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## Annals and Magazine of Natural History: Series 6

Publication details, including instructions  
for authors and subscription information:  
<http://www.tandfonline.com/loi/tnah12>

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Published online: 02 Oct 2009.

To cite this article: G. Lewis F.L.S. (1892) XXVII.—On Eretmotus and  
Epiechinus (Histeridæ), Annals and Magazine of Natural History: Series 6,  
10:57, 231-236, DOI: [10.1080/00222939208677400](https://doi.org/10.1080/00222939208677400)

To link to this article: <http://dx.doi.org/10.1080/00222939208677400>

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XXVII.—On *Eretmotus* and *Epiechinus* (Histeridæ).

By G. LEWIS, F.L.S.

[Plate XIX.]

LAST spring I made another excursion in Algeria, and, searching diligently as occasion offered for Myrmecophilous Histeridæ, I succeeded fairly well as regards *Eretmotus*; but I was not so fortunate in respect to *Sternocælis* as during a somewhat similar ramble in 1888. I found three new species of *Eretmotus* and one new *Sternocælis*; and my additional material makes it clear that an *Eretmotus* I took in 1888 and erroneously referred to *E. approximans*, Fairm., is an undescribed species.

The best specific characters in *Eretmotus* lie in the structure of the prosternum, and figures of this part of seven species are given here. In the figures the anterior lobe of the prosternum is not shown, the suture before the keel being the limit of the drawing. The Plate also gives some outlines of the sterna of three species of *Epiechinus*, a genus lately formed to receive *Onthophilus costipennis*, Fähr., and allies. The genus at present contains, besides five African species, four from Asia, viz. *E. arboreus*, Lew., *taprobanæ*, Lew., *birmanus*, Lew., and *Onthophilus hispidus*, Mars.; and the structure of the sternal plates is very curious. *O. hispidus*, Mars., is described in the 'Abeille,' i. 1864, p. 340, from specimens taken in Celebes by Wallace, a species supposed by Marseul to be Paykull's *Hister hispidus* from the "East Indies:" but this is more than doubtful. Figure 9 is drawn from an example taken lately at Port Darwin by Mr. J. J. Walker, and is, I think, Marseul's species, the type of which I examined in Paris last May.

On a general study of the Histeridæ, made with such knowledge as I have derived from the habits of about one hundred and fifty species I have seen alive in various parts of the globe, it appears that the elytral striæ serve for what may be termed *guiding-lines*—that is, that a species whose habits do not necessarily constrain it to move in a direct or straight line is guided in its movements or receives assistance in going straight from the dorsal striæ. The genera *Hister* and *Platysoma*, especially the cylindrical species, contain types of this kind, and *Teretrius* and *Tryponæus* consist of species without striæ, and with them no guiding-lines are necessary, as the species all frequent holes drilled in timber by wood-boring beetles, where they cannot move to the right or to the left. *Eretmotus* is another instance, but of a different kind,

where guiding-lines are not wanted, and the striæ are again almost obsolete; it lives in ants' nests under stones, and while the insect is in the nest it wanders about within the limit of the burrows in any direction without forcing a cavity for itself. When the stone is raised *Eretmotus* moves as fast as possible to the edge of a gallery deeper down in the nest, and then, drawing the legs into the sternal grooves, voluntarily tumbles into it and often feigns death at the bottom. Both classes of insects fly to the places where they congregate, and during flight it does not seem that striation can serve a purpose. The habits of *Sternocælis*, also a genus without striæ, correspond in many ways to those of *Eretmotus*; but it is much more dependent on the ants than the other, and, being so, it is to a greater extent unfettered by the external influences which seem to mould into a monotonous similarity the species in the extensive genera *Hister* and *Saprinus*. During its dependency on the ants *Sternocælis* seems to have been free to develop into strange forms, or, at any rate, forms which appear to us fantastic, almost at random, like *Paussus*; but both *Sternocælis* and *Eretmotus* are limited in their distribution to the area inhabited by their host *Aphanogaster*, while *Paussus*, associating with ants of various kinds, some arboreal, some terrestrial, has been found in every continent.

In the Stercoraceous Histeridæ striæ are useful provided my estimate of their value is correct, as they all burrow more or less in the ground, and a large number of the Coprophaga are also provided with somewhat similar striæ. Amongst the Geodephaga *Abax* is an instance of an insect with guiding-lines, and *Oödes*, like so many aquatic species, is without them. In the *Dytiscus* ♂ there is a resemblance to *Oödes*, and in the female there is a similarity to *Abax*, and perhaps the striation, if there is any analogous use for it in such apparently different insects, is useful to the female when burrowing in the banks of ponds at the time she arranges for the lodgment of her eggs. The Hololeptini are flat and formed for working in all directions under loosened bark, and in several species, such as *Hololepta procera*, Er., and *elongata*, Er., the striæ are as obsolete as in *Eretmotus*, whose movements are similarly free. In the genus *Lioderma* (scarcely separable from *Hololepta*) the species are not all subcortical, but are found in the rotting limbs of the *Opuntia* and similar vegetals, and they have frequently one complete stria, and those which are interrupted are deep. Finally, reference may be made to *Abreus* and *Acritus*, insects without striæ, and whose habits lead them to roam freely in *Cossus*-burrows or under seaweeds on the shore. The Saprini have a different dorsal sculpture, but, as

sand-burrowing species, the prominent prosternal keel is without doubt very useful.

1. *Eretmotus corpulentus*, sp. n. (Pl. XIX. fig. 1.)

Orbicularis, convexus, niger, nitidus; pedibus, ore, antennisque rufopiceis; corpore subtilissime punctato, prosterno striis, antice evanescentibus, basi divaricatis.

L.  $3\frac{1}{8}$  mill.

Orbicular, convex, black, shining; the head carinate at the sides, feebly punctulate; the thorax finely punctulate, anterior angles less produced than in *E. Lucasi*, much less produced than in *E. cirtensis*, posterior fovea shallow; the elytra with all the striæ short and nearly obsolete; propygidium and pygidium finely punctulate; the prosternum wide, with the striæ well-marked at the base, widening out behind the coxæ, anteriorly evanescent before the suture, punctuation fine and scattered.

This species is the largest of the series and is very distinct; it comes nearest to *E. Lucasi*.

Found in the plain of Metija.

2. *Eretmotus Lucasi*, Mars. (Pl. XIX. fig. 2.)

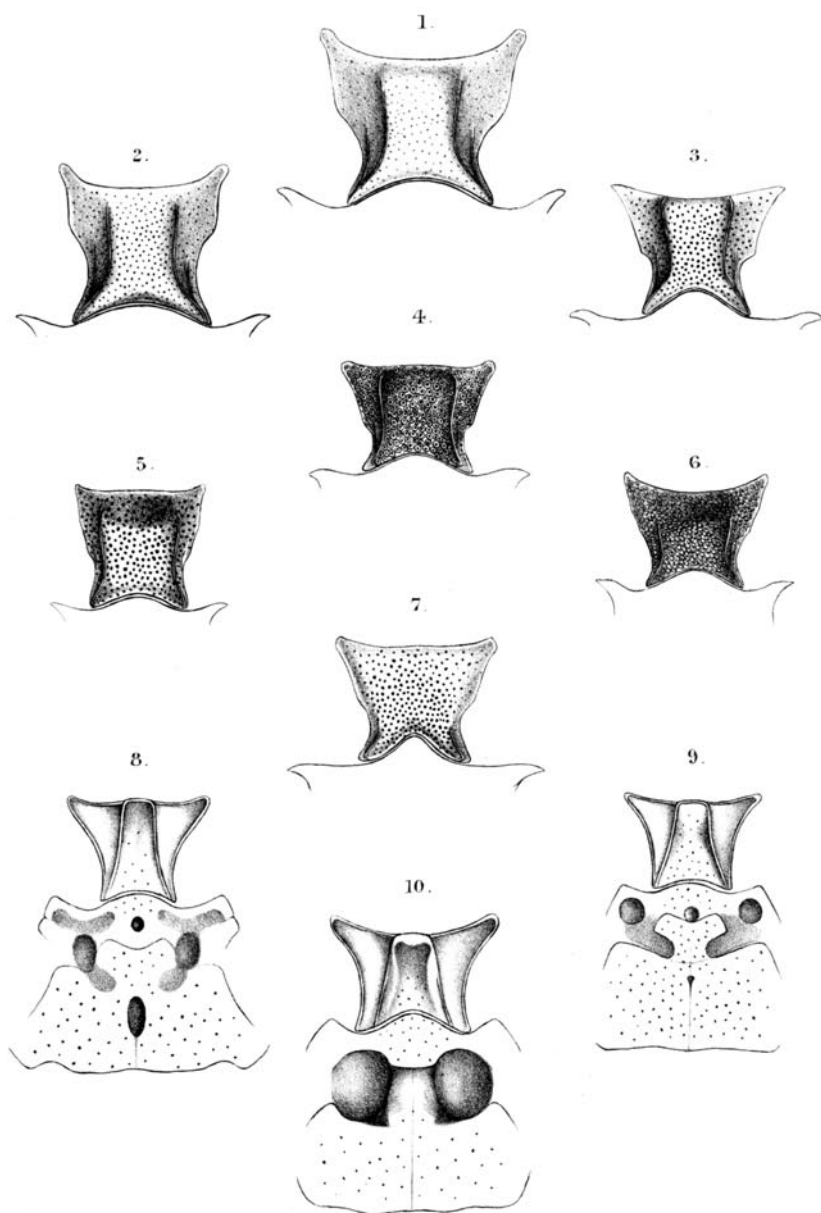
On the 29th April, and again on the 4th May, I obtained this species just below the cedar-forest on the mountain above Blida. This is probably the same locality in which Lucas found the first specimens in 1857; the locality given by Marseul is Médéah. The figure is from a specimen I have compared with the type.

3. *Eretmotus cirtensis*, sp. n. (Pl. XIX. fig. 3.)

Suborbicularis, convexus, niger, nitidus; corpore modice punctato; prosterno striis fortibus ad basin divaricatis, sparse punctato.

L.  $2\frac{3}{4}$  mill.

Suborbicular, convex, black, shining, nearly smooth above; the head feebly impressed before the clypeus, punctures sparse and shallow, bicarinate; the thorax feebly punctured, anterior angles obtusely produced, with a well-marked fovea within the basal angle; the elytra sculptured like the thorax, epipleural carina well defined, striæ feeble, first one third the length of the elytron, second two thirds, third a little longer than the first; the propygidium and pygidium finely punctulate; the prosternum a little rugose, with scattered shallow punctures, the striæ well marked and widened out at the base, anteriorly continuing to the suture. The prosternal striæ are



nearer to each other in this species than in any other known, and the general outline is less orbicular.

I obtained a small series of this species in the fir-woods above Constantine and a single example at Bone, on the road to La Calle and Guelma.

4. *Eretmotus sociator*, Coq. (Pl. XIX. fig. 4.)

The figure is drawn from an example kindly given to me by Mons. L. Bedel, and is from Daya. The thorax is more transverse than in the other species and the prosternal punctures are distinctly ocellate, as shown in the Plate. Coquerel says nothing about the prosternum, except that it is "saillant;" but Marseul redescribed the species from an example in Fairmaire's collection, and in the diagnosis he says "prosterno dense punctato," and in the text following "prosternum rugueux." Coquerel studied this species so slightly that he made a genus for it, although he knew of Marseul's genus *Eretmotus*, and even writes about it and says it has a certain analogy to *Eretmotus*, and differs in the relative width of the mesosternum—and this it does not do. The species has frequently been assigned erroneously to Fairmaire. I have no doubt about the identification of this species, yet Coquerel speaks of the "thorace elytrisque subtilissime punctatis;" but under the microscope the thorax is strongly punctate, especially at the sides, where the punctures are often ocellate.

5. *Eretmotus kabyliæ*, sp. n. (Pl. XIX. fig. 5.)

Orbicularis, convexus, niger, nitidus; capite ocellato-punctato; thorace lateribus vix dense punctato; prosterno carinis modice punctato sinuatis.

L.  $2\frac{3}{4}$  mill.

Orbicular, convex, black, shining, the legs and antennæ, like all the species, rufo-piceous; the head rather densely punctured, feebly impressed before the clypeus; punctures ocellate or subocellate, lateral carina rather strong, feebly sinuous, the thorax somewhat densely punctured at and behind the anterior angles and behind the head, punctures gradually becoming fine and scattered towards the disk; anterior angles moderately produced; posterior fovea shallow and somewhat triangular; the elytra finely punctulate throughout, first and second striæ visible for two thirds of elytra, third obsolete; epipleural carinæ not markedly raised; propygidium and pygidium finely punctulate. The prosternum, striæ widened

out slightly at the base, somewhat parallel to each other laterally, and well marked but shortened before the suture; the punctuation rather large, somewhat scattered, and not ocellate.

I found this at Hamman Rirha, 26th February, 1888.

6. *Eretmotus Bedeli*, sp. n.

Orbicularis, convexus, niger, nitidus; capite subocellato-punctato; pronoto antice punctato; prosterno dense punctato.  
L.  $2\frac{3}{4}$  mill.

Orbicular, convex, black, shining; the head somewhat closely punctate, punctures ocellate or subocellate, carinæ well marked; the thorax rather densely (not so densely as in *E. kabyliæ*) punctured behind the neck and at and behind the anterior angles; basal fovea very shallow and transverse, the elytra finely punctulate, first stria fine but apparently complete, second dimidiate, third obsolete; the propygidium and pygidium finely punctulate. The punctures on the prosternum are very similar to those of *E. sociator*, but the carinæ are stronger near the base and the anterior mesosternal margin is wider and less angulate.

The prosternum of this species is not figured; the upper surface of the insect is similar to *E. kabyliæ* and beneath it resembles *E. sociator*.

My friend M. L. Bedel discovered this species a few years since in the forest at Teniet el Had, and last May I took four or five specimens in the locality he directed me to.

7. *Eretmotus Leprieuri*, Mars. (*approximans*, Fairm.).  
(Pl. XIX. fig. 6.)

I found this species at Hamman Meskoutin, in the cedar-forests above Blida, and at Teniet el Had. It associates with *Aphanogaster striola*, Roger (?), and appears to have a wide area of distribution. The original example was found on Edough, above Bone, and Baron Bonnaire has found it on the "Pic de Cedres," near Batna. The ant is smaller and less black than *A. testaceopilosa*, with the sculpture of the head very rugose and the antennæ and legs brown. At Blida I found six specimens in one nest and at Teniet el Had four together on the 2nd May. At this date *Zygena zulema*, Pier., was very abundant, but rather worn, and the asphodel and tulip still in bud; but in the valley near Affrville the asphodel was in full flower. The climate of Algeria varies so much from year to year that a statement regarding flowering plants is a better guide to the season than any date.



8. *Eretmotus tangerianus*, Mars. (Pl. XIX. fig. 7.)

I have Marseul's type of this species, but the drawing has been made from a more recent specimen I took at Tangier. The prosternal striæ are very short.

*Salient Characters of the Species.*

*E. corpulentus*.—Broad and robust; punctures throughout extremely fine.

*E. Lucasi*.—Less robust; punctures throughout more distinct.

*E. cirtensis*.—Inclined to be oblong; prosternal striæ closer together and clearly reaching the suture.

*E. sociator*.—Thorax transverse; prosternum thickly covered with ocellate punctures.

*E. kabyliæ*.—Thorax densely punctured externally; prosternal striæ sinuous rather than divergent.

*E. Bedeli*.—Very similar above to *kabyliæ*; prosternum closely resembles the figure given for *sociator*, Coq.

*E. Leprieuri*.—A small species with short rugose prosternum. The only species not found with *Aph. testaceopilosa*.

*E. tangerianus*.—Prosternal striæ nearly obsolete.

## EPIECHINUS.

All the members of this genus are more or less squamous, and to show the sculpture of the sterna given in the figures the scales have been carefully removed.

## EXPLANATION OF PLATE XIX.

Fig. 1. *Eretmotus corpulentus*, Lew. The prosternal plate without the anterior lobe.

Fig. 2. *Eretmotus Lucasi*, Mars. The prosternal plate without the anterior lobe.

Fig. 3. *Eretmotus cirtensis*, Lew. The prosternal plate without the anterior lobe.

Fig. 4. *Eretmotus sociator*, Coq. The prosternal plate without the anterior lobe.

Fig. 5. *Eretmotus kabyliæ*, Lew. The prosternal plate without the anterior lobe.

Fig. 6. *Eretmotus Leprieuri*, Mars. The prosternal plate without the anterior lobe.

Fig. 7. *Eretmotus tangerianus*, Mars. The prosternal plate without the anterior lobe.

Fig. 8. *Epiechinus birmanus*, Lew. The three sternal plates.

Fig. 9. *Epiechinus hispidus*, Mars. The three sternal plates.

Fig. 10. *Epiechinus taprobanæ*, Lew. The three sternal plates.