A monograph of the species of CHRYSOBOTHRIS inhabiting the United States.

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Since the publication of the "Revision of the Buprestidæ of the United States," by Dr. LeConte (Trans. Amer. Philos. Soc. xi, 1859), the species of Chrysobothris have remained practically undisturbed. There have been in the meantime but six species described, of which two are valid. The material has been allowed to accumulate in our cabinets until enough has been obtained to supply defects in the original series and to render it probable that very few more new species will be discovered. Nor has it appeared that science has seriously suffered by retaining many of the species more than twenty years without names, and it is highly probable that much unnecessary synonymy has been avoided by the aggregation of series, which at the same time indicate the great variability of many of our species and the real characters separating them. The publication of descriptions of isolated species in advance of any monographic work, or preparation for it, must necessarily be done at the risk of insufficiency as important characters are frequently developed by serious study which are overlooked in the haste of descriptive work. Chrysobothris is no exception, and the books are full of descriptions, some of which having no value in themselves are useful merely in fixing specific names in our literature until comparison places them in the grand crowd of synonyms. Our species have quite their share of synonymy, principally due to Laporte and Gory; for, of the twenty-two species mentioned by them together or by Gory in the supplement, but five remain valid and one (*errans*) does not belong to our fauna, and it may be added that the figures in their work leave much to be desired and the descriptions are, for the most part, very insufficient.

Anterior to the "Revision" above cited the species described by Laporte and Gory were made the subject of a special synonymical study by Dr. LeConte, and the results published in Proc. Acad. 1857, pp. 6–10, with approximately correct conclusions which were confirmed or corrected by studies of the types then in the possession of Count Mniszech, in Paris (Proc. Acad. 1873, pp. 330–333).

The types of the species described by Melsheimer were obtained by the Museum of Comparative Zoology at Cambridge, and for a long time were loaned to Dr. LeConte, many of them still remaining in his cabinet, now part of that Museum.

The species described by other authors anterior to the "Revision" are few in number, and fortunately definitely known. Typical specimens of all the species described by LeConte are, with one exception, in his cabinet.

The few immediately preceding remarks indicate the authority for the names which will be used for the species in the following pages, while the work itself is based on an aggregation of material which it would be impossible at the present time to equal.

During his life-time LeConte's cabinet and my own were used in common with the result of making them similar in the names of the species and by interchange of specimens as nearly equal as possible in numbers. I have already remarked that close monographic study usually develops previously unnoticed characters, and, as will be observed in the following pages, the exact definition of several of the species became somewhat uncertain. A renewed study of many of LeConte's types became necessary, and for this possibility I must return my thanks to the Museum of Comparative Zoology for the freedom with which they have permitted me to use not only these, but also all other material in their possession. The series in the National Museum at Washington has been kindly loaned me.

Among the personal friends who have assisted me by the loan of their entire collections Mr. Ulke, of Washington, requires special mention, his series being very full and his specimens the perfection of neatness.

To Messrs. Edwards, Angell, Merkel and Reinecke, of New York, Fuller, of New Jersey, Pergande and Lugger, of Washington, Henshaw, and Blanchard of Massachusetts, Wilt and Wenzel, of this city, I am also indebted for the loan of smaller series which have been useful in their aggregation by indicating points of distribution not otherwise known. My own cabinet contains all the species with one exception.

Regarding the number of specimens examined—of thirty-three species, I have seen ten and over, in many cases hundreds, seven with five or six, five with three or four, one with two, while four only

are uniques. In the fifty species enumerated both sexes are described of forty-two, seven are known only by females, one by the male.

Having an unequaled opportunity in both the quality and quantity of material, it remains to be seen whether the results of my study, as given in the following pages, will make a really difficult subject comprehensible to others.

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The genus as recognized in the following pages is in full accord with those who unite Chrysobothris and Colobogaster, the reasons for which have been aptly given by James Thomson, in "Typi Buprestidarum," App. 1, p. 40, and need not be repeated here further than to say that the size of the cavities for the articulation of the antennæ is very variable in our species. The first joint of the hind tarsi is always as long as the next three, frequently much longer.

The general form of the species is variable, but the variation is not as great as in some genera, such as Psiloptera, which are truly polymorphic. For a better idea than can be given by description the reader is referred to the annexed sketches.

In the various synoptic tables some of the characters used are common to both sexes, others are purely sexual. In the first category are those found in the surface of the thorax, the anterior margin of prosternum, the last ventral segment, and finally the clypeus.

The disc of the thorax may be regular and even, more or less equally punctured and without either grooves or irregular elevations, this is illustrated in the first six species on Plate ii and others on Plates vi–vii. The irregular disc, that is with grooves or irregular callosities and with usually uneven punctuation, is by far the most abundant form, and, in our fauna, more characteristic of the genus, see Plates iii and iv.

The anterior margin of the prosternum may be lobed or truncate, neither character being peculiar to any of the groups into which I have divided our species. The truncate prosternum occurs in *dentipes*, *trinervia* and the related species as well as elsewhere, the form is illustrated by diagram fig. 98. In those species in which the prosternum is lobed in front, the lobe varies greatly in form and size—from a simple arcuation of the middle of the front margin (fig. 99) to an abrupt, well developed projection (fig. 22).

The last ventral segment by the character of its lateral margins enables us to divide the genus into two primary series. In the first the margins are distinctly serrulate, sometimes strongly so, occasionally simply crenulate, many illustrations will be found on Plates ii to v. In the second series the lateral margins are not serrulate, as shown on Plates vi–vii, although in two species, *œrea* and *libonoti* (figs. 175–176 and 195–196), the margin is interrupted beyond the middle.

The form of the clypeus appears to have escaped observation, or at least description by nearly every author, and no one seems to have attached the importance to it which it deserves. The usual emargination of the clypeus is triangular or oval, the broader the emargination the more shallow it becomes. There are, however, several curious forms as shown in figures 12, 31, 36, 46, which are, with the exception of 36, restricted to a single species in each case. Other modifications probably occur in exotic forms and will doubtless be more accurately observed in the future.

Modifications of structure dependant on sex are very numerous, and occur in many parts of the body and its members. Descriptions are given as fully as necessary under each species and many of them illustrated on the plates, so that but little more than a few general remarks will be here given.

FORM of body.—There is but little difference in the sexes except that the male is often more slender and the female more convex.

HEAD.—This varies in form, color, sculpture and pubescence.

Form.—The front of the male is usually much flatter, the female more convex.

Color.—Frequently the male head is green, while that of the female is æneous or cupreous.

Sculpture.—In the majority of species the front is much more densely and finely punctured and the callosities indistinct or wanting in the male, while in the female the punctures are coarser and sparser and the callosities prominent. It is rare that the callosities are more prominent in the male, while in a small number of species the front is similarly (that is, coarsely and sparsely) punctured in both sexes.

Pubescence.—In those species with a very flat front that portion is quite densely pubescent in the male and scarcely so in the female.

ANTENNÆ.—These differ in form and color.

Form.—The only instance of variation of form occurs in group viii, in which the only known male has the lower edge doubly serrate (fig. 238). In the females of this group the lower edge of the antennæ is broader than in the species of the preceding series.

Color.—The most common difference is that the male antennæ are brighter in color, green or cupreous, while in the female they are bronze or piceous. In *acutipennis* joints four to eleven of the male antennæ are more or less testaceous, in the ♀ bronze.

PROSTERNUM.—It is quite common to find the same differences in the prosternum as have been observed in the front, that is, more densely punctured and finely pubescent ♂, or more coarsely and sparsely punctured and less pubescent ♀. It is, however, not rarely that both sexes are similar and have coarse, sparse punctuation, or the prosternum may be very nearly smooth.

LEGS.—The femora show no perceptible differences in the two sexes, except that in the males they are slightly stouter. The tooth is similar.

Tibiæ.—The differences between the two sexes is usually very well marked. In the female the tibia is at most feebly arcuate without apical dilatation or tooth or serration on the inner edge. In two species, *azurea* (221) and *atrifasciata* (242), the tibiæ are so nearly alike in the sexes that the differences might readily escape observation, and in *libonoti* (197) they do not differ at all. In the males the anterior tibiæ are always more or less arcuate, and in one species *impressa* (202) angularly bent. A comparatively small number of species have the anterior tibiæ serrulate on the inner margin, and in these it will be observed that the apical dilatation is either feeble or null. Those with the tooth at a greater or less distance below the middle are even less numerous. The apical dilatation is of very variable form and size, as will be seen on the accompanying sketches. The middle tibiæ show much less variation, but in *floricola* (50) they are distinctly sinuate, in a few other species the tip is slightly thickened, while in *femorata* and *Merkelii* they are nearly as serrulate as the anterior tibiæ. In a large number the middle tibia ♂ is arcuate, but much less than the anterior, while in the ♀ it is usually straight. In but one species, *scabripennis*, the posterior tibia ♂ is arcuate.

LAST VENTRAL SEGMENT.—In all our species the last ventral segment is emarginate in the male, but variable in extent among the species, from the deep quadrangular notch of *gemmata* (180) or *acutipennis* (190) to the feeble arcuate truncation of *chrysoela* (229), *scitula*(234) or *atrifasciata* (240). It is not often that the disc is carinate in the male, and then the carina is short, and never entire, as in the female. The disc is more commonly broadly sulcate at middle as in *Merkelii* (185) or *acutipennis* (190). The last ventral of the female is rarely as deeply emarginate as in its male, *analis* (210), usually much less so and quite often truncate as in *acutipennis* (191) or *gemmata* (181), sometimes more or less sinuate as in *chrysoela* (230), *scitula* (235) or *atrifasciata* (241). The tridentate form of apex is rare, *libonoti* (196). Many modifications of the emarginate type will be observed in the sketches. The disc is often strongly carinate in the female, the carina extending from the base to the apex as in *octocola* (9), *gemmata* (181) or *Merkelii* (186). The last dorsal segment often differs in the sexes, principally in sculpture, the punctuation in the female being coarser and deeper than in the male. It will, however, be observed that in *femorata* the last dorsal of female is carinate at middle, a deep fovea on each side.

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From the preceding remarks, which have been condensed as much as possible, it will be seen that modifications of a purely sexual import occur in many portions of the body, which can be utilized in more accurately defining species. The form, color and sculpture of species are often so variable that two specimens of different species will more closely resemble each other superficially than other individuals of the species to which they belong. This is especially observable in the *trinervia* series, where recourse to sexual characters is the only means of separating the closely allied members.

The species of Chrysobothris are so numerous in our fauna that they may be best understood by dividing them into groups. The primary division adopted is practically that proposed by Dr. LeConte in his Revision, with such modifications as have been rendered necessary by the increased material. It must not be supposed that these "groups" are such natural divisions that they have equal value, they are merely adopted for convenience, and those who study the species will find many points of resemblance between members of widely separated groups, e. g. *femorata* and *sexsignata*.

The following is the scheme:

Lateral margin of last ventral segment serrulate (3–171).
Disc of thorax even, without foveæ or callosities (1–25).....Group I.
Disc of thorax irregular, median line more or less sulcate, often with callosities (30–164).
Anterior tibiæ ♂ arcuate and serrulate within; clypeus acutely notched at middle, semi-circularly arcuate each side (30–34).....Group II.
Anterior tibiæ ♂ arcuate and with a tooth near the tip (35–65)....Group III.
Anterior tibiæ ♂ more or less arcuate, dilated at tip (66–172).
Form depressed (66–145).....Group IV.
Form subcylindrical, slightly pubescent (150–169).....Group V.
Lateral margin of last ventral segment not serrulate, rarely interrupted (175–246).
Elytra acuminate at tip (173–193).....Group VI.
Elytra obtuse and serrulate at tip (198–244).
Elytra with either costæ or discal foveæ, sometimes with both (198–232). Group VII.
Elytra without costæ or discal foveæ (237–244).....Group VIII.

The numbers in the table refer to the figures on the accompanying plates, the numbering being continuous for greater ease and certainty of reference. Regarding the figures on the plates it must be remembered that while many of the species are practically constant in sculpture, others are greatly variable. Every figure represents the sculpture of the specimen in hand at the time, that one being chosen which seemed most closely to represent the average sculpture.

Group I.

In this group we now have six species, two of these were so placed by Dr. LeConte, and I have added four others, three being for the first time here described, while the other had been placed in the series with the disc of thorax unequal. Five of them agree in having the thorax gradually narrowed to base, very feebly so in *purpureovittata*. In *Edwardsii*, however, the thorax is broader at base and the sides irregular. All agree in having the prosternum lobed in front, very feebly in the larger species and quite prominently in the smaller forms.

The following table will assist in separating the species:

Larger species; the elytral costæ very distinctly elevated; prosternal lobe relatively feeble; ventral segments with distinct lateral callosities.
Clypeus broadly emarginate.
Middle and posterior femora ♂ and ♀ coarsely serrate on their posterior edges.....1. **atabalipa.**
Middle and posterior femora simple.....2. **octocola.**
Clypeus semi-circularly emarginate and with a tooth each side.
3. **Edwardsii.**

Smaller species; the elytral costæ either entirely obliterated or very faintly indicated; prosternal lobe very well marked; ventral segments without lateral callositics.

Sides of thorax arcuately narrowing to base; sides of ventral segments densely punctate and rather densely clothed with fine recumbent pubescence.

Elytra with first costa faintly indicated and with indistinct discal foveæ. 4. **debilis.**

Elytra without trace of costæ or foveæ; a large cupreous humeral space. 5. **axillaris.**

Sides of thorax straight and almost parallel; abdomen sparsely punctate and not pubescent.

Elytra without trace of costæ or foveæ; usually blue or green, with a median purple-black vitta, surface shining ..... 6. **purpureovittata.**

These species are all from the southwestern regions of our territory. The serration of the femora in *atabalipa* is a remarkable character and has not been observed in any other species in our fauna.

1. **C. atabalipa** Lap. et Gory.—Form elongate, depressed, gradually narrower posteriorly from the humeri; color above dark bronze, feebly shining, beneath more brilliant; antennæ metallic green, the margins of the joints coppery, joint three nearly as long as the next two, joints four to eleven gradually narrower; front flat, very densely punctate, occiput carinate; clypeus very broadly emarginate; thorax widest one-fourth from apex, in front of which the sides are obliquely narrowed, posteriorly nearly straight and much less oblique, hind angles distinct; disc moderately and regularly convex, without depressions, the punctuation at middle rather fine, but not close, becoming coarser, denser and more rugose at the sides; elytra a little wider than the thorax, humeri rounded, sides very gradually convergent posteriorly, the margin serrate from middle, the apices separately rounded, the sutural angle slightly spiniform; surface moderately, coarsely and densely punctate, a moderately deep fovea at middle of base, a feebler one near the humeri and three on the disc of each elytron, one in front of middle interrupting the second costa, the second behind the middle and more external, the third between the first and second costæ; the first costa is well marked and extends from the apical margin two-thirds to base, the second may or may not attain the apical margin and extends nearly to base, terminating in the humeral fovea, third costa obsolete; prosternum slightly lobed in front, the surface brilliant metallic æneous, smooth along the middle, more coarsely punctured in front and at the sides, the pleuræ densely coarsely punctured; metasternum and abdomen brilliant æneous, with coppery reflections, the punctures sparse at middle, coarser and closer at the sides, posterior margins of the segments smooth, ventral segments with their angles acute, segments two to five with a smooth tubercle at the sides, more elevated and spiniform on the last segment; last segment with the lateral margin serrate, a submarginal groove; legs punctate, æneous, with cupreous reflections. Length .56 – .86 inch; 14 – 22 mm. (Fig. 1.)

Male.—Front flat, without tubercles, finely pubescent; anterior tibiæ (5) arcuate, scarcely broader at tip, and with about four obtuse teeth on the inner edge near the tip; middle tibiæ slightly arcuate, obtusely four to five dentate within;

posterior tibiæ straight; prosternum smooth at middle, pubescent at the sides; last ventral segment (3) deeply, almost semi-circularly emarginate; last dorsal with serrate margin, slightly notched at middle.

Female.—Front slightly convex, sparsely pubescent, an arcuate ridge above each antennal fossa and a chevron at middle above; anterior tibiæ arcuate, not serrate within; middle tibiæ feebly arcuate, not serrate; posterior tibiæ straight; prosternum smooth at middle, very slightly hairy at the sides; last ventral segment (4) carinate at middle, apex sinuately truncate, with the angles slightly acute; last dorsal truncate and broadly emarginate, carinate, the edges feebly serrate.

In both sexes the anterior femora are rather obtusely toothed, the tooth serrate on its entire edge; the posterior edge of the lower side of both the middle and posterior femora is coarsely serrate in its entire extent. The first ventral segment is broadly sulcate at middle, the following segments flattened.

There seems to be very little variation in this species. Usually the first and second elytral costæ are alone distinct; in some specimens, however, there are traces of the third and fourth near the apex.

Occurs in Texas and Mexico.

2. **C. octocola** Lec.—Form moderately elongate, subdepressed, narrower at apical third; color above dark olive bronze or slightly reddish, feebly shining, beneath æneous, the median line greenish or slightly bluish; front rather flat, coarsely, densely punctured, with two chevrons in ♀ which are very indistinct or absent ♂; clypeus broadly but not deeply emarginate; thorax nearly twice as wide as long, slightly wider between the basal than the apical angles, widest one-third from apex, where the sides are angulate then straight and slightly narrowing to base; disc regularly convex without depressions or elevations, coarsely but not densely punctate at middle, very densely and rugosely at the sides; elytra wider than the thorax, parallel in front, narrowing at apical third, the median basal depression deep, with a golden spot, humeral depression feeble; three discal golden foveæ on each elytron, the first one-third from base interrupting the second costa; the second one-third from apex interrupting the third costa; the third one-fourth from apex between the first and second costæ; the first elytral costa elevated, extending three-fourths to base, the second longer, but less distinct, third short, fourth feebly indicated; surface coarsely and densely punctured except near the scutellum; lateral margin serrate in nearly its entire extent, the apices separately rounded; body beneath much more shining than above and metallic æneous or cupreous, coarsely but very sparsely punctate, each ventral segment with a smooth triangular umbone; prosternum very slightly lobed in front. Length .40 – .60 inch; 10 – 15 mm. (Fig. 6.)

Male.—Head green, chevrons usually wanting, at most but one present; antennæ metallic green, the joints four to eleven gradually narrower; anterior femora (10) stout, strongly toothed, the tooth serrate on its distal edge; anterior tibia arcuate, not broader at tip, with about five fine denticulations on the inner side; middle tibiæ slightly arcuate, the inner edge denticulate, the posterior straight; prosternum smooth at middle, coarsely punctured at the sides; last ventral (8) segment nearly semi-circularly emarginate, an intra-marginal serrate edge; last dorsal coarsely not closely punctate, a slight notch at apex.

Female.—Front æneous or cupreous, more convex, usually with two chevrons and sometimes a smooth median line in front; antennæ darker and less metallic than in the male; prosternum smooth at middle as in the male; anterior femur as in the male but less stout, the tibia less arcuate and not denticulate; middle tibia nearly straight, the posterior straight; last ventral segment (9) carinate at middle, the apex truncate, with a slight tooth at middle, the angles prominent; an intra-marginal serrate ridge; last dorsal coarsely and densely punctate, strongly carinate at middle and distinctly emarginate at apex.

In both sexes the first ventral segment is vaguely sulcate. There have been no variations of moment observed in this species. On comparison with *atabalipa* its form is less elongate, the golden foveæ more evident and the emargination of the front rounded at bottom.

Occurs in Texas, Arizona, California and in Tamaulipas, Mexico.

3. **C. Edwardsii** n. sp.—Form rather robust, moderately convex, piceous, with faint bronze lustre on the elytra, more shining on the head and thorax, beneath coppery bronze; head densely punctured; clypeus (12) deeply, semi-circularly emarginate at middle, on each side dentiform; antennæ piceous, feebly bronzed, third joint a little shorter than the next two, joints four to eleven gradually narrower; thorax more than twice as wide as long, sides feebly arcuate, sinuate at middle, obliquely narrowing at apex, and slightly arcuately narrowing at base, disc regularly convex, without callosities or depressions, coarsely punctate, rather sparsely at middle, more densely and transversely wrinkled at the sides; elytra very little wider than the thorax, very little more than twice as long as wide, arcuately narrowing at apical third, the lateral margin serrate; the sutural margin elevated two-thirds to base, the first costa sharply elevated three-fourths to base, the second nearly as long, the third less distinct, the fourth very distinct in its apical half; the basal fovea deep, the humeral depression distinct, the discal foveæ existing in a faint trace, the inner about one-fourth from the apex between the first and second costæ, the second more anterior, interrupting the third costa; intervals between the costæ moderately, densely and very regularly punctate; body beneath coarsely and moderately densely punctured, the ventral segments one to five with a smooth umbone at the sides. Length .45 inch; 11.5 mm. (Fig. 11.)

Male.—Unknown.

Female.—Front cupreous, convex, with two chevrons in the form of an inverted V; prosternum broadly smooth at middle, coarsely punctured at the sides; anterior tibiæ slightly arcuate, the middle and posterior straight; last ventral segment (13) nearly semi-circular, with a very feeble notch at tip, the margin serrate; a distinct submarginal line, within which is a feebly serrate elevation.

The prosternum is very distinctly lobed in front and the tooth of the anterior femur is serrate along its entire outer edge from the apex.

At first glance this species resembles some of the more robust forms of *femorata*. It is, however, easily known from any other species in our fauna by the form of the clypeus which seems peculiar.

Occurs at Tucson, Arizona; Henry Edwards.

4. **C. debilis** Lec.—Form moderately elongate, slightly convex, dark brownish bronze, sometimes slightly æneous, sides of thorax usually broadly, bright cupreous; antennæ bright cupreous ♂ or piceous ♀, gradually more slender to the tip, the third joint as long as the next two; front slightly convex, densely punctate, more finely and more distinctly pubescent in the male, two distinct callosities, the occipital carina sometimes bifurcate on the vertex; clypeus with a moderately deep oval emargination at middle arcuate each side; thorax one and a half times as wide as long, the base slightly narrower than the apex, the sides arcuate, broadest at apical third, disc moderately convex, surface regular, without median or other grooves or callosities, the punctuation a little variable, usually not dense, sometimes indistinct, but with distinct transverse strigæ; elytra a little wider than the thorax, parallel, narrowed at apical third, the margins serrulate, the apices obtuse; first costa elevated near the apex, the others indicated by smooth lines, more or less distinct, and usually interrupted; basal fovea distinct but not deep, two foveæ at apical third sometimes confluent, another in front of middle on the second costal line, surface moderately closely punctured, more densely near the base; body beneath dark bronze, rather densely punctured, the sides of the ventral segments densely and finely punctured and rather densely clothed with white pubescence, the middle of the segments more coarsely and sparsely punctured, a narrow space on each side of sutures two, three and four smooth and shining; prosternum with a well defined lobe in front; anterior femur with a moderately large, serrate tooth; margin of last ventral segment serrulate. Length .20–.32 inch: 5–8 mm. (Fig. 15.)

Male.—Prosternum flat, densely, finely punctured and pubescent; anterior tibia (19) arcuate and with a short dilatation at apex; middle and posterior tibiæ straight; last ventral segment (17) semi-circularly emarginate; last dorsal coarsely punctate, triangularly emarginate at apex.

Female.—Prosternum flat, more coarsely punctured and less pubescent than the male; anterior tibia slightly arcuate, the middle and posterior straight; last ventral (18) truncate, slightly emarginate; last dorsal coarsely punctate, entire.

While this species is rather inconspicuous in appearance it is as easy to recognize as any in our fauna by the very well defined prosternal lobe, the densely finely punctured sides of the abdomen with the white pubescence and the elytral sculpture. I have examined the types of *debilis* and *disjuncta* and find no appreciable difference. They were originally described from uniques, but I have recently examined more than twenty specimens. The elytral foveæ are often conspicuously cupreous; in the majority of specimens not so.

Occurs in Ohio (LeConte), Texas, Arizona and southern California.

5. **C. axillaris** n. sp.—Form moderately elongate, not very convex, nearly as in *debilis*, but broader; color dark brownish bronze, the basal fovea of the elytra and large humeral space, bright coppery red; antennæ more slender to the tip, piceous, second joint as long as the next two; front very slightly convex, coarsely, closely punctate, two small tuberosities and a feeble chevron above; clypeus with a moderately deep oval emargination, arcuate each side; thorax twice as wide as long, base and apex equal, sides slightly irregularly arcuate, disc moderately convex, without depressions or callosities, the surface rather sparsely

punctured at middle; more densely at the sides; elytra wider than the thorax, parallel, arcuately narrowed at apical third, the margins serrate, the apices obtuse, disc moderately convex, basal fovea distinct and bright cupreous, the first costa faintly indicated behind the middle by a smooth line, the surface densely punctured, more sparsely toward the suture and posteriorly; body beneath nearly black, densely punctured, the ventral segments very densely punctulate at the sides and clothed with fine white pubescence, at middle much more coarsely punctured, the basal margins of the last three segments smooth, the terminal segment with the margins serrulate; prosternum very distinctly lobed in front; anterior femur with a moderately large tooth, serrate in its distal edge. Length .31 inch; 8 mm. (Fig. 20.)

Male.—Unknown.

Female.—Prosternum flat, densely and coarsely, almost cribrately punctured; anterior tibia (24) slightly arcuate, the middle and posterior straight; last ventral segment (23) with a very small, semi-circular notch at tip.

This species is closely allied by its prosternal lobe and the punctuation of the abdomen to *debilis*, but differs from that species in the almost total absence of elytral sculpture excepting the punctuation. The ventral punctuation is also different, as the densely punctured lateral region extends more to the middle and the median region is more coarsely and closely punctate. The anterior tibiæ are bright coppery red, while the large humeral space is quite conspicuous.

One specimen, southern Arizona; two from Texas a little more brilliantly colored.

6. **C. purpureovittata** n. sp.—Form moderately elongate, feebly depressed, color bright blue or green, varying to violet or coppery bronze, each elytron with a moderately broad purple-black vitta extending from the humeri nearly to the tip, indistinct on the violet or bronze species, surface rather shining; antennæ cupreous, gradually more slender to the tip, the third joint very little longer than the fourth; front slightly convex, moderately densely punctured, a slight arcuate carina near the top, clypeus rather broadly triangularly emarginate, the notch oval at bottom, on each side arcuate, thorax about one and a half times as wide as long, the sides straight and very slightly convergent to base, anterior angles slightly rounded, disc moderately convex, surface regular without inequalities, punctuation rather sparse at middle, denser and very slightly strigose near the sides; elytra a little wider than the thorax, parallel, very slightly wider behind the middle, apical third rather obliquely narrowed, the margin relatively coarsely serrate, the apices obtuse; surface equal, without costæ or foveæ, except the usual basal fovea and a moderate intra-humeral depression, surface rather finely not closely, but quite evenly punctate; body beneath similar in color to the upper surface, rather sparsely punctate, the ventral segments without callosities, the margin of the last distinctly serrulate; prosternum very distinctly lobed in front; anterior femur with a small, very acute tooth and a few denticulations more externally. Length .22–.29 inch; 5.5–7.5 mm. (Fig. 25.)

Male.—Prosternum slightly convex, a little more coarsely and closely punctured than the elytra; anterior tibia (29) slightly arcuate, a short and rather narrow

dilatation at apex; middle and posterior tibiæ straight; last ventral segment (27) semi-circularly emarginate; last dorsal coarsely, sparsely punctate, slightly notched at middle.

Female.—Prosternum as in the male; anterior tibia very slightly arcuate, the others straight; last ventral (28) sinuately truncate; last dorsal coarsely punctate, the apex entire.

In the bright blue or green specimens the extreme margin of the thorax as well as the entire lateral margin of the body beneath and the femora are bright cupreous. The brightly colored specimens with the more distinct blackish vitta are very pretty and easily known, the darker forms by their color and form resemble *scitula* at first glance.

Occurs in Indiana, Illinois, Kansas and Texas, the latter region being most numerously represented.

Group II.

The group here separated is characterized by having the disc of the thorax irregular, more or less sulcate at middle, the last ventral segment with serrulate margin. The clypeus is acutely incised at middle, semi-circular each side and it may be aptly compared to two semi-circles tangent with their diameters continuous. The anterior tibiæ of the male are arcuate, the inner edge multi-denticulate and the middle tibiæ are similar. The form of the two pairs of tibiæ is repeated in *sexsignata* which has also a similar clypeus, but more broadly emarginate, but the last ventral segment has the lateral margin entire.

There is but one species known which can be referred to this group, but what the group lacks in number is made up in the variation of that one species and is without parallel in our series.

7. **C. femorata** Fab.—Form oblong, sometimes slightly robust or moderately elongate, usually of dark bronze surface, but sometimes slightly brassy, cupreous, or rarely æneous; antennæ serrate from the fourth joint and gradually more slender to the tip, the third joint a little longer than the next two; greenish ♂ or cupreous ♀; front rather flat ♂ or slightly convex ♀ and with a chevron in both sexes and other callosities ♀; clypeus (31) at middle acutely notched, on each side semi-circular; thorax more than twice as wide as long, widest slightly behind the apex, the sides somewhat irregular, slightly narrowed at base; disc irregular, an indistinct median depression, a deeper depression posterior to and parallel with the apical margin, with other irregular depressions near the side; surface rather coarsely punctured less densely at middle, more densely and deeply at the sides; elytra a little wider than the thorax, sides nearly parallel, gradually narrowed at apical third, the margin serrate, the apices obtuse; disc feebly convex, the sculpture very variable, usually with the first

and second costæ distinct near the apex, and with two foveæ on each side, which are transverse in form, the first a little in front of middle, the second one-third from apex, the basal depression rather feeble, the surface otherwise coarsely and near the sides confluently punctured; body beneath more shining than above and more metallic, usually more or less greenish in the ♂ or cupreous ♀, the surface coarsely but not densely punctured, the ventral segments with a triangular umbone on each side; prosternum not lobed in front, the surface coarsely punctured at the sides and with a smooth broad line at middle, hairy in the ♂; anterior femur with a rather broad, obtuse tooth, the entire margin of which is serrate. Length .28 – .64 inch; 7 – 16 mm. (Fig. 30.)

Male.—Front usually green, hairy; anterior tibiæ (34) arcuate, slightly dilated at tip, the inner margin with small teeth, usually five, sometimes more, rarely serrulate; middle tibiæ arcuate, the inner margin serrulate, except near the base; posterior tibiæ straight; last ventral segment (32) with the margin serrulate, a submarginal depression, the apex semi-circularly emarginate; last dorsal segment coarsely, sparsely punctate, the apical border emarginate.

Female.—Front cupreous, never green, not hairy; anterior tibiæ arcuate, slightly broader at tip, not serrate or toothed internally; middle tibiæ slightly arcuate, inner margin simple; posterior tibiæ straight; last ventral segment (33) more elongate than in the male, the apex broadly but feebly emarginate, the angles sometimes slightly prominent; last dorsal strongly carinate at middle, the apex truncate.

As might be expected with a species of such wide distribution the variations in aspect and in sculpture are very great, but with a large series the specific identity of all the forms is easily demonstrable. The essential characters of the species remain the same through all its variations and may be summarized as follows; last ventral segment with serrulate margin; thorax with irregular surface; clypeus acutely notched at middle and semi-circular each side; anterior tibiæ of male slightly dilated at tip, the inner side denticulate.

The form of the clypeus is peculiar to the species, the only approach to a similarity being in *sexsignata*, which has the margin of the last ventral simple. The variations of sculpture have given rise to the descriptions of many of the forms under different specific names, the most important of which will be briefly noted.

C. Alabamæ Gory.—This is the larger and more robust form occurring in the Gulf States. The sculpture is quite coarse, but the elytral costæ are hardly indicated. The foveæ of the disc are well marked and usually coppery.

C. femorata Fab.—Is the form more common in the Middle States, and in size it is somewhat smaller and less robust than *Alabamæ*, the sculpture smoother, the elytral costæ a little more evident, and the foveæ more sharply limited.

C. soror Lec.—This is a little smoother and more slender, the thorax more decidedly narrowed at base, the elytral costæ without being much elevated are more distinct for a greater length.

C. Lesueuri Lap. et Gory.—In this form, which resembles *soror* in shape, the elytral sculpture is quite sharply indicated and the costæ, foveæ and more densely punctured intervals are well limited. The foveæ are especially sharply defined and are usually more golden in color.

C. nigritula Lap. et Gory. (*obscura* Lec.)—Form slender, rather more acutely narrowed posteriorly, the surface more greenish from the color of the punctures and the sculpture even more confused than in *Alabamæ.*

C. misella Lec.—This form is founded on small and imperfectly developed specimens and from their sculpture and general appearance should be referred to the variety *femorata.*

Other variations will be observed in the color of the under side of the body from brassy to cupreous and green, but as these are so common everywhere in the Buprestidæ it is merely necessary to indicate their occurrence.

As already remarked the species has a very wide distribution. It occurs in Canada and in every State and territory in the United States and extends into Mexico.

Group III.

The group here suggested consists of species of at most moderate size, without very conspicuous or well defined elytral sculpture. The thorax has a rather feeble median impression, almost wanting in *ignicollis* and *contigua,* being therefore intermediate between the species of the first group and those aggregated around *trinervia.* The last ventral segment has a serrate margin. The essential character of the group is found in the anterior tibia of the male, which has an acute tooth (in *contigua* obtuse) usually one-third from the apex, although in *speculifer* and *viridicyanea* it is very close to the apex.

The following table gives, in brief, the characters separating the species:

Clypeus acutely incised at middle, dentate each side.
- Clypeal teeth well marked; tooth of anterior tibia ♂ rather broad, not very acute at tip.....8. **contigua.**
- Clypeal teeth scarcely prominent; tooth of anterior tibia male acute and prominent.....9. **cuprascens.**

Clypeus with a truncate median lobe, a slight sinuation on each side; anterior tibia ♂ as in *cuprascens* ..... 10. **floricola.**

Clypeus with an oval or broad emargination at middle.

Color coppery bronze, or some slight variation of that.

Tooth of anterior tibia ♂ slender, acute and one-third from the apex. 11. **ignicollis.**

Tooth of anterior tibia ♂ triangular, very near the tip..12. **speculifer.**

Color bright blue or greenish; tooth of anterior tibia ♂ rather large, triangular and acute, very near the apex..... 13. **viridicyanea.**

The species of this group, with the exception of *floricola*, belong to the region of Colorado and Texas, westward to California and Oregon. The first mentioned (*floricola*) belongs to the Atlantic region proper.

8. **C. contigua** Lec.—Moderately elongate, subdepressed; color above dark bronze, moderately shining; thorax somewhat cupreous, beneath usually cupreous; antennæ gradually more slender to tip, with greenish ♂ or cupreous ♀ lustre, third joint as long as the next two; front flat and densely punctured, greenish and pubescent ♂ or slightly convex, less densely punctured, cupreous and not pubescent ♀; clypeus (36) with a small acute notch at middle, on each side a small acute tooth and sinuate; thorax twice as wide as long, base and apex equal, sides obliquely narrowed at apex, nearly parallel at middle, then slightly narrowed at base; disc rather uneven, median depression feeble, with a distinct impressed line posteriorly, post apical transverse impression distinct; surface coarsely and not densely punctured at middle, more densely, almost cribrately punctured at the sides; elytra wider than the thorax, parallel, narrower at apical third, the margin serrulate, the apices obtuse; surface irregularly sculptured, the first costa distinct at apical half, the others confused, intervals coarsely, densely punctured, with an irregular smoother space behind the middle, a second near the apex, basal and humeral depressions distinct; prosternum distinctly but feebly lobed in front; body beneath shining, coarsely not densely punctured; anterior femur with a small tooth, not visibly, serrate. Length .28 - .42 inch; 7 - 10.5 mm. (Fig. 35.)

Male.—Prosternum very densely punctured, sparsely pubescent; anterior tibiæ (39) slightly arcuate, a little thicker at tip and with a broad, rather obtuse tooth below the middle; middle and posterior tibiæ straight; last ventral segment (37) with serrulate margin, the apex with a small semi-circular emargination; last dorsal sparsely punctate, apex emarginate.

Female.—Prosternum coarsely not densely punctate; anterior tibiæ slightly arcuate not dilated nor toothed; middle and posterior straight; last ventral segment (38) with serrulate margin, and with a very small emargination at tip; last dorsal very coarsely punctate and entire.

This species shows very little variation in the color of its surface, but the sculpture is slightly variable and difficult to describe without being individual. In appearance it resembles some of the forms of *femorata*. With this species begins a small series in which the male has the anterior tibia toothed at some point below the middle, of

these two only have the form of clypeus described above ; the present species has the tibial tooth slightly below the middle and obtuse, while in *cuprascens* it is one-third from the apex and acute.

Occurs in Oregon, Washington Territory, Nevada and California.

9. **C. cuprascens** Lec.—Form of *femorata*, subdepressed, cupreo-æneous, the thorax more reddish, moderately shining; antennæ more slender at tip, greenish ♂ or æneous ♀, third joint as long as the next two; front feebly convex, without callosities, more densely punctured and greenish ♂ ; clypeus (41) triangularly notched at middle, on each side acutely toothed, then subtruncate ; thorax twice as wide as long, base and apex equal, sides in front narrowing, at middle parallel, slightly sinuate, base slightly narrowed ; disc irregular, a vague median depression and with slight depressions near the side; surface coarsely and moderately closely punctate, subconfluent near the sides ; elytra wider than the thorax, the sides parallel, or slightly sinuous, narrowing at apical third, the margin serrulate, the apices obtuse ; the first costa distinctly elevated, extending two-thirds to base, the second and third costæ feebly evident at middle ; basal fovea moderately deep, discal foveæ two on each side, the first irregularly quadrate near the middle between the first and third costæ, the second one-third from the apex transverse, the foveæ very densely and finely punctured, the surface otherwise irregularly punctured, densely and coarsely punctured at sides and apex, more sparsely on the disc ; body beneath coarsely not densely punctate ; last ventral segment serrulate ; anterior femur with a small tooth not serrulate. Length .26 – 36 inch ; 6.5 – 9 mm. (Fig. 40.)

Male.—Prosternum very densely punctured, finely pubescent ; anterior tibiæ (44) slightly arcuate, acutely toothed one-third from the apex ; middle and posterior tibiæ straight ; last ventral segment (42) with a small, semi-circular emargination ; last dorsal obsoletely punctate, apex subtruncate.

Female.—Prosternum coarsely and closely punctate ; anterior tibiæ slightly arcuate, simple, the middle and posterior straight ; last ventral (43) with a very small emargination at apex ; last dorsal sparsely punctate at the sides, the apex entire.

With a form of clypeus similar to that of *contigua* this species differs in the form and position of the anterior tibial tooth of the male. The sculpture of the surface is more distinctly defined and the shallow foveæ quite well indicated. There seems to be very little variation in the numerous specimens examined.

The unique type in the cabinet of Dr. LeConte has the clypeus without the two median teeth as I have indicated in a previous paper (Trans. Am. Ent. Soc. pl. iv, fig. 16) ; this seems, however, purely accidental, as my specimens otherwise agree so closely in form, color, sculpture and sexual characters.

Occurs in Colorado and New Mexico.

10. **C. floricola** Gory.—Form of *femorata*, subdepressed, dark bronze, with slight cupreous tinge ; antennæ very little more slender toward the tip, æneous ♀ or greenish ♂, third joint a little longer than the next two ; front slightly

convex in both sexes, coarsely, densely punctured, with small, irregular callosities; clypeus (46) with a short, median, truncate lobe, on each side of which is a slight sinuation; thorax more than twice as wide as long, the sides nearly parallel at middle, narrowed at apex and base; disc irregular, a distinct median channel, wider in ♀, and some irregular depressions near the side, a subcariniform callus at base opposite the middle of each elytron; surface coarsely punctate, not densely at middle, very densely and confluent at the sides; elytra wider than the thorax, often wider slightly behind the middle, gradually narrowed at apical third, the margin serrulate, the apices obtusely rounded; the first costa moderately elevated from the apex to the middle, the other costa very indistinctly defined and irregular, the basal and humeral depressions not deep, surface very densely punctured between the slight elevations, more sparsely near the base; body beneath sparsely punctate, very shining; prosternum distinctly lobed in front; last ventral segment with serrulate margin; anterior femur with rather strong tooth, serrulate on its distal edge. Length .34 – .48 inch; 8.5 – 12 mm. (Fig. 45.)

Male.—Prosternum coarsely, sparsely punctate at the sides, scarcely hairy; anterior tibia (50) slightly arcuate, with a very acute and prominent tooth one-third from the tip; middle tibia slightly arcuate, the inner side slightly sinuous and subangulate one-third from the apex; posterior tibia straight; last ventral segment (47) with a very feeble emargination at apex; last dorsal coarsely punctate, the apical margin subtruncate.

Female.—Prosternum as in the male; anterior tibia feebly arcuate, inner margin simple; middle and posterior tibiæ straight; last ventral segment (48) longer than in the male, subtruncate at apex; last dorsal very coarsely punctate, apex entire.

While there is very little noteworthy in the general appearance of this species, it is unique in the form of the clypeus being the only one in our fauna without emargination. The form of the middle tibia of the male is also unique.

Occurs from the Middle States to Florida.

11. **C. ignicollis** Horn.—Form nearly that of the smaller *femorata*, but rather broader, color dark bronze, the head and thorax bright cupreous; antennæ rather short, æneous ♂, piceous ♀, serrate from the fourth joint but scarcely narrower externally, third joint as long as the next two; front slightly convex, more densely punctured in the male; clypeus (52) with a rather shallow, broad emargination at middle; thorax twice as wide as long, sides at middle parallel and slightly sinuate, narrowed at apex and base; disc feebly convex, a vague median depression with others irregular near the sides and apex; surface moderately coarsely punctured, the punctures sparse and rather irregular at middle, dense and confluent at the sides; elytra a little wider than the thorax, parallel, narrowed at apical third, the margin serrulate, the apices obtuse; disc feebly convex, the first costa extending from apex to middle, the discal foveæ shallow, transverse, densely punctured, the basal fovea deep, the surface between the discal foveæ and posterior to the last very sparsely punctured, the surface otherwise coarsely and densely punctured; body beneath bright æneous or subcupreous, coarsely, sparsely punctured, rather more densely at the sides of the ventral segments; last ventral segment with serrulate margin; anterior femur with rather small, obtuse tooth, serrate along its distal margin. Length .24 – .32 inch; 6 – 8 mm. (Fig. 51.)

Male.—Prosternum not lobed in front, coarsely, densely punctured, with a feeble trace of smooth median space, sparsely pubescent; anterior tibia (55) slightly arcuate, and with a very acute tooth one-third from the tip; middle tibia slightly sinuate on the inner side; last ventral segment (53) broadly, almost semi-circularly emarginate; last dorsal sparsely punctured.

Female.—Prosternum coarsely, sparsely punctured, the median smooth space evident; anterior tibia slightly arcuate, middle and posterior straight; last ventral segment (54) with a very small emargination at apex; last dorsal very coarsely densely punctured.

The general style of elytral sculpture is that of *contigua*, *cuprascens* and *speculifer*, and in aspect it resembles especially the second. The form of the clypeus will distinguish it from the first two while the form and position of the anterior tibial tooth of male will separate it from the third. It is almost impossible, in description, to separate the females of *speculifer* and *ignicollis*.

Occurs in Colorado and Texas.

12. **C. speculifer** n. sp.—Form oblong, subdepressed, as in the var. *misella* of *femorata*, bright cupreo-æneous, usually more red posteriorly; antennæ piceous, slightly æneous, more slender externally, the third joint as long as the next two; front slightly convex in both sexes, coarsely and closely punctured, with callosities sometimes forming two chevrons; clypeus (57) very broadly but not deeply triangularly emarginate on each side rounded, usually with a submarginal elevated line parallel with the emargination; thorax rather more than twice as wide as long, sides at middle slightly sinuate, narrowed at apex and base; disc moderately convex, at middle a slight depression with distinctly impressed line, near the side irregular depressions and opposite the middle of base of each elytron a feeble cariniform callus; surface densely punctate at middle, then more sparsely punctate, confluent near the sides; elytra a little wider than the thorax, parallel, narrowed at apical third, the margin posteriorly feebly serrate, the apices separately rounded; disc subdepressed, the first costa distinctly elevated from apex to middle, two more densely punctured discal foveæ of large and irregular form, the one at apical third the other in front of middle, the basal fovea deep, and with elevated spaces conspicuously shining and smooth, the surface otherwise rather densely and coarsely punctured; body beneath very coarsely not closely punctate, the ventral segments with distinct callosities at the sides; prosternum not lobed in front, coarsely, closely punctate in both sexes with feeble, smooth, median line; anterior femur with moderate tooth serrate on its distal margin. Length .24 – .28 inch; 6 – 7 mm. (Fig. 56.)

Male.—Anterior tibia (60) feebly arcuate, slightly broadened at tip and with an acute tooth near the apex; middle tibia slightly arcuate, the posterior straight; last ventral segment (58) semi-circularly emarginate.

Female.—Anterior tibia slightly arcuate, without notch; the middle and posterior straight; last ventral (59) with a very small emargination at tip.

With a similarity of surface sculpture to the other members of the group with toothed anterior tibia, this species is notable in having

the smooth spaces more sharply limited and more shining. The especial distinction is, however, based on the form of clypeus and the male sexual characters.

Occurs in Colorado and Arizona.

13. **C. viridicyanea** n. sp.—Form oblong, subdepressed, bright cobalt blue changing to green; antennæ green, more slender externally, third joint as long as the next two; front feebly convex, rather densely punctured and with two feeble callosities; clypeus (62) with a feeble, triangular emargination at middle on each side arcuate; thorax more than twice as wide as long, nearly parallel at middle, narrowed at apex and base; disc feebly convex, a vague, median, and some irregular lateral depressions; surface coarsely punctate, sparsely at middle, more densely and subconfluently at the sides; elytra broader than the thorax, a little wider behind the middle, arcuately narrowing at apical third, margin feebly serrate posteriorly, the apices separately obtuse; the first costa distinctly elevated from apex to middle, the basal fovea deep, the surface rather coarsely and densely punctured, very irregularly in places with transverse smoother spaces at apical third, behind the middle and obliquely from the humeri; body beneath more shining than above, coarsely but sparsely punctate; prosternum not lobed; last ventral with serrulate margin; anterior tibia with feeble tooth, serrate on its distal edge. Length .32–.36 inch; 8–9 mm. (Fig. 61.)

Male.—Prosternum very densely punctured and pubescent; anterior tibia (65) slightly arcuate, a slight dilatation one-third from base, a strong acute tooth near the apex; middle tibia slightly sinuous within, the posterior straight; last ventral segment (63) deeply semi-circularly emarginate, the last dorsal coarsely punctate and feebly emarginate at apex.

Female.—Prosternum coarsely, moderately, closely punctate; anterior tibia feebly arcuate; middle and posterior straight; last ventral (64) longer than in the male, feebly but rather broadly emarginate; last dorsal closely punctate, subtruncate.

This species has a general superficial resemblance to *Harrisii*, but is more densely punctate and less shining. The two species differ primarily in their sexual characters.

Occurs in California, Nevada and Montana.

Group IV.

This group contains nearly one-third of all the species in our fauna, and is of very difficult study, and from the similarity of the elytral sculpture in seven of the species it is necessary to have recourse to sexual characters. The species divide themselves into two equal series—those with the prosternum lobed in front and those with the prosternum truncate. The lobe is here never so well marked as has been observed in several other groups, and in fact in several species consists of a mere arcuation of the anterior margin of the prosternum.

The following table will assist in the determination of the species:

Prosternum without trace of lobe in front.....2.
Prosternum lobed, sometimes rather feebly.....8.
2.—Color bright blue; thorax with a feeble trace of a median sulcus.
14. **Harrisii.**
Color dark bronze or æneous.....3.
3.—Disc of thorax not sulcate at middle, but with an arcuate impression on either side.....15. **dolata.**
Disc of thorax sulcate at middle.....4.
4.—Joints four to eleven of antennæ more or less testaceous.....16. **dentipes.**
Antennæ uniform, usually entirely metallic.....5.
5.—Joints four to eleven of antennæ equally broad in both sexes.
17. **ludificata.**
Antennæ gradually more slender to tip.....6.
6.—Posterior tibiæ of ♂ arcuate.....18. **scabripennis.**
Posterior tibiæ in both sexes straight.....7.
7.—Anterior tibiæ ♂ abruptly dilated at tip for a short distance without sinuation above the dilatation; last ventral ♀ with a narrow but moderately deep notch.....19. **trinervia.**
Anterior tibiæ ♂ dilated at tip, sinuate above the dilatation; last ventral of ♀ with an extremely feeble truncation, almost entire.
20. **carinipennis.**
Anterior tibiæ ♂ abruptly dilated at tip, deeply sinuate above the dilatation; last ventral ♀ distinctly emarginate, with a well marked transverse ridge in front of the notch.....21. **caurina.**
8.—Median sulcus of thorax very well marked, the elevated smoother spaces conspicuous.....9.
Median sulcus very feeble, linear or almost obliterated, the sides of the disc without obvious smoother or elevated spaces.....12.
9.—Anterior tibia ♂ with an abrupt dilatation at tip.....10.
Anterior tibia merely a little broader at tip.....11.
10.—Elytral costæ interrupted, but not expanded near the base; form oblong.
The first elytral costa very nearly parallel with the suture and elevated nearly to the base; last ventral without distinct submarginal serrate ridge.....22. **californica.**
First elytral costa sinuous, especially near the apex, evanescent in front of middle; last ventral with submarginal serrate ridge.
23. **Blanchardi.**
Elytral costæ interrupted, and near the base expanded in broad smooth spaces, more or less confluent; form broad, depressed.
24. **quadrilineata.**
11.—Callosities of ventral segments pronounced; elytral sculpture of rather sharply defined, depressed, punctured spaces and narrow, well elevated, smooth ridges.....25. **exesa.**
12.—Last ventral segment with a distinct, submarginal, feebly serrate ridge, the marginal groove consequently deep.....26. **texana.**
Last ventral without submarginal ridge, the marginal groove feeble..... 13.

13.—Anterior tibia ♂ dilated near the tip, without obvious sinuation.

Tooth of anterior femur serrulate; ventral segments with distinct lateral smooth spaces; last ventral ♀ with small, semi-circular emargination. 27. **mali.**

Tooth of anterior femur not or extremely indistinctly serrulate; ventral segments without lateral smooth spaces; last ventral ♀ with a barely perceptible emargination.....28. **pusilla.**

Anterior tibia ♂ abruptly dilated at apex, deeply sinuate above the dilatation; femoral tooth serrulate; ventral segments without lateral smooth spaces; last ventral ♀ emarginate at tip, with a transverse ridge in front of emargination.....29. **nixa.**

This group has representation in every part of our fauna and two of the species, *dentipes* and *trinervia*, have very wide distribution, the other species are more restricted in their habitats.

14. **C. Harrisii** Hentz.—Form rather broad, subdepressed; color blue, or greenish blue, shining, beneath similar in color, but usually darker; antennæ piceous, slightly more slender to tip, third joint not as long as the next two, sometimes hardly longer than the fourth; front slightly convex, a little more punctate in the male and somewhat more green; clypeus (67) with a broad, shallow emargination at middle, arcuate each side; thorax a little more than twice as wide as long, obliquely narrowed at apex and base, slightly sinuate at middle, disc moderately convex, a vague depression of the median line; surface somewhat irregular, coarsely and closely punctured, transversely strigose near the sides; elytra wider than the thorax, slightly wider behind the middle, disc feebly convex, the first and fourth costæ slightly elevated near the apex, basal depression deep, the humeral slight, a large shallow fovea one-third from base on the line of the second costa, frequently another less distinct one-third from apex, surface rather coarsely and roughly punctured; body beneath moderately coarsely, but not densely punctured, the ventral segments without lateral callosities, the posterior angles not prominent, the last ventral with serrulate margin; anterior femur with a moderate and rather obtuse tooth, feebly serrate; prosternum not lobed in front. Length .24 – .32 inch; 6 – 8 mm. (Fig. 66.)

Male.—Prosternum flat, densely punctured; anterior tibiæ (70) arcuate, slightly dilated at apex, sinuate above the dilatation; middle tibia arcuate, very obliquely grooved, posterior tibia straight; last ventral segment (68) semi-circularly emarginate; last dorsal coarsely punctate, triangularly notched at apex.

Female.—Prosternum very coarsely punctate; anterior tibia slightly arcuate, the middle less so, the posterior straight; last dorsal (69) longer than in the male, a very slight notch at tip; last dorsal coarsely punctured, the apex entire.

This species has heretofore been placed among those in which the last ventral segment has an entire border, but in all the specimens examined it is distinctly serrulate, its place is therefore in the present series. The only species at all closely resembling it is *viridicyanea*, which has other sexual characters.

New England States and Canada, extending as far south as North Carolina.

15. **C. dolata** n. sp.—Form rather broad, as depressed as in *dentipes*, color piceous or nearly black, with faint bronze lustre, beneath cupreous; antennæ cupreous, gradually more slender to the tip, the third joint a little longer than the next two; front (♀) cupreous, coarsely and closely punctate, with two callosities at middle; clypeus (72) with a triangularly oval emargination at middle on each side arcuate; thorax twice as wide as long, sides strongly arcuate near the front angles then feebly arcuately narrowing to base; disc feebly convex not sulcate at middle, a moderately deep crescentic depression each side, an oblique depression near the apex, a feebly elevated ridge near the sides, surface very densely, rather coarsely punctate, the punctures slightly transversely confluent; elytra wider than the thorax, rapidly narrowed at apical third, the margin serrulate, the apices obtuse; disc with the first costa entire, the second and third interrupted and transversely confluent into large, smooth, elevated spaces, the fourth costa fine and submarginal, the intervals very densely punctured and opaque; body beneath cupreous, moderately closely punctate; prosternum not lobed in front, coarsely and closely punctate ♀; last ventral segment with serrulate margin; anterior femur with moderately strong, serrulate tooth. Length .46 inch; 11.5 mm. (Fig. 71.)

Male.—Unknown.

Female.—Anterior and middle tibiæ feebly arcuate, the posterior straight; last ventral segment (73) very feebly emarginate at apex; last dorsal sparsely punctate, acutely notched at apex.

Not having the male of this species its position in a tabular arrangement is somewhat uncertain, but the absence of prosternal lobe restricts its position between those in which the male have a tibial tooth or those with an apical dilatation. The form of the thorax, the emargination of the clypeus and the peculiar elytral sculpture will make it recognizable. The contrast on the elytra between the elevated smooth spaces and the densely punctured intervals is very striking.

Occurs in California, Nevada and Oregon, and is thus far rare.

16. **C. dentipes** Germ.—Form moderately elongate, depressed, color dark bronze, either brownish or piceous, very feebly shining; antennæ more slender externally, joint three nearly as long as the next two, joints four to eleven in great part testaceous; front flat and densely punctured, without distinct callosities ♂, or slightly convex, irregularly, coarsely punctured, with more or less distinct callosities ♀; clypeus (76) rather broadly, triangularly notched at middle, on each side rounded; thorax nearly twice as wide as long, broadest one-third from apex, the sides posteriorly slightly sinuate and gradually narrowed to base; disc moderately convex, a broad median sulcus wider in front, limited on either side by a more elevated smoother space, between which and the margin the surface is irregular; surface densely punctate and at sides confluent; elytra wider than the thorax, nearly parallel, obliquely narrowed at apical third, the margin feebly serrate, the apices separately obtuse; disc rather flat, the first costa distinct at apical half terminating in front in a vague, smooth space, the other costæ replaced by broad smoother spaces of irregular shape, the surface between very densely punctured, the basal fovea moderate; body beneath cupreous,

coarsely not closely punctate; prosternum (98) not lobed in front; anterior femur with a rather strong but obtuse tooth, serrate on its distal edge; last ventral segment with serrulate border. Length .40 – .64 inch; 10 – 16 mm. (Fig. 75.)

Male.—Prosternum very sparsely punctate, more densely and finely along the anterior border; anterior (79) and middle tibiæ arcuate and slightly dilated near the apex, the posterior very feebly arcuate; last ventral segment (77) broadly, nearly semi-circularly emarginate: last dorsal coarsely not densely punctate, emarginate at apex.

Female.—Prosternum as in the *male;* anterior and middle tibiæ feebly arcuate, the posterior straight; last ventral (78) longer than in the male, a feeble emargination at apex; last dorsal coarsely punctate at apex and with a small emargination.

Notwithstanding the wide distribution of this species it shows so very little variation except in size and surface color, that there will be no trouble in recognizing it. It is remarkable in having the outer joints of the antennæ yellowish testaceous in both sexes, a similar structure will be observed in the male of *prolongata.* The anterior and middle tibiæ of the male are almost exactly alike, a condition very unusual in the genus. Superficially the sculpture is somewhat like *floricola.*

Occurs in Canada and all the States east of the Mississippi and from Missouri westward to Nevada and Oregon. I have never had specimens from Texas, Arizona, New Mexico or California.

17. **C. ludificata** n. sp.—Form moderately elongate, very little convex, piceous or nearly black with the densely punctured spaces cupreous, body beneath dark bronze; antennæ (96) bronze, joints four to eleven serrate and equally broad, third as long as the next two; front very slightly convex, coarsely punctate, with more elevated tubercles; clypeus (81) very broadly triangularly emarginate, on each side slightly arcuate; thorax nearly twice as wide as long, the sides in front and posteriorly oblique, at middle slightly sinuate; disc moderately convex, a rather deep, median, densely punctured sulcus limited each side by an irregular costa, the surface thence to the sides coarsely and confluently punctured and with two smoother tubercles; elytra a little wider than the thorax, parallel, narrower at apical third, the margin serrulate, the apices obtuse; disc with the usual four costæ, the first nearly entire and straight the others interrupted and irregular, the intervals with alternating smooth and densely punctured spaces, the latter cupreous; body beneath very shining, sparsely punctate, dark bronze, sometimes slightly greenish at middle; prosternum truncate in front, coarsely punctate in both sexes, but smoother at middle in the female; last ventral segment with serrulate margins; anterior femur strongly toothed, the tooth serrulate on its outer edge. Length .40 – .48 inch; 10 – 12 mm. (Fig. 80.)

Male.—Anterior tibiæ (84) slightly arcuate, an obtuse dilatation at tip, an oblique groove above the dilatation extending along the front of the tibia in front of the dilatation; middle tibia feebly arcuate and slightly thickened below the middle; posterior tibia straight; last ventral segment (82) semi-circularly emarginate, a vague median depression; last dorsal coarsely punctate, emarginate at tip.

Female.—The tibiæ nearly straight, the anterior not dilated; last ventral (83) longer than in the male and with a small semi-circular notch; last dorsal coarsely punctate, feebly emarginate.

This species is one of a small group in which the markings are very similar, and consequently difficult to distinguish, except by other characters, principally sexual. The present species is notable in having the joints of the antennæ from the fourth to the tenth of equal width, the usual form is more slender externally. The male is peculiar in not having the prosternum very differently sculptured from the female, the usual punctuation is denser and finer.

Occurs not uncommonly in Colorado. I have seen others in the cabinet of Mr. Ulke from New Mexico, Arizona and California.

18. **C. scabripennis** Lap. et Gory.—Form of *femorata*, a little more acute posteriorly, color brassy or slightly cupreous; antennæ more slender externally, greenish blue ♂ or subcupreous ♀, third joint as long as the next two; front rather flat, densely punctate and green ♂, or slightly convex, more coarsely punctate and more or less cupreous ♀, callosities in both sexes; clypeus (86) very broadly not deeply triangularly emarginate at middle, on each side rounded; thorax twice as wide as long, narrowed at apex and base, sides at middle nearly parallel, disc moderately convex, a vague median channel densely punctured, wider in front, limited each side by a slightly elevated smooth space, between which and the sides the surface is irregular, very coarsely and confluently punctate, forming transverse plicæ; elytra wider than the thorax, parallel, narrowed at apical third, the margin serrulate the apices separately obtuse; disc slightly convex, the four costæ distinct, but more or less interrupted and with anastomozing lines, the surface densely, moderately, finely punctured, the basal fovea rather feeble; body beneath coarsely not densely punctate, the metasternum more densely and finely; prosternum not lobed in front; anterior femur with a moderately strong tooth crenulate on its distal margin; last ventral segment with serrulate margin. Length .34 – .42 inch; 8.5 – 10.5 mm. (Fig. 85.)

Male.—Prosternum moderately, densely and rather coarsely punctate, sparsely pubescent; anterior tibia (89) arcuate, moderately dilated at apical fourth; middle tibia arcuate, slightly broader near the apex, the posterior arcuate; last ventral segment (87) semi-circularly emarginate; last dorsal coarsely punctate feebly emarginate at apex.

Female.—Prosternum coarsely and much more sparsely than in the male; anterior and middle tibiæ feebly arcuate, the posterior straight; last ventral (88) with a very small semi-circular emargination; last dorsal coarsely and densely punctate, the apex emarginate.

The color of the under surface may vary from æneo-cupreous to greenish. I have seen a specimen from the Museum of Comparative Zoology quite green above. From all the other species of the group which follow (with truncate prosternum) this must be distinguished

primarily by the male sexual characters; secondarily it will be observed that the thorax here is shorter and more abruptly narrowed at base.

Occurs in Canada, New York and the New England States.

19. **C. trinervia** Kby.—Form nearly that of *femorata*, subdepressed, piceous, with æneous surface lustre, the punctured spaces of the elytra cupreous, body beneath cupreous; antennæ bronzed, gradually more slender to tip, third joint as long as the next two; front green, rather flat ♂, cupreous, slightly convex ♀, coarsely and closely punctured, with two small callosities; clypeus (91) broadly triangularly emarginate at middle, the notch sometimes oval at bottom, on each side arcuate; thorax twice as wide as long, sides rather abruptly wider in front, then slightly convergent and near the hind angles abruptly narrowed, but less so than in front; disc moderately convex, a moderately deep median sulcus densely punctured, on each side an irregular elevation, near the sides usually with two tubercles placed obliquely, the surface otherwise densely and coarsely punctured; elytra parallel, narrowed at apical third, the margin serrulate, the apices obtuse; disc subdepressed, with three more or less interrupted costæ with intercurrent elevations, the fourth costa close to the margin and inconspicuous; intervals between the costæ with alternating, densely punctured, and smoother spaces; body beneath sparsely punctate; prosternum not lobed in front; anterior femur with a broad but obtuse tooth, feebly serrate on its outer edge; last ventral segment with the margin serrulate. Length .36–.56 inch; 9–14 mm. (Figs. 90 and 95.)

Male.—Prosternum very densely punctured and finely pubescent; anterior tibia (94) arcuate, rather abruptly dilated at tip, the dilatation being a lamina arising from the posterior side of the tibia; middle tibia less arcuate, gradually broader to tip, the posterior tibia straight; last ventral segment (92) broadly semi-circularly emarginate, the last dorsal sparsely punctate with a triangular emargination.

Female.—Prosternum coarsely, sparsely punctate; anterior tibia slightly arcuate, gradually wider to tip, the middle less arcuate, not thicker, the posterior straight; last ventral (93) longer than in the male and with a small semi-circular emargination; last dorsal more punctate than in the male, a vague median sulcus and a small apical notch.

As is usual in a species with wide distribution the facies is extremely variable. This results from the greater or less prominence of the costæ and their extent as well as from the variable punctuation. From the aggregate, which has heretofore passed as *trinervia* in our cabinets, I have separated a number of species—some of which follow immediately—others belong to the series with the prosternum feebly lobed in front. These differ in their sexual characters in addition to the presence of the lobe. There remains, notwithstanding, the separation of these, an aggregate of variable facies with all intergrades of form and sculpture, which must by their sexual characters be considered *trinervia*. It will therefore be necessary in examining specimens to look closely to the sexual characters.

In the more northern specimens (from New England States, Canada and northward) the individuals are usually smaller and with the elytral costæ well marked often entire, the thorax is also often slightly narrowed from the post apical dilatation to the base, while in the southern and western forms the thorax is in shape quite like *femorata.* The color beneath is always brassy or cupreous, those mentioned by LeConte as entirely green beneath belong to *caurina* or *carinipennis.*

Occurs from the Hudson's Bay region through Canada and the New England States as far south as North Carolina; from the Middle States it extends westward to Colorado, New Mexico, thence to Utah, and to Alaska. I have never seen specimens from our Pacific States.

20. **C. carinipennis** Lec.—Form rather more elongate than *femorata,* piceous, the punctured spaces dark bronze or coppery, body beneath either æneous or sometimes entirely green; antennæ æneous in both sexes, gradually more slender to the tip, third joint as long as the next two; front rather flat ♂, densely punctured and somewhat greenish or slightly convex ♀ more coarsely punctured and æneous with feeble callosities; clypeus (101) rather broadly triangularly emarginate, on each side arcuate; thorax twice as wide as long, narrowed at apex and base, at middle nearly parallel; disc feebly convex, a distinct broad median channel densely punctured, limited each side with a more elevated smoother space, near the front angles a smooth space, the surface otherwise densely and coarsely punctured; elytra a little wider than the thorax, sides parallel, gradually narrowed at apical third, sides feebly serrulate, apices obtuse, disc feebly convex, the first costa nearly entire, the second and third distinct but interrupted by the punctured spaces, the fourth finely elevated, intervals with alternating densely punctured and smooth spaces conjointly of nearly equal areas, the basal fovea not deep; body beneath not densely punctured, the punctures somewhat elongated, prosternum not lobed in front; anterior femora with a moderate tooth very feebly serrulate on distal edge; last ventral segment with serrulate margin. Length .36 – .50 inch; 9 – 12.5 mm. (Fig. 100.)

Male.—Prosternum coarsely and moderately densely punctured, sparsely pubescent; anterior tibia (104) arcuate and with a deep sinuation one-third from the apex and a dilatation from the posterior border of the tibia from the emargination to the apex; middle tibia slightly arcuate and feebly dilated at tip, the posterior straight; last ventral segment (102) deeply semi-circularly emarginate, the last dorsal moderately punctate, feebly emarginate at apex.

Female.—Prosternum very coarsely punctate at the sides nearly smooth at middle; anterior and middle tibiæ very feebly arcuate, the posterior straight; last ventral segment (103) longer than in the male, the apex with a scarcely perceptible truncation, usually with a slightly elevated serrulate ridge in front of the apex, last dorsal coarsely sparsely punctate, a small triangular emargination at apex.

In sculpture this species occupies an exactly intermediate position between *ludificata* and *trinervia*, the sexual characters of the male apart from the last ventral are also intermediate. As already remarked, a strict regard for the sexual peculiarities is necessary to enable the species to be correctly separated.

Four female specimens in my cabinet from Nevada are entirely green beneath.

Occurs in Colorado and Nevada.

21. **C. caurina** n. sp.—Form nearly as in *femorata*, piceous, surface dark bronze, the punctured spaces usually cupreous, rarely greenish, body beneath æneous, sometimes slightly greenish along the middle; antennæ more slender to tip, greenish ♂ or cupreous ♀, third joint as long as the next two; front ♂ rather flat, greenish, densely punctate and with two callosities, or in ♀ more convex, more coarsely punctured and cupreous; clypeus (106) very broadly triangularly emarginate at middle, arcuate each side; thorax nearly twice as wide as long, sides at middle nearly parallel or slightly sinuate, at apex and base narrowed; disc feebly convex, median line broadly depressed and densely punctured, limited each side by an irregular but rather broad smoother space, usually two callosities toward the side, the surface otherwise densely and very coarsely punctured; elytra a little wider than the thorax, parallel, narrowed at apical third, the margin serrulate, the apices obtuse; disc subdepressed, the first costa distinct, sometimes nearly entire, the second and third more or less interrupted, the fourth existing as a finely elevated line, the intervals with densely punctured spaces of irregular shape, and broad smoother spaces with reticulating lines near the sides, basal fovea moderate; body beneath sparsely punctate; prosternum truncate in front; anterior femur with rather obtuse tooth, very feebly serrulate; last ventral segment with margin serrate. Length .34 – .44 inch; 8.5 – 11 mm. (Fig. 105.)

Male.—Prosternum densely punctured, sparsely pubescent; anterior tibia (109) arcuate, the inner edge with a rather deep notch one-third from the apex, and an obtuse dilatation narrowing again at the tip; middle tibia arcuate, rather abruptly dilated at apex, posterior tibia straight; last ventral (107) with deep, semi-circular emargination and vaguely depressed along the middle; last dorsal sparsely punctate, triangularly emarginate at tip.

Female.—Prosternum coarsely sparsely punctate; anterior tibia feebly arcuate, not dilated at tip, middle and posterior straight; last ventral (108) with a feeble emargination limited in front by a distinctly elevated transverse carina; last dorsal coarsely punctate, with a very feeble notch at middle.

This is one of the species separated from the series formerly thought to be varieties of *trinervia*. On comparison the present species differs from *trinervia* and *carinipennis* in having the costæ much less distinct and more interrupted, and the densely punctured spaces less numerous and the smooth spaces consequently much larger. The true differences must, however, be looked for in the sexual characters as figured.

Occurs in Colorado, Nevada and Oregon.

22. **C. californica** Lec.—Form very like *trinervia*, but rather more depressed and broader; color dark cupreo-æneous, sometimes slightly greenish, beneath rather brassy, sometimes slightly greenish; antennæ greenish ♂ or cupreous ♀, gradually more slender to the tip, the third joint as long as the next two; front flat, greenish, more densely punctured and slightly pubescent ♂, slightly convex, æneous, more coarsely punctured ♀ and with two indistinct callosities in both sexes; clypeus (111) with a broadly oval emargination at middle, arcuate each side; thorax twice as wide as long, narrowed at apex and base, the sides at middle often slightly sinuate; disc moderately convex, a median, broad, densely punctured sulcus limited each side by a broad elevated space which is smooth in front and very coarsely punctate posteriorly, two oblique callosities near the side, the surface otherwise densely and coarsely punctate; elytra a little wider than the thorax, parallel, narrowed at apical third, the margin feebly serrulate, the apices obtuse; disc with the first costa entire, but less elevated and broader near the base, the other costa interrupted, the third quite oblique, often joining the second at middle, the intervals between the costæ with alternating smooth and punctured spaces, the punctuation dense or sparse in places, the basal depressions rather feeble; body beneath coarsely but sparsely punctate, the ventral segments with distinct lateral callosities; prosternum (99) with a short, broad lobe in front; anterior femur with a moderate tooth, serrulate externally; last ventral segment serrulate at the sides and with a feeble submarginal elevation. Length .40–.76 inch; 10–19 mm. (Fig. 110.)

Male.—Prosternum densely punctate, sparsely pubescent; anterior tibia (114) flexed at apex and base and with a nearly semi-circular dilatation at apical fourth; middle tibia slightly arcuate and gradually broader at apical third, the posterior straight; last ventral segment (112) deeply semi-circularly emarginate, the last dorsal coarsely punctate, acutely notched at middle.

Female.—Prosternum more convex, more coarsely and not densely punctured; anterior tibia feebly arcuate, the middle and posterior straight; last ventral (113) subtruncate at apex, the angles acute, last dorsal cribrately punctured with a slight notch at tip.

This species seems to vary more in size than in any of those with the sculpture of the style of *trinervia*, and its smaller forms greatly resemble some of those, especially *caurina*, and for its separation the presence of the prosternal lobe, although feeble, and the sexual characters will suffice.

With this species I have united *vulcanica* Lec. as a smaller form.

Occurs in the northern part of California and in Nevada.

23. **C. Blanchardi** n. sp.—Form nearly as in *dentipes*, but less depressed, surface above very distinctly bronzed, beneath similar in color but more shining; antennæ ♂ greenish, ♀ bronzed, gradually more slender to the tip, third joint as long as the next two; front flat, green, densely punctured and pubescent ♂, or slightly convex, coarsely and less densely punctured ♀, with two callosities less strongly indicated ♀; clypeus (115) broadly but not deeply triangularly emarginate; thorax twice as wide as long, narrowed at apex and base, the sides almost regularly arcuate, disc feebly convex, a vague, median, densely punctured sulcus, with a slightly elevated, less punctured space each side, a vague, oblique,

less punctured space exterally, the surface otherwise densely and coarsely punctured; elytra a little wider than the thorax, gradually narrowed from the middle to the apex, the sides feebly serrate, the apices obtuse; disc subdepressed, the first costa sharply elevated from the apex to the middle, extending to the base in an irregular smooth space, the other costæ broadly interrupted forming irregular, narrow, smooth spaces, an obliquely placed densely punctured space at apical third between the first and third costæ, a smaller space near the middle between the ends of the second costa, the basal fovea shallow, the surface moderately coarsely and rather irregularly punctured; body beneath very shining, the punctures moderately coarse and not closely placed, ventral segments without distinct lateral callosities; prosternum distinctly lobed in front, the lobe short; anterior femur with moderate tooth, serrulate on its distal edge; last ventral segment with serrulate margin, and slightly elevated submarginal ridge. Length .40 – .50 inch; 10 – 12.5 mm. (Fig. 114.)

Male.—Prosternum densely punctured and finely pubescent; anterior tibia (119) arcuate, sinuate internally one-third from tip and from that dilated to the apex; middle tibia arcuate and gradually broader near the tip, the posterior very slightly arcuate; last ventral segment (117) semi-circularly emarginate; last dorsal coarsely punctured at apex and sides, the tip slightly emarginate.

Female.—Prosternum coarsely not densely punctate, scarcely pubescent; anterior and middle tibiæ arcuate, the latter less so, not broader at tip, posterior tibia straight; last ventral (118) longer than in the male, a very narrow but moderately deep notched at apex; last dorsal cribrately punctured, entire at apex.

It is remarkable that a species from a locality from which this comes should have remained so long unseparated, it having doubtless been mixed with *dentipes* as a smoother and smaller variety. To the acute observation of Mr. Fred. Blanchard we are indebted for its recognition, and by him my attention was first directed to the variation of the form of the prosternum in this genus. I take great pleasure in making his name the specific appellation of this insect as an evidence of my appreciation of his careful study as well as of his many kindnesses.

Occurs in Massachusetts (Tyngsboro'), District of Columbia and Lake Superior region.

24. **C. quadrilineata** Lec.—Form rather broad, depressed, piceous, the punctured spaces with dark bronze lustre, the elevated spaces alone shining, beneath coppery bronze; antennæ dark bronze ♀ or greenish ♂ slightly more slender to tip, third joint a little longer than the next two; front very slightly convex, coppery bronze in both sexes, more densely punctured in the male, the occipital carina bifurcating on the front and with two small tubercles ♂ or with the sculpture coarser and more confused ♀; clypeus (121) with an oval emargination at middle, rounded each side; thorax twice as wide as long, narrowed at apex and base, widest slightly behind the middle, the sides at middle slightly sinuate; disc moderately convex, a deep, median, densely punctured sulcus, on each side a broad, smooth, slightly elevated space, a narrower, sinuous, elevated space nearer the side, the surface otherwise coarsely and densely punctured;

elytra a little wider than the thorax, sides parallel at base, narrowed at apical two-fifths, the margin feebly serrulate, the apices obtuse; disc feebly convex, basal fovea rather deep, the first costa elevated from apex nearly to middle, then expanding in a smooth space; the second costa slightly elevated near apex, then expanding in a wide, smooth space, again narrowing, but becoming somewhat wider near the base; third costa indicated by an oblique, smooth line, the fourth scarcely at all indicated; the intervals between the costæ and smooth spaces very densely and finely punctured, except a space at and behind the humeral umbone; body beneath coarsely not closely punctate; prosternum very distinctly lobed in front; ventral segments with feebly indicated, smooth, lateral spaces, the margin of the last segment serrulate; anterior femur with an acute tooth, serrulate on its distal edge. Length .46 – .56 inch; 11.5 – 14 mm. (Fig. 120.)

Male.—Prosternum densely punctured with a smooth elevated median line, sparsely pubescent; anterior tibia (124) slightly arcuate, a slight subbilobed dilatation extending one-third from the tip; middle tibia slightly arcuate, thickened at apex, the posterior straight; last ventral segment (122) semi-circularly emarginate at apex, vaguely concave at middle; last dorsal coarsely punctate, subtruncate at apex.

Female.—Prosternum with very coarse punctures, not closely placed, median smooth space distinct; anterior tibia slightly arcuate, the middle and posterior nearly straight; last ventral segment (123) with a slight triangular notch.

The extent of the smooth spaces formed by the dilatation of the costæ is variable. The aspect of the species is peculiar, and totally unlike any other in our fauna.

I have seen three ♂ specimens in the cabinet of Dr. LeConte from New Mexico and one ♀ in my cabinet from Arizona.

25. **C. exesa** Lec.—Form rather broad, nearly as in *femorata*, but rather more acute posteriorly, color dark bronze, the punctured spaces somewhat cupreous, beneath brassy; antennæ cupreous, narrower to tip, third joint as long as the next two; front rather flat, coarsely, closely punctate, sparsely pubescent, the occipital carina bifurcating on the vertex, two small, round callosities at the middle of the front; clypeus (126) with a broadly oval emargination at middle, arcuate each side; thorax nearly twice as wide as long, narrower at base, the sides suddenly narrowing at apex and obliquely at base; disc moderately convex, a vague, median depression with a smooth line posteriorly, a large callosity each side of middle in front, another oblique nearer the side, two callosities on each side near the base, more or less confused, the surface otherwise coarsely and subconfluently punctured; elytra wider than the thorax, the humeri quite prominent, sides subparallel, obliquely narrowed at apical third, the margin serrate, the apices obtuse; disc moderately convex, the first costa elevated from apex to near the base expanding in a broad space, the other costæ interrupted and broadly expanded in smooth spaces, the fourth finely elevated, the basal fovea moderately deep, two discal densely punctured foveæ, the first one-third from apex, transverse, extending from the first to the fourth costa, a second in front of middle, larger, extending from the first to the third costa; the smoother spaces formed by the dilated and confluent second and third costæ are placed posteriorly to these foveæ and between them and with a larger smooth space near the base extending from the first to the third costa; the surface otherwise than men-

tioned is moderately, densely punctate; body beneath shining, sparsely punctate with large elongate punctures, the ventral segments with a large lateral callosity; prosternum distinctly lobed in front; anterior femur with an acute tooth serrulate on its outer edge; margin of last ventral segment serrulate. Length .36 – .50 inch; 9 – 12.5 mm. (Fig. 125.)

Male.—Prosternum flat, densely punctured and pubescent; anterior tibia (129) slightly arcuate and with a feeble dilatation at apical fourth; middle tibia arcuate, thicker at tip; posterior straight; last ventral segment (127) semi-circularly emarginate; last dorsal sparsely punctate, triangularly emarginate.

Female.—Prosternum convex, and smoother at middle, at sides coarsely punctured; tibiæ nearly straight; last ventral segment (128) broadly emarginate-truncate, carinate at basal half of the median line; last dorsal coarsely closely punctate and entire.

The elytral sculpture is actually that of the *trinervia* series with the confluence of the costæ more sharply defined and limited. In a series of about twenty specimens there is very little variation.

Occurs in Arizona.

26. **C. texana** Lec.—Form rather elongate with the general habitus of *dentipes*, but more convex, cupreo-æneous, the thorax usually more cupreous; antennæ gradually more slender to tip, greenish ♂, cupreous ♀, the third joint as long as the next two; front rather less convex, slightly greenish, more densely punctured and slightly pubescent ♂, more coarsely punctured ♀ two feeble callosities in both sexes; clypeus (131) feebly but broadly emarginate at middle, arcuate each side; thorax nearly twice as wide as long, narrowed at apex and base, widest one-third from apex, the sides at middle feebly sinuate; disc moderately convex, the median sulcus very feeble or wanting, on each side near the front a slight callosity, external to which is a depression, the surface sparsely punctate near the middle, densely and coarsely punctate at the sides; elytra a little wider than the thorax, gradually narrowing to apex, almost from the humeri, the sides feebly serrulate, the apices obtuse; the subsutural costa elevated at apex, depressed and forming a broad smooth space near the base, the second costa broadly interrupted and forming broad, smooth spaces, the third distinct at the middle of its extent, the surface rather coarsely and closely punctate, densely near the sides, the basal and humeral depressions moderately deep; body beneath rather coarsely punctured, rather densely at the sides, ventral segments with distinct callosities; prosternum with a well marked lobe in front; anterior femora with a moderate tooth, sinuous and serrulate on its distal margin; last ventral segment with a serrulate margin and a slightly elevated submarginal ridge. Length .34 – .48 inch; 8.5 – 12 mm. (Fig. 130.)

Male.—Prosternum moderately, densely punctate, especially in front, and with a smooth median space; anterior tibia (134) distinctly arcuate, sinuate on its inner edge one-third from apex, below which is a dilatation which narrows again at the tip; middle tibia slightly arcuate, the posterior straight; last ventral (132) deeply semi-circularly emarginate, the last dorsal coarsely punctate and at apex feebly notched.

Female. Prosternum coarsely and sparsely punctate, a smooth median space; anterior tibiæ slightly arcuate, the middle and posterior straight; last ventral (133) slightly truncate at tip; last dorsal coarsely punctate and entire.

This species is not likely to be confused with any others of its series; the prosternal lobe is here better marked than in any except *exesa*.

Occurs in Colorado, Texas, Arizona and California.

27. **C. mali** n. sp.—Form rather broad, subdepressed, color above variable from dark bronze to bright coppery red, beneath more or less cupreous; antennæ gradually more slender to tip, third joint as long as the next two, color greenish in ♂ or dark bronze ♀; front slightly convex in both sexes, very little more closely punctured in the male and with two median callosities and a chevron above; clypeus (136) broadly triangularly emarginate at middle; thorax twice as wide as long, narrowed at apex and base, widest slightly behind the middle; disc moderately convex, median line vaguely channeled and usually more densely punctate, the surface otherwise densely, coarsely punctured with usually an oblique callosity near the side; elytra a little wider than the thorax, parallel, narrowed at apical third, the margin serrulate, the apices obtuse; disc with the costæ rather feebly indicated and with badly defined densely punctured spaces, the first on the interval between the first and second costæ, the second at the end of the third costa (these often confluent) a third near the middle interrupting the second costa, basal fovea rather feeble, the surface otherwise rather coarsely not densely punctate; body beneath rather sparsely, coarsely punctate, the ventral segments with distinct lateral callosities; prosternum with a short lobe in front; anterior femora with a prominent tooth, serrulate on its distal edge; last ventral segment with serrulate border, but without submarginal ridge. Length .26 - .42 inch; 6.5 - 10.5 mm. (Fig. 135.)

Male.—Prosternum coarsely and closely punctate; anterior tibia (139) arcuate, abruptly dilated at apical fourth, the dilatation narrowing at tip; middle tibia arcuate, slightly thicker at tip, the posterior straight; last ventral segment (137) semi-circularly emarginate, the last dorsal sparsely punctate and slightly emarginate at tip.

Female.—Prosternum a little less closely punctate; anterior tibia slightly arcuate, the middle and posterior straight; last ventral (138) with a small, semicircular emargination, the last dorsal sparsely punctate and truncate.

The variation in surface color is from the darker shades seen usually in *femorata* to that with the entire surface quite red; beneath the difference is less marked.

Specimens from the Sacramento Valley were sent me by Mr. L. E. Ricksecker as infecting apple trees, others collected in Owen's Valley could not possibly have had that habit.

Occurs in California, Nevada, Utah and Colorado.

28. **C. pusilla** Lap. et Gory.—Form nearly as in the small specimens of *femorata*, dark coppery bronze, slightly shining; antennæ gradually more slender to the tip, bronzed in both sexes, third joint as long as the next two; front slightly more convex in the female, punctuation rather coarse, a little denser in the male, two small middle callosities in both sexes; clypeus (141) with a small but broad emargination at middle, truncate each side; thorax twice as wide as long, narrowed at apex and base, but more abruptly in front, the sides at middle

nearly straight, disc feebly convex, a vague median depression and others laterally, surface coarsely, densely and equally punctured; elytra a little wider than the thorax, parallel, narrowed at apical third, the margins serrulate, the apices obtuse; disc feebly convex, the three costæ very feebly indicated, the second and third interrupted by vague oblique foveæ, the surface rather coarsely, but closely punctured; body beneath more shining than above, the punctures moderately closely placed, the ventral segments without lateral callosities; prosternum distinctly lobed in front, the lobe short; last ventral segment with serrulate margin, but without submarginal elevated line; anterior femur with moderately strong, serrulate tooth. Length .22 – .28 inch; 5.5 – 7 mm. (Fig. 140.)

Male.—Prosternum moderately, coarsely and closely punctate, sparsely pubescent; anterior tibiæ (144) arcuate, with a small semi-circular dilatation before the apex; middle tibiæ slightly arcuate, the posterior straight; last ventral (142) with a small semi-circular emargination, the last dorsal sparsely coarsely punctate, feebly emarginate at tip.

Female.—Prosternum more coarsely, less closely punctate, not hairy; anterior tibia scarcely arcuate, the middle and posterior straight; last ventral (143) longer than in the male, with a very slight emargination, the last dorsal coarsely punctate, the apex entire.

This is a small and inconspicuous species quite constant in its color, but variable in the distinctness of its markings as the costæ may almost entirely disappear and the foveæ become very vague. The basal depression of the elytra usually remains quite distinct.

Occurs from Massachusetts to Wisconsin and North Carolina; does not seem to be rare.

29. **C. nixa** n. sp.—Form moderately elongate, subdepressed, dark cupreous, subopaque, beneath more shining and paler; antennæ dark bronze, gradually more slender to the tip, third joint as long as the next two; front ♂ feebly convex, densely punctured slightly hairy; clypeus (146) with a shallow, but very broad emargination at middle; thorax twice as wide as long, slightly narrowed at apex and base, sides at middle slightly arcuate; disc slightly convex, a vague median depression and a slightly impressed line posteriorly, a slight post-apical depression and smoother near the sides; surface very coarsely and closely punctate, subconfluent near the sides; elytra a little wider than the thorax, parallel, narrowed at apical third, the margin serrulate, the apex obtuse; disc obsoletely costate, the first costa alone elevated from the apex to the middle, the basal and humeral foveæ moderately deep, three very vague discal foveæ, one at apical third between the first and second costæ, a second more anterior at the end of the third costa, the third interrupting the second costa a little in front of middle, surface coarsely punctured, sparsely on the disc, densely at the sides; body beneath coarsely, sparsely punctate, the ventral segments without callosity; prosternum very distinctly lobed in front; anterior femur with a rather small serrulate tooth at middle; last ventral segment distinctly serrulate along its margin. Length .32 – .40 inch; 8 – 10 mm. (Fig. 145.)

Male.—Prosternum coarsely, densely punctate, sparsely pubescent; anterior tibiæ (149) arcuate and with a deep oblique sinuation one-fourth from the tip, below which is a moderate dilatation; middle tibia slightly arcuate, the posterior slightly sinuous; last ventral segment (147) deeply semi-circularly emarginate; last dorsal coarsely punctate and rather deeply triangularly emarginate.

Female.—Prosternum coarsely not densely punctate; anterior and middle tibiæ slightly arcuate, the posterior straight; last ventral segment (148) slightly emarginate and with a slight transverse ante-apical lamina; last dorsal coarsely, closely punctate, the apex slightly emarginate.

An inconspicuous species resembling a diminutive *dentipes*, but differing in its style of ornamentation as well as by the sexual characters.

Occurs in western Nevada, and at Calaveras, Cal.

Group V.

The following species form a small and apparently natural group characterized by a subcylindrical, parallel form, with the elytra very little wider than the thorax. The upper surface is usually slightly pubescent with grayish hair, but this with careless handling is apt to be lost. The thorax is convex, and while but one exhibits a faint trace of median depression several have callosities. The punctuation is dense and rather coarse. In some respects this group seems to connect the first and second groups, but the species appear, on the whole, to be degraded forms of the series with the last ventral segment serrate, and to represent, or at least parallel the group placed at the end of the other series.

The prosternum is lobed in all the species, the lobe short and indistinct in the bronze species, very prominent in the blue species.

The following table will assist in the determination of the species:

Anterior femur distinctly toothed.
  Color dark bronze or greenish.
    Thorax with distinct callosities.
      Elytral costæ distinct; sides of thorax regularly arcuate.. .....30. **deleta.**
      Elytral costæ replaced by smooth lines; sides of thorax narrowed at apex and base.....31. **deserta.**
    Thorax without callosities, the punctuation coarse, but not crowded; sides regularly arcuate; costæ of elytra distinct.....32. **lixa.**
  Color bright blue, green or violaceous.
    Thorax with faint median depression (in the larger specimens), sides narrowed at base; elytral sculpture very feeble.....33. **cyanella.**
Anterior femur without tooth.
  Color blue-green.
    Surface densely punctulate; sides of thorax regularly arcuate; apex of abdomen exposed .....34. **humilis.**

Of the five species of this group three occur in California (two Southern, one from the North), the other two are from Arizona.

30. **C. deleta** Lec.—Moderately elongate, subcylindrical, dark bronze, sometimes brownish or greenish, sparsely pubescent; antennæ rather short, gradually

more slender to tip, third joint not quite as long as the next two, greenish in ♂, bronze in ♀; head slightly convex and with two frontal tubercles in both sexes, green and more densely punctate ♂, bronze and more coarsely punctate ♀; clypeus (151) with an oval emargination at middle; thorax twice as wide as long, sides regularly arcuate, disc convex, very coarsely and closely punctate and with four callosities transversely placed (the outer indistinct) and a median posterior smooth line; elytra scarcely wider than the thorax, parallel, narrowed at apical third, the margin very finely serrulate, the apices obtuse; disc convex, the first costa distinctly elevated from apex to middle, the outer costæ indistinct and interrupted; basal fovea distinct, the discal foveæ scarcely visible; body beneath more shining than above, not densely punctate, sparsely pubescent, the ventral segments with indistinct lateral callosities; last ventral segment with serrulate border; prosternum with a small lobe in front; anterior femur with a very acute tooth, serrulate on its outer edge. Length .28 – .36 inch; 7 – 9 mm. (Fig. 150.)

Male.—Prosternum coarsely and closely punctate, sparsely pubescent; anterior tibia (154) feebly arcuate, stouter toward the tip, with a slight and short dilatation near the apex; middle tibia slightly arcuate, thickened at the extreme apex; posterior tibia straight; last ventral (152) nearly semi-circularly emarginate.

Female.—Prosternum coarsely not closely punctate; anterior tibia slightly arcuate, gradually stouter to the tip; middle and posterior tibiæ straight; last ventral segment (153) oval and entire at apex, a slight sinuation each side limited by the last serration of the margin; last dorsal coarsely and densely punctured and entire.

In one specimen before me the body beneath is entirely green. As a rule the punctures of the under side, particularly of the abdomen, are much coarser and more distinct than in *deserta*. While there is some little variation in sculpture, the first or subsutural costa remains distinct in its posterior half.

Occurs in California (Owen's Valley and northward) and Washington Territory.

31. **C. deserta** n. sp.—Subcylindrical, dark coppery bronze, feebly shining, sparsely pubescent; antennæ slightly greenish, gradually more slender to tip, the third joint as long as the next two; front slightly convex, rather shining, not densely punctured, an indistinct chevron above, sparsely pubescent and greenish ♂; clypeus (156) very broadly but not deeply emarginate; thorax nearly twice as wide as long, sides rounded at apex and base, disc convex, very coarsely and closely punctured with four callosities arranged in a transverse row in front of the middle and a smooth median line posteriorly; elytra scarcely wider than the thorax, parallel, narrower at apical third, the margin very feebly serrulate, the apices obtuse, disc convex, the costæ replaced by smoother lines, basal fovea deep, two indistinct discal foveæ, one on the second smooth line one-third from base, the second one-third from apex between the first and second smooth lines, surface rather coarsely and closely subgranulately punctured; body beneath more shining than above, very coarsely and closely punctate, the punctures of the abdomen much finer and submuricate; margin of last ventral segment distinctly serrulate; prosternum with a very short lobe in front; anterior femur with a small acute tooth, serrulate on its distal edge. Length .35 inch; 9 mm. (Fig. 155.)

Male.—Prosternum densely punctate, sparsely pubescent; anterior tibia (158) slightly arcuate, with a small semi-circular dilatation before the apex; middle and posterior tibiæ straight; last ventral segment (157) broadly arcuately truncate; last dorsal sparsely punctate, entire.

Of this species I have seen but three males. It resembles very closely and might readily be mistaken for *deleta*, which has, however, the first costa at least elevated near the apex. In *deserta* the clypeus is rather more broadly emarginate and the anterior tibia of the male otherwise formed.

Occurs in the Mojave Desert of California, also near San Diego.

32. **C. lixa** n. sp.—Form subcylindrical, moderately convex, dark bronze, moderately shining, sparsely pubescent; antennæ dark bronze, gradually more slender to the tip, the third joint but little longer than the second or fourth; front convex, coarsely and moderately closely punctured in both sexes and slightly pubescent; clypeus (160) broadly triangularly emarginate at middle, rounded on each side; twice as wide as long, base and apex equal, the sides regularly arcuate; disc convex, coarsely, deeply and rather closely punctate, more densely at the sides, often with a median smooth space posteriorly, but without distinct callosities; elytra scarcely wider than the thorax, parallel, narrowed at apical third, the margins finely serrulate, the apices obtuse; disc convex, the first costa distinctly elevated from the apex to middle or even more, and continued by a smooth line, the second and third indicated by smooth lines, basal fovea distinct, a faint, more densely punctured fovea one-third from apex external to the second costa, another in front of middle interrupting the second costa, surface otherwise relatively coarsely and rather closely punctate; body beneath more shining than above, the punctuation less coarse and moderately close along the side of the body and ventral segments, these with a feeble lateral umbone, the last segment with serrulate margin; anterior femur with a small, rather acute tooth, serrulate on its outer edge; prosternum scarcely lobed in front. Length .16 – .28 inch; 4 – 7 mm. (Fig. 159.)

Male.—Prosternum coarsely and moderately closely punctured, scarcely punctured near the anterior margin; anterior tibia (163) slightly arcuate and gradually thicker to tip and with a very faint dilatation at apex; middle tibia very slightly arcuate, the posterior straight; last ventral segment (161) nearly semicircularly emarginate, last dorsal coarsely sparsely punctate, slightly emarginate at apex.

Female.—Prosternum more coarsely and sparsely punctate, a median smooth space posteriorly; tibiæ nearly straight; last ventral (162) longer than in the male, the apex truncate, with distinct but not prominent angles; last dorsal coarsely, sparsely punctate, apex entire.

This species might be mistaken for a small form of *deleta*. It is, however, more cylindrical, the punctuation relatively coarser, and the thorax without callosities. The male sexual characters are not different, but the last ventral of the females is distinctly so.

Occurs in Texas and Arizona, taken rather abundantly by Morrison in the latter region.

33. **C. cyanella** n. sp.—Form subcylindrical, very slightly depressed, color bright blue or green, becoming violaceous on the elytra rarely, surface slightly pubescent, beneath greenish blue; antennæ greenish ♂ or piceous ♀, a little more slender to the tip, the third joint as long as the next two; front slightly convex in both sexes, more densely punctured in the male and with two small callosities, more coarsely punctured in the female, the callosities almost obliterated; clypeus (165) with a small oval emargination at middle, arcuate each side; thorax twice as wide as long, or even a little wider, arcuately narrowed in front, obliquely at base, disc convex, with a vague median depression in the larger specimens, which is wanting in the smaller ones, a distinct rounded fovea near the side, surface coarsely, deeply and moderately densely punctured, and in the largest specimens transversely confluent near the sides; elytra a little wider than the thorax, parallel, apical third arcuately narrowed, the margin scarcely serrulate, the apices obtuse, disc feebly convex, the costæ faintly indicated only in the larger specimens and then by smoother lines, the basal fovea not deep, the surface somewhat irregular, and occasionally with faint traces, the first quite small, one-third from apex and near the fourth costa, the second larger on the second costa in front of middle, the surface rather coarsely and not densely punctured, except near the base; body beneath rather sparsely punctate, the ventral segments without lateral callosities, the last segment with serrulate margin; prosternum very distinctly lobed in front; anterior femur with a moderately large tooth with but few serrations externally. Length .20 - .42 inch; 5 - 10.5 mm. (Fig. 164.)

Male.—Prosternum flat, very densely punctate, sparsely pubescent; anterior tibia (168) feebly arcuate, a short and narrow dilatation at tip; middle tibia slightly arcuate, a little thicker at tip, posterior tibia straight; last ventral segment (166) with a shallow semi-circular emargination; last dorsal coarsely punctate and with a rather broad, triangular notch at tip.

Female.—Prosternum flat, more coarsely punctate than in the male; anterior tibia feebly arcuate, the middle and posterior straight; last ventral (167) a little longer than in the male, a barely perceptible notch at apex; last dorsal coarsely punctate and with a slight notch at tip.

The subcylindrical form, blue color and the well lobed prosternum make this species an easily recognized one. The larger specimens do not vary greatly from *deleta* in the elytral sculpture, except that it is more obliterated, while this is even lost as the specimens become smaller, so that the elytra have only the punctuation remaining. The color varies from green to blue and violet, as is usual in blue species. The largest specimen I have seen is in the collection of Mr. H. Edwards, and is that from which the figure was prepared.

Occurs in the mountain regions of northern California near Yreka and Mt. Shasta.

34. **C. humilis** n. sp.—Form subcylindrical, parallel, moderately robust, color bluish green, variable in the direction of the light, subopaque, beneath blue-black, with white pubescenee, femora bright æneous; antennæ rather stout, gradually more slender to tip, piceous, the third joint as long as the next two;

front convex, moderately densely punctured; clypeus (170) with a very broad shallow emargination, arcuate each side; thorax twice as wide as long, base wider, than apex, sides very regularly arcuate, disc convex, very densely but equally punctate; elytra very little wider than the thorax, parallel, arcuately narrowed at apical third, the margin serrulate, the apices very obtuse, exposing the tip of the abdomen; disc moderately convex and even, the basal fovea very faint, surface very densely and equally punctate, the punctures a little finer than on the thorax and with a tendency to form oblique strigæ near the sides; body beneath moderately, densely punctate, and clothed with short white recumbent pubescence, sides of abdomen more densely punctulate and pubescent, the margins of the segments on each side sutures two, three and four smooth; last ventral segment with serrulate margin; prosternum rather strongly lobed in front; anterior femur without trace of tooth. Length .22 inch; 5.5 mm. (Fig. 169.)

Male.—Unknown.

Female.—Prosternum flat, closely punctate; the tibiæ all straight; last ventral segment (171) sinuately truncate; last dorsal segment punctate, the tip emarginate.

This species is a diminutive in form of *atrifasciata*, and could have been placed next to it if the last ventral segment had not serrulate margins. I place it, however, among the subcylindrical species, admitting at the same time that it shows a marked relationship with *debilis* in the sculpture and pubescence of the under surface as well as with *atrifasciata* in its general form. It is remarkable in the absence of femoral tooth, and while the specimen is a female it is not probable that the male is otherwise, as I have not observed any differences in all the other species in the form or size of the femoral tooth between the sexes.

One specimen, Arizona.

Group VI.

The species of the small group here separated are of medium or rather large size. They agree in having the thorax widest anteriorly, the sides from the anterior third narrowed to base; the prosternum is not lobed in front, and in both sexes is nearly smooth along the middle; the last ventral segment has the margin devoid of serrulations, although in several the edge is interrupted; in the male the apex is usually very deeply, almost quadrangularly emarginate. The apices of the elytra are rather acute and more or less prolonged in a spine.

The following table will assist in recognizing the species:

Thorax not sulcate at middle, or with a feeble trace of a depression.
  Lateral margin of last ventral segment abruptly interrupted.....35. **aerea.**
  Lateral margin of last ventral entire.

Elytra with three golden foveæ on the disc; the second costa interrupted by the anterior fovea and not joining the fourth near the apex. 36. **gemmata.**

Elytra with two indistinct foveæ; the second costa continuous through the anterior fovea and at apex joining the fourth costa.....37. **Merkelii.**

Elytra with two discal cupreous foveæ; second costa interrupted by the anterior fovea and not joining the fourth at apex; disc of thorax with vague median depression.....38. **acutipennis.**

Thorax with a well marked median sulcus; elytral costæ interrupted; last ventral segment with slightly interrupted margin.....39. **libonoti.**

The species of this group, which are all from the extreme southwestern regions of our country, recall in a striking manner the species of the first group by their size, outline and many points in their sexual characters.

35. **C. ærea** Chev.—Form rather elongate, piceous, with feeble bronze surface lustre, beneath more brassy and shining, sometimes slightly cupreous; antennæ bronzed ♂ or piceous ♀, gradually more slender to the tip, the third joint a little longer than the next three; front nearly flat, æneous, densely punctured and finely pubescent ♂, more coarsely and irregularly punctured and with irregular smooth spaces ♀; clypeus (174) deeply triangularly emarginate at middle, arcuate each side; thorax nearly twice as wide as long, obliquely narrowed in front, the sides straight, nearly parallel or slightly convergent to base, the hind angles distinct; disc moderately convex, slightly depressed at middle, sometimes a vague depression at base opposite the middle of each elytron, and with irregular callosities near the sides in front; surface finely sparsely punctured at middle third, with a smooth median line, near the sides more coarsely and densely punctured; elytra a little wider than the thorax, gradually narrowed almost from the humeri, the margin feebly serrulate near the apex, the tips acute; disc moderately convex, the basal and humeral foveæ rather deep, three discal costæ, the first usually well defined from apex to middle, the others finer, more or less interrupted, connected by intervening smooth spaces, one moderately large, densely punctured discal fovea on the second carina one-third from base, usually surrounded by a smooth elevated border, intervals between the carinæ rather finely, not very densely punctured, the punctuation finer and sparser in the scutellar region; body beneath nearly smooth along the median line, except on the abdomen, where the punctures are coarse and sparse, sides of body more densely and finely punctured and slightly pubescent; ventral segments with feeble callosities and with the hind angles slightly prominent; last ventral segment with the margin not serrate, but with an interruption at the posterior third; prosternum slightly arcuate in front, but not truly lobed; anterior femur with a moderately large tooth not serrate. Length .68 – .86 inch; 17 – 22 mm. (Fig. 173.)

Male.—Prosternum with very few fine punctures at middle, a line of piliferous hairs along the sides and very coarse punctures at the sides in front; anterior tibia (177) feebly arcuate, slightly dilated at tip, a slight tooth at the beginning of the dilatation, above which is a distinct notch; middle tibia slightly arcuate, the posterior straight; last ventral (175) with a short, flat carina at middle in front, the apex very deeply emarginate, the angles prominent and sinuately truncate; last dorsal segment coarsely punctured and entire.

Female.—Prosternum as in the male; tibiæ are all nearly straight; last ventral segment (174) sinuately truncate with prominent angles, a broad obtuse carina extending from base nearly to apex.

This is one of the largest species in our fauna and may be at once known by the interrupted margin of the last ventral segment, the edge not being serrate. My first specimen was given me by Dr. C. A. Dohrn, of Stettin, since which others have been collected by Morrison in Arizona. On comparison with the Saunders collection now in the British Museum it bore the name *costifrons* Chev. The facies of the species is quite unlike our others, and it would not have been introduced in the present essay except from the specimens collected by Morrison.

Being somewhat in doubt, however, regarding the status of *costifrons* I communicated with my friend Sallé, who, with his usual kindness, sends me a specimen of *C. œrea* Chev. (*mexicana* Dej.) with the following remarks: "The *C. costifrons* Chev. is very near to it (*œrea*), but the elytral impressions are more round and brilliant golden." From my own comparisons I am satisfied that the characters referred to by Sallé are purely varietal, and that *costifrons* cannot be considered a distinct species.

Occurs in Arizona, extending as far south as Oaxaca, Mexico.

36. **C. gemmata** Lec.—Form moderately robust, subdepressed, broader in the female, color above purple or violet, beneath bright green; antennæ (97) greenish ♂ or purplish ♀, serrate from the fourth joint and slightly more slender to tip, the third joint as long as the next three; front dissimilar in the sexes; clypeus (179) with a very broad, but shallow emargination at middle; thorax twice as wide as long, sides narrowed in front, widest one-third from apex, thence obliquely narrowing to the hind angles which are nearly rectangular; disc moderately convex, slightly irregular, a vague median depression in front, a deeper post-apical oblique impression; surface coarsely punctate, rather sparsely at middle densely and confluently at the sides; elytra wider than the thorax, parallel, obliquely narrowing at apical third, the margin serrate, the apices acute, slightly spiniform; the first costa sharply elevated from apex to middle, the second a little shorter and not joining the first at apex, the third short and scarcely evident, the fourth extending from the apex sharply elevated one-third toward the base; the basal fovea deep and with a golden spot, the first discal fovea a little in front of middle and interrupting the second costa, second one-third from apex between the second and fourth costæ, the third spot nearer the apex between the first and second costæ; the surface very equally, moderately, densely and coarsely punctured; body beneath very coarsely, sparsely punctate, the sides of the ventral segments with a distinct callosity; posterior angles of the ventral segments prominent, the margin of the last ventral not serrate, but with a serrate submarginal ridge; prosternum not lobed in front, the surface in both sexes nearly smooth, with few fine scattered punctures; tooth of anterior femur relatively small but acute, the distal edge indistinctly crenulate. Length .76 – .88 inch; 19 – 22 mm. (Fig. 178.)

Male.—Front densely punctured, surface without callosities, except a slight arcuate elevation on the vertex; anterior tibia (182) slightly arcuate, slightly dilated at apex and very finely serrulate within; middle tibia arcuate, inner margin serrulate; posterior tibia straight; last ventral segment (180) broadly concave at middle, the apex deeply quadrangularly emarginate.

Female.—Front very irregular and very coarsely punctate, a short median carina on each side vaguely concave, vertex with feeble arcuate carina; anterior tibia very slightly arcuate, the middle and posterior straight; last ventral segment (181) longer than in the male, sides slightly sinuate near the tip, the apex sinuously truncate, the angles acute, the median line rather strongly carinate.

This species is one of the largest in our fauna and is conspicuous by the purplish color of its surface, the well marked golden spots and the very regular and even surface sculpture.

Occurs in Arizona, probably near the southern boundary.

37. **C. Merkelii** n. sp.—Form rather robust, piceous; surface faintly bronzed, feebly shining, beneath æneous or slightly cupreous; antennæ æneous, more slender to tip, the third joint rather longer than the next three; front rather flat, very densely punctured, finely pubescent and cupreous in the male, slightly convex, coarsely punctured, a well developed, transverse, biarcuate carina above the antennæ, and another above the middle of the front in the female; clypeus (184) broadly emarginate at middle, arcuate each side; thorax twice as wide as long, widest one-third from apex, sides abruptly broader in front then oblique to the base; disc moderately convex, with a post-apical depression, another near the front angles, another at base, surface finely punctured at middle, more densely and subconfluently near the sides; elytra wider than the thorax, parallel, arcuately narrowed at apical third, the margins serrate, the apices acuminate; disc moderately convex, with the costæ all distinctly elevated, the first extending in front of middle and becoming a smooth line prolonged into the basal fovea, the second at apex joining the fourth, extending forward without interruption to the outer side of the basal fovea, third sometimes arising from the second one-third from apex, extending forward interrupted by a fovea and gradually passing under the humeri, fourth less elevated than the others and close to the margin; basal fovea moderately deep, humeral depression distinct; a cordate fovea, densely punctured near the tip of the third costa, another in front of middle, indistinctly defined, divided by the second costa; surface between the costæ moderately densely punctate, coarser and sparser in the scutellar region; body beneath rather coarsely punctate, more closely at the sides of the abdomen; posterior angles of ventral segments conspicuously prominent, the sides with feeble callosity; margin of last ventral segment not serrate, slightly sinuate at the apical third, a distinctly elevated serrate ridge rather distant from the margin; anterior femur with a relatively feeble notch, not serrate; prosternum truncate in front. Length .60 - .66 inch; 15 - 16.5 mm. (Fig. 183.)

Male.—Prosternum slightly convex at middle, with a few coarse punctures, the anterior angles more densely punctured and slightly pubescent; anterior tibiæ (187) slightly arcuate, not dilated at tip, the inner edge multidenticulate, the middle tibia similar; posterior tibia straight; last ventral segment (185) broadly sulcate at middle, deeply emarginate at apex, the angles prolonged and obliquely truncate; last dorsal coarsely, sparsely punctate, entire.

Female.—Prosternum as in the male, but less punctured at the front angles; anterior tibia slightly arcuate, the inner edge not serrulate; middle tibia arcuate and finely serrulate within, the posterior straight; last ventral (186) strongly carinate at middle, the apex truncate with acute angles; last dorsal more coarsely and densely punctured than in the male, entire.

This species has the same general characters as *gemmata* and *acutipennis*, resembling the former, especially in form, but is a little more robust and with fewer and less distinct elytral spots, the surface color being also different. From the latter it differs in its stouter and more robust form and the absence of median depression of the thorax.

For specimens I am indebted to the kindness of Mr. Aug. Merkel, of New York, to whom I take great pleasure in dedicating it.

Occurs in Texas and Arizona.

38. **C. acutipennis** Chev.—Form moderately elongate, dark bronze, feebly shining; antennæ gradually more slender to tip, the third joint a little longer than the next three, joints four to eleven testaceous ♂ or brownish ♀; front rather flat, densely, coarsely punctured, a little more irregular in female, an elevated chevron near the top; clypeus (189) very broadly triangularly emarginate at middle, on each side arcuate; thorax nearly twice as wide as long, widest one-third from apex, the sides in front rather suddenly narrowed, posteriorly straight and gradually narrowed; disc moderately convex, a very vague median depression, a deeper oblique post-apical depression and another parallel with but distant from the lateral margin; surface sparsely punctate at middle, more densely near the base, coarsely confluently at the sides and a small, oval, finely and densely punctured space in front; elytra a little wider than the thorax, parallel, obliquely narrowed at apical third, the margin scarcely serrate, the apices separately acute; disc feebly convex, the first two costæ long, the third short and median, the fourth visible at apical third, two distinct brassy foveæ, one transverse one-third from apex between the second and fourth costæ, a second a little in front of middle between the first and third, dividing the second costa and a very small spot a little more anterior between the first and second costæ, the surface moderately coarsely punctured, more densely near the apex, basal fovea rather deep; body beneath æneous, greenish in front; abdomen coarsely not closely punctate, the lateral callosities of the ventral segments feeble, the hind angles slightly prominent; last ventral with entire lateral margin; prosternum not lobed in front; anterior femur with a relatively small tooth, not denticulate. Length .44 – .70 inch; 11 – 17.5 mm. (Fig. 188.)

Male.—Prosternum smooth at middle, moderately densely punctured at the sides and slightly pubescent; anterior tibiæ (192) slightly arcuate; feebly dilated at tip, the inner edge finely serrate near the tip; middle tibiæ slightly arcuate and serrulate within; posterior tibiæ straight; last ventral segment (190) deeply quadrangularly emarginate, along the middle broadly sulcate.

Female.—Prosternum almost entirely impunctate; anterior tibiæ feebly arcuate, the middle and posterior straight; last ventral (191) longer than in the male, the sides slightly sinuate, the apex truncate with prominent angles, the median line rather strongly carinate.

In both sexes the last ventral segment has near the margin a feebly elevated serrate ridge. The species has the appearance of a gigantic *sexsignata*. This species, *Merkelii* and *gemmata*, form a very natural group with the costæ well defined; they differ in the number, position and distinctness of the foveæ.

Occurs in Texas, Arizona and Mexico.

39. **C. libonoti** n. sp.—Form moderately elongate, gradually attenuate posteriorly, piceous slightly bronzed, beneath cupreous; antennæ more slender to tip, third joint as long as the next two, æneous ♂, piceous ♀; front rather flat in male, not densely punctured, subopaque, æneous and without distinct callosities, more convex and shining, more coarsely punctured, bronzed, and with two feeble chevrons ♀; clypeus (184) broadly triangularly emarginate at middle, arcuate each side; thorax nearly twice as wide as long, widest slightly behind the apical angles, sides abruptly wider in front, then straight and oblique to base; disc moderately convex, a deep median sulcus limited each side by an obtusely elevated carina, a distinct oblique callosity in front and a depression exterior to it; surface finely punctured in the sulcus, very coarsely and confluently otherwise; elytra wider than the thorax, the humeri rather prominent, sides parallel in front, narrowed at apical third, the margins serrate, the apices acuminate; disc moderately convex, with the usual costæ, the first distinctly elevated from the apex to the middle, the others interrupted and dilated in smooth spaces more or less confluent, the surface otherwise densely punctured, the basal fovea moderately deep, the humeral impression distinct; body beneath æneo-cupreous, shining, sparsely and finely punctate, the ventral segments without lateral callosities, the margin of the last ventral segment not serrate, but with a slight interruption one-third from the apex; prosternum truncate in front; anterior femur with a moderately large tooth, obsoletely serrulate on its distal edge. Length .32 - .48 inch; 8 - 12 mm. (Fig. 183.)

Male.—Prosternum nearly smooth at middle, a very few punctures, more densely punctured in front and at its angles; anterior tibia (187) slightly arcuate, without apical dilatation; middle and posterior tibiæ straight; last ventral segment (185) deeply semi-circularly emarginate; last dorsal coarsely punctured, subtruncate at apex.

Female.—Prosternum and tibiæ as in the male; last ventral (186) larger than in the male, the apex tridentate.

This species is peculiar among those with the elytra acuminate in having the disc of the thorax deeply grooved at middle. It is also remarkable in having practically no difference between the sexes in the prosternum and in the form of the tibiæ.

Collected in Arizona by Morrison.

Group VII.

The species of this group are all of small size, excepting *impressa* and *chalcophoroides*, and have in great part a feeble development of elytral sculpture. They agree in having the last ventral segment with entire margin and the apices of the elytra obtuse.

The following table will assist in the indentification of the species:

Eyes very nearly contiguous on the occiput; thorax subangulate at the sides. 40. **impressa.**

Eyes normally distant on the occiput.

Last ventral segment with submarginal, elevated, serrate ridge; third joint of antennæ long.

Species very large (21.5 mm.); thorax with callosities, abruptly narrowed in front; elytral sculpture recalling *Chalcophora*. 41. **chalcophoroides.**

Species smaller (7–8 mm.); thorax without callosities feebly narrowed in front; elytral sculpture feeble.....42. **analis.**

Last ventral segment without submarginal serrate ridge.

Elytra with costæ more or less distinct; disc of thorax uneven, sides at base usually obliquely narrowing.

Third joint of the antennæ as long as or longer than the next three.

Color above dark bronze; tooth of anterior femur serrulate, the tibia ♂ arcuate and serrulate.....43. **sexsignata.**

Color violaceous or cupreous; tooth of anterior femur not serrulate, the tibia ♂ not serrulate.....44. **azurea.**

Third joint of antennæ shorter than the next two; color dark bronze. 45. **æneola.**

Elytra without trace of costæ.

Thorax twice as wide as long.....46. **chrysoela.**

Thorax less than twice as wide as long.....47. **scitula.**

The species above enumerated belong to the Atlantic and central regions; none have as yet occurred on the Pacific slope.

40. **C. impressa** Fab.—Form rather broad, depressed, piceous, surface with faint bronze lustre, more evident on the thorax; antennæ piceous, three basal joints æneous, gradually more slender to the tip, the third joint as long as the next three; front rather flat in both sexes, more pubescent in the male, coarsely and densely punctured, a short sinuous carina above each antennal fovea, another more elevated at middle of front, above which in the female is a chevron; eyes very closely approximated on the occiput, especially in the males; clypeus (199) broadly triangularly emarginate at middle, oval each side; thorax more than twice as wide as long, subangulate at the sides, base slightly wider than apex, sides in front very oblique, then for a short distance less oblique, then arcuately narrowing to base; disc moderately convex, a vague median depression, another oblique, post-apical, three others vaguely impressed between the middle and side; surface coarsely punctured, punctures rather sparse at middle, more dense but not confluent at the sides; elytra very little wider than the thorax, nearly parallel, obliquely narrowed at apical third, the margin strongly serrate almost from the humeri, the apices obtuse; disc somewhat flattened, the basal fovea small but deep, the humeral depression well marked, first costa elevated from apex two-thirds to base, continued by a smooth line, the second costa faintly elevated, interrupted by the anterior fovea, continuing faintly to the basal fovea, third costa faint and short, the fourth elevated only near the apex, a faintly impressed densely punctured, obcordate fovea one-third from apex between the second and fourth costæ, another one-third from base, bilobed, interrupting the second costa;

surface moderately densely punctured, the punctures nearly equal, a little sparser and coarser in the scutellar region; body beneath dark bronze, sparsely punctate, the punctures of the abdomen coarser, the sides of the ventral segments with flat, smooth spaces, the hind angles of the segments slightly prominent; margin of last ventral segment entire, an elevated submarginal serrate ridge; prosternum not lobed in front; anterior femur with a moderately strong tooth, vaguely serrate on its distal edge. Length .48–.56 inch; 12–14 mm. (Fig. 198.)

Male.—Prosternum very sparsely, finely punctate, transversely wrinkled in front; anterior tibia (202) suddenly flexed at middle, the apex not dilated; middle tibia strongly arcuate, the posterior straight; last ventral segment (200) deeply semi-circularly emarginate, the angles prominent; last dorsal coarsely punctate, truncate.

Female.—Prosternum as in the male; anterior and middle tibiæ slightly arcuate, the posterior straight; last ventral (201) arcuately truncate at apex, the angles prominent, a short carina at base with a depression each side; last dorsal coarsely punctate, the apex rounded.

The peculiarities of this species in form, the approximate eyes and the sculpture, are so well marked as to require no special mention.

This species occurs at Surinam, and is recorded from Santo Domingo. While mentioned by Chevrolat in his "Coléoptères de Cuba," (Ann. Fr. 1867, p. 586) it is not credited to that island. In the "Catalogus G. and H.," the species appears as a Colobogaster, while in the "Catalogus Buprestidarum," Saunders, 1871, the specific name *tranquebarica* is adopted.

The specimens before me were collected at Key West, Fla., by Morrison, and kindly given me by Mr. G. W. J. Angell, of New York.

41. **C. chalcophoroides** n. sp.—Form rather broad and robust, moderately convex, piceous, the surface with a silvery bronze lustre, except on the smooth spaces; antennæ gradually more slender to tip, piceous, the third joint as long as the next three; front ♀ rather flat, very coarsely cribrately punctured with callosities forming three irregular transverse bands; clypeus (204) broadly triangularly emarginate at middle, on each side arcuate; thorax twice as wide as long, widest a little behind the apex, the sides in front very abruptly wider, posteriorly straight and slightly convergent; disc at middle rather flat, with a median smooth space, on each side of which the punctures are close but not coarse, nearer the margin the punctures are very coarse and deep, with elevated tubercles of irregular form, a large callosity near the front, another opposite the middle of the base of the elytron; elytra wider than the thorax, humeri broadly rounded, the sides arcuately narrowing to apex, the sides feebly serrate near the tip, the apices slightly obliquely truncate; disc moderately convex, the first costa extending two-thirds to base and expanding in a broad smooth surface, second and third costæ replaced by large, irregular smooth spaces, the fourth costa slender but entire, the intervals very densely and rather finely punctulate; prosternum with a short, very broad lobe in front, the surface smooth at middle, coarsely punctate at the sides; metasternum coarsely not deeply cribrate; poste-

rior angles of the ventral segments prominent, the surface closely punctate, the punctures very elongate, the first ventral broadly sulcate at middle, the last ventral with entire margin; anterior femur with a moderately strong acute tooth, not serrate on its free edge. Length .86 inch; 22 mm. (Fig. 203.)

Male.—Unknown.

Female.—Anterior tibia (206) feebly arcuate, the middle and posterior straight; last ventral segment (205) sinuately truncate, the angles distinct, the surface smooth at middle, a distinctly elevated submarginal serrulate ridge.

The large size and robust form of this species are rather striking in its association with those forms in which the apices of the elytra are not spiniform. The sculpture is also peculiar and with the surface color resembles more closely our species of Chalcophora near *virginiensis*.

One specimen from Arizona given me by Mr. F. G. Schaupp without special designation of locality.

42. **C. analis** Lec.—Form moderately elongate, color greenish or dark bronze, moderately shining, beneath bronze, more or less green along the middle; antennæ cupreous, gradually more slender to tip, the third joint nearly as long as the next three; front slightly convex, cupreous, coarsely and closely punctured, an inverted chevron above more distinct in the female; clypeus (208) broadly triangularly emarginate, arcuate each side; thorax one-half wider than long, broader at base, the sides slightly sinuate and feebly narrowed both at apex and base; disc moderately convex, even, without grooves or depressions, the punctures moderately close and transversely confluent; elytra wider than the thorax, nearly parallel, narrowed at apical third, the margin serrate, the apices obtuse; disc moderately convex, the first costa faintly elevated at apical half, continued by a smooth line, the other costæ either abrupt or faintly indicated by smooth lines, the basal fovea moderately deep, another depression near the middle of each elytron, the surface coarsely not densely punctured at apical half, more densely and transversely subconfluent near the base; body beneath rather sparsely punctate; prosternum with a well marked lobe in front; anterior femur with a moderately strong tooth, serrate on its distal edge; last ventral segment with a submarginal serrate ridge, the outer margin entire. Length .28 – .32 inch; 7 – 8 mm. (Fig. 207.)

Male.—Prosternum coarsely not closely punctate; anterior tibia (211) slightly arcuate, with a very feeble dilatation at apex; middle and posterior tibiæ straight; last ventral segment (209) semi-circularly emarginate, with the angles acute and an ante-apical, transverse, serrate line; last dorsal sparsely punctate near the apex, the margin entire.

Female.—Prosternum as in the male; tibiæ straight; last ventral (208) emarginate, nearly as in the male, without distinct ante-apical, transverse, serrate line; last dorsal coarsely punctate, a slight depression at middle of apical margin.

Of all the species without special superficial characters this one is probably the easiest to recognize by its structural characters. There is but little variation, except in color. The sexual characters as

given by Dr. LeConte are, unfortunately, reversed, the dilatation of the anterior tibiæ indicating the male not having been observed.

Occurs in Texas near the Rio Grande, and at Matamoras, Mexico.

43. **C. sexsignata** Say.—Form and facies very like the small varieties of *femorata*, color piceous, with a faint bronze surface lustre, each elytron with three golden or brassy spots, one basal, two dorsal; body beneath bright green, the sides bright cupreous; antennæ green in both sexes, gradually more slender to the tip, the third joint as long as the next three; front flat, bright green ♂, cupreous ♀, coarsely not densely punctured, a chevron near the top, below it a transverse line thicker at middle; clypeus (213) triangularly emarginate, at middle arcuate on each side, resembling *femorata*; thorax twice as wide as long, abruptly narrowed in front, sides very slightly arcuate and gradually convergent posteriorly, the hind angles obtuse; disc moderately convex, a vague median depression posteriorly, a subapical, oblique impression, frequently an oblique depression from the anterior angles toward the scutellum; surface coarsely and densely punctured, more or less transversely strigose; elytra wider than the thorax, sides nearly parallel in front, very obliquely narrowed behind the middle, the margin serrulate, the apices obtuse; disc feebly convex, the first costa nearly entire, the others represented by faintly elevated smooth lines, a shallow fovea one-third from apex at the end of the third costa, another larger on the second costa in front of the middle, the basal fovea moderately deep, the humeral depression feeble, the surface coarsely, closely punctate; body beneath with moderate punctures, sparse at middle, rather dense at the sides of the abdomen, the ventral segments with feeble callosities, the hind angles not prominent; last ventral segment with entire margin; anterior femur with a moderate tooth, sinuate and serrate on its distal edge; prosternum not lobed in front. Length .26 - .50 inch; 6.5 - 12.5 mm. (Fig. 212.)

Male.—Prosternum flat, densely punctured, sparsely pubescent; anterior tibia (216) arcuate, not dilated at tip, serrulate within; middle tibia less arcuate and less serrulate; posterior tibia straight; last ventral (214) finely carinate at middle, semi-circularly emarginate at tip, the angles acute; last dorsal coarsely punctate, apex entire.

Female.—Prosternum a little more coarsely punctured; anterior tibia feebly arcuate, the middle and posterior straight; last ventral segment (215) strongly carinate at middle, the apex truncate, the angles slightly prominent.

This species represents in this series *femorata* in the other, many of its characters of form, sculpture and sexual modifications are similar, as will be seen on comparison.

Occurs from New York to Virginia, westward to Nebraska and Indian Territory.

44. **C. azurea** Lec.—Form rather broad, subdepressed, color variable from blue to greenish blue, violet or cupreous, beneath blue, the sides of the abdomen sometimes cupreous; antennæ greenish ♂ or bronze ♀, gradually more slender to the tip, the third joint nearly as long as the next three; front slightly convex, coarsely and rather closely punctured; clypeus (218) very broadly not deeply, triangularly emarginate at middle, on each side slightly arcuate; thorax nearly

twice as wide as long, widest slightly behind the middle, sides at apex and base narrowing, at middle slightly sinuate; disc moderately convex, without well marked depressions, except the usual post-apical, surface coarsely punctate, the punctures rather close at middle and sometimes transversely confluent, at sides much more dense; elytra wider than the thorax, gradually wider to two-thirds, then arcuately narrowing to apex, the margins serrate, the apices obtuse; disc feebly convex, a faint trace of the first costa and barely perceptible smooth lines indicating the others, the basal fovea small but distinct, two discal foveæ, one in front of middle, the other one-third from the apex, the foveæ often brighter blue or green; surface coarsely punctate, not closely in apical half, more densely near the base; body beneath more shining than above, usually blue, rarely green, these latter with the sides bright cupreous, as in *sexsignata*, the surface rather sparsely punctate; prosternum scarcely perceptibly lobed in front; anterior femur with a rather broad tooth, serrulate on its distal edge; last ventral segment with entire margin. Length .24 – .31 inch; 6 – 8 mm. (Fig. 217.)

Male.—Prosternum densely, coarsely punctured over its entire surface; anterior tibia (221) arcuate, thicker to tip, but not dilated at apex; middle tibia slightly arcuate, the posterior straight; last ventral segment (219) deeply, semicircularly emarginate, the angles acute, a slight carina at middle posteriorly.

Female.—Prosternum a little less densely punctured; anterior and middle tibiæ slightly arcuate, the posterior straight; last ventral (220) truncate, with the angles acute and prominent, slightly carinate, at middle posteriorly.

This species from its variable color might be confounded with *Harrisii* or *scitula*, but the structure of the antennæ will distinguish it from the first, and of the thorax from the second. In one specimen I have seen the suture of the elytra is greenish metallic.

Occurs in New York, Illinois, District of Columbia, Georgia and Texas.

45. **C. æneola** Lec.—Form rather broad, subdepressed, nearly as in *pusilla*, dark bronze, subopaque; front slightly convex in both sexes, coarsely punctured, a little more closely in the male, the female with two faint chevrons, dark bronze ♀, slightly greenish ♂; antennæ rather broad, gradually more slender to the tip, the third joint not as long as the next two; clypeus (223) acutely emarginate at middle arcuate each side, closely resembling *femorata*; thorax a little more than twice as wide as long, narrowed in front, sinuate at the middle of the sides, incurved posteriorly; disc feebly convex, a vague median sulcus, a deeper depression near the sides; surface moderately and coarsely punctate, slightly transversely confluent in the female; elytra scarcely wider than the thorax, parallel, narrowed at apical third, the margin feebly serrulate, the apices obtuse; disc subdepressed, basal fovea moderate, a longer humeral depression, first costa slightly elevated from apex one-third to base and continued slightly by a smooth line, the other costa faintly indicated by short lines; surface moderately, densely, equally punctured without distinct foveæ; body beneath much more shining than above, the punctures of the abdomen rather sparse and indistinct; last ventral segment with entire margin; prosternum not lobed in front; anterior femur with a moderate tooth not serrulate on its margin. Length .27 inch; 7 mm. (Fig. 222.)

Male.—Prosternum densely, coarsely punctured and slightly pubescent between the coxæ, more sparsely punctured in front; anterior tibiæ (226) arcuate and with a dilatation at apical third; middle tibiæ straight, slightly thickened at tip, posterior tibia straight; last ventral segment (224) with a shallow, semi-circular emargination, the last dorsal sparsely punctate, vaguely emarginate at tip.

Female.—Prosternum coarsely, sparsely punctate; anterior tibia slightly arcuate, the middle and posterior straight; last ventral segment (225) very slightly notched at tip, longer than in the male, the sides slightly sinuate; last dorsal sparsely punctate, entire.

This species is very inconspicuous and might readily be mistaken for *pusilla.* In the typical specimens the elytra show no traces of more densely punctured foveæ, although there are slight depressions where they should be, but in some specimens I have examined the foveæ are nearly as plain as in *pusilla,* thereby increasing the resemblance, at the same time the elytral punctuation is coarser.

Occurs in Kansas, Nebraska, Nevada, Texas and Arizona.

46. **C. chrysoela** Illig.—Form moderately broad, not depressed, color purplish black, or faintly cupreous; elytra with golden to greenish spots, usually four on each side, the posterior two often transversely confluent; body beneath dark bronze; antennæ gradually more slender to tip, cupreous in both sexes, the third joint a little longer than the next two; front slightly convex, coarsely punctured, an arcuate carina above joining the occipital carina, greenish ♂ or bronze ♀; clypeus (228) triangularly emarginate at middle, arcuate each side; thorax twice as wide as long, anterior angles obliquely truncate, the sides slightly sinuous; disc moderately convex, without depressions, punctuation coarse, sparser at middle, dense near the sides; elytra wider than the thorax, slightly broader behind the middle, arcuately narrowing at apical third, the margin serrulate, the apices obtuse; disc moderately convex, without trace of costæ, basal fovea moderately deep, golden or green, this color often reaching the humeri, a distinctly impressed fovea near the middle of each elytron and a spot opposite on the lateral margin, these often united, one-third from apex two spots, these often transverely confluent; surface coarsely but not closely punctate; body beneath with very large punctures, the ventral segments without callosities, the margin of the last ventral entire; prosternum faintly lobed in front; anterior femur with a moderate, acute tooth, not serrulate. Length .28 – .32 inch; 7 – 8 mm. (Fig. 227.)

Male.—Prosternum very coarsely punctate, a narrow elevated median line; anterior tibia (231) arcuate, a very slight dilatation near the tip; middle tibia slightly arcuate, the posterior straight; last ventral segment (229) with a broad, but shallow, arcuate emargination, the angles distinct; last dorsal coarsely punctured, the apex entire.

Female.—Prosternum as in the male; anterior and middle tibiæ slightly arcuate, posterior straight; last ventral (230) sinuately truncate, the angles acute, a subapical serrulate ridge; last dorsal as in the male.

This species and *scitula* are closely related, more so in description than in facies. The present species has a broader thorax, and is in fact broader generally, the punctuation is less coarse and the elytral spots of different appearance and form.

This species seems strictly southern in its distribution, occurring from Virginia to Florida and Texas.

47. **C. scitula** Gory.—Form rather elongate, moderately convex, color deep violet, or dark cupreous, the thorax often more decidedly blue, each elytron with three more brilliant spots, blue or green, and of variable distinctness and extent; antennæ gradually more slender to tip, piceous, three basal joints greenish ♂ or cupreous ♀, third joint nearly as long as the next three: front slightly convex, green ♂, violaceous ♀, coarsely and deeply punctured, an arcuate line, the concavity upward, above which is a slight depression in both sexes; clypeus (233) with a small triangular emargination at middle, subtruncate each side; thorax one and a half times as wide as long, the sides straight, very slightly convergent posteriorly, rounded near the front angles, the hind angles distinct and sometimes slightly everted; disc convex, without depressions or callosities, surface coarsely punctured, sparsely at middle, more densely near the sides, sometimes slightly transversely strigose; elytra wider than the thorax, humeri rounded, sides slightly wider behind the middle, arcuately narrowed at apical third, the margin finely serrate, the apices obtuse; disc convex, the punctuation coarse, deep, but not dense, there is no trace of costæ and the foveæ are scarcely impressed, the basal even rather shallow, the colored spots are placed in the usual position of the foveæ of the other species; body beneath violet-blue, punctuation coarse, but sparse, the ventral segments without umbones, their angles not prominent; prosternum distinctly lobed in front; anterior femur with rather strong tooth, obsoletely serrate or simple; last ventral with entire margin. Length .22 – .28 inch; 5.5 – 7 mm. (Fig. 232.)

Male.—Prosternum flat, densely punctured, not pubescent; anterior tibia (236) arcuate, a slight dilatation near the tip; middle tibia feebly arcuate, the posterior straight; last ventral (234) with a very shallow, broad emargination; last dorsal very coarsely punctured, entire at apex.

Female.—Prosternum as in the male; anterior tibia slightly arcuate, the middle and posterior straight; last ventral (235) sinuately truncate, the angles prominent; last dorsal coarsely punctured, entire.

This species appears in the monograph of Laporte and Gory as *ultramarina* Say. Dr. LeConte recognizing the erroneous determination proposed the name *azurea* for it (Proc. Acad. 1857, p. 8), and in his "Revision of the Buprestidæ" (Trans. Am. Philos. Soc. xi, 1859, p. 238) the name *concinnula* Lec. is substituted and *azurea* used for another species. Later, in the "Check List," Crotch used the name *chlorocephala*. During his visit to Europe Dr. LeConte examined many of the types of Gory and Laporte in the possession of Count Mniszech, and obtained a specimen of *scitula*, which proves to be merely a more brilliantly colored variety of *ultramarina* ‡ G. and L., and *concinnula* Lec. I have for these reasons adopted the name *scitula* as the prior name.

The more brightly colored specimens resemble both *azurea* and somewhat *Harrisii*, but the form of the thorax is quite characteristic,

and the strong rather distant punctuation of the elytra is almost peculiar to the present species.

Occurs in the Middle States region, New Jersey, Pennsylvania, Ohio and District of Columbia.

Group VIII.

Three species are separated below as a group, the essential characters being:—last ventral segment with the margin entire, not serrulate; elytra with the apices separately rounded, the disc without trace of either costa or fovea.

The following table will distinguish the species:

Species of rather large size, robust, apex of abdomen exposed beyond the elytra, punctuation of surface rather coarse, elytra with three interrupted purple-black fasciæ.
Sides of thorax regularly arcuate.....48. **atrifasciata.**
Sides of thorax oblique in front, arcuate posteriorly.....49. **Ulkei.**
Species rather small and slender, the punctuation sparse and fine; elytra covering the abdomen, color bright green, without fasciæ.
Sides of thorax very feebly arcuate.....50. **prasina.**

The male is known of the first species only, in it the antennæ are bipectinate, the terminal joint itself being bifurcate. In the female the lower edge of the antennæ is broad, so that in section the antennal joints are an equilateral triangle. In the other two species, of which only females are known; the antennæ present the usual flattened form, and it is probable that those of the male do not differ in structure from the normal type.

The three species are western, *atrifasciata* occurring in New Mexico and Arizona, *Ulkei* in Texas and *prasina* in the north of California.

48. **C. atrifasciata** Lec.—Form robust, slightly depressed, cylindrical, bright green or blue, varying to golden or cupreous; elytra with three interrupted fasciæ of black or purple color; antennæ variable in form in the two sexes, dark bronze, third joint very nearly as long as the next three; front convex, not differing in color in the two sexes, coarsely and deeply punctured and with an arcuate, transverse, elevated line above, beneath which is a zigzag line in form of W; clypeus (239) very broadly not deeply emarginate; thorax more than twice as wide as long, slightly broader at base than apex, the sides regularly arcuate; disc convex, a smoother median line posteriorly; punctures near the middle very coarse and deep, at the sides more dense; elytra scarcely wider than the thorax, parallel, narrowed at apical third, the apices separately rounded and not covering entirely the abdomen, the margins feebly serrulate; disc convex, without trace of costæ, basal fovea moderately deep; surface less coarsely punctured than the thorax and not densely, those nearer the base rather coarser; body beneath coarsely, not densely punctured, the ventral segments without

lateral umbone, the angles rather prominent, the last segment with entire margin; prosternum not lobed in front; anterior femur with an acute, not serrulate tooth. Length .44 – .58 inch; 11 – 14.5 mm. (Fig. 238.)

Male.—Antennæ bipectinate (238) from the fourth joint, the posterior or inferior branch a little longer, terminal joint bifurcate; prosternum convex, coarsely sparsely punctured; anterior tibia (242) slightly arcuate, very vaguely sinuate on its inner edge; middle tibia slightly arcuate, the posterior straight; last ventral segment (240) very vaguely emarginate at middle truncate each side; last dorsal short, coarsely punctate and entire.

Female.—Antennæ simply serrate, the lower edge, however, broader than usual; prosternum as in the male; anterior tibia scarcely arcuate, the middle and posterior straight; last ventral segment (241) sinuately truncate; last dorsal coarsely punctate, entire.

The dark markings on the elytra seem quite constant, and are in a general way as represented in the figure. The color of the body beneath is as above. The male antennæ present an unique structure in the genus.

Five specimens have been examined, one only a male. It occurs in Arizona and New Mexico.

49. **C. Ulkei** Lec.—Form of *atrifasciata*, deep blue, the elytra with darker spaces as in that species; thorax more than twice as wide as long, widest behind the middle, the sides in front rather oblique, posteriorly strongly arcuate. Length .60 inch; 15 mm. (Fig. 243.)

This species is so closely related to the preceding that a few words of description with some comparative remarks are all that seem necessary. The foveæ of the head, of which Dr. LeConte speaks, are merely the spaces above and below the W-like line, which is less elevated than in *atrifasciata*. The thorax is otherwise formed as shown in the outline, although this is really less of a variation than may be observed in such species as *femorata*. The sculpture of the surface is less marked and the punctures less dense, while those of the elytra are rather finer and closer than in *atrifasciata*.

The only specimen I have seen is the type kindly loaned me by Mr. Ulke. It is a female, and the ventral segments are as in *atrifasciata*. The antennæ, however, present the usual form observed in the genus, the free angles being truncate and not at all acute, while the lower edge is no broader than normal. The antennal structure alone induces me to retain the species as distinct, otherwise I should have considered it an unusually stout female of *atrifasciata*, as indeed it may ultimately prove to be.

One specimen, Texas.

50. **C. prasina** n. sp.—Form moderately elongate, color above bright green, beneath dark violet; surface moderately shining, glabrous; antennæ ♀ piceous, gradually more slender to tip, third joint as long as the next two; front moderately convex, coarsely not deeply punctured, occiput without carina; clypeus (245) very broadly, not deeply emarginate, arcuate each side; thorax posteriorly very nearly twice as wide as long, sides very feebly arcuate, gradually divergent from the front angles, slightly arcuate posteriorly, disc convex; surface even without foveæ or callositics, punctuation rather sparse, a little coarse toward the sides; elytra very little wider than the thorax, parallel, arcuately narrowed at apical third, the margin serrate, the apices separately rounded; disc regularly convex, without costæ or foveæ, the basal fovea very feeble; surface finely, indistinctly and sparsely punctate; body beneath dark violet, the punctuation coarse, feebly impressed and not dense, the flanks of the prothorax almost smooth, ventral segments without callositics, the margin of the last ventral entire; prosternum coarsely not densely punctured, feebly lobed in front; anterior femur with a short broad tooth, serrulate on its distal edge. Length .26 inch; 6.5 mm. (Fig. 244.)

Male.—Unknown.

Female.—Anterior and middle tibiæ (247) slightly arcuate, the posterior straight; last ventral segment (246) with the apex rounded, entire, an ante-apical serrate ridge, the terminal teeth on each side prominent; last dorsal coarsely punctured, entire.

A pretty little species readily known by its structural characters and color. The contrast between the color of the upper and lower surfaces is greater than I have observed in any other species.

One specimen from California, probably the northern regions.

Additional Notes.

C. CALIFORNICA *Motsch.* quoted by Saunders (Catal. Bupr. p. 97) as a synonym of *californica* Lec., was described as Belionota, and is really *Actenodes acornis* Say.

C. ERRANS *Gory*, quoted from N. A., is probably from S. A. See Lec., Proc. Acad. 1873, p. 331.

C. FASTIDIOSA *Gory*, described from Brazil, is said by Dr. LeConte to be a variety of *femorata*, Proc. Acad. 1873, p. 332.

C. FRONTALIS *Oliv.*, formerly in our lists, is from Brazil.

C. GERMARI *Lap. et Gory*, heretofore quoted as a synonym of *sexsignata* Say, is a synonym of *Solieri*. See Lec. Proc. Acad. 1873, p. 332.

C. THORACICA *Fab.*, is from the island of St. Thomas.

In the bibliography, references and synonyms not pertinent to our fauna have been omitted.

Bibliography and Synonymy.

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basalis Lec., Proc. Acad. 1858, p. 68; Revis. Bup. Trans. Amer. Philos. Soc. 1859, p. 230.

C. octocola Lec., Proc. Acad. 1858, p. 67; Revis. p. 230.

C. Edwardsii n. sp.

C. debilis Lec., Revis. p. 236.

disjuncta Lec., Revis. p. 236.

C. axillaris n. sp.

C. purpureovittata n. sp.

C. femorata Oliv., Ent. ii, 32, p. 47, pl. xi, fig. 121; Fab., Syst. El. ii, p. 208; Lec., Revis. p. 231.

insculpta Hbst., Käfer, ix, p. 145, pl. 146, fig. 10.

quadri-impressa Lap. et Gory, loc. cit. p. 48, pl. ix, fig. 64.

Lesueuri Lap. et Gory, loc. cit. p. 49, pl. ix, fig. 66.

dentipes ‡ Lap. et Gory, loc. cit. p. 52, pl. ix, fig. 70.

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cribraria Mann., Bull. Mosc. 1837, p. 77.

dissimilis Gory, Mon. Suppl. p. 181, pl. xxxi, fig. 177.

alabamae Gory, loc. cit. p. 185, pl. xxxi, fig. 183.

viridiceps, rugosiceps Mels., Proc. Acad. ii, p. 147.

soror ‖ Lec., Revis. p. 232.

obscura Lec., Revis. p. 232.

misella Lec., Revis. p. 233.

adelpha Gemm. et Har., Catalogus, p. 1423 (for *soror* ‖).

C. contigua Lec., Revis. p. 255.

semisculpta ♀ Lec., Revis. p. 254.

purpurifrons Mots., Bull. Mosc. 1859, iii, p. 183.

C. cuprascens Lec., Revis. p. 234.

C. floricola Gory, Mon. Suppl. p. 179, pl. xxv, fig. 175.

femorata ‡ Lap. et Gory, loc. cit. p. 48, pl. ix, fig. 65.

calcarata Mels., Proc. Acad. ii, p. 144; Lec., Revis. p. 234.

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C. speculifer n. sp.

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vulcanica Lec., Proc. Acad. 1861, p. 346.

C. Blanchardi n. sp.

C. quadrilineata Lec., Revis. p. 233.

C. exesa Lec., Proc. Acad. 1858, p. 68; Revis. p. 231.

C. texana Lec., Revis. p. 234.

C. mali n. sp.

C. pusilla Lap. et Gory, loc. cit. p. 53, pl. x, fig. 72 (*biguttata* on plate); Lec., Revis. p. 236.

striangulata Mels., Proc. Acad. ii, p. 147.

C. nixa n. sp.

C. deleta Lec., Revis. p. 255.

subcylindrica Mots., Bull. Mosc. 1859, iii, p. 182, pl. iv, fig. 17.

C. deserta n. sp.

C. lixa n. sp.

C. cyanella n. sp.

C. humilis n. sp.

C. ærea Chev., Col. Mex. fasic. iii; Lap. et Gory, loc. cit. p. 42, pl. viii, fig. 59.

C. gemmata Lec., Proc. Acad. 1858, p. 67; Revis. p. 237.

C. Merkelii n. sp.

C. acutipennis Chev., Col. Mex. ii, p. 190.

acuminata Lec., Revis. p. 237.

C. libonoti n. sp.

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nigrofasciata ‡ Lec., Revis. p. 240.

C. Ulkei Lec., Revis. p. 240.

C. prasina n. sp.

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* The name *impressa* has been used, although it was preoccupied by Fabricius himself. Later Gmelin changed the name to *tranquebarica*, and two years after Olivier proposed *excavata*. In accordance with the strictest rules the name proposed by Gmelin should be adopted, although it conveys an erroneous idea of habitat. Inasmuch as the first *impressa* proposed by Fabricius is now placed in Halecia, it might be as well to allow the Chrysobothris to retain the name proposed for it. It is better, at times, to violate the law of priority than perpetuate an annoyance.

PLATE II.

Fig. 1. **C. atabalipa.**
Fig. 2. idem front.
Fig. 3. idem ♂ last ventral segment.
Fig. 4. idem ♀ last ventral segment.
Fig. 5. idem anterior leg ♂.
Fig. 6. **C. octocola.**
Fig. 7. idem front.
Fig. 8. idem ♂ last ventral segment.
Fig. 9. idem ♀ last ventral segment.
Fig. 10. idem anterior leg ♂.
Fig. 11. **C. Edwardsii.**
Fig. 12. idem front.
Fig. 13. idem ♀ last ventral segment.
Fig. 14. idem anterior femur ♀.
Fig. 15. **C. debilis.**
Fig. 16. idem front.
Fig. 17. idem ♂ last ventral segment.
Fig. 18. idem ♀ last ventral segment.
Fig. 19. idem anterior leg ♂.
Fig. 20. **C. axillaris.**
Fig. 21. idem front.
Fig. 22. idem prothorax beneath.
Fig. 23. idem ♀ last ventral segment.
Fig. 24. idem anterior femur ♀.
Fig. 25. **C. purpureovittata.**
Fig. 26. idem front.
Fig. 27. idem ♂ last ventral segment.
Fig. 28. idem ♀ last ventral segment.
Fig. 29. idem anterior leg ♂.
Fig. 30. **C. femorata** var. *Lesueuri.*
Fig. 31. idem front.
Fig. 32. idem ♂ last ventral segment.
Fig. 33. idem ♂ last ventral segment.
Fig. 34. idem anterior leg ♂.
Fig. 35. **C. contigua.**
Fig. 36. idem front.
Fig. 37. idem ♂ last ventral segment.
Fig. 38. idem ♀ last ventral segment.
Fig. 39. idem anterior leg ♂.
Fig. 40. **C. cuprascens.**
Fig. 41. idem front.
Fig. 42. idem ♂ last ventral segment.
Fig. 43. idem ♀ last ventral segment.
Fig. 44. idem anterior leg ♂.
Fig. 45. **C. floricola.**
Fig. 46. idem front.
Fig. 47. idem ♂ last ventral segment.
Fig. 48. idem ♀ last ventral segment.
Fig. 49. idem anterior leg ♂.
Fig. 50. idem middle leg ♂.

PLATE III.

Fig. 51. **C. ignicollis.**
Fig. 52. idem front.
Fig. 53. idem ♂ last ventral segment.
Fig. 54. idem ♀ last ventral segment.
Fig. 55. idem anterior leg ♂.
Fig. 56. **C. speculifer.**
Fig. 57. idem front.
Fig. 58. idem ♂ last ventral segment.
Fig. 59. idem ♀ last ventral segment.
Fig. 60. idem anterior leg ♂.
Fig. 61. **C. viridicyanea.**
Fig. 62. idem front.
Fig. 63. idem ♂ last ventral segment.
Fig. 64. idem ♀ last ventral segment.
Fig. 65. idem anterior leg ♂.
Fig. 66. **C. Harrisii.**
Fig. 67. idem front.
Fig. 68. idem ♂ last ventral segment.
Fig. 69. idem ♀ last ventral segment.
Fig. 70. idem anterior leg ♂.
Fig. 71. **C. dolata.**
Fig. 72. idem front.
Fig. 73. idem ♀ last ventral segment.
Fig. 74. idem anterior femur ♀.
Fig. 75. **C. dentipes.**
Fig. 76. idem front.
Fig. 77. idem ♂ last ventral segment.
Fig. 78. idem ♀ last ventral segment.
Fig. 79. idem anterior leg ♂.
Fig. 80. **C. ludificata.**
Fig. 81. idem front.
Fig. 82. idem ♂ last ventral segment.
Fig. 83. idem ♀ last ventral segment.
Fig. 84. idem anterior leg ♂.
Fig. 85. **C. scabripennis.**
Fig. 86. idem front.
Fig. 87. idem ♂ last ventral segment.
Fig. 88. idem ♀ last ventral segment.
Fig. 89. idem anterior leg ♂.

PLATE IV.

Fig. 90. **C. trinervia** (N. Hampshire).
Fig. 91. idem front.
Fig. 92. idem ♂ last ventral segment.
Fig. 93. idem ♀ last ventral segment.
Fig. 94. idem anterior leg ♂.
Fig. 95. **C. trinervia** (N. Carolina).
Fig. 96. antenna of *C. ludificata.*
Fig. 97. antenna of *C. gemmata.*
Fig. 98. prothorax beneath of *dentipes,* etc.
Fig. 99. prothorax beneath of *californica,* etc.
Fig. 100. **C. carinipennis.**
Fig. 101. idem front.
Fig. 102. idem ♂ last ventral segment.
Fig. 103. idem ♀ last ventral segment.
Fig. 104. idem anterior leg ♂.
Fig. 105. **C. caurina.**
Fig. 106. idem front.
Fig. 107. idem ♂ last ventral segment.
Fig. 108. idem ♀ last ventral segment.
Fig. 109. idem anterior leg ♂.
Fig. 110. **C. californica.**
Fig. 111. idem front.
Fig. 112. idem ♂ last ventral segment.
Fig. 113. idem ♀ last ventral segment.
Fig. 114. idem anterior leg ♂.
Fig. 115. **C. Blanchardii.**
Fig. 116. idem front.
Fig. 117. idem ♂ last ventral segment.
Fig. 118. idem ♀ last ventral segment.
Fig. 119. idem anterior leg ♂.
Fig. 120. **C. quadrilineata.**
Fig. 121. idem front.
Fig. 122. idem ♂ last ventral segment.
Fig. 123. idem ♀ last ventral segment.
Fig. 124. idem anterior leg ♂.
Fig. 125. **C. exesa.**
Fig. 126. idem front.
Fig. 127. idem ♂ last ventral segment.
Fig. 128. idem ♀ last ventral segment.
Fig. 129. idem anterior leg ♂.

PLATE V.

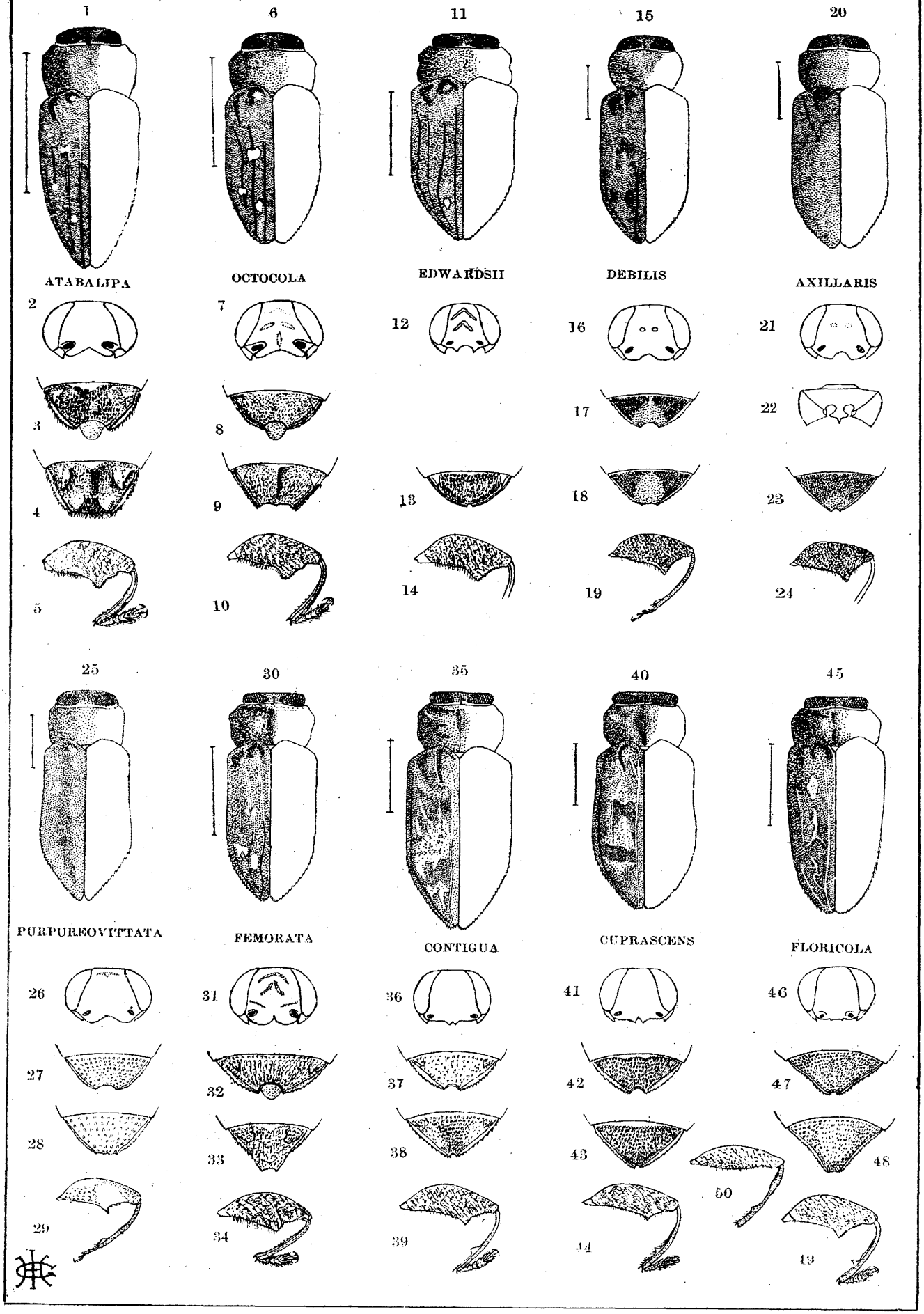
Fig. 130. **C. texana.**
Fig. 131. idem front.
Fig. 132. idem ♂ last ventral segment.
Fig. 133. idem ♀ last ventral segment.
Fig. 134. idem anterior leg ♂.
Fig. 135. **C. mali.**
Fig. 136. idem front.
Fig. 137. idem ♂ last ventral segment.
Fig. 138. idem ♀ last ventral segment.
Fig. 139. idem anterior leg ♂.
Fig. 140. **C. pusilla.**
Fig. 141. idem front.
Fig. 142. idem ♂ last ventral segment.
Fig. 143. idem ♀ last ventral segment.
Fig. 144. idem anterior leg ♂.
Fig. 145. **C. nixa.**
Fig. 146. idem front.
Fig. 147. idem ♂ last ventral segment.
Fig. 148. idem ♀ last ventral segment.
Fig. 149. idem anterior leg ♂.
Fig. 150. **C. deleta.**
Fig. 151. idem front.
Fig. 152. idem ♂ last ventral segment.
Fig. 153. idem ♀ last ventral segment.
Fig. 154. idem anterior leg ♂.
Fig. 155. **C. deserta.**
Fig. 156. idem front.
Fig. 157. idem ♂ last ventral segment.
Fig. 158. idem anterior leg ♂.
Fig. 159. **C. lixa.**
Fig. 160. idem front.
Fig. 161. idem ♂ last ventral segment.
Fig. 162. idem ♀ last ventral segment.
Fig. 163. idem anterior leg ♂.
Fig. 164. **C. cyanella.**
Fig. 165. idem front.
Fig. 166. idem ♂ last ventral segment.
Fig. 167. idem ♀ last ventral segment.
Fig. 168. idem anterior leg ♂.

PLATE VI.

Fig. 169. **C. humilis.**
Fig. 170. idem front.
Fig. 171. idem ♀ last ventral segment.
Fig. 172. idem anterior femur ♀.
Fig. 173. **C. ærea.**
Fig. 174. idem front.
Fig. 175. idem ♂ last ventral segment.
Fig. 176. idem ♀ last ventral segment.
Fig. 177. idem anterior leg ♂.
Fig. 178. **C. gemmata.**
Fig. 179. idem front.
Fig. 180. idem ♂ last ventral segment.
Fig. 181. idem ♀ last ventral segment.
Fig. 182. idem anterior leg ♂.
Fig. 183. **C. Merkelii.**
Fig. 184. idem front.
Fig. 185. idem ♂ last ventral segment.
Fig. 186. idem ♀ last ventral segment.
Fig. 187. idem anterior leg ♂.
Fig. 188. **C. acutipennis.**
Fig. 189. idem front.
Fig. 190. idem ♂ last ventral segment.
Fig. 191. idem ♀ last ventral segment.
Fig. 192. idem anterior leg ♂.
Fig. 193. **C. libonoti.**
Fig. 194. idem front.
Fig. 195. idem ♂ last ventral segment.
Fig. 196. idem ♀ last ventral segment.
Fig. 197. idem anterior leg ♂.
Fig. 198. **C. impressa.**
Fig. 199. idem front.
Fig. 200. idem ♂ last ventral segment.
Fig. 201. idem ♀ last ventral segment.
Fig. 202. idem anterior leg ♂.
Fig. 203. **C. chalcophoroides.**
Fig. 204. idem front.
Fig. 205. idem ♀ last ventral segment.
Fig. 206. idem anterior leg ♂.

PLATE VII.

Fig. 207. **C. analis.**
Fig. 208. idem front.
Fig. 209. idem ♂ last ventral segment.
Fig. 210. idem ♀ last ventral segment.
Fig. 211. idem anterior leg ♂.
Fig. 212. **C. sexsignata.**
Fig. 213. idem front.
Fig. 214. idem ♂ last ventral segment.
Fig. 215. idem ♀ last ventral segment.
Fig. 216. idem anterior leg ♂.
Fig. 217. **C. azurea.**
Fig. 218. idem front.
Fig. 219. idem ♂ last ventral segment.
Fig. 220. idem ♀ last ventral segment.
Fig. 221. idem anterior leg ♂.
Fig. 222. **C. æneola.**
Fig. 223. idem front.
Fig. 224. idem ♂ last ventral segment.
Fig. 225. idem ♀ last ventral segment.
Fig. 226. idem anterior leg ♂.
Fig. 227. **C. chrysoela.**
Fig. 228. idem front.
Fig. 229. idem ♂ last ventral segment.
Fig. 230. idem ♀ last ventral segment.
Fig. 231. idem anterior leg ♂.
Fig. 232. **C. scitula.**
Fig. 233. idem front.
Fig. 234. idem ♂ last ventral segment.
Fig. 235. idem ♀ last ventral segment.
Fig. 236. idem anterior leg ♂.
Fig. 237. **C. atrifasciata.**
Fig. 238. idem antenna ♂; T, terminal joint; A, P, the anterior and posterior branches of joints 4 – 10.
Fig. 239. idem front.
Fig. 240. idem ♂ last ventral segment.
Fig. 241. idem ♀ last ventral segment.
Fig. 242. idem anterior leg ♂.
Fig. 243. **C. Ulkei,** outline of thorax.
Fig. 244. **C. prasina.**
Fig. 245. idem front.
Fig. 246. idem ♀ last ventral segment.
Fig. 247. idem front femur ♀.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ATABALIPA
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EDWARDSII
DEBILIS
AXILLARIS
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PURPUREOVITTATA
FEMORATA
CONTIGUA
CUPRASCENS
FLORICOLA
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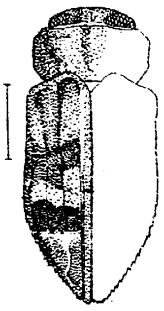

IGNICOLLIS

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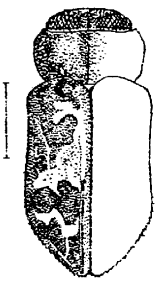

SPECULIFER

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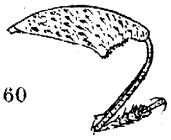

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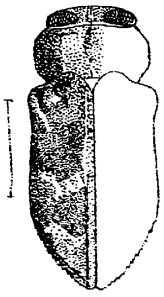

VIRIDICYANEA

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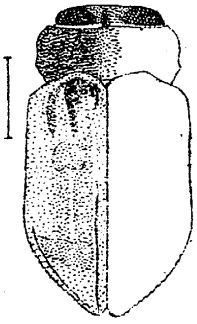

HARRISII

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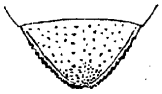

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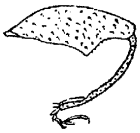

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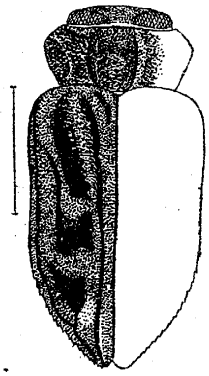

DOLATA

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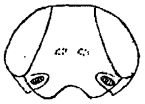

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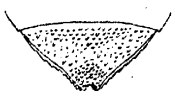

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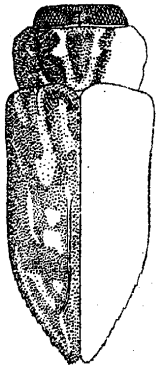

DENTIPES

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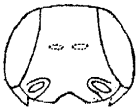

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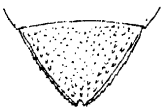

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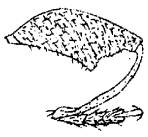

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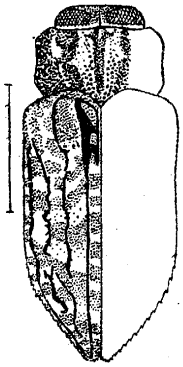

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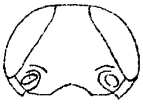

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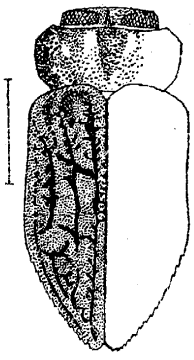

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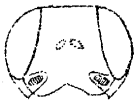

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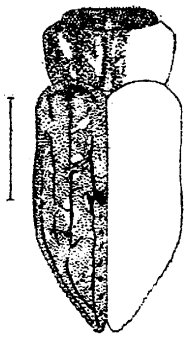

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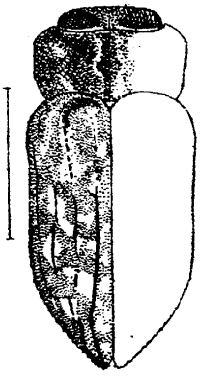

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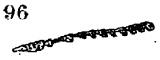

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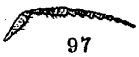

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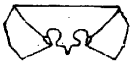

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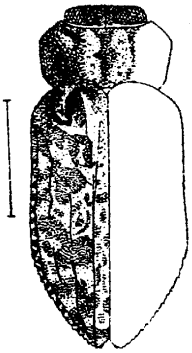

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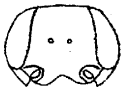

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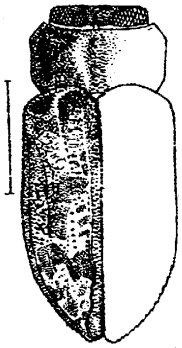

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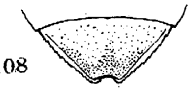

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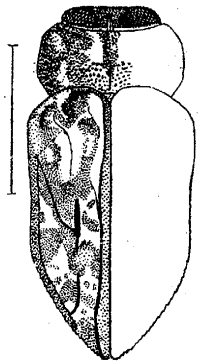

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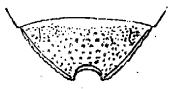

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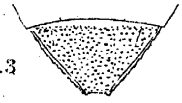

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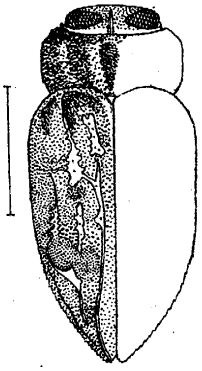

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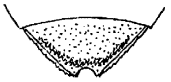

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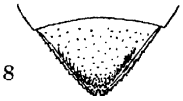

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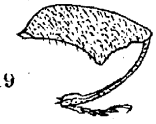

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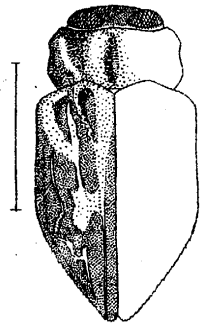

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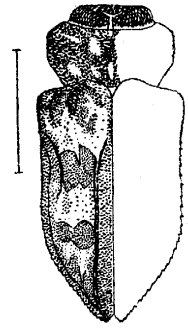

EXESA

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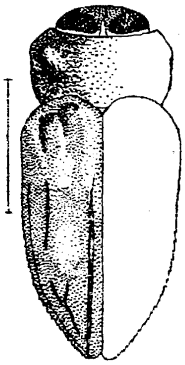

TEXANA

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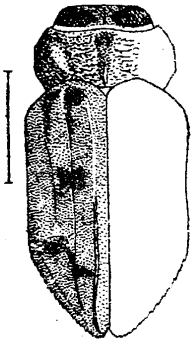

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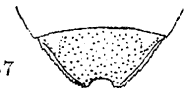

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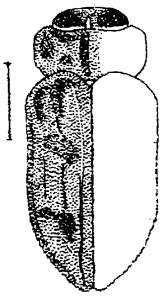

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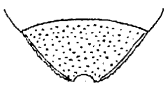

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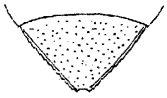

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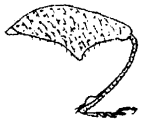

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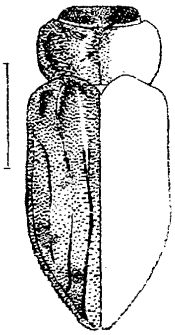

NIXA

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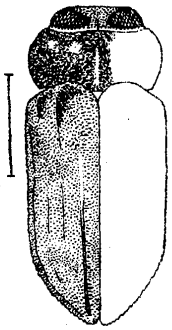

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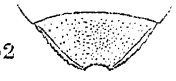

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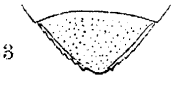

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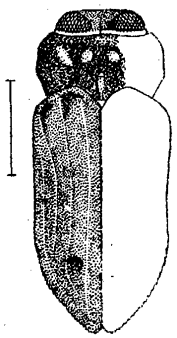

DESERTA

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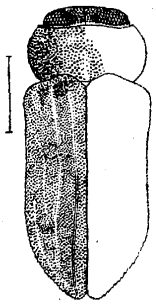

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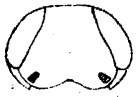

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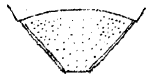

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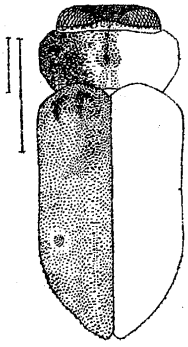

CYANELLA

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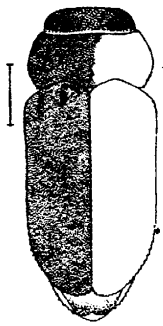

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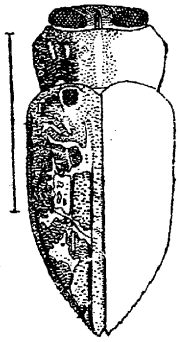

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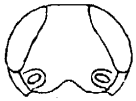

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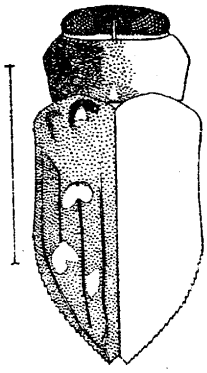

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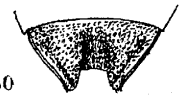

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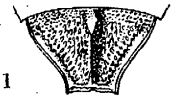

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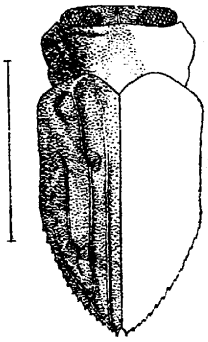

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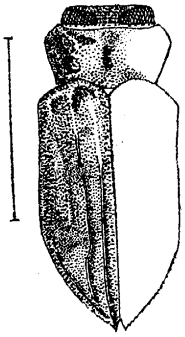

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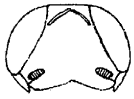

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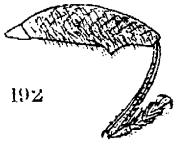

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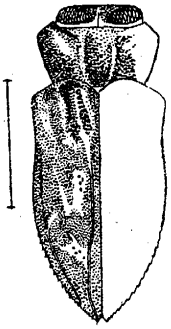

LIBONOTI

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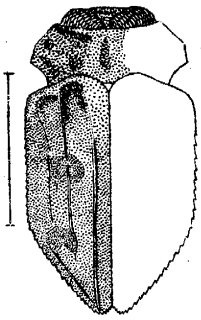

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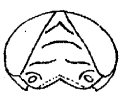

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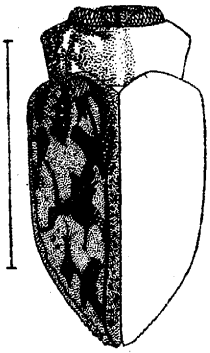

CHALCOPHOROIDES

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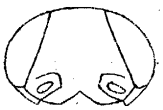

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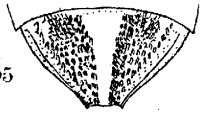

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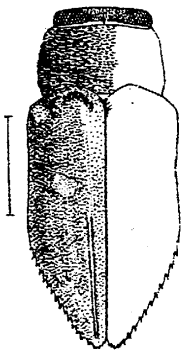

ANALIS

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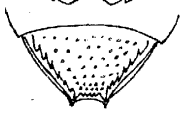

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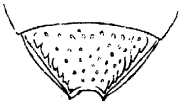

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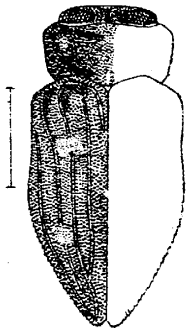

SEXSIGNATA

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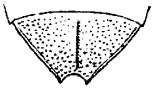

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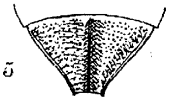

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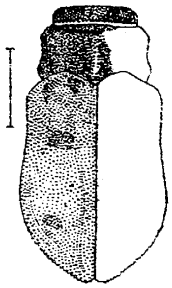

AZUREA

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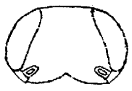

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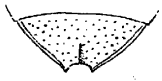

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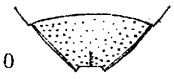

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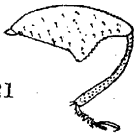

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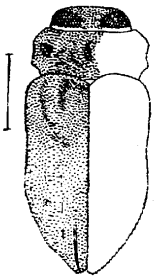

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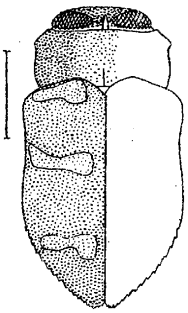

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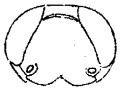

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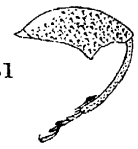

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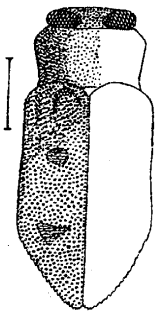

SCITULA

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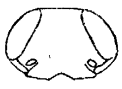

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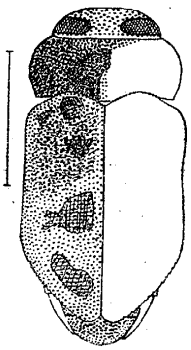

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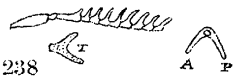

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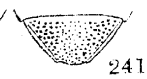

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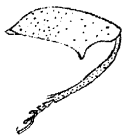

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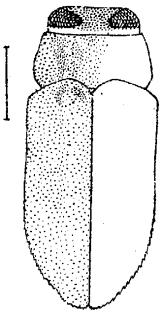

PRASINA

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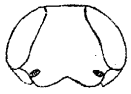

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