spurs smaller in the second than in the first group; tarsi pubescent beneath; the anterior and middle ones of the male usually dilated.

I have removed from this tribe, as constituted by Lacordaire, the genus *Apocrypha*, which by the agglutination of the dorsal and lateral pieces of the prothorax, seems well entitled to be considered as a distinct tribe. The remaining genera are homogeneous in form and characters, and are divisible into two groups, the first of which is allied to the *Blaptini*, but differ not only by the more prominent ligula, but by the small coriaceous clypeus, and narrow inflexed portion of the elytra; the difference in the vestiture of the tarsi is of less moment, as in some species the hairs become in part so rigid as to simulate bristles or spines.

Body hairy; outer joints of antennæ not compressed. AMPHIDORÆ.
Body glabrous; outer joints of antennæ compressed. HELOPES.

Group I.—*Amphidoræ*.

Body oblong, rarely almost linear, clothed with long erect hair, apterous; mesosternum short; hind coxæ widely separated in *Cratidus* and *Amphidora*, but less so in *Stenotrichus*; outer joints of the antennæ not compressed; tarsi with the pubescence beneath very coarse, sometimes almost spinous. The epipleuræ are moderately broad and do not extend to the tip of the elytra.

Outer joints of antennæ subglobose;

First joint of hind tarsi a little longer than the 2d. CRATIDUS.

First joint of hind tarsi as long as the 2d and 3d. AMPHIDORA.

Outer joints of antennæ subtriangular; 1st joint of hind tarsi long.

STENOTRICHUS.

These genera are known only from California; *Cratidus* is founded upon *Amphidora osculans* Lec.; in it the anterior tarsi of the male are not dilated, but the hind tibiæ are armed with an

acute tooth on the inner face near the tip. Of Amphidora two species are known to me: *A. nigropilosa* Lec., and *A. littoralis* Esch. The type of Stenotrichus is *A. ? rufipes* Lec., and to the same genus probably may be referred *A. attenuata* Lec.

These species are all found on the surface of the ground, but *A. littoralis* frequently occurs also under bark.

Group II.—*Helopes*.

Body convex, oblong or elongate, rarely oval, apterous, or winged; upper surface glabrous; mesosternum short, or moderate in length; hind coxæ narrowly separated; intercoxal process triangular, obtuse at tip; outer joints of the antennæ subtriangular, compressed. Front and middle tarsi of the male dilated; pubescence of the under surface of the tarsi fine. The epipleuræ are narrow, and do not extend to the tip of the elytra.

Our species are numerous, and some are found in each district. They are generally of a dark, metallic color, with much lustre; all are to be referred to the genus *Helops*, and in several of them the flanks of the prothorax are sculptured with deep lines.

Tribe XV.—*MERACANTHINI*.

Body ovate, convex, apterous; head received in the thorax nearly to the eyes, which are transverse, large, emarginate, and somewhat coarsely granulated; mouth somewhat quadrangularly prolonged; front separated from the labrum by a coriaceous clypeus; sides dilated over the insertion of the antennæ, and obliquely elevated, elevation not extending to the anterior margin of the front (as it does in all the preceding tribes); mentum trapezoidal; ligula prominent; last joint of palpi strongly securiform; antennæ long and slender, outer joints very slightly thicker; epipleuræ narrow, not extending to the tip of the elytra; metasternum short; anterior coxæ rounded; middle coxæ with distinct trochantin; hind coxæ widely separated; anterior thighs armed with an obtuse tooth, less prominent in the female; tibial spurs small; tarsi pubescent beneath.

This and the next tribe differ from all the others represented in our fauna by a peculiarity first pointed out by Lacordaire, and which led him to name the division of the family, to which they appertain, *Otidogènes*. In all the tribes above described the sides of the front, above the insertion of the antennæ, are horizontal,

and the lateral margin extends to the anterior margin; in this and the next tribe the lateral margin is elevated into an oblique ridge, which becomes obsolete before attaining the anterior margin of the front.

The present tribe has but one representative in the Atlantic district, *Meracantha contracta*, found under bark; it has received many names, but the oldest is that of *Helops contractus* Beauv.

Tribe XVI.—STRONGYLINI.

Body elongate, winged; head not received in the thorax as far as the eyes, which are large, transverse, emarginate, and somewhat coarsely granulated; mouth broadly but slightly prolonged; front separated from the labrum by a coriaceous clypeus; sides dilated over the insertion of the antennæ, and obliquely elevated, elevation not extending to the anterior margin of the front; mentum trapezoidal; ligula prominent; last joint of palpi strongly securiform; antennæ long and slender, outer joints very slightly thicker. Epipleuræ narrow, extending to the tip of the elytra; metasternum long; anterior coxæ rounded; middle coxæ with distinct trochantin; hind coxæ narrowly separated; legs long; tibial spurs very small; tarsi pubescent beneath.

But one genus, *Strongylinn*, is represented by three species found under bark in the Atlantic district; two of them differing somewhat in the form of the thorax are described by Say; *S. tenuicolle* Lac. (*Helops ten.* Say) has the thorax subcylindrical, and as long as wide; *S. terminatum* Lac. (*Tenebrio terminatus* Say) has the thorax somewhat narrowed in front, and wider at the base than its length. In both species the last joint of the antennæ is pale yellow.

FAM. XLVIII.—AEGIALITIDAE.

Mentum very transverse, trapezoidal, narrower in front, supported on a very short and broad gular process; ligula broad, prominent; labial palpi widely separated, short, 3-jointed.

Maxillæ (lobes not seen), base prominent; palpi short, 4-jointed, scarcely dilated.

Head prominent, not constricted behind, received into the thorax not as far as the eyes, which are small, convex, rounded,

and coarsely granulated; clypeus short, distinct; labrum prominent; mandibles short (not distinctly seen).

Antennæ as long as the head and thorax, 11-jointed, last three joints one-half larger than the preceding ones, inserted under very small oblique frontal ridges.

Prothorax subcylindrical, lateral suture obliterated; coxal cavities entirely closed behind, and widely separated.

Mesosternum moderately long; coxal cavities (apparently) surrounded by the sterna, side pieces not seen.

Metasternum very short, side pieces not very wide.

Elytra separate, broadly rounded at tip, covering the abdomen; epipleuræ extremely narrow, wings wanting.

Abdomen with six ventral segments; the first and second connate, the fifth truncate at tip, and united by suture to the sixth.

Legs long; anterior coxæ globose, prominent, widely separated, without trochantin; middle ones very widely separated, rounded, without trochantin; hind ones very widely separated, oval; tibiæ slender, with very small spurs; anterior and middle tarsi 5-jointed, hind ones 4-jointed; all the joints short and equal, pubescent beneath, except the last, which is very long and stout, with large, simple claws.

The characters above detailed are abundantly sufficient to separate as a distinct family the single species, *Aegialites debilis* Mann., from Russian America, upon which it is founded.

The insect is of small size, and of black color, with the elytra gradually widened from the thorax, and impressed with punctured striae, gradually becoming effaced towards the sides.

Regarding the affinities of this genus various opinions have been entertained. Mannerheim hesitated between Seydmanidæ and Tenebrionidæ; Motschulsky, on account of the form of the tarsi, placed it among the Parnidæ; Gerstaecker placed it in Tenebrionidæ near Helops. It is of such extreme rarity as to have been seen by but few entomologists. For a specimen of it I am indebted to Col. Motschulsky.

FAM. XLIX.—CISTELIDÆ.

Mentum small, trapezoidal, wider in front; ligula exposed; paraglossæ distinct; labial palpi 3-jointed; gular peduncle distinct.

Maxillæ with two flattened, ciliate lobes: palpi 4-jointed, frequently long and much dilated.

Head suddenly but only moderately narrowed behind the eyes; neck thick, received by the prothorax; mouth moderately prolonged; eyes not finely granulated, usually large, transverse, and emarginate; anterior part of front subcoriaceous; clypeus not distinct (except in *Stenochidus*, where the front is coriaceous, and the clypeus somewhat distinct); labrum prominent; mandibles short.

Antennæ 11-jointed, long, more or less serrate, sometimes nearly filiform, inserted under small oblique frontal ridges, which do not reach the anterior margin of the front, and are usually almost obsolete.

Prothorax with epimera and episterna not distinct, lateral margin obvious in our genera; anterior coxal cavities closed behind, sometimes confluent.

Mesosternum short, side pieces attaining the coxal cavities.

Metasternum long in our genera; episterna narrow.

Elytra rounded at tip; epipleuræ narrow; wings perfect in our genera.

Abdomen with five or sometimes six ventral segments, of which the first three are more closely connected, though not connate; the hind margin of the third and fourth is coriaceous; intercoxal process acute in our genera.

Legs generally long; anterior coxæ varying from globose and subtransverse to conical; middle coxæ with distinct trochantin; hind coxæ transverse, not widely separated in our genera; tibial spurs distinct; tarsi usually lobed beneath, anterior and middle ones 5-jointed, hind tarsi 4-jointed; claws always distinctly pectinate.

The species of this family approach very nearly in organization to the last tribes, or most degraded forms of Tenebrionidæ; and the degradation of structure is carried still farther by the anterior coxæ becoming conical, prominent, and contiguous in certain genera. The only characters to be relied on for the isolation of this family are—1st, the pectinate claws; 2d, the anterior coxal cavities closed behind.

Some of the species live on leaves and flowers, others are found under bark.

Two tribes exist in this family, but one of which is represented in our fauna; groups of genera seem to be indicated, but the characters, when illustrated by foreign genera, appear to be very

indefinite. I shall therefore give simply a synoptic table of our genera without attempting further division.

Front entirely corneous;	STENOCHIDUS.*
Front with the anterior margin subcoriaceous;	
Mandibles emarginate at tip; sixth ventral segment invisible;	
Anterior coxæ separated by prosternum;	
Tarsi with distinct lobes.	ALLECULA.
Tarsi with obsolete lobes;	
Last joint of maxillary palpi longer than wide.	CISTELA.
Last joint of maxillary palpi transverse.	STIGMATOMA.
Anterior coxæ contiguous, cavities confluent.	MYCETOCARES.
Mandibles emarginate at tip; sixth ventral segment visible (tarsi not lobed);	
Second and third joints of antennæ equal, very small.	CHROMATIA.
Third joint of antennæ longer than the second.	CAPNOCHROA.
Mandibles with the tip entire.	ANDROCHIRUS.

To *Stenochidus* belong *Stenochia gracilis* Lec. and *Prionychus cyaneus* Lec., from California. The species of *Allecula* and *Cistela* are numerous, and the majority are undescribed; *Cistela* is found on both sides of the continent. Of *Stigmatoma* I have three species; all are shining black with red humeral spots. The only one described is *Cistela fraterna* Say. Of *Mycetochares* I have four species, of which *M. binotata* Say is the only one described. *Chromatia* is founded upon *Cistela amoena* Say, a species with strongly serrate antennæ, which differs from *Cistela* not only by the third joint of the antennæ being very small, but by the sixth ventral segment being prominent and deeply excavated in the male. *Capnochroa* is established on *Cistela fuliginosa* Mels., a large species which, with all the other characters of *Cistela*, differs by the sixth ventral segment being visible in both sexes, and in the male very deeply excavated, so as to form two flattened, curved processes. The eyes are large.

The type of *Androchirus* is *Cistela fuscipes* Mels., found in the Middle States; it is a large species with yellow legs, and the

* This genus has the thorax narrower than the elytra, and thus approaches in form the Australian genus *Atractus*. The mandibles are truncate; at the base of the labrum is an obsolete clypeus; the last joint of the much elongated maxillary palpi is large and securiform; the anterior coxæ are small and globular; the intercoxal process of the abdomen is narrow; the third and fourth joints of the front and middle tarsi, but only the third joint of the hind tarsi, are lobed beneath. This genus, by the form of the front and of the anterior coxæ, indicates a separate group; the species are of a dark, submetallic color, and entirely glabrous.

hind angles of the thorax prolonged backwards, the sixth ventral segment is visible in both sexes, and in the male is very deeply excavated, so as to form two long, flattened, curved processes; the fifth segment is emarginate in the same sex; the joints 1—4 of the anterior tarsi of the male are moderately dilated, and the fifth is elongated, flattened, and twisted, so as to be much deformed, with the claws larger than the female. The mandibles are not truncate or emarginate at tip, and the tarsi are not at all lobed. A second species (38—41 unc. long), from the Southern States, only differs from *A. fuscipes* by the thorax being less sinuate at base, with the hind angles scarcely prolonged. I have named it *A. luteipes*.

FAM. L.—LAGRIIDAE.

Mentum transverse, trapezoidal, wider in front, supported on a distinct gular process; ligula prominent; palpi 3-jointed.

Maxillæ with two flattened, ciliated lobes; palpi 4-jointed, moderate in size.

Head prominent, horizontal, inserted into the thorax, more or less constricted behind the eyes, which are transverse, emarginate, and not finely granulated; elypeus subcoriaceous; labrum prominent; mandibles short.

Antennæ 11-jointed, nearly filiform, inserted under very small oblique frontal ridges.

Prothorax narrower than the base of the elytra, subcylindrical, with the lateral suture obliterated; anterior coxal cavities closed behind, and nearly confluent.

Mesosternum moderately long, side pieces attaining the coxal cavities; metasternum long, side pieces narrow; epimera not visible.

Elytra rounded at tip, covering the abdomen; epipleuræ narrow; wings perfect.

Abdomen with five free ventral segments, the anterior four of which appear to be more closely connected; fifth rounded at tip, sixth sometimes visible.

Legs slender; anterior coxæ conical, prominent, without trochantin, separated by a very narrow prosternum; middle coxæ separated, with distinct trochantin; hind coxæ transverse; tibial spurs obsolete; front and middle tarsi 5-jointed; hind tarsi 4-jointed, with the first joint long; the penultimate joint of all the tarsi (except in one foreign genus) is dilated,

emarginate, and clothed beneath with a dense brush of hairs; claws simple.

This family is represented in our fauna by three species from the Atlantic States; they are found under bark and on leaves; they belong to a tribe, Statyrini, to be distinguished from the genuine Lagriini by the sixth ventral segment being visible, and the last joint of the antennæ elongated. Two genera are indicated:—

Head scarcely constricted behind (elytra not striate). ARTHROMACRA.
 Head strongly constricted behind (elytra striate). STATYRA.

To *Arthromacra* belongs only *Lagriæ anea* Say (*Arthrom. donacioides* Kirby).

There is absolutely nothing in the preceding formula which can be relied on as distinguishing this family from the Tenebrionidæ, except the prominent anterior coxæ, and the dilated penultimate joint of the tarsi; the larvæ are nevertheless very different, and it is chiefly owing to a knowledge of that fact that the two families are retained as distinct.

FAM. LI.—MONOMMIDÆ.

Mentum moderate in size, somewhat rounded, supported by a broad gular process; gular fissures narrow; ligula corneous, somewhat prominent behind the mentum; labial palpi 3-jointed.

Maxillæ with two flattened ciliated lobes; palpi 4-jointed, last joint truncate.

Head horizontal, prominent, received in the thorax as far as the eyes, which are large, transverse, and strongly granulated; front flat, rounded anteriorly; labrum short, scarcely prominent; mandibles short, emarginate at tip.

Antennæ inserted under the frontal margin, received in grooves on the under surface of the prothorax, 11-jointed; last three joints larger, forming an oval flattened club.

Prothorax gradually narrowed from base to tip, as wide at base as the elytra; lateral suture distinct; flanks with a deep curved groove from the front to the hind angle for the reception of the antennæ; prosternum broad, rounded behind, fitting closely to the mesosternum; coxal cavities very small, closed behind by the mesosternum.

Mesosternum broad, side pieces not extending to the coxal

cavities; metasternum large; side pieces narrow; epimera visible.

Elytra rounded behind, covering the abdomen; epipleuræ not very wide, extending to the apex.

Abdomen with five free segments; the first elongated, the 5th marked with a curved submarginal furrow in our genus.

Legs moderate, strongly contractile; anterior coxæ distant, scarcely visible, rounded; middle coxæ flat, widely separated; hind ones flat, transverse, widely separated; middle thighs suddenly contracted at the base; tibiæ slender, compressed; tarsi not dilated, slightly pubescent beneath; anterior and middle ones 5-jointed, hind ones 4-jointed; claws small, simple; first joint of hind tarsi long.

This family consists of small, black, oval flattened insects, resembling in appearance *Triplax* of the *Erotylidae*. It appears to constitute a very distinct type, without well-marked affinities with any other family. It contains but two genera: *Monomma* confined to the Eastern, *Hyporhagus* to the Western Continent. Of the latter genus one species is found in the Atlantic, and a second in the Pacific district. Both are described by Mr. Thomson in his beautiful monograph (*Annales de la Société Entom. de France*, 1860).

FAM. LII.—MELANDRYIDÆ.

Mentum transverse, trapezoidal, generally narrower in front, supported on a large gular process; ligula prominent; labial palpi 3-jointed.

Maxillæ with two flattened ciliate lobes; palpi 4-jointed, frequently very long and much dilated.

Head usually deflexed, generally not constricted behind; received into the thorax not as far as the eyes; suddenly constricted behind in *Scaptia*; eyes emarginate or entire, and not finely granulated; clypeus often subcoriaceous; labrum prominent; mandibles short.

Antennæ 11-jointed in our genera (10-jointed in the foreign genus *Conopalpus*); generally filiform; sometimes thicker externally, inserted under very small oblique frontal ridges.

Prothorax as wide behind as the base of the elytra (except in *Stenotrachelus*), with the lateral suture always distinct; anterior coxal cavities open behind, frequently confluent.

Mesosternum moderately long, side pieces attaining the coxal cavities; metasternum long, side pieces narrow; epimera visible.

Elytra rounded at tip, covering the abdomen; epipleuræ narrow; wings perfect.

Abdomen with five free ventral segments, the anterior two sometimes more closely connected; intercoxal process small.

Legs moderate or long, slender; anterior coxæ large and oval when separated, conical and prominent when contiguous, sometimes with trochantin; middle coxæ with distinct trochantin, sometimes nearly contiguous; hind coxæ transverse, contiguous, or nearly so; tibial spurs distinct; front and middle tarsi 5-jointed, hind tarsi 4-jointed; the penultimate joint frequently emarginate; claws simple (except in *Nothus* and *Stenotrachelus*).

This family contains a moderate number of species found under bark, or in fungi. The form is generally elongate, and the thorax is often marked with two basal impressions; the first joint of the hind tarsi is always much elongated.

Four tribes are separated thus:—

Head not constricted behind;

Antennæ with the last four joints suddenly larger

TETRATOMINI.

Antennæ gradually thickened or filiform;

Claws simple, or rarely dilated at base.

MELANDRYINI.

Claws cleft to the base.

STENOTRACHELINI.

Head constricted behind into a small neck.

SCRAPHINI.

Tribe I.—TETRATOMINI.

This tribe is constituted of but a single genus *Tetratoma*, of which two species are found in the Atlantic States in fungi; they are oval and convex; the palpi are short, not much dilated; the antennæ are 11-jointed, with the last four joints equal in size, and each is about three times as long as any of the preceding ones; the tibial spurs are small, and the claws are simple; the coxæ are not contiguous but separated by their respective sterna.

Tribe II.—MELANDRYINI.

The outer joints of the antennæ are not suddenly larger, and the claws, except in *Nothus*, are simple; according to the position of the coxæ the following groups may be established, in all of which the antennæ are 11-jointed:

Anterior coxæ oval, separated by the prosternum ;

Head horizontal ;

3d joint of antennæ longer than the 4th.

3d joint of antennæ equal to the 4th.

Head vertical.

Anterior coxæ contiguous ;

Claws simple ;

Frontal suture not visible.

Frontal suture distinct.

Claws broadly dilated and toothed at the base.

PENTHES.

SYNCHROÆ.

ORCHESIE.

SERROPALPI.

MELANDRYÆ.

NOTHI.

Group I.—*Penthes*.

I have placed as a separate group the genus *Penthe*, represented by two velvety black, flattened, oval species, found under bark in the Atlantic States; the more common one, *P. obliquata*, is readily known by the scutellum covered with orange-colored hair.

These insects resemble in appearance gigantic *Mycetophagi*, and have been classed by previous authors among the *Tenebrionidae*; the anterior coxal cavities are widely open behind.

The antennæ are not thickened externally; the 3d joint is as long as the 4th and 5th together; the 7-10 are rounded, the 11th is a little longer, and is pale at the tip; in the male the joints 4-7 are compressed and broader than the others; the maxillary palpi are moderate in length, and but slightly dilated; the anterior coxæ are oval and separated by the prosternum; the middle coxæ are equally distant, and the hind coxæ are less distant; the tarsi are filiform, the penultimate joint not being lobed; the claws are simple; the tibial spurs are short.

Group II.—*Synchroæ*.

This group contains but a single species, *Synchroa punctata* Newman (*Melandrya umbrina* Mels.), from the Atlantic States. The form is elongate, like an *Elateride* of the genus *Melanotus*, coarsely punctured and pubescent; the head is prominent and horizontal; the maxillary palpi are moderate in length, and but slightly dilated; the antennæ are long, slender, and feebly serrate, and the third joint is not longer than the fourth; the anterior coxæ are oval and separated by the prosternum, which is also slightly prolonged; the middle coxæ are equally separated; the hind coxæ are less distant; the tarsi are filiform, and the claws simple; the tibial spurs are long.

Group III.—*Orchesiæ*.

Head vertically deflexed; antennæ gradually thickened externally, 11-jointed, third joint not conspicuously elongated; maxillary palpi with the last joint more or less dilated; anterior coxæ oval, separated by the prosternum; middle coxæ separated; hind coxæ contiguous, flat, variable in form, oblique in *Hallomenus*, not oblique in the other genera; spurs of middle and hind tibiæ variable in size, but very large and serrate in *Orchesia*; tarsi filiform; claws simple.

Hind coxæ small; tibial spurs long, simple.

EUSTROPHUS.

Hind coxæ large; tibial spurs serrate.

ORCHESIA.

Hind coxæ oblique; tibial spurs simple.

HALLOMENUS.

One species of *Eustrophus* was found by me at the Colorado and Gila Rivers of California, and one of *Hallomenus* is known from Russian America; the other species are found in the Atlantic States.

Group IV.—*Serropalpi*.

Head more or less inclined, sometimes vertical; frontal suture not distinct; antennæ variable, third joint not conspicuously elongated; maxillary palpi variable, sometimes very long, with the third and fourth joints dilated internally, and the fourth large and securiform (in which case they are called *serriform*); anterior coxæ conical, contiguous, without trochantin, except in *Xylita*, where the trochantin is indistinct; middle coxæ not contiguous, except in *Xylita*; tibial spurs slender, sometimes very small; tarsi with penultimate joint sometimes emarginate or lobed; claws simple.

I have united into one group the *Serropalpides* and a portion of the *Melandryides*, of Lacordaire, as they seem insensibly to merge together.

Our genera may be thus tabulated:—

Hind tarsi with 3d and 4th joints equal; palpi strongly serriform.

SERROPALPUS.

Hind tarsi with 3d joint shorter than the 4th, more or less lobed.

Maxillary palpi with the second and third joints as wide as the 4th;

Head vertical; prosternum short in front of coxæ.

DIREA?

Head oblique; prosternum not very short;

Maxillary palpi not serriform.

PHLEBOTRYA?

Maxillary palpi serriform.

HYPULUS.

- Maxillary palpi with the 4th joint wider than the 2d and 3d ;
 Eyes entire or nearly so ;
 Last joint of maxillary palpi triangular, securiform ;
 Middle coxæ contiguous. XYLITA.
 Middle coxæ separate ;
 Pubescence erect ; antennæ not very thick. ZLORA.
 Pubescence prostrate ; antennæ thick, outer joints transverse.
 CAREBARA.
 Last joint of maxillary palpi very long, cultriform. SPILOTUS.
 Eyes strongly emarginate, last joint of palpi securiform. TROTOMA.

All of these genera occur in the Atlantic States ; Serropalpus, Hypulus, and Xylita have also occurred in Oregon. To Philæotrya I would refer *Direxa sericea* Hald. Carebara is established on a slender species with thick antennæ ; it is remarkable for the tibial spurs being almost obsolete. The species *C. longula* Lec. is narrow and flattened, dark brown, finely punctured and pubescent, somewhat shining (.25 unc. long) ; the thorax is nearly square, not narrowed in front, and scarcely rounded on the sides ; the abdomen projects a little beyond the elytra ; the base of the antennæ, the feet, and sometimes the ventral surface, are testaceous. The type of Spilotus is *Hallomenus quadripustulosus* Mels. ; it appears to be related to the European *Abdera*, but differs in the form of the last joint of the maxillary palpi. To Trotoma belong *Scrapta flavicollis* Hald., and *S. rugosa* Hald.

Group V.—**Melandryæ.**

Head inclined, never vertical, frontal suture distinct ; antennæ with the third joint not conspicuously elongated ; maxillary palpi long, sometimes moderately serriform, last joint wider, securiform ; anterior coxæ conical, contiguous, with distinct trochantin ; middle coxæ absolutely contiguous ; tibial spurs slender, never small ; tarsi with penultimate joint more or less lobed ; claws simple.

Our genera are four in number :—

- Thorax with the base sinuous, but not distinctly lobed ;
 Elytra not striate. PROTALPIA.
 Elytra striate. MELANDRYA.
 Thorax with a broad basal lobe ; elytra punctured, not at all striate ;
 2d and 3d joints of antennæ together not longer than the 4th. EMMESA.
 3d joint of antennæ scarcely shorter than the 4th. PHRYGANOPHILUS.

Melandrya is represented by *M. striata* Say, Emmesa by *E. connectens* Newm. (*Melandrya maculata* Lec.), and *E. labiata* (*M. labiata* Say), all from the Atlantic States ; *Phryganophilus*

collaris Lec. is found from Maine to Oregon. *Prothalia* is founded on *P. undata* Lec., from Louisiana, a brown, shining, punctured insect (.27 unc. long), clothed sparsely with pale hairs, and having the elytra pale, coarsely punctured, and ornamented with narrow fuscous spots, which are partly confluent into three transverse bands; the thorax is semicircular, slightly sinuous at the base, the middle of which is feebly emarginate; it is more densely and less coarsely punctured than the elytra, and is dusky, except at the sides; there are three impressions near the base, the middle one broad, and the other two smaller and deeper. The antennæ are longer than the head and thorax, slightly thickened externally, dusky, with the base pale; the third joint is a little longer than the fourth; the maxillary palpi are not at all serriform; the feet and palpi are pale.

Group VI.—**Nothi.**

Head inclined; antennæ subserrate, not thickened externally; maxillary palpi with the last joint large, dilated, nearly cultriform; anterior coxæ conical contiguous, with large trochantin; middle coxæ nearly but not quite contiguous; tibial spurs obsolete, tarsi with penultimate joint conspicuously lobed, claws with a broad rectangular dilatation at base in the female, trifid in the male.

This group contains but one genus, *Nothus*, found on flowers; it is represented by two species in the Atlantic States; they have much the appearance of *Telephorus*. In the males the hind femora are curved, and the tibiæ armed with a process on the inner margin near the tip.

Tribe III.—**STENOTRACHELINI.**

Head horizontal; antennæ nearly filiform; maxillary palpi with the last joint large, securiform; anterior coxæ conical, contiguous, with distinct trochantin; middle coxæ absolutely contiguous, tibial spurs slender; tarsi filiform; claws cleft to the base, with the inferior portion as long as, but more slender than the upper.

Stenotrachelus arctatus Lec. (*Helops arctatus* Say; *Sten. obscurus* Mann.), alone represents this tribe in our fauna. It is found from Lake Superior to Russian America, and is a slender

insect (5 unc. long) of a very dark bronzed color, punctured with fine cinereous pubescence; the eyes are larger in the male than the female and slightly emarginate.

This tribe is remarkable for presenting the first instance of the cleft form of claws, which reappears subsequently in the Anthicidae in the genus *Nematonyx*, and becomes very general in the families Mordellidae and Meloidae; I am very doubtful whether it and *Scotodes*, a Russian genus, should not be separated as a distinct family and placed just before Anthicidae; the head is constricted at base, at least on the sides, and the thorax is narrower than the elytra.

Tribe IV.—SCRAPTINI.

Head inclined; suddenly constricted a short distance behind the eyes into a small neck; maxillary and labial palpi with the last joint securiform; anterior coxæ large, conical, contiguous, with distinct trochantin; middle coxæ absolutely contiguous; tibial spurs slender; tarsi with the penultimate joint lobed; claws simple.

But one genus, *Scraptia*, is contained in this tribe; the eyes are transverse, deeply emarginate, and strongly granulated, the antennæ are long, slender, and very fragile. Our species are found on leaves, and thus far only in the Atlantic States.

FAM. LIII.—MYCTERIDAE.

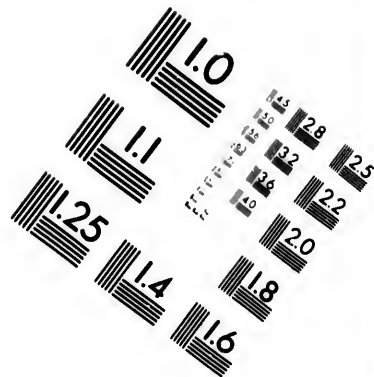
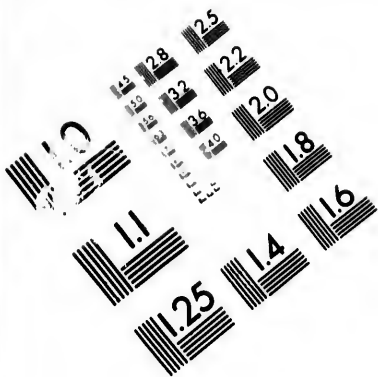
Mentum transverse; a little wider in front, supported by a large gular process; ligula prominent, bilobed; labial palpi 3-jointed.

Maxillæ with a large prominent base, and two ciliated lobes; palpi 4-jointed, last joint elongate, triangular, obliquely truncate.

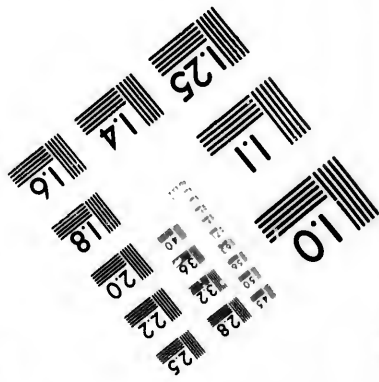
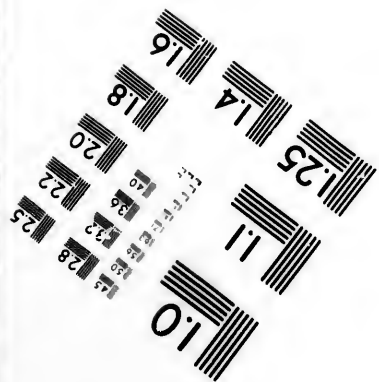
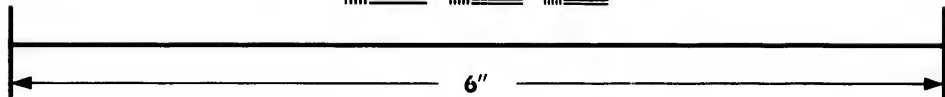
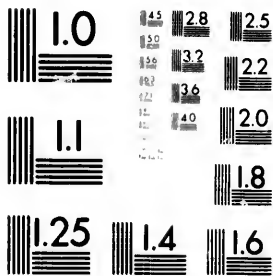
Head slightly narrowed behind the eyes, which are rounded and not very finely granulated; scarcely inclined; front prolonged into a flattened beak as long as the rest of the head, in the first tribe, short in the second; clypeus short. coriaceous; labrum prominent; mandibles emarginate at tip.

Antennæ 11-jointed, nearly filiform; inserted at the sides of the front.

Prothorax trapezoidal, nearly as wide at base as the elytra; lateral suture wanting; coxal cavities confluent, open behind.



**IMAGE EVALUATION
TEST TARGET (MT-3)**



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Mesosternum narrow, separating the coxæ; side pieces not extending to the cavities.

Metasternum long, side pieces not very narrow; epimera visible.

Elytra covering the abdomen; epipleuræ narrow, distinct.

Abdomen with five free ventral segments; the anterior two of which appear more closely connected; intercoxal process acute.

Legs slender; anterior coxæ small, conical, contiguous, without trochantin; middle coxæ small, rounded, separated, entirely inclosed by the sterna; hind coxæ transverse, separated; tibial spurs small; front and middle tarsi 5-jointed; hind tarsi 4-jointed; the penultimate joint dilated into a short membranous lobe beneath; claws armed with a broad basal tooth.

The two genera which I have here associated have very few points in common, except those above detailed; the first resembles in form some of the smaller *Alleculæ* or *Cistelæ*, while the second does not resemble especially any other insect known to me.

The two genera indicate different tribes:—

Head prolonged into a rostrum.

MYCTERINI.

Head short, not rostrated.

LACCONOTINI.

Tribe I.—MYCTERINI.

Head prolonged before the eyes into a flattened beak as long as the rest of the head; antennæ nearly filiform; epipleuræ extending to the tip of the elytra; first ventral segment as long as the 2d; 5th very short.

The genus *Mycterus*, usually classed among *Oedemeridæ*, alone represents this tribe; one species in the Atlantic States, and another in New Mexico belong to our fauna. The former consistence of the integuments, the distinct epipleuræ, the small size of the coxæ, and the membranous sole of the penultimate joint of the tarsi are valid reasons for removing this genus from association with *Oedemeridæ* to the position here given it; the resemblance in form to some of the members of *Cistelidæ* is considerable, while in structural characters, *Mycterus* has much affinity with *Salpingus*.

Tribe II.—LACCONOTINI.

Head short; antennæ as long as the head and thorax, subseriate; epipleuræ not extending to the tip of the elytra; first ven-

tral segment very short, only one-half as long as the 2d ; 5th as long as the 4th.

Lacconotus punctatus Lec., a small insect given me as found in Pennsylvania, alone constitutes this tribe ; it is of narrow form (.17 unc. long), black, strongly punctured, and thinly clothed with short pubescence ; the thorax is rather flat, nearly square, with two large discoidal foveæ ; the basal edge is tinged each side with red. The elytra are wider than the thorax, parallel, rounded at the tip, and not very convex ; they are punctured like the head and thorax, and are slightly rugous. The 2d ventral segment has a very large pale spot occupying the whole middle portion.

I can add but little to the characters given above ; the ligula and mentum are smaller than in *Mycterus*, and the maxillary palpi less elongated.

FAM. LIV.—PYTHIDAE.

Mentum transverse, trapezoidal, narrower in front, supported on a broad and short gular process ; ligula visible ; labial palpi 3-jointed.

Maxillæ with flattened, ciliate lobes ; palpi 4-jointed, moderate in size.

Head not constricted behind, prominent in our tribes, received by the prothorax not as far as the eyes, which are not emarginate, and not finely granulated ; clypeus short, distinct ; labrum prominent ; mandibles short, emarginate at tip, sometimes toothed internally.

Antennæ 11-jointed, slightly thickened externally, inserted under small oblique frontal ridges.

Prothorax narrower at base, with the lateral suture distinct in *Boros* and *Crymodes*, wanting in the other genera ; anterior coxal cavities open behind, frequently confluent.

Mesosternum moderately long, side pieces attaining or not the coxal cavities ; metasternum long (except in *Cononotus*), side pieces narrow.

Elytra rounded at tip, covering the abdomen ; epipleuræ narrow, wings perfect (except in *Cononotus*).

Abdomen with five ventral segments, all free ; intercoxal process small, acute (except in *Cononotus*).

Legs moderate ; anterior coxæ conical, usually contiguous, sometimes with trochantin ; middle coxæ rounded, with or without trochantin ; hind coxæ transverse, nearly contiguous,

except in *Cononotus*, where they are very widely separated; tibiae slender, with the spurs small but distinct; tarsi slender, never lobed, anterior and middle ones 5-jointed, hind ones 4-jointed, (said to be 5-jointed in *Tanyrhinus*); claws simple.

This family contains a small number of species, mostly confined to northern localities; those of the first and third tribes live under bark, those of the second are found under stones.

Our three tribes (or perhaps more properly sub-families) may be separated as follows:—

Middle coxæ with distinct trochantin.	PYTHINI.
Middle coxæ inclosed by the sterna, without trochantin;	
Metasternum short, head not rostrated.	CONONOTINI.
Metasternum long, head with a distinct rostrum.	SALPINGINI.

Tribe I.—PYTHINI.

Head prominent; last joint of maxillary palpi dilated; metasternum long, body winged; intercoxal process of abdomen small, acute; middle coxæ with distinct trochantin, extending to the epimera; mandibles visible beyond the labrum, emarginate at tip, and in *Priognathus* also serrate on the inner edge.

These species are of moderate or large size, and are found under bark; in general aspect they resemble certain *Tenebrionidæ*, but are immediately known by the anterior coxal cavities being open behind.

Two of our genera, *Crymodes* and *Priognathus*, are peculiar to the northern part of America; the other two are also represented in Northern Europe; they are distinguished as follows:—

Lateral suture of prothorax visible; middle coxæ separated;	
Anterior coxæ separated by prosternum.	BOROS.
Anterior coxæ almost contiguous.	CRYMODES.
Lateral suture of prothorax wanting; middle coxæ contiguous;	
Mandibles with one small tooth; body depressed.	PYTHO.
Mandibles serrate; body not depressed.	PRIOGNATHUS.

Of *Pytho*, two species are known in our fauna; of the other genera but single species have yet been discovered.

Tribe II.—CONONOTINI.

Head prominent, obtuse; metasternum short, hind margin almost straight, wings none; intercoxal process of abdomen very broad; middle coxæ nearly contiguous, closely embraced by the

sterna, without trochantin; mandibles scarcely visible beyond the labrum; anterior coxæ small, conical, contiguous; tibial spurs very small.

This tribe consists of the genus *Cononotus*, of which two species were found by me under stones in California; they are slender, pale brown, finely pubescent insects of small size, having the thorax elongated, and regularly conical in form, and much narrowed behind; the lateral suture is nearly effaced, though still capable of being traced; the maxillary palpi are very long, and the last joint is large and triangular.

It is very difficult to indicate the affinities of this genus; it seems to be equally out of place in any family. It was formerly considered by me as allied to *Apocrypha*, of the *Tenebrionida*, a view adopted by *Lacordaire*; but the open anterior coxal cavities forbid such an association. The first and second ventral segments appear to be connate; should dissection confirm this observation, it will point very strongly towards the reception of the genus as a separate family.

Tribe III.—SALPINGINI.

Head prominent, front flattened, prolonged more or less into a broad beak; last joint of maxillary palpi not dilated; metasternum long, body winged, intercoxal process of abdomen acute; middle coxæ embraced by the sterna, without trochantin; mandibles not visible beyond the labrum; anterior coxæ conical, contiguous.

This tribe consists of species of small size; two of the genera are represented on both sides of the continent; the third, *Tanyrhinus*, is found in Russian America, and is unknown to me; the form of thorax is very different from that of the other genera, being described as very much narrower at tip than at base; the reverse is the case in every genus of the present family known to me; the 5-jointed hind tarsi are also altogether anomalous, and I am inclined to believe that the genus has been improperly considered as allied to *Rhinosinus*.

Hind tarsi 4-jointed;

Beak broad, and very short.

Beak prolonged;

Hind tarsi 5-jointed; beak prolonged.

SALPINGUS.

RHINOSINUS.

TANYRHINUS.

FAM. LV.—CEDEMERIDAE.

Mentum trapezoidal, slightly narrowed in front, supported by a large gular process; ligula large, prominent, bilobed; labial palpi 3-jointed.

Maxillæ with large exposed base, and two flattened ciliate lobes; palpi 4-jointed, last joint dilated in our genera.

Head slightly inclined, gradually, but not strongly narrowed behind, received into the thorax not as far as the eyes, which are tolerably strongly granulated in *Calopus*, but more finely in our other genera; front somewhat prolonged; epistoma subcoriaceous; labrum prominent; mandibles emarginate at tip, furnished on the inner margin with a membranous ciliated border.

Antennæ 11-jointed, nearly filiform, sometimes serrate.

Prothorax narrower at the base than the elytra, lateral suture wanting; coxal cavities widely open behind, confluent.

Mesosternum pointed behind; side pieces extending to the coxal cavities, which are generally confluent; metasternum long; side pieces narrow.

Elytra covering the abdomen; epipleuræ almost wanting; visible only near the base.

Abdomen with five free ventral segments, the 6th sometimes visible in the males.

Legs moderate; anterior coxæ large, conical, contiguous; middle coxæ conical, contiguous or slightly separated, sometimes with distinct trochantin; hind coxæ transverse, nearly contiguous; tibial spurs distinct; anterior and middle tarsi 5-jointed; hind tarsi 4-jointed; the penultimate joints dilated in our genera, and furnished with a dense brush of hairs beneath; claws simple, slightly dilated at the base.

Insects of moderate size found generally upon plants, though some species of *Asclera* live near water on the ground.

Our genera are as follows:—

- | | |
|---|-------------|
| Antennæ partly surrounded by the eyes; middle coxæ not contiguous; | |
| Clypeal suture not obvious. | CALOPUS. |
| Clypeal suture very distinct. | MICROTONUS. |
| Antennæ not surrounded by the eyes; middle coxæ contiguous; | |
| Anterior tarsi with more than the 4th joint spongy pubescent beneath; | |
| Anterior tibiæ with two distinct spurs. | DITYLUS. |
| Anterior tibiæ with but one spur. | NACERDES. |

Penultimate joint only of the tarsi spongy pubescent beneath; anterior tibiæ with two spurs. ASCLERA.

Catopus is found in Texas and New Mexico; the other genera are represented on both sides of the Continent; the only species of *Nacerdes* is *N. melanura*, which is also found in Europe.

Microtonus is founded on a very small brown sericeous insect, found on leaves in the Atlantic States. The last joint of the palpi is large and securiform; the antennæ are inserted at a small emargination of the eyes, are slender, one-half the length of the body, with the 2d joint one-third as long as the following one; the eyes are comparatively large, widely separated, and tolerably coarsely granulated; the front is crossed by a very distinct curved suture, just before the eyes; the penultimate joint of the tarsi is very slightly bilobed. The species *M. sericans* Lec. is small (.10-.15 unc. long) and slender, brown, densely punctured, and clothed with short sericeous pubescence; the thorax is as wide as the head, nearly square, feebly bisinuate at base, with the hind angles subacute, very feebly rounded on the sides, and generally vaguely impressed near the sides behind the middle.

FAM. LVI.—CEPHALOIDAE.

Mentum small, nearly square, supported by a gular process; ligula membranous, broad, bilobed, prominent; labial palpi small, 3-jointed.

Maxillæ with the base large and prominent, and two long slender lobes ciliate at the tip; palpi 4-jointed, last joint triangular, obliquely truncate.

Head inclined, large, rhomboidal, gradually narrowed behind the eyes, suddenly constricted at base, inserted into the thorax by a not very slender neck; eyes small, reniform, finely granulated; mandibles small, acute at tip, subserrate on the inner margin with a broad membrane extending from the base half the length; labrum prominent; frontal suture not distinct.

Antennæ inserted at the sides of the front, under a small ridge in front of the eyes, 11-jointed; slightly thickened towards the tip.

Prothorax elongate, trapezoidal, as wide at base as the elytra, lateral suture wanting; coxal cavities large, confluent, open behind.

Mesosternum acute; side pieces reaching the coxal cavities, which are confluent; metasternum long, side pieces narrow.

Elytra gradually narrowed from the base, as long as the abdomen; epipleuræ narrow but distinct, not extending to the tip.

Abdomen with six free ventral segments, the 6th short, deeply emarginate in the male, permitting the 7th to be seen.

Legs long and slender; anterior and middle coxæ large, conical, contiguous, with distinct trochantins; hind coxæ slightly oblique, prominent, concave behind near the tip; tibial spurs long, slender; tarsi filiform, pubescent beneath; claws pectinate, each with a large appendage, as long as the claw itself, and obtusely rounded at the tip.

The characters above given are sufficient to show that the genus *Cephaloon* should rank as a distinct family. It was placed by Newman, who first described it in *Edemeridæ*, by myself in *Meloidæ*, and more recently by Motschulsky in *Melandyridæ*. None of these positions will, in my opinion, be found correct. From the *Meloidæ* it differs by the thorax being as broad at base as the elytra, as well as by the different form of the head. From *Melandyridæ* it differs not only by the head being constricted at base, but by the lateral suture of the prosternum being wanting, and by the greater number of ventral segments. Its resemblance to *Edemeridæ* is more decided, though from them it is at once distinguished by the head being constricted at base, as well as by the peculiar form of the claws.

One species, *Cephaloon lepturides* Newman (var. *C. varians*) Hald., is found on plants in the Northern States and in Canada. Two Asiatic species have been recently described by Motschulsky; they are found near the Amoor River.

FAM. LVII.—MORDELLIDÆ.

Mentum trapezoidal, supported by a gular process; ligula prominent, cordiform: palpi 3-jointed, last joint triangular.

Maxillæ with large, prominent base, and two ciliated lobes; palpi 4-jointed, rather long, with the last joint securiform or cultriform, sometimes transverse.

Head vertical, applied closely to the thorax, suddenly constricted immediately behind the eyes, connected with the

prothorax by a very small neck; eyes small and coarsely granulated in the first tribe, large and finely granulated in the second; labrum prominent; mandibles short, entire at tip, with an internal membranous margin.

Antennæ inserted at the sides of the front, before the eyes, 11-jointed, slender, usually slightly thickened externally.

Prothorax strongly narrowed in front, as wide at base as the elytra; lateral suture quite obvious; coxal cavities large, open behind, confluent.

Mesosternum short, carinated, pointed behind, side pieces attaining the coxal cavities, which are not confluent; metasternum large, but not long, side pieces variable in width.

Elytra narrowed behind, not truncate, leaving exposed the tip of the abdomen; epipleuræ not distinct.

Abdomen with five or six ventral segments; the last dorsal and sixth ventral are prolonged in the second tribe, forming an anal style.

Legs, anterior short, posterior usually long; anterior coxæ large, conical, contiguous, without trochantin; middle coxæ not prominent, slightly separated; hind coxæ flat, contiguous, moderate in size in the first, very large in the second tribe; tibial spurs large, hind tibiæ frequently dilated; hind tarsi compressed, long; claws simple in the first, cleft to the base, with the upper portion pectinate, in the second tribe.

Two tribes are thus separated:—

Abdomen not prolonged at tip.

ANASPINI.

Abdomen prolonged at tip.

MORDELLINI.

Insects of small size, found on plants; all are pubescent; many are very prettily variegated in color.

Tribe I.—ANASPINI.

Body rather fusiform than cuneate; hind coxæ not very large, tibiæ slender; claws neither cleft nor serrate; last dorsal segment of the abdomen not prolonged, sixth ventral not visible in *Anaspis*, but visible in the other two genera; eyes oval, narrowly emarginated, coarsely granulated; antennæ inserted very near the eyes, not serrate; upper surface of the body transversely strigate.

Our genera are three:—

Anterior and middle tarsi with the 3d and 4th joints equal;

Antennæ long, scarcely thickened externally.

DICLIDIA.

Antennæ shorter, last five joints broader.

PENTARIA.

Anterior and middle tarsi with the 4th joint very small.

ANASPIS.

Diclidia contains one species from Texas; *Pentaria* Muls. was separated by me formerly as *Anthobates*, but under false characters, so that the name should be rejected, and the more recent one adopted. The species are found on each side of the continent, and have the elytra ornamented with broad bands. *Anaspis* is also found on both sides of the continent.

Tribe II.—**MORDELLINI.**

Body cuneiform, pointed behind; hind coxæ very large; hind tibiæ short, dilated, triangular; claws cleft to the base, with the upper portion pectinate; last dorsal segment of abdomen prolonged, forming an anal style or process; eyes large, oval, finely or coarsely granulated; antennæ inserted in front of the eyes, but not very near to them, sometimes serrate.

Our genera may be separated as follows:—

- Eyes finely granulated; hind tibiæ with a small, subapical ridge;
 Scutellum emarginate; eyes not reaching the occiput. **TOMOXIA.**
 Scutellum triangular; eyes reaching the occiput;
 Last joint of maxillary palpi very transverse. **GLIPA.**
 Last joint of maxillary palpi triangular, or securiform. **MORDELLA.**
 Eyes coarsely granulated; hind tibiæ and tarsi with oblique ridges on the
 outer face;
 Hind tibiæ with one long ridge, and no subapical one. **GLIPODES.**
 Hind tibiæ with subapical and oblique ridges. **MORDELLISTENA.**

Sphalera Lec., founded on *Mordella melæna* Germ., does not appear to be sufficiently distinct from genuine *Mordella*. *Glipodes* is founded on *Mordella sericans* Mels., and is very remarkable for the structure of the last joint of the maxillary palpi in the male; it is covered on the under surface with a dense brush of short hair, and from the base on the outer side proceeds a long, bifurcated appendage, the branches of which are as long as the joint itself.

Mordella and *Mordellistena* occur on both sides of the continent; the other genera are thus far known only in the Atlantic States.

FAM. LVIII.—**ANTHICIDAE.**

Mentum trapezoidal, narrower in front, supported by a broad gular process; ligula large, prominent, labial palpi 3-jointed.

Maxillæ with large, exposed base, and two flattened, ciliate lobes; palpi 4-jointed.

Head somewhat inclined, strongly constricted behind the eyes; neck slender, front somewhat prolonged, labrum prominent; mandibles not extending beyond the labrum, truncate or emarginate at tip.

Antennæ inserted at the sides of the front, immediately before the eyes, 11-jointed, nearly filiform, very rarely (*Xylophilus Melsheimeri* ♂) flabellate.

Prothorax narrower than the elytra at base, lateral suture wanting; anterior coxal cavities open behind, confluent.

Mesosternum pointed behind, usually very slightly separating the coxæ, rarely the coxal cavities are confluent; side pieces extending to the cavities; metasternum long, side pieces narrow.

Elytra covering the abdomen, rounded behind; epipleuræ very narrow.

Abdomen with five free ventral segments, rarely six.

Legs moderate; anterior coxæ conical, prominent, contiguous; middle ones subconical, with distinct trochantin, nearly or quite contiguous; hind ones transverse, nearly contiguous in the first three tribes, more distinctly separated in the fourth tribe; tibial spurs small; anterior and middle tarsi 5-jointed; hind tarsi 4-jointed; the penultimate joint of all generally emarginate; claws simple, except in *Nematoplus*, *Pedilus*, and *Maeratria*.

I have united the Anthicites and Pedilides of Lacordaire, and excluded from the family Scaptia, which appears to me to be more related to the Melandryidæ. The family is thus rendered very homogeneous, and divides into four natural tribes:—

Eyes more or less emarginate; hind coxæ approximate;

Head constricted far behind the finely granulated eyes. PEDILINI.

Head constricted just behind the coarsely granulated eyes. XYLOPHILINI.

Eyes elliptical, entire, rather coarsely granulated;

Hind coxæ approximate.

MACRATHINI.

Hind coxæ somewhat distant.

ANTHICINI.

Tribe I.—PEDILINI.

The species of this tribe are of much larger size than those of the other tribes, varying in size from one-fourth to one-half an inch in length; they are found on flowers.

The head is constricted far behind the eyes, which are tolerably finely granulated, never regularly oval, and always emarginate,

though in some of the species of the second group very slightly so; the neck is not very slender; the hind coxæ are nearly contiguous, the intercoxal process being very small and acute.

The genera indicate three groups:—

Claws cleft to the base.	NEMATOPIL.
Claws slightly dilated at the base.	EURYGENII.
Claws with a broad basal tooth.	PEDILI.

Group I.—**Nematopil.**

Nematophilus collaris Lec., a slender black insect with a reddish-yellow thorax, alone constitutes this group; the mandibles are acutely emarginate at tip; the epistoma is not separate from the front; the maxillary palpi are but feebly dilated; the middle coxæ are distinctly separated; the abdomen of the male has six ventral segments, the fifth being emarginate; the tarsi are entirely filiform, and the claws are cleft to the base, as in *Stenotrachelus*.

The insect is very rare, and is found in the Northwestern States.

Group II.—**Eurygenil.**

Elongate insects clothed with gray pubescence; the mandibles are broadly truncate at tip; the epistoma is not separate from the front; the maxillary palpi are considerably dilated; the middle coxæ are very slightly separated; the abdomen in both sexes has but five ventral segments; the anterior tarsi are somewhat dilated, and the penultimate joint of all is bilobed; the claws are very slightly dilated at base.

Last joint of maxillary palpi broad, securiform.	EURYGENIUS.
Last joint of maxillary palpi long, cultriform.	STEREOPALPUS.

The three species of the first genus differ in the form of the eyes; in *E. Wildii* Lec. they are deeply emarginate, in the Californian *E. constrictus* Lec. slightly, and in *E. murinus* scarcely at all emarginate. Those of the second genus have the eyes very slightly emarginate; in both the eyes are less finely granulated than in the first and third groups.

Group III.—**Pedili.**

This group consists of but a single genus, *Pedilus*, represented by several species in the Atlantic, and one in the Pacific district. They are prettily colored insects, with the thorax globose, polished, and usually yellow; in the males the tips of the elytra are convex and polished, resembling somewhat a vesicle.

The mandibles are truncate; the epistoma separated from the front by a transverse suture; the maxillary palpi feebly dilated; the middle coxæ are contiguous; the abdomen of the male has six distinct ventral segments; the penultimate joint of the tarsi is bilobed, and the claws are suddenly dilated at base into a broad tooth.

Tribe II.—**XYLOPHILINI.**

A few small species, found on leaves and flowers, are contained in this tribe; they have entirely the form and appearance of species of *Anthicus*, but are known at once by the emarginate, hairy, and coarsely granulated eyes. None have yet been found in the Pacific district.

The head is much deflexed, and constricted immediately behind the eyes; the epistoma is separate from the front; the neck is very small; the last joint of the maxillary palpi is large and securiform; the middle coxæ are contiguous; the hind coxæ are nearly contiguous, the intercoxal process being very small; the first joint of the hind tarsi is extremely long; the penultimate joint is bilobed, and the claws are simple.

One species, *X. Melzheimeri* Lec., is remarkable for the antennæ of the male being flabellate; in another species, *X. basalis* Lec., the last joint of the antennæ is considerably longer than the others. I do not feel certain that these should be regarded as generic differences.

Tribe III.—**MACRATRINI.**

Two very narrow, brown, pubescent species of *Macratris* are found in the Atlantic States, on flowers and leaves.

The head is deflexed, constricted far behind the eyes, which are oval, and not at all emarginate, somewhat coarsely granulated, and slightly hairy; the neck is very small; the epistoma is not separate from the front; the maxillary palpi are compressed and dilated, with the last joint large and securiform; the last three joints of the antennæ are longer than the others; the middle coxæ are distinctly separated; the hind coxæ are nearly contiguous; the intercoxal process of the abdomen is very small and acute; the first joint is longer than the others, and the sixth is visible in the male; the penultimate joint of the tarsi is bilobed; the first joint of the hind tarsi is very long; the claws are suddenly and broadly dilated at base.

Tribe IV.—ANTHICINI.

Head deflexed, constricted behind the eyes, which are regularly oval, and rather coarsely granulated; the epistoma is not separate from the front; the neck is very small; the mandibles are emarginate at tip; the last joint of the maxillary palpi is moderately dilated; the middle coxæ are nearly contiguous in other genera, but absolutely so in *Tanarthrus*; the hind coxæ are moderately separated; the intercoxal process is acute at tip, except in *Formicomus*, where it is broad and obtuse; the ventral segments are five in both sexes; the penultimate joint of the tarsi is bilobed in our genera, and the claws are simple.

Our genera are:—

Antennæ with the 11th joint equal to the 10th;	
Thorax prolonged over the head into a horn.	NOTOXUS.
Thorax not prolonged over the head;	
Antennæ moniliform; thighs thickened.	TOMODERUS.
Antennæ not moniliform;	
Body without wings; humeral angles rounded.	FORMICOMUS.
Body winged; humeral angles distinct.	ANTHICUS.
11th joint of antennæ elongated, almost divided into two.	TANARTHUS.

The species are numerous; the genera, except *Tanarthrus*, are represented on the Atlantic district, but thus far no species of *Tomoderus* has occurred in the Pacific region. The differences between the second, third, and fourth genera seem to me rather indefinite. *Tanarthrus*, besides the elongated 11th joint of the antennæ, and contiguous middle coxæ, is farther remarkable for having the elytra shorter than the abdomen, and subtruncate at the extremity. The genus contains but two species, from the Colorado Desert, one of which, *T. salinus* Lec., flies and runs on salt mud, after the manner of a *Cicindela*. The species of *Notoxus* live on flowers and leaves; those of *Anthicus* are very numerous; some are found on plants, but the greater number live near the margin of water, especially in sandy localities.

FAM. LIX.—PYROCHROIDÆ.

Mentum trapezoidal, narrowed in front, supported by a large gular process; ligula large, prominent, bilobed, labial palpi 3-jointed.

Maxillæ with large exposed base, and two corneous ciliated lobes; palpi 4-jointed, moderately dilated.

Head somewhat inclined, strongly constricted a short distance behind the eyes, which are emarginate and not finely granulated, and sometimes very large; neck not very slender, received in the thorax; labrum prominent; mandibles short, emarginate at tip.

Antennæ inserted at the sides of the front just before the eyes, 11-jointed; serrate or subpectinate (♀), and ramose (♂); rarely (Eupleurida) nearly filiform.

Prothorax narrower than the elytra at base, lateral suture completely wanting; anterior coxal cavities widely open behind, confluent.

Mesosternum pointed behind; side pieces attaining the coxal cavities, which are confluent; metasternum long, side pieces narrow.

Elytra wider than the abdomen, rounded at tip; epipleuræ almost wanting, visible only near the base.

Abdomen with five free ventral segments; the 5th in the male is emarginate, and the 6th is visible.

Legs rather long; anterior coxæ large, conical, contiguous; middle coxæ conical, contiguous, with distinct trochantin; hind coxæ oblique, transverse, slightly separated; tibial spurs small; anterior and middle tarsi 5-jointed; hind tarsi 4-jointed; the penultimate joint is dilated and somewhat prolonged beneath; the claws are simple.

A few insects, from one-third to three-fourths of an inch long, are comprised in this family; our species live under bark, and several are conspicuous for the rufous thorax, which contrasts with the black head and elytra.

The genera are four from the Atlantic States, of which Dendroides is also represented in Russian America:—

Eyes moderate in size, distant;

Antennæ simple.

EUPLEURIDA.

Antennæ serrate or ramose;

Last joint of maxillary palpi long, cultriform.

PYROCHROA.

Last joint of maxillary palpi long, oval.

SCHIZOTUS.

Eyes very large, sometimes nearly contiguous.

DENDROIDES.

The branches of the male antennæ are rigid in Pyrochroa, and very slender and flexible in Dendroides; in Schizotus they are of an intermediate form, and somewhat flexible.

Eupleurida is founded on a very remarkable insect, *E. costata* Lec., from the Southern States. It is of a testaceous color (♂ 2 unc.

long), with the head black, the front retuse; the thorax is semi-circular, with the sides thickened and reflexed, and the middle strongly carinate; this carina is prolonged into a point at the base. The elytra are elongate oval, very coarsely punctured, flattened on the back, with a very strong ridge running from the humerus nearly to the tip, and another very near the margin from near the base to the tip itself, thus causing the appearance of distinct epipleuræ; the elytra are dusky, with a long lateral spot and the tip pale. The consistence of the body is firmer than in the other genera of the family, but I cannot perceive any structural difference of importance except the form of the antennæ, which are not very slender, but cylindrical; the 2d joint is one-half as long as the third; the last joint of the maxillary palpi is large and securiform; the eyes are distant and moderate in size.

FAM. LX.—MELOIDÆ.

Mentum trapezoidal, supported by a large gular process; ligula prominent, labial palpi 3-jointed.

Maxillæ with two corneous ciliated lobes, the outer one in some *Nemognathini* very long and filiform; the inner one sometimes very small; palpi 4-jointed.

Head much inclined, suddenly constricted far behind the eyes into a small neck, which is not entirely received into the prothorax; eyes variable in form, finely granulated; labrum prominent; mandibles usually not extending beyond the labrum, frequently entire at tip, frequently armed with a small subapical tooth, rarely (*Phodaga*) emarginate at tip.

Antennæ 11-jointed in our genera, inserted (except in *Phodaga*) at the sides of the front, before the eyes.

Prothorax narrower at base than the elytra, lateral suture completely obliterated; prosternum short; coxal cavities large, confluent, widely open behind.

Mesosternum short, triangular, side pieces attaining the coxal cavities, which are confluent; metasternum very short in the first tribe, generally long in the second.

Elytra variable in form, but when short never truncate; epipleuræ not well defined.

Abdomen with six free ventral segments.

Legs long, anterior and middle coxæ large, conical, contiguous; hind coxæ transverse, prominent, more or less concave beneath, nearly contiguous; tibial spurs distinct, those

of the hind tibiæ frequently differing in size and form; anterior and middle tarsi 5-jointed; hind tarsi 4-jointed; penultimate joint almost always cylindrical; claws usually divided at the base, with the inferior portion very slender; rarely not divided, and then armed with a large tooth.

This family contains species of moderate or large size found on plants; they are mostly of a soft consistence, and are remarkable for secreting a peculiar principle, cantharidine, from which they derive the blistering power, which causes them to be used in medicine.

They are equally remarkable in the development of the larva, which assumes successively several forms, in the first of which it is a very small active *Pediculus*-like parasite infesting bees of different genera.

Two tribes, first properly recognized by Lacordaire are thus separated.

Side pieces of meso- and metathorax covered by the elytra.	MELOINI.
Side pieces of meso- and metathorax visible.	LYTTINI.

Tribe I.—MELOINI.

The insects composing this tribe are without wings; the elytra are frequently much shorter than the abdomen, and in one genus are imbricated, or overlap at the suture; the metasternum is very short, so that, except in *Henous*, the middle coxæ extend partly over the hind coxæ; the side pieces of the meso- and metathorax are entirely covered by the elytra; the claws are sometimes armed with a tooth, sometimes cleft to the base; in this case the upper portion is never pectinate, as in certain genera of the next tribe. The frontal suture is distinct, and the front is prolonged before the insertion of the antennæ.

Our genera are:—

Elytra short, imbricated; claws cleft.	MELOE.
Elytra not imbricated; claws armed with a tooth;	
Elytra much shorter than the abdomen, diverging.	MEGETRA.
Elytra connate, larger than the abdomen.	CYSTEODEMUS.
Elytra subconnate; claws cleft.	HENOUS.

Meloe is generally diffused, and is the only genus represented on the Eastern Continent; *Henous* is found from Kansas to Texas; *Cysteodemus* in Arizona and Colorado Desert; the genus *Megetra* Lec. (*Arcana naturæ*, 1,127) is founded upon *Meloe cancellatus* Er., and *Cysteodemus vittatus* Lec., which occur in New

Mexico and Arizona. I formerly considered these species as constituting a section of *Cysteodemus*.

Tribe II.—**LYTTINI.**

Body generally winged; elytra, in our genera, not shorter than the abdomen, entirely closing together along the suture; metasternum long (except in *Apterospasta*); middle coxæ not overlapping the hind coxæ; side pieces of meso- and metathorax plainly visible, not covered by the elytra; claws generally cleft to the base, the upper portion sometimes pectinate; very rarely they are armed with a tooth.

Subtribes may be separated as follows:—

Front not prolonged beyond the base of the antennæ.	HORIINI.
Front prolonged; frontal suture very distinct;	
Mandibles prolonged, acute.	NEMOGNATHINI.
Mandibles obtuse, short.	LYTTINI.

Sub-Tribe I.—**Horiini.**

Head large, squarely truncate behind; front without suture, scarcely extending beyond the insertion of the antennæ, which are not very long, and not thickened towards the extremity; the eyes are transverse, and subreniform; the mandibles extend beyond the labrum, and in some males of foreign species are quite large; the lobes of the maxillæ are not elongated, and the palpi are not dilated; the claws of the tarsi are cleft to the base, the upper portion is finely pectinate, the lower one is very slender; the tarsi are clothed with stiff hairs or bristles beneath.

Three species are known in our fauna: one without wings, *Horia sanguinipennis* Say, from the Northern and Middle States, and two winged species from the vicinity of the Rocky Mountains. They all belong to the genus *Tricrania* Lec., which is distinguished from the foreign genera by the last joint of the maxillary palpi being longer than the 3d, and by the triangular head.

Sub-Tribe II.—**Nemognathini.**

Head triangular, squarely truncate behind (except in *Gnathium*); front with distinct transverse suture, prolonged beyond the insertion of the antennæ, which are filiform or very slightly thickened externally; the eyes are transverse, rarely (*Gnathium*) oval and oblique; the mandibles are acute at tip and extend beyond the labrum; the outer lobe of the maxillæ is generally prolonged into

a slender, flexible process, sometimes nearly as long as the body; the maxillary palpi are not dilated, and the last joint is longer than the preceding; the claws of the tarsi are cleft to the base, the upper portion is strongly pectinate, the lower one equal in length, acute, and generally more slender than the upper; the tarsi are clothed with stiff hairs beneath.

The serrature of the upper part of the claws is not sufficient by itself to separate this from the next sub-tribe, since in it there are certain foreign genera, scarcely to be distinguished in appearance from *Lytta*, in which the upper part of the claws is quite distinctly serrate; but in my opinion the marked difference in appearance produced by the triangular head, which is usually applied more closely than in *Lytta* to the square prothorax and especially the more prominent and acute mandibles, evince the propriety of separating the three genera below mentioned from those contained in the next sub-tribe.

Maxillæ with the outer lobe prolonged, setaceous;

Antennæ not thickened externally.

Antennæ thicker towards the tip.

Maxillæ with the outer lobe not prolonged.

NEMOGNATHA.

GNATHIUM.

ZONITIS.

The species of *Nemognatha* differ like those of *Lytta* in the size and shape of the spurs of the hind tibiæ; in *Gnathium*, the prothorax instead of being square, as in the other two genera, is gradually narrowed in front, but, as if to balance this approach towards the next sub-tribe, the mandibles are still longer and more acute than in *Nemognatha*.

Sub-Tribe III.—*Lyttini* (genuini).

Head variable in form; front with a very distinct transverse suture, prolonged beyond the insertion of the antennæ; the eyes are transverse and subreniform, except in *Phodaga*, where they are regularly oval; the antennæ are variable in form, but inserted in front of the eyes, except in *Phodaga* and *Eupompha*, where they are situated between the eyes; the mandibles are thick, and obtuse, rarely (*Phodaga*) emarginate at tip; the palpi vary in form; the lobes of the maxillæ are not prolonged; the claws of the tarsi are usually cleft to the base; the upper part is not serrate in our genera, and the under part is usually equal in length to the upper one; in *Phodaga*, *Eupompha*, *Tegrodera*, the under portion is connate with the upper one, and only half as long.

Four natural groups appear to exist among our genera :—

Vertex not elevated ;	
2d joint of antennæ long.	MACROBASIS.
2d joint of antennæ much shorter than the 3d.	LYTTÆ.
Vertex elevated ; 2d joint of antennæ small ;	
Mandibles obtuse.	EUPOMPHÆ.
Mandibles emarginate.	PHODAGÆ.

Group I.—**Macrobases.**

I have separated as a distinct group the species included in *Lytta* division C. of my synopsis.* The general appearance of the species, and the remarkable sexual characters impressed on the antennæ evidence the correctness of the view here taken.

The eyes are strongly transverse and broadly emarginate ; the antennæ are inserted in front of the eyes ; the first joint is usually much elongated, especially in the males, frequently compressed and bent in that sex ; the second joint is larger in the males than in the females, and is generally longer than the third, sometimes much longer, but in *Apterospasta* the second is a little shorter than the third ; the vertex is not elevated ; the last joint of the maxillary pulpi is triangular and obliquely truncate ; the mandibles are thick and obtuse, with a small tooth near the apex. The anterior thighs have a sericeous spot of hair on the under surface. The spurs of the hind tibiæ are always slender and the divisions of the claws equal ; the tarsi are pubescent beneath.

Two genera are separated as follows :—

Body without wings ; metasternum short.	APTEROSPASTA.
Body winged ; metasternum long.	MACROBASIS.

Apterospasta approaches to Henous of the first tribe of this family ; it contains two species, *Lytta valida* Lec. and *L. segmentata* Say, found in Texas and Nebraska. *Macrobasis* contains several species found in the Atlantic and Central districts ; none have yet occurred in the regions adjoining the Pacific.

Group II.—**Lyttæ.**

The eyes are transverse and broadly emarginate ; the antennæ are inserted in front of the eyes, with the second joint much shorter than the third, and except in *Pleuropompha*, very small ; they are sometimes filiform, sometimes with the outer joints larger and rounded ; the vertex is not elevated ; the last joint of the

* Proc. Acad. Nat. Sc., Phila., VI. 331.

maxillary palpi is broadly rounded at tip; the mandibles are truncate, and have a small tooth near the apex; the spurs of the hind tibiæ are variable in form; the divisions of the claws of the tarsi are usually equal; in *Calospasta* the under one, though separate, is shorter, and in *Tegrodera*, the under one is shorter, and connate with the upper; the tarsi are pubescent beneath.

Our genera may be thus arranged:—

Penultimate joint of tarsi bilobed.	TETRAONYX.
Penultimate joint of tarsi cylindrical;	
Lower portion of claws equal to the upper, and separate;	
Anterior thighs with a sericeous spot; (antennæ filiform);	
2d joint of ant. equal to half the 3d; elytra costate.	PLEUROPOMPHA.
2d joint of antennæ very short; elytra even.	EPICAUTA.
Anterior thighs without a sericeous hairy spot;	
Antennæ filiform, outer joints cylindrical.	PYROTA.
Antennæ thicker externally, outer joints oval or rounded;	
Labrum deeply emarginate.	POMPHOPÆA.
Labrum slightly emarginate.	LYTTA.
Lower portion of claws shorter than the upper, connate;	
Labrum not emarginate; body pubescent.	CALOSPASTA.
Labrum emarginate; body glabrous.	TEGRODERA.

The form of the spurs of the hind tibiæ varies greatly in *Lytta*. In *Pyrota* and *Pomphopœa* the outer spur is obtuse, and the inner acute. In *Pleuropompha*, *Epicauta*, *Calospasta*, and *Tegrodera*, both spurs are acute. *Lytta* and *Epicauta* are found on both sides of the continent; *Pomphopœa* and *Tetraonyx* are confined to the Atlantic States. *Calospasta* contains but one species, *Epicauta elegans* Lec., and *Tegrodera* but one large and beautiful species, *T. erosa* Lec., both from California. *Pleuropompha* is founded upon *Lytta costata* Lec., from New Mexico.

Though there is much difference between the various species *Lytta* in the form of the outer joints of the antennæ, which are quite transverse in some and elongate in others, the entirely cylindrical shape, which renders the antennæ of *Epicauta* filiform, is not assumed.

The sexual characters are remarkable in some of the species; thus, in the male of *Lytta Nuttalli*, the trochanters of the hind legs are armed with a spine; in the male of *Pyrota mylabrina* and *insulata* the last joint of the maxillary palpi is ovate, broadly transverse, and flattened, with the under surface concave and spongy. The antennæ of the male of *Pleuropompha costata* Lec.

are longer than those of the female, and the difference is caused by the elongation of the third, fourth, and fifth joints, which thus become more than twice as long as any of the following ones.

Group III.—*Eupomphae*.

A single New Mexican species, *Eupompha fissiceps* Lec., is known to me; it has the shape of *Lytta*, with the thorax and elytra metallic bluish-green, the head and legs yellow, the elytra reticulated, and the head divided by a very deep groove.

The eyes are oval and oblique; the antennæ are filiform, with the second joint very short, and are inserted between the eyes; the vertex is elevated, obtusely rounded, and deeply cleft; the last joint of the maxillary palpi is oval; the mandibles are obtuse, with a subapical tooth; the anterior thighs have no sericeous spot; the outer spur of the hind tibiæ is obtuse; the tarsi are pubescent beneath; the claws are not serrate, the under portion is about one-third shorter than the upper, and connate with it.

In the male the first three joints of the front tarsi are very much swelled, and very convex beneath, and deeply excavated above.

Group IV.—*Phodagae*.

Like the preceding, this group contains but a single species, *Phodaga alticeps* Lec., from Arizona; it is entirely black, and finely pubescent.

The eyes are oval and longitudinal; the antennæ are not longer than the head, inserted between the eyes, and filiform, with the second joint very short; the last joint of the maxillary palpi is oval; the labial palpi appear subulate, the last joint being cylindrical, not shorter than the penultimate, which is triangular; the mandibles are deeply emarginate at tip; the head behind the eyes is conical, and the vertex is very prominent; the anterior thighs have no sericeous spot; the spurs of the hind tibiæ are long, slender, and acute; the tarsi are spinous beneath; the claws are not serrate, the under portion is about one-third shorter than the upper, and connate with it.

The male in my collection has only one leg of the middle pair preserved; in it the tibia is dilated, and deeply longitudinally excavated on the inner face.

FAM. LXI.—RHIPIPHORIDÆ.

Mentum trapezoidal, supported by a gular process; ligula membranous, prominent, frequently bilobed; labial palpi 3-jointed.

Maxillæ with prominent base, and two lobes, which are connate at base, the inner one sometimes atrophied; maxillary palpi 4-jointed, not dilated.

Head vertical, affixed to the prothorax by a very slender neck, which is entirely contained in the prothorax; vertex usually elevated; eyes large, very finely granulated, except in the first tribe; mandibles not emarginate at tip, entirely corneous, without any membranous border on the inner margin; labrum prominent.

Antennæ 11-jointed (10-jointed in certain females), pectinate or flabellate in the males, frequently serrate in the females.

Prothorax as large as the elytra at the base, much narrowed in front, lateral suture wanting (in our genera); coxal cavities large, open behind, confluent.

Mesosternum short, declivous, separating the coxæ; side pieces very wide, attaining the coxæ; metasternum large; side pieces narrow in the first, wide with large epimera in the other tribes.

Elytra rarely covering the abdomen, usually narrowed behind, and dehiscent, sometimes (*Myodites*) very small; rarely (*Rhipidius*) wanting in the female, in which case the wings are also wanting, and the body is larviform.

Abdomen with free segments, variable in number.

Legs generally long; anterior coxæ large, conical, contiguous, without trochantin, overlying the middle coxæ, which are transverse or oblique, usually slightly separated, without trochantins; hind coxæ transverse, lamellate, contiguous; spurs of tibiæ usually distinct; tarsi filiform, anterior and middle ones 5-jointed, hind ones 4-jointed; claws pectinate or toothed, rarely simple.

The perfect insects are found on flowers; the larvæ of the second tribe are known to be parasitic on Hymenopterous, and those of the fourth on Orthopterous insects.

Four tribes are thus distinguished :—

Elytra as long as the abdomen, not dehiscent.

EVANIOCERINI

Elytra shorter than the abdomen ;

Oral organs perfect ;

Middle coxæ contiguous.

Middle coxæ widely separated.

Oral organs atrophied.

RHIPIPHORINI.

MYODITINI.

RHIPIDIINI.

Tribe I.—**EVANIOCERINI.**

In this tribe, represented in our fauna only by *Pelecotoma flavipes* Mels., from the Atlantic States, the oral organs are perfect ; the eyes are emarginate, not very finely granulated, and the antennæ are inserted before them at the sides of the front ; the scutellum is not covered by the base of the prothorax ; the elytra are as long as the abdomen, and are contiguous along the suture ; the middle coxæ are very slightly separated by the narrow mesosternum ; the epimera of the metathorax are small, and the episterna are narrow. There are five ventral segments.

The genera belonging to this tribe resemble in form Mordellidæ, and in one foreign genus (*Ctenidia*) the lateral margin of the thorax is well defined ; it can be distinctly traced in our species. It is very doubtful whether this tribe should be retained as a member of the present family, but nothing is yet known of the habits of the larvæ.

The genus *Pelecotoma* is distinguished from foreign genera by the tarsal claws being feebly bidentate, and the vertex not elevated.

Tribe II.—**RHIPIPHORINI.**

Oral organs perfect ; eyes entire, very finely granulated ; antennæ inserted between the eyes upon the front, biflabellate in the males, serrate in the females ; scutellum covered by a lobe of the base of the prothorax ; lateral suture of prothorax entirely wanting ; elytra not much shorter than the abdomen, pointed behind, not meeting closely along the suture ; middle coxæ slightly separated ; epimera of metathorax large, episterna wide ; ventral segments five ; tarsi long ; claws bifid at tip.

Cuneiform insects with coarsely punctured and sparsely pubescent surface, of varied colors, found upon flowers.

Our species all belong to two genera, both having the vertex very much elevated :—

Labrum long, triangular, maxillæ prolonged.

Labrum short, maxillæ not prolonged.

MACROSIAGON.

EMMENADIA.

No species has yet occurred in the Pacific district.

Tribe III.—MYODITINI.

Oral organs perfect; labrum not visible; eyes not emarginate, very finely granulated; antennæ inserted on the front, inside of the eyes, on a line with their anterior margin, flabellate in both sexes, but with the tenth and eleventh joints connate in the females; scutellum not covered by the prothorax; lateral suture of prothorax entirely wanting; elytra very small, wings not folded; middle coxæ very widely separated; epimera of metathorax large, episterna wide; ventral segments five, with the genital sheath of both sexes prominent.

One genus, *Myodites*, is contained in this tribe; it is represented by several species from the Atlantic States; they are found on the flowers of *Solidago* in August.

Tribe IV.—RHIPIDIINI.

Oral organs atrophied; eyes very large, finely granulated, occupying the greater part of the head; antennæ (of the males) contiguous, flabellate; prothorax without any trace of lateral suture; scutellum not covered by prothorax; elytra short, pointed, dehiscent; wings not folded; middle coxæ not widely separated; ventral segments eight.

Female without elytra and wings; larviform.

No species of *Rhipidius* has yet been found in the United States; but as *Blatta germanica*, in which *R. blattarum* is parasitic, has been introduced, it is proper that the attention of observers should be directed to the discovery of its parasite.

FAM. LXII.—STYLOPIDAE.

Oral organs atrophied, except the mandibles and one pair of palpi.

Head large, transverse, vertical, prolonged at the sides, forming a stout peduncle, at the end of which are situated the eyes, which are convex, and very coarsely granulated.

Antennæ inserted on the front, at the base of the lateral processes of the head; forked in our genera.

Prothorax exceedingly short.

Mesothorax short, bearing at each side a slender, coriaceous, club-shaped appendage, with the inner margin membranous; this appendage represents the elytra.

Metathorax very large, greater in bulk than the rest of the body, with the sutures of the dorsal pieces all distinct; the postscutellum is conical and prolonged far over the base of the abdomen; wings very large, fan-shaped, with a few diverging nervures; the epimera are very large, and project behind almost as far as the postscutellum.

Abdomen small, with from seven to nine segments.

Legs short; anterior and middle coxæ cylindrical, prominent; hind coxæ very small, contiguous, quadrate; tibiæ without spurs; tarsi without claws, joints each with a membranous lobe beneath.

Females larviform, always contained in the pupa case.

This family contains a small number of species which, by the degradation of structure have lost all resemblance to the other members of the order Coleoptera. They were, from the period of their discovery to within a few years, considered as a separate order, under the name Strepsiptera, but a knowledge of the transformations, and a more rigid interpretation of the external anatomy has convinced nearly all systematists of the propriety of placing them a family of Coleoptera.

They are parasitic in the bodies of species belonging to various genera of aculeate Hymenoptera; the comparatively large size of these parasites causes a distortion of the abdomen of the Hymenopteron affected, and, on close observation, the heads of the pupa cases may be seen emerging between the segments. The head of the pupa case of the male is convex, that of the female is flat; specimens containing male pupæ can be kept confined with proper food until the parasite is hatched.

But two genera are yet known in North America, in both of which the tarsi are 4-jointed.

Antennæ with six joints.

STYLOPS.

Antennæ with four joints.

XENOS.

Stylops inhabits bees of the genus *Andræna*; I have never met with specimens. *Xenos Peckii* lives in our common wasp *Polistes fuscata*. I have seen styloped individuals of *Odynerus quadricornis*, and of a large species of *Splex*.

It is very desirable that observers in the United States should turn their attention to the laborious but interesting task of collecting the species of this family.

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NOTE.

The second part of this work will contain those families embraced in the divisions Tetramera and Trimera of the older authors; in them, the penultimate joint of the tarsi is closely connate with the last joint, and forms merely an enlargement at the base of it.

I am now preparing a synonymical list of the species of Coleoptera of America north of Mexico. For the purpose of rendering the work as complete as possible, it is very desirable that increased collections should be made in the western portions of the Continent, especially in Texas, New Mexico, and the regions west of the Rocky Mountains. I would therefore appeal to those who may be willing to make collections within the regions mentioned, to aid me in this work. Due credit shall be given in my publications for the assistance received, and, when desired, the duplicates, properly named, shall be returned to the persons collecting.

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J. L. LEC.

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