

Notes on the species of ASAPHES of Boreal America.

BY GEORGE H. HORN, M. D.

A study of this genus based on the accumulation of material since Leconte's Revision has led me to conclusions hardly expected at first. Starting with the idea that the species should be separated by some characters capable of definition and which could be used as a key, it became evident at once that this was not easily to be done. At a glance in our cabinets it will be seen that certain species are normally black while others are brown, ferruginous or even paler, and while this would make a tolerably good empirical division it is certainly not natural. The absence of the carina at the hind angles of certain forms and with it the absence of the intra-angular incisure is the first character of importance to be observed. In those species in which the color above and beneath is entirely black, the flanks of the prothorax beneath are usually densely but always equally punctured, while in the paler species this part of the body is very unequally punctured, it is usually densely punctured in front and with a large smooth space posteriorly, in one or two species there is no space free of punctures but the punctures are so very sparsely placed as to make a very considerable contrast between the anterior and posterior portion of the flanks. This character separates very nearly those species (with a carina), which are totally black from those which are not so. The form of the prosternal mucro has also a certain value in separating the species. In some it will be noticed that the median line of the prosternum to the tip of the mucro is straight and the bifid mesosternum is also nearly in the same plane with the metasternum the lobes being rather prominent. In others the mucro is flexed behind the coxæ and the mesosternum quite oblique its lobes not prominent. By the use of these characters we avoid the necessity of separating species by the thoracic punctuation, a rather variable and unsafe character.

Dr. Candeze has separated as distinct species some forms in which the inner striæ of the elytra are more or less effaced, but it will be observed that this is a sexual character, and is often seen in the females though not constant in that sex but I have never noticed it in the males.

The tabular separation based on the above with other less important characters is given below, the numbers indicating a cabinet arrangement based on superficial resemblances.

- Hind angles of thorax not carinate, basal margin without incisure. Flanks beneath sparsely punctured.....11. **bilobatus**.
- Hind angles carinate, basal incisures more or less distinct.....2.
- 2.—Flanks of thorax beneath with a large smooth space posteriorly or very much less densely punctured.....3.
- Flanks of thorax beneath without smooth space, at most, very little less densely punctured posteriorly.....4.
- 3.—Carina of hind angles fine and close to the margin, incisures feeble.
- Black, elytra luteous.....6. **oregonus**.
- Ferruginous brown, elongate.....7. **soccifer**.
- Carina well marked and divergent from margin, incisures well marked.
- Hind angles divergent. Prosternal mucro horizontal...9. **decoloratus**.
- Hind angles not divergent. Mucro flexed.
- Third joint of antennæ shorter than the fourth, thorax very sparsely and indistinctly punctured.....8. **indistinctus**.
- Third joint of antennæ equal to the fourth, thorax variably but always very distinctly punctured.....10. **memnonius**.
- 4.—Prosternal mucro horizontal, the mesosternum with its lobes moderately prominent.
- Thorax sparsely punctured at middle and but moderately densely punctured at the sides, hind angles not divergent.....3. **morio**.
- Thorax closely punctured at middle and very densely at the sides.
- Pubescence very short and black. Hind angles somewhat divergent.
4. **dilaticollis**.
- Pubescence longer, brownish. Hind angles not divergent.
5. **tumescens**.
- Prosternal mucro flexed, the mesosternum oblique its lobes not at all prominent.
- Thorax very convex, pubescence long, black, erect.....1. **hirtus**.
- Thorax moderately convex, pubescence very short.....2. **carbonatus**.

The notes which follow are intended to be supplementary to the fuller descriptions already given by Drs. Leconte and Candeze, they are however ample for the separation of the species known to us at present.

The synonymy given under *memnonius*, *decoloratus* and *bilobatus*, may be surprising to some students and cause doubts in the minds of others, to both classes I can say that the conjoined material in my own and Dr. Leconte's cabinet is abundant enough to sustain the views here given.

A. hirtus Cand.—Rather slender, black, moderately shining, sparsely clothed with moderately long and more or less erect black hair. Thorax more convex than usual, very coarsely and moderately densely punctured, hind angles carinate and divergent; flanks beneath coarsely and moderately densely

punctured; prosternal mucro slightly flexed, mesosternum not prominent. Elytra moderately deeply striate, striæ punctured, intervals convex, coarsely punctulate. Body beneath and abdomen moderately coarsely punctate. Length .40—.50 inch; 10—13 mm.

The sexes exhibit the same differences as in the other species but not in so conspicuous a degree. In the male the thorax is distinctly longer than wide, narrowed in front, the sides feebly arcuate and the hind angles more divergent.

The thorax in the female is as broad as long, not narrowed in front, the sides more arcuate and the hind angles less divergent than in the males. The elytra are also a little less deeply striate at middle, but this is not so conspicuous in the specimens before me as in the other black species.

Occurs in California.

A. carbonatus Lec.—Black, moderately shining, sparsely clothed with short black pubescence. Thorax densely punctured, moderately convex, hind angles rather strongly carinate and very little divergent; flanks of thorax beneath densely punctured in front, less densely posteriorly but without smooth space, tip of prosternum flexed. Mesosternum not prominent. Elytra striate, striæ finely punctured, intervals moderately convex and moderately densely punctulate. Length .40—.64 inch; 10—16 mm.

Males.—Thorax less convex, sides less arcuate and more narrowed in front. Elytral striæ equally deep at base and sides.

Females.—Thorax more convex, sides more arcuate scarcely narrower in front, disc somewhat more coarsely punctured. Elytral striæ near the suture often less deep than those at the sides.

With this species I have united *coracinus* Cand., the differences given by that author being merely sexual.

Occurs from Nebraska westward to California and Oregon. Immature specimens are brownish with brown pubescence.

A. morio Lec.—Closely resembling in general appearance the preceding but more robust and of larger size. The thorax is convex rather sparsely punctured on the disc, more densely at the sides, the surface being more shining than in *carbonatus*, the hind angles are similarly carinate but the angles are not at all divergent; beneath the flanks are similarly punctured. The prosternal mucro is straight and smooth, the mesosternum rather prominent. The under side of the body is also less punctured and more shining than *carbonatus*. Length .60—.72 inch; 15—18 mm.

The sexes also exhibit a variation similar to that of *carbonatus* but to a more marked degree, recalling that of *memnonius*.

The punctuation of the thorax is somewhat variable but is never so dense as in *carbonatus* or *dilatocollis*. The form of the prosternum will distinguish this species at all times from the former, while the latter species has a very regularly and densely punctured thorax with

more arcuate sides and less convex disc. With this species I unite *verna* Cand., the differences being sexual.

Occurs in California, Oregon and Vancouver.

A. dilaticollis Motsch.—Black, feebly shining, sparsely clothed with short black pubescence. Form parallel. Thorax as broad as long, sides arcuate, hind angles divergent, carinate; surface densely and very equally punctured; beneath densely punctured on the flanks without smooth space. Prosternal mucro horizontal, mesosternum moderately prominent. Elytra striate, striæ finely punctured, intervals nearly flat, moderately densely punctulate. Length .54—.66 inch; 14—17 mm.

I have seen four specimens of this species all of which appear to be females. The punctuation of the thorax is even denser and finer than in *coracinus*. The divergent angles will distinguish it from the next species, which also differs in its pubescence.

Occurs in Middle California.

A. tumescens Lec.—Piceous, clothed with brownish hair. Thorax scarcely longer than wide, moderately convex, with punctures moderately densely placed, hind angles not divergent, carinate; flanks of prothorax beneath densely punctured, a little less densely posteriorly; prosternal mucro horizontal, mesosternum moderately prominent. Elytra striate, striæ coarsely punctured near the base, more finely toward the tip, intervals convex, punctulate. Length .44—.56 inch; 11—14 mm.

The two specimens before me by the form of the thorax seem to be females. The thorax has the sides moderately arcuate in front and the disc is slightly broader behind the apex than at base. The whole contour of the species resembles the preceding, but the parallel hind angles and the brownish pubescence seem to warrant its being retained as distinct.

Occurs in California.

A. oregonus Lec.—Piceous, elytra luteous, legs varying from pale to piceous, surface sparsely clothed with yellowish pubescence. Thorax not densely nor coarsely punctured, hind angles slightly divergent and with a fine carina rather close to the lateral margin; flanks of thorax beneath rather coarsely but not densely punctured, with a large smooth space posteriorly; prosternal mucro rather strongly flexed, mesosternum inconspicuous. Elytra striate, striæ punctured, intervals flat or feebly convex and punctulate. Length .32—.40 inch; 8—10 mm.

Male.—Thorax distinctly longer than wide, sides nearly straight and gradually convergent in front.

Female.—Thorax as wide as long, sides rather strongly arcuate in front.

The differences in form between the two sexes are very sharply marked, the female resembling in outline *Corymbites rotundicollis*, while the male has the outline of *Sericosomus fusiformis*.

Occurs in Oregon and Vancouver.

A. soccifer Lec.—Form elongate, pale brownish, clothed with short pale pubescence, body beneath and legs paler than the upper surface. Thorax feebly convex rather sparsely punctate, hind angles slightly divergent, the carina fine and close to the margin; flanks of prothorax beneath not densely punctured with a smooth space posteriorly; prosternal mucro flexed, mesosternum inconspicuous. Elytra feebly striate, striæ punctured, intervals feebly convex, punctulate. Length .54 inch; 14 mm.

Of this species I have seen but two males, the thorax is longer than wide, narrowed in front, the sides very nearly straight.

From its elongate form this insect bears a closer resemblance to *Athous* (especially *Ath. ferruginosus*), than to the present genus, the resemblance is still further increased by the longer antennæ.

Occurs in New Mexico.

A. indistinctus Lec.—Piceous moderately shining, sparsely clothed with greyish pubescence. Thorax moderately convex, and shining, very sparsely and finely punctulate, hind angles slightly divergent and with a moderate carina parallel with the margin; flanks not densely punctate, a smooth space posteriorly; mucro flexed, mesosternum not conspicuous. Elytra striate, striæ punctured, intervals moderately convex, sparsely punctulate. Length .44 inch; 11 mm.

The two specimens before me are males. The thorax is longer than wide, slightly narrowed in front, sides very feebly arcuate.

This species might be mistaken for a variety of *decoloratus*, but the thorax is very much less evidently punctured and the prosternal mucro flexed. It bears no resemblance whatever to *memnonius* near which it is placed in the table, except in the technical characters there made use of.

Occurs in Georgia and South Carolina.

A. decoloratus Say.—Piceous black, shining, surface often with æneous tinge, elytra often pale, legs pale rufous; surface sparsely clothed with greyish pubescence. Thorax moderately, not densely punctured, hind angles divergent, carinate, the carina diverging from the margin; flanks moderately densely punctured in front, a large smooth space posteriorly. Elytra moderately deeply striate, striæ punctured, intervals convex and punctulate. The prosternal mucro is horizontal, the mesosternum is however not prominent. Length .36—.60 inch; 9—15 mm.

Male.—Thorax very evidently longer than wide, sides feebly arcuate, disc less convex and usually less punctured. Form generally more slender and less convex.

Female.—Thorax very little if any longer than wide, disc more convex and punctured than in the male and with the sides more arcuate. General form stouter and more convex.

The above short description suffices to define this species as a whole. The sexes vary in form and are parallel in their differences with those of *Corymbites cylindriciformis*.

Under the name *decoloratus* I have placed as synonyms *æreus* Mels. and *hemipodus* Say, the former being merely the usual form of female, the latter a larger development of the same sex. The specimen of *hemipodus* described by Leconte (Revis. Elat. p. 449), is an abnormal specimen, not only in the thoracic sculpture but also in the vague elytral impressions.

This species occurs everywhere in the Atlantic region as far west as Missouri, but I have never seen any from the Gulf States.

A. memnonius Herbst.—This species presents a range of variation in form parallel with that of *bilobatus*. Its general characters are: Color piceous to pale brown, legs always paler, surface sparsely clothed with brownish pubescence. Thorax moderately densely punctured but variable in the sexes, the disc more convex in the female, hind angles not divergent, rather strongly carinate, the carina divergent from the margin; beneath rather coarsely punctured but with a smooth space of variable extent posteriorly; prosternal mucro flexed at tip, mesosternum not prominent. Elytra moderately deeply striate, the striæ punctured, intervals moderately convex, punctulate.

Males.—Thorax less convex more sparsely punctured, sides nearly straight, form nearly square. Elytral striæ equally deep on the disc and sides.

Females.—Thorax convex, moderately densely punctured, sides usually moderately arcuate. Elytral striæ often less deep near the suture.

Under the name *memnonius* I unite in addition to those already placed there, *baridius* Say, and *brevicollis* Cand., the former being the female and the latter merely a less developed form of the species.

Occurs from Canada to Georgia and westward to Colorado. It varies in size from .50—1.02 inch; 13—26 mm.

A. bilobatus Say.—Under this name are included those forms in which the hind angles of the thorax are not carinate and the intra-angular incisure of the basal margin is absent. The form, especially in the thorax, varies in the sexes and has given rise to the synonymy noticed further on. The males are more slender, the thorax longer than wide, the sides straight and usually convergent in front. In the females the thorax is nearly square, sometimes longer than wider, the sides more or less arcuate and rarely slightly sinuate behind. The convexity of the thorax also varies sexually being more convex in the female but this difference is by no means so obvious as the form. The punctuation is moderately coarse but not very dense but varies in both respects. The elytra are striate, the striæ coarsely punctured near the base becoming finer toward the tip, the intervals are convex, irregularly biserially punctulate. In most of the females the striæ nearest the suture are much less deep than in the males. The flanks of the prothorax are coarsely punctured but shining, the punctures being scarcely less dense posteriorly than in front. The prosternal mucro is flexed at tip, the mesosternum not prominent. The color varies from rufo-testaceous to pale brown and the surface is sparsely clothed with pale brownish pubescence. Length .50—.64 inch; 13—16 mm.

It is not possible to define varieties accurately, but the following notes may render intelligible some of the described forms.

Bilobatus Say, ♀.—Sides of thorax feebly arcuate in front, parallel posteriorly. *A. tener* Lec. is the ♂, *consentaneus* Lec. and *planatus* Lec. are ♀ and not separable.

Melanophthalmus Mels., ♀.—Sides of thorax more decidedly arcuate and slightly sinuate posteriorly. These specimens recall somewhat the form of *Corymbites rupestris*.

Cavifrons Mels., is described from a male less mature, of paler color with pubescence removed and therefore apparently more shining.

Occurs from Canada to Georgia.

Synonymy and Bibliography.

- A. hirtus** Cand. Mem. Belg. xvii, 1865, p. 54.
A. carbonatus Lec. Proc. Acad. 1860, p. 320; Cand. Mon. iv, p. 214, pl. 3, fig. 2.
coracinus Cand. loc. cit. p. 214.
A. morio Lec. Trans. Am. Philos. Soc. x, p. 450; Cand. loc. cit. p. 213.
verna Cand. loc. cit. p. 212.
A. dilaticollis Mots. Bull. Mosc. 1859, iv, p. 368.
A. tumescens Lec. Proc. Acad. 1861, p. 348.
A. oregonus Lec. loc. cit. p. 348.
A. soccifer Lec. U. S. Surveys 1876, (Lt. Wheeler), App. H, 10, p. 516.
A. indistinctus Lec. Trans. Am. Philos. Soc. x, p. 451.
A. decoloratus Say, (*Elater*), Trans. Am. Phil. Soc. vi, p. 180; Lec. loc. cit. p. 451; Cand. Mon. iv, p. 212.
hemipodus ♀ Say, Ann. Lyc. i, p. 254; Lec. loc. cit. p. 449; Cand. loc. cit. p. 210.
corporosus ♀ Germ. (*Diacanthus*), Zeitschr. iv, p. 72.
aereus ♀ Mels. (*Athous*), Proc. Acad. ii, p. 156; Lec. loc. cit. p. 450; Cand. loc. cit. 215.
aeneolus ♂ Mels. loc. cit.
A. memnonius Hbst. (*Elater*), Kaefer x, p. 29, pl. 160, fig. 10; Lec. loc. cit. p. 450; Cand. loc. cit. p. 211, pl. 3, fig. 1.
baridius Say, Trans. Am. Phil. Soc. vi, p. 176.
Thomasi Germ. (*Hemicrepidius*), Zeitschr. i, 1839, p. 213.
ruficornis Kby. Fauna Bor. Am. p. 146.
brevicollis Cand. Mon. iv, p. 212.
A. bilobatus Say, (*Elater*), Trans. Am. Phil. Soc. vi, p. 164; Lec. loc. cit. p. 452; Cand. loc. cit. p. 222.
melanophthalmus ♀ Mels. (*Athous*), Proc. Acad. ii, p. 154; Lec. loc. cit. p. 451; Cand. loc. cit. p. 221.
cavifrons ♂ Mels. loc. cit. p. 154; Lec. loc. cit. p. 453; Cand. loc. cit. p. 223.
tener Lec. loc. cit. p. 452.
consentaneus ♀ Lec. loc. cit. p. 452.
planatus ♀ Lec. loc. cit. p. 453.