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Studies in CHRYSOMELIDÆ.

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Various parts of the family Chrysomelidæ have been carefully studied, and the results have proven very useful to students of our fauna. There are, however, several large series which have not been studied collectively, and as the descriptions are widely scattered and often insufficient, no satisfactory progress can be made by those who desire to become acquainted with the species.

Finding that the descriptions were unsatisfactory, and in some instances even misleading, it occurred to me that the results obtained in a re-arrangement of my material might prove of advantage to others. I have therefore prepared the following sketches of those genera which occupy a position intermediate between Donacia, which has recently been ably treated by Mr. C. W. Leng, and the Cryptocephalini. Some of the genera have been omitted because they contain one or two species, and the accessible literature is sufficient for their determination. Lema has been omitted for a like reason, although the species are fairly numerous in our fauna.

SYNETA Esch.

With our existing literature it is absolutely impossible to determine the species scattered in collections. In a recent visit to Washington I found in the cabinet of Mr. Ulke an accumulation of ma-

terial which he kindly placed at my disposal for study in conjunction with my own specimens. This aggregation of material has enabled me to study the limits of variation, sexual and specific, and by this means to fix with absolute certainty the species at present known.

Several important facts have been learned. The first is, that the characters heretofore used in the separation of species based on color, sculpture, and the mode of dentation of the sides of the thorax, have an extremely small value. The second is, that the form of the antennæ, together with the sexual peculiarities of the male, afford the only means of specific definition.

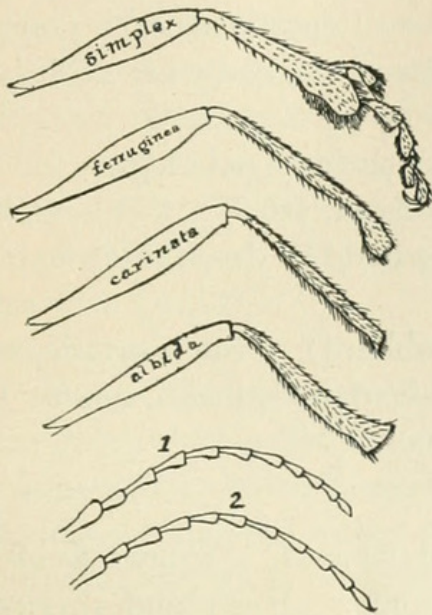
In the four species known to me there will be observed two forms of antenna. Three species, of which *ferruginea* may be taken as the type, have the joints of the antennæ 4-11 of nearly equal length, or, if anything, the outer joints are gradually a little longer, especially the eleventh. In *albida* the outer four joints are notably shorter than the four preceding joints in both sexes.

At this point it is well to observe that the females of all the species have a semicircular depression of the last ventral segment, fimbriate with moderately long hairs. The last male segment is sinuately truncate, without depression. Other sexual peculiarities exist in the posterior tibiæ of the males of several species, which will be referred to in their proper place.

The thorax is always more or less angulate at the middle of the sides, and often with three small acute teeth. In a large series of any species it will be noticed that in the males there is a tendency to a simple angulation of the sides, while in the female it is more common to observe the tridenticulate form. In *albida* both sexes are similarly angulate, and it is rare to find one showing evidences of the tridenticulation. In all the species the thorax is densely coarsely punctured, a little less densely and with more shining surface in *carinata* than in the others.

The elytra are always more or less costate. At least traces of four costæ may be seen on each elytron. The innermost costa is separated from the suture by three irregular rows of punctures, it is often obliterated, and even in its greatest development (*carinata*) does not extend more than three-fourths to apex. The second costa is separated from the first by three irregular rows of punctures, and is more constant in its distinctness, and is, when present, entire. The third costa is always short, and is observed between the posterior termination of the second and fourth costæ. The fourth costa is

present and well marked in all the specimens examined. It starts at the humerus below the umbone and reaches the apex.



These costæ are subject to great variation. It will be observed that the males are usually more costate than the females and specimens of the latter sex without any costæ, except the subhumeral, are quite common in *ferruginea* and *albida*.

From the tenor of the preceding remarks it will be evident that no characters worthy of consideration are to be found in the thorax and elytra for specific separation as these parts vary sexually and individually.

On the annexed cut will be found representations of the hind tibiæ of the males of the four species. The two forms of antennæ are shown in the figures, 1 representing *albida*, while the other three species have the other form.

The following table will serve to separate the species:

Antennæ with joints 4-10 very nearly equal in length, eleventh longer than tenth.

Outer joints of antennæ piceous; hind tibiæ of male simple.....**carinata.**

Antennæ entirely ferruginous or paler.

Posterior tibiæ of male with a curved process on the posterior edge near the tip; no terminal spurs.....**simplex.**

Posterior tibiæ of male sinuate on the front edge near the tip and with distinct spurs.....**ferruginea.**

Antennæ with joints 8-11 nearly equal in length and very obviously shorter than the preceding joints.

Posterior tibiæ of male simple and with terminal spurs.....**albida.**

S. carinata Mann.

Male.—Head and thorax piceous-black, shining, coarsely punctate. Thorax obtusely angulate at the sides, rarely feebly tridenticulate, apical and basal margins often paler in color than the disc. Elytra testaceous, but never very pale, sutural margin piceous. Body beneath piceo-testaceous. Legs piceous, the base of the femora and coxæ testaceous. Hind tibiæ nearly simple, merely slightly thickened at apex.

Female.—Rufo-testaceous above. Antennæ similar in color to the males, but not quite so dark. Thorax rather more acutely angulate

at the sides. Body beneath a little darker in color than above. Legs brown, femora paler at base.

In both sexes the carina on the elytra are well marked, rather more elevated in the male. In well preserved specimens each puncture bears a short hair and on the summits of the costæ are slightly longer hairs.

Two male specimens in my cabinet have entirely pale legs.

In his comments on this species (Proc. Acad. 1873, p. 24) Crotch has clearly confounded two species. The male he describes belongs to the next species.

Occurs in Alaska, Idaho and Utah (Hubbard). Crotch says Vancouver and Oregon also, but as he has confounded two species I quote only localities certainly known to me.

S. simplex Lec.

Male.—Entirely ferruginous above and beneath. Thorax feebly angulate at the sides, usually tridenticulate. Head and thorax densely coarsely punctate, not shining. Elytra with the four costæ moderately well developed. Posterior tibiæ gradually dilated, the apex prolonged on the inner edge beyond the insertion of the tarsus and without spurs, a long curved process on the posterior edge near the tip.

Female.—Paler in color than the male. Thorax very feebly angulate, and usually with three small denticles. Elytra quadricostate, but less distinctly than the male. Posterior tibiæ simple, and with distinct terminal spurs.

The male of this species may be very readily separated from any other known form. By the pale antennæ the females may be separated from the preceding species. From *ferruginea* there is no very obvious distinction, except that I observe in the present species the terminal joint of the antennæ is distinctly longer than the tenth, while in *ferruginea* the two are about equal.

Occurs in Alaska, Oregon, Washington and northern California.

S. ferruginea Germ.

Male.—Rufo-ferruginous, or rufo-testaceous. Thorax rather broadly angulate at the sides and very obtusely tridenticulate. Elytra quadricostate, the costæ not well marked, excepting the sub-humeral. Posterior tibiæ slightly broader at tip and with terminal spurs, the inner edge sinuate below the middle.

Female.—Generally of a paler color than the male. Thorax

usually more distinctly tridenticulate. Elytra less distinctly costate and often with the costæ obsolete, except the subhumeral.

In the wide range of country over which this species extends every grade of variation in the distinctness of the costæ occurs. There need be no trouble in separating the males of this species. The females resemble those of the preceding, and may be known by the characters there given.

Occurs in Newfoundland, New Hampshire, Massachusetts, New York, Michigan, Nebraska, Ohio, Maryland, Virginia and the intermediate localities.

S. albida Lec.

Male.—Variable in coloration. Thorax subacutely angulate at the sides without denticulation. Elytra with the second and fourth costæ usually distinct, often only the fourth evident, color yellowish testaceous with the suture nearly always narrowly piceous. Posterior tibiæ simple, with terminal spurs.

Var.—Head rufescent, occiput piceous. Thorax nearly black, with the apical and basal margins pale.

Var.—Head and thorax rufescent, the latter paler at apex and base.

Var.—Head and thorax as pale as the elytra.

Var.—When the suture is piceous the scutellum is similar in color, when pale the scutellum is pale.

Female.—Yellowish white, practically invariable in color. Thorax less acutely angulate. Elytra in the great majority very feebly costate, the subhumeral alone evident.

This species is readily known by its generally smaller size and paler color, but more especially by the form of the antennæ, in which the last four joints, although equal in length among themselves, are very obviously shorter than the four joints which precede.

Occurs in Oregon, Washington, and California as far south as Alameda.

Bibliography and Synonymy.

S. carinata Mann., Bull. Mosc. 1843, ii, p. 307; Lac., Mon. p. 228.

S. simplex Lec., Pacif. R. R. Rep. 1857, p. 66.

S. ferruginea Germ. (*Donacia*), Nov. Act. Halens. i, 6, p. 34; Lac., Mon. p. 232.

tripla Say, Journ. Acad. v, p. 281; edit. Lec. ii, p. 337.

costata Newm., Ent. Mag. v, p. 391.

rubicunda Lac., Mon. p. 230.

S. albida Lec., Pacif. R. R. Rep. 1857, p. 66, ♀.

suturalis Lec., loc. cit. ♂.

seriata Lec., Proc. Acad. 1859, p. 90, ♂.

ORSODACNA Latr.

In "Entomologica Americana," vol. i, p. 9, while giving the synonymy of the species described by Newman, will be found a list of the synonyms of *Orsodacna atra* Ahr.

In the few words which follow I hope to make clear the relationship of the names to each other, and as briefly as possible describe the varieties which have caused the multiplication of names.

O. atra Ahrens (*Donacia*), Nov. Act. Halens. i, p. 46; Lacord., Mon. p. 86.

Color entirely piceous, including the legs.

Var. *tibialis* Kby., Fauna Bor. Am. p. 221; *inconstans* Nm. Ent. Mag. v, p. 391.

Entirely piceous, except that the tibiae and base of femora are more or less testaceous.

Newman recognized as varieties of his species certain forms which are sub-varieties of *trivittata*, hence his name.

Var. *luctuosa* Lac., loc. cit. p. 72.

Piceous, thorax reddish, with a central discal spot of variable size piceous.

Var. *hepatica* Say, Journ. Acad. v, p. 281; *ruficollis* Newm., Ent. Mag. v, p. 391.

Piceous, thorax entirely red.

The specimen described by Say was evidently slightly immature, that by Newman fully colored.

Var. *vittata* Say, Journ. Acad. iii, p. 430; Lacord., Mon. p. 71; *armeniaceæ* Germ., sp. nov. p. 526.

Piceous black, thorax orange-yellow, each elytron with a narrow, slightly oblique, yellow stripe.

Var. *trivittata* Lacord., Mon. p. 71; *tricolor* Mels., Proc. Acad. 1847, p. 160.

Color in great part yellowish, with slight reddish tinge to the thorax; elytra with a narrow sutural piceous stripe and a lateral piceous border, which at middle is much dilated and again narrowed.

Occasionally the occiput is piceous.

The elytra may become entirely yellow. One specimen in my cabinet has merely a slight piceous area at tip.

Var. *Childreni* Kby., Faun. Bor. Am. p. 221.

In great part piceous, each elytron with a humeral and apical yellow spot of variable form and size.

The legs are either piceous or testaceous, depending on the extent of either color on the elytra.

The yellow elytral spots may become so extended as to produce a design resembling closely that of *trivittata*, but for those who desire

it this variety may be separated from the preceding by having the head and thorax always of dark color.

There seems to be no law of distribution of these varieties, except in the case of the entirely piceous forms which seem restricted to the more northern regions.

In distribution, as a whole, the species crosses our continent from the New England States to Vancouver and northward. In the Atlantic region it is found in North Carolina. From the Lake Superior region it passes southward through Colorado to Arizona, and on the Pacific coast from Vancouver southward in the more elevated regions through California.

ZEUGOPHORA Kunze.

The species of this genus have not yet been collected with sufficient care and such numbers as to warrant any positive assertion regarding their synonymy. It is very probable that the seven given below should be reduced to four, and possibly to three.

That they may be identified by their present names, the following table is presented :

Body as seen from above of one color.

Pitchy-black.....**abnormis.**

Entirely yellowish.....**Kirbyi.**

Body above bi-colored.

Elytra entirely black.

Head entirely yellow; punctures of elytra large and more distant than their diameters.....**scutellaris.**

Occiput black; elytral punctures close.....**consanguinea.**

Elytra parti-colored.

Thorax entirely yellow.

Elytra with discal piceous area, touching the base, not reaching the apex; antennæ entirely yellow.....**californica.**

Elytra with a cordiform discal space, the suture narrowly and side margin yellow; outer half of the antennæ piceous; elytral punctures very close.....**puberula.**

Thorax with a discal piceous area divided at middle by a yellow line.

Elytra with a common oval, or cordiform spot and the apex pale; antennæ pale.....**varians.**

From our present knowledge these species are distributed as follows :

Z. abnormis Lec., Lake Sup., Or., Ks., Col., N. M., Nev., Wash.

Z. Kirbyi Baly, *Reineckii* Grote, N. Y. (western).

Z. scutellaris Suffr., N. Eur., Or., N. M., Ill.

Z. consanguinea Cr., Ill. (northern)

Z. californica Cr., Oregon.

Z. puberula Cr., Mass., Ill.

Z. varians Cr., Penn., Ill., Ks., Wash.

SAXINIS Lac.

The species of this genus at present known to inhabit our fauna may be separated in the following manner :

Elytra with both humeral and apical red spots.

Thorax distinctly punctate; punctures of the rows not confused near the scutellum..... **apicalis.**

Elytra with humeral spot alone.

Humeral spot large, involving the entire epipleural lobe, extending rather more than a third from the humerus toward the apex.

Punctures of thorax rather coarse and close, particularly deep near the side margin; elytral sculpture rather rough; surface somewhat dull.

sonorensis.

Punctures of thorax neither coarse nor close, a little coarser near the sides, but not dense; rows of punctures of elytra well defined; surface moderately shining..... **omogera.**

Humeral spot umbonal, not involving the half of the epipleural lobe; thorax comparatively smooth.

Elytra rather closely punctate, the punctures of the striæ irregular and confused with those of the intervals; surface rather dull..... **sauucia.**

Elytra with the punctures of the striæ fine and not closely placed, those of the intervals few and very fine, surface quite smooth..... **politula.**

Elytra without humeral red spot.

Thorax sparsely finely punctate; punctures of elytral rows distinct, but irregular; surface rather dull..... **speculifera.**

As a general rule the Chrysomelidæ are noted for their variability in ornamentation, but in the present genus, as far as our representation shows, the spots are constant as to form and extent, so that I can use them as a means of separating species in tabular form.

S. apicalis Lec., Trans. Am. Ent. Soc. xii, 1884, p. 25 — Rather more elongate than our other species, blackish blue, the thorax somewhat greenish. Head rather coarsely punctate. Thorax sparsely, finely punctate on the disc, a little more coarsely and closely on the declivity. Elytra striato-punctate, the punctures moderately coarse, but not crowded, becoming finer toward the apex, all the rows are regular, even the scutellar is not confused, intervals with sparsely placed finer punctures; humeral red spot large, extending inward to the second stria, involving the entire epipleural lobe, apical spot round, not reaching either the suture or apex; epipleural lobe subangulate; body beneath densely finely punctulate and clothed with fine cinereous pubescence. Length .24 inch.; 6 mm.

Differs from all our species by the presence of a sub-apical red spot in addition to the humeral and by the sub-angulate epipleural lobe. In the latter respect it seems allied to the Mexican *saginata*. It is the only species in our fauna with all the rows of punctures distinct.

Occurs in southern Arizona (Morrison).

S. sonorensis Jacoby, Biol. Cent.-Am. vi, pt. i, Suppl. p. 88, pl. xxxvii, fig. 10.—Form of *saucia*, cobalt-blue, but less shining than that species. Head moderately coarsely punctate, slightly strigose, and with alutaceous surface. Thorax rather coarsely and moderately closely punctate, more coarsely, closely and deeply at the sides, surface somewhat alutaceous. Elytra rather roughly sculptured, the rows of punctures only moderately distinct at the sides, on the disc much confused where those of the striae and of the intervals are scarcely distinct: humeral spot large, extending inwards to the fourth stria and near the base to the third, at the sides covering the entire epipleural lobe, extending more than a third from the base toward the apex. Body beneath densely finely punctured, clothed with short, silken, cinereous pubescence. Length .20—.22 inch.; 5—5.5 mm.

This species resembles *saucia* pretty closely, but the thorax is more coarsely punctured, and the humeral spot of greater extent. The epipleural lobe is also more subangulate, but less so than in *apicalis* or the Mexican *saginata*.

Occurs in Arizona. Mr. Jacoby gives northern Sonora as his locality, the specimens having all been collected by Morrison.

S. omogera Lac., Mon. ii, p. 482.—Bluish-green to dark blue, moderately shining. Head punctate, slightly rugulose with alutaceous surface. Thorax rather finely and not closely punctured on the disc, more coarsely and closely at the sides; striae of punctures moderately distinct at the sides, although somewhat confused, those of the disc, especially near the scutellum, very much confused; humeral spot extending inward to the third or fourth stria, at the sides covering the entire epipleural lobe, extending more than a third toward the apex, epipleural lobe rounded. Body beneath densely finely punctured and cinereo-pubescent. Length .12—.15 inch.; 3—3.75 mm.

The only species with which this might be mixed is *sonorensis*, which has a more coarsely and closely punctured thorax and much less shining surface. The epipleural lobe is again more obtuse than in the two preceding species, although less so than in *saucia*.

Occurs from New Jersey to Georgia, Tennessee and Texas.

S. saucia Lec., Pacific R. R. Rep. 1857, p. 66; *bisignata* (*Clythra*), Walker, Nat. in Vanc. vol. ii.—Deep blue, thorax more shining, elytra rather dull. Head dull, alutaceous, sparsely punctate, on the clypeus more distinctly. Thorax very finely and indistinctly punctate on the disc, more coarsely close to the side and near the apex. Elytra with the rows of punctures indicated, but much confused, especially near the scutellum; humeral spot not large, covering less than half the epipleural lobe, the latter regularly rounded, without trace of angulation. Body beneath densely finely punctulate and cinereo-pubescent. Length .16—.20 inch.; 4—5 mm.

In this species the umbonal spot is of oval form. It does not extend inwards further than the fifth row of punctures, and but rarely involves more than the half of the epipleural lobe. The characters

given in the table will enable it to be distinguished from any other species.

In the "Biologia" (vi, pt. 1, suppl. p. 90) Mr. Jacoby quotes me as stating that this species is identical with *saginata*. If I have ever published such a statement the reference has entirely escaped me. At all events I will now assert that the two species are not the same.

Occurs in various parts of Oregon and California.

S. politula n. sp.—Form rather robust, deep blue, surface shining. Head very indistinctly punctate; disc of thorax almost absolutely smooth, a few coarse punctures and wrinkles close to the lateral margin. Elytra with distinct striae of fine not closely placed punctures, the first and second rows confused near the scutellum, intervals wide, flat, with finer punctures distantly placed; humeral spot oval, extending inward as far as the fourth stria, externally not covering half of the epipleural lobe, the latter broadly rounded. Body beneath densely finely punctured and cinereo-pubescent. Length .25 inch.; 6.25 mm.

This species has a smoother and more shining surface than any other in our fauna. The striae of punctures are also more regular, excepting, probably, *apicalis*. Its form is more robust than any, except the following species.

Occurs in California near Monterey and Santa Barbara.

S. speculifera n. sp.—Deep blue, feebly shining, the thorax more shining, humeral umbone purple-black polished. Head alutaceous, indistinctly sparsely punctate. Thorax sparsely finely punctured on the disc, a little more distinctly on the declivity and coarsely close to the side margin. Elytra rather roughly punctate, the rows of rather coarse punctures somewhat confused, especially near the scutellum, the intervals slightly convex and with distant smaller punctures; humeral spot entirely wanting, in lieu thereof the umbone is smooth, purple-black; epipleural lobe broadly rounded. Body beneath densely finely punctured and cinereo-pubescent. Length .26 inch.; 6.5 mm.

An easily known species by the absence of the humeral red spot. In form it resembles *politula*, but is more robust than any other species. It cannot be suspected of being an accidental variety of *saucia*, as the thorax is more distinctly punctate and the elytra far more roughly sculptured.

Occurs in Owen's Valley, California; two specimens.

In the females of all the species the last ventral segment has an oval and moderately deep fovea, which is smooth at bottom. The same segment of the male is simple.

MEGALOSTOMIS Lac.

This genus contains the largest species of the tribe. Three are known to me from our fauna, all belonging to the s. g. *Minturnia* as defined by Lacordaire, which may be distinguished in the following manner:

Colors above more or less metallic... ..**pyropyga.**

Color not metallic, piceous, elytra with a broad, basal, dull red band.

Humeral umbone black; legs entirely black.....**major.**

Humeral umbone red; tibiae red on outer edge.....**subfasciata.**

M. pyropyga Lac., Mon. p. 524.—General color above bluish green, metallic, elytra with a broad basal, reddish yellow band, their apices with brilliant golden spot with coppery reflection, a similar color at apex of thorax; surface glabrous; scutellum smooth. Length .40 inch.; 10 mm.

The sexes do not differ much in this species. The last ventral segment has a small fovea in the female.

Occurs in Arizona, common in Mexico.

M. major Crotch (*Coscinoptera*), Proc. Acad. 1873, p. 29.—Form robust, piceous, moderately shining, surface sparsely cinero-pubescent, elytra with a broad, dull red, basal band enclosing a black spot at the umbone. Head piceous, moderately closely punctate. Thorax rather sparsely punctate on the disc, more closely and coarsely toward the sides, hind angles well defined, not prominent; scutellum closely punctate. Elytra not closely punctate, the punctures coarser toward the sides and much finer toward the apex. Pygidium densely punctured and cinereo-pubescent, a shining, space near the apex, which is subcarinate along its middle. Body beneath densely punctulate and cinereo-pubescent. Legs black, cinereo-pubescent. Length .36—.42 inch.; 9—10.5 mm.

Of this species I have seen females only; they have the usual fovea in the last ventral segment. This form is evidently closely related to, and, in all probability, identical with *dimidiata*, which is found in the adjacent regions of Mexico.

Occurs in Texas near the Rio Grande.

M. subfasciata Lec. (*Coscinoptera*), Trans. Am. Ent. Soc. 1868, p. 56.—Resembles the preceding in color, except that the basal red band is divided at the suture and the umbone is not black, surface above more sparsely pubescent. Head moderately closely punctate. Thorax closely punctate at the sides, more sparsely on the disc, the median line conspicuously smooth, hind angles well defined; scutellum closely punctate. Elytra moderately coarsely, but not closely punctate, finer toward the apex, but not denser at the sides. Pygidium densely punctate and pubescent with a short, smooth carina. Body beneath densely punctulate and pubescent. Legs piceous, the outer edge of the tibiae rufo-testaceous. Length .24—.30 inch.; 6—7.5 mm.

In the male of this species both mandibles are subangulately prominent at the sides. The females have normal mandibles and a fovea in the last ventral segment. The pygidium is more convex in the male.

The typical specimen of this species has the basal fascia of the elytra so broadly divided at the suture that the species was described as having merely a quadrangular humeral spot. Specimens are more abundant in which the sutural black division is very narrow or even

wanting. In no specimen has any evidences of a black humeral umbone been observed.

This species is probably distinct from any of the Mexican forms as it extends its habitat more to the North.

Occurs in Kansas and Arizona.

COSCINOPTERA Lac.

The species which occur in our fauna are, with two exceptions, from the trans-Mississippi and southwestern regions of our country. They divide quite sharply into two series already recognized by Lacordaire.

Elytral punctuation very confused, without any trace of a serial arrangement; hind angles of thorax rounded; form robust; mandibles of male stout, subangulate externally.....**Series A.**

Elytral punctuation subseriately arranged; hind angles of thorax obtuse, but quite evident; form more cylindrical; mandibles of male not obviously different from those of the female.....**Series B.**

Series A.

The species which belong to this series approach *Megalostomis* more closely. They may be separated by the following table:

Disc of thorax evenly and regularly convex; punctuation dense and even; a smooth median line.

Thorax and elytra pitchy-black, no trace of humeral red spot..**dominicana.**

Thorax slightly green, elytra purple-black with a distinct humeral spot.

seminuda.

Disc of thorax uneven and irregularly convex, the punctuation unevenly disposed and rather coarse, no well defined smooth median line.

Elytra with an entire yellow vitta.....**vittigera.**

Elytra with short vitta or humeral spot*var. idem.*

C. dominicana Fab., Syst. El. ii, p. 34; Oliv., Ent. vi, 864, pl. 2, fig. 28.

franciscana Lec., Col. Kansas, 1859, p. 22.

dorsalis Lec., Trans. Am. Ent. Soc. 1874, p. 25.

This species is so well known to all collectors as to need no comment.

The specimens from the eastern Atlantic region are less conspicuously pubescent than those of the more western regions. *C. franciscana* was founded on a Kansas specimen, and it is rather odd that a specimen from Arizona differing only in being particularly well preserved should have again received a name.

Widely distributed from the New England States to Dakota, to Texas and Arizona, extending into Mexico.

C. seminuda n. sp.—Form of *dominicana*, purplish black, thorax faintly æneous, elytra with subhumeral red spot, surface very sparsely pubescent. Antennæ black; labrum orange; head closely and moderately coarsely punctate; thorax regularly convex, punctures moderately coarse, but not dense at middle, denser and finer on the declivity, median smooth line distinct; elytra moderately coarsely and closely punctate without order, except faintly near the apex, where the punctures are less close, humeral spot covering the epipleural lobe, but not the umbone; body beneath densely finely punctate and densely cinereo-pubescent; legs black. Length .24 inch.; 6 mm.

Exactly of the form of *dominicana*, and similarly sparsely pubescent to the eastern forms of that species. The male has a smooth spot on the last ventral segment. The mandibles are, however, much less prominent than in *dominicana* or *vittigera*.

Occurs in Arizona.

C. vittigera Lec., Proc. Acad. 1861, p. 357.—Less robust than *dominicana*, piceous black, moderately shining, each elytron with a yellow vitta of variable width, sometimes shortened or reduced to a humeral spot. Thoracic convexity irregular, caused by a transverse depression across the middle, somewhat deeper at the sides, punctuation coarser than in *dominicana* and much sparser, somewhat irregularly disposed, the median smooth line feebly indicated; elytra coarsely not densely punctured, the punctures not at all substriately arranged, smoother at apex; body beneath black, densely punctulate, not very densely pubescent; legs black, sparsely pubescent. Length .12—.22 inch.; 3—5.5 mm.

The male has the mandibles strong and subangulate externally, the last ventral with a smooth space. The female has a smooth fovea in the last ventral and normal mandibles.

The surface is sparsely pubescent, the thorax more distinctly so than the elytra.

In the usual form the elytral vitta starts at the epipleural lobe, curves upward without including the entire umbone, passes parallel with the side margin to the apex, curving in to the suture. Specimens occur in which the elytra are entirely yellow, except a narrow sutural and lateral border.

On the other hand the vitta may gradually shorten until only a humeral spot is left. For these the varietal name *arizonensis* is suggested, from the region of their occurrence.

In my cabinet are two small specimens .12—.14 inch. which seem to me, at present, to be best placed as starved specimens. There does not seem sufficient character about them to warrant their being distinct species.

Occurs from Wyoming and Dakota southward through Colorado to Arizona.

Series B.

These species, by the subseriate elytral punctuation, approach *Euryscopa* gradually by their sculpture and one of them might, by that alone, be placed in *Euryscopa*. They are as follows:

Elytra pubescent, the punctuation relatively fine and close.

Elytra with distinct humeral red spot.

Thorax densely punctate, the punctures much closer than their own diameters, the smooth median line well marked.....**axillaris.**

Thorax quite sparsely punctate, at least anteriorly.

Elytral punctuation distinctly subseriate, the pubescence of surface not dense.....**canella.**

Elytral punctuation very indistinctly substriate and only so at the sides, pubescence of upper surface dense, almost concealing the surface color and sculpture.....**mucorea.**

Elytra without humeral red spot, the smooth thoracic vitta indistinct.

ænescens.

Elytra glabrous, the punctures coarse, subseriate and closely resembling *Euryscopa*; no humeral spot.....**æneipennis.**

In the males of all the species of this series the mandibles are not subangulate externally, and are scarcely more prominent than in the female. The last ventral of the male has a smooth space, the female a smooth fovea.

C. axillaris Lec., Trans. Am. Ent. Soc. 1868, p. 56.—Form subcylindrical, scarcely at all narrowed behind the humeri, piceous, slightly bronzed, moderately shining, very sparsely pubescent, humeri with a quadrate red spot covering the umbone. Head moderately densely, but not deeply punctate; labrum piceous, yellow at the sides; thorax regularly convex, hind angles distinct, surface densely and equally punctate, the median smooth line well marked, except sometimes in front; elytra densely punctate, more coarsely than the thorax, the punctures distinctly subseriately placed, the apex somewhat smoother; body beneath densely punctulate and pubescent; legs piceous, sparsely pubescent. Length .14—.20 inch.; 3.5—5 mm.

There does not seem to be any notable variation among the specimens studied.

Occurs from Colorado to Texas.

C. canella Lec., Trans. Am. Ent. Soc. 1874, p. 25; *bifaria* Lec., loc. cit.

Closely resembles *axillaris*, and differs in having the thorax not closely punctate on the disc, the punctures more distantly separated than their own diameters. In the majority of specimens the tibiae are reddish on the outer side.

The typical specimens of the two species are before, and I am entirely unable to perceive why two species should have been described.

Occurs in southern California and Arizona.

C. mucorea Lec., Proc. Acad. 1858, p. 83.

Somewhat more robust than *axillaris*, slightly more æneous and with the pubescence more abundant, so as to nearly conceal the surface. The humeral red spot is not conspicuous, but covers the umbone. The punctuation of the middle of the thorax is not dense, but moderately coarse as compared with *canella*. The labrum is piceous, slightly paler at the sides. Legs entirely piceous. Length .22 inch.; 5.5 mm.

Occurs in So. California, extending to Tucson, Ariz. (Wickham)

C. ænescens Crotch, Proc. Acad. 1873, p. 29.—Piceous black, slightly bronzed, moderately shining, very sparsely pubescent. Thorax not closely punctate at middle, the punctures more distant than their diameters, at sides more densely punctured. Elytra distinctly substriately and moderately densely punctate. Length .18 inch.; 4.5 mm.

With a form resembling *axillaris* or *canella*; it is distinguished from the latter by the absence of humeral spot, and from the former, in addition, by the less densely punctate thorax.

Occurs in Georgia.

C. æneipennis Lec., Journ. Acad. iv, p. 26.—Surface distinctly æneous; head, thorax, scutellum and under side pubescent, elytra glabrous. Thorax rather densely punctate with a smooth median line. Elytra with coarse punctures arranged in quite regular striæ, but confused near the scutellum. Length .26—.28 inch.; 6.5—7 mm.

This is the largest species in our fauna. It is evidently more nearly related to the Mexican *cribrata* than any other, although quite distinct from that. The regularity of the elytral punctuation might cause some suspicion that the species should be referred to *Euryscopa*.

Occurs in Texas and Arizona, extending into Mexico.

EURYSCOPA Lac.

The species of this genus are far less numerous in our fauna than *Coscinoptera*. They are known only from the extreme southwestern regions of our country.

The few species known may be thus separated:

Thorax closely and coarsely punctate, much more densely near the sides.

Thorax as long, or longer than wide; humeral umbone black; subhumeral lobe well developed.....**Lecontei.**

Thorax broader than long; humeral spot quadrate, the umbone red; subhumeral lobe feeble.....**pusilla.**

Thorax finely and sparsely punctate, on the disc nearly smooth.

Form rather slender; thorax as long (or nearly so) as wide; punctures of elytral striæ fine.....**subtilis.**

Form robust; thorax much wider than long; punctures of elytral striæ coarse and deep.....**vittata.**

In this genus the sexual characters are feebler than in *Coscinoptera*. The fovea in the last ventral of the female is scarcely evident. In a male of *pusilla* the mandibles are distinctly angulate externally.

E. LeContei Crotch, Proc. Acad. 1873, p. 28: *scapularis* ‡ Lec. olim.—Form moderately elongate, piceous black, shining; elytra with a humeral red spot, somewhat variable in size. Head and thorax moderately densely clothed with ashy-white pubescence; head densely and rather coarsely punctured, thorax as long as wide, or slightly longer, relatively coarsely punctured, closely on the disc, more densely at the sides, a smooth median line; scutellum with few coarse punctures. Elytra slightly narrowed posteriorly, subhumeral lobe rather large, the striæ of punctures coarse, deep and closely placed, intervals feebly convex, scutellar stria much confused. Body beneath densely punctured, cinereo-pubescent. Length .10—.22 inch.; 2.5—5.5 mm.

In this species the humeral red spot has a constant form in the numerous specimens examined. It begins under the humeral umbone passing around that leaving it black, extends inwards to about the fourth stria and about one-third the length of the elytra. The posterior edge is oblique.

As synonyms of this species I unhesitatingly place *longicollis* and *parvula* Jacoby (Biol. Cent. Am. vi, pt. 1, suppl. pp. 78, 79, pl. xxxvii, figs. 5, 6). Exactly similar specimens from the same source are before me in much greater number than seen by Mr. Jacoby. That author seems to have misunderstood Crotch's expression "thorax coarsely and strongly punctate," which is undoubtedly exact relatively to any others he had before him.

Occurs in Texas and Arizona.

E. pusilla n. sp.—Subcylindrical, a little more robust than *LeContei*, piceous black, shining, elytra with a quadrate red, humeral spot. Head closely and rather coarsely punctate, cinereo pubescent, labrum yellow in the male, darker in female. Thorax broader than long, coarsely and closely punctate, cinereo-pubescent, a smooth median line; scutellum numerously punctate. Elytra scarcely narrowed behind, subhumeral lobe feeble, the humeral red spot subquadrate, extending inward to the fifth stria and nearly squarely truncate posteriorly. elytral striæ composed of coarse, deep and closely placed punctures, which are wider than the intervals. Body beneath densely punctured and pubescent. Length .16 inch.; 4 mm.

The males have the mandibles distinctly angulate externally.

This species is closely related to *LeContei*, but has a much broader thorax, at least a third wider than long, while in that species the thorax is as long, or even a little longer than wide at middle. The humeral spot is here quadrate and covers the umbone, and the subhumeral lobe is feeble.

While it is usually mixed with the preceding, there is no doubt that this is the best defined of any of the species in our fauna.

Occurs in Texas.

E. subtilis n. sp.—Form of *LeContei*, piceous black, shining, elytra with large red humeral space extending broadly and obliquely toward the apex. Head not coarsely punctate, sparsely on the vertex, densely on the front, surface cinereo-pubescent. Thorax slightly narrowed in front, fully as long as wide ♀ or less elongate ♂, surface relatively finely punctate on the disc and very sparsely, toward the sides a little more coarsely and closely, median line smooth, surface cinereo-pubescent, sparsely on the disc; scutellum with but few punctures. Elytra narrowed near the apex only, subhumeral lobe moderate, striae composed of moderately fine, not closely placed nor deeply impressed punctures, intervals flat, smooth. Body beneath densely punctate, cinereo-pubescent. Length .15—.20 inch.; 3.75—5 mm.

The female has a distinct fovea in the last ventral segment, the males have a shorter and broader thorax. The red space surrounds the humeral umbone and extends obliquely inward to the second stria, thence posteriorly more than half the length of the elytra, the apex rounded.

While it resembles *LeContei* in form, it differs in its less punctate thorax, more finely punctate elytra, and the larger humeral space. From *vittata*, with which it has been associated as a variety, it differs in its smoother elytra and much more elongate form, especially as to the thorax.

Occurs in the southern part of California.

E. vittata Lec., Journ. Acad. iv, p. 26,—Form nearly as robust as *Cosc. dominicana*, piceous black, shining; elytra with a red humeral spot (umbone black) sometimes extended, forming a vitta. Head moderately closely and coarsely punctate, cinereo-pubescent, occiput smoother. Thorax one-half wider than long, narrowed in front, disc scarcely visibly punctate, at sides more distinctly, surface cinereo-pubescent, more closely at the sides; scutellum with numerous coarse punctures and pubescent. Elytra slightly narrowed posteriorly, the subhumeral lobe moderately developed, striae composed of large, deep, closely placed punctures, intervals flat, smooth. Body beneath densely punctured, cinereo-pubescent. Length .22—.26 inch.; 5.5—6.5 mm.

The females have a feeble fovea in the last ventral segment.

The punctures of the striae vary somewhat, but are usually as described, although one specimen might be called moderately finely punctate.

The humeral spot varies in extent. In the type specimen the spot forms a vitta extending nearly to the apex of the elytra as in *Cosc. vittigera*. In all the other specimens seen the spot does not extend beyond the middle of the elytra.

This species will be easily known by its form, which is only a little less robust than *Cosc. dominicana* and by the very smooth disc of the thorax.

Occurs in Texas, Arizona and southern California.

Notes on AMARA s. g. TRIÆNA.

BY GEO. H. HORN, M. D.

The division Triæna includes those Amaræ in which the terminal spur of the anterior tibia is trifid in both sexes. The posterior tibiæ of the males are pubescent on the inner side, as in *Amara* proper, but not so densely. In all the species the tip of the prosternum has a distinct marginal line. The thorax at base has a marginal line which extends from the angle one-third inwards. The scutellar stria terminates in an ocellate puncture.

The species are few in number, and may be separated in the following manner:

Antennæ piceous, except the three or four basal joints.

Legs entirely rufo-testaceous.

Hind angles of thorax obtuse; tarsi entirely pale; fourth joint of antennæ in great part pale..... **angustata.**

Hind angles of thorax sharply rectangular; tarsi semi-piceous; fourth joint of antennæ almost entirely piceous.

Sides of body beneath and abdomen smooth..... **pallipes.**

Sides of body beneath and abdomen coarsely sparsely punctate.. **longula.**

Legs in great part piceous **scitula.**

Antennæ and legs entirely rufo-testaceous..... **Belfragei.**

The first two species belong to the Atlantic fauna, the next two to the Pacific region, while the last is known to me from Texas only.

A. angustata Say.

The smallest of the species of the group. The hind angles of the thorax are quite obtuse, and there is no distinct oblique impression of the disc near them. The under side of the body is smooth.

Occurs from Canada southward, and from the New England States westward nearly to the Rocky Mountains.

A. pallipes Kby.

More elongate in form than *angustata*, and with the hind angles of the thorax rectangular, the sides of the thorax parallel for a short distance in front of them. There is a distinct oblique impression near the hind angles. Under side of body smooth.



Horn, George H. 1892. "Studies in Chrysomelidæ." *Transactions of the American Entomological Society* 19, 1-18.

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