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Synopsis of the EUPHORIÆ of the United States.

BY GEORGE H. HORN, M.D.

(Read before the American Philosophical Society, Dec. 19, 1879.)

The occurrence of several new species in our fauna affords an opportunity of briefly reviewing our entire series.

The first question presenting itself is the generic name which should be adopted, and this seems to be a difficult matter to determine. The ablest European authorities who have had to deal with the Cetonia group as  $\mathbf{a}$ 

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castanea t Kby. . Zool. Journ. II, p. 517; Harris, Journ. Acad. V, p. 384.

whole do not seem to be in accord as to the limits of genera, so that we have on the one hand a multiplicity and on the other a synonymic union which does not seem tenable. Lacordaire, under the name *Euryomia*, collects the contents of about ten genera, all of which, with one exception, are the creation of Burmeister. This aggregation is again dispersed in the Catalogus (G. and H.) with *Erirhipis* alone suppressed. It seems highly probable that neither of these extremes is correct.

The name *Euryomia*, at present used in our literature, has for its type a Madagascar species, which presents characters entitling it to be separated from the forms which occur in our fauna, whatever may be its relations with the other old world types which Lacordaire has united with it, consequently our species should bear some other name. *Euphoria* is adopted as most convenient, because the name suggests no special character. Lacordaire states that the genus is not capable of being defined, seeing that the species differ more among themselves than they do in the aggregate from the other neighboring genera. It is, he says, "a genus established on geographical distribution alone."

In a limited series, such as our fauna presents, *Stephanucha* might be allowed to remain separated, but this seems hardly necessary until the limits of all the genera are better defined than they are now.

Having given the reasons for adopting the generic name, the following table of species is presented for the consideration of our students :

Clypeus dentate in front. Base of thorax entire.	
Quadridentate [STEPHANUCHA]areata Fab	r.
Bidentateverticalis, n. sp	
Clypeus entire or feebly emarginate, the angles rounded.	
Mesosternal protuberance round or nearly so	2.
Mesosternal protuberance transverse	
2. Thorax either shining or punctured and pubescent	3.
Thorax opaque, scarcely punctured, not pubescent10	).
3. Base of thorax at middle not emarginate	ŀ.
Base of thorax emarginate at middle	
4. Thorax arcuate at base, elytra not sulcateaestuosa, n. sp	э.
Thorax truncate at base	1.
5. Punctuation of thorax dense, surface pubescent or hairy	<b>3</b> .
Punctuation sparse, surface glabrous or scarcely pubescent	7.
6. Body beneath and legs very hairyhirtipes, n. sp	).
Body beneath and legs normally hairy sepulcralis Fab	r.
7. Mesosternal protuberance punctured and hairy beneathdevulsa, n. sp	).
Mesosternal protuberance glabrous beneath	3.
8. Punctuation of thorax coarse, elytra with short and inconspicuou	
pubescence	
Punctuation of thorax sparse, usually inconspicuous, body above er	1-
tirely devoid of pubescence,	
9. Elytra reddish-yellow with black fasciæfascifera Lee	
Elytra variable, the surface with green or blue lustrefulgida Fab	r.

- 10. Clypeus longer than wide, rather deeply emarginate..californica Lec Clypeus not longer than wide, feebly or not emarginate..herbacea Oliv.
- 11. Elytra luteous, maculate with small black spots.....inda Linn. Elytra sooty, with small transverse luteous spots......Schottii Lec.

From the above table I have rejected *basalis*, *dimidiata* and *canescens*, as they are Mexican, and are very rarely found in Texas or Arizona. The species described by Say as *Cetonia vestita* is believed to be *C. hirtella* Lian. (Schaum, Am. Ent. Soc. Fr., 1849, p. 267), and nothing has ever been found since in our country which will fill the description, it is therefore dropped into European synonymy.

### E. areata Fab.

Black, moderately shining, elytra luteous with black spaces at the humeri, and subapical umbone and along the suture, upper surface with short erect yellowish pubescence, longer on the head, denser on the thorax and very sparse on the elytra, beneath hairs long and sparse. Clypeus short, narrowed in front, quadridentate, the middle teeth closer and arising from a common base. Thorax oval, base arcuate entire, surface densely punctured. Elytra very obsoletely bicostate, the punctuation very indistinct. Mesosternum feebly prominent, the protuberance transverse. Pygidium usually moderately, densely punctured. Abdomen with very few punctures. Length .48 inch; 12 mm.

The club of the male antennæ is a little longer than that of the female. The anterior tibiæ are tridentate in both sexes.

The normal form of coloration, and which is almost invariable in the eastern specimens, is that in which the elytra are in great part luteous, with the base narrowly black, the suture is also black, this color dilating into a large circum-scutellar patch, a smaller transverse space behind the middle, and again dilating at apex. In the specimens from Kansas and Nebraska, the elytra are more roughly sculptured and almost entirely black, the luteous color being reduced to a U-shaped mark by the extension of the elytral black spaces, and by the margin being dark.

A specimen in Mr. Ulke's cabinet requires special mention. It is of the size of *aestuosa*, the humeri and subapical umbone are similarly tipped with piceous, and the suture very narrowly piceous, disconnected from the suture and along the region occupied by the faint costæ are irregular small piceous patches. The sides of the thorax are irregularly bordered with a whitish coating, and the pygidium

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except at tip clothed with similar material. The clypeus is formed as in normal *areata*, and the characters generally are those of that species. From its appearance it might be suspected of being a hybrid between *aestuosa* and *areata*.

Occurs from the Middle States, westward to Kansas, and south to Texas.

### E. verticalis, n. sp.

Black, moderately shining, upper surface without pubescence, form robust, moderately convex. Clypeus as long as wide, a little narrowed in front, anteriorly emarginate, the angles acute and reflexed, vertex with an obtuse tubercle, surface of head coarsely, densely and deeply punctured. Thorax oval, narrowed in front, broader than long, sides strongly arcuate, especially in front, base less arcuate, not emarginate, disc moderately convex with coarse punctures sparsely placed, but closer near the anterior margin, a narrow smooth median space. Scutellum smooth. Elytra onehalf longer than the thorax, disc with rows of ocellate foveæ forming nearest the suture two distinct pairs separated by very feeble costæ, between the ocellate foveæ are simple punctures distantly placed, at the sides the punctures are irregular, and more densely placed ; sutural angle obtuse. Pygidium sparsely punctate. Body beneath with brownish hair, abdomen nearly smooth, a few coarse punctures at the sides only. Length .52 inch ; 13 mm. Pl. iv, fig. 12.

The sexes differ only in the form of the pygidium, that of the male being more convex and inflexed at tip. The anterior tibiæ are acutely tridentate, the upper tooth more distant than the other two. The antennal club is nearly as long as the entire stem in both sexes. The mesosternal button is transversely oval and hairy in front.

In general form this species resembles *areata*, but is a little more robust. It is easily known among the species in our fauna by its bidentate clypeus and totally black color, as well as by the elytral sculpture. By its form of clypeus it is allied to E. Hera Burm. from South America.

Two specimens are before me, one of each sex from Arizona, and the adjacent portion of California.

### E. aestuosa, n. sp.

Piceous, moderately shining, body above luteous, thorax with a large median piceous space, humeral and subapical umbones of elytra tipped with piceous, form moderately robust, surface above and beneath with short, inconspicuous pubescence. Clypeus a little wider than long, slightly broader in front, angles rounded, anterior margin moderately reflexed and slightly emarginate at middle. Head and front coarsely and densely punctured with moderately long hair. Thorax oval, narrowed in front, slightly wider than long, sides moderately arcuate, base not narrower than middle, basal margin regularly arcuate, surface coarsely and densely punctured, with short erect yellowish pubescence. Scutellum smooth. Elytra moderately convex, disc very vaguely bicostate, surface irregularly sparsely punctate. Body beneath piceous, shining, sparsely hairy, tibiæ very feebly fimbriate. Pygidium concentrically strigose, smooth near the tip. Mesosternal button round, hairy. Length .54 inch; 13.5 mm. Pl. iv, fig. 14.

In the unique  $\varphi$  before me, the club of the antenna nearly equals the stem. The anterior tibiæ are acutely tridentate, the teeth rather long and equidistant. From the few species in our fauna which have the base of the thorax simply arcuate, this species differs, either by the form of the clypeus or the elytral and thoracic sculpture.

One specimen, Kansas, given me by Dr. S. V. Summers. It is probable that the color will vary from this unique. The scutellum is black, and the suture and apical margin narrowly piceous, and these spaces may possibly be found extending so as to form a style of coloration analogous to that of *areata*.

# E. hirtipes, n. sp.

Piceous, elytra luteous, above with moderately long yellowish hair. Clypeus as broad as long, not narrowed in front, anterior angles broadly rounded, apical margin slightly reflexed, feebly emarginate. Head coarsely and densely punctured, clothed with rather long yellowish hair. Thorax oval, broader than long, narrower in front, sides strongly arcuate, base narrower than middle, the margin broadly arcuate, and opposite the scutellum emarginate, disc moderately convex, surface densely but rather irregularly punctured, a smooth space along the middle and one on each side, pubescence rather long and erect. Scutellum smooth, a median impression near the tip. Elytra slightly narrowed toward the tip, disc feebly convex, vaguely bicostate, the intervals irregularly punctured, the punctures bearing moderately long hairs. Pygidium moderately densely punctured and hairy. Body beneath and legs clothed with long yellowish hair. Abdomen coarsely punctured. Mesosternal button round and hairy in front. Length  $.42 \circ -.56 \, \odot$  inch;  $10.5 - 14 \, \text{mm}$ . Pl. iv, fig. 13.

The antennal club is about the length of the stem, and similar in the two sexes. The anterior tibiæ are rather broad, tridentate, the apical tooth longer and more distant than the other two. The legs are less hairy in the female

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than in the male, which has, especially on the hind tibiæ, a dense brush of long hair on the inner side.

In form, this species bears a resemblance to *sepulcralis*, but so differs in color and vestiture, not only from this, but also from all our others, as to make it very conspicuously distinct.

Occurs in Dodge county, Nebraska.

# E. Kernii Hald,

This species has become so generally known as to need no extended description. The clypeus is nearly square, the angles rounded, the anterior margin feebly emarginate. The thorax is transversely oval, base truncate at middle, surface densely and coarsely punctured. The elytra are each rather broadly and deeply bisulcate, the surface sparsely punctate and at the sides transversely wrinkled. The pygidium is concentrically strigose. The mesosternum does not project in a button-like protuberance. Length .40-.52 inch; 10-13 mm.

The male antennal club is a little longer than that of the female. The anterior tibiæ are very decidedly tridentate in the female and either simply bidentate in the male or with the upper tooth showing a very feeble trace.

No species in our fauna exhibits such a wide range of color variation.

In the normal form the under surface and legs are piceous or black. Head black. Thorax black, sides more widely, base very narrowly bordered with yellow. Elytra in great part yellow or reddish-yellow, maculate with black spots of irregular size and shape, becoming more or less confluent.

The first noticeable variety (*Clarkii* Lec.) has the abdomen, posterior legs and the anterior four tibiæ pale reddish-yellow. The discal black space of the thorax is divided by a pale median stripe, the elytra remaining normal in color.

Fully as common as this last variety is one in which the entire body above and beneath is black.

These last forms resemble the species described further on as *devulsa*, but this has the base of thorax emarginate.

Occurs over the region of the Plains from Kansas to Texas.

#### E. devulsa, n. sp.

Piceous black, shining, sparsely clothed with very short inconspicuous

pubescence. Clypeus a little wider than long, sides feebly arcuate, anterior angles broadly rounded, apical margin slightly reflexed and feebly emarginate at middle. Head coarsely and densely punctured, more sparsely on the clypeus. Thorax oval, narrowed in front, broader than long, sides regularly arcuate, basal margin emarginate at middle, disc moderately convex, coarsely but not densely punctured. Scutellum coarsely punctured at the sides. Elytra moderately convex, sub-bicostate on the disc, the intervals with variolate fovea, which gradually become simple punctures toward the sides of the elytra, sutural angle rectangular. Body beneath sparsely clothed at the sides with yellowish hair, abdomen very sparsely punctate and with few hairs at the sides. Tibiæ slightly fimbriate within. Pygidium concentrically strigose. Mesosternal button punctured and hairy beneath and in front. Length .40 -.48 inch ; 10-12 mm. Pl. iv, fig. 15.

The anterior tibiæ are tridentate in the two sexes, the upper tooth more distant. The antennal club is very nearly as long as the rest of the antennæ.

This species resembles the Mexican *E. dimidiata* in form, sculpture and size, and differs in the style of coloration and the punctured scutellum. It also resembles the entirely black varieties of *Kernii*, but the latter has more deeply sulcate elytra and the thorax truncate at base.

The males differ from the females by their smaller size, narrower form and more convex pygidium.

Occurs near San Antonio, Texas.

#### E. sepulcralis Fab.

Body beneath bronzed, shining, distinctly violaceous, above dark bronze, not very shining. Clypeus a little wider than long, anterior angles rounded, apical margin slightly reflexed, not emarginate, surface coarsely punctured, vertex with short erect yellow hairs. Thorax transversely oval, sides arcuate, base emarginate at middle, surface coarsely punctured, not densely at middle, but densely and subconfluently at the sides, pubescence short, erect and very persistent. Scutellum usually smooth, often sparsely punctured at the sides. Elytra distinctly bicostate, intervals with numerous punctures which tend to become ocellate foveæ, at sides the punctures are converted into short, deep transverse strigæ, especially near the apex, surface sparsely pubescent with numerous short, sinuous lines of whitish or ochreous color; tip of elytra distinctly sinuous, the suture slightly prolonged. Pygidium concentrically strigose, often whitish at the sides. Mesosternal umbone transversely oval. Metasternum smooth at middle, strigose, and often coated with white at the sides. Abdomen sparsely punctured at middle, at sides more coarsely and with few hairs, often with whitish coat. Length .44-.60 inch; 11-15 mm.

The club of the male antenna is very little longer than that of the female, the anterior tibiæ tridentate in both sexes.

This species is, next to *inda*, the most common in our fauna. It occurs from the Middle States westward to Kansas, and to Florida and Texas, extending even into Mexico.

The above description, rather detailed for one so common, is given that the specific limits when compared with *melancholica* may be made more evident.

# E. melancholica Gory.

Body beneath black, shining, usually with green or dark blue lustre, upper surface equally shining, surface greenish-blue or nearly black. Clypeus as in *sepulcralis*, head not hairy. Thorax formed as in that species, the punctuation coarse, denser at the sides but not confluent, the surface entirely devoid of hairs. Elytra also similar, the punctuation less deep and more sparse, and at the sides very faintly or not at all strigose, surface devoid of hairs, and with whitish lines similar to those of *sepulcralis* but less sinuous. Body beneath as in *sepulcralis*. Length .48-.60 inch; 12-15 mm.

The antennal club of the male is very distinctly longer than that of the female. The anterior tibiæ are tridentate in both sexes, but the upper tooth is smaller in the male.

By a comparison of descriptions it will be seen that this species is more shining, less deeply sculptured, and the upper surface without pubescence. The sculpture of the thorax and sides of elytra is notably different in the two. Here the sides of the thorax are usually margined with cretaceous, but in *sepulcralis* rarely so. The sexual characters here are also better marked.

Occurs in Kansas, Texas and Mexico.

# E. fascifera Lec.

Black, shining, glabrous. Clypeus as broad as long, anterior angles rounded, margin reflexed, not emarginate, surface coarsely and densely punctured. Thorax triangular, sides feebly arcuate, base emarginate in front of scutellum, apex truncate, the middle of apical margin slightly elevated in a tubercle, surface sparsely punctate, color reddish-yellow, with a large triangular black space, or with the space replaced by four black spots. Elytra vaguely bicostate, punctures sparse and coarse, on the disc sub-ocellate, color a reddish-yellow, with a basal, median and sub-apical transverse dentate fascial black. Pygidium concentrically strigose. Body beneath very coarsely transversely strigose, and with sparse short pubescence. Abdomen very sparsely punctate, and slightly pubescent at the sides. Mesosternal umbone moderately prominent, rounded at tip. Length .52-.74 inch; 13-19 mm. Pl. iv, fig. 16.

The club of the male antenna is a little longer than that of the female; anterior tibiæ tridentate in both sexes.

The specimens before me, six in number, are exactly alike in their elytral markings, scarcely varying in the minutest detail; in one in my cabinet, from Utah, the thorax has the large black discal space replaced by four smaller spots.

The entirely glabrous surface and the general outline of this species place it in close alliance with *fulgida*.

Occurs in the Peninsula of California, and extends to South-western Utah at St. George (Dr. Palmer).

#### E. fulgida Fab.

This species, well known from its brilliant green surface, varying to blue, needs but little comment. The upper surface is entirely devoid of pubescence. The head is brilliant green, the thorax similar in color, but margined at the sides with yellow, its surface sparsely punctate. On the elytra the traces of costæ are almost entirely obliterated, the punctuation usually sparse and indistinct, often more or less maculate, with cretaceous spots. The pygidium is concentrically strigose, and with four cretaceous spots more or less confluent. The metasterum is smooth at middle, and at sides deeply strigose. The abdomen is smooth, with but few coarse punctures at the sides, and along the margin of the segments, the sides are usually broadly cretaceous, sometimes with a double row of cretaceous spots. The mesosternal umbone is prominent, oval at tip. The legs are reddish or brownish-yellow, tarsi piceous. Length .52–.80 inch; 13–20 mm.

The male has a larger antennal club than the female, the tibiæ are tridentate in both.

In the specimens from the Northern States, the elytra have less of the greenish surface lustre, and exhibit a brownishred ground color; these have also the fewest whitish spots. In the specimens from the Gulf States, the color is always more brilliant, the punctuation more evident, and the whitish spots more numerous.

Occurs from the Middle States westward to Missouri, and south to Florida and Texas.

#### E. californica Lec.

Bright green, opaque above, shining beneath, very similar to *fulgida*, upper surface without pubescence. Clypeus longer than wide, slightly

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narrower in front, apical margin deeply emarginate, feebly reflexed, surface not densely punctured. Thorax transversely oval, sides rather strongly arcuate, base emarginate at middle, disc moderately convex, sparsely obsoletely punctured, a small white spot on each side of middle, lateral margin very narrowly cretaceous. Elytra obsoletely bicostate, the punctures between the costæ very fine and in two rows, sides rather strongly plicate, suture rather strongly elevated, especially near the tip, where it is slightly prolonged, surface opaque green with small cretaceous spots, the first at middle on the inner costa, the second at three fourths, between this costa and the suture, a third behind the second near the apex, two at the margin placed obliquely behind the first two, a very small spot behind the humerus. Pygidium strigose, a white spot each side. Body beneath shining green, sparsely clothed with hair along the sides. Metasternum and abdomen smooth at middle, coarsely punctured at the sides. Meso-metasternal protuberance long, parallel, rounded at tip. Legs bright green, tarsi black. Length .64 inch; 16 mm.

Of this species I have seen but one specimen, the type. It was given by Baron Osten-Sacken to Dr. Leconte, with the statement that he obtained it in California, but I do not know if it was collected by him. The species seems to me to resemble the East Indian type and to belong to the genus (?) *Glyciphana*, but until an opportunity is afforded for comparison no positive statement can be made, and I leave it with the doubts above given.

## E. herbacea Oliv.

Body beneath green, moderately shining, above dull green, changing to opaque brown. Clypeus as broad as long, sides and apex reflexed, the latter not emarginate, surface sparsely punctate. Thorax transversely oval, sides moderately arcuate  $\varphi$ , or more triangular with sides nearly straight  $\mathcal{J}$ , base emarginate at middle, disc sparsely punctate. Elytra vaguely bicostate, intervals finely punctate, sides with coarse strigæ, surface variable from brownish-green to brown, opaque, with numerous whitish spots of irregular size and shape behind the middle and near the apex and sides. Pygidium concentrically strigose and with short hairs. Body beneath green, shining, abdomen often brownish. Metasternum smooth at middle, strigose and hairy at the sides, abdomen sparsely punctate over the entire surface, pubescent at the sides. Mesosternal button oval, a little broader than long. Length .56-.64 inch; 14-16 mm.

The male club is very decidedly longer than that of the female, the anterior tibiæ tridentate in both sexes.

This species is entirely devoid of pubescence on the upper surface, except the head and pygidium. It is a well-known species to all collectors, but less common than *inda*. Occurs in the Middle States region, occasionally found abundantly, but usually not common.

#### E. inda Linn.

Clypeus broader than long, apex not emarginate, angles rounded, margin reflexed. Mesosternal button more than twice as wide as long.

This species is so well known as to require no further comment.

Occurs everywhere in the United States east of the Rocky Mountains.

# E. Schottii Lec.

Black, beneath shining, above opaque, elytra variegated with short transverse luteous spots. Clypeus nearly square, anterior angles rounded, apical margin slightly reflexed, truncate, surface coarsely and moderately densely punctured sparsely clothed with erect yellowish hair. Thorax subtriangular, sides feebly arcuate, base emarginate at middle. surface coarsely punctured, more densely at the sides and very sparsely near the base, pubescence short and sparse, color piceous with three luteous vittæ at middle. Elytra piceous opaque, with irregular, short, transverse and sinuous luteous spots, disc vaguely bicostate, intervals biseriately vaguely punctate, at sides irregularly punctate and posteriorly distinctly plicate. Pygidium indistinctly concentrically strigose. Mesosternal protuberance transverse, arcuate in front. Metasternum smooth at middle, coarsely strigose at the sides, sparsely pubescent. Abdomen very sparsely punctate and with short pubescence. Femora brownish, tibiæ and tarsi piceous. Length .44-.56 inch; 11-14 mm.

The club of the male antenna is very nearly double that of the female, the anterior tibiæ are bidentate  $\sigma$ , or tridentate  $\varphi$ .

In form this species bears a considerable resemblance to *herbacea*, being much less robust and more depressed than *inda* and with less distinct pubescence. There is, however, a very close relationship between *inda* and *Schottii*, as shown by a general similarity of appearance, and the form of the mesosternal protuberance.

Occurs in Texas, Eagle Pass.

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E. verticalis, n. sp.

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E. aestuosa, n. sp.

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Explanation of Plate IV.

- 1. Cremastochilus planatus Lec.
- 2. C. saucius Lec.
- 3. C. Wheeleri Lec.
- 4. C. leucostictus Burm.
- 5. C. Schaumii Lec.
- 6. C. crinitus Lec.
- 7. C. nitens Lec.
- 8. C. variolosus Kby.
- 9. C. Harrisii Kby.
- 10. C. retractus Lec.
- 11. Tarsal monstrosity in C. saucius.
- 12. Euphoria verticalis Horn.
- 13. E. hirtipes Horn.
- 14. E. aestuosa Horn.
- 15. E. devulsa Horn.
- 16. E. fascifera Lec.

