

**Notes on the species of ANOMALA inhabiting the
United States.**

BY GEORGE H. HORN, M.D.

The species of *Anomala* occurring within our faunal limits may be divided into three series, which have been considered genera by some authors.

Metasternum not protuberant, the middle coxæ narrowly separated.

Tarsal claws in part cleft.....ANOMALA.

Tarsal claws all simple.....RHOMBONYX.

Metasternum protuberant, middle coxæ rather widely separated.....SPILOTA

Sub-genus ANOMALA.

This division is the most numerously represented in our fauna. The species are separated in the following manner:

- Front claw of the anterior and middle tarsus very distinctly cleft at tip.....2.
 Front claw of the anterior tarsus scarcely cleft, the small division being much within the tip.....**parvula.**
- 2.—Claw joint of anterior tarsi distinctly toothed beneath.....^{toothed}.....3.
 Claw joint of anterior tarsi not toothed.....5.
- 3.—Clypeus concave, the margin rather widely reflexed; thorax always uniformly reddish yellow in color.....**flavipennis.**
 Clypeus flat, margin narrowly reflexed; thorax either bicolored or entirely piceous.....5.
- 4.—Sides of clypeus nearly parallel; thorax rather finely punctured.
 Thorax uniform in color, piceous with bronze surface lustre.....**binotata.**
 Thorax testaceous, with a triangular spot of variable size placed with its basae at the apical margin.....**centralis.**
 Sides of clypeus divergent posteriorly, the clypeus nearly semicircular, thorax coarsely punctured.....**minuta.**
- 5.—Elytra variable in color, sometimes entirely testaceous, but when marked with piceous the spots are arranged in transverse bands.....**undulata.**
 Elytra variable, sometimes entirely piceous; when bi-colored the piceous spaces indicate longitudinal vittæ; intercostal intervals very irregularly punctured.....**lurida.**

A. parvula Burm.—Form oblong, testaceous; vertex and two thoracic spots piceous. Clypeus transverse; sides oblique, margin narrowly reflexed, surface punctate. Thorax transverse, narrower in front; sides regularly arcuate, base distinctly margined; surface very sparsely punctate. Elytra with striæ of coarse punctures feebly impressed, the intervals scarcely elevated and nearly equal. Pygidium sparsely punctate. Body beneath nearly smooth. Length .30 inch; 7.5 mm.

The front claw of the anterior tarsus is cleft at some distance behind the tip, and so feebly that it might escape observation. The claw joint of the tarsus is toothed at middle beneath. The middle front claw is cleft at tip, the two portions nearly equal.

To this species, also, I refer two specimens from Arizona, which differ in having the front more densely punctured, the thoracic spots larger, and the suture and lateral margins of the elytra narrowly brown. By its peculiar anterior claws this species is very readily known.

Occurs in the Gulf States and Arizona.

A. flavipennis Burm.—Moderately robust, rufescent; elytra testaceous, rarely with darker spaces. Head moderately densely punctured. Clypeus broader at base, margin rather widely reflexed. Thorax transverse, narrower in front; sides regularly arcuate, base distinctly margined; surface sparsely punctured; sometimes with a vaguely impressed median line. Elytra punctured, very few of the striæ are regular, three intervals more distinctly sub-costiform. Pygidium rather coarsely punctured. Body beneath nearly smooth, with very few punctures, pectus and costal plates hairy. Length .40—.44 inch; 10—11 mm.

The anterior claw of the front tarsus is but little shorter than the posterior, the tip is cleft, the two portions not very unequal, the base flexed. The claw joint is rather strongly toothed beneath. The anterior middle claw is cleft at tip, the upper portion much more slender, but equal in length to the inferior.

The pale testaceous elytra enable the greater number of specimens to be recognized at once. Specimens occur in North Carolina with the elytral punctuation somewhat coarser and deeper, and the costiform intervals have in the basal region linear piceous spots. In the darker specimens the thorax has a slight æneous tinge.

Occurs in the Southern States.

A. binotata Gyll.—Form moderately robust, piceous; thorax dark bronze, shining; elytra yellowish testaceous, the suture and margin narrowly bordered, and usually on each side two piceous spots. Head rather densely punctured. Clypeus scarcely broader at base, the margin narrowly reflexed. Thorax narrowed in front; sides arcuate, disc convex, sparingly punctured, toward the sides more densely and with a larger foveate puncture. Scutellum bronzed. Elytra, with striæ, of coarse punctures, somewhat confused in the sutural region, three of the intervals very slightly more elevated. Pygidium rather densely rugulose, and with short hairs. Body beneath coarsely, not densely punctured, pectus, coxal plates and sides of abdomen hairy. Length .40—.44 inch; 10—11 mm.

The claw joint of the anterior tarsi is distinctly toothed beneath. The anterior claw is flexed at base, the tip cleft, the upper portion quite slender, and a little shorter than the lower. The anterior claw of the middle tarsus is cleft at tip, the two portions nearly equal.

The specimens from the eastern and northern parts of our territory have the elytra more decidedly sculptured, and the two elytral spots well marked. Specimens occasionally found have the sutural region near the apex broadly piceous, the color extending often widely around the apical

border. From Arizona and Texas specimens occur with the elytra much smoother and more shining and without the usual spots. These are the variety *luteipennis* Lec.

Occurs from the Middle States to Arizona.

A. centralis Lec.—Form moderately robust, testaceous; head rufescent, thoracic triangular space, suture and margin of elytra brownish; head densely punctured; clypeus slightly broader at base, the margin narrowly reflexed; thorax transverse, narrowed in front; sides arcuate, base distinctly margined, except sometimes at middle; surface very sparsely and finely punctured, testaceous, with an irregular triangular brown space, the base at the apical margin; elytra with regular striæ of moderately coarse punctures, somewhat confused near the suture, the intervals nearly equal, not elongated; pygidium sparsely, obsoletely punctured; body beneath sparsely punctate, pectus and coxal plates hairy. Length .36—.44 inch; 9—11 mm.

The claw joint of the front tarsus is toothed beneath; the anterior claw is flexed at base, the tip unequally cleft, the upper portion more slender and shorter than the lower; the anterior middle claw is nearly equally cleft at tip.

The specimens from which the species was originally described were collected in the Peninsula of California. They are of the smaller size indicated above. The thoracic spot is quite regularly triangular. The suture at base is very narrowly brown; at the apical half that color becomes broader, and continues around the apex and side to the humeral umbone. From Arizona and Sonora the specimens referred to this species are somewhat longer, the thoracic spot more extended. The scutellum is often darker, but the suture and side margin of the elytra are extremely narrowly bordered with fuscous. The species can hardly be mistaken for any other in our fauna, as its characters are quite constant.

Occurs in Arizona, Sonora, and the Peninsula of California.

A. minuta Burm.—Form oval, rather robust, color very variable, sometimes entirely black, often more or less testaceous, with a large thoracic space and transverse elytral fasciæ piceous; head moderately densely punctured; clypeus nearly semi-circular in outline, the sides divergent posteriorly, the margin narrowly reflexed; thorax transverse, convex, narrower in front; sides arcuate, base margined; surface coarsely and rather deeply, but not densely punctured; elytra, with striæ, of coarse, deep, closely-placed punctures; those near the suture somewhat confused, the intervals equal, not at all elevated; pygidium rugulose in front, smoother at apex; body beneath coarsely and sparsely punctured, not hairy. Length .26—.30 inch; 6.5—7.5 mm.

The claw joint of the front tarsus is very distinctly toothed beneath when viewed laterally; the claws are stout and large, the anterior deeply cleft at tip, the two portions very nearly equal; the front claw of the middle tarsus is feebly cleft at tip, the two portions nearly equal.

As indicated above, the species is extremely variable in color. In the specimens which are black or piceous, the abdomen is always rufescent.

The most abundant form has the sides of the thorax broadly testaceous, and the elytra are piceous, with a basal and post median transverse testaceous band of irregular outline. These have the body beneath and legs testaceous. The great variability of its coloring makes this species one not easy to define. It is usually found in cabinets mixed with the smaller forms of *undulata*, and it is with this species and *semilivida* that it is most likely to be confused. The latter species belongs to the Rhombonyx series, and should therefore be easily excluded. From *undulata* the present species is distinguished by its shorter and more robust form, the punctuation of the surface convex and deeper. In *undulata* it is rare to find even a trace of tooth at the middle of the claw joint of the front tarsus beneath, and the anterior claw is scarcely flexed at base, and the cleft portions of the tip nearly equal.

Occurs in the Middle and Southern States.

A. undulata Mels.—Form elongate, oval; color variable; head densely punctured anteriorly; margin of clypeus narrowly reflexed, the sides divergent, the angles broadly rounded; thorax narrowed in front; sides regularly arcuate, base distinctly margined; surface variably punctured, sometimes rather finely, at others more coarsely; scutellum coarsely punctured; elytra, with striæ of moderately coarse punctures, somewhat confused near the suture, the intervals nearly equal; three, however, somewhat more distinctly elevated; pygidium rugulose, or evenly punctured; body beneath sparsely, but rather coarsely punctured with very little pubescence. Length .30—.40 inch; 7.5—10 mm.

The claw joint of the front tarsus is scarcely at all toothed beneath, the anterior claw is but little flexed at base, the tip cleft into two nearly equal portions; the anterior claw of the middle tarsus is equally cleft at tip.

This species is extremely variable in color. The first striking variation is in the punctuation of the thorax. In the specimens from the more northern region of our country and from as far south as Virginia, the thorax should be called coarsely punctured, it is nearly as much so as in *minuta*, while the more southern specimens are quite smooth, and as in *binotata*. These seem climatic varieties, and can not be separated as species. In the color of the surface the variation is very great. Specimens occasionally appear of entirely pale, testaceous color, with only a thoracic spot fuscous; these resemble, slightly, *centralis*. The under side of the body is, as a general rule, testaceous, but specimens have been found with the abdomen piceous. The thorax has always a large median space, fuscous, the sides pale; the fuscous portion has a purplish or bronze surface lustre. The elytra are rarely entirely testaceous, usually there are two series of fuscous spots arranged in arcuate rows, the one about the middle the other posteriorly. The spots often become confluent, forming distinct and continuous fasciæ. The only species with which

this might be confounded is *minuta*, the smaller specimens being rather difficult to separate.

Occurs in the Middle and Southern States.

A. lurida Fab.—Form rather robust, color variable; head rather densely and coarsely punctured; clypeus short, broader at base, the angles broadly rounded, margin narrowly reflexed; thorax narrowed in front; sides regularly arcuate, basal marginal line distinct; surface sparsely punctate; elytra, with three intervals regular and sub-costiform, the interspaces rather densely and irregularly punctured; pygidium sparsely punctate; body beneath shining, very sparsely punctate, pectus not hairy. Length .50 inch; 12.5 mm.

The claw joint of the front tarsus is not toothed beneath, the anterior claw deeply cleft at tip, the two parts nearly equal; the front claw of the middle tarsus is cleft at tip, the two portions equal.

This species, like several others in our fauna, extends southward into Mexico, and even to South America. I have seen but two specimens from New Mexico and Arizona which agree quite well in their color, but Burmeister describes the species as being one of great variability in color. Our specimens may be described as piceous, the legs, except the tarsi, yellow. The thorax is broadly margined and testaceous as in *undulata*, there being also near the side margin a piceous spot surrounding a large puncture. The elytra are entirely brownish except three testaceous vittæ which follow the line of the costæ. From Burmeister's description the elytra are sometimes testaceous with brownish vittæ, thus reversing the relations of the colors given above. It is evident that the colors here arrange themselves in longitudinal vittæ on the elytra, and do not form spots which coalesce into transverse bands.

This species is the only one in the present genus in which the spaces between the sub-costiform intervals are punctured in a confused manner.

New Mexico and Arizona.

Sub-genus RHOMBONYX.

Two species occur in our fauna; in both the clypeus is rather deeply concave, and the margin more reflexed than in the other species of the genus.

Clypeus transverse, at least twice as wide as long, vertex sparsely punctured; above varicolored..... **semilivida.**

Clypeus very little wider than long, rather densely punctured; body above uniformly yellowish..... **cavifrons.**

A. semilivida Lec.—Oblong, oval, color variable; head moderately or sparsely punctured; clypeus short, transverse, semicircular, margin widely reflexed; thorax transverse, rather suddenly arcuate from the middle to the apex, disc sparsely punctate, base with a distinct marginal line; elytra with striæ of

feebly impressed punctures, the inner of the usual sub-costiform intervals alone distinctly elevated; pygidium nearly smooth or sparsely punctate; body beneath sparsely punctate, pectus hairy. Length .26—.28 inch; 6.5—7 mm.

The claws of all the tarsi are simple and slender.

The color is variable. In the typical forms from Florida the general color is testaceous, the head and an irregular thoracic space piceous. A specimen in my cabinet is entirely piceous with the sides of the thorax alone testaceous. Another with head and thorax rufescent has the sides of the elytra brownish. Others have the suture narrowly, and the sides of the elytra more widely brownish. From this it is evident that the markings have a tendency to a longitudinal and not a fasciate arrangement.

Occurs in Georgia and Florida.

A. cavifrons Lec.—Oblong, oval, uniformly yellowish testaceous; front densely punctured; clypeus very little wider than long, the angles rounded, margin rather widely reflexed; surface less punctured than the front, the frontal suture distinctly carinate; thorax narrowed in front; sides arcuate, widest at middle, sparsely punctate, a vague median line near the front, basal marginal line distinct; elytra feebly striate, the striæ very obsoletely punctured, the intervals slightly convex; pygidium nearly smooth; body beneath very sparsely punctate, pectus slightly hairy. Length .40 inch; 10 mm.

Tarsal claws are simple.

I have seen about ten specimens of this species of uniform color. It is remarkable by the feeble punctuation of the elytra and the cariniform frontal suture.

Occurs in Texas and New Mexico.

Sub-genus *SPILOTA*. *from Paraguay*

From the material of our fauna this division seems fully entitled to generic value, but in deference to the views of Burmeister and Lacordaire is retained in its present situation. The basal marginal line of the thorax which exists in the preceding sub-divisions is entirely wanting here.

Pygidium sparsely punctured, rather shining, with very little or no pubescence.

? Thorax with sparse punctuation, between which the surface is shining.

lucicola.

Thorax rather densely and coarsely punctured, sub-opaque.....**oblivia.**

Pygidium rather densely punctured, not shining, densely pubescent.

marginata.

A. lucicola Fab.—Form oval, robust; color variable from entirely yellow to entirely black; head moderately densely punctured; clypeus transverse; sides very little divergent, angles rounded, margin in front narrowly reflexed; thorax convex; sides regularly arcuate, gradually narrowed to the point, basal marginal line obliterated, surface rather coarsely but not densely punctured; elytra with

moderately deep striæ of rather coarse, closely-placed punctures, the intervals nearly equally convex; pygidium sparsely punctured; body beneath coarsely but sparsely punctured, the pectus very slightly hairy. Length .36—.40 inch; 9—10 mm.

The front claw of the anterior and middle tarsi is deeply cleft at tip, the two portions nearly equal.

When the color is pale yellow the legs and antennæ are the same, the metasternum being the only portion a little darker in color. When entirely black only the stem of the antennæ is pale. The thorax has often a large discal piceous space, which is sometimes broadly divided at its middle.

Occurs most abundantly in the Northern and Middle States.

A. oblivia n. sp.—Oblong, oval, moderately robust; surface feebly shining with very faint aeneous lustre, general color rufescent, the disc of thorax darker; head rather densely punctured; clypeus short and broad; sides divergent posteriorly, anterior border narrowly reflexed; thorax narrowed in front; sides regularly arcuate, basal marginal line distinct at the sides, disc convex, rather densely and coarsely punctured; elytra with striæ of deep, coarse, closely-placed punctures, the intervals nearly equal on the disc, those near the sides more elevated and sub-costiform; pygidium sparsely punctured; body beneath sparsely punctured, and with short hairs on the pectus. Length .34—.44 inch; 8.5—11 mm.

The anterior claws of the middle and front tarsi are cleft at tip, very unequally on the front tarsus, and very feebly on the middle.

This species is less robust in facies than either *lucicola* or *marginata*. The surface is slightly aeneous, which is never the case in *lucicola*, and more opaque, and the thorax more coarsely punctured than in either of those mentioned.

Occurs from Pennsylvania to Georgia.

A. marginata Fab.—Oval, robust, pale rufescent, disc of thorax and head darker; surface with aeneous lustre; head densely punctured; clypeus short, broader at base, margin narrowly reflexed; thorax narrower in front; sides arcuate, base not margined, color brownish, broadly margined at the sides with testaceous; surface coarsely but sparsely punctured; elytra rather deeply striate with coarse, closely-placed punctures, the second stria composed of a double row of punctures; intervals equally convex; pygidium densely rugulose and pubescent; body beneath sparsely punctured, pectus slightly hairy. Length .44—.60 inch; 11—15 mm.

The front claws of the anterior and middle tarsi are cleft at tip, the two portions nearly equal.

This species shows very little variation, nothing beyond the size and a little darkening of the color.

Occurs in the Southern States.

In addition to the above species there is one described by Fabricius, and figured by Olivier, which is uncertain, *Melolontha innuba*. Burmeister considers it a *Spilota*, and says that is a Mexican species. It

does not appear that he saw the Fabrician type which belonged to Dr. Hunter. From what I can gather from the description of Fabricius and Olivier with the figure given by the latter, I am inclined to believe it one of the varieties of *minuta*, Burm. Until the matter can be determined by reference to the type, the Fabrician name will be placed in doubt under *minuta*.

Bibliography and Synonymy.

- A. parvula** Burm. Handb. iv, 1, p. 247.
A. flavipennis Burm. loc. cit. p. 249.
dichroa Mels. Proc. Acad. ii, p. 140.
A. binotata Gyll. Schönh. Syn. Ins. i, 3, App. p. 106; Burm. loc. cit. p. 262.
unifasciata Say, Journ. Acad. v, p. 199.
marginella Lec. Proc. Acad. 1854, p. 81, et 217.
luteipennis Lec. loc. cit. p. 80.
A. centralis Lec. n. sp. 1863, p. 78.
A. minuta Burm. loc. cit. p. 249; Handb. iv, 2, p. 504.
? innuba Fab. Mant. i, p. 22; Oliv. Ent. i, 5, p. 46, pl. 8, fig. 93.
A. undulata Mels. Proc. Acad. ii, p. 140.
varians, Fab. Syst. El. ii, p. 173; Burm. Handb. iv, 1, p. 248.
maculata Cast. Hist. Nat. ii, p. 136; Burm. loc. cit. p. 539.
variegata Latr. Voy. Humb. at Bonp. ii, 1833, p. 47, pl. 33, fig. 4; Burm. Handb. iv, 2, p. 498 note.
A. lurida Fab. Syst. Ent. p. 35.
inconstans Burm. Handb. iv, 1, p. 252, et 562.
A. semilivida Lec. Proc. Amer. Philos. Soc. 1878, p. 403.
A. cavifrons Lec. Trans. Am. Ent. Soc. 1867, p. 52.
A. lucicola Fab. Ent. Syst. suppl. p. 132; Burm. Handb. iv, 1, p. 269; iv, 2, p. 504.
atrata et mærens Fab. Syst. El. ii, p. 174.
pinicola Mels. Proc. Acad. ii, p. 141.
nigritula Cast. Hist. Nat. ii, p. 137.
A. oblivia n. sp.
A. marginata Fab. Ent. Syst. i, 2, p. 164; Burm. Handb. iv, 1, p. 266.
annulata Germ. Ins. Spec. Nov. p. 121.