

NOTES ON AMERICAN HEMIPTERA HETEROPTERA.

BY

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I.

CONTRIBUTIONS TO A KNOWLEDGE OF THE SPECIES OF THE GENUS
COSMOPEPLA STÅL.

This genus of the subfamily Pentatomina, as constituted by the eminent Prof. Stål: O. V. A. F., 1867, p. 525, has the following characters:

Corpore latiuscule obovato, subtus sat convexo; capite valde deflexo, thorace brevior, parviusculo, ante oculos utrinque leviter sinuato, antesinus vix angustato, apice rotundato-truncato, jugis et tylo æque longis, marginibus sub-acutis; bucculis sat elevatis, postice altioribus; ocellis inter se quam ab oculis fere triplo longius remotis; rostro paullo pone coxas posticas extenso, articulo primo bucculas superante, articulo secundo apicalibus duobus ad unum vix brevior; antennis mediocribus, articulo primo apicem capitis æquante vel vix attingente, secundo tertio brevior; thorace antè sat declivi, marginibus lateralibus obtusis, callosis, integris, angulis lateralibus rotundatis, haud prominulis; scutello mediocri, apice lato et rotundato, frenis ultra medium scutelli haud extensis; venis membranæ simplicibus; mesosterno leviter carinato; ostiis odoriferis paullo elevatis, in sulcum haud continuatis; tibiis teretibus, sulco destitutis.

The important characters of this long diagnosis have been summed up by M. Distant, in Biol. Cent. Amer., p. 52, as follows:

The lobes of the head are of equal length, the scutellum broad and rounded at the apex, the lateral angles of the pronotum are rounded * * * and the nervures of the membrane are longitudinal and simple.

Up to this day five species were placed in this genus, in which Stål, in his great work *Enumeratio Hemipterorum*, 2, 1872, pp. 18, 19, enumerated three already described species: *Cimex carnifex* Fabr., H. S., Suppl., 1798, p. 535; *Eysarcoris decoratus* Hahn, W. L., II, 1834, p. 117, Fig. 198; *Eysarcoris conspicillaris* Dallas, List of Hemipt., I, 1851, p. 225, and diagnosed *Cosmopepla cruciaria* Stål. Recently M. Distant added to these *Cosmopepla binotata* Dist., Biol. Centr.-Amer., Hemipt. Heteropt. Suppl., p. 327, Tab. XXXI, Fig. 7.

* SIR: I have the honor to submit for publication the accompanying "Notes on North American Hemiptera Heteroptera," by Mr. A. L. Montandon, of Bucharest, Rumania. The notes are of authoritative value and Mr. Montandon has based them to a certain extent upon Museum material which I have sent over to him from time to time.

Respectfully,

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Important material received from many parts of the American continent enables me to add two new species.

The synoptic table and the following descriptions will enable one to identify easily the seven species of the genus *Casmopenia* known at present:

- A. Scutellum very obtusely rounded at the extremity; frenum very short, not quite one-third the length the scutellum; shape of the body broadly oval.
- B. Apical margin of scutellum yellowish ochraceous; abdomen beneath with a regular, narrow edge, extending to the stigmata; body above slightly and sparsely punctured.
- C. Pronotum with a transverse fascia and a longitudinal central spot reaching from the anterior margin back to near the posterior margin; thorax ochraceous, shining, and impunctured.
- C. cruciaria* Stal.
- C. C. Pronotum with a transverse ochraceous fascia, but without the longitudinal spot; the disk of the pronotum punctured at the middle as at the sides before and behind, the transverse fascia..... *C. caruleata* Montand.
- B. B. Apical margin of scutellum concolorous, not yellowish ochraceous, body above thickly punctured.
- D. Scutellum with a red spot on each side near the apex; transverse fascia and longitudinal central spot of the pronotum narrow linear; abdomen above narrowly edged with red.
- C. carnifera* Fabr.
- D. D. Scutellum entirely concolorous, transverse fascia of the pronotum irregular, broadened in the middle, slightly elevated; abdomen beneath broadly edged with yellowish ochraceous; this margin inwardly sinuated opposite each stigma.
- C. uhleri* Montand.
- A. A. Scutellum less obtusely rounded at the extremity; frenum reaching almost one-half of the length of the scutellum; the body a little longer than that of the preceding group; above slightly brassy and thickly punctured.
- E. Transverse yellowish ochraceous fascia of the pronotum irregular, slightly elevated; scutellum punctured to the apex; narrowly edged with yellow at the apex; abdomen beneath broadly edged with yellow; yellow margin deeply sinuate on each segment; stigmata black... *C. conspiciellaris* Dallas.
- E. E. Transverse yellowish ochraceous fascia of the pronotum shining, regular; apex of scutellum more broadly edged with yellowish ochraceous.
- F. Scutellum punctured near the apex on the yellowish ochraceous part; transverse fascia of the pronotum extended backward to near the base of the pronotum; two dark spots in the middle of the fascia; abdomen beneath with the lateral margins broadly pale ochraceous; a segmental series of small, dark, rounded spots covering the stigmata.
- C. binotata* Distant.
- F. F. Apex of scutellum shining, impunctate on the yellowish ochraceous part; transverse fascia of the pronotum not extended backward, impunctate, slightly elevated; abdomen beneath with pale ochraceous lateral margin of equal width including the stigmata..... *C. decorata* Hahn.

Cosmopepla cœruleata, sp. nov.

Several entomologists have given me this species with the name *C. decorata* Hahn, which is manifestly incorrect. These two species, however, are almost alike with regard to the disposition of colors, and on considering only Hahn's figure, W. 1., Tab. LXV, Fig 198, one may be led to confusion. Here is the description of the author, loc. cit., II, p. 117:

Schwarz, blaugrünlich, glänzend, punktirt; die Seitenränder und ein breites glattes Querband über die Mitte des Rückenschildes bleichgelb, die Spitze des Schildchens gelbroth; die Ränder des obern Theils der Halbdecken schmal, die des Hinterleibes breit bleichgelb; Länge 3 Lin.; Breite $1\frac{1}{2}$.

Now, in the species that I describe, the color is not *blue greenish*, but polished dark blue; the abdominal yellow edge is not so broad as in Hahn's species, and the respective proportions are different; *C. cœruleata* Montand. is broader (4 to $4\frac{1}{2}$ ^{mm}) proportionally to the length ($5\frac{3}{4}$ to $6\frac{1}{2}$ ^{mm}).

Hahn gives Mexico as the native country of his species, and indeed I have received and studied many examples from that region (Durango; États du Centre, Dugès) which were surely *C. decorata* Hahn. But specimens of the *C. cœruleata* Montand. have been received from Venezuela (collection Fallou and my own); Costa Rica (Van Patten) (collection of National Museum, Washington, and my own); Costa Rica, Alajuela (Sec. Orozco); San José (P. Biolley), in my collection.

Notwithstanding this superficial resemblance this species deviates very much from the real *C. decorata* Hahn in the broader shape of the body, the broader scutellum at the extremity, with a shorter frenum, the more delicate and not so dense punctation, and by just these characteristics *C. cœruleata* Montand. is closely allied with *C. cruciaria* Stål, as described by the author (Énumération Hemipt. II, p. 19):

Cærulescente nigra, nitida, remote punctata, marginibus lateralibus anticis, fascia media rittaque percurrentibus thoracis * * * flavescens, lavigatis.

C. cruciaria Stål differs only in the longitudinal ochraceous shining line on the middle of the pronotum, which is very apparent and does not exist in *C. cœruleata* Montand., in which the disk of the pronotum is entirely punctured before and behind the transverse fascia; in the blue color of *C. cœruleata* Montand. (not dark violaceous, as *C. cruciaria* Stål), and by the relative length of the fifth joint of the antenna, which is shorter than the second and third conjointly in *C. cœruleata* Montand., whilst the fifth joint is a little longer than the second and third together in *C. cruciaria* Stål. But whether this last character is constant or not, can only be settled by an examination of a larger number of specimens.

Stål's species is mentioned by the author from Bogota, New Grenada (Mus. Holm.), and I possess in my collection two specimens from Cauca, Colombia; so that these two allied species live in the same countries and constitute the more southern forms of the genus.

Cosmopepla Uhleri sp. nov.

Castaneous, with some metallic reflection, especially on the head, and the anterior part of pronotum; above densely punctured. The lobes of the head are equal in length, the central lobe a little narrowed at the apex. Pronotum with the lateral margins and one transverse fascia ochraceous, the latter slightly elevated, with unequal callosities, sinuated before and behind, inclosing four castaneous, finely punctured spots, two on each side impressed and a fifth similar spot on the middle before the line of the four just mentioned. This fifth spot tends to disappear in the examples, in which the transverse, ochraceous fascia gives forth a central longitudinal ochraceous line extending irregularly forward, and reaching sometimes to the anterior margins of the pronotum. Scutellum broadly rounded at the apex, uniformly colored, castaneous, punctured to the extremity without any yellowish ochraceous edge. Elytra castaneous, punctured, with a somewhat shining interval to the internal angle; the exterior margin with an ochraceous callosity. Membrane of the same color as the elytra with 5 to 6 nervures. Connexivum above ochraceous, with a castaneous spot at the base of each segment, arising from the exterior margin of the elytra. Body beneath with blue greenish reflection, especially on the disk of the abdomen. Breast with small pale spots punctured with black at the base of each of the legs. Ostiolar canal ochraceous. Lateral margins of the prostethium ochraceous, with a spot of the same color on the middle of the margins. Lateral margins of the metapleura callous, ochraceous, with the posterior margins narrowly edged with ochraceous. Abdomen beneath broadly edged with ochraceous, this edge inwardly crenulated by a small extension of the color to the middle of each segment, opposite to the stigmata. The latter rather dark; the larger part of the genital segment brownish. Extremity of the femora, tibiae broadly to the middle, and first joint of the tarsi, yellowish brown. Sometimes, however, the legs are entirely darkish.

Length, $5\frac{1}{2}$ to 6^{mm} ; breadth, $3\frac{1}{2}$ to 4^{mm} . California, one example (collection Lethierry). Nevada, two examples in my collection.

It affords me special satisfaction to dedicate this species to Prof. Uhler, who thought that it constituted only a variety of *C. conspiciellaris* Dall., from which it is, however, very distinct from the broader and proportionally shorter body and the more broadly rounded apex of scutellum, which is not edged with ochraceous as in specimens of the true *C. conspiciellaris* Dall. The author of this last species gives this character in his diagnosis (List of the specimens of hemipterous insects in the collection of the British Museum, Part 1, 1851, p. 225): "Scutellum narrowly edged with yellowish white at the apex."

C. Uhleri Montand. differs also in the brownish spots on the connexivum which is here exposed, whilst in *C. conspiciellaris* Dall. the connexivum, hidden under the margin of elytra, is narrowly edged with yellowish and without spots; also in the inward crenulation of the abdominal

edge, which is produced by a small extension of the darkened abdominal disk, covering the stigmata in *C. conspiciellaris* Dall., whilst the edge is crenulated with a small extension of the color of the edge opposite to the stigmata in *C. Uhleri* Montand., the edge covering the stigmata being slightly darkish in this last species.

Prof. Distant (Biol. Centr.-Amer., Tab. 5, Fig. 8), gives a very good figure of *C. conspiciellaris* Dall., probably the type of the author, preserved in the British Museum. It is one of the darkest and least shining species, almost black, slightly bluish, with metallic bronze reflections. It is larger than *C. Uhleri* Montand., and measures in length 6-7^{mm}. My collection contains one example from Vancouver Island, and by the favor of Prof. C. V. Riley I have studied two specimens from Los Angeles, Cal., which are in the collection of the National Museum at Washington.

Every entomologist knows *C. carnifex* Fabr., which is widely distributed throughout the United States and British America. It does not deserve special mention.

C. binotata Distant is very well described by the author (Biol. Centr. Amer., Suppl., p. 327) and figured (Tab. 31, Fig. 7) in the same work. The color of this figure does not appear to me dark enough, but the distinguishing characters are well shown. I also have seen two specimens of this species, one from Durango, Mexico, which is in my collection, and another from Wisconsin, in the collection of Prof. Lethierry.

II.

SYNONYMICAL NOTES ON SOME NORTH AMERICAN SPECIES OF THE GENUS ALYDUS FABR.

Alydus conspersus Montandon.

=*Calcaratus* Uhler, nec Linné.

Grayish above, sparsely hairy on the head and the anterior part of the pronotum; head black, anterior margin and a longitudinal spot on the middle of the anterior part of pronotum black, the middle of this black spot sometimes with a very small longitudinal pale line. The posterior part of the pronotum and the elytra grayish with fine punctures, with castaneous and numerous irregular black spots. Membrane pale vitreous with darkish nervures and numerous round spots irregularly scattered on the surface; the greater part of the back of the abdomen red, base and extremity black. Connexivum black with a pale spot at the base of each segment. Body beneath black with metallic bronze reflections, especially on the abdomen. Antenna dark brown, with the basal two-thirds of the second, and third joints pale. Legs black, the tibiae brownish, with the base and extremity darkish. First joint of the tarsi brownish, with the extremity black. Length, 10 to 11^{mm}.

I have received this species from Constantine, Mich.; Burlington, Iowa; Massachusetts; Colorado; and Dakota.

Of the same dimensions and color as the European species, *A. cælaratus* Lin., with which at first sight it is very easily confounded. It differs in the more sparse hairs, which are almost wanting on the disk of the pronotum; in the small, dark, rounded spots on the posterior part of the pronotum and the elytra; and especially in the whitish diaphanous membrane, with the nervures darkish and the numerous, small, rounded spots scattered on the surface. It is closely allied to the following species:

Alydus curinus Say=*ater* Dallas.

This species is larger than *A. conspersus* (12 to 13^{mm}), darker in every way, being most frequently entirely black, with very small, pale, almost imperceptible spots at the base of the segments of the connexivum; the hair of the head and surface of the pronotum very dense and black. Some pale varieties have the elytra grayish, but the membrane is entirely infuscated and the back of the abdomen is darker than in *A. conspersus* Montaud., sometimes entirely black.

It is as abundant as the preceding species, and my collection contains numerous examples from Iowa, Connecticut, Massachusetts, and Florida.

Prof. Uhler has correctly placed it in his Check List of the Hemiptera-Heteroptera of North America, 1886. Of this species Say gives the following diagnosis: "Body blackish, *hairy*, punctured: thorax densely punctured, *mutic*" (Description of New Hemipterous Insects collected in the Expedition to the Rocky Mountains, 1824). It can not be confounded, as was done by Stål (Enumerat. Hemipter., Part 1, 1870, p. 213), with *A. pilosulus*, H. S., which is not of the same form, having the lateral angles of the pronotum prominently acute, as well represented in H. Schaeffer's figure 870, which gives a clear idea of this last species. Consequently the synonymy should be corrected thus:

Alydus pilosulus H. S.=*curinus* Stål nec Say.

The small, lateral, pale edge of the pronotum renders this species easily recognizable and it is also very common. I possess specimens from St. Louis, Mo.; Florida; and Massachusetts. From the lateral acuminate angle of the pronotum this species could be placed in the subgenus *Megalotomus* Fieb, but it has not the long antennæ, the first joint not being longer than the second, nor the broad hollow at the base of the pronotum, as in the following species, which it approaches:

Alydus (S. G. *Megalotomus* Fieb.) *quinquespinosus* Say=*crucatus* H. S.

This last species is widely distributed throughout North America, and my collection contains specimens from Canada, Massachusetts, Wisconsin, New York, and Florida.

III.

DESCRIPTION OF TWO NEW NORTH AMERICAN SPECIES OF HETEROPTERA.

Dendrocoris pini Montandon.

Oval; pale yellow ochraceous; above coarsely and densely, beneath more finely punctured, concolorous. Head as long as broad (including the eyes), the vertex moderately convex. Antennæ brownish red, with the third joint twice as long as the second, shorter than the first and second together; joints 3, 4, and 5 equal in length. Pronotum, with a short longitudinal callus, smooth to the middle of the anterior margin, with the cicatrices of each side at the anterior part of the pronotum slightly elevated and partially smooth; the lateral margins of the pronotum straight, anterior angle very slightly notched, humeral angle obtuse, not prominent; margins of the scutellum with small, shining, and slightly elevated pale spots. Elytra with a small impunctate portion in the middle of the disk, lateral margins occasionally with pale spots like those of the margin of the scutellum. Membrane reaching the extremity of the body, concolorous, with the body and with the nervures very slightly apparent. Connexivum separated from the elytra, concolorous and densely punctured; the segmental sutures slightly elevated. Rostrum brownish red, reaching the posterior coxæ. Extremity of the femora and of the tibiæ and tarsi more or less reddish brown.

Male and female: Length, 5 to 6^{mm}; width, 3½ to 3¾^{mm}. Found upon *Pinus monophylla* in the Argus Mountains, Cal. Collection of the U. S. National Museum and my own.

The genus *Dendrocoris* Bergroth (Revue d'Entomologie, 1891, p. 228) has been substituted for the genus *Liotropis* Uhler, preoccupied.

I am of the same opinion as Prof. Bergroth, who says that this genus should not be placed in the subfamily Asopina, in which Prof. Uhler has put it, and it evidently belongs to the subfamily Pentatomina, near the genus *Lopadusa* Stål.

The new species just described is easily distinguishable from the two which are recorded in this genus, *D. humeralis* Uhler and *D. fruticicola* Bergroth, by its smaller dimensions, the lateral obtuse angle of the pronotum not prominent, and the pale color of the body with concolorous punctures.

Sinea Rileyi Montandon.

Ferruginous brownish with a grayish pubescence, very short and not so dense upon the elytra, denser beneath, especially on the breast. Posterior and middle femora in the middle and all tibiæ in the middle paler than the body. Head a little shorter than the pronotum, with a double row of three short spines before the eyes, the anterior spines longer than the posterior, and behind the eyes on each side two

tubercles before and behind the ocelli. Neck not spinous. Anterior part of the pronotum covered with small, not very acute tubercles, more robust at the middle, the anterior part one-fourth shorter than the posterior which is granulose; disk much swollen, with a slight longitudinal impression at the middle; lateral angle slightly acuminate; posterior margin narrowly pale with two small teeth alongside the scutellum. Elytra paler at the base, the lateral margins and the small quadrangular discoidal cell near the membrane; brownish on the disk and at terminal exterior angle. Membrane pale vitreous with a brownish black spot at the interior angle, divided and continued upon the nervures and reaching to the extremity of the membrane. Abdomen much broader than the elytra (δ and φ), laterally margins largely rounded in the two sexes, especially φ , with a broad pale fascia at the extremity of each segment. Abdomen beneath ferruginous, paler in the middle. Anterior femora as in all species of the genus *Sinea*, with sometimes whitish and very slender hairs. Superior spine at the extremity of the femora robust and pale as the spines of the inferior part. Antennae wanting in the specimens before me.

δ : Length $9\frac{3}{4}$ mm; abdominal width, $2\frac{3}{4}$ mm. φ : Length, 11mm; abdominal width, 4mm. Panamint Valley, California. Collection of the U. S. National Museum and my own.

I take pleasure in dedicating this species to Prof. C. V. Riley, who has sent it to me. At first sight one may identify this species by its proportionally greater breadth than in the other species of the genus; by the rounded shape of the abdomen; by the pale spots on each segment of the connexivum, by the greatly swollen pronotum posteriorly, and by the very plain brownish mark of the whitish membrane.