

**THE EUMOLPINI OF BOREAL AMERICA.**

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The essay which follows has no higher aim than to be a descriptive catalogue of the species at present known. My desire has been to place in the hands of students the means of separating the recognized species with some degree of accuracy so that new forms may be detected and proper data obtained of the food-plants.

The Eumolpini are by no means an easy group to study. While the genera seem fairly well defined as to facies, permanent and sharply limited characters for their definition are not readily found. In fact, practical experience and a certain amount of empirical knowledge are important factors here as well as in many other places in the Coleoptera.

As an example we may take the first character used in the analytical table—the presence or absence of the lobe on the prothorax below the eyes. In many cases the character is very well defined, but specimens, and even species, occur in genera which normally have the lobe, in which it is hardly possible to say to which division they should be referred, and it is at this point that experience and tact have weight. It has been found elsewhere that it is possible to draw hard and fast lines in classification, but I am not aware that any portion of the Chrysomelidæ admits of such treatment.

The number of genera of Eumolpini at present known is about two hundred, requiring the division of the tribe into numerous groups in order that the genera may be correlated and studied. When genera are numerous an exceptional case is allowable, and does not greatly embarrass the student in his appreciation of the relation of the genus to the group in which it forms an exception by reason of some modification of the key character or its absence. On the other hand, when genera are few in number, as in our fauna, and the exceptional case is the only genus we have, then other characters must be sought than those used in the greater field. An instance of this sort is found in *Tymnes*, our only *Edusite*, one of the principal group characters being the presence of transverse rugæ behind the humerus, which are totally wanting in *Tymnes*.

Characters drawn from the claws must be used with the addition of judgment and experience, as they are variable in all the genera with several species.

To those who desire to study in detail the modifications of the

- Anterior margin of prothorax beneath arcuate, forming post-ocular lobes.....2.  
Anterior margin of prothorax beneath straight.....8.
- 2.—Body above pubescent or scaly... ..3.  
    Body above glabrous.....5.
- 3.—Thorax without distinct lateral margin (*Adoxites*).....**Adoxus**.  
    Thorax with distinct lateral margin (*Myochroites*).....4.
- 4.—Prosternum much longer than wide, narrowed between the coxæ.  
    Front tibiæ toothed on inner side near the apex ; margin of thorax usually  
        dentate.....**Myochrous**.  
    Front tibiæ simple; thorax entire.....**Glyptoscelis**.  
    Prosternum broad, flat, subquadrate ; claws very distinctly bifid.  
   **Colaspidea**.
- 5.—Middle and posterior tibiæ emarginate on outer edge near the apex (*Typo-*  
*phorites*).....**Typophorus**.  
    Tibiæ all entire.....6.
- 6.—Claws simply divergent (*Corynodites*).....**Chrysochus**.  
    Claws divaricate.....7.
- 7.—Prosternum narrowed between the coxæ and convex from apex to base  
    (*Edu sites*) .....**Tymnes**.  
    Prosternum broad, flat, subquadrate (*Endocephalites*)..... **Colaspoides**.
- 8.—Thorax without distinct lateral margin.....9.  
    Thorax margined .....10.
- 9.—Head without supra-orbital groove; body above without metallic colors  
    (*Leprotes*).  
        Thorax transverse; front thighs with a small tooth; third joint of ant-  
        ennæ not longer than the second.....**Xanthonia**.  
        Thorax cylindrical; thighs mutic; third joint of antennæ longer than  
        second.....**Fidia**.  
    Head with supra-orbital groove (*Scelodontites*).  
        Body above with metallic colors.....**Graphops**.
- 10.—Head with distinct supra-orbital groove (*Metachromites*).  
    Middle and posterior tibiæ emarginate near the apex...**Metachroma**.  
    Head without supra-orbital grooves.....11.
- 11.—Claws distinctly bifid (*Eumolpites*).....**Eumolpus**.  
    Claws appendiculate, usually broadly so.....12.
- 12.—Lateral margin of thorax irregular or undulating (*Colaspites*).  
    All the tibiæ entire.  
        Prosternum narrow and contracted between the coxæ.....**Colaspis**.  
        Prosternum wide and nearly parallel-sided.....**Rhabdopterus**.  
        Middle tibiæ emarginate near the apex.....**Metaxyonycha**.  
    Lateral margin of thorax regular and entire (*Iphimeites*).  
        Third joint of antennæ distinctly longer than the third, the outer five  
        joints not abruptly wider .....**Nodonota**.  
        Joints 2—5 of antennæ very nearly equal in length, the outer five joints  
        rather abruptly wider.  
            Form oblong, thorax with basal marginal line.....**Metaparia**.  
            Form semi-globose, thorax without basal marginal line..**Chrysodina**.

From the above table it will be seen that we now have nineteen genera of Eumolpini against fourteen given in the "Classification." Six genera previously unknown or omitted, have been added: *Colaspidea*, *Eumolpus*, *Rhabdopterus*, *Metaxyonycha*, *Colaspoides* and *Nodonota*, while *Tricotheca* has been suppressed, as not distinct from *Xanthonia*.

The nineteen genera represent twelve of the twenty-one groups into which Chapuis divided the tribe and thirteen of the twenty-five subsequently recognized by Lefevre. The discrepancy in the number of our groups arising from the fact that Lefevre has divided the Iphimeites of Chapuis separating the Chrysodinites by characters not appreciable in our material. Of the nineteen genera, *Graphops* and *Metaparia* are at present peculiar to our fauna.

An arrangement of our genera in the order given in the table would seem very unnatural in a cabinet. The following order is suggested and explained by arranging in parallel columns the genera of the two series into which the Eumolpini are at present divided:

Thorax with post-ocular lobes.

1. *Adoxus* (*Adoxites*).
4. *Myochrous* (*Myochroites*).
5. *Glyptoscelis*.
6. *Colaspidea*.
8. *Typophorus* (*Typophorites*).
10. *Chrysochus* (*Corynodites*).
12. *Tymnes* (*Edusites*).
16. *Colaspoides* (*Endocephalites*).

Thorax without post-ocular lobes.

2. *Fidia* (*Leprotites*).
3. *Xanthonia*.
7. *Graphops* (*Scelodontites*).
9. *Metachroma* (*Metachromites*).
11. *Eumolpus* (*Eumolpites*).
13. *Colaspis* (*Colaspites*).
14. *Rhabdopterus*.
15. *Metaxyonycha*.
17. *Nodonota* (*Iphimeites*).
18. *Metaparia*.
19. *Chrysodina*.

By such an arrangement no violence is done to the relationship of the genera of the various groups. The names in italics here, as in the table, indicate the group names of Chapuis and Lefevre.

**ADOXUS** Kby.

The only known species of this genus inhabits Europe and the northern portion of our own continent, varying in a similar manner in both regions.

The most recent description of the species by Weise is as follows:

**A. obscurus** Linn.—Niger, subopacus, tenuiter albido-pubesceus, antennis basi ferrugineis, elytris sat crebre subtiliter punctatis striis punctorum majorum. Long. 5—6 mm.

This description applies to the totally black form, of which several varieties are recognized in Europe, one being found in our limits.

Var. *vitis* Fab.—Elytra pale brown, sparsely clothed with yellowish pubescence, tibiæ similar in color to the elytra.

Our two varieties are so sharply separated in color, and almost so in distribution, that they might well be considered distinct species. In both the series of coarser punctures are not evident, except near the side margin.

The *obscurus* form is known to me most abundantly from California and Nevada, with one specimen from Colorado. The *vitis* form extends from New Hampshire westward to the Lake Superior region, Utah, Colorado and Washington. The specimens from the last three localities are but few in number.

*Eumolphus cochlearius* Say, Long's Second Expedition, vol. ii, p. 296; edit. Lec. 1, p. 196, is a synonym of this species as correctly surmised by Kirby and LeConte.

#### **FIDIA** Baly.

The species of *Fidia* resemble those of *Adoxus* in form. They are separated by the fact that, in *Adoxus* the prosternal sutures are distinct, while in *Fidia* they are entirely obliterated. By the system adopted by Chapuis, and followed by Lefevre, the two genera belong to groups not closely approximated.

The species known to me are as follows:

Fulvous, varying to pale brown; punctures of elytral striæ not very coarse, intervals flat, densely punctured.....**viticida.**

Piceous, or nearly black; punctures of elytral striæ coarse and deep, intervals flat, the punctures not dense, but submuricate.

Pubescence coarse and fulvous; punctures of thorax coarse and very closely placed; legs piceous, the femora usually pale at base.....**longipes.**

Pubescence fine and cinereous; punctures of thorax moderately coarse and well spaced; legs black.....**cana.**

**F. viticida** Walsh, Pract. Ent. ii, May. 1867, p. 87.

This species varies in the form of the thorax. In many males the thorax is decidedly longer than wide and the sides feebly arcuate, while in the females the width is always greater than the length. The curvature of the sides varies, so that the thorax may be widest at middle or behind the middle, producing the obtusely subangulate form spoken of by Lefevre.

A very full account of this insect and its injuries to the vine are given by Mr. Walsh at the place of description. A shorter account will be found in Missouri Reports, pt. 1, p. 132, by Dr. Riley.

This insect has been twice since described as *F. murina* Crotch, Proc. Acad. 1873, p. 53, and *F. lurida* Lefevre, "Catalogus Eumolpidarum," Mem. Liege, 1885, p. 76 (separate).

Occurs from the Middle States to Dacota, Florida and Texas.

**F. longipes** Mels., Proc. Acad. iii, p. 169; Crotch, Proc. Acad. 1873, p. 34; *viticolus* Uhler, Proc. Acad. 1855, p. 418.

Resembles the preceding in form, but usually smaller. Color piceous, surface clothed with rather coarse fulvous pubescence. Punctures of the elytral striæ coarse, deep and closely placed, the intervals flat, with punctures not densely placed, but rather roughly muricate. The legs are black, the femora at base usually paler, sometimes the tibiæ are pale.

**F. cana** n. sp.—Black, subopaque, not densely clothed with cinereous hairs, forming a denser line on the median line of the thorax. Antennæ piceous, joints 2—4 pale. Head very coarsely not densely punctured. Thorax subcylindrical, slightly narrower in front, sides arcuate, disc regularly convex, coarsely but not densely punctured. Punctures of elytral rows coarse, but not closely placed, intervals flat, the punctures not close and feebly muricate. Body beneath black, sparsely pubescent on the abdomen, more densely on the sternal side pieces. Length .22 inch.; 5.5 mm.

This species has a form similar to the other two, and may be known from *longipes* by the generally finer punctuation of the entire surface and by the fine cinereous hairs of the surface.

Occurs in Texas.

#### **XANTHONIA** Baly.

This genus was founded by Dr. Baly on a species (*Stevensii*) which had previously been named by Melsheimer. There is, however, one error in the generic description. The front thighs are said to be not toothed. In the males there is always present a small conical elevation at the middle of the front thighs in the position in which a tooth usually occurs. Therefore, the difference between the present genus and *Tricotheca* is narrowed to the feeble one of the antennæ being as long as the body in the latter genus, and about half as long as the body in *Xanthonia*. At all events our so-called *Tricotheca* must be considered a *Xanthonia*, notwithstanding the well-marked tooth on the front thighs.

In Biol. Cent.-Amer. vi, pt. 1, Jacoby describes and figures a *Xanthonia* with toothed femora. Possibly our *vagans* has been described from Mexico.

The species are not readily separable, the following note will, however, assist:

- Punctures of elytra in fairly regular rows, very little confused near the suture, elytra dull ochreous, with large piceous spots; front femur of male with a well marked tooth ..... **vagans**.
- Punctures of elytra very confused, with a feeble seriate tendency near the sides; elytra usually dull ochreous with piceous spots, sometimes the entire surface is fulvous; male with a feeble denticle on the front femur. **decemnotata**.
- Punctures of elytra much finer than in the preceding species, and arranged in quite regular series, but slightly confused near the suture; color usually pale fulvous, but varying through brown to piceous, but not maculate; front femur of male with a small denticle..... **villosula**.

**X. vagans** Lec. (*Tricotheca*), Trans. Am. Ent. Soc. 1885, p. 26.

Larger than the other species, and resembling in coloration *decemnotata*.

Occurs in Texas and southwestern Utah.

**X. decemnotata** Say (*Pachnephorus*), Journ. Acad. iii, p. 445; edit. Lec. ii, p. 213.

The general color is dull ochreous with darker legs. The elytra have piceous spots, which are more or less confused, arranged as follows: a spot on each umbone, a second within this, a common elongate sutural spot in front of the middle, on each side of which are three linear spots; posterior to these latter are three other linear spots.

Specimens quite frequently occur with the entire surface ochreous without spots. These may be known from *villosula* by the coarser punctuation of the elytra, very irregularly placed.

Occurs over a wide extent of the eastern United States and Canada, extending to Texas; not yet known from Florida.

**X. villosula** Mels. (*Eumolpus*), Proc. Acad. iii, p. 169; *Stevensii* Baly, Jour. of Ent. ii, 1863, p. 151.

Fulvous, varying through brownish to piceous, but never with evidence of defined spots. Antennæ always pale, legs never piceous, usually paler than the general color of the body. Elytra with finer punctures than in *decemnotata*, which are arranged in very regular rows except near the scutellum. The pubescence seems more persistent than in the other two species.

The name *plagiatus* Mels. quoted by Lefevre, under *Myochrous*, is merely a variety of this species with the indeterminate fuscous cloud on the elytra, as stated by Melsheimer.

Occurs from Canada through the eastern United States to Georgia, Texas and Arizona.

**MYOCHROUS** Erich.

The species of this genus are of oblong form and clothed with scaly vestiture. The sides of the thorax are usually dentate.

Three species occur in our fauna:

Thorax distinctly tridentate at sides.

Thorax wider than long; vestiture of surface not dense and easily removed.

**denticollis.**

Thorax longer than wide; vestiture close and persistent; form more slender.

**longulus.**

Thorax not dentate at the sides..... **squamosus.**

In Lefevre's "Catalogus Eumolpidarum" a *M. plagiatus* Mels. is recorded. This is a variety of *Xanth. villosula*.

**M. denticollis** Say, Jour. Acad. iii, p. 448; edit. Lec. ii, p. 215.

The vestiture consists of rather small scales, cinereous and brown intermixed, not closely placed, and permitting the bronze color of the surface to be readily visible. The anterior tibiae in both sexes are acutely and rather strongly toothed below the middle. In the male the last ventral segment has a small fovea, the apical margin broadly emarginate. In the female there is no fovea and the tip of the segment obtuse.

This species varies considerably in size, from .18 to .28 inch. Specimens of the latter size, collected by E. A. Schwarz, at Columbus, Texas, are rather more densely clothed with scales than the other specimen before, and have consequently a more luteous appearance, but they do not seem to differ specifically.

Occurs from Illinois to Texas and Florida.

**M. longulus** Lec., Proc. Acad. 1858, p. 86.

The vestiture consists of narrow and acute brownish scales, more densely placed than in *denticollis*. The rows of punctures of the elytra are also less closely placed, so that there is a well marked interval between the rows. The anterior tibiae have no distinct tooth, there being merely a slight angulation below which is a slight sinuation. The last ventral of the male has a shallow fovea, the tip of the segment truncate.

As in *denticollis*, the thoracic teeth are somewhat variable in their prominence.

Occurs at Yuma, Cal., and Arizona.

**M. squamosus** Lec., Col. Ks. 1859, p. 24.

The vestiture consists of closely placed, elongate-oval cinereous

scales. The rows of elytral punctures are well separated. The anterior tibiae have a small spiniform tooth. Only females have been seen, the last ventral without fovea and obtuse.

Occurs in Montana, Kansas and Nebraska.

### GLYPTOSCELIS Lec.

The species of this genus are all of rather large size for this tribe as represented in our fauna. They are all more or less densely clothed with hairs, scaly hairs or scales, always recumbent. It will doubtless have been observed that the species in our fauna constitute two dissimilar series, the one series longer with vestiture as above, the other smaller with short, sparse, erect hairs. Crotch remarked that these resemble (*Heteraspis*) Graphops. In truth, they should be separated from *Glyptoscelis* by the form of the prosternum, the latter having a narrower prosternum, while in the three small species the prosternum is broad and subquadrangular.

The species of *Glyptoscelis* are thus distinguished:

- |  |                       |
|--|-----------------------|
| Claws cleft, but sometimes feebly.....   | 2.                    |
| Claws absolutely simple.....   | 6.                    |
| 2.—Vestiture of surface hair-like.....   | 3.                    |
| Vestiture scale-like.....  | 6- <b>squamulata.</b> |
| 3.—Elytra with distinct circum-scutellar depression.....   | 4.                    |
| Elytra convex at base.....   | 5.                    |
| 4.—Vestiture of elytra sparse, but equal.....  | 2- <b>pubescens.</b>  |
| Vestiture in broken lines.....   | 1- <b>illustris.</b>  |
| 5.—Thorax slightly narrowed at base; punctuation of elytra conspicuously coarse, vestiture ferruginous ..... | 3- <b>barbata.</b>    |
| Thorax not narrowed at base.   |                       |
| Pubescence white and uniform.....  | 5- <b>albida.</b>     |
| Pubescence forming vittae alternately darker.....  | 4- <b>alternata.</b>  |
| 6.—Elytra acute at tip and slightly prolonged; vestiture of scale-like hairs.                                |                       |
|  | 7- <b>cryptica.</b>   |

**G. illustris** Cr., Proc. Acad. 1873, p. 35.—Median line of front distinctly impressed. Thorax wider than long, narrower at base than at middle. Elytra not densely punctate, pubescence sparse, and in great part short and brown, with slightly longer whitish hair along the side margin and suture and forming several short lines on the declivity. Length .35—.40 inch.; 9—10 mm.

Some well preserved specimens in the collection of the National Museum are by no means so greatly deprived of pubescence on the elytra as those in my cabinet, the types of Crotch. In mine there are large nude spaces, while in those the entire surface is sparsely clothed with a white pubescence easily removable by abrasion.

Occurs in Oregon and northern California.



**G. pubescens** Fab., Gen. Ins. Mant. 1777, p. 220; Lef., Mem. Liege, xi, p. 122.

*hirsutus* Gmel. ed. Linn. i, 4, p. 1703.

*hirtus* Ol., Ent. vi, 1808, p. 906, pl. i, fig. 16.

*pini* Say, Jour. Acad. v, p. 295; ed. Lec. ii, p. 341.

Median line of front sometimes smooth, not impressed. Thorax transverse, widest at middle, slightly narrower at base, very coarsely and closely punctate. Elytra moderately coarsely and closely punctate, the pubescence bicolored, cinereous and brown hairs intermixed. Length .31—.38 inch.; 8—9.5 mm.

This species and the preceding have a concavity surrounding the scutellum. The claws are cleft near the middle, and in *illustris* about a third from the tip.

Occurs from the Middle States region to North Carolina. Crotch adds Oregon, but this is doubtful.

**G. barbata** Say, Jour. Acad. v, p. 296; edit. Lec. ii, p. 341.—Head very coarsely punctured, head not impressed. Thorax very coarsely and closely punctured, widest at middle, base slightly narrower. Elytra very coarsely and closely punctate. Vestiture of entire surface not dense, ferruginous. Length .22—.30 inch.; 5.5—7.5 mm.

Similar in appearance to *pubescens*, but somewhat more robust and without circum-scutellar depression. The claws are strongly cleft.

Occurs in the northern Atlantic region.

**G. alternata** Crotch, Proc. Acad. 1873, p. 36.—Head moderately closely punctate, front not impressed. Thorax broad, base slightly broader than the middle, moderately coarsely and closely punctate. Vestiture of head and thorax nearly white and moderately dense. Elytra closely punctate, with whitish hairs in vittæ, the alternate lines brownish and less densely placed. Length .24—.38 inch.; 6—9.5 mm.

The claws are feebly cleft at middle. Differs from all our species by the alternating color of the vittæ of the elytra.

Occurs in Owen's Valley, Cal., and Wyoming. The latter specimens are smaller.

**G. albida** Lec., Proc. Acad. 1859, p. 81; *longior* Lec., Bull. U. S. Geol. Surv. iv, p. 462.—Head not densely punctate, front feebly impressed. Thorax slightly variable in form, usually broader than long, sometimes as long as wide, coarsely and closely punctate and rather densely clothed with whitish hairs. Elytra closely punctate and similarly clothed. Length .16—.32 inch.; 4—8 mm.

The claws are moderately strongly cleft at middle. *G. longior* Lec. is placed as a synonym without any hesitation, the variation in the form of the thorax is gradual. The pubescence is very easily removable.

Occurs in California, Oregon, Nevada and Idaho.

**G. squamulata** Crotch, Proc. Acad. 1873, p. 36.—Very like *albida*, but with the entire surface densely clothed with elongate white scales. The thorax is decidedly wider at base than at middle; in fact, the sides are regularly arcuately narrowed from base to apex. Length .25—.30 inch.; 6.5—7.5 mm.

The claws are moderately strongly cleft a little in front of the middle.

Occurs in Oregon, California, Utah and Arizona.

**G. cryptica** Say, Jour. Acad. iii, p. 449; edit. Lec. ii, p. 215.—Head coarsely punctate, front scarcely impressed. Thorax widest at base, sides feebly arcuate and gradually narrowed to the front. Elytra acute at tip and slightly prolonged, the apices slightly divergent; surface scarcely metallic, vestiture not dense and composed of scale-like hairs. Length .30—.35 inch.; 7.5—9 mm.

The claws in the specimens before me are absolutely simple, without trace of tooth.

This species has been re-described by Dr. Baly (Trans. Ent. Soc. Lond. 1865, p. 334) as *albicans*, without a knowledge of the locality. Jacoby (Biol. vi, pt. 1, p. 177, pl. vii, fig. 4) records the species from Mexico, on the authority of a specimen obtained from Sallé, and part, originally, of the Sturm collection. The locality is doubtless an error. It is due to Jacoby to note that he observed the simple claws of this species.

Occurs in Missouri, Kansas and Dakota.

#### **COLASPIDEA** Lap.

It has been stated that three species until now enrolled as *Glyptoscelis* should be separated from that genus by their broad and flat prosternum and a feeble trace of an antennal groove on the outer angle of the prosternum. From the descriptions of Chapuis and Lefevre studied conjointly there seems to be no reason why they should not be referred to *Colaspidea*, the species of which are from southern Europe and the circum-Mediterranean region generally. As our three species are from California, the distribution may seem peculiar, but this is merely one of many instances of genera represented in Europe and our Pacific regions without representation in the Atlantic region.

The species are separable as follows:

Sides of thorax feebly arcuate; pubescence of surface sparse and inconspicuous.

Bright brassy in color; tibiae always paler than the femora.....**cuprascens.**

Cobalt-blue, or slightly greenish; legs entirely black bronzed..**smaragdulus.**

Sides of thorax strongly arcuate; pubescence of surface well marked.

Color blue, green or bronze; thorax more coarsely and closely punctate than the two preceding.....**varicolor.**

**C. cuprascens** Lec., Proc. Acad. 1858, p. 85.—Bright brassy in color, sparsely clothed with short cinereous pubescence. Thorax moderately coarsely not closely punctate, sides arcuate, but never strongly so. Elytra not closely punctate. Femora brassy, tibiae rufescent, tarsi black. Length .16—.20 inch.; 4—5 mm.

In the original description the tibiae are said to be black, but this has not been seen in any specimens before me.

Occurs in southern California, San Diego.

**C. smaragdulus** Lec., Pacif. R. R. Rep. 1857, p. 67.—Variable in color from cobalt-blue to green, femora metallic, tibiae and tarsi black, surface very sparsely clothed with short whitish hairs. Thorax not closely punctate and much more finely than the elytra, sides of thorax moderately arcuate. Elytra coarsely and moderately closely punctate. Length .16—.20 inch.; 4—5 mm.

Some of the green varieties resemble *cuprascens*, but the thorax is more finely punctured and the elytra and the legs always black. On the other hand some of the smaller forms resemble *varicolor*, and will be referred to under that species.

California: Sacramento to Los Angeles.

**C. varicolor** Crotch, Trans. Am. Ent. Soc. 1874, p. 79.—Color variable from green to blue or coppery, surface cinereo-pubescent, the pubescence more conspicuous and persistent than in the other two species. Thorax strongly arcuate at the sides and near base rather abruptly narrowed, the surface moderately coarsely and closely punctate. Elytra more coarsely, but less closely punctate than the thorax. Femora metallic, rufescent at base, tibiae rufescent, tarsi brown. Length .10—.12 inch.; 2.5—3 mm.

In this species the pubescence is always more conspicuous than in either of the preceding. The surface is more coarsely and closely punctate. The small specimens of *smaragdulus* which resemble this may be known by the form of the thorax, with punctuation finer than on the thorax. In the present species the legs are always more largely rufescent than in either of the preceding.

Occurs at Santa Barbara, Tejon and San Bernardino in California.

#### **GRAPHOPS** Lec.

The species of this genus were formerly placed as *Heteraspis*, from which genus they differ in having a deep groove surrounding the eye in part. In the "Catalogus Eumolpidarum," Lefevre makes *Graphops* a synonym of *Scelodonta*, a view which seems not well founded, from the fact that none of our species have a tooth on the front femora. In fact, *Graphops* seems to be intermediate between *Scelodonta* and *Syricta*.

The species have been well separated by Dr. LeConte in a table

(Trans. Am. Ent. Soc. xii, p. 26) which is reproduced with such additions and changes as seem necessary.

- Prothorax feebly margined at base; clypeus emarginate.....2.  
 Prothorax strongly margined at base.....3.  
 2.—Prothorax finely and densely punctured, elytra punctulate, with striæ of small, approximate punctures, becoming obsolete behind; color green, pubescence coarse. Length 5 mm. Kansas.....**beryllinus**.  
 Prothorax strongly and densely punctured, elytra alutaceous, with striæ of small, approximate punctures, becoming obsolete behind; form more elongate; color blackish green, pubescence coarse. Length 4 mm. Colo. **obscurus**.  
 Form of *beryllinus*; prothorax less densely punctured; elytra punctulate, striæ composed of larger, less approximate punctures, becoming obsolete behind; color coppery, green, or even blackish. Length 4—4.5 mm. Illinois, Texas, Kansas.....**varians**.  
 3.—Clypeus truncate.....4.  
 Clypeus emarginate.....5.  
 4.—Coppery, thinly pubescent; head strongly punctured, alutaceous; prothorax punctured, at the sides rugose; elytra punctulate, striæ composed of distant, larger punctures, obsolete behind, sometimes indistinct. Length 4 mm. Massachusetts to Georgia, Iowa and Texas.....**pubescens**.  
 Bronze or coppery, thinly pubescent; stouter and smaller than *pubescens*, the thorax is rugosely punctured over the whole disc and the elytra are punctulate with very obsolete rows of larger punctures. Length 2.5 mm. New York to Texas and Florida.....**curtipennis**.  
 5.—Coppery, thinly clothed with white hair; head and prothorax punctured, not rugose; elytra punctulate, striæ composed of distant, larger punctures; form as in *curtipennis*. Middle and Southern Atlantic States. **marcassitus**.  
 Coppery or green, thinly clothed with very short, white, erect pubescence; head alutaceous, sparsely punctured, thorax more densely; elytra uniformly punctured, striæ obsolete, indicated by short hairs arranged in rows. Length 3—4 mm. Texas.....**simplex**.  
 Elongate, green or coppery, thinly clothed with long, coarse, white hair; head feebly, prothorax irregularly punctured with indistinct smooth spots; elytra punctulate, striæ composed of conspicuously larger distant punctures. Length 4 mm. Wyoming, Idaho, Colorado, Kansas, Wisconsin, Arizona.....**nebulosus**.

**G. beryllinus** Lec., Trans. Am. Ent. Soc. xii, p. 26.

**G. obscurus** Lec., loc. cit.

**G. varians** Lec., loc. cit.

No other description than that given in the table was written by Dr. LeConte of these three species, and none seems necessary, in view of the similarity of form of all of them.

**G. pubescens** Mels., Proc. Acad. iii, p. 169; Lec., loc. cit.

?*cuprea* Prov. Nat. Canad. x, p. 383.

**G. curtipennis** Mels., loc. cit.; Lec., loc. cit.

In this species there are oblique lines on the elytra devoid of pubescence and smoother than the rest of the surface. The clypeus is far less emarginate than in the four preceding species in which it is a triangular notch, here a slight emargination.

**G. marcassitus** Crotch, Proc. Acad. 1873, p. 35; Lec., loc. cit.

**G. simplex** Lec., loc. cit.

**G. nebulosus** Lec., Col. Kans. p. 23; loc. cit. supra, p. 27; *smuragdula* Lec., Col. Kans, p. 24.

In this species, as in *curtipennis*, there are oblique smooth spaces on the elytra devoid of pubescence giving a nebulous appearance.

### TYPOPHORUS Erichs.

This generic name was formerly applied to those species now placed in Tymnes. The character given by Lefevre and Chapuis to separate the *Edusites* (which includes *Tymnes*) and the *Typophorites* is, that the sides of the elytra are transversely wrinkled in the former group. This character is certainly of no avail in our fauna. As far as the *Typophorites* are represented in our fauna they all have the eyes surrounded by a rather deep groove as in *Graphops* and *Metachroma*, while in *Tymnes* no such structure exists.

According to the authors above cited two genera exist in our fauna, *Typophorus* and *Paria*, which Chapuis separates as follows:

Thighs unarmed ..... **PARIA**.  
Posterior thighs toothed..... **TYPOPHORUS**.

An examination of the specimens before me shows that all our *Paria* have a tooth on the posterior femur, small though it is, yet relatively as large as in *viridicyanea*, which is well recognized as a *Typophorus*. Moreover, one of our varieties of *Paria* has been re-described by Lefevre as *Typophorus histrio*. I must, therefore, conclude that these two genera should not have a separate existence, and propose to unite all our species under the older name.

Our species are as follows:

Bright blue; large species .22—.28 inch..... **viridicyaneus**.  
Rufo-testaceous, maculate or black; small species, .16 inch. at most.. **canellus**.

**T. viridicyaneus** Crotch, Proc. Acad. 1873, p. 40.—Form robust, bright cobalt-blue, varying to green, shining. Head very sparsely finely punctate, a distinctly impressed frontal line. Thorax very sparsely and irregularly punctate. Elytra regularly striate-punctate, the punctures not large, rather distant, and becoming finer to apex, at sides a subcostiform plica extends from the umbone obliquely backward toward the side margin. Body beneath and legs less brightly colored, abdomen sparsely punctate. Antennæ rufo-testaceous at base, outer five joints piceous. Length .22—.30 inch.; 5.5—7.5 mm.

This species seems anomalous in its association with the following, but there have been no structural characters found to separate it.

Lefevre (Cat. Eumolp. p. 132) gives *T. sturmi* Lef. as a synonym, and Jacoby states (Biol. Cent.-Amer. vi, i, suppl. p. 236) that *chalcus* Lef. seems to be but a color variety.

Occurs from Virginia southward to Georgia, Texas, southern California and through Mexico to Costa Rica (Jacoby).

**T. canellus** Fab., Syst. El. ii, p. 52; Oliv., Ent. vi, p. 915, pl. 2, fig. 3.

var. *sexnotata* Say, Jour. Acad. iii, p. 445; edit. Lec. ii, p. 213.

*infuscata* Lec., Ann. Lyc. i, p. 173.

var. *quadrinotata* Say, loc. cit.

var. *quadriguttata* Lec., Proc. Acad. 1858, p. 86.

*histrion* Lefevre, Ann. Ent. Soc. Fr. 1877, p. 319.

*laevicollis* Crotch, Proc. Acad. 1873, p. 40.

var. *pumila* Lec., Col. Kans. 1859, p. 23.

var. *thoracica* Mels., Proc. Acad. iii, p. 168.

var. *aterrima* Oliv., Ent. vi, p. 913, pl. 2, fig. 27.

*opacicollis* Lec., Col. Kans. 1859, p. 23.

After an accumulation of much material and its careful study, I am convinced that all the above names apply to forms not specifically distinct. In order to give some idea of the variation the following table is presented as a guide to those who prefer to separate their forms under the varietal names:

Elytra totally black .....	2.
Elytra pale or spotted.....	3.
2.—Head and thorax black.....	var. <i>aterrimus</i> .
Legs entirely black.....	sub-var. <i>aterrimus</i> .
Legs entirely pale.....	sub-var. <i>gilvipes</i> .
Thorax reddish yellow.....	var. <i>thoracicus</i> .
Legs pale.....	sub-var. <i>thoracicus</i> .
Legs black.....	sub-var. — —
3.—Thorax black, elytral spots large.....	var. <i>quadrinotatus</i> .
Head rufescent.....	sub-var. <i>quadrinotatus</i> .
Head black.....	sub var. — —
Thorax yellow or slightly reddish.....	4.
4.—Elytra with black spots.	
Spots confluent in a large saddle-shaped black space; thorax smoother than usual.....	var. <i>sellatus</i> .
Spots longitudinally confluent forming a vitta on each elytron.	var. <i>vittatus</i> .
Spots separate.	
Two on each elytron; suture often piceous.....	var. <i>quadriguttatus</i> .
Three on each elytron.....	var. <i>sexnotatus</i> .
Elytra pale, without spots.....	var. <i>pumilus</i> .

In addition to the above varieties it will be observed that those with spotted elytra are sometimes pale beneath and often entirely black.

The typical *canellus* is similar to the variety *quadriguttatus* with the addition of a dark suture and is consequently the equivalent of *histrion* Lef.

In all the forms specimens may occur with comparatively coarsely punctured thorax or nearly smooth, with all intergrades. In the black varieties the thorax is often alutaceous and subopaque.

The above table is given merely as a means of accounting for all the specific names which have appeared in literature and not as an evidence of acquiescence in minute subspecific division.

This species is widely distributed over the continent east of the Rocky Mountains from Canada to Texas, extending thence west through Arizona to Fort Yuma.

#### **METACHROMA** Lec.

The characters which will serve to distinguish this genus from any other in our fauna are as follows: Thorax without post-ocular lobe, eyes surrounded above and in front by a deep groove, middle and posterior tibiae emarginate on the outer edge near the tip.

*Metachroma* seems to be restricted to Boreal and Central America with the exception of one species from Madagascar which probably needs a new generic study.

The species are not difficult in the cabinet, but the differences which may be made known by description are not easy to be appreciated.

The first character used in the annexed table—the tooth on the posterior femora—must be looked after with some care, as the tooth is really very small, and could readily escape observation. The thighs in the species with the tooth are generally stouter and more abruptly narrowed at the knee than in those of the next series.

Each elytron has eleven striae seven of which are between the suture and the umbone, and two run parallel with the side margin. Between these two series, that is, just exterior to the seventh, are two short striae which begin posterior to the umbone from a common point. For convenience in the following descriptions they are called short striae. In some species these striae are distinct and regular, while in others they are much confused or very irregular.

The punctuation of the head and thorax affords useful characters.

In those with the coarsely punctured front the median impression is absent, or nearly so, but well marked in those with a smooth head.

In some species the suture between the clypeus and the front is entirely obliterated, or existing in a mere trace, while in others the suture is deeply impressed. In the latter case the groove which surrounds the eye is prolonged obliquely inward and joins the ends of the frontal suture.

Some variation has been observed in the extent to which the claws are cleft, but not to an extent rendering characters drawn from the differences available in either description or a table.

There is some color variation, but not by any means to the extent observed in the forms at present grouped under *Typophorus canellus*.

The genus is certainly very difficult of treatment. The species recognized below are doubtless all valid species, but considerable discretion and allowances for variation must be used in any attempt to study them from description alone.

The following scheme is offered as an assistance :

- Posterior femora with a very small tooth on the lower edge about one-third from the knee..... 2.
- Posterior femora simple .....7.
- 2.—The two short elytral striæ exterior to the seventh inter-confused; angles of thorax feeble.....3.
- These two striæ distinct and regular .....5.
- 3.—Eyes nearly round, simply truncate in front; head coarsely punctured; propleuræ and metasternum coarsely punctured.....**æneicolle.**
- Eyes transverse, more or less emarginate; head and underside of body comparatively smooth.....4.
- 4.—Small species (.13—.16 inch.). head and clypeus smooth.
- Thorax very distinctly punctate; suture and two spots on each elytron piceous .....**longulum.**
- Thorax scarcely at all punctate; color very variable .....**dubiosum.**
- Larger species (.16—.22 inch.); clypeus coarsely punctured.  
**californicum.**
- 5.—Head almost smooth, a median frontal depression..... **ustum.**
- Head coarsely punctate, frontal impression feeble or absent.....6.
- 6.—Thorax distinctly but not closely punctate; punctures of striæ much narrower than the intervals.
- Entirely piceous black, shining .....**aterrimum.**
- Elytra reddish, with a broad, common, sutural stripe .....**suturale.**
- Thorax quite smooth; punctures of striæ coarse and nearly as wide as the intervals; elytra piceous black and usually with very pale apex.  
**terminale.**
- Thorax coarsely and closely punctate; punctures of striæ coarse and deep.  
**peninsulare.**



- 7.—Clypeo-frontal suture obliterated, the supra-orbital groove not extending on the front.....8.  
 Clypeo-frontal suture distinctly grooved and formed by the oblique extension of the supra-orbital groove.....9.
- 8.—Head and thorax more or less punctate.  
 Form more or less oval; thorax with a very distinct lateral margin, the margin when viewed laterally convex downward.  
 Striæ of elytra regular, except the two short ones exterior to the seventh; thorax nearly twice as wide as long, sides strongly arcuate.  
**interruptum.**  
 Striæ of elytra exterior to the fifth much confused; thorax one-half wider than long, sides feebly arcuate.....**angustulum.**  
 Form parallel; thorax very feebly margined, margin straight.  
**parallelum.**  
 Head and thorax almost absolutely smooth.....**laevicolle.**
- 9.—Thorax sparsely punctate or quite smooth .....10.  
 Thorax densely punctate, sometimes opaque and strigose.....13.
- 10.—Front with clypeus sparsely finely punctate.....11.  
 Head numerous coarsely punctate; clypeus sometimes rugose.  
 Elytra rufo-testaceous, the sides piceous; form depressed.....**luridum.**  
 Elytra rufo-testaceous maculate, the spots sometimes forming an M-like mark; form convex.....**maculipenne.**
- 11.—Form short convex, *Paria*-like; elytra nearly as wide as long, entirely pale testaceous.....**pellucidum.**  
 Form oblong, subdepressed; elytra very obviously longer than wide.....12.
- 12.—Thorax very distinctly punctate.  
 Entirely testaceous.....**pallidum.**  
 Elytra with a large lateral piceous space.....**laterale.**  
 Thorax sparsely obsolete punctate; surface dull, minutely alutaceous.  
**floridanum.**
- 13.—Punctures of thorax distinct, scarcely strigose; punctures of striæ coarse and regular.....**puncticolle.**  
 Punctures of thorax dense and strigose; punctures of elytra fine and more or less irregular.....**quercatum.**

It will be observed in the "Catalogus," as well as in the "Catalogus Eumolp." of Lefevre that the species have all been given the feminine termination notwithstanding the fact that LeConte and Crotch have both correctly taken the neuter, in accordance with the custom in all genera with the termination "chroma," as *Callichroma*, *Der-matochroma*, and others.

**M. æneicolle** n. sp.—Form quite like a *Graphops*, piceous shining, surface with slight metallic lustre, which is more distinct on the head and thorax; elytral umbone and apex of elytra paler in color. Antennæ rufo-testaceous, gradually darker to tip. Head moderately coarsely punctate and gradually more closely from the occiput to the clypeus, a faint vertical impression; eyes with a very small emargination in front. Thorax a little wider than long, scarcely at all narrowed in front, sides regularly not strongly arcuate, lateral margin very

feeble, angles feebly auriculate; disc convex, rather coarsely and closely punctate with a smooth border along the apex and a smooth median line in posterior half. Elytra broader at base than the thorax, about a third longer than wide, humeri moderately prominent, sides arcuate, disc convex with striæ of coarse, closely-placed punctures, becoming a little finer toward apex, the striæ all regular, except the short post-humeral striæ exterior to the seventh, which are confused. Body beneath piceous, with distinct æneous lustre. Propleuræ coarsely and closely punctate, metasternum still more coarsely, abdomen coarsely sparsely punctate at base, gradually more finely toward apex. Legs rufo-testaceous, femora slightly bronzed on the outer side. Length .12 inch.; 3 mm.

This species at first glance might be mistaken for a *Graphops*, from which the pubescence had been removed. It is rather an aberrant species by the eyes being scarcely emarginate, and the groove which surrounds them not deep and not extended in front. The lateral thoracic margin is also very feeble, and the propleuræ coarsely and closely punctate.

**M. longulum** n. sp.—Form oblong, moderately elongate, beneath piceous, upper surface, legs and antennæ yellowish, thorax each side with a dusky area, each elytron with two small spots and suture narrowly piceous. Head smooth, very sparsely punctate, punctures more numerous on the clypeus, a short frontal impression. Thorax one-third wider than long, apex very little narrower than base, apex slightly prolonged, sides moderately arcuate, angles scarcely prominent, lateral margin narrow, but distinct; disc convex, very distinctly punctate, but not coarsely nor closely. Elytra oblong, more than a half longer than wide, convex, humeri moderately prominent, surface moderately deeply striate, striæ coarsely, deeply and closely punctate, much less distinct near the apex, intervals distinctly convex; each elytron with the sutural interval piceous and two piceous discal spots, one on the fifth interval obliquely behind the umbone, a second smaller on the sixth a little behind the middle. Body beneath not punctate. Length .12 inch.; 3 mm.

Two specimens are referred to this species which exhibit more pronounced elytral sculpture than any other in our fauna. The male has the first joint of the anterior and middle tarsi dilated and the sutural angle of the elytra slightly prolonged. As in the preceding species, the striæ are all regular, excepting the two short ones exterior to the seventh.

A third specimen before me differs from the other two in having the elytral striæ not impressed, a few punctures on the propleuræ; abdomen rufescent and sparsely punctate. It doubtless indicates a true species, but from the already known variability of others I propose to pass it with this note until others appear.

Occurs in Arizona.

**M. dubiosum** Say, Journ. Acad. iii, p. 447; edit. Lec. ii, p. 214 (*nec*. Crotch, Proc. Acad. 1873, p. 41).—Very like *Typoph. canellus* in form and similarly variable in color. Antennæ pale at base, piceous externally. Head sparsely, finely

and indistinctly punctate, lower half of clypeus more punctate, frontal impression feeble. Thorax about a half wider than long, narrowed in front, apex broadly prolonged over the head, sides broadly arcuate, lateral margin very evident, angles distinctly auriculate, disc very convex, sparsely, finely and indistinctly punctate. Elytra much broader than the thorax, not more than a third longer than wide, sides slightly sinuate behind the humeri, then broadly rounded to apex, disc very convex, striato-punctate, punctures moderately coarse and closely placed, finer toward apex, the striæ regular, excepting the two exterior to the seventh, which are usually irregular, sometimes, however, regular. Body beneath smooth, abdomen sparsely indistinctly punctate. Legs always pale. Length .13—.18 inch.: 3.5—4.5 mm.

This species varies nearly as much as *Typ. canellus*. The following have been observed:

*a*—entirely pale above and beneath.

*b*—(typical form) pale, thorax with an indistinct cloud each side, suture of elytra piceous, gradually broader from apex toward base, side margin narrowly black from humerus two-thirds to apex, first ventral segment black.

*c*—as in *b*, but suture less widely black, on each elytron two indistinct spots placed as in *longula*.

*d*—thorax as in *b*; sutural space broad.

*e*—thorax black; sutural black space wider.

*f*—thorax black; head, humeri and apex of elytra pale.

*g*—entirely black above and beneath, except the legs.

While this species is placed in the series in which the punctures of the two short striæ exterior to the seventh are confused, specimens occur in which they are comparatively regular. It may, however, be distinguished from any of the following species with denticulate femora by the punctures of the short striæ in these latter being quite as coarse as those of the other striæ and by the head of *dubiosa* being quite smooth, while it is either coarsely punctate or opaque in the others.

It is not surprising that Say suspected that this species might be a variety of *Cryptocephalus canellus* Fab.; some of the varieties of both, in form and color, are deceptively alike.

Occurs in Dacota, Kansas and Texas.

**M. californicum** Crotch, Proc. Acad. 1873, p. 41.—Oblong, pale reddish brown, thorax slightly darker. Antennæ entirely pale. Head punctate in a broad area along the middle, sparsely on the vertex, more closely and coarsely on the clypeus. Thorax about a third wider than long, narrowed in front, sides moderately arcuate, anterior angles slightly prominent, the posterior broadly rounded, surface finely punctate, sparsely at middle, a little more closely at the sides. Elytra striato-punctate, striæ rarely slightly impressed near the base, the

punctures variable, usually closely placed, much less distinct at apex, intervals very finely sparsely punctate. Body beneath somewhat darker than above; propleuræ smooth, metasternum at sides sparsely punctate, abdomen sparsely, finely and indistinctly punctate. Legs always pale. Length .16—.22 inch.; 4—5.5 mm.

As in the preceding species this has the two short striæ exterior to the seventh much confused. It resembles some of the immaculate forms of *interrupta*, but differs in the character of the short striæ, and by the hind angles of the thorax being broadly rounded.

Occurs in California and Arizona in the vicinity of Fort Yuma.

**M. ustum** Lec.—Oblong, pale castaneous, usually the thorax is darker, shining. Antennæ entirely pale. Head almost absolutely smooth, a distinct frontal impression, clypeus indistinctly punctate. Thorax one-fourth wider than long, narrowed in front, sides strongly arcuate, angles distinctly prominent, disc convex, almost smooth, the punctures being fine, sparse and indistinct. Elytra striato-punctate, the punctures coarse, but not close near base, becoming rapidly finer and indistinct near apex, the short striæ regular. Propleuræ and sides of metasternum smooth, abdomen sparsely punctate. Legs rufo-testaceous. Length .18—.22 inch.; 4.5—5.5 mm.

This species is the largest at present known among those with the small tooth on the hind femur. The two short striæ exterior to the seventh, although composed of small punctures, are regular and not at all confused.

Occurs in southwestern Texas.

**M. aterrimum** n. sp.—Oblong, piceous black, shining, under side of femora and the tarsi rufescent. Antennæ piceo-rufous, paler at base. Head black, labrum and a spot near the eyes rufescent, front rather coarsely sparsely punctate, denser on the clypeus, frontal impression indistinct. Thorax one-third wider than long, slightly narrower in front, sides broadly arcuate and narrowly margined, angles prominent, disc convex, coarsely punctate, not coarsely nor closely, smoother along the apex. Elytra striato-punctate, the punctures coarser and closer near the base, much finer toward apex, the two short striæ regular. Body beneath smooth and shining, abdomen sparsely punctate. Length .24 inch.; 6 mm.

The four specimens before me, received at various times, agree in all particulars. The very distinctly punctate head and thorax will readily distinguish it from any of the species in near association otherwise, except *suturale*, which is of shorter form, differently and with less distinctly punctate thorax.

Occurs in New Mexico, Luna (Wickham), Santa Fé (Gisler).

**M. suturale** Lec., Proc. Acad. 1858, p. 85.—Form moderately robust, piceous black, shining; elytra pale castaneous or rufo-testaceous, with a broad sutural black stripe. Antennæ rufo-testaceous, darker externally. Head piceous, a large

rufescent space near each eye, front sparsely punctate, more coarsely on the clypeus; labrum pale. Thorax nearly twice as wide as long, slightly narrowed in front, sides broadly arcuate, margin very evident, angles prominent, the anterior the more distinctly, surface sparsely and very finely punctate, a little more distinctly at the sides. Elytra scarcely a fourth longer than wide, striato-punctate, striæ all regular, the punctures becoming finer toward the apex. Body beneath smooth, abdomen sparsely punctate. Legs piceous black, tarsi paler. Length .20--.24 inch.; 5--6 mm.

The larger measurement is on the authority of Dr. LeConte, as none in my cabinet are of that size.

In our lists this species appears as a synonym of *dubiosa* Say on the authority of Mr. Crotch, who had evidently not seen the species described by Say.

Related to *M. ustum*, but distinct in the arrangement of the colors and by the sculpture of the head. In *suturale* there is no frontal fovea.

Occurs in Texas, Waco (Belfrage).

**M. terminale** n. sp.—Form slightly oblong, similar to *suturale*, piceous black, shining, apex of elytra testaceous, sometimes extending narrowly to the humerus. Antennæ yellowish testaceous. Head sparsely punctate, slightly opaque, clypeus paler. Thorax nearly twice as wide as long, slightly narrowed in front, sides strongly arcuate, angles feebly prominent, disc convex, almost absolutely smooth, the punctures very fine and distant. Elytra striato-punctate, striæ all regular, punctures coarse and deep, nearly as wide as the intervals, becoming obsolete near the apex. Body beneath smooth, shining, abdomen sparsely finely punctate. Length .16--.19 inch.; 4--5 mm.

The legs are usually rufo-testaceous, but a specimen from Key West has black legs. This has also the pale space at the elytral apex very indistinctly defined.

While closely related to *suturale*, this species is quite distinct by the characters given in the table.

Occurs in Florida, Biscayne Bay and Key West (Schwarz).

**M. peninsulare** Crotch, Proc. Acad. 1873, p. 42.—Very like *ustum* in form and color. Head brown, coarsely but not closely punctate. Antennæ rufo-testaceous, darker toward the tip. Thorax brown, nearly twice as wide as long, scarcely narrowed in front, sides strongly arcuate, angles prominent, disc moderately coarsely and closely punctate, a smooth median line posteriorly, a little more finely punctate near the apex. Elytra piceo-testaceous with darker suture, coarsely and closely striato-punctate, intervals flat and smooth, striæ all regular. Propleuræ with a few scattered punctures. Abdomen sparsely punctate. Legs piceo-testaceous, the femora darker beneath and at the knees. Length .20—.22 inch.; 5--5.5 mm.

This species is readily known among those with the small tooth on the hind femora, by the closely and coarsely punctate thorax.

The epipleuræ are quite smooth, the propleuræ sparsely punctate, and it is probably by a slip of the pen that Crotch stated that the epipleuræ are punctate.

Collected at Cape San Lucas, Penins. Cal. by John Xantus.

**M. interruptum** Say, Journ. Acad. iii, p. 448: ed. Lec. ii, p. 215.—Oblong, yellowish or pale brownish testaceous, each elytron with two oblong piceous spots (which are often absent) body beneath testaceous, brownish or piceous black. Head sparsely punctate, a distinct frontal impression. frontal suture not excavated. Antennæ testaceous, slightly darker externally. Thorax nearly a half wider than long, slightly narrower in front, sides strongly arcuate, angles prominent, disc finely, rather sparsely punctate, smoother along the middle. Elytra striato-punctate, striæ regular, except near the scutellum and the short striæ exterior to the seventh, punctures finer toward the apex, intervals smooth. Propleuræ usually with a few punctures posteriorly, met-episterna with few fine punctures. Abdomen finely sparsely punctate. Legs pale testaceous. Length .20—.24 inch.; 5—6 mm.

This species shows no signs of a tooth on the posterior femur, but two specimens in the six before me have a small tooth on the front femur. It is possible that specimens may occur with a tooth on the posterior femur, in which case they might seem allied to *californicum*, which it resembles in color and form. As in that species the punctuation of the thorax is variable from fine to comparatively coarse. The elytral piceous spots when present are on the fifth and sixth intervals, the one in front of middle, the other equally distant posteriorly.

Occurs in Dacota, Kansas and Arizona.

**M. angustulum** Crotch, Proc. Acad. 1873, p. 41.—Oblong, moderately convex, beneath piceous black, upper side, legs and base of antennæ yellowish testaceous. Antennæ pale at base, the outer six joints black. Head sparsely punctate, more coarsely and closely on the clypeus, median frontal impression variably distinct. Thorax one-third wider than long, slightly narrowed in front, angles feebly prominent, sides not strongly arcuate, disc convex, sparsely not coarsely punctate; scutellum sparsely punctate, sometimes opaque. Elytra striato-punctate, the first five striæ regular, the others more or less confused; intervals smooth, punctures a little less distinct toward the apex. Propleuræ smooth, sides of metasternum and abdomen sparsely finely punctate. Length .23—.25 inch.; 6—6.5 mm.

This species has a form not unlike *interruptum* and *californicum*. No well marked sexual peculiarities have been observed, although two specimens presumed to be males have a more slender form, and the ventral segments are flatter.

In the material before me I observe no variation, although Crotch mentions several varieties, but I am convinced that he has mixed

two very distinct species, the description, however, having been taken from the form now under consideration, one of his types being now before me.

Occurs in Montana and Kansas.

**M. parallelum** n. sp.—Elongate, parallel, slightly depressed, very like a *Phyllobrotica* in form, piceous black, shining; legs, epipleuræ, base of antennæ and front yellow. Head between the eyes yellow, surface sparsely punctate, frontal impression well marked, clypeus piceous, slightly concave transversely, coarsely punctate or wrinkled. Thorax about one-fourth wider than long, scarcely narrower in front, angles very little prominent, sides arcuate, the margin extremely narrow, disc convex, very sparsely finely punctate. Elytra parallel sided, narrowed only near the apex, striato-punctate, striæ all more or less irregular, those beyond the third very much so, the punctures but little finer near the apex. Body beneath smooth and shining, abdomen sparsely finely punctate and slightly transversely wrinkled. Length .20 inch.; 5 mm.

The males have the abdomen distinctly flattened, and with a small tooth-like process at the middle of the posterior edge of the first ventral segment.

This species varies in color by having the elytral suture and the side margin very narrowly testaceous. The thorax may be reddish, or more or less suffused with piceous.

In the remarks under *angustulum* mention is made of two species having been mixed. This is the one including the last two varieties mentioned by Crotch. It differs from that species especially in the more elongate and depressed form, the confusion of nearly all the striæ, although the first three may be called fairly regular, and in the general color of the surface.

Occurs in Montana.

**M. lævicolle** Crotch, Proc. Acad. 1873, p. 43.—Entirely yellowish testaceous, form very like *T. canellus*. Head smooth, a few scattered fine punctures on the occiput, clypeo-frontal suture entirely obliterated. Thorax one-fourth wider than long, slightly narrowed in front, sides strongly arcuate, angles slightly prominent, disc convex, absolutely smooth. Elytra obsoletely striato-punctate near the base only, absolutely smooth at sides and apex. Body beneath smooth and shining, abdomen sparsely punctate. Length .13 inch.; 3.5 mm.

As remarked by Crotch this species resembles *pollidum*, but is rather more robust in form, the elytral punctuation fainter, the head smooth without trace of impressed frontal suture.

Occurs in North Carolina (Zimmermann) and Coney Island, N. Y. (Linell).

**M. luridum** Oliv., Ent. vi, p. 892, pl. 2, fig. 29; *vicinum* Crotch, Proc. Acad. 1873, p. 43.—Oval, depressed, head and thorax piceo-testaceous, elytra rufo-

testaceous with sides piceous. Antennæ pale. Head sparsely punctate, clypeus more coarsely and closely, a slight frontal impression, clypeo-frontal suture sinuous, sometimes indistinct. Thorax nearly twice as wide as long, scarcely narrowed in front, angles prominent, sides strongly arcuate, disc moderately convex, punctate, not closely, variable in coarseness. Elytra striato-punctate, punctures moderately closely placed, gradually finer to apex, all the striæ regular, the intervals flat, with a single series of fine distant punctures. Body beneath piceo-testaceous, finely strigose, the abdomen sparsely punctate. Legs pale. Length .12 inch.; 3 mm.

From the fact that the clypeo-frontal suture may be distinct or obliterated in this species, it is rather difficult to place it in an analytical table. The depressed form resembling the well-known *quercatum* with the coloration will render it readily known. The figure given by Olivier is very good, so that it seems remarkable that his species was not sooner identified.

Occurs in Georgia and South Carolina.

**M. maculipenne** Schwarz, Proc. Amer. Philos. Soc. 1878, p. 366.—Slightly oblong, convex, rufo-testaceous, thorax darker, each elytron with three piceous spots. Antennæ testaceous, outer half darker. Head coarsely sparsely punctate and opaque, frontal suture deeply grooved. Thorax nearly twice as wide as long, slightly narrowed in front, angles prominent, sides strongly arcuate, disc convex, moderately coarsely and closely punctate. Scutellum brown or piceous. Elytra rather coarsely striato-punctate, all the striæ regular, the punctures finer toward the apex, each elytron with three piceous spots, one on the fifth interval one-third from base, a second at the side margin opposite the first, the third on the seventh interval at the middle. Body beneath smooth, shining, rufo-piceous, abdomen paler, sparsely punctate. Legs testaceous. Length .14—.18 inch.; 3.5—4.5 mm.

The piceous spots of the elytra are said to be confluent, at times, in an **M**-like mark. The general appearance of the species is very like some larger specimens of *Typophorus sexnotatus*.

Taken abundantly by Mr. E. A. Schwarz on *Quercus virens* at Enterprise, Fla.

**M. pellucidum** Crotch, Proc. Acad. 1873, p. 43.—Entirely pale yellowish testaceous, sometimes slightly darker, form short and robust. Head sparsely punctate, more closely on the clypeus, the frontal suture distinctly grooved. Thorax fully twice as wide as long, slightly narrowed in front, sides strongly arcuate, angles slightly prominent, disc convex, relatively coarsely, but not closely punctate, smoother near the sides. Elytra but little longer than wide, disc striato-punctate, the punctures feeble and entirely obliterated at sides and apex. Body beneath finely alutaceous, abdomen sparsely punctate. Length .10 inch.; 2.5 mm.

A short and robust species, the smallest in our fauna, closely related to *pallidum* in all its characters except the form.



Occurs from North Carolina (Zimmermann) and Georgia (Morrison) through Florida to Key West (Schwarz).

**M. pallidum** Say, Journ. Acad. iii, p. 446; ed. Lec. ii, p. 214.—Oblong oval, slightly depressed, yellowish testaceous, thorax and head sometimes rufescent. Head distinctly punctate, usually more finely in northern specimens and more coarsely in southern; median frontal impression usually distinct, clypeo-frontal suture more or less excavated. Thorax twice as wide as long, slightly narrowed in front, sides strongly arcuate, angles prominent, disc distinctly punctate, moderately closely, the southern specimens more coarsely. Elytra striato-punctate, the punctures not coarse, obliterated at apex, the two short striae somewhat irregular. Body beneath smooth, shining; abdomen usually darker, sometimes piceous, sparsely punctate. Length .12—.16 inch.; 3—4 mm.

The specimens from the northern limit of distribution are smaller and less punctate.

Occurs from Massachusetts (Blanchard) to Missouri (Say) and southward to Florida.

**M. laterale** Crotch, Proc. Acad. 1873, p. 44.—Oval, subdepressed, yellowish testaceous, each elytron with a large, irregularly shaped piceous spot extending inward from the side margin, but not reaching the suture. Head sparsely indistinctly punctate, clypeus coarsely, frontal suture distinctly excavated. Thorax not quite twice as broad as long, slightly narrowed in front, angles prominent, sides strongly arcuate, disc rather coarsely punctured at middle, but comparatively smooth around the borders. Elytra rather coarsely striato-punctate, the striae all regular, punctures finer toward apex. Body beneath smooth, metasternum darker in color; abdomen sparsely punctate. Length .10—.12 inch.; 2.5—3 mm.

This species has much the form of *lucida*, but is rather more convex. It differs from that species in having a smoother head, thorax pale, elytra with the large lateral piceous blotch.

Occurs in North Carolina and Kansas (Crotch).

**M. floridanum** Crotch, Proc. Acad. 1873, p. 43.—Oblong, moderately convex, rufo-testaceous, surface dull and finely alutaceous. Head sparsely indistinctly punctate, clypeus more evidently, frontal suture well excavated, median impression of front short, but well marked. Thorax one-third wider than long, slightly narrower in front, angles very feebly prominent, sides not strongly arcuate, disc convex, extremely finely sparsely punctate. Elytra rather finely striato-punctate, striae all regular, punctures a little finer toward the apex. Body beneath rather dull; abdomen sparsely finely punctate. Length .18—.20 inch.; 4.5—5 mm.

This species has no striking peculiarities, except the rather dull greasy aspect of the surface.

Occurs at Capron and Biscayne Bay, Florida (Schwarz).

**M. puncticolle** Lec., Proc. Acad. 1858, p. 85.—Oval, slightly oblong, subdepressed, brownish testaceous, legs pale, surface shining. Antennae pale rufo-

testaceous. Head rather coarsely and moderately closely punctate, clypeo-frontal suture excavated, a short frontal depression. Thorax about twice as wide as long, slightly narrowed in front, sides strongly arcuate, angles prominent, disc convex, closely, but simply punctate, less closely at sides, apex and base. Elytra rather coarsely striato-punctate, striæ all regular, punctures finer toward the apex. Body beneath similar in color to the upper surface. Abdomen sparsely and closely, but obsoletely punctate. Length .18 inch.; 4.5 mm.

The typical specimen of this species is not now before me. It seems to have had the elytral suture black. Crotch incorrectly suppressed this species as a synonym of *quercatum*, but it is more opaque, than in that species, and the striæ are composed of rather coarse punctures and are all regular.

Occurs in Georgia and Texas.

**M. quercatum** Fab., Syst. El. i, p. 417; Oliv. Ent. vi, p. 891, pl. ii, fig. 26. —Oblong-oval, subdepressed, dull black. Antennæ testaceous, darker externally. Head sparsely punctate, with the frontal suture either excavated or not. Thorax nearly twice as wide as long, angles prominent, sides strongly arcuate, disc convex, rather densely strigoso-punctate, opaque. Elytra dull, finely alutaceous, finely striato-punctate, the striæ all slightly irregular, the punctures finer or obliterated at apex. Body beneath black, more shining than above; abdomen sparsely finely punctate. Length .12—.14 inch.; 3—3.5 mm.

This species varies in having the humeri and an apical spot dull red. Sometimes these spots extend and unite along the side margin. Nearly all of these maculate specimens have a reddish head and one in my cabinet has pale legs.

A variety taken by Mr. Wenzel at Anglesea, N. J., has the elytra pale, with an elongate, triangular, scutellar, piceous space, and often a small lateral spot. These occur on Hazel. It is notable that all the northern specimens, whether entirely black or bicolored, have pale legs. Those with black legs seem to be entirely southern.

As a synonym of this species Mr. Crotch has erroneously placed *puncticolle* Lec.

Occurs from Massachusetts (Blanchard) to Georgia and Florida.

In addition to the foregoing species the following has been described, but I have not been able to identify it in my material, and the type is at this time not accessible to me. One specimen which I obtained from Dr. LeConte as part of Crotch's typical series is certainly a *pallidum*.

**M. marginale** Crotch, Proc. Acad. 1873, p. 43.

Allied to *M. vicinum* [= *luridum*] in color and form, but the ocular sulci meet across the front, which is evidently punctate and

opaque; thorax transverse, sides strongly rounded, but not much deflexed, finely alutaceous, closely punctate; scutellum black; elytra tolerably regularly punctate striate, margins pitchy. L. .16. North Carolina and Kansas.

It may be possible that the above species is merely a larger *luridum*, which varies in the distinctness of the frontal suture.

### **CHRYSOCHUS** Redt.

The two species of this genus are so well known and so generally found in all collections as to need no comment. They are.

**C. auratus** Fab., Syst. Ent. 1775, p. 101.—Brilliant green with coppery reflexions.

Occurs in the eastern Atlantic region from Canada southward.

**C. cobaltinus** Lec., Pacif. R. R. Rep. 1857, p. 67.

*californicus, castaneus, tenebricosus* Marsh, Proc. Linn. Soc. Zool. 1865, p. 49.

Cobalt-blue, rarely with faint greenish tinge.

Occurs, as does *auratus*, on various species of *Asclepias* (milkweed), and very abundant on the Pacific coast from Oregon southward.

### **EUMOLPUS** Weber.

This genus is now represented in our fauna by one species which was described by me as a *Chrysochus*, from the fact that I failed to appreciate the meaning of the characters drawn from the prosternal episterna.

**E. surinamensis** Fab., Syst. Ent. 1775, p. 96; Jacoby, Biol. Cent.-Am. vi, p. 172, pl. ix, figs. 14—16.

*robustus* Horn (*Chrysochus*), Trans. Am. Ent. Soc. 1885, p. 186.

Variable in color from cobalt-blue to green.

Occurs from southern Arizona to Brazil.

### **TYMNES** Chap.

This genus comprises those species formerly enrolled as *Typophorus*. They are few in number and separable as follows:

Metasternum at sides comparatively smooth.

Color variable, green, bronze or cupreous; elytra coarsely punctate even to the apex; apical angle acute, very slightly prolonged in the male.

**tricolor.**

Color deep blue with violaceous reflexions; elytra not coarsely and rather sparsely punctate, at apex quite smooth; apical angle not acute.

**violaceus.**

Metasternum at sides densely and coarsely punctured.

Color piceous, slightly bronzed; elytra moderately coarsely punctured even to the apex; sutural angle well defined, not acute.....**metasternalis.**

*T. oregonensis* Cr. is removed from the genus and placed in close proximity to *Colaspis*.

**T. tricolor** Fab., Ent. Syst. i, p. 316.

*viridis* Fab., Syst. El. i, p. 413; Oliv., Ent. vi, p. 886, pl. ii, fig. 17.

*verticalis* Chap., Gen. Col. x, p. 311, note.

Very variable in color as indicated in the table. The more decidedly green specimens are generally males. By far the larger number of specimens have pale legs, but forms with piceous legs are occasionally seen. Labrum always yellow. Specimens are often seen with the elytra subcostate, especially near the apex. Anal segment often pale, more especially in the males, in which sex that segment is broadly emarginate and with a transverse depression.

Occurs in the Atlantic region from Massachusetts southward.

**T. violaceus** n. sp.—Similar in form to *tricolor*, but always smaller: color deep blue, shining, the surface with violaceous reflections, thorax more or less green. Antennæ testaceous, the outer four or five joints darker. Labrum pale. Head sparsely punctate. Thorax not coarsely, but moderately closely punctate. Elytra more coarsely punctate than the thorax, punctures irregularly placed, closer near the base, nearly obliterated at apex. Body beneath piceous, shining; abdomen coarsely not closely punctate. Femora piceous, tibiæ and tarsi usually paler. Length .20 inch.; 5 mm.

The male has the last ventral segment truncate and with a moderately deep transverse fovea.

Formerly this species was supposed by me to be *Colaspis chrysis* Ol., and is doubtless so named in several collections, but recent studies of the species described by Fabricius and Olivier have caused me to apply that name to another insect.

Collected near Allegheny, Pa., by Dr. John Hamilton.

**T. metasternalis** Crotch, Proc. Acad. 1873, p. 38.

Closely resembles *tricolor*, but differs in having the head and thorax more densely punctured, the latter somewhat aciculate. The underside of the body is also more densely punctate, particularly at the sides of the metasternum.

Occurs in Illinois and western Pennsylvania (Dr. Hamilton).

#### **COLASPIS** Fab.

Notwithstanding the rather wide separation of this genus and *Tymnes* in the books, they are certainly rather difficult to differentiate sharply. They belong, however, to two distinct series, *Colaspis* having no post-ocular lobes, nor is the lower portion of the prothoracic

opening expanded in a bell-shaped manner as in *Tymnes*. The thoracic margin is always irregular, not forming a continuous line. The tarsal claws are broadly appendiculate at base, the tibiæ entire and without emargination.

The differences between *Colaspis* and the genera closely related to it are stated in the analytical table.

The species are not numerous, and may be readily separated by the following table:

Elytra with costiform intervals, between which are two or more rows of punctures more or less confused; body nearly smooth beneath...	<b>brunnea.</b>
Elytra not costate, or only vaguely so at apex.	
Body beneath comparatively smooth.	
Purplish black, thorax very coarsely, deeply and somewhat irregularly punctate; elytral punctures with a slight tendency to a striaal arrangement.	<b>nigrocyanæa.</b>
Green, blue or bronze, metallic; punctures of thorax evenly arranged, not very coarse nor deep; elytral punctures equal, but not in striae.	<b>favosa.</b>
Body beneath very distinctly punctate, the metasternum never smooth.	
Blue, dull green or bronze; elytral punctures simple, finer toward apex.	<b>oregonensis.</b>
Bright green, inclining to golden; elytral punctures simple, finer toward apex.....	<b>chrysis.</b>
Piceous with very faint bronze surface lustre; elytral punctures simple, rather coarser and substriate at apex.....	<b>intermedia.</b>

**C. brunnea** Fab. (*Galleruca*), Ent. Syst. Suppl. p. 94; Oliv., Ent. vi, p. 891, pl. ii, fig. 27; *suilla* Fab., Syst. El. i, p. 417; Oliv., loc. cit. p. 892, pl. ii, fig. 28; *flavida* Say, Long's Exped. ii, p. 295; edit. Lec. i, p. 196; *flavicans* Lef., Catal. Eumolp. 1885, p. 33.—Oval, slightly oblong, moderately convex, usually yellowish testaceous, but variable in color, not shining, legs always pale. Head punctate, not closely, a little more finely on the occiput. Antennæ pale, the outer joints often piceous. Thorax about one-half wider than long, narrowed in front, sides rather broadly arcuate, the margin irregular, sometimes sub-bidentate, angles distinctly prominent, disc moderately convex, moderately closely and evenly punctate. Elytra with intervals more or less costate, between which are two irregular rows of coarse and deep punctures. Propleuræ moderately coarsely, but not closely punctate, metasternum smooth, abdomen sparsely finely punctate. Length .16—.24 inch.; 4—6 mm.

In the male the first joint of the anterior tarsi is distinctly dilated. The last ventral is entire. In the female the tarsus is slender and the last ventral emarginate.

This species is very variable.

*flavida* Say.—Yellowish testaceous, a little darker beneath. Of this *flavicans* Lef. is merely a larger form.

*brunnea* Fab.—Similar to *flavida*, with the epipleural margin and underside brownish, and often with a slight metallic lustre.

*suilla* Fab.—Head and thorax brown, with a slight metallic lustre.

*costipennis* Cr.—Head and thorax brightly metallic, elytra brown with yellow costæ. In this variety Lefevre has changed the name to *Crotchii*, ignoring the fact that his own name, *costipennis*, is four years younger in date.

In all these varieties will be found subordinate variations in the costæ of the elytra. In the normal form there are seven costæ of equal width with the spaces between them, these latter with two irregular rows of punctures. In other specimens, notably the *costipennis* forms, but four costæ are seen, the intervals between them wider and with more numerous punctures.

Between all these forms there are intermediate specimens, and any attempt to separate them as species will be found impossible.

For this species there seems to be some disagreement as to the name, Crotch adopting the name used by me, and Lefevre using *suilla*. There can be no doubt that *brunnea* Fab. applies to this insect, as will be seen by referring to the supplementary description by Olivier, but by accident Olivier omits to give credit to Fabricius for this species, although there can be no doubt that he had the same species, and probably specimen as had Fabricius.

Widely distributed over the entire region east of the Rocky Mountains extending to Arizona.

**C. nigrocyanea** Crotch, Proc. Acad. 1873, p. 45.—Oval, facies rather robust, dull blue-black, feebly shining. Antennæ pale at base, outer five joints piceous. Head coarsely, deeply and moderately closely punctate, a distinct median frontal impression. Thorax nearly twice as wide as long, narrowed in front, sides strongly arcuate posteriorly, margin slightly irregular, hind angles alone prominent, disc convex, very coarsely, deeply and rather closely punctate. Elytra very coarsely and deeply punctate, punctures irregularly placed, but with a feeble stria arrangement near the apex. Body beneath piceous, shining, with a slight æneous lustre. Propleuræ not closely punctate, metasternum quite smooth, abdomen sparsely indistinctly punctate. Legs piceous. Length .20—.22 inch.; 5—5.5 mm.

The sexual characters are as in the preceding species.

No variation has been observed, except that in some specimens the thorax is irregularly punctate, having smooth spaces.

Occurs in Arizona, Tucson (Wickham).

**C. favosa** Say, Journ. Acad. iii, p. 447: edit. Lec. ii, p. 214.—Oblong-oval, moderately convex, blue, bluish green or slightly cupreous, shining. Antennæ testaceous at base, piceous externally. Head sparsely punctate, a little more coarsely on the clypeus, an oblong tuberosity on each side within and slightly above the insertion of the antennæ. Thorax twice as wide as long, narrowed in front, sides strongly arcuate, margin somewhat irregular, angles not prominent, disc convex, evenly punctate, a little more coarsely and closely at the sides. Elytra coarsely, deeply, moderately closely substriately punctate. Propleuræ not closely punctate, metasternum smooth, abdomen sparsely finely punctate. Legs piceous, sometimes with slight metallic lustre. Length .18—.22 inch.; 4.5—5.5 mm.

The sexual characters are as in *brunnea*.

This species is known to me from Dacota, Kansas, North Carolina and Florida.

**C. oregonensis** Crotch (*Typophorus*), Proc. Acad. 1873, p. 38.—Oblong, moderately convex, color bluish, green, cupreous or golden, moderately shining. Antennæ pale, the outer joints piceous. Head coarsely punctate, sparsely on the occiput, quite roughly on the clypeus. Thorax about one-half wider than long, narrowed in front, sides arcuate, margin distinctly undulate, anterior angles alone prominent, disc moderately convex, coarsely and moderately closely punctate. Elytra more coarsely punctate than the thorax, punctures moderately close, irregularly placed, less close at apex. Entire body beneath moderately coarsely punctate. Legs rufo-testaceous. Length .22—.25 inch.; 5.5—6.5 mm.

This species was placed by Crotch in *Typophorus* (= *Tymnes*), but the absence of the post-ocular lobe of the thorax and the undulate margin clearly place it in *Colaspis*.

Occurs in Oregon and northern California.

**C. chrysis** Oliv., Ent. vi, p. 886, pl. ii, fig. 16.—Oblong, convex, bright green or slightly cupreous. Antennæ pale, slightly darker externally. Head rather coarsely punctate, not closely except on the clypeus. Thorax nearly twice as wide as long, slightly narrowed in front, sides feebly arcuate, margin slightly irregular, angles not prominent, disc moderately convex, rather coarsely punctate, median line much smoother, gradually more densely toward the sides. Elytra coarsely but not densely punctate, transversely plicate, especially near the sides, margin slightly explanate, near the apex. Prothorax coarsely and moderately closely punctate, shining; metasternum and its pleuræ closely punctate, alutaceous, finely transversely wrinkled. Legs pale yellowish testaceous. Length .31 inch.; 8 mm.

In the male the first joint of the anterior tarsus is dilated, the last ventral segment truncate, in the female the last ventral is slightly emarginate.

This is the largest and most brilliant species in our fauna. It is remarkable that it should have remained so long unknown after its original description.

Occurs in western North Carolina (Blanchard).

**C. intermedia** Jacoby, Biol. Cent.-Am. vi, pt. 1, Suppl. p. 207.—Oblong, convex, piceous with rarely a faint bronze lustre, legs yellowish testaceous. Antennæ pale at base, outer joints piceous. Head sparsely punctate, clypeus a little more closely; thorax nearly twice as wide as long, sides feebly arcuately narrowing to the front, margin slightly irregular, angles not everted, disc convex, sparsely indistinctly punctate. Elytra not closely punctate, punctures rather fine at middle, coarser at sides, substriately arranged at apex with the intervals convex. Body beneath piceous, slightly bronzed. Propleuræ smooth, without punctures, metasternum at sides punctate. Abdomen piceo-testaceous, sparsely punctate with a transverse row of short erect hairs at the middle of the first three segments. Length .17—.20 inch.; 4.5—5 mm.

The male has the last ventral segment truncate, transversely impressed at middle, with a transverse row of short, stiff bristles near the apical border. In the female the last ventral segment has a slight apical emargination.

This species has such a deceptive resemblance to some of the forms of *Rhabdopterus picipes*, that I had placed them for a time with that species. It may be known from that by the usual narrow prosternum of *Colaspis*, as well as by the sexual characters. Mr. Jacoby places this species in a new genus, *Euphrytus*, Biol. Cent.-Am. vi, p. 124, but there seems no valid reason for separating our species from *Colaspis*.

Occurs in Arizona, Tucson (Wickham).

#### **RHABDOPTERUS** Lef.

This genus contains a number of species formerly placed in *Colaspis*, of which they possess all the essential structural characters, except that the prosternum is broad and flat, not contracted between the coxæ.

One species occurs in our fauna.

**R. picipes** Oliv., Ent. vi, p. 886, pl. ii, fig. 15; *prætexta* Say, Journ. Acad. iii, p. 442; ed. Lec. ii, p. 211.—Form oblong oval, convex, brown bronze, the elytral margin often æneous. Antennæ testaceous, slightly darker externally. Head coarsely sparsely punctate, usually with a median impressed line, clypeus more closely punctate, a smooth space near the antennal insertion. Thorax nearly twice as wide as long, narrowed in front, sides strongly arcuate, hind angles prominent, disc convex, variably punctate, but never closely. Elytra coarsely, but not closely punctate, punctures irregular on the disc, substriate near the apex, surface usually with at least one smooth line indicating the position of a third interval. Body beneath more or less green, abdomen brown, paler at apex. Propleuræ with a few coarse punctures, metasternum smooth, abdomen sparsely punctate, the first three segments with a row of short erect hairs at middle. Legs testaceous. Length .16—.20 inch.; 4—5 mm.

The male has the last ventral segment truncate, quite smooth and



with a transverse depression. Posterior tibia slightly sinuate on the inner edge. The last ventral of the female is bi-emarginate, forming thus three acute teeth.

This insect and *Tymnes metasternalis* have such a close resemblance superficially that I have found the latter among specimens sent as the former.

Regarding the name adopted for this species some explanation is probably necessary, inasmuch as two valued correspondents have rather protested against the name adopted.

The species was described by Olivier from the collection of Bosc at the same time that he redescribed *viridis* Fab. Of the latter species he notes varieties with pale and piceous legs, but for some reason he has failed to describe *tricolor* Fab. I make this note because it has been supposed that Olivier had *tricolor* before him when he described *picipes*. The name *picipes* is certainly misleading, as the figure shows the insect to have pale legs.

The principal reason, however, for adopting *picipes* over *prætexta* is that the Bosc collection is in great part in the Jardin des Plantes in Paris, where Lefevre probably saw the type, and he places *picipes* in *Rhabdopterus*, and as we have no representative of the genus in our fauna other than *prætexta*, the conclusion must be that *picipes* and *prætexta* are the same.

Occurs from Massachusetts westward to Dacota and south to N. Carolina. Say states that it is common on the myrtle, while Blanchard finds it abundant on basswood (*Tilia*).

#### METAXYONYCHA Marshall.

To this genus *Colaspis arizonæ* Cr. should be referred. *Metaxyonycha* is referred by Chapuis and Lefevre to the group Colaspitæ, and differs from all the members of that by the middle tibiæ being deeply emarginate on the outer edge near the apex. The posterior tibiæ have a very feeble emargination. The other characters are essentially those of *Colaspis*.

Two forms are known to me.

Color above entirely orange-yellow.....**arizonæ.**  
Elytra blue, with the entire margin, suture and a transverse band crossing the suture orange-yellow.....**circumcincta.**

**M. arizonæ** Crotch, Proc. Acad. 1873, p. 45.—Orange-yellow, antennæ (except four basal joints) and tarsi black. Head coarsely and deeply punctate, clypeus smooth. Thorax more than twice as wide as long, narrowed in front,

sides arcuate, margin feebly undulate, basal marginal line fine, disc convex and deeply punctured, the spaces between the punctures convex; scutellum parallel-sided. Elytra coarsely and deeply punctured, punctures irregularly placed, except near the apex, where the intervals are well marked and convex. Underside of body comparatively smooth, a few fine, sparse punctures. Length .32 inch.; 8 mm.

In the male the last ventral segment is feebly triangularly emarginate.

Of this I have seen but few specimens and all agree in color.

Occurs in Arizona, locality unknown.

**M. circumcincta** n. sp.—Similar in form sculpture to the preceding, differing only in color. The upperside is quite constant in color; the head is orange-yellow, thorax in great part but with a broad blue band along the base. The elytra are in great part blue, somewhat metallic, with a moderately wide orange-yellow border along the lateral margin, reaching the apex and extending along the suture to base. About one-third or less from base is a short transverse band which crosses the suture, but does not reach the sides. The underside of the body is very variable, sometimes it is entirely black (with the legs), or it may be entirely orange-yellow, but intermediates occur. Length .32 inch.; 8 mm.

The sexual characters are as in the preceding species.

This species is evidently very closely allied to *crucifera*, but Marshall makes note of costæ on the elytra which do not exist here, and of feeble teeth at the sides of thorax which are not seen in the present species. No mention is made of the broad blue band at the base of the thorax. Comparison will probably be necessary to settle the question of the validity of the present species, if not also of the preceding.

Occurs in New Mexico and Arizona.

It is not at this time possible to state whether the two forms are distinct species or varieties of one. The latter opinion was held by Dr. LeConte. All the specimens examined belong to either one or other form and no intermediates have occurred. The occurrence of the genus in our fauna is rather remarkable, the species being confined to tropical America.

#### **COLASPOIDES** Lap.

Head large, deeply inserted in the thorax. Eyes round, slightly emarginate in front. Labrum broadly, clypeus triangularly emarginate with acute angles. Prothorax beneath lobed behind the eyes, the suture between the sternum and side pieces distinct. Prosternum broad, flat, truncate at the two extremities. First joint

of hind tarsus scarcely longer than the next two, the claws broadly appendiculate and divaricate. Tibiæ not emarginate.

This genus, now for the first time introduced into our fauna, seems to bear nearly the relationship to *Tymnes* that *Nodonota* does to *Colaspis*.

The emargination of the clypeus is particularly noted by Chapuis, but not mentioned by Lefevre. In truth, the character is variable in specimens of the same species. There is no basal marginal line to the thorax.

The species known to me are as follows:

Clypeus distinctly narrower at base between the insertions of the antennæ, apical edge feebly emarginate without prolonged angles; blue or green, with violaceous surface lustre.....**violaceipennis.**

Clypeus not narrowed at base, apical border deeply emarginate.

Clypeal emargination semicircular, the angles but little prolonged; form short and robust, head and thorax dull; legs black, slightly bronzed...**opacicollis.**

Clypeal emargination deep and triangular, the angles triangularly prolonged to the front; form somewhat oblong, surface shining; legs testaceous.

**viridimicans.**

**C. violaceipennis** n. sp.—Ovate, convex, above bluish green, the elytra with a violaceous tinge inclining to cupreous, beneath piceous, with dull green lustre. Antennæ piceous, the tarsal joints paler. Head alutaceous, coarsely not closely punctate, clypeus much narrowed at base, the apex nearly truncate. Thorax less than twice as wide at base as long, sides slightly arcuate and strongly convergent to the front, hind angles rectangular, disc convex, equally punctate over the whole surface, punctures rather fine and not closely placed. Elytra scarcely a fourth longer than wide, the punctures coarser than on the thorax, not closely placed, substriately arranged. Body beneath smooth, abdomen alutaceous, sparsely punctate. Legs piceous, with slight green lustre. Length .15—.17 inch.; 3.75—4.5 mm.

Of this species two females alone are known to me. As is usual, the apical margin of the thorax is prolonged, entirely concealing the head from above.

Collected in Arizona, precise locality unknown, but from the southern part.

**C. opacicollis** n. sp.—Ovate, robust, head and thorax usually dull green and subopaque, elytra bluish and more shining, beneath piceous, faintly greenish. Antennæ testaceous, the outer five joints black. Head alutaceous, finely and sparsely punctate, clypeus broader at base, apex semicircularly emarginate, the angles not prolonged. Thorax more than twice as wide at base as long, sides arcuately divergent in front, hind angles sharply rectangular, disc convex, equally punctate, punctures fine and sparse. Elytra but little longer than wide, punctures coarser than those of the thorax, arranged in irregular geminate striæ. Body beneath smooth, shining, abdomen with very few punctures. Legs piceous, faintly bronzed. Length .18 inch.; 4.5 mm.

In the male the head is larger than in the female, the eyes more prominent and the mandibles stouter and more prolonged. The first joint of the front and middle tarsi are distinctly dilated.

This species is the largest and most robust in facies of the three here described. The surface is darker than in the other species. A specimen is before me with the elytra greenish like the thorax, usually the colors are as described above.

Occurs in Texas, Big Springs (Wickham).

**C. viridimicans** n. sp.—Form slightly oblong, convex, above bright green, beneath piceous, slightly æneous, legs testaceous. Antennæ darker testaceous at base, outer five joints piceous. Head slightly alutaceous, sparsely irregularly punctate, clypeus broader at base, the apex triangularly emarginate with the angles more or less prolonged. Thorax about one-half wider at base than long, sides arcuately convergent in apical half only, hind angles rectangular, disc convex, equally punctate, the punctures moderate in size and not closely placed. Elytra more coarsely punctate than the thorax, the punctures rather irregularly placed with but a faint trace of a stria arrangement. Body beneath smooth, abdomen finely alutaceous, with but few fine punctures. Length .16 inch. ; 4 mm.

The sexual characters are as in *opacicollis*.

This species, in its form, resembles some *Cryptocephali*. It may be at once known by the pale legs and the form of the clypeus.

Occurs in Arizona and New Mexico (Wickham).

#### **NODONOTA** Lef.

This name was suggested by Lefevre for those species separated from *Colaspis* by Chapuis under the preoccupied name *Noda*.

Both Chapuis and Lefevre place the genus in the *Iphimeites*, which is separated from the *Colaspites* by the feeble and not always existing character of undulating sides of the thorax in the latter group and entire in the former.

As in *Colaspis*, the third joint of the antennæ in *Nodonota* is notably longer than the second, and the first joint of the hind tarsus as long as the next two.

*Nodonota* is closely related to *Chrysodina* and *Metaparia*; from the first it is known by the presence of the basal marginal line of the thorax and from the second by the longer third antennal joint.

It is hard to understand why Crotch should have united all the forms known to him under one name as there was no scarcity of material. There seem to be four well-defined species at present in collections separable by characters by no means difficult of appreciation. They are as follows:

Clypeus much contracted between the insertion of the antennæ.

Surface above finely punctate, beneath not or but little punctate..**clypealis**.

Clypeus broad between the antennæ.

Form short, oval; punctuation of thorax simple; elytra with no post-umbonal costa.

Sides of metasternum not at all punctate; upper surface shining...**tristis**.

Sides of metasternum coarsely punctate; upper surface dull.....**convexa**.

Form oblong, subparallel; punctuation of thorax substrigose.

Elytra with distinct post-umbonal costa.....**puncticollis**.

All these species belong to the Atlantic region.

**N. tristis** Oliv., Ent. vi, p. 889, pl. ii, fig. 23; *pilula* Germ., Ins. spec. nov. p. 567.—Regularly oval, convex, feebly shining, color variable, dull bronze, slightly cupreous, bluish or bluish green. Antennæ pale at base, outer five joints piceous. Head variably punctate, sometimes sparsely and finely, or again rather coarsely and moderately closely; clypeus broad between the antennæ. Thorax more than twice as wide as long, narrowed in front, sides slightly arcuately convergent to apex, front angles alone prominent, disc convex, surface very finely alutaceous, subopaque, the punctuation simple, usually moderately close, but less so at base and sides. Elytra oval, convex, the umbone distinct, but not prominent, sometimes with a slight impression within it, surface more coarsely punctate than the thorax, usually very irregularly and then more closely, sometimes more sparsely and then vaguely substriate, a sutural stria is usually well marked from the apex to middle. Propleuræ sparsely punctate, metasternum at sides not punctate, abdomen alutaceous, sparsely punctate, sometimes slightly transversely wrinkled. Legs piceous, very rarely rufo-testaceous. Length .11—.15 inch.; 3—4 mm.

The males have the first joints of the anterior and middle tarsi distinctly dilated.

This is the form most abundantly found, and the one in which the tendency to a substriate arrangement of the elytral punctures is most evident. The characters given in the analytical table are those which best serve to separate it from the other species.

Occurs from the Middle States to Kansas, southward to North Carolina. Lives on various upland weeds, *Lespedeza* and *Ceanothus* (Hamilton).

**N. clypealis** n. sp.—Very like *tristis* in form, size and color, and differs in having the clypeus much contracted between the insertion of the antennæ. The surface is much less distinctly and more sparsely punctate. The propleuræ have very few punctures, the sides of metasternum smooth. Abdomen quite smooth, very sparsely finely punctate. Length .14—.15 inch.; 3.5—4 mm.

The males are as in *tristis*.

This species is either comparatively rare or has been overlooked and mixed with *tristis*.

Specimens are known to me from eastern Pennsylvania, North Carolina and Texas.

**N. convexa** Say, Journ. Acad. iii, p. 443; ed. Lec. ii, p. 212.—Form more truly oval and more convex than *tristis*, surface nearly always dull, variable in color, blue and bronze, or slightly greenish; clypeus broad between the antennæ. Head variably punctate, with a more or less distinct median impression. Thorax as in *tristis*, the punctuation less close, the median line usually smoother. Elytra much more coarsely punctate than the thorax, without any trace of striæ, except at the apex, umbone feeble. Propleuræ moderately coarsely, but very sparsely punctate, sides of metasternum more coarsely and closely. Abdomen alutaceous, very sparsely punctate. Legs piceous. Length .15—.18 inch.; 4—4.5 mm.

This species is larger, more truly oval and less shining than any in our fauna, so that it can with ease be selected from the others by sight. It differs especially, however, in having the sides of the metasternum coarsely punctured.

Occurs in Pennsylvania, Illinois, Dacota, Wisconsin. Dr. Hamilton finds it on the great ragweed, *Ambrosia trifida*, in river bottoms.

**N. puncticollis** Say, Journ. Acad. iii, p. 444; edit. Lec. ii, p. 212; *humeralis* Lec., Proc. Acad. 1858, p. 85; *strigicollis* Lef., Rev. Mag. Zool. 1875, p. 112.—Form oblong, slightly parallel-sided, blue, green or olivaceous, moderately shining. Antennæ rufo-testaceous, the outer five joints piceous. Head distinctly alutaceous, moderately coarsely, but not closely punctured, clypeus broad. Thorax rather more than twice as wide as long, sides feebly arcuate and gradually convergent to the front, the front angles acute, but not everted; disc convex, distinctly alutaceous, moderately closely punctate, the punctures elongate and substrigose. Elytra coarsely irregularly punctate, striate near apex, the disc often with smooth stripes representing costæ, umbone moderately prominent, with a subcostiform prolongation posteriorly, a distinct depression within the umbone. Propleuræ alutaceous, sparsely coarsely punctate, metasternum alutaceous not punctate. Abdomen alutaceous, sparsely obsoletely punctate. Legs piceous, very rarely pale. Length .13—.17 inch.; 3.5—4.25 mm.

The first joint of the anterior and middle tarsus is dilated in the male.

This species may be recognized by its more oblong and less convex form, with the punctures of the thorax substrigose.

Occurs from Pennsylvania westward to Kansas, Dacota and Montana, southward to North Carolina. Specimens sent me by Dr. Hamilton were collected on the wild rose.

#### **METAPARIA** Cr.

This genus seems not to have been seen by Lefevre, and is placed with a few genera of uncertain position. It belongs to the *Iphimeites* as recognized by Chapuis, but which has been divided by Lefevre into the *Chrysodinitæ* and *Iphimeitæ* on characters which seem illusory as far as our genera illustrate them.

In the table given by Chapuis *Metaparia* should be placed near *Noda* (= *Nodonota*), from which it differs in having the second and third joints of the antennæ equal in length and the anterior angles of the thorax not prominent externally. The basal marginal line of the thorax is distinct, but fine.

**M. clytroides** Cr., Proc. Acad. 1873, p. 40.—Oblong, nearly parallel, bright green. Antennæ three-fourths the length of the body, the basal and outer five joints piceous, intermediate joints rufo-testaceous, the outer five joints together longer than the basal six. Head relatively large, surface alutaceous, sparsely punctate; clypeus rather deeply, labrum less emarginate. Thorax transverse, very little narrowed in front, sides regularly arcuate, anterior angles not prominent, basal marginal line fine, but distinct; disc convex, surface alutaceous, sparsely but regularly punctate; scutellum oval, broader than long. Elytra but little wider than the thorax at base, surface alutaceous, more coarsely punctate than the thorax, with two vague, smooth interspaces on each side. Body indistinctly punctate. Legs rufo-testaceous, sometimes piceo-rufous with the femora more or less bronzed. Length .12 inch.; 3 mm.

In the males the head is longer than in the female and the jaws more prominent. The first joint of the anterior and middle tarsi is dilated.

Crotch states that the tibiæ are dentate, but this does not seem to be true. The antennal joints 2-3 are equal in length, 3-4-5 are a little shorter, but *inter se* equal in length. The outer five joints are more dilated than in any of the nearly allied genera.

All the specimens examined have been collected in Texas.

#### **CHRYSODINA** Baly.

The single species constituting this genus in our fauna was described under the generic name *Chalcoparia* Crotch (Proc. Acad. 1873, p. 39). The reference to the "Check List" of later date is not a valid citation (Lefev. Eumolp.).

In the synoptic table of genera (loc. cit. p. 33) Crotch erroneously places this genus with those having the thorax lobed behind the eyes.

**C. globosa** Oliv., Ent. vi. p. 893, pl. ii, fig. 30; Crotch, Proc. Acad. 1873, p. 39; *ovata* Say, Journ. Acad. iii, p. 442; edit. Lec. ii, p. 211.—Broadly oval and convex, surface shining, bronze-blue or brassy. Thoracic punctuation not close, regularly placed, finer than on the elytra. Elytral punctures moderately coarse and deep, not closely placed, and with an evident tendency to form rows. Legs rufo-testaceous. Length .10 inch.; 2.5 mm.

In the male the first joint of the anterior and middle tarsi is dilated forming an area as large as the next two joints.

The species of *Chrysodina* seem to be of small size. It is, moreover, as remarked by Mr. Jacoby (Biol. Cent.-Am.), extremely diffi-

cult, if not impossible, to say what should be called *Chrysodina* and what *Nodonota*. As far as our species are concerned, those of the latter genus have a distinct basal marginal line to the thorax which is not seen in *Chrysodina*, and the third joint of the antennæ obviously longer than the second.

Occurs from the Middle States to Colorado and Arizona.

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## MONOGRAPH OF THE NORTH AMERICAN SPECIES OF TACHYTES.

BY WILLIAM J. FOX.

The North American species of this genus have never been monographed. The only important paper published relating to our species is by William H. Patton,\* in which that author gives a history of the genus and a catalogue of the American species. I have been aided greatly in my work by having before me the types of Cresson and Patton, these authors having described two-thirds of the heretofore known species. To Mr. E. T. Cresson I am indebted for the use of the material belonging to the American Entomological Society (the collection of that society lacks but one species to be completed) and to Prof. C. V. Riley for the loan of the United States National Museum's collection, which is also very complete. The types of all the new species are in the former collection, with exception of *T. calcaratus*, which is in the National Museum. I am also indebted to Mr. William H. Ashmead, for favors received. In distinguishing the species it will be found necessary to open the mandibles, and in some cases to remove some of the hair on the clypeus, so that the clypeal teeth may be distinguished.

### TACHYTES Panzer.

*Tachytes* Panz., Krit. Rev. ii, p. 129, 1806.

*Lyrops* Illig. Ross., Faun. Etrusc. ed. 2, ii, p. 161, 1807.

*Tachyptera* Dahlb., Hym. Eur. i, p. 133, 1845.

*Tachytes* Kohl., Verh. Zool.-Bot. Gesell. Wien, xxxiv, p. 327, 1884.

Body generally stout. Anterior femora of male without or with an emargination or excavation near the base on underside.† Spines on the first joint of fore tarsi short, stout, not flexible. Pygidial

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\* Proc. Bost. Soc. Nat. Hist. vol. xx, p. 391, 1880.

† According to Kohl (Verh. Zool.-Bot. Gesell. Wien, xxxiv, p. 328) *T. auru-lentus* was the only species of *Tachytes* having the fore femora emarginate near the base. About one-half our species possess this character.