THE PRINCETON COLLECTION OF FOSSIL BEETLES FROM FLORISSANT.

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Through the kindness of Professor Gilbert van Ingen, of the Department of Geology of Princeton University, I have been allowed to study the collection of Florissant fossil beetles in his care. The series is of particular interest since it forms a part of the material used by Scudder in working up two of his principal papers on the Tertiary insects* and contains many of his types and cotypes. He studied the present collection with special reference to the Adephaga, Clavicornia and Rhynchophora and in these groups described practically all of the novelties which were in sufficiently good condition for that purpose. With the exception of *Atænius patescens*, for the determination of which I am responsible, all of the species attributed to his authorship in the following list were identified by him and the specimens represent the originals which served as the bases of his descriptions. Those attributed to myself are either lately published or now in press elsewhere. Ten are described as new. The drawings are made with a camera lucida and represent only what actually remains of the specimens, there being no attempt to restore lost parts or to idealize any of the characters.

As in all collections of fossil insects, a good many of the specimens are in too poor preservation to repay study, but it is possible to recognize the forty-two species listed below.

Carabidæ.

Bembidium tumulorum Scudd.
Pterostichus walcotti Scudd.
Amara danæ Scudd.
sterilis Scudd.
Harpalus whitfieldii Scudd.

Staphylinidæ.

Staphylinus lesleyi Scudd.
Philonthus abavus Scudd.
Xantholinus tenebrarius Scudd.
Lithocharis scottii Scudd.
Bledius morsei Scudd. (?)
osborni Scudd.

Coccinellidæ.

Coccinella sodoma n. sp.

Cryptophagidæ.

Antherophagus megalops n. sp.

Dermestidæ.

Dermestes tertiarius Wickh.
Attagenus aboriginalis n. sp.

Byrrhidæ.

Byrrhus romingeri Scudd.

Buprestidæ.

Melanophila handlirschi Wickh.

*Monographs of the United States Geological Survey, Vols. XXI and XL.

Lampyridæ.
Podabrus wheeleri Wickh.
cupesoides Wickh.
Telephorus humatus n. sp.
Trypherus aboriginalis n. sp.

Ptinidæ.
Xestobium (?) alutaceum n. sp.

Scarabæidæ.
Atænius patescens Scudd.
Aphodius aboriginalis Wickh.

Cerambycidæ.
Callidiopsites grandiceps n. sp.
Leptura leidyi n. sp.

Chrysomelidæ.
Crioceridea dubia Wickh.

Cistelidæ.
Cistela antiqua n. sp.
Capnochroa senilis n. sp.

Rhynchitidæ.
Paltorhynchus narwhal Scudd.
Trypanorhynchus depratus Scudd.

Otiorhynchitidæ.
Evopes occubatus Scudd.
Eudomus robustus Scudd.
pinguis Scudd.

Curculionidæ.
Geralophus occultus Scudd.
fossicius Scudd. (?)
lassatus Scudd.
Cleonus primoris Scudd.
Cremastorhynchus stabilis Scudd.
Anthonomus arctus Scudd.
Tychuis evolatus Scudd.
Aulobaris damnata Scudd.

Coccinella Linn.

C. sodoma n. sp. (Plate II, Fig. 1). Outline subcircular, of the ordinary form of **Coccinella** if allowance be made for flattening. Sculpture extremely fine, consisting only of the alutaceous roughening common in the genus. Scutellum a little larger than in the recent North American species of **Coccinella.** Length, 7.75 mm.

Type in the Museum of Princeton University, number 6561.

An extended description seems unnecessary, since the figure will show the proportions of the different parts of the body. While it is safer to consider the generic reference as applying in the Linnæan sense, there is nothing about the specimen which would seem to throw it out of *Coccinella* proper. It is a little larger than the average *C. transversoguttata*, the common species of the Rocky Mountains today. No definite color pattern can be distinguished.

Antherophagus Latr.

A. megalops n. sp. (Plate I, Fig. 1). Form subparallel and moderately elongate, the entire surface devoid of any distinct sculpture though there are faint signs of shallow, broad, elytral sulcations, a few small punctures towards the sides of the pronotum and what seem to be hair marks on the prothorax and elytra. Head large, about one and one-half times as long as the pronotum, slightly longer than wide, sides a little convergent anteriorly, front margin indistinctly preserved, but apparently about truncate. Eyes submedian in position, large and rounded, separated above by less than the width of one of them.

Antennæ submoniliform, slightly incrassate exteriorly, first joint large, second short, third longer than the fourth, though not much so, fourth to eighth subequal, the remaining three forming a weak club. The eleventh joint is damaged in this specimen, so that the exact form cannot be made out. Prothorax very short, about twice as broad as long, the form of the sides distorted, one appearing to be straight with the anterior angle distinct while the other is arcuate with the angles nearly obliterated. Scutellum absent or not defined. Elytra about one and one-half times as long as broad, apices, in life, probably conjointly rounding through as preserved they are separately subcuminate at tip. Legs wanting. Length, 4.30 mm.

Type in the Museum of Princeton University, obverse and reverse, numbers 6564 and 6535.

The head is larger than in the modern species of *Antherophagus* that I know and the eyes are of much greater size in the fossil. It may be necessary, some day, to erect a new genus for this insect, but for the present, it seems better to allow it to remain in *Antherophagus*.

Dermestes Linn.

D. tertiarius Wickh. (Plate II, Figs. 2 and 3). A specimen contained in this collection is in much more perfect condition than the type and shows a few additional features. The head is of normal size and punctured a little more strongly than the prothorax. The right antenna is displayed in sufficiently good preservation to show that it is very similar to that of the recent **D. marmoratus** except that the two joints immediately preceding the club are a trifle broader. The vestiture, punctuation and size are as described for the type.

On account of the imperfection of the type, which was used for the original figure, new drawings from the Princeton specimen are given herewith. The generic reference seems to be completely sustained by this example. It carries the Princeton Museum number 6613.

Attagenus Latr.

A. aboriginalis n. sp. (Plate II, Fig. 4). Form elongate, subelliptical. Head of moderate size, deeply inserted in the prothorax, minutely sparsely punctulate, eye rather small. Prothorax along middle a little less than one-half the basal width, sides arcuate, dissimilarly so in the specimen, front and hind angles well defined, apical emargination moderately deep, base rather strongly lobed at middle and sinuate each side, disk minutely punctulate or nearly smooth. Scutellum small, triangular. Elytra about three and three-fourths times the length of the prothoracic median line, not striate, punctuation minute, surface with signs of a fine hairy vestiture. Length, 5.00 mm.

Type in the Museum of Princeton University, number 6290.

The form, size, thoracic outline (especially the shape of the base), the proportions of the abdominal segments and the vestiture all point to this generic assignment. The sculpture seems to have been finer than that of any of the recent North American species with which I am acquainted, and this character will separate it from the fossil *A. sopitus*.

Telephorus Schäff.

T. humatus n. sp. (Plate I, Fig. 2). Form subparallel, rather narrow. Head crushed so as to appear excessively large, particularly since the basal antennal joints are thereby merged with the genæ. Eye moderately large, rounded. Antennæ equal to a little more than one-half the body length, first joint not distinguishable, second small, third shorter than the fourth, remainder subequal in length, all except the distal three with the inner angles produced so as to appear moderately serrate. Prothorax transverse, sides and apex rounded. Scutellum of normal size, triangular. Elytra four times the length of the prothoracic median line, rounded at apices. Legs rather short. Length, 7.50 mm.

Type in the Museum of Princeton University, number 5984.

In form and size this insect resembles the recent *T. bilineatus* quite closely. The sculpture is of the fine alutaceous type common in the genus.

Trypherus Lec.

T. aboriginalis n. sp. (Plate I, Fig. 3). Form similar to that of the recent **T. latipennis.** Head a little distorted, but evidently of moderate size. Antennæ slender, filiform, the joints not serrate, but too poorly preserved to describe as to their relative lengths. Prothorax about as wide as the head, transverse, apex narrower than the base, sides moderately strongly rounded. Elytral length equal to twice the prothoracic width, apices narrowed, but rounded, sculpture strongly scabrous. Abdomen with several segments exposed beyond the elytral tips, without visible terminal appendages. Legs wanting, except one femur, which is rather slender. Length, 8.75 mm.

Type in the Museum of Princeton University, number 6527.

There is little doubt that this insect is closely allied to *Trypherus* if not an actual member of the genus. It has the size, form, sculpture and general appearance of the recent *T. latipennis*, common in the eastern half of North America.

The hind wings are spread and exposed, showing the basal portions of the venation quite well. A comparison of the figure of the fossil with the accompanying one of the wing of *T. latipennis* will show the close general correspondence between them. The dotted lines in the latter figure show as transparent markings on the general ground, but in the fossil the upper one of these is not visible while the lower one seems to have been strongly pigmented.

Xestobium Motsch.

X. (?) alutaceum n. sp. (Plate I, Fig. 5). Form nor very elongate. Head large, deflexed, eye about circular and rather small compared with that of most recent Anobiini. Pronotum somewhat gibbous dorsally at about the middle, projecting anteriorly over the head. Elytron with a rather weak epipleural lobe within which is a fine but distinct stria, apex apparently rounded. Legs short and only moderately stout. Length, from front of pronotum to abdominal apex, 6.65 mm.

Type in the Museum of Princeton University, number 6575.

In a general way, this species slightly resembles the Florissant fossil *Xylobiops lacustre*, but the proportions are different and the sculpture of the present species is very fine. The entire upper surface shows traces of a minute scabrosity, but the abdomen is almost entirely smooth. The elytra are not striate except inside the epipleural margin. By the small eyes, the size, sculpture and general form, this seems to approach *Xestobium*, but the generic reference must be considered provisional, the most dubious character being the large head.

Callidiopsites n. gen.

This generic name is proposed for a Cerambycid fossil which shows affinities with *Callidium* in the broad short form, short stout antennæ, heavy legs, transverse and nearly or quite confluent front coxal cavities, and coarse elytral scuplture. It differs in the mesosternum, being much narrower between the middle coxæ and the head very much larger. It is not entirely in agreement with any of the recent genera of Callidioides known to me and it seems better to give it a separate generic assignment. The type is *C. grandiceps*, described below.

C. grandiceps n. sp. (Plate III). Form rather short and stout, outline, as preserved, not unlike some species of **Patrobus** in the Carabidæ. Head large, nearly as long as broad and decidedly longer than the prothorax. Eyes not definable. Antennæ extending a little beyond elytral two-thirds, moderately stout, the first joint large and thick, third not greatly elongate, tenth and eleventh distinctly shorter than the two preceding. The joints are apparently carinate along their faces. Prothorax very short, a little wider than the head. Elytra (likely enough from abdominal distention due to maceration) not completely covering the dorsal segments, their apices separately rounded, surface coarsely closely punctured with some indication of striæ at the outer margins. Thighs heavy, somewhat clavate, especially the middle and hind pairs. Apex of abdomen extruded, displaying a simple, straight sex organ. Length, to extended tip of abdomen, 15.25 mm.; of elytra, 8.25 mm.

Station number 13B. One specimen, collector not specified, was received from Professor Cockerell. The type is in the Museum of the University of Colorado. Another is contained in the Princeton collection, with the number 6543.

This looks like a Carabid, but what can be seen of the structure of the underside together with the large antennæ incline to the assignment given above. The antenna figured is a trifle too slender, since it is a camera lucida drawing and the edges of the organ were not entirely freed from the matrix.

Leptura Serv.

L. leidyi n. sp. (Plate I, Fig. 6). Form, judging from the remains, subparallel, as in the recent **L. sphæricollis.** Head apparently incomplete in front of the eye, which is reniform, distinctly emarginate and of rather small size. Antennæ not preserved, except a few of the basal joints which are relatively shorter than usual in the living forms. Prothorax a little damaged, but apparently not strongly campanulate. Elytra subparallel to apices which are separately rounded and not much narrowed. Surface sculpture everywhere very fine, the elytra seemingly with a delicate pubescence. Legs moderately long. Length, from front of head to abdominal apex, 7.50 mm.

Type in the Museum of Princeton University, number 6512.

The small size will at once separate this from any of the other described species of Florissant Lepturæ, and the fine sculpture serves to differentiate it from *L. antecurrens* which comes nearest in length. Like the other fossils from Florissant ascribed to this genus, it must be considered a *Leptura* in the wide sense only. It is named after Joseph Leidy, zoologist and palæontologist.

Cistela Fabr.

C. antiqua n. sp. (Plate IV). Form fairly stout. Head finely rather densely punctulate and hairy. Eyes, as shown by their sockets, moderately large. Antennæ slender, the basal two joints not definable, the remainder sub-equal, scarcely serrate, the distal ones not incrassate; if directed backwards, the antennæ would reach nearly to the basal fourth of the elytra. Prothorax broad at base, narrowed at apex, sides gently arcuate, surface finely punctulate and hairy like the head, but more distinctly. Scutellum of moderate size, sculptured like the thorax. Elytra not alike in outline on account of the specimen being crushed askew, but the left one, which seems to be the better preserved, is a little more than four times the length of the prothoracic median line, tapering to the rather sharply rounded apex. Elytral sculpture and vestiture like that of the pronotum. Legs wanting. Length, from front of head to elytral apex, 13.10 mm.

Type in the Museum of Princeton University, number 6534.

The appearance of this insect is that of a *Cistela* with estriate elytra and slender antennæ. Compared with the North American species known to me, it comes closest to *C. pinguis* from Colorado. It is about the size of the fossil *Capnochroa senilis*, but that insect has striatopunctate elytra.

Capnochroa Lec.

C. senilis n. sp. (Plate II, Fig. 5). Form elongate, subparallel as far as shown, but the elytral apices are broken off. Head rather large for this genus, transversely finely subrugose. Eyes, as displayed, transversely elliptical and of good size. Palpus (probably the maxillary) with the terminal joint roughly triangular, moderately dilated. Antennæ relatively less elongate than in the recent **C. fuliginosa,** not serrate, second joint shorter than the third, which is not so long as the fourth. Prothorax narrowed anteriorly, the more perfect side about straight, anterior coxæ narrowly separated by the prosternum. Scutellum of moderate size. Elytra long, if complete they would be about six and one-half times the median prothoracic length, rather coarsely striate and punctate. Legs moderate or rather short, not excessively slender, the tarsi, as far as shown, a little shorter than the tibiæ, claws large, the front ones apparently pectinate. Length of fragment, 12.40 mm.; if entire, the insect would reach about 14.00 mm.

Type in the Museum of Princeton University, number 6902.

While the generic reference must be considered somewhat doubtful, it seems safe to assume that the fossil represents a large Cistelid belonging in the same neighborhood as *Capnochroa*. The texture is very like that of the Cistelidæ, the

prosternum being strikingly like that of *Capnochroa* and setting up strongly in the same way. The arrangement of the coxæ is as in that genus and the front tarsi correspond very well. The form of the palpus is similar. Under high power, the claws show transverse markings, which I think are the somewhat obscured pectinations. The strength of the elytral sculpture is indicated by its showing through, although the specimen is preserved as an underside. A disturbing element is introduced by the antennæ, which are shorter and less serrate than in the modern species, but I dislike to found a new genus upon this character alone. Our living *Capnochroa fuliginosa* occurs in the Atlantic district and as far west as the Mississippi Valley.

EXPLANATION OF PLATES.

PLATE I.

Fig. 1. Antherophagus megalops n. sp.
Fig. 2. Telephorus humatus n. sp.
Fig. 3. Trypherus aboriginalis n. sp.
Fig. 4. Trypherus latipennis, (recent), hind wing.
Fig. 5. Xestobium (?) alutaceum n. sp.
Fig. 6. Leptura leidyi n. sp.

PLATE II.

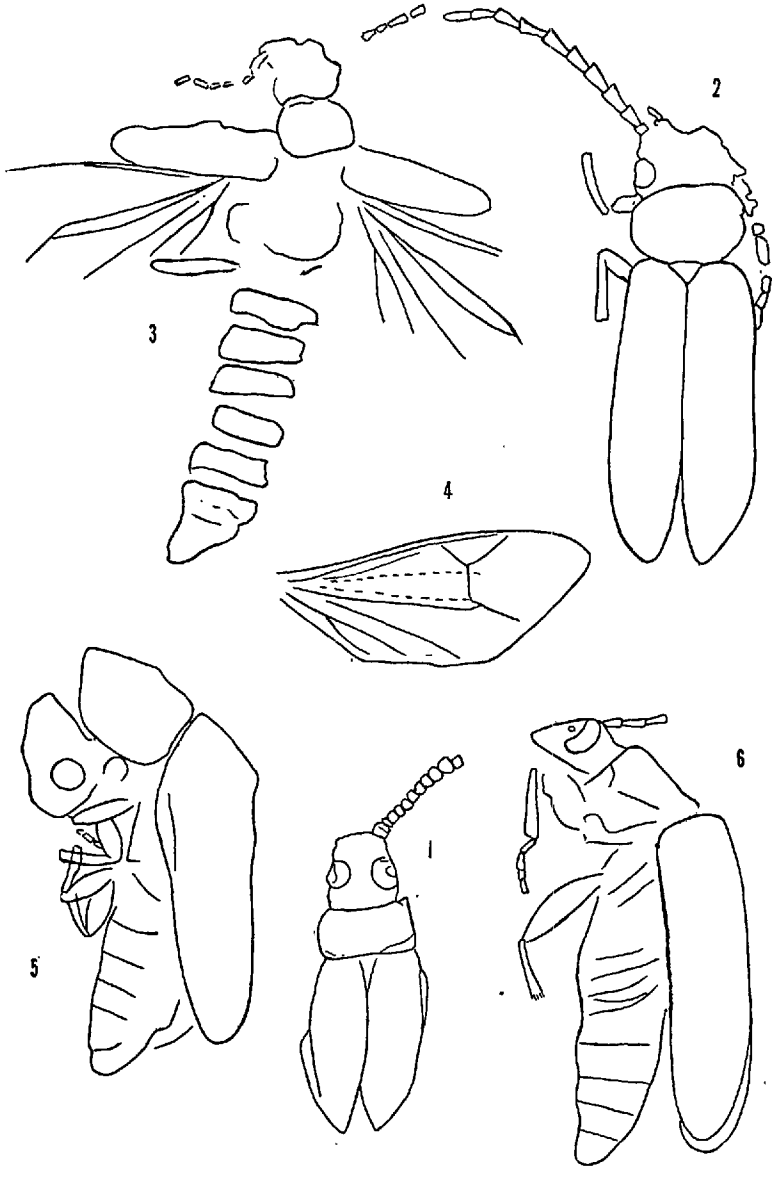
Fig. 1. Coccinella sodoma n. sp.
Fig. 2. Dermestes tertiarius Wickh.
Fig. 3. Dermestes tertiarius, antenna.
Fig. 4. Attagenus aboriginalis n. sp.
Fig. 5. Capnochroa senilis n. sp.

PLATE III.

Callidiopsites grandiceps n. sp.

PLATE IV.

Cistela antiqua n. sp.



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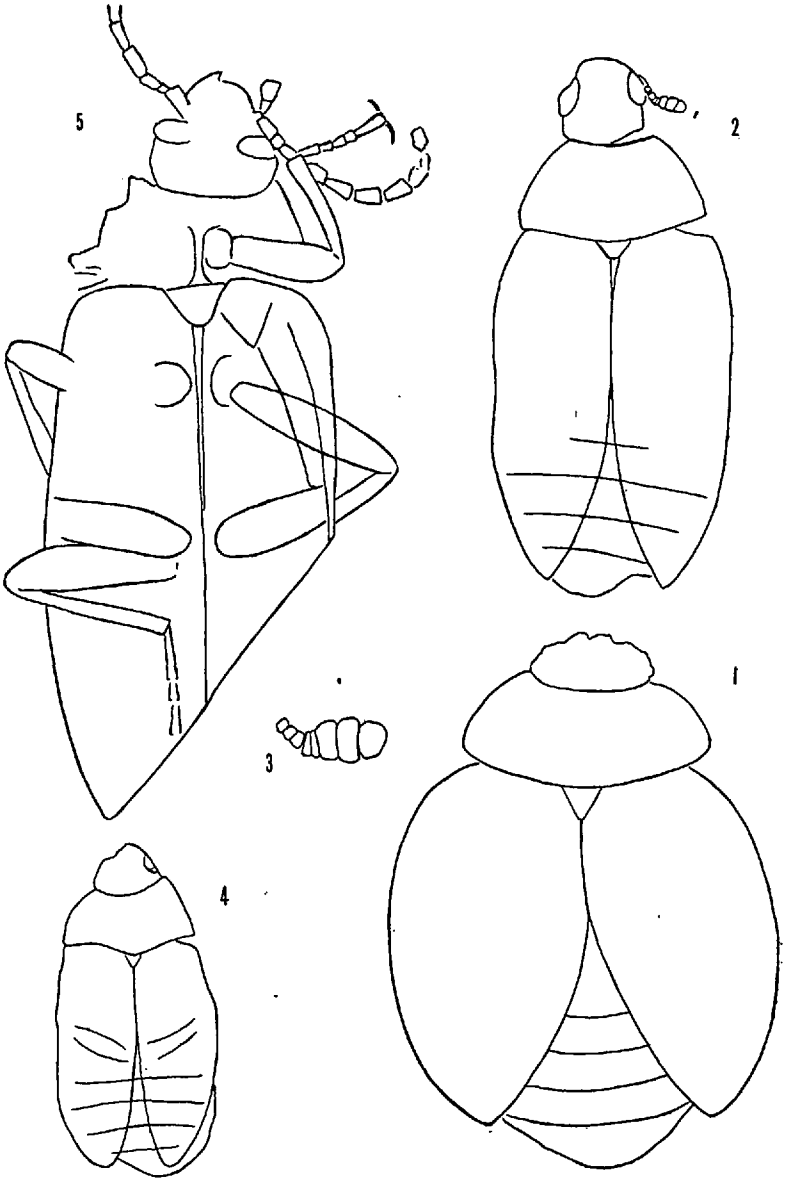

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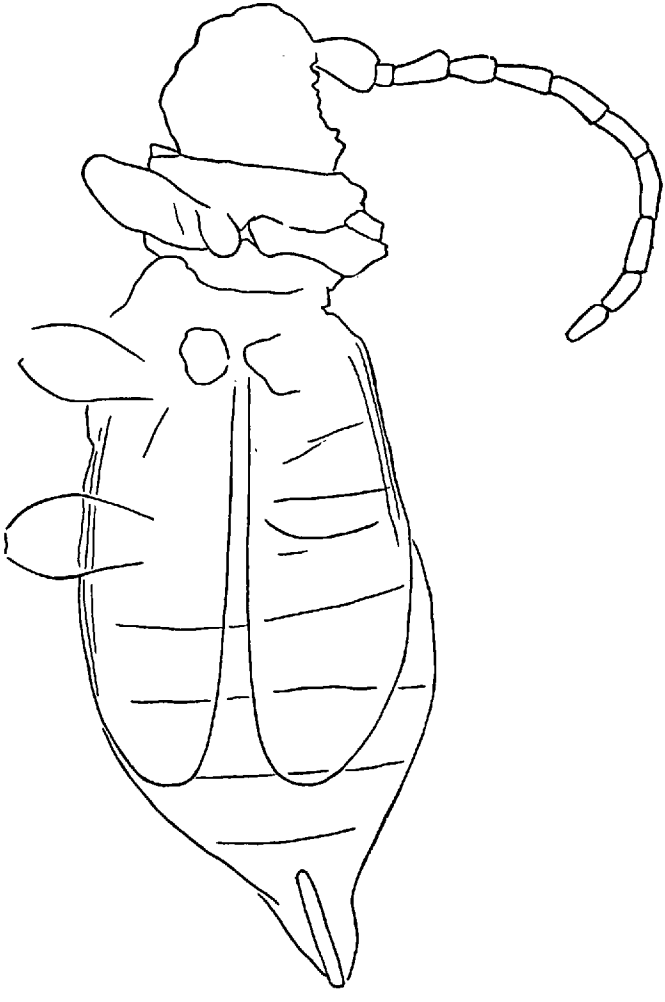

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