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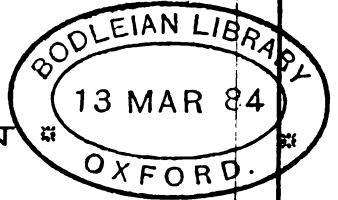
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**Miscellaneous notes and short studies of North American
COLEOPTERA.**

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The following pages have been prepared with the view of placing before the students of our fauna any points of material interest which have been observed from time to time. These include synonymical notes, short studies of various genera, and descriptions of some new species. Synonyms are ascertained by the accumulation of specimens when the types or their equivalents are at hand. When, however, types are in the hands of distant authors an interchange of specimens establishes the fact of identity, which should be made known by publication. Short studies are either preliminary to monographic work or supplementary to it, and are, in either case, useful in giving the newest ideas. The description of isolated new species is probably the least useful of the parts of a paper of this kind, as but little is added to our knowledge beyond a new name, and this, too often, a possible synonym.

With these few words of explanation the following notes are presented:

Amblychila Piccolomini Reiche.

A second and very careful examination of the type of this species in the Museum of the Jardin des Plantes convinced me that the views, already several times expressed, of its identity with *cylindriciformis* Say, are correct. It is certainly smaller than the specimens taken in Kansas and at the same time smoother, corresponding very closely in these respects with specimens taken in New Mexico and Eastern Arizona, which are in the cabinets of Dr. LeConte and Mr. Ulke respectively. The locality in which the Reiche specimen was collected was said to be California, but I have endeavored to show from collateral evidence that the specimens distributed by Dupont from the same series were collected, in all probability, in Texas (vide Trans. Am. Ent. Soc. X. Bull. p. iv).

Cicindela Magdalenae Lec., Proc. Acad. 1873, p. 321.

At the time of the preparation of the "Index to the species described by Dr. LeConte," I caused to be inserted on my own responsibility that the species was probably South African in origin, my reasons being that the type of markings and the whole facies of the species were widely different from any in our fauna, and decidedly like the South African forms of which I had seen a number in the cabinet of Mr. F. G. Schaupp.

During a visit to Prof. Westwood last year he kindly placed the type before me, belonging to the Hope collection at Oxford. I then found that the specimen really belonged to a series of four, this one having been accidentally misplaced and that the species was *C. senegalensis*, Dej.

Carabus cancellatus Illig.

This species must be added to the list. More than a dozen specimens were captured near Wilmington, N. C., by the late Mr. Wenzel, and were part of the unpinned specimens contained in a bottle with other alcoholics undoubtedly native species.

Calosoma peregrinator Guér.

Specimens of this species kindly given me by Mr. Salvin show that *C. carbonatum*, Lec., must be placed in synonymy. By some misunderstanding *C. prominens*, Lec., has been suppressed as the synonym, but must be restored to the well-known species with the sides of thorax angulate.

CYCHRUS Fab.

An examination of Dr. Schaum's types in the Berlin Museum shows that our determinations of his species are correct.

C. convexus, Moraw., from Japan, is almost an exact reproduction in miniature of our *C. tuberculatus*, Harr.

ANOPHTHALMUS Sturm.

In 1871 a table of our species was published by me in these Transactions. Since that time Mr. Hubbard has made known another species, and one about to be described has also been taken. The number of specimens has been increased, and renewed study shows the necessity of modifying some of the characters given in the table twelve years ago. The following table and notes are presented in the hope that they will prove more useful:

Terminal joint of maxillary palpus shorter than the preceding; elytra with two dorsal punctures.

Thorax longer than wide, base truncate, hind angles rectangular, humeral margin of elytra not serrulate.....**Tellkampfi.**

Terminal joint of maxillary palpus equal to or longer than the preceding; elytra with three dorsal punctures.

Base of thorax on each side oblique; elytra with punctured striae.

Thorax a little longer than wide; humeral margin of elytra not serrulate, striae feeble, obsoletely punctured, intervals sparsely punctulate and pubescent.....**Interstitialis.**

Thorax not longer than wide; humeral margin of elytra distinctly serrulate, striae rather deep, the punctures coarse, intervals slightly convex, rarely punctulate, not pubescent.....**Menetriesi.**

Base of thorax on each side squarely truncate, elytra with obsolete or feeble striae.

Humeral margin of elytra not serrulate.

Thorax longer than wide.....**tenuis.**

Thorax as wide as long.

Thorax small, not as long as the head and scarcely larger. Elytra obsoletely striate, surface shining and with very short pubescence near the base.....**pusio.**

Thorax larger and wider than the head. Elytra with scarcely any traces of striae, its surface subopaque, finely alutaceous, not pubescent,
eremita.

Humeral margin of elytra distinctly serrulate.

Elytra subopaque, very finely alutaceous, surface with very feeble traces of striae. Thorax distinctly narrowed behind.....**pubescens.**

Elytra shining, surface distinctly striate. Thorax rather transverse, scarcely narrower posteriorly.....**audax.**

In the above table I have attempted to arrange the species in such a manner as to indicate the gradual approach toward the forms of *Trechus* existing in our fauna. The palpar structure of *Tellkampfi* marks that species as the most specialized. The first three species in the above table are also remarkable in their very feeble evidence of the existence of the recurrent end of the sutural stria, it has, in fact, almost entirely disappeared.

A. Tellkampfi Erichs., Müll. Arch. 1844, p. 384.

This species represents in our fauna *A. Bilimeki*, of Europe. It is remarkable in having but two dorsal punctures.

It occurs most abundantly in the Mammoth Cave of Kentucky, also in Cave City cave.

A. interstitialis Hubbard, American Entomologist, 1880, p. 52.

The characters given in the table sufficiently differentiate this species from any other in our fauna. In it the recurrent sutural stria is feebly indicated. It is also remarkable for the great length of the tarsal claws which are a little more than half the length of the last tarsal joint. In attempting to distinguish this species too great stress should not be laid on the interstitial punctuation, as it is variable here and exists in an equally variable manner in the next species.

Occurs in the Mammoth and Cave City caves.

A. Menetriesi Motsch., Etudes. Ent. 1862, p. 41.

I find that Motschulsky quotes an earlier date for this species, but on referring to the Etudes, 1854, p. 12, there is merely a mention of a species. Three characters together serve to distinguish this species from any other in our fauna—the serrulate humeri—deeply striate elytra and prominent hind angles of the thorax. In the last respect, however, the

specimens are somewhat variable and the hind angles are sometimes scarcely more than rectangular.

At the same time Motschulsky describes two other species, *striatus ventricosus*. The latter I feel quite sure is merely a variety of *Menetriesi*. The other may possibly be *interstitialis*, *Hubb.*, but I am unwilling to suppress a name founded on a good description to adopt one quite otherwise.

Occurs in the Mammoth, Cave City, Saltpetre and Ronald's caves.

A. tenuis Horn, Trans. Am. Ent. Soc. 1871, p. 327.

This is the most slender species in our fauna. The hind angles of the thorax are slightly prolonged backwards. The elytra are faintly striate on the disc, the intervals with slight traces of punctuation, and the entire surface extremely finely alutaceous. The recurrent sutural stria is well marked. The tarsal claws are extremely slender and nearly straight.

My specimens were collected by Prof. Cope in the Wyandotte cave, of Southern Indiana; those possessed by Dr. LeConte are from the Bradford caves.

A. pusio Horn, Trans. Am. Ent. Soc. 1868, p. 125.

This is our smallest species. The thorax is not larger than the head, narrowed behind, the hind angles not prominent, the base nearly squarely truncate and the basal impressions very deep. The striae of the elytra are evident only near the suture, and the sutural stria is very distinctly recurved. The surface is shining, the intervals near the base very finely punctulate and with very short pubescence.

I have seen but three ♂ specimens of this species, all collected by Prof. Cope in Erhart's cave, Montgomery county, Virginia.

A. eremita Horn, Trans. Am. Ent. Soc. 1871, p. 325.

A species somewhat resembling *tenuis*, but broader. The thorax at base is very squarely truncate, and the elytra less striate and more distinctly alutaceous than in any other species in the present list.

One ♂ specimen collected in Wyandotte cave.

A. pubescens Horn, Trans. Am. Ent. Soc. 1868, p. 126.

The humeri are distinctly serrulate, the surface distinctly alutaceous, feebly striate and with an extremely fine pubescence, which appears to be more persistent than in the other species.

Collected in Cave City, Saltpetre and Ronald's caves.

A. audax n. sp.—Rufo-testaceous, shining, head slightly darker. Thorax one-third broader than long, scarcely narrowed at base, sides slightly arcuate in front, feebly sinuate in front of the hind angles, which are rectangular but not prominent, base squarely truncate, apical and median lines moderately distinct,

basal impressions deep, lateral margin wider posteriorly. Elytra oblong oval, wider than the thorax, base truncate, humeri obtuse, the margin serrulate, disc finely striate, the striae slightly punctured at base and nearly obsolete at the sides, the recurrent sutural stria rather deeply impressed. Tarsal claws small. Length .16 inch; 4 millim.

By its much broader thorax with the margin wider behind, this species approaches *Trechus* more closely than any of the preceding species.

One specimen ♂, Ronald's cave, cabinet of Dr. LeConte.

Of the species mentioned above I have seen a very large number of *Tellkampfi*, five of *interstitialis*, twenty of *Menetriesi*, seven of *tenuis*, three of *pusio*, one of *eremita*, six of *pubescens* and one of *audax*.

TRECHUS Clairv.

T. hydropticus n. sp.—Piceous shining, elytra iridescent, antennae and legs pale. Thorax transverse, narrower at base, sides feebly arcuate anteriorly, margin wider posteriorly, hind angles distinct but not prominent. Elytra broadly oval, not more than one-fourth longer than wide, surface smooth, the three inner striae alone distinct, the others obsolete. Body beneath smooth, shining. Length .12 inch; 3 millim.

This species is closely related to the California *ovipennis*, but is much smaller and more convex, the eyes are much less prominent and very feebly granulated.

Collected by Mr. Ulke in Virginia.

PSEUDOMORPHA Kby.

The occurrence of a new species gives me the opportunity to bring together a few notes on those previously described so that they may be aptly compared.

But one other species is known from North America (*P. Pilatei*, *Chaud.*, Yucatan), which is even smaller than *excrucians* and with the parallel form of *Behrensi* and *augustata*. It is a very distinct species. The type was kindly shown me by Mr. René Oberthur, its present owner.

There are now known to us in our fauna four species of *Pseudomorpha*, which for convenience of determination may be arranged as follows: Elytra distinctly narrower posteriorly.

- Elytra with rows of coarse punctures forming nine quite regular striae, **excrucians** Kby.
- Elytra nearly smooth, punctures obsolete.....**Cronkhitei** Horn.
- Elytra parallel.
- Elytra with moderate punctures, very irregular on the disc, forming striae at the sides.....**Behrensi** Horn.
- Elytra with moderate punctures, confused on the disc, finer at the sides and forming striae, in addition a row of large dorsal punctures 9 or 10 in number near the suture.....**augustata** Horn.

P. excrucians Kby., Trans. Linn. Soc. 1825, p. 101, Pl. 3, fig. 3.—The body beneath and legs, head and thorax rufo-testaceous, elytra piceous. Head and

thorax with very few punctures. Elytral punctures very coarse, forming quite regular striae, merely a little confused behind the the scutellum. Length .26 inch; 6.5 millim.

Male.—Anterior and middle tarsi with rather long hairs beneath. Third ventral segment rather densely punctured at middle, more sparsely at the sides, fourth and fifth segments with a short transverse row of closely placed, recumbent bristles at middle. Last ventral segment with two submarginal setigerous punctures on each side. The third and fourth ventral segments have also a series of coarse punctures, forming an arcuate row extending from side to side, each puncture bearing an erect seta.

Occurs in Georgia.

P. Cronkhitel Horn, Trans. Am. Ent. Soc. 1867, p. 151.—Body beneath rufo-piceous, above piceous. Head and thorax very sparsely punctulate. Elytral sculpture nearly obsolete, but with one or two large punctures in the post-scutellar region. Length .32 inch; 8 millim

Male.—Characters as in *excrucians*.

The post-scutellar punctures represent the row of dorsal punctures of *angustata*.

Collected in Owen's Valley, California.

P. Behrensi Horn, Trans. Am. Ent. Soc. 1870, p. 76.—Body beneath rufopiceous, above piceous. Head and thorax sparsely, but quite distinctly, punctured. Thorax obsoletely subcarinate at middle posteriorly. Elytra with coarse punctures forming striae at the sides, but rather irregular at middle. There is no indication of a dorsal series of punctures. Length .38 inch; 9.5 millim.

Male.—Characters as in *excrucians*.

Female.—Third ventral coarsely and densely punctured at middle, less densely at the sides, fourth and fifth segments without the short transverse row of bristles. Last ventral with four submarginal setigerous punctures on each side.

Occurs in the San Joaquin Valley, California.

P. angustata n. sp.—Elongate, parallel, castaneous, shining. Head with very few punctures near the occiput. Thorax a little more than twice as wide as long, narrowed in front, sides slightly arcuate, margin narrowly explanate, except near the hind angles, angles of thorax rounded, disc moderately convex, median line finely impressed, surface with a few rather coarse punctures at middle, fewer and less evident near the sides, the extreme margin plurisetose. Elytra elongate, parallel, as wide as the thorax, surface sparsely punctate, the punctures irregularly placed on the disc, but forming vague striae near the sides; about one-fourth from the suture is a series of coarse dorsal punctures about ten in number bearing short setae, lateral margin sparsely fimbriate. Body beneath paler than above, smooth and shining. Third ventral segment at middle densely submuriately punctured, fourth and fifth segments with a transverse row of short setae at middle, the last ventral with two large setigerous punctures near the margin on each side. Length .30 inch; 7.5 millim. Pl. IX., fig. 6.

The specimen before me is a male, and the characters given above for the abdomen are sexual. In shape this species is fully three times as long as wide. By its parallel elytra it approaches *P. Behrensi*, Horn, which has not, however, any trace of the dorsal series of setigerous punctures on the elytra.

A female in the cabinet of Dr. LeConte has the row of dorsal punctures less distinct, and the last ventral segment with three marginal punctures.

Collected by H. K. Morrison in Arizona.

AMPHIZOA.

This genus was at first considered by Dr. Sharp sufficiently a Dytiscide to be placed in his division *Dytisci complicati*. This view he, however, recalls, and is willing to admit that Amphizoa and Pelobius must be isolated from any of the great families of Adepnaga. He is not, however, willing to admit that they should take rank as families in the same sense as we receive the Carabidae or Dytiscidae, his objection being based on an unwillingness to consider Amphizoidae and Pelobiidae, each containing but one genus and those genera three species each, comparable with great aggregates containing many genera and numerous species.

In adopting the views of Dr. LeConte regarding Amphizoa and extending the idea still further in the suggestion of a family for Pelobius, the number of the species was entirely a minor consideration. The type of structure was taken as the standard of comparison and each particular type was designated by a name adopted in all cases from those in use.

To those who prefer to follow Dr. Sharp's synthetic method of treating the subject, I can see no reason why a single species should not represent in itself all the various syntheses through which Dr. Sharp passes the objects of his study. Thus a species *insolens* represents also the genus Amphizoa, the tribe Amphizoini, the subfamily Amphizoinae, and finally the family Amphizoidae, which makes part of a larger aggregate known as Adepnaga.

It is quite within the limit of possibility that an ally of Amphizoa should occur with a structure of middle coxal cavities, as in the *Dytisci fragmentati* or the subfamily Carabinae. We would then certainly have all the elements of a complete synthesis with the addition of a single species. To my mind an important modification of structure has as great systematic value when represented by one species as by a thousand.

A. Josephi, Matth., is retained as distinct by Dr. Sharp. I have carefully examined the type and find it not different from the male of *insolens*.

The occurrence of a species (*A. Davidis*, Lucas) in the mountain regions of Thibet has been recently made known.

DYTISCIDAE.

While on a visit to Dr. Sharp I was enabled through his kindness to examine very nearly all of the species described by him from our fauna. From notes made by me at the time I have been enabled to identify very many of the species since my return, although a good number still remain unknown to us.

The work of Dr. Sharp is the most important ever given to science on this family. Numerous characters overlooked by others have been clearly presented. While I can hardly agree with him in his estimate of the value of very minute characters for the separation of species, it must nevertheless be admitted that his entire work gives evidence of close, conscientious and accurate study.

The following notes are intended to bring his work into closer correspondence with our cabinets as far as I am able to interpret it. In those cases in which I feel compelled to dissent from his views I have endeavored to give my reasons as clearly and briefly as possible, and if the expressions are short and didactic, they have been so framed to avoid unnecessary verbosity.

In using Dr. Sharp's work I have many times had occasion to regret that his idea of the entire inviolability of the original name given by preceding authors has been put in practice. Unless there happens to be a new species on a given page it is impossible to say with certainty what genus is before us, nor can we in this case be certain as on p. 411 a new *Antiporus* is described with the name *Hydroporus*. It is, to say the least, a little confusing to find, as on p. 271, four generic names on one page.

The omission of author's names after genera throughout the book is, to say the least, inconvenient. While I admit that the name of the author is not an essential part of the generic name it very often gives us a clue to bibliography, often a matter of very great utility.

CANTHYDRUS Sharp.

This contains the species formerly in our lists under *Suphis*.

C. punctipennis, Shp., seems merely a pale form of *bicolor*, *Say*. It is taken frequently by Mr. Ulke near Washington.

HYDROCANTHUS.

Dr. Sharp is willing to admit three species in our fauna.

H. oblongus, Shp.—This species is founded on the pale or ferruginous specimens often found in Pennsylvania.

H. iricolor, *Say*.—Dr. Sharp identifies as we have done.

H. texanus, Shp., is what we have called *atripennis*, Say, which name Dr. Sharp assigns to a Brazilian species.

On the whole I am inclined to agree with Mr. Crotch, who considered all these forms one species.

LACCOPHILUS.

L. fuscus, Shp., founded on one female specimen, does not appear separable from *decipiens*, Lec.

L. pictus, Cast., occurs in Arizona and the Peninsula of California.

L. insignis, Shp.—This and the preceding species were confounded together by Crotch. It occurs in Texas only, as far as we know. This species has the yellow marks on the elytra forming distinct fasciae, while in *pictus* the yellow marks are in the form of small isolated spots. Another species closely allied to these two has been collected in Arizona.

L. americanus, Aubé., is noted in our fauna by Dr. Sharp. I have never seen native specimens, but it is known to me from the Antilles.

L. terminalis, Shp.—Closely allied to *fasciatus*, Say, and recalling also *maculosus*. It is known to me from Peninsula of California and the adjacent regions of Upper California.

L. atristernalis, Crotch, is *mexicanus*, Aubé.

COELAMBUS.

C. fumatus, Shp., seems to be the true *lutescens*, Lec. The latter, as determined by Dr. Sharp, should receive another name.

C. infuscatus, Shp.—A specimen from Oregon referred by me to this species is a male. The anterior tarsal claws are dissimilar, the anterior being a little shorter than the posterior, stouter, more arcuate and rather broadly dilated at base.

DERONECTES.

D. suffusus, Shp.—Specimens from Massachusetts in my cabinet belong to this species, but I am unable to convince myself that it is specifically distinct from *catascopium*, Say.

D. prosternalis, Shp.—This is clearly Say's *catascopium*. I do not know why the latter name should be disregarded. It is distinguished from *griseostriatus* by having the prosternum more carinate in front, but I am quite sure from my observation that this is an evanescent character.

HYDROPORUS.

H. pulcher, fide Shp., is not *pulcher*, Lec., which has no distinct sutural stria.

H. integer, Shp., is the true *pulcher*, Lec.

H. labratus, Shp., seems to be identical with *oppositus*, Say, which has not been considered specifically distinct from *undulatus* by Crotch.

H. peltatus, Shp.—Dr. Sharp writes that this name is equivalent to *spurius*, Lec. There does not appear to be any special reason for the substitution and the name should be restored.

H. clypealis, Shp.—This is probably confounded in all cabinets with *undulatus*, Say. The males are, however, easily distinguished by the claws of the front tarsi being very unequal.

H. mexicanus, Shp.—A specimen apparently of this species is in my cabinet from Southern California.

H. rivatis, Gyll.—Of this species *obesus*, Lec., and *congruus*, Lec., are synonyms.

H. despectus Shp., *perplexus* Shp., *rusticus* Shp., *tenebrosus* Lec. (*subpubescens* Lec.), *hirtellus* Lec.

I am quite sure that I have identified in our series all the forms above indicated, that is, a certain number can be referred to each name, but the vast mass of specimens is of intermediate material. I think the name *tenebrosus*, Lec., should be applied to the aggregate.

H. tristis, Payk.—To this belong *varians* and *subtensus*, Lec.

HYDROTRUPES Sharp.

H. palpalis, Shp.—A few specimens have been received from the San Bernardino Valley, California. It may be at once known by the quadrate terminal joint of the labial palpi. The body is black and shining, the elytra very finely punctured, the punctures connected by minute reticulations.

AGABUS.

A. perplexus, Shp., is *suturalis*, Crotch.

A. ambiguus Say, fide Shp.—From specimens sent to Dr. Sharp I learn that the species here identified is the same as *discolor*, Harris, of our cabinets. Dr. Sharp is now inclined to believe that the species should not be separated from congener, *Payk*. The latter name should remain with *ambiguus* and *discolor* as synonyms.

A. aeneolus, Crotch.—Dr. Sharp states that the type of *punctulatus*, Aubé, is the same as this. The latter name should be used.

A. strigulosus, Crotch.—To this *nanus*, Lec., must be referred.

A. Walsinghami, Crotch, does not appear specifically distinct from *confertus*, Lec.

A. confinis, Gyll.—To this *ovoideus*, Cr., must be referred.

A. Lecontei, Crotch.—This species was originally described as *discolor*, Lec. The name being preoccupied was changed in the Mel-

sheimer Catalogue to *lutosus*. In the List of Coleoptera (1863) the latter name is lost sight of in its relation to *discolor*, and is there given as a name intended to be applied to another species and was so used by Crotch. In order to avoid further confusion the name *Lecontei* should be allowed to stand.

A. nigroaeneus, Er.—Abundant from Canada to California, and is the species described as *lutosus*, Crotch.

ILYBIUS.

I. ater, De Geer.—To this unguaris, Lec., must be referred.

I. ignarus, Lec. fide Shp., does not seem to be correctly identified. The true species belongs to Sharp's group 2.

I. angustior, Gyll.—To this picipes, Kby., should be referred.

COPTOTOMUS.

C. obscurus, Shp.—I have very great doubt of the distinctness of this species.

RHANTUS.

R. obscurus, Shp., is flavogriseus, Crotch.

R. longipes, Shp., was regarded as a mere color variety of the preceding by Crotch, and, I think, correctly.

R. plebejus, Shp.—While I can separate specimens which agree with Dr. Sharp's description, I do not believe the species distinct from *binotatus*, Harr.

R. discedens, Shp., is the female of *tostus*, Lec.

R. sericans, Shp., is the species recorded in our lists as *notatus*, Fab., and, I think, not distinct.

COLYMBETES.

C. Crotchi, Shp., is *strigatus*, Lec.

C. exuratus, Lec., *sculptilis*, Harr., *rugipennis*, Shp.—After a study of the large series in our cabinets I arrive at the following results:

The males, from whatever part of our territory, are identical. The females, however, vary. The principal forms are (1) those with the thorax sculptured as in the male; (2) those with the thorax more decidedly vermiculate; (3) those with the thorax much more coarsely and deeply vermiculate, and the transverse strigae of the elytra deeper on the disc, much finer at sides and apex.

I think this condition of affairs is indicative of polymorphism in the female. A similar polymorphism in *Agabus* congener and *bipustulatus* has been ably elucidated by Dr. Sharp.

I think the three species above named should be united under the name of *sculptilis*, Harr.

C. inequalis, Horn.—I consider this in the same manner a dimorphic female of seminiger, *Lec.*

HYDATICUS.

H. modestus, Shp., *cinctipennis*, Aubé, *americanus*, Shp.—In the separation of these three species from *stagnalis*, *Fab.*, I can not agree with Dr. Sharp. The only differences are in the color of the upper surface. These variations seem to run gradually from one style to another. The form in which the elytra (except the sides) are black is the most common. A second variation occurs with a subbasal yellow transverse band of variable distinctness. The band then becomes pectinate posteriorly, and we have the vittate varieties thus gradually formed.

ACILIUS.

A. semisulcatus, Aubé.—Crotch was entirely correct in noting smooth females for this species. I have doubts whether this species should be considered distinct from *fraternus*, *Harr.* In studying our large series I find the females in the Eastern Atlantic region to be equally divided between the smooth and the sulcate forms. The sulci extend very little in front of the middle of the elytra. As we go west the sulci become gradually longer, so that the Oregon and Alaskan specimens are sulcate very nearly to the base. Smooth females become rare as we go westward. I think our collections demonstrate the identity of these two species.

In a recent letter Dr. Sharp holds that the two species are distinct, the character on which he relies principally is the somewhat greater distance between the anterior margin of the posterior coxa and the posterior border of the middle coxal cavity in *fraternus* than prevails in *semisulcatus*. I have not been satisfied with my study of this character.

GRAPHODERES

In this genus Dr. Sharp has discovered a variability in the number of the small palettes on the anterior and middle tarsi of the male.

In view of the very great resemblance between the so-called species, it is difficult to imagine that the variability indicates specific distinction. I have examined a number of males and very few agree among themselves. From an examination of the species in the cabinet of Dr. Sharp, I believe that the separation of *fasciatocollis* *Harr.*, *perplexus* *Shp.*, and *elatus* *Shp.*, from *cinereus* entirely unwarranted by the evidence afforded by other species of recognized variability in tarsal vestiture.

On the other hand I have seen three males, two collected by myself in Northern California and a third in Washington Territory, in which the middle tarsi of the male are not at all dilated, nor are there any palettes.

The anterior tarsi have a total of fifteen palettes and the claws are unequal, the posterior being one-third shorter, feebly arcuate, but distinctly sinuate beneath. The claws of the middle tarsi ♂ are feebly arcuate and of unequal length.

G. occidentalis n. sp.—Form more elongate than in *cinereus*, colors precisely similar. Male sexual characters as above. Length .54 inch; 13.5 millim.

This species seems closely allied to *austriacus*, but Dr. Sharp says its anterior claws are a "little unequal." Here they are very unequal on the anterior and middle feet.

Occurs in California and Washington Territory. Female unknown.

The following species are those unknown to Dr. Sharp and placed in an appendix to his paper. As some of them have escaped notice in our lists, it has been thought advisable to make such notes concerning them as may aid in their determination. The numbers given are those of Dr. Sharp's Appendix.

1180. *Agabus atratus* Mann., probably *tristis* Aubé.

1193. *Agabus irregularis* Mann. Has been identified by Crotch with *hypomelas* Mann., and, probably, correctly.

1201. *Agabus scapularis* Mann., probably *anthracinus* Mann.

1202. *Agabus subopacus* Mann., can not be identified.

1227. *Colymbetes fossiger* Motsch., is *Agabus morosus* Lec.

1249. *Colymbetes sobrinus* Motsch., is *Agabus nigroaeneus* Er.

1251. *Colymbetes strigosus* Lec., is a clerical error (=strigatus).

1285. *Dytiscus anxius* Mann., is probably *circumcinctus* Ahr.

1292. *Dytiscus fuscostriatus* Motsch., probably *circumcinctus* Ahr.

1413. *Hydroporus persimilis* Cr. The type of this species in my cabinet does not seem different from *collaris* Lec.

1423. *Hydroporus pulcher* || Motsch., is a pale *striatellus* Lec.

In addition to the above there is nearly an equal number of species due to Say, Melsheimer, Mannerheim and Motschulsky, which have escaped recognition and seem to be beyond the limits of an approximate guess.

The following species described by Kirby in the *Fauna Boreali Americana* have, for the most part, been omitted by Dr. Sharp. The types are all in the British Museum and their synonymy could have been authoritatively decided by him. I have seen nearly all of them and the following notes will, probably, be found correct:

Hydroporus nigrolineatus Step., is probably not that species, but one of the smoother forms of *Coelambus impresso-punctatus* Schall, otherwise known to us as *Hydroporus quadrilineatus* Mann.

Hydroporus laevis Kby., is probably the same as that subsequently described by LeConte as *duodecimlineatus* and, if so, Kirby's name should prevail.

Hydroporus picatus Kby., and *similis* Kby., are forms of the variable *impresso-punctatus* Schall.

Laccophilus biguttatus Kby.—This has been placed as a synonym of two other species at various times, but it is probably not a *Laccophilus* at all and seems rather to be a species of *Hydroporus*, perhaps allied to *pulcher* Lec.

Colymbetes semipunctatus Kby., is an *Agabus* and known to us.

Colymbetes bicolor Kby. and *phaeopterus* Kby.—From an examination of the types of these two species in the British Museum, they seemed to be merely color varieties of one species and identical with the form described by Sharp as *Agabus confinis* Gyll. I believe *ambiguus* Say to be the same species, and the name is older than any of those above quoted.

Colymbetes reticulatus Kby., seems to be the same as that described by Aubé a year or two later as *Agabus reticulatus*.

Colymbetes picipes Kby., is *Iybius angustior* Gyll.

Colymbetes assimilis Kby., is *Rhantus binotatus* Harris.

Colymbetes triseriatus Kby., is *C. sculptilis* Harris.

Colymbetes rugicollis Kby., is *Graphoderes liberus* Say.

Colymbetes MacCullochii Kby., is *Acilius mediatius* Say.

Dytiscus Ooligbukii Kby., is considered to be *confluens* Say, which in turn is *dauricus* Gebl.

Dytiscus Harrisii Kby., a well-known species.

Dytiscus Franklinii Kby., from the description it also must be referred to *dauricus* Gebl.

The following species are sufficiently conspicuous to warrant their description in an isolated manner:

LACOPHILUS Leach.

L. lateralis n. sp.—Oval, rather broad, yellowish testaceous, elytra black with few yellow marks. Head and thorax obsoletely finely punctulate. Sides of thorax feebly arcuate, hind angles rectangular, color yellowish testaceous with a bilobed piceous spot at the apex and a smaller one at base. Elytra very minutely punctulate, black, with few yellow spots each indicating a tendency toward three transverse series, epipleurae pale. Body beneath nearly smooth, abdomen obliquely scratched. Length .16-.18 inch; 4-4.5 millim. Pl. IX, fig. 2.

This species is closely related to *insignis* and *pictus*, more particularly the latter in form, although even a little more broadly oval. The spots on the elytra are much less numerous and the epipleurae pale in their

entire extent. The dark spaces at the apex and base of the thorax are present in all the specimens before me, and are always wanting in the other two species.

Occurs in Arizona.

The three species above cited form a conspicuously defined little group, characterized by their black elytra maculate with clear yellow. The essential characters of each are as follows:

- Oval, slightly oblong, thorax entirely immaculate. Elytral spots conspicuous, more or less confluent in fasciae; epipleuræ piceous..... **insignis**.
 Oval, rather broad, thorax with a narrow ante-scutellar piceous space. Elytral spots small, not confluent; epipleuræ piceous..... **pictus**.
 Oval, rather broad, thorax with bilobed apical and basal spots. Elytra with few yellow spots; epipleuræ pale..... **lateralis**.

L. insignis Shp., occurs in Texas, *pictus* Cast., in Arizona and Lower California, *lateralis* Horn, in Arizona.

HYDROPORUS Clairv.

H. palliatus n. sp.—Oval, moderately convex, without pubescence, surface shining, color piceous; legs, palpi, antennae, epipleuræ and base of elytra pale yellow. Head with scarcely any trace of punctuation. Thorax with sides very feebly arcuate, the margin very narrowly thickened, surface punctured, rather closely along the base and sides, quite densely near the hind angles, a subapical series of coarser punctures. Elytra paler than the thorax, the basal pale band of varying width extending from the humeri to the suture; surface sparsely and rather finely punctured, and with two indistinct series on each elytra of coarser punctures. Prosternal process moderate. Articular lobes of hind coxæ truncate, the outer angles acute, the cotyloid cavities distinctly separated. Sides of hind coxæ, epipleuræ and abdomen coarsely punctured, abdomen at middle more finely and less densely punctured. Coxal lines deep, nearly parallel, slightly divergent only in front. Third joint of anterior and middle tarsi deeply bilobed. Length .14 inch; 3.5 millim.

I have examined about a dozen specimens and find no special sexual differences. I refer this species to Dr. Sharp's Group 8, in association with *vilitis* and others. The shining surface and pale band at the base of the elytra make it a very conspicuous species.

Occurs at Crystal Springs, California.

H. picturatus n. sp.—Broadly oval, form of *rivialis*. Beneath piceous, abdomen at times rufescent at base and apex. Head yellow, a little darker posteriorly, surface very sparsely and finely punctured. Thorax with regularly arcuate sides, the side margin not thickened, hind angles obtuse, surface with an extremely fine punctuation, with coarser punctures in the basal and subapical regions, lateral impressions vague, color yellow with broad basal and apical spaces piceous, so that but a narrow line of yellow divides them. Elytra finely and densely punctured, with very coarse punctures irregularly placed and with feeble traces of two dorsal striae, color yellow with interrupted black suture transversely confluent, forming a conspicuous oval spot near the middle of the vittae, another posteriorly and a very irregular space extending to the side margin. Prosternum

in front of the coxae acutely carinate, the lobe rather broad, not elongate. Body beneath subopaque, coarsely punctured at the sides of the coxal plates and first two ventral segments, the remainder of the surface somewhat rugulose. Legs pale, antennae infusate toward the tip. Length .10 inch; 2.5 millim. Pl. IX, fig. 4.

This species is referred to Dr. Sharp's Section C. of Group 3, and of the species there belonging is most clearly allied to *rivalis*, which it resembles in form and considerably in its markings. It is, however, more shining and with the coarse punctuation of the upper surface very obvious. The third tarsal joint is scarcely bilobed, the claw-joint rather long, and the claws long and slender.

I have seen but four specimens collected in Western Nevada.

H. quadrimaculatus n. sp.—Broadly oval, feebly shining, piceous, head centre of prothorax, two spots on each elytron orange yellow. Head alutaceous, sparsely, finely punctured. Thorax piceous, a central transverse space pale, sides feebly arcuate, hind angles rectangular, surface with coarse punctures along the basal region, those in front gradually finer, between these a dense, very fine punctuation, lateral impressions very vague. Elytra with distinctly alutaceous surface, with numerous but not densely placed coarse punctures, which are gradually finer to the apex and obsolete toward the sides. Prosternum finely carinate between the coxae, the prosternal process rather broad but not long. Body beneath distinctly alutaceous, subopaque, the sides of the coxal plates with very coarse punctures. Ventral segments somewhat wrinkled at the sides. Length .12–.14 inch; 3–3.5 millim. Pl. IX, fig. 5.

This species is also referred to the *rivalis* group, although its sculpture and style of coloration recall *Hydrovatus*. The male has the anterior tarsi a little more dilated than the female, the claws longer and rather less arcuate. In both sexes the third joint is feebly emarginate and the terminal joint moderately long. In the female the terminal ventral segment is somewhat acuminate, in the male simple.

The elytral spots are large, the humeral spot extends on the epipleura and reaches nearly to the suture, its posterior border being broadly notched. The posterior spot is about one-third from the tip, of irregular quadrate shape, and also reaches the side margin of the elytra. The extreme tip is often yellow also.

Occurs in Western Nevada.

TRIARTHON Maerk.

T. Lecontei Horn, Trans. Am. Ent. Soc. 1868, p. 131, has been described as *T. cedonulli* Schauffuss, Ann. Ent. Soc. Fr. 1882, p. 43.

A second species occurs in Pennsylvania.

T. pennsylvanicum n. sp.—Oval, moderately robust, rufo-testaceous, shining. Clypeus slightly prolonged and truncate, corneous. Head sparsely and finely punctulate. Thorax narrower in front, sides moderately arcuate, disc very sparsely and finely punctulate. Elytra wider at base than the thorax, disc striate, striae with coarse closely placed punctures, intervals slightly convex, sparsely

punctulate, the alternate series, 1-3-5-7, with coarser punctures distantly placed. Body beneath less shining, sparsely punctate and pubescent. Prosternal process scarcely prolonged between the coxae. Length .12 inch; 3 millim.

This species closely resembles *Lecontei*. It has a smaller thorax, the elytra more deeply striate, the striae more closely punctured, the intervals more convex but less punctulate. In *Lecontei* the clypeus is entirely membranous, in the present species prolonged and corneous, in that species the prosternum is distinctly prolonged between the coxae, here scarcely so. As my type of *Lecontei* is a ♂ and the present a ♀, it is hardly safe to insist on the clypeal character as a specific one.

One specimen ♀, collected by Dr. W. G. Dietz at Hazleton, Pennsylvania.

DIETTA Sharp.

At the time of the publication of my Synopsis of the Silphidae, I called attention to certain apparent anomalies in the structure of the insect, especially in the structure of the tarsi, which were said to be 4-5-5-jointed. Through the kindness of Dr. Sharp I have examined his unique, and found that the specimen was really a monstrosity, there being four joints on one anterior tarsus and five on the other. The genus must, as I suspected, be placed in the series with five joints on all the feet, and is really, as I stated, intermediate between *Hydnobius* and *Anogdus*.

STACHYGRAPHIS Lec.

On the request of Dr. LeConte I have prepared a figure of this very peculiar genus of Staphylinidae, allied to *Geodromicus* of the Homalini. It is remarkable in the spinous hairs projecting laterally from the post-ocular region of the head. All the tibiae exhibit curious structure, as shown in the plate, which characters are, possibly, sexual. Two specimens only are known, both of which agree in the details given.

It occurs in California.

S. maculata Lec., Pl. IX, fig. 7.

A full description will shortly appear.

HISTER Linn.

II. (*Phelister*) *gentilis* n. sp.—Oval, convex, black, shining. Head and thorax sparsely and finely punctulate. Thorax with an entire, well-impressed submarginal stria. Elytra more sparsely and finely punctured than the thorax, surface with six entire dorsal and a sutural stria, all sharply impressed, the inner dorsal and sutural joining by an arc; external subhumeral entire, internal absent. Epipleurae unistriate. Propygidium and pygidium sparsely and finely punctured. Prosternum convex, the striae distinct, diverging and ascending in front. Marginal stria of mesosternum entire. Body beneath sparsely punctulate. Anterior tibiae very finely serrulate. Length .10 inch; 2.5 millim.

It is not without some little doubt that I refer this species to *Phelister*.

The antennal fossae are slightly enclosed in front, approaching *Onthophilus*, but the resemblance extends no further. It might be placed near *H. vernus* from which, however, it differs in many points.

Taken by H. K. Morrison in Arizona.

ECHINODES Zimm.

E. decipiens n. sp.—Broadly oval, piceous, brown, moderately shining. Head smooth, obtusely carinate at middle, deeply impressed on each side. Thorax shining, surface with sparsely placed, slightly muricate punctures, each bearing a short erect hair. Elytra with a marginal and three vaguely impressed entire striae at the side, each with a single row of coarse and closely placed punctures bearing a short erect hair; between these striae and the suture are four series of punctures rather irregularly placed, bearing setae, the sutural row the most distinct. Propygidium and pygidium shining, sparsely punctate. Body beneath shining, smooth. Prosternum bicarinate, the carinae divergent posteriorly. Length .06 inch; 1.5 millim.

This species resembles *E. setiger* Lec., and is but little longer. It differs in the elytral sculpture. The present species has the outer striae more impressed, the inner rows of punctures single, while in *setiger* the outer striae are less impressed and the inner rows composed of two or more series of punctures.

Collected by H. K. Morrison in Arizona.

Teretriosoma facetum Lewis, Ent. Mo. Mag. 1879, p. 61.

This species was described with the locality "Canada." I had always doubted the occurrence of this form so far north in our fauna, and a reference to the donation book of the British Museum gave the locality as Ceylon, although the specimen was otherwise labelled. Mr. Lewis informed me that he had other evidence that the insect was Ceylonese, and the species must, therefore, be removed from our lists.

PELTASTICA Mann.

A species of this genus has been discovered in Japan and specimens were kindly given me by Mr. George Lewis. The species strikingly resembles our own, but is broader, less convex and the margin of the elytra more explanate. It is also paler in color. The crescentic pale fascia, so evident near the basal third of the elytra in our species, does not appear in the Japanese form.

CHRYSOBOTHRIS Esch.

C. contigua Lec.—This species seems to have been misunderstood at home and abroad. It is of moderate size, resembling somewhat in form *femorata*, and may be at once distinguished from any other species in our fauna by the clypeus being bidentate at middle, the two teeth being separated by a narrow acute notch.

C. semisculpta Lec., was made a synonym of *femorata* by Crotch. It is really the ♀ of *contigua*.

C. cuprascens Lec., is also peculiar in the structure of the clypeus, that portion being almost rectilinearly truncate, with a small notch at middle. The anterior tibiae of ♂ have a small and very acute tooth near the tip.

C. vulcanica Lec., and *C. californica* Lec., appear to be merely unusually developed ♀ of *C. trinervia* Kby.

C. exesa Lec.—Male specimens now known to us show the anterior tibiae to be simple and not serrate within, the apex scarcely broader than the female. The femoral tooth is serrulate as in *femorata*. The middle tibiae are very distinctly arcuate in the male and very slightly so in the female, the posterior are straight in both sexes. The last ventral segment ♂ is triangularly emarginate, in the ♀ broadly emarginate with an acute angle each side.

C. cribraria Mann., which has remained in our lists unknown is that variety of *femorata* known as *soror* Lec.

GYASCUTUS Lec.

The occurrence of a new species in the eastern portion of our fauna has led to new study of our species with the following result: In 1868 (Trans. Am. Ent. Soc., ii. p. 154) I gave a synoptic table and called attention to the existence of two series of species—the first with the tarsi rather slender, especially the posterior, in which the first joint equals very nearly the next two joints together and the entire tarsus as long as the tibia—the second with short and broader tarsi, the first joint but little longer than the second.

The first series above indicated constitutes the genus *Gyascutus*, while the species of the second should be referred to *Hippomelas*.

The species referred to *Gyascutus* may be distinguished in the following manner:

- Epistoma broadly emarginate; species of robust facies.....2.
- Epistoma subtruncate; species of slender facies.....4.
- 2.—Elytra with subcostiform elevations; thorax very unequally sculptured and with irregular smooth spaces.....**planicosta** Lec.
- Elytra without subcostiform elevations.....3.
- 3.—Thorax irregularly sculptured, with large smooth spaces, prosternum in front somewhat concave, color above and beneath green bronze,

obliteratus Lec.

Thorax nearly equally sculptured with coarse punctures, without distinct callosities, prosternum in front flat, color above and beneath reddish bronze.....**carolinensis** n. sp.

- 4.—Thorax gradually narrowed in front, sides scarcely arcuate, the surface regularly punctured.....**cuneatus** Horn.

G. carolinensis n. sp.—Form moderately robust, reddish or coppery bronze, moderately shining. Sides of thorax moderately arcuate, the disc convex, coarsely punctured, at the sides somewhat tuberculate by the confluence of the punctures. Scutellum small oval. Elytra densely and deeply punctured, the punctures near the apex less confused and forming a slight tendency to striae. Body beneath more shining than above, moderately densely punctured, but smoother along the median line. Prosternum very coarsely punctured in front, the process smooth with a row of coarse deep punctures so closely placed as to resemble a groove. Length .60-.76 inch; 15-19 millim.

Although very distinct in its facies from *obliteratus* it is not easy to give any striking characters by which the two may be separated. It is, however, smaller, less robust, the sculpture much less coarse and the color quite different.

There have been about eight or ten specimens collected by the late Mr. W. F. Wenzel near Wilmington, North Carolina. I find no difference in them except in size. Those in my cabinet were kindly given me by his son, Mr. Henry Wenzel.

Of the species in the table, *cuneatus* makes the closest approach in resemblance to *Hippomelus suginata*, in fact, the two might easily be confounded without reference to the structure of the tarsi.

HIPPOMELAS L. et G.

The following species belong to the above-named genus and are distinguished as follows:

Epistoma rather deeply emarginate, the labrum almost bilobed.

Thorax with moderately arcuate sides and regularly punctured surface,

sphenicus Lec.

Epistoma broadly emarginate, the labrum feebly notched.

Thorax narrowed in front, the sides nearly straight, disc regularly punctured,

suginata Mann.

Arcuate, disc irregularly and roughly sculptured..... **caelatus** Lec.

Thorax quadrate, sides arcuate, the disc regularly and moderately punctured,

californicus Horn.

H. suginata Mann., has not yet to my knowledge occurred within our faunal limits.

H. caelatus by its robust form and thoracic sculpture approaches *Gyascutus*, while *californicus* by its feeble frontal ridges seems to lead to *Psiloptera*. All the species of both genera have the tips of the elytra slightly emarginate and slightly spinous.

Deltometopus ereptus Bonv.—An examination of the type in the collection of M. Sallé convinces me that it in no wise differs from *amoenicornis* Say.

Analestesa testacea Leach, is *Cebrio bicolor* Fab.

Corymbites tristis Cand.—Specimens, which on comparison do not differ from this species, have been found in Japan by Mr. George Lewis.

I have already stated that I believe *Elater semivittatus* Say, to be the older name of this species.

EUBRIA.

In a synopsis of our Dascyllidae attention was directed to the difference between the anterior and posterior claws of each pair of feet, the former being deeply bifid, the latter simple. Reasoning from analogous forms in our fauna I had reason to believe that the claws of the female would prove to be simple. While in the British Museum the suspicion was mentioned to Mr. A. Sidney Olliff, and to him we owe the demonstration of a character which I had suspected from analogy.

Pleolobus Philippi, which appears in the Munich Catalogue among the Telephorini is a Dascyllide and identical with *Anorus Lec.*, which is the prior name.

The tribe Macropoginini, as recognized in our books, will include the South American genus *Artematopus*, and as Lacordaire has already indicated the tribe, his name, *Artematopini*, should be adopted. The definition of the tribe must, however, be modified in accordance with the views already expressed by me (*Trans. Am. Ent. Soc.* 1880, p. 77).

CLERIDAE.

Cymatodera gigantea Horn, I find on comparison to be *C. Hopei* Gray. The latter name should prevail.

C. texana Gorham, *Biol. Cent. Amer.* iii. 2, p. 134, is the second of the species indicated by me but not named in my Synopsis, *Trans. Am. Ent. Soc.* 1876, p. 230.

Enoplium humerale Horn.—Mr. Gorham (loc. cit. p. 184) refers this species to *Pyticera*, but drops my specific name on the ground that there is a *humerale* in *Pelonium*. If the genera are distinct the reasoning is not valid.

CERAMBYCIDAE.

Callidium nicolas Wht., is merely the dark form of *Hylotrupes ligneus* Fab.

Callidium subfasciellum Wht., is *Phymatodes varius* Fab.

Liopus dorsalis Wht., is a *Lepturges*, and is from Brazil and not United States.

From an examination of the cabinet of Mr. H. W. Bates it became evident that our species referred to *Pilema* are really *Callimus*, while *Callimus chalybaeus* *Lec.*, must receive a new generic name, and *Poecilobrium* has been proposed by me* to contain not only that species, but also *Callidium rufipes* *Fab.*, of Europe.

**Class. Col. N. A.*, ed. ii., p. 291.

CHRYSOMELIDAE.

HISPINI.

The coleoptera forming this tribe of CHRYSOMELIDAE are so well known as not to need at present any general remarks.

Those occurring in our fauna are divisible into several groups in the following manner :

Tarsal claws simply divergent.

Third joint of tarsus deeply bilobed.

Antennae filiform or fusiform.....MICRORHOPALIDES.

Antennae clavate. Elytra with oblique plications.....OCTOTOMIDES.

Third joint of tarsus not bilobed, fourth joint long.

Antennae very short, clavate.....STENOPODIDES.

Tarsal claws widely divaricate.

Antennae filiform.....CALLISPIDES.

MICRORHOPALIDES.

Form more or less oval to cuneiform. Antennae filiform, 8-11 jointed. Tarsal claws divergent, the claw joint projecting at most one-third its length beyond the deeply bilobed third joint.

This group corresponds with the *Cephalodontites* of Chapuis, and the name has been changed because the genus from which the name has been derived does not appear distinct from *Odonotota*, which Harold in his turn replaces by *Chalepus*.

Our genera are as follows :

Antennae with 8 joints, the last four being closely connate.

Elytra oval, convex, not or feebly costate.....MICRORHOPALA.

Antennae with 11 distinct joints. Elytra costate.

Middle tibiae straight.....ODONOTOTA.

Middle tibiae curved.....CHARISTENA.

MICRORHOPALA Chev.

Head small, rounded, front slightly convex. Antennae apparently with but 8 joints, the last four being closely united in an oblong mass. Thorax usually broader than long and wider at base. Elytra with rows of punctures, the interval costiform or not. Legs short, tibiae straight, slightly broader toward the tip. Third tarsal joint deeply bilobed, the fourth joint usually not longer than the lobes, rarely much longer.

Microrhopala, as here constituted, contains also the species in our fauna referred in the books to *Uroplata*. There seem to be no valid characters for separating these genera. Certain of our species are referred by Chapuis (Genera des Coleoptères, XI, p. 322) to a section of the latter genera called *Pentispa*, characterized by the head having five longitudinal grooves on the vertex. I have never observed more than

three grooves (*rubrolineata*), often one only as in *vittata*, or with a confused punctuation (some specimens of *Xerene*). In his essay on the Chrysomelidae (Proc. Acad. 1873, p. 82) Crotch included *Octotoma* in *Microrhopala*. The genus seems sufficiently marked to retain as distinct. Our species, although not numerous, are not easily separable in tabular form. The following table will assist in their recognition :

Terminal joint of tarsi very little or not longer than the lobes of the third; antennal club elongate.....	2.
Terminal joint of tarsi nearly twice as long as the lobes of the third; antennal club rather short.....	10.
2.—Elytra with eight series of punctures only	3.
Elytra with more than eight series.....	9.
3.—Joints 2-6 of antennae nearly smooth and glabrous.....	vittata.
Joints 2-6 roughly sculptured and somewhat hairy.....	4.
4.—Body above bicolored, thorax generally with lateral red stripe, elytra usually vittate	5.
Body above entirely blue or slightly greenish	6.
Body above bicolored, elytra yellow, apical half and suture black,	
	dimidiata.
5.—Surface above and beneath black, rarely feebly bronzed	Xerene.
Surface above and beneath bright blue.	
Thorax with lateral red vitta, elytral vitta narrow.....	rubrolineata.
Thorax without vitta, elytral vitta broad.....	vulnerata.
6.—Thorax not or very little wider at base than apex.....	floridana.
Thorax gradually wider from apex to base.....	7.
7.—The rows of punctures regular and distinct.....	8.
Rows of punctures very irregular, the punctures large and confluent,	
	Erebus.
8.—Punctures of the outer rows much larger and of more irregular size than the inner.....	excavata.
Punctures of all the rows equal and distinct.....	cyanea.
9.—The interval between the third and fourth costae with four series of punctures near the apex; form slender, parallel.....	porcata.
10.—Above and beneath black.....	montana.
Above reddish yellow, elytra maculate with black, thorax on each side with a distinct basal impression.....	Melsheimeri.

As the species are for the most part common and well-known, detailed descriptions seem unnecessary, and only the more important characters and variations will be mentioned.

M. vittata Fab.—Oblong ovate, bluish black, head, thorax, base of femora, elytral vitta and narrower side margin red. Antennae nearly smooth to the sixth joint. Front unisulcate. Elytra with eight series of punctures arranged in pairs, the alternate intervals broader and slightly more convex. Length .20-.26 inch; 5-6.5 millim.

Var. *laetula* Lec., has the head and thorax more clearly red than in the Eastern forms. Kansas to Oregon.

Var. ———. A specimen from Colorado has the elytra entirely black, without vitta, the head is also fuscous.

Occurs everywhere in our territory except in the Arizona region.

M. dimidiata n. sp.—Black, above yellow, median space of thorax, sutural stripe and apical half of the elytra black. Antennae black, third joint scarcely longer than the fourth. Vertex sulcate, bronzed. Thorax gradually broader to base. Sides at middle subangulate, disc convex cribrately punctured. Elytra nearly parallel, very slightly broader behind, apices conjointly rounded, the margin serrate, disc with eight rows of coarse deep punctures separated by three well-marked costae. Legs black. Length .20 inch; 5 millim.

This species differs entirely in the style of coloration from any in our fauna and approaches the Mexican type of Hispidæ. I have in my cabinet a Mexican species closely resembling the present, which differs in the elytra at tip, more strongly dentate and the thorax has on each side an elongate smooth callus.

Occurs in Texas.

M. Xerene Newm.—Black, sides of thorax and elytral vitta reddish yellow. Front usually coarsely punctured, rarely with traces of grooves. Elytra with eight regular rows of deeply impressed punctures, the intervals between them slightly alternating. Length .16–.20 inch; 4–5 millim.

Var. *interrupta* Couper.—In this form the vitta is interrupted. The species otherwise is very little variable.

Occurs in the Atlantic region and Canada. I have not seen specimens from west of the Mississippi.

M. rubrolineata Mann.—Body above and beneath blue, sides of thorax and elytral vitta reddish-yellow. Head distinctly grooved. Length .16–.20 inch; 4–5 millim.

Var. *signaticollis* Lec.—This form has the elytral vitta entirely wanting. Numerous specimens have been observed in which the vitta extends but half the length of the elytra.

This species is closely related to the preceding and differs by very slight characters which are, however, constant. It will also be observed that the margin of the elytra near the apex is very distinctly serrate in this species.

Occurs in California.

M. vulnerata n. sp.—Form of the preceding species, above and beneath blue, elytra with a yellowish-red vitta, which is broader toward the base. Front sulcate. Thorax entirely blue, punctures coarse and deep, but distinct, not confluent. Elytra with margin serrulate near the apex, disc with eight equal rows of coarse deep punctures, the intervals equal; vitta extending about two-thirds the length of the elytra, and at its basal half suddenly wider and reaching nearly to the side margin. Length .14–.18 inch; 3.5–4.5 millim.

Although closely related to *rubrolineata* the present species has the

thorax entirely blue, and the punctuation more regular and not confluent. The elytral vitta is also a constant difference.

Occurs in Arizona.

M. floridana Schwarz.—Above and beneath dark blue, nearly black. Vertex sulcate. Thorax broader than long, sides nearly parallel, coarsely, deeply and somewhat confluent punctured. Elytra with eight rows of coarse punctures, the punctures of the four inner rows larger and more elongate than the others, the alternate intervals very slightly more elevated. Lateral margin scarcely visibly serrulate. Length .18 inch; 4.5 millim.

The form of the thorax will distinguish this from the following uniformly blue species.

Occurs in Florida.

M. excavata Oliv. (*Pluto* Newm.).—Bluish black, moderately shining. Front sulcate. Thorax distinctly wider at base, the disc coarsely and irregularly punctured. Elytra with eight rows of coarse deep punctures, the two inner rows less deep and somewhat confused, the intervals sometimes slightly elevated, usually flat, margin of elytra serrulate. Length .20 inch; 5 millim.

In this species there is considerable variation of elytral sculpture, so great that I had supposed two distinct forms existed. Certain specimens have the costae slightly indicated and may be considered the typical forms, others again have no trace of costae. A form occurs in Texas without costae, with the rows of punctures quite regular, these approach very closely to *cyanea*.

Occurs from Canada to Georgia and Texas.

M. Erebus Newm.—Bluish black, feebly shining. Vertex sulcate. Thorax broader behind, coarsely and deeply cribrate. Elytra with the series of punctures much confused, the punctures very large and somewhat confluent, especially at the sides, margin of elytra serrulate. Length .18-.20 inch; 4.5-5 millim.

This species carries to the greatest extreme the irregularity of the elytral punctures, as well as their size and depth. It is very rare that any specimen exhibits an entire row of punctures. There being no regular rows of punctures the intervals are consequently never costiform.

Occurs in Florida.

M. cyanea Say.—Bluish black, sometimes slightly bronzed, shining. Vertex sulcate. Thorax broader at base, coarsely and deeply punctured. Elytra with eight regular rows of equal punctures, the intervals equal and never carinate, margin not serrulate. Length .24 inch; 6 millim.

Occurs in Missouri, Colorado and Texas. I have seen a specimen marked New York.

The preceding four species of uniform dark blue color are very puzzling and difficult to separate, and with a greater or less amount of material will give rise to differences of opinion as to whether the number four should be increased or diminished. My first study of the series,

several years ago, seemed very unsatisfactory, but on resuming it for the completion of the present work, I have not modified the notes made at that time.

M. porcata Mels.—Black, without lustre. Vertex distinctly sulcate. Thorax quadrate, sides slightly arcuate, surface cribrate. Elytra nearly parallel, each distinctly tricostate, the intervals biserially punctured, except between the second and third, in which four rows of punctures are observed at the apical fourth, becoming confused at the base, margin not serrate. Length .12 inch; 3 millim.

By its slender form this species resembles a *Charistena*, but the tibiae are straight and gradually broader to tip.

Occurs from Pennsylvania to Illinois, but rare.

M. montana n. sp.—Form moderately robust, black, without lustre. Vertex distinctly sulcate. Thorax slightly transverse, not wider behind, sides moderately arcuate, disc convex, coarsely but very regularly punctured. Elytra distinctly tricostate, the intervals between the costae with a double series of coarse punctures, that between the two outer costae with four rows of punctures, distinct near the apex and separated by a slight costa, confused near the base. Fourth tarsal joint much longer than the lobes of the third. Length .10 inch; 2.5 millim.

This species and the next agree in having the fourth tarsal joint nearly twice as long as the lobes of the third. The antennae are also shorter than usual in the genus and the terminal joints more decidedly capitate.

Occurs in Montana.

M. Melsheimeri Cr. (*Odontota Hardyi* Cr.).—Beneath piceous, above reddish yellow, maculate. Vertex sulcate. Thorax nearly quadrate, sides feebly arcuate, disc convex coarsely and deeply punctured, usually a median smooth callus and a vague impression on each side at base, color sometimes uniformly reddish yellow, occasionally maculate with piceous spots. Elytra sculptured as in the preceding species, color reddish yellow, maculate, with piceous spots arranged in oblique series, sometimes confluent in oblique fasciae. Legs reddish yellow. Fourth tarsal joint elongate. Length .12 inch; 3 millim.

Occurs in the Atlantic region, also in California.

The characters used for the separation of the genera of *Hispidae* are for the most part feeble. These two species are probably as much entitled to separation as a distinct genus as *Octotoma* or *Charistena*, but in a fauna like our own in which the representation is limited there seems little use in multiplying names.

ODONTOTA Chevr.

The generic name here adopted is chosen rather in deference to the limited tradition of the science in this country, than from a conviction that it will ultimately prevail. In the group *Cephalodontides*, as defined by Chapuis, four genera are given in which the antennae have the eleven joints quite distinctly separated, these are *Odontota*, *Cephalodonta*, *Charistena* and *Anoplitis*. The first is distinguished by the prominence of

the head in front of the antennae, the second has antennae one-third longer than the thorax and rather slender, while *Charistena* has curved middle tibiae. The latter genus seems fairly established. *Odontota* and *Anoplitis* differ only in the description by the prominence of the head of the former. In studying our species I do not find the character valid, in other words, it is evanescent. *Cephalodonta* does not occur in our fauna, and a discussion of its value would be premature without specimens.* In the *Hispidae*, as in many other parts of the *Coleoptera*, classification has been too much diluted by unnecessary genera.

The following table gives a summary of the species known in our fauna :

- Elytra with ten series of punctures..... 2.
- Elytra with eight series of punctures..... 6.
- 2.—Elytra not costate, form narrow, parallel..... **collaris**.
- Elytra costate..... 3.
- 3.—Elytra with two costae only, first and third, the latter being feeble, apex coarsely serrate or even dentate..... **omogera**.
- Elytra with three entire costae only..... 4.
- 4.—Elytra black, at most with reddish humeri.
 - Body beneath black, thorax red with discal dark space.
 - Humeri red, thorax distinctly flattened posteriorly..... **scapularis**.
 - Elytra entirely black, thorax convex..... **notata**.
 - Body beneath red, thorax red, elytra black..... **bicolor**.
 - Elytra reddish yellow, sutural stripe black..... **dorsalis**.
- 5.—Thorax very much broader at base than apex, elytra somewhat expanded at tip **rubra**.
- Thorax very little wider at base, elytra not expanded at tip... **californica**.
- 6.—Elytra gradually wider behind, somewhat expanded at apex, surface variably maculate with piceous **nervosa**.
- Form slender parallel, color yellowish, elytra with narrow sutural strip and side margin blue-black..... **gracilis**.

O. collaris Say.—Slender, parallel, piceous, thorax red, elytra blue. Vertex not sulcate. Thorax transverse, widest at middle, sides arcuate, disc convex with an ante-scutellar depression, surface cribrate. Elytra with ten rows of equal punctures, closely placed without costae, the interval between the first and second pairs of rows a little wider, corresponding with the usual first costa, margin finely serrulate. Length .22-.24 inch ; 5.5-6 millim.

Occurs in Colorado and Illinois.

O. omogera Cr.—Cuneiform, black, opaque, thorax in part and humeral spot red. Vertex sulcate. Thorax widest at base, subangulate at middle, coarsely and deeply punctured, disc flattened posteriorly, the depression limited each side by a slight umbone and posteriorly by a transverse ridge ; color red, sides and de-

* In the Munich Catalogue, p. 3613, the authors go a step further in uniting all these genera with *Chalepus* (excepting *Cephalodonta*), while Chapuis considers *Chalepus* as a mere section of *Cephalodonta*. The name being much the older should have taken priority over that of which it is considered a part.

pressed space piceous. Elytra broader toward the apex, the margin of which is explanate and rather strongly toothed, the suture slightly retracted; disc with ten rows of punctures, the first pair separated from the others by a strong smooth costa extending from the basal margin to the apex, a fainter costa also exists at the usual position of the third costa. Length .30-.32 inch; 7.5-8 millim.

This species extends southward from Arizona to Mexico and Central America. It may possibly be described under an older name from the latter countries, but at the time Crotch described the species we were unable to satisfy ourselves that this was the case.

O. scapularis Oliv.—Robust cuneiform, black, thorax in great part and humeral angles of elytra red. Vertex punctured. Thorax widest at base, sides arcuate or feebly subangulate, disc convex, slightly depressed posteriorly with the ante-scutellar transverse ridge, surface coarsely and deeply punctured, color red, a median piceous space. Elytra serrulate at apex, ten rows of punctures, each elytron tricostrate, the second and third costae separated by four rows of punctures. Legs black, femora at basal third sometimes red. Length .22-.28 inch; 5.5-7 millim.

Occurs from the Middle States to Arizona. The Eastern specimens are always smaller and have a darker thorax.

O. notata Oliv.—Very like the preceding species in form, but differs in the thorax being more regularly convex with scarcely any trace of posterior flattening, and the dark space of the surface is limited to a well defined central spot. The elytra are entirely black, and the punctures of the rows are less deep and less approximated, and the rows themselves less crowded together. Length .24-.28 inch; 6-6.5 millim.

Occurs in Georgia and Florida.

O. bicolor Oliv.—Form rather slender, beneath bright red, head, antennae, elytra and legs black. Vertex sulcate. Thorax very little wider at base, sides obtusely subangulate, disc convex with scarcely any trace of posterior depression, cribrately punctured. Scutellum red. Margin of elytra serrulate, disc punctured and costate as in *scapularis*. Body beneath bright red. Legs black, the bases of the femora usually red. Length .24 inch; 6 millim.

This species differs also from the others in having the second joint of the antennae fully as large as the third. It is also less cuneiform, approaching *collaris* in shape.

Occurs in the Middle and Western States.

O. dorsalis Thunb.—Black, thorax and elytra reddish yellow, the latter with a common sutural piceous vitta. Vertex coarsely punctured. Thorax wider at base, sides arcuate, disc cribrately punctured and with faint depression posteriorly. Elytra striate and costate as in *scapularis*, margin finely serrulate. Length .24-.26 inch; 6-6.5 millim.

The only variation in this species is in the width of the sutural vitta. This is usually broader behind, sometimes it is very narrow and parallel, and still more rarely wider at the base.

Occurs in the Middle and Southern States.

The name above used has been taken from the Munich Catalogue. The description is unknown to me.

O. rubra Weber.—Broadly cuneiform, depressed, elytra broader at apex, color above rose red or reddish yellow, the elytra slightly clouded with darker spaces. Vertex punctured. Thorax much broader behind, sides nearly straight, coarsely and deeply punctured, slightly depressed posteriorly. Elytra broader at apex, which is obtuse, the margin explanate and serrate, disc with ten rows of punctures and three entire rather strong costae; between the second and third costae a shorter one which starts from the humeral umbone and joins the second, and a shorter which starts from the third near the apex and extends forward. Length .24-.26 inch; 6-6.5 millim.

The under side of the body varies in color from piceous to pale red.

This species is widely diffused, specimens have been seen even from California.

O. californica n. sp.—Beneath piceous, above reddish yellow, nearly as in *rubra*. Vertex with longitudinal impression. Thorax a little wider posteriorly, disc coarsely and deeply punctured, slightly flattened near the base, sides nearly straight or slightly sinuate. Elytra gradually wider posteriorly, the apical margin feebly explanate and finely serrate, disc with rows of punctures and costae as in *rubra*. Length .18 inch; 4.5 millim.

This species might be mistaken for the smaller forms of *rubra*. It differs, however, in having the thorax much less dilated posteriorly, and the elytra have not the rather abrupt expansion of the apex. In *rubra* the thorax at base is nearly twice as wide as the apex, in the present species not more than one-fourth wider. The elytral costae while they preserve the type of *rubra* are much less elevated.

Occurs in California and Arizona.

O. nervosa Panz.—Color variable. Vertex with median sulcus. Thorax about one-third wider at base than apex, sides nearly straight, anterior angles often prominent and dentiform, disc coarsely and deeply punctured. Elytra elongate quadrate, slightly arcuately broader posteriorly, margin feebly serrulate, surface with eight rows of punctures separated by three entire costae, the first distinctly broader. Length .14-.16 inch; 3.5-4 millim.

This species is extremely variable in color. The under side may be either piceous or entirely pale. The head is usually dark, thorax often pale, usually more or less maculate with piceous. The elytra are sometimes pale, with slight traces of darker spaces resembling in this respect *rubra*, or the surface may be black with a few indistinct yellow spots. The more common form has yellow elytra with piceous spots arranged as follows: At scutellum and humeri, two spots on the first costa and one opposite them at the side margin, a spot at the outer apical angle. These often become connected by oblique extensions. The great number of variations have given this species a large synonymy.

Occurs everywhere in the Eastern regions, also in Arizona.

O. gracilis n. sp.—Slender, parallel, reddish yellow, suture of elytra and a narrow space at the side bluish black. Vertex vaguely sulcate. Thorax quadrate, scarcely wider than long, base very little wider than apex, sides feebly arcuate, disc convex, coarsely but not densely punctuate. Elytra parallel, not wider at apex, margin finely serrulate, disc with eight rows of punctures separated by three entire costae. Body beneath pale. Legs pale, tarsi piceous. Antennae piceous. Length .14 inch; 3.5 millim.

This species has more nearly the form of *Charistena*. The colors recall those of *dorsalis*.

One specimen, Columbus, Texas.

CHARISTENA Baly.

Antennae 11-jointed, first joint stout, oval, second longer, third longer than the second, 4-6 gradually shorter, 7-11 distinct, stouter than the others but closely articulated. Head small, front not prominent. Eyes moderate, finely granulated. Thorax usually subcylindrical, margin indistinct. Elytra elongate, parallel, apex rounded, disc tricostate, with eight rows of coarse punctures in pairs. Legs moderate, intermediate tibiae strongly arcuate, the inner apical angle acute, slightly prolonged. Tarsi dilated, densely pubescent beneath, first joint triangular, rather small, second reniform, third deeply bilobed, fourth almost entirely between the lobes of the third, claws feebly curved divergent.

This genus founded by Dr. Baly, has been suppressed by Gemminger & Harold in their Catalogue into *Chalepus* (*Anoplitis*, *Odontota*) without, it seems to me, any valid reason, the characters on which it is based being of at least equal value to any of those on which the other genera of this group are separated.

Our species are as follows:

Body above unicolorous, bluish or black.

Femora feebly serrulate, third joint of antennae not elongate.....**nigrita**.

Femora distinctly serrulate, third joint of antennae longer than second,

perspicua.

Body above bicolored. Thorax red, with base and apex black.

Thorax longer than wide.....**Ariadne**.

Thorax transverse.....**Lecontel**.

Ch. nigrita Oliv.—Moderately elongate, feebly shining, subopaque, black, with at most a feeble violaceous lustre. Thorax longer than wide, sides feebly arcuate in front, subparallel behind, surface coarsely and deeply punctured. Elytra wider than the thorax, subparallel, apex obtusely rounded, with the margin feebly serrulate, disc feebly depressed, each with three discal costae, and the suture and margin moderately elevated, between the costae two rows of large deep punctures. Abdomen nearly smooth. Legs black. Length .15 inch; 3.75 millim.

The intermediate femora are very finely serrulate beneath. The third joint of the antennae is not longer than the second.

This species is widely distributed over the Atlantic region.

Ch. perspicua n. sp.—Moderately elongate, shining, black, upper surface with very distinct bluish lustre. Thorax longer than wide, sides very feebly arcuate.

ate, disc moderately convex, with a distinct transverse basal impression, surface coarsely and deeply punctate. Elytra wider than the thorax, subparallel, apices obtusely rounded with the margin serrulate, disc tricostate, the costae with the suture and margin moderately elevated and between them two rows of coarse peep punctures. Body beneath smooth, shining. Legs black. Length .22 inch; 5.5 millim.

The intermediate femora are much more distinctly serrulate than in the preceding species, and the third joint of the antennae is longer than the second, and about equal to the fourth and fifth together. These characters with the greater distinctness of the basal thoracic impression, the larger size and color serve to distinguish this species from the preceding.

Occurs in Arizona and New Mexico.

Ch. Ariadne Newm.—Moderately elongate and shining, elytra distinctly blue, thorax red, usually margined with black at apex and base. Thorax a little wider than long, sides feebly arcuate in front, subparallel behind, disc moderately convex with a feeble basal impression, surface coarsely and deeply punctured. Elytra as in *nigrita*. Legs black. Intermediate femora scarcely visibly serrulate. Length .15 inch; 3.75 millim.

The third joint of the antennae is nearly as long as the second, and is intermediate in this respect between the two preceding species.

Occurs in Florida and appears to be rare.

Ch. Lecontei Baly.—Very similar to the preceding in color and sculpture. It has, however, a wider thorax, the base of which is transversely impressed and the disc at middle subcarinate. Length .20 inch; 5 millim.

Occurs in Florida, rare. Unknown to me.

OCTOTOMIDES.

Form oblong, depressed, obtuse and dilated posteriorly. Antennae short, 8-jointed, the last two forming an elongate oval club. Tarsal claws divergent. Elytra with short oblique plicae, the intervals punctured.

OCTOTOMA Suff.

Antennae as long as head and thorax, first two joints oval, the second smaller, third cylindrical a little longer. 4-6 shorter, each slightly broader and shorter than the preceding, seventh obconical, eighth oval, subacute at tip, these two forming an elongate club. Femora moderate, distinctly sinuate beneath near tip, tibiae curved at base, the anterior more dilated than the others and with the outer edge sinuate. Tarsi dilated, densely pubescent beneath, first joint triangular, small, second broad and very deeply emarginate, third as long as the first two and deeply bilobed, fourth but little longer than the lobes of the third, prolonged at tip in an inter-unqual process, claws moderate, feebly curved.

Our species differ from the generic description given by Chapuis in the form of the femora and tibia. That author states that the femora have a dentiform process beneath near the tip, and that all the tibiae are slender. In our species they are as described above and the differences may be specific only.

O. plicatula Fab.—Oblong, dilated posteriorly, piceous black, opaque. Head yellowish, occiput black. Antennae rufous, club darker. Thorax yellowish, disc and sides piceous, transverse, anterior angles prominent in front, behind them the sides are deeply sinuate, the three-fourths posterior to the sinuation straight and deeply convergent, surface coarsely punctured and with a T-shaped callosity in the middle of the disc. Scutellum yellow. Elytra oblong, dilated at apex, each at tip obliquely truncate, more prolonged at the suture, base broader than the thorax, humeri obtuse, entire margin denticulate, disc flattened, surface with numerous acutely elevated, short, oblique plications more or less anastomosing, the intervals punctured. Legs piceous, the femora and tibiae at base and tip paler. Length .18 inch; 4.5 millim.

This species is widely distributed, but rare. Occurring in Illinois, South Carolina and Texas. Its peculiar sculpture and clavate antennae make it one of the most easily known species in our fauna.

O. marginicollis n. sp.—Beneath piceous, above yellowish, apical half of the elytra brown. Antennae pale yellow, the third joint nearly as long as the two following together. Head feebly punctured. Thorax nearly twice as wide as long at middle, sides nearly straight behind, arcuate in front and slightly sinuate behind the prominent front angles, lateral margin narrowly explanate and translucent, especially in front, disc slightly convex, vaguely depressed posteriorly, surface coarsely cribrate punctured. Elytra elongate, quadrate, arcuately narrowed at middle and rather abruptly dilated at apex, margin serrate, surface with elevated ridges formed as follows: An irregular carina begins at the base within the humeral angle and extends somewhat sinuously to the middle, where it abruptly forms an intricate network of strongly elevated ridges, extending over nearly the entire apical half of the elytra, on each side a short distance from the apex of the suture is a laminiform tubercle, between the ridges the surface is coarsely punctured, cribrate at the basal portion of the elytra. Legs yellowish, femora and tibiae broadly annulate, with brown at middle. Length .20 inch; 5 millim. Plate IX, fig. 9.

This species is larger and relatively broader than *plicatula*. It differs primarily in color and very obviously in sculpture. In the preceding species the elytra are covered with oblique plications, but in the present species the elevations are confined to the apical half of the elytra and are more irregularly sinuous instead of oblique plications.

Occurs in Arizona.

STENOPODIIDES.

Form oval, moderately robust. Elytra with alternate intervals feebly more convex. Antennae very short, extending but very little behind the anterior margin of thorax, 8-jointed, last two joints forming an elongate oval club. Tarsi not dilated, clothed beneath with silken hairs, third joint not bilobed, scarcely emarginate, fourth joint as long as the others together, moderately stout, claws rather long, feebly curved, divergent.

This assemblage of characters defines a very distinct group, and the structure of the tarsi has nothing approaching it as far as known among the Phytophaga, except in *Haemonia*. Can it be possible that the present insect is subaquatic in its habits in the manner of that genus?

STENOPODIUS n. g.

Head small, vertex not prominent, front vertical. Labrum short, truncate; mentum narrow, elongate; palpi slender, the last joint of the maxillaries longer than the preceding united. Eyes large, oval. Antennae short, passing very slightly the anterior margin of the thorax, first joint subglobular, second longer, obconical; 3-6 equal, as broad as long: seventh obconical, broader than long; eighth in form of an oval obtusely pointed mass, with the sutures barely visible. Thorax broader than long, base very little wider than apex, sides feebly arcuate, apical margin slightly prolonged at middle and sinuate on each side. Scutellum broader than long, truncate at tip. Elytra oval, one-third longer than wide, apices conjointly rounded, surface with eight rows of punctures on each, the alternate intervals slightly broader and very feebly more convex. Legs moderate, glabrous. Tarsi not dilated, with short silken hairs beneath, each two-thirds the length of its tibia, first three joints nearly equal in length, the third emarginate above, fourth as long as the others together, with the feebly arcuate claws nearly half the length of the joint.

S. flavidus n. sp.—Oval, moderately robust, glabrous, body beneath antennae and head black, upper surface and legs pale yellow. Head black, a spot above each eye yellow. Thorax broader than long, base very little wider than apex, apex prolonged at middle and slightly elevated, on each side sinuate and deeply impressed, sides feebly arcuate in front, subparallel at basal two-thirds, with an extremely feeble trace of sinuation, base feebly lobed at middle, sinuate on each side, surface coarsely, deeply and rather closely punctured with a small fovea at each anterior angle. Elytra wider than the thorax, oval, one-third longer than wide, sides very slightly arcuate, margin feebly serrate, disc convex, each with eight rows of coarse punctures, intervals narrow, each alternate slightly wider and very little more convex. Body beneath black, shining, abdomen sparsely punctate, pygidium and a spot on each side of the last ventral yellow. Length .16 inch; 4 millim. Pl. IX, fig. 8.

In form this species is shorter and more robust than any in our fauna. The peculiar characters are so many as to make it probably the most easily recognized known Hispide. The form of the apex of the thorax is especially noteworthy, from the fact that the depression along the margin on each side of a slight median elevation, appears to be for the reception of the club of the antennae when at rest. This latter character, together with the aspect of the surface and the structure of the tarsi, render it probable that the species is subaquatic in its habits.

Occurs in California and Arizona.

CALISPIDES.

Form elongate, subcylindrical. Antennae filiform, eleven-jointed. Tarsi dilated, densely pubescent beneath, third joint deeply bilobed, claws divaricate. First ventral suture nearly obliterated at middle. Elytra with striae of punctures.

One genus is known in our fauna.

STENISPA Baly.

Antennae 11-jointed, first joint small, subglobular, second obconical, a little longer, third cylindrical nearly as long as the first two, 4-10 subequal, eleventh longer and subacute at tip. Head small, front concave with an inter-antennal

carina. Eyes oval, finely granulated. Thorax quadrangular. Scutellum oval, acute at tip. Elytra subcylindrical, slightly narrowed at tip. Femora stout, tibiae not arcuate, but slightly flattened. Tarsi dilated, densely pubescent beneath, first joint triangular, as large as the second, second feebly emarginate, third deeply bilobed, fourth nearly half projecting beyond the third, with rather stout, moderately arcuate divaricate claws. Metasternal episterna very narrow at middle.

Two species occur in our fauna.

Black with a slight bronze tinge **metallica**.
 Black with slight bluish tinge, thorax red **collaris**.

S. metallica Fab.—Subcylindrical, elongate, black, shining, with slight bronze tinge. Thorax a little longer than wide, sides at anterior angles feebly arcuate, posteriorly straight, with a very feeble trace of sinuation, surface very sparsely punctate. Elytra with ten rows of moderately fine punctures and a short scutellar row. Body beneath shining, very sparsely punctate. Length .20-.24 inch; 5-6 millim.

Occurs from the New England States to Texas.

S. collaris Baly.—Subcylindrical, elongate, black, with slight bluish tinge, thorax red. Thorax quadrate, sides at anterior angles feebly arcuate, posteriorly straight and parallel, surface sparsely punctate. Elytra as in *metallica*. Body beneath black, sparsely punctate. Length .26 inch; 6.5 millim.

This species is somewhat stouter in appearance than the preceding, and differs in form of thorax and different color.

Occurs from Michigan to Texas.

Bibliography and Synonymy.

MICRORHOPALA Baly.

- M. vittata** Fab., Ent. Syst. Suppl. p. 117; Oliv. Ent. vi, p. 770, No. 95, pl. ii, fig. 20; Crotch, Proc. Acad, 1873, p. 82.
lactula Lec., Col. Kans. 1859, p. 27.
- M. dimidiata** n. sp.
- M. Xerone** Newm., Ent. Mag. v, 1838, p. 390; Baly, Ann. Nat. Hist. 1864, p. 269; Crotch, loc. cit. p. 82.
interrupta Couper, Can. Nat. 1865, p. 63.
- M. rubrolineata** Mann., Bull. Mosc. 1843, ii, p. 307; Crotch, loc. cit. p. 82.
signaticollis Lec., Proc. Acad. 1859, p. 82.
- M. vulnerata** n. sp.
- M. floridana** Schwarz. Proc. Am. Philos. Soc. 1878, p. 369.
- M. Erebus** Newm., Entomologist, 1841, p. 77.
- M. exoavata** Oliv., Ent. vi, p. 775, No. 95, pl. ii, fig. 29; Crotch, Proc. Acad. 1873, p. 83.
Pluto Newm., Entom. 1841, p. 77.

- M. cyanea** Say, Journ. Acad. iii, p. 433; Crotch, loc. cit. p. 83.
Hecate Newm., Entom. 1841, p. 77.
- M. porcata** Mels., Proc. Acad. iii, p. 161; Crotch, loc. cit. p. 83.
- M. montana** n. sp.
- M. Melsheimeri** Crotch, Proc. Acad. 1873, p. 83.
Hardyi Cr. (*Odontota*), Trans. Am. Ent. Soc. 1874, p. 80.

ODONTOTA Chevrr.

- O. collaris** Say, Journ. Acad. iii, p. 433.
Walshii Crotch, Proc. Acad. 1873, p. 81.
- O. omergera** Cr., loc. cit. p. 80.
- O. scapularis** Oliv., Ent. vi, 766, No. 95, pl. i, fig. 13; Crotch, loc. cit. p. 80.
lateralis Say, Journ. Acad. iii, p. 431.
- O. notata** Oliv., loc. cit. p. 774, pl. ii, fig. 26; Crotch, loc. cit. p. 81.
- O. bicolor** Oliv., Encyc. Meth. vii, 1792, p. 96; Ent. vi, p. 774, pl. ii, fig. 27;
 Kirby, Fauna Bor. Am. iv, p. 227; Crotch, loc. cit. p. 81.
Bacchus Newm., Entom. 1841, p. 76.
- O. dorsalis** Thunb., Götting. Gel. Anz. 1805, p. 282.
scutellaris Oliv., Ent. vi, p. 771, pl. ii, fig. 21; Crotch, loc. cit. p. 81.
anturalis † Harr., Ins. Inj. Veg. 2d ed. p. 98.
- O. rubra** Weber, Obs. Ent. 1801, p. 60; Crotch, loc. cit. p. 81.
quadrata Fab., Syst. El. ii, p. 66; Oliv., Ent. vi, p. 774, pl. ii, fig. 28.
marginata Say, Long's Exped. ii, p. 292.
pallipes Germ., Ins. spec. nov. p. 529.
- O. californica** n. sp.
- O. nervosa** Panz., Ed. Voet. iv, 1798, Vorber et p. 92, Front fig. 1.
inaequalis Weber, Obs. Ent. 1801, p. 65.
rosea Weber, loc. cit. p. 66; Crotch, loc. cit. p. 81.
suturalis Fab., Syst. El. ii, p. 63; Oliv., Ent. vi, p. 777, p. ii, fig. 32.
flavipes Germ., Ins. spec. nov. 1824, p. 529.
obsoleta et pallida Say, Journ. Acad. iii, p. 432.
Philemon et Baucis Newm., Ent. Mag. v, 1838, p. 390.
- O. gracilis** n. sp.

CHARISTENA Baly.

- C. nigrita** Oliv., Ent. vi, p. 778, pl. ii, fig. 35; Baly, Trans. Ent. Soc. London,
 Series ii, Vol. iii, p. 252; Crotch, loc. cit. p. 81.
- C. perspicua** n. sp.
- C. Ariadne** Newm., Entom. 1841, p. 77; Baly, loc. cit. p. 252; Crotch, loc. cit. p. 82.
- C. Lecontei** Baly, loc. cit. p. 252.

OCTOTOMA Suffr.

- O. plicatula** Fab., Syst. El. ii, p. 63; Oliv., Ent. vi, p. 776, pl. ii, fig. 31; Crotch,
 loc. cit. p. 83.
- O. marginioellus** n. sp.

STENOPODIUS Horn.

- S. flavidus** n. sp.

STENISPA Baly.

- S. metallica** Fab., Syst. El. ii, p. 66; Oliv., Ent. vi, p. 777, pl. ii, fig. 33; Baly,
 Cat. Hisp. p. 14, pl. iv, fig. 4; Crotch, loc. cit. p. 80.
brevicollis Rand. (*Languria*), Bost. Journ. ii, p. 48.
- S. collaris** Baly, Cat. p. 163; Crotch, loc. cit. p. 80.

ASIDA Latr.

A. macra n. sp.—Form slender, resembling *Eleodes extricata*. Black, moderately shining. Head coarsely and on the occiput densely punctured. Thorax at the sides longer than wide, narrower in front than at base, sides feebly arcuate and obtusely margined, hind angles acute and slightly divergent, disc slightly convex, sparsely punctured at middle, confluent punctured near the sides, base very feebly bisinuate. Elytra not wider at base than the thorax, sides not margined, humeral angle slightly reflexed, oval, broadest behind the middle, surface sparsely punctured and slightly wrinkled. Prothorax beneath coarsely punctured, abdomen subopaque, scabrous. Length .54 inch; 13.5 millim. Pl. IX, fig. 10.

This species is the most slender at present known in our fauna, and is the only one with the thorax gradually narrowed from base to apex with nearly straight sides.

Collected by Prof. Snow in New Mexico, occurs also in Arizona.

EUSATTUS Lec.

E. politus n. sp.—Oval, very little longer than wide, convex, black, shining. Head very sparsely punctate in front. Thorax very narrowly margined, base bisinuate, the hind angles obtuse, surface sparsely punctate at the sides, nearly smooth at middle. Elytra with very fine punctures, very remotely placed, sides rounded not margined, the epipleurae gradually wider from apex to base. Prosternum coarsely punctured in front, the intercoxal process and tip margined. Body and abdomen very sparsely and finely punctulate. Length .40 inch; 10 millim.

This species by its smooth surface resembles *laevis* Lec., while its form is more nearly that of *difficilis* Lec. It differs, however, from all those with rounded sides to the elytra (except *puberulus*) in having the prosternum margined. This character I find to occur in *robustus* Lec. and *costatus* Horn, which have strongly margined sides to the elytra.

Occurs at Santa Barbara, California. From C. F. Gissler.

E. dilatatus Lec., should be united with *muricatus* Lec.

E. puberulus Lec., in addition to the small scale-like hairs of the surface, differs from *muricatus* in having the prosternum distinctly margined.

The following amended table will enable our species to be distinguished:

Elytra with a distinct lateral margin.....	2.
Elytra not margined	5.
2.—Epipleurae occupying the entire space below the margin; prosternum distinctly margined at tip.....	robustus.
Epipleurae narrow, suddenly broader at base.....	3.
3.—Prosternum margined at tip; elytra subcostate and granular.....	costatus.
Prosternum not margined at tip.....	4.
4.—Elytra with faint costae and transverse reticulations.....	reticulatus.
Elytra coarsely and irregularly eroded.....	erosus.
5.—Prosternum margined at tip.....	6.
Prosternum not margined.....	7.
6.—Elytra subopaque, punctured, with fine scale-like hairs.....	puberulus.
Elytra smooth, shining.....	politus.

- 7.—Epileuræ suddenly broader at base; elytra smooth.....**laevis.**
 Epileuræ gradually broader from apex to base.....8.
- 8.—Epileuræ nearly smooth; elytra faintly punctured.....**dubius.**
 Epileuræ punctured and hairy.....9.
- 9.—Form oblong; elytra finely reticulate.....**productus.**
 Form oval; elytra with faint traces of costae.....**difficilis.**
 Form oval, very convex, elytra submuricate.....**muricatus**

With the exception of *reticulatus*, which occurs on the plains, all the above species are found west of the Rocky Mountains, from Oregon to Cape St. Lucas. Other species occur in Mexico.

CORPHYRA Say.

In the Transactions for 1871 (p. 228-233) I gave a synopsis of the species then known to us, with full descriptions. In that paper fourteen species were admitted. After the return of Mr. Crotch from California in 1873, his material was placed in my hands and six new species were described, one of which I now believe to be a variety. At the time these latter were described other engagements prevented me from bringing all our species together in one table, and only those from the west coast were treated (Trans. Am. Ent. Soc. 1874, pp. 40-43).

The object of the present essay is to bring them all together with such short notes as will enable them to be easily recognized.

The discovery of a new species in Nevada introduces an entirely new element in the series, viz., flabellate antennae in the male with the second and third joints moniliform.

Another series of characters which have been regarded in the separation of species is found in the form of the male sexual apparatus (*oedeagus*). These I have not attempted to describe, but the accompanying sketches will give an idea of the variations. The organ is composed of two semitubular pieces, variously modified at the free end. A lateral view shows the organ to be more or less curved upwards near the tip, except in *inconspicua*, where it is absolutely straight. Through the centre of the tube formed by the lateral pieces a membranous tube passes, which is of somewhat denser structure near the tip. This tube is capable of considerable extension and is the efferent duct, or penis, properly speaking. The figures on Pl. IX, figs. 11-18 give a lateral and an under view of the organ; in many cases it is absolutely identical in several species. I have not seen that of *C. cyanipennis*, but believe it will be found to resemble fig. 18.

The modifications in the form of the end of the complex organ have had considerable weight in causing me to retain several species apart, while I have used apparently trivial characters to indicate their differences.

Series A.—Antennae dissimilar in the sexes, serrate in ♀, pectinate or flabellate ♂.

- Antennae ♂ flabellate, joints 4-10 bearing long branches, joints 2-3 small, globular; elytra at tip ♂ simple.....1. **flabellata**.
 Antennae ♂ pectinate, joints 3-10 with stout branches, joint 2 small, globular; elytra at tip ♂ slightly impressed.....2. **Crotchii**.

Series B.—Antennae subserrate in both sexes.

- Posterior tibiae of males arcuate and obliquely grooved, elytra at tip simple in both sexes.....3. **abnormis**.
 Posterior tibiae slender and similar in the sexes.....2.
 2.—Elytra at tip dissimilar in the sexes, that of the male either prolonged, impressed or tipped with yellow and usually smoother.....3.
 Elytra alike in the two sexes.....11.
 3.—Elytra at tip ♂ acutely candate and tipped with yellow.....4.
 Elytra simply tipped with yellow, not impressed nor bullate.....5.
 Elytra at tip more or less bullate and distinctly impressed.....6.
 4.—Elytra entirely black.....4. **distinguenda**.
 Elytra with a nearly entire pellow vitta.....5. **Bardi**.
 5.—Thorax shining without median impressed line.
 Thorax black.....6. **funebriis**.
 Thorax red, rarely with darker median spot.....7. **punctulata**.
 Thorax subopaque, a distinctly impressed median line.....8. **canaliculata**.
 6.—The elytral tip ♂ yellow and impressed.....7.
 The tip in ♂ black, with impression.....9.
 7.—Last two ventral segments ♂ yellow, legs yellow.....9. **elegans**.
 Abdomen entirely black in both sexes.....8.
 8.—Thorax entirely red.
 Legs pale.....**monticola**.
 Legs black.
 Elytra sparsely punctured.....10. **terminalis**.
 Elytra densely punctured.....11. **Lewisii**.
 Thorax black.
 Legs pale.....12. **Sulvipes**.
 Legs black.....13. **Newmani**.
 9.—Elytra blue, antennae, tibiae and tarsi pale.....14. **cyanipennis**.
 Elytra blackish, varying to red.....10.
 10.—Legs yellow.....15. **pulchra**.
 Legs entirely black.
 Clypeus pale yellow; thorax red, with broad median space black,
 16. **lubiata**.
 Clypeus black.
 Elytra with distinct pruinose surface lustre.
 Elytra rather densely punctured, thorax black.....17. **lugubris**.
 Elytra coarsely and sparsely punctured, thorax red.....18. **collaris**.
 Elytra shining without pruinose lustre.....**variabilis**.
 11.—Thorax nearly smooth, color red.....19. **inconspicua**.
 Thorax conspicuously punctured, usually piceous, the elytra vittate in ♂,
 luteous in ♀.....20. **vittata**.
 1.—**C. flabellata** n. sp.—Piceous, thorax and legs reddish yellow. Head and thorax with very few fine punctures. Elytra shining, punctuation sparse

and feebly impressed, nearly smooth at apex and base, pubescence fine and short. Scutellum yellow. Body beneath sparsely punctured and slightly pubescent. Length .18-.26 inch; 4.5-6.5 millim.

Male.—Antennae with joints 2-3 small, globular, 4-10 with a long branch, eleventh joint nearly as long as the five preceding joints together, equalling in length the process from the tenth joint. Elytra at tip absolutely simple as in the female. Anterior and middle tarsi scarcely dilated.

Female.—Antennae subserrate, the second joint alone small.

I have one male in my cabinet with the elytra pale. This style of variation seems to be usual in those species, which occur west of the Rocky Mountains. I have never observed any tendency in the Atlantic species to have the elytra become paler.

I have seen six specimens collected in Western Nevada.

2.—**C. Crotchii** Horn, Trans. Am. Ent. Soc. 1874, p. 41.

In the specimens I have seen of this species the elytra are pale reddish yellow, the suture and apical margin narrowly bordered with piceous.

Male.—Antennae pectinate from the third joint, second small, globular. Elytra at tip feebly impressed. Anterior and middle tarsi distinctly dilated.

Female.—Antennae slender and very feebly subserrate.

Collected by Mr. Crotch at Crystal Springs, California.

3.—**C. abnormis** Horn, Trans. Am. Ent. Soc. 1874, p. 40.—Black, thorax red.

Male.—Antennae feebly serrate. Anterior and middle tarsi dilated. Posterior tibiae arcuate and obliquely sulcate.

Female has not been identified with certainty.

Occurs in California and Colorado.

4.—**C. distinguenda** Horn, loc. cit. p. 42.—Nearly black, thorax red; antennae subserrate in both sexes.

Male.—Elytra smoother at apical third and yellow, the tips prolonged, acute and slightly reflexed.

Female.—Elytra nearly equally punctured, tip not prolonged nor yellow.

Collected at San Buenaventura and Visalia, California.

5.—**C. Bardi** Horn, loc. cit. p. 42.—Piceous, thorax red, elytra with a pale vitta extending from the humeri to near the tip. Antennae subserrate in both sexes.

Male.—Sexual characters as in the preceding species, but the tip is rather less prolonged.

Female as in *distinguenda*.

Collected at San Buenaventura, California, by Mr. Crotch.

6.—**C. funebris** Horn, Trans. Am. Ent. Soc. 1871, p. 280.—Body and legs entirely black, elytra with slight pruinose lustre.

Male.—Elytra tipped with yellow and smoother, not convex nor impressed.

Female.—Elytra concolorous, equally punctured.

Occurs widely diffused in California.

7.—**C. punctulata** Lec., Ann. Lyc. V, p. 151.—Black, thorax red. Varies, with the elytra entirely reddish yellow.

Male characters as in *funebria*.

Female as in *funebria*.

Occurs in California and Nevada.

This and the preceding species seem to differ only in the color of the thorax and may possibly be the same.

8.—**C. canaliculata** Lec., New Species, p. 143.—Black, thorax red, surface feebly shining. Thorax with median impressed line deeper behind. Elytra rather coarsely not densely punctured. Eyes less prominent than the hind angles of the head. I have seen variations of this species in which the color is entirely black, and one of them with pale legs.

Male.—Elytra bordered at tip with yellow, smoother, not impressed.

Female as in *funebria*.

Collected rather commonly by Mr. Charles Dury, near Cincinnati, Ohio. The males seem to be rare.

9.—**C. elegans** Hentz, Trans. Am. Philos. Soc. 1830, p. 257.—Piceous, thorax, legs and two basal joints of antennae reddish yellow. Elytra rather coarsely, sparsely punctate.

Male.—Elytra with an oval bullate spot at tip which is very smooth, yellow and impressed. Last two segments of abdomen yellow.

Female.—Elytra nearly equally punctured at tip. Abdomen black.

Occurs principally in the northwestern regions. My specimens are from Detroit and Dakota. It occurs, however, in the Middle States.

10.—**C. terminalis** Say, Journ. Acad. V, p. 257.—Piceous, thorax red, elytra slightly pruinose, the punctures coarse, deep, but not dense.

Male.—Elytra at tip yellow, smooth, impressed, but not more convex.

Female.—Elytra concolorous, a little smoother at tip.

Occurs in the Middle States, Ohio and Michigan.

11.—**C. Lewisii** Horn, Trans. Am. Ent. Soc. 1871, p. 281.—Body beneath piceous, color above variable. Elytra moderately densely punctured.

A large series of specimens shows this species to be very variable and this, too, in characters usually considered of some importance. These varieties are as follows:

Lewisii.—Black, thorax red. Elytra of male tipped with yellow.

variabilis.—Black, thorax red. Elytra of male black at tip.

monticola.—Elytra yellowish, tip ♂ yellow, legs entirely or in part pale.

In addition to the above-named varieties specimens occur with yellow elytra as in *monticola*, but with entirely or partly black legs, and again, others entirely black above.

It might seem as if some of these forms should be considered specifically distinct, as the characters separating them are no less than those used to distinguish other species. While certain characters are used as

convenience for separation, it must be admitted that there are minor differences of aspect or sculpture not easy or practicable to describe which really distinguish species in the cabinet, and in many the sexual characters of the male afford the only means of giving expression to recognized differences.

In the varieties above indicated I see no reason for drawing the specific line anywhere, there are none of these minor differences of aspect and sculpture, nor is the habitat a factor in the kind of variation. I have concluded to unite these forms under one name and have placed the varieties in separate places in the table, so that all the forms may be recognized.

Male.—Elytra at tip somewhat swollen, smooth and impressed. When the tip is yellow the impression is always black.

Female.—Elytra not swollen at tip, punctured.

The form *Lewisii* occurs in Colorado; *monticola* in California, Nevada and Montana; *variabilis* in Colorado, Montana, New Mexico and Arizona. The totally black specimens are from Arizona.

12.—**C. fulvipes** Newm., Ent. Mag. V, p. 375.—Black, shining, legs yellow. Elytra coarsely and moderately densely punctured. Thorax sometimes reddish brown.

Male.—Elytra at tip yellow, swollen, smooth, impressed.

Occurs in New York, Ohio, Michigan and Canada.

13.—**C. Newmani** Lec., Proc. Acad. 1855, p. 274; *lugubris* † Newm.

This species agrees in most respects with *fulvipes*, except that the legs are black. The apical spot of the male is however smaller, and the elytra less coarsely and densely punctured.

Occurs in Maine, Canada and New York.

14.—**C. cyanipennis** Bland, Proc. Ent. Soc. Phila. 1864, p. 264.—Piceous, tibiae, tarsi, antennae and palpi yellow. Elytra blue, coarsely but not densely punctured.

Male.—Elytra slightly swollen at tip, impressed and smoother, not yellow.

Female.—Elytra not swollen nor impressed.

Occurs in New Hampshire and Virginia.

15.—**C. pulchra** Lec., Jour. Acad. ser. 2, 1, p. 83.—Piceous, legs and two basal joints of antennae pale. Thorax red, with broad median black space. Elytra densely punctured.

Male.—Elytra not more convex at tip, deeply impressed and smoother only in the impression.

Female.—Elytra nearly equally punctured to tip.

Occurs in Ohio, Missouri, Dakota and Montana.

16.—**C. labiata** Say, Jour. Acad. 1827, p. 247.—Piceous, clypeus pale yellow. Thorax red, with broad median black space. Elytra densely punctured.

Sexual characters as in *pulchra*.

This species closely resembles *pulchra*, but differs in having black legs and a pale clypeus.

Occurs in the Middle States, Ohio and Dakota.

17.—**C. lugubris** Say, Jour. Acad. 1827, p. 246.—Color entirely black.

Male.—Elytra at tip slightly swollen, smoother, deeply impressed.

Female.—Elytra a little smoother at tip.

This species is more coarsely and less densely punctured than *pulchra* or *labiata*, but agrees closely in this respect with *fulvipes*, which has yellow legs and the male elytra tipped with yellow.

Occurs in the Middle States, Canada and Ohio.

18.—**C. collaris** Say, Journ. Acad. 1827.—Black, thorax red. Elytra with coarse, deep, sparsely placed punctures.

Male.—Elytra at tip smoother, not swollen, and with a feeble impression near the suture.

This species is the smallest of those with the elytra impressed at tip, and is unusually coarsely punctured. It is almost impossible to distinguish the females from those of *terminalis*.

Occurs in the Middle States.

19.—**C. inconspicua** Horn, Trans. Am. Ent. Soc. 1874, p. 42.—Piceous, thorax red, elytra piceous or or rufous. Elytra moderately densely punctured.

The tips of the elytra are not in any respect different in the two sexes. The only method of distinguishing the male is by the presence of the additional ventral segment. The females might be mistaken for *punctulata* or *Lewisii*, but the elytra are rather more coarsely and less densely punctured, and the form smaller and more slender.

Occurs in California and Nevada.

20.—**C. vittata** Horn, Trans. Am. Ent. Soc. 1871, p. 279.—Piceous, elytra with vitta and side margin pale, often in the female entirely pale. Thorax conspicuously and moderately densely punctured. Elytra moderately densely punctured.

The sexual characters are entirely wanting at the tips of the elytra.

The females have usually luteous elytra and the legs pale.

Occurs in California.

CANTHARIS Linn.

C. mutilata Horn, having the fifth joint of the male antennae excavated and somewhat prolonged upwards at its distal end, must be placed between those species which have several joints so deformed (*e. g.* *cancera*) and those in which the intermediate joints are simply thicker.

C. deserticola Horn.—At the time of the description of this species (Proc. Amer. Philos. Soc. 1873) I knew the female only and placed it with Group 2. The male is now at hand, and having the intermediate

antennal joints thicker in the male must be referred to Group 1. The pygidium of the male is broad and truncate, the hind trochanter without spine, the surface glabrous. It is therefore allied to *lugubris*, *Childii* and *tenebrosa*, from all of which it differs by the head, thorax and femora being bright red and the elytra finely reticulate.

The following modification of the table of the species of Group 2 has been made necessary by the discovery of new forms.

- Anterior tibiae of males with one spur: hind trochanters subangulate.
 - Elytra finely punctured, rather glossy, antennae stout**gentilis**.
 - Elytra scabrous, subopaque, antennae slender **moerens**.
- Anterior tibiae of males with two spurs.
 - Outer spur of hind tibiae short, stout, broader and concave at tip.....2.
 - Outer spur rather slender, laminate at tip.....3.
- 2.—Elytra black.
 - Elytra finely scabrous.....**insperata**.
 - Elytra reticulate.
 - Thorax subpentagonal, coarsely punctured.....**reticulata**.
 - Thorax nearly smooth, sides not angulate.....**cribrata**.
 - Elytra fulvous or luteous.
 - Head and thorax black.....**cardinalis**.
 - Head, thorax and elytra luteous.....**dichroa**.
- 3.—Antennae moniliform, scarcely longer than head and thorax...**occipitalis**.
 - Antennae slender, usually as long or longer than half the body.....4.
- 4.—Stouter species, thorax as wide or wider than long.....5.
 - Slender species, thorax longer than wide and narrower than the head.....6.
- 5.—Body above, including head, of one color.
 - Hind trochanters of male subangulate beneath.....**incommoda**.
 - Hind trochanters oval.....**stygica**.
 - Body above bicolored.
 - Thorax and elytra dark bluish green; occiput red.....**auriculata**.
 - Head and thorax brilliant alucous, thorax yellowish red, with median metallic-green spot.....**refulgens**.
 - Head greenish black, thorax red, elytra olive green.....**crochii**.
 - Head and thorax red, elytra very dark green.....**aeneipennis**.
- 6.—Color above reddish testaceous, elytra sometimes black.....**nitidicollis**.
 - Color entirely black.....**lugens**.
 - Bright aeneous, elytra slightly cupreous.....**Rathvoni**.

C. gentilis n. sp.—Black, rather shining, scarcely pubescent. Head sparsely punctate. Thorax pentagonal, punctured at sides and base. Elytra rather shining, sparsely, finely punctured, a few coarser punctures intermixed. Metasternum densely punctured, abdomen more shining and sparsely punctured. Spurs of hind tibiae very slender. Length .72-.90 inch; 18-23 millim.

Male.—Anterior tibiae with one spur. Last ventral segment crescentically impressed and triangularly emarginate.

This is one of the largest species of the group and has a more shining surface. It recalls *Epicauta corvina* in form.

Occurs in New Mexico and Arizona.

C. occipitalis n. sp.—Black, rather shining. Head sparsely punctate, the entire occipital region red. Thorax subpentagonal, with very few punctures. Elytra very very obsoletely scabrous and with very few minute punctures. Body beneath very sparsely punctate. Length .50–.76 inch; 12.5–19 millim.

Male.—Anterior tibiae with two spurs. Last ventral segment broadly emarginate with obtuse angles on each side.

Occurs in the southern part of California.

C. incommoda n. sp.—Black, without lustre. Head coarsely, sparsely punctate. Thorax subpentagonal, with very few punctures. Elytra finely scabrous and punctate. Body beneath very sparsely punctate. Length .68–.90 inch; 17–23 millim.

Male.—Anterior tibiae with two spurs, middle tibiae rather strongly arcuate. Last ventral deeply triangularly emarginate, penultimate ventral broadly emarginate. Hind trochanters subangulate.

The species may be known from the many other black ones by the sexual characters, and by reference to those given in the above table.

Occurs in the southern part of California.

CALOSPASTA Lec.

C. viridis n. sp.—Green or slightly bluish, feebly shining, sparsely pubescent. Head sparsely punctured. Antennae short, not reaching the hind angles of the thorax, filiform, the joints closely articulated. Thorax quadrate, very little wider than long. Elytra rather coarsely scabrous and distinctly pubescent. Body beneath sparsely punctured and pubescent. Spurs of hind tibiae slender and acute. Tarsal claws with the upper and lower portions nearly equal. Length .24–.30 inch; 6–7.5 millim.

This species is remarkable in being the first appearance of the genus east of the Rocky Mountains and in having the two portions of the claw nearly of equal length.

Occurs in Colorado and New Mexico (Prof. F. H. Snow).

EXPLANATION OF PLATE IX.

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|---|---|
| Fig. 1. <i>Laccophilus insignis</i> Sharp. | Fig. 12. Same of <i>C. terminalis</i> . |
| " 2. <i>Laccophilus pictus</i> Lap. | " 13. Same of <i>C. Lewisii</i> . |
| " 3. <i>Laccophilus lateralis</i> Horn. | " 14. Same of <i>C. inconspicua</i> . |
| " 4. <i>Hydroporus picturatus</i> Horn. | " 15. Same of <i>C. punctulata</i> , <i>fun-</i>
<i>bris</i> , <i>vittata</i> , <i>Bardi</i> and <i>distin-</i>
<i>guenda</i> . |
| " 5. <i>Hydroporus quadrimaculatus</i>
Horn. | " 16. Same of <i>C. pulchra</i> , <i>labiata</i> and
<i>Crotchi</i> . |
| " 6. <i>Pseudomorpha augustata</i> Horn. | " 17. Same of <i>C. lugubris</i> , <i>abnormis</i> ,
<i>flabellata</i> and <i>collaris</i> . |
| " 7. <i>Stachygraphis maculata</i> Lec. | " 18. Same of <i>C. fulvipes</i> , <i>Newmani</i>
and <i>elegans</i> . |
| " 8. <i>Stenopodius flavidus</i> Horn. | |
| " 9. <i>Octotoma marginicollis</i> Horn. | |
| " 10. <i>Asida macra</i> Horn. | |
| " 11. Oedeagus of <i>Corphyra canalicu-</i>
<i>lata</i> Lec. | |

