

ventral surface without transverse furrows. Front tibiæ with three teeth (including apical tooth) but without denticulations; mid-tibiæ with one spine. Type of genus: *Scaritoderus loyolæ*, Fairm.

Scaritoderus loyolæ, Fairm. Bull. Soc. Ent. Fr. 1883, p. 55.

Scaritoderus loyolæ, Andr. Ann. & Mag. N. H. (9) iii. 1919, p. 469.

Crepidopterus favrei, Maindr. Bull. Soc. Ent. Fr. 1904, p. 269, fig.

In his "Monographie des Scaritides" (Ann. Soc. Ent. Belg. xxii. 1879, p. 156) Chaudoir published the genus *Anomoderus* for *A. costato-granulatus*, a species from New Caledonia. Fauvel, finding the name of Chaudoir's genus was preoccupied, changed it to *Anomophænus* (Rev. d'Ent. i. 1882, p. 229); Atkinson in his Catalogue of Oriental Carabidæ (Journ. As. Soc. Beng. 1890, Suppl. i. p. 18) says that Fauvel's name is also preoccupied, but I cannot find that this is the case. When Fairmaire published his *Scaritoderus loyolæ*, he too had discovered that *Anomoderus* was a preoccupied name, and he suggested *Scaritoderus* to replace it; he pointed out some differences between the Indian and New Caledonian species, but left them in the same genus. As Fauvel's name is anterior to Fairmaire's, *Anomophænus* must stand for the New Caledonian species, and *Scaritoderus* becomes a synonym of it.

It is in these circumstances that I propose the new genus described above for the Indian species. It differs in some important points from *Anomophænus*: the tooth of the mentum is almost quadrate, a narrow slit on each side separating it from the lobes, the penultimate joint of the labial palpi is sex-setose, the first joint of the antennæ equal in length to the four succeeding ones, sides of prothorax dentate, base only slightly produced, &c.

LXI.—Fossil Arthropods in the British Museum.—II.

By T. D. A. COCKERELL, University of Colorado.

[Plate XVI.]

COLEOPTERA.

Carabidæ.

Carabites gardneri, sp. n. (Pl. XVI. fig. 10.)

Elytron 16.8 mm. long, 5.5 mm. wide; base truncate, apex narrowed, but obtuse at tip; the outer margin strongly concave just before the end. Outer margin with

a strong sharp sulcus, but no distinct row of punctures mesad of it; disc with eight strong striæ, beset with small round rather weak punctures throughout, about 7 punctures to a mm. On middle of elytron three striæ, with two intervals, go in 2 mm. transversely. The two outer discal striæ run to the apex, converging near it, as also do the two inner, but the four middle ones unite in two pairs, thus terminating, the outer pair 3 mm. and the inner pair 2 mm., before the apex. There is no basal incomplete stria, nor any sign of specialised discal punctures. The striæ, with their punctures, resemble those of *Morio*, but the fossil is easily separated from that genus by the absence of specialised submarginal and discal punctures.

Bartonian, Bagshot Beds; Bournemouth (*J. S. Gardner*). British Museum, 19010 with reverse (=type), 19009, 19012, 19011, 19019 with reverse, 19013.

The type of *Carabites*, Heer, is an elytron 3.5 mm. long, from the Lower Lias of Switzerland. Our insect is of course not congeneric, but Scudder used *Carabites* in a general sense for Carabidæ not referable to a known genus, and I follow him in this usage, to avoid giving a new generic name. I do not know a living genus to which *C. gardneri* may be referred, but I am not familiar with more than a small fraction of the numerous genera.

Elateridæ.

Elaterites murchisoni (Giebel).

Elytron as preserved 14 mm. long, the actual length was probably at least 15 mm.; width 4.5 mm.; nine longitudinal lines of small round punctures; near the apex 10 punctures in 2 mm. of length, and three rows in 1 mm. transversely; on middle of elytron two rows in 1 mm. The shape of the elytron is about as in *Agriotes*, the apex forming a large angle. The punctures are about as in *Pyrophorus*, but those in the apical field are stronger, although the insect is not so large.

Lower Bagshot Beds, Corfe Clay; Creech, between Corfe and Wareham, Dorset (*P. B. Brodie*). Brit. Museum, 18996. From W. R. Brodie (No. 17).

This is the type-specimen of *Elaterium murchisoni*, Giebel, 1856, based on Westwood, Proc. Geol. Soc. London, 1854, p. 395, plate 16. f. 34. It has quite typical Elaterid sculpture; but the type of *Elaterium* is *E. pronæus*, Westw., from the Purbeck, which has elongated punctures and, as Handlirsch remarks, is surely not congeneric. *Elaterites*, Heer

(type now designated *E. lavateri*, Heer, from Oeningen), seems applicable to the present insect. I include in *Elaterites*, however, various Elaterid elytra from the Tertiary, which cannot be definitely assigned to known genera. Those described below, if completely known, would very likely be found to include as many genera as species.

Elaterites perditulus, sp. n. (Pl. XVI. fig. 7.)

Elytron about 10·3 mm. long, width about 2 mm. ; eight rows of fine punctures, about the middle four rows in 1 mm. transversely ; punctures in the rows about 130–160 μ apart, and placed in delicate grooves. The general form is that of *Monocrepidius* ; the apex is too pointed for *Athous*.

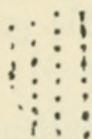
Corfe, I. of Purbeck, Dorset (*Brodie*). Brit. Museum, 10418.

This is labelled "*Agrilus*, Buprestidæ (W.)." W. probably stands for Westwood, but in spite of this high authority the insect must be referred to the Elateridæ.

Elaterites laconoides, sp. n. (Pl. XVI. fig. 8 ; text-fig. 1.)

Elytron 7 mm. long and 2·5 mm. broad, formed much as in *Lacon*, the apex very obtuse. Ten striæ, bearing five round (not elongate) punctures ; near the humeral angle the second stria (counting from without) is deflected toward the third at its upper end, and in the space thus formed between the first stria and upper end of second is a little

Fig. 1.



18998.

Elaterites laconoides (sculpture).

row of four punctures. On the basal half of the elytron the punctures are very distinct, but on the apical part they are small and obscure. On the basal part the punctures are about six in a mm., and there are three striæ to a mm. transversely.

Bartonian, Bagshot Beds ; Bournemouth, near the pier. Presented by Alfred Bell. Brit. Museum, 18998.

Elaterites sculptilis, sp. n. (Pl. XVI. fig. 9.)

Elytron 7 mm. long and 1.8 mm. wide, the base truncate, the apex pointed. Nine delicate striæ, very finely punctate, the four inner ones with the punctures subobsolete, the others with distinct though very delicate punctures. The outer striæ are more closely placed than the four inner; the fifth stria (from within) is one mm. from inner margin. Punctures on outer striæ about 95–130 μ apart. Between the inner series of striæ the surface is extremely finely rugulose, with lines inclined to be transverse or oblique, but irregular, as in the living *Cardiophorus fenestratus*, Lec.

“Corfe, I. of Purbeck” (*Brodie*); Brit. Museum, 10420. “Studland Bay, I. of Purbeck, Dorset” (*Brodie*); Brit. Museum, 10422. These are the two impressions of the same specimen.

Elaterites palæophilus, sp. n. (Pl. XVI. fig. 1.)

Elytron as preserved 6 mm. long, but the ends missing; probable total length at least 9 mm. Width 2.4 mm.; dark brown, with eleven rows of round punctures; the rows close together, and the punctures so placed that often two of one row and two of the next will mark the four corners of a square space; punctures about 6 in a mm. lengthwise, and five rows transversely in a mm., but the first three rows are more widely spaced than the others.

Lower Eocene; Woolwich and Reading Beds, Peckham. Caleb Evans collection. Brit. Museum, 1467.

Someone had already labelled it “*Elater.*” (See also Smith, ‘Geologist,’ iv. (1861) p. 40.)

Curculionidæ.

Curculionites marginatus, Giebel.

Elytron convex, about 6 mm. long and 3 mm. wide; with six visible (probably one or two obliterated) longitudinal rows of very large deep punctures, squarish and somewhat longer than wide. Each row contains about 20 punctures, and there are between 4 and 5 punctures in 2 mm. longitudinally. Transversely, there are 5 rows in 2 mm. The intervals between the punctures are not larger, but often rather smaller, than the punctures themselves.

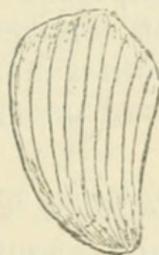
Bagshot Series, Corfe, Dorset (*Brodie*). Brit. Museum, 10417. This is the type-specimen of Giebel’s *C. marginatus*,

based on Westwood's figure. The type of Heer's genus *Curculionites* is *C. redtenbacheri*, Heer, from Radoboj. This shows only the ventral surface, but looks like one of the Brachyrhinae (Otiorrhynchinae). *C. marginatus*, so far as anything shows, could go in the genus *Brachyrhinus* (*Otiorrhynchus*). Pierce recognises ten families of Curculionoidea, and places these insects in a family Psallidiidae, on the ground that *Psallidium* was the first published genus. This change does not seem to me to be necessary.

Ceutorhynchus (?) *eocenicus*, sp. n. (Fig. 2.)

Elytron convex, 3 mm. long and 2 mm. broad; inner margin concave, outer strongly convex; base broad, obtusely angulate about the middle. There are eight sharp longitudinal striae, and no visible punctures. The striae are about 190 μ apart.

Fig. 2.



Ceutorhynchus (?) *eocenicus*, Ckll.

Lower Eocene, Woolwich Beds; Peckham. Caleb Evans collection. Brit. Museum, 14472.

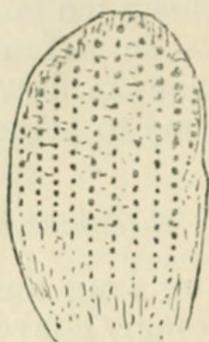
The specimen is labelled: "C. E., Peckham, 841^a. *Strophosomus* or *Cneorhinus*." It appears to have been recorded by Smith, 'Geologist,' iv. (1861) p. 40. It does not appear to me to belong to the Brachyrhinae, but rather to have been an extremely broad-bodied weevil of the *Ceutorhynchus* type, very similar to *C. degravatus*, Scudd., from the Eocene of Colorado.

Ophryastites gardneri, sp. n. (Fig. 3.)

Elytron slightly convex, flattened on disc, about 10.6 mm. long and 5 mm. wide; eight rows of very distinct but only moderately large punctures, about 8 in 2 mm., and in addition a row of small weak punctures next to the outer margin, and a broken row next to the inner margin. The surface is irregularly transversely wrinkled.

Bartonian, Bagshot Beds; Bournemouth (*J. S. Gardner*).
 Brit. Mus. 19000; also 19005, which seems to be the
 reverse, or in any event the same species.

Fig. 3.



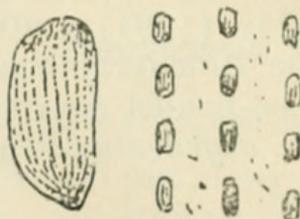
Ophryastites gardneri, Ckll.

This represents a large weevil, the whole insect doubtless
 15 mm. long in life. It is in all respects very similar to
Ophryastes grandis, Scudd., from the Eocene of Colorado,
 but the punctures are not connected by longitudinal striæ
 as in *O. grandis*. *Ophryastites* is used by Scudder for fossil
 insects of this affinity, but of uncertain generic position.

Baris (?) *palæophilus*, sp. n. (Fig. 4.)

Elytron 3.2 mm. long and about 1.7 mm. broad; shaped
 as in *B. interstitialis*, Say. Convex, with ten rows of closely
 placed elongate punctures. The punctures are about 80 μ
 long, and the intervals between them are about 50 μ . The
 rows are about 110 μ apart.

Fig. 4.



Baris (?) *palæophilus*, Ckll.

Bartonian, Bagshot Beds, Bournemouth (*J. S. Gardner*).
 Brit. Museum, 19016.

So far as can be seen, this might belong to *Baris*. There is
 a superficial resemblance to *Geralophus*, from the Florissant
 Miocene; but in *Geralophus* the small punctures are not
 over a third as long as the distance between the rows.

Chrysomelidæ.

Chrysomelites allochlamys, sp. n. (Fig. 5.)

Elytron about 7·5 mm. long and 4·3 mm. broad; moderately convex but flattened on disc, broadly truncate at base, obtuse at apex; nine lines of round rather large punctures; one near the inner margin, and four pairs of parallel lines, two near middle of disc, and two, close together, not far from outer margin; between the pairs of lines the surface is very densely covered with punctures of the same size as those in the lines. In one of the lines there are about seven punctures to a mm.

Fig. 5.

*Chrysomelites allochlamys*. 19008.

Bartonian; Bagshot Beds, Bournemouth (*J. S. Gardner*). Brit. Museum, 19008, with reverse.

The type of *Chrysomelites* is *C. prodromus*, Heer, from the Lower Lias of Switzerland, an insect certainly not congeneric with the present species. But I follow Scudder in treating the name as applicable to fossil Chrysomelidæ of unknown generic position, although it seems probable that our insect should be made the type of a new genus. It has a curious resemblance to *Smodicoptera liasina* (Heer), from the Lower Lias of Switzerland. Heer considered *Smodicoptera* to be a Buprestid (*Euchroma*), but our species certainly cannot belong to that family. In 'Die Insektenfauna der Tertiärgebilde von Oeningen und von Radoboj' (1847), plate viii., Heer undertook to illustrate the primitive or fundamental pattern of a Coleopterous elytron, and according to this system *C. allochlamys* may be considered a primitive form. Such a pattern persists in the modern *Leptinotarsa*, but that typically differs from our fossil in having the rows of punctures much more irregular and (especially *L. undecimlineata*) double at least in part, while the intervals between the

parallel rows are only very sparsely punctured*. The fossil shows no colour-bands, but they may have existed in life. There is a group of *Leptinotarsa*, represented by *L. juncta* and its immediate allies, in which the rows of punctures are single and even, as in *C. allochlamys*.

Cerambycidæ.

Leptura (?) *bartoniana*, sp. n. (Pl. XVI. fig. 12.)

Elytron as preserved 9.5 mm. long, but apex lost, probable total length about 12 mm.; width 3 mm.; costal margin thickened; humeral region with the usual large rounded prominence; surface throughout coarsely punctured on the basal half, the punctures deep, suboval, inclined to be in longitudinal lines, but not regular, the intervals usually less than the width of a puncture, about seven punctures in 2 mm. longitudinally; on apical half or more of elytron the punctures are fine and well separated; on the descending outer face below the humeral angle, the punctures are large and run more or less in oblique lines.

Bartonian, Lower Bagshot, Corfe Clay; Creech, between Corfe and Wareham, Dorset (*P. B. Brodie*). From W. R. Brodie. Brit. Museum, 18997.

This agrees with *Leptura*, so far as can be seen. Compared with the living *L. cribripennis*, it differs by being much less coarsely punctured in the apical region, and by the large punctures not being at all confluent. On the other hand, the punctures on the basal half are very much larger and coarser than in *L. sexmaculata* or *L. instabilis*.

Scarabæidæ.

Pelidnotites (gen. nov.) *atavus*, sp. n. (Fig. 6.)

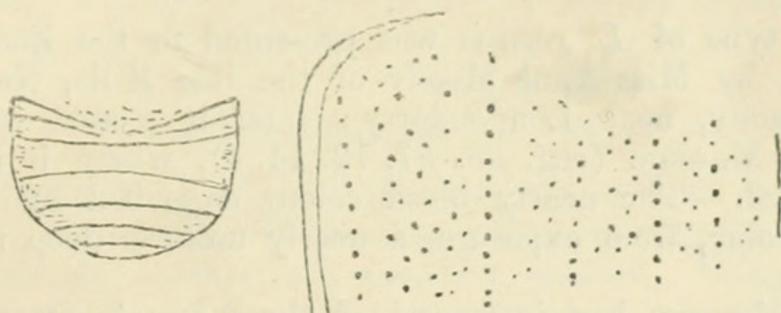
Elytron about 18 mm. long, width uncertain; surface with rows of fine punctures (6 or 7 in 2 mm.), and widely scattered irregular similar punctures between. Humeral region with a well-defined thickened edge. A row of punctures proceeds backward from the obtuse humeral angle, very slowly diverging from the margin; the next row of punctures is about 3 mm. from this on the basal part of the

* The specimen of *L. undecimlineata*, Stål, before me was collected by Mrs. Cockerell at Antigua, Guatemala. It has the pattern of head and thorax as in Tower's segregate *L. diversa* ('The Mechanism of Evolution in *Leptinotarsa*,' pl. 2. f. 4), but these parts are yellowish, nearly as in *L. panamensis*, and the elytral stripes are distinctly metallic green. It will stand as race *guatemalensis*, and is, I presume, the *L. guatemalensis* which Tower mentions but fails to describe.

elytron, but beyond the distance decreases to 2 mm.; three other rows of punctures are visible, the last only 1 mm apart.

Bartonian, Bagshot Beds; Bournemouth (*J. S. Gardner*). Brit. Museum, 19004. An abdomen, nearly 12 mm. broad, probably belongs to the same species (B. Mus., 19037). There is also a prothorax, 10 mm. broad, and 5 mm. long in middle, formed exactly as in *Cotalpa lanigera*, but impunctate, which may well belong here (B. Mus., 19040). The data for the abdomen and prothorax are the same as for the elytron.

Fig. 6.

*Pelidnotites atavus*, Ckll.

This is by far the oldest genuine Scarabæid known, but it seems clearly to belong to the Rutelini in the vicinity of *Pelidnota* and *Cotalpa*. The reference is strongly supported by the abdomen and prothorax, which show the presence of such a type in the deposit, or at least indicate a veritable Scarabæid. As it is impossible to definitely refer the insect to a living genus, I propose the name *Pelidnotites* for it.

EXPLANATION OF PLATE XVI.

- Fig. 1. *Elaterites palæophilus*, Ckll., $\times 3$. P. 458.
 Fig. 2. *Megapterites mirabilis*, Ckll., type. P. 278.
 Fig. 3. *Pycnoscelus gardneri*, Ckll., type, $\times 1\frac{1}{2}$. P. 275.
 Fig. 4. *Hammapteryx anglica*, Ckll., type. P. 276.
 Fig. 5. *Cecophylla bartoniana*, Ckll., type, $\times 2$. P. 277.
 Fig. 6. *Allopterites multilineatus*, Ckll., type, $\times 2$. P. 275.
 Fig. 7. *Elaterites perditulus*, Ckll., $\times 3$. P. 457.
 Fig. 8. *Elaterites laconoides*, Ckll., type, $\times 3$. P. 457.
 Fig. 9. *Elaterites sculptilis*, Ckll., $\times 3$. P. 458.
 Fig. 10. *Carabites gardneri*, Ckll., type, $\times 2$. P. 455.
 Fig. 11. *Formica heteroptera*, Ckll., type, $\times 2$. P. 278.
 Fig. 12. *Leptura bartoniana*, Ckll., type. P. 462.

[Figs. 2, 3, 4, 5, 6, and 11 illustrate the paper in the March issue; figs. 1, 7, 8, 9, 10, and 12 belong to the present paper.—Ebs.]



Cockerell, Theodore D. A. 1920. "Fossil arthropods in the British Museum." *The Annals and magazine of natural history; zoology, botany, and geology* 5, 455–463.

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