BIOLOGIA
CENTRALI-AMERICANA.

INSECTA.

COLEOPTERA. Vol. II. Part 2.
PECTINICORNIA AND LAMEL LICORNIA.

BY

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INTRODUCTION.

The present volume of the Coleoptera section of the Central-American fauna deals with the two allied Tribes Pectinicornia and Lamellicornia, well-defined groups which include many of the largest and most striking forms of the order. The genera representing the two tribes were placed by Linnaeus and other early systematists, apparently under a vague, but not less true, sense of their superior organization, at the head of the whole Coleopterous series, a position from which they have since been deposed in favour of the less specialized Cicindelidae and allied groups of the Adephaga. The higher specialization of the Lamellicornia is clearly shown in the tendency they display to consolidation of parts of their external structure, especially the mouth-organs, the ligula with the mentum, and the labrum with the clypeus or epistome, and still more clearly in the concentration and reduction in number of the ganglia of the nervous system.

The two tribes were considered as forming one only by the eminent specialists Erichson and Burmeister, and were separated by Lacordaire in his classical 'Genera des Coléoptères,' in 1856, chiefly on the ground of the immobility of the antennal lamelle, the same being movable like the leaves of a book in the more highly organized Lamellicornia. This constant difference is, however, supplemented by many other important and significant characters, which, though constant within subordinate groups of each respectively, do not apply to the whole tribe and are therefore of minor systematic value, though indicating sufficiently distinct tribal types of form and lines of development.

With regard to the contents and relations of the Central-American fauna of Pectinicornia and Lamellicornia, the two tribes present such different aspects that they must be considered separately.

In Pectinicornia our fauna is exceedingly poor in the chief family of the tribe, viz. the Lucanidae, but, on the other hand, exceedingly rich in the other and more aberrant
BIOLOGIA CENTRALI-AMERICANA.

ZOOLOGIA.

Class INSECTA.
Order COLEOPTERA.
Tribe PECTINICORNIA.

Fam. LUCANIDÆ.

CANTHAROLETHRUS.


Three, perhaps four, closely allied species of this beautiful and peculiar genus of stag-beetles are known, all from Colombia or Ecuador. One of the Colombian species extends its range into the domain of our Fauna, and is remarkable as being, with the exception of two small Æsali, the only form known to inhabit Central America of the conspicuous Family of Lucanidæ, so numerous in all other tropical and subtropical regions.

1. Cantharolethrus luxerii. (Tab. I. figg. 1 ♂, 2 ♀.)

Cantharolethrus luxerii, Parry, Trans. Ent. Soc. 3 Ser. II. p. 6, t. 9. f. 6; id. ibid. 1872, p. 76 (♂);

Hab. Costa Rica (Van Patton); Panama, Volcan de Chiriqui 3000 feet (Champion).
—South America, Colombia 123.

Four examples, viz. two males from Costa Rica, and two females from Chiriqui. The largest of the two males measures 50 millim. and one of the females 33 millim.

The examples obtained by Mr. Champion were both found crawling on tree-trunks, in the dense forest bordering the upper margins of the coffee plantations in the district known as "Las Potrerillas," situate on the south-east slope of the Volcan de Chiriqui.

PECTINICORNIA.

ÆSALUS.


Three species of Æsalus have been recorded, one European, one Japanese, and one from Mexico.

1. Æsalus trogoides.
Æsalus trogoides, Albers, Deutsche ent. Zeit. 1883, p. 228 1.

Hab. Mexico, Oaxaca 1.

As no mention is made of an ocular canthus, this species appears to be a typical Æsalus. It is much larger (6 millim.) than Æ. neotropicalis, and also differs in colour and in the form of the prosternum.

2. Æsalus neotropicalis. (Tab. I. figg. 3, 3 a.)
Oblongo-ovatus, sordide fuscus, antennis pedibusque rufo-rubris; supra breviter sat dense erecte setosus, opacus, grosse discrete punctatus; clypeo vix arcuato, ocilia cantho angusto setiferum dimidio divis; thorace fere sicut in Æ. scarabaeoides; elytris intersitis paulo convexis, setis plurimque in striis sitis; tibis anticus et intermedii extus denticulati dentibusque acutis elongatis tribus; 1\textsuperscript{a} apicalis recte existanti, alteris duobus medianis; prosterno plano, nec elevato.

Long. 4 millim.

Hab. Guatemala, near the city, Zapote, Capetillo (Champion).

Differs from the type of the genus, and all other members of the subfamily to which it belongs, in the eyes being divided (for half their width) by a canthus. The canthus is linear, convex, and studded with short blunt erect setae like the rest of the surface. The antennae are very similar; but the joints 6 and 7 are excessively short and acutely produced on their inner side. The mesosternum, as in the type, forms a subvertical plate on the front face of an intercoxal process of the metasternum, and is broadly excavated to receive the point of the prosternum; the latter is not elevated as in Æ. scarabaeoides, but planed to the level of the anterior coxa.

Many examples, obtained by beating the withered leaves and boughs of fallen forest trees.

Fam. PASSALIDÆ.

The latest monographer of this family, Dr. Kaup, in 1871 (Monogr. der Passaliden, Berlin Ent. Zeitschr. xv.), formulated an elaborate classification, which, as it was founded on abundant material, and of course applied to the Passalidæ of the whole world, I would willingly have adopted, as the most convenient course in dealing with a limited fauna; but a careful examination has shown the classification to be so arbitrary and inapplicable that I have been compelled to reject it. How far the inconsistencies may be due to the quinary method which Kaup adopted it is unnecessary to inquire, but the necessity of making up the number five in the species of each genus, the genera of
PROCULUS.

each subfamily, and so forth, is certainly accountable for some of the errors. The Passalidae of the New World, instead of forming three out of the five subfamilies into which Kaup divided the family, seem to me to belong essentially all to one type of form, with very great diversity of minor characters, but no important differences of structure. The minor differences afford tolerably trustworthy characters for the formation of small generic groups of which Kaup established a large number, and in adopting most of these I have been obliged to institute numerous others on the same class of modifications, chiefly the ridges and armature of the head. I have grouped the genera into two sections, characterized by the form of the base of the elytra and the relative length of these organs, or the hinder body, with regard to the thorax. For convenience of reference and comparison I have adhered pretty closely to Kaup’s sequence of the genera, although it violates to some extent their natural affinities.

Section I. Elytra relatively short, more or less protuberant in the middle of the base.

A. Antennal leaflets very long.

PROCULUS.

*Proculus*, Kaup, Harold’s Col. Hefte, iv. p. 8 (1868); id. Monogr. der Passaliden, p. 65 (1871).

Three species of this fine genus, the giants of the family, are at present known. They appear to be restricted to Guatemala and the adjoining region of British Honduras.

In Guatemala *P. goryi* is confined to the Pacific slope, and found at elevations of from 1000 to 5000 feet; *P. opacipennis* and *P. miniscochi* to the Atlantic slope, and to the humid forest region of Alta Vera Paz, at elevations of from 3000 to 5000 feet; examples of the last-named species were only met with sparingly in various localities in this district by Mr. Champion, who, at the time not possessing means of preserving such large insects in a very humid climate, was unable to retain examples.

Decaying specimens of these and other Passalidae occasionally harbour rare Staphylinidae.

1. *Proculus goryi*.


*Proculus goryi*, Kaup, Monogr. der Passal. p. 66, t. 5. f. 12.

*Hab.* Guatemala12, Pantaleon, Las Mercedes, Las Nubes above Mazatenango (Champion), Costa Cuca (Sarg.).

This species was obtained plentifully by Mr. Champion in the coffee estate of Las Nubes and elsewhere along the Pacific slope, by employing the Indians to turn over the fallen trunks of the largest forest trees, in the decaying wood on the under side of which the insect passes its earlier stages.

BB 2
2. Proculus opacipennis.

Passalus opacipennis, Thomson, Archiv Ent. i. p. 420, t. 21, f. 4¹.
Proculus opacipennis, Kaup, Monogr. der Passal. p. 68, t. 5, f. 3.

Hab. Guatemala¹, Coban, Senahu (Champion).

3. Proculus mniszechi.

Passalus goryi, Thomson, Archiv Ent. i. p. 421 (nec Melly)¹.

Hab. British Honduras, R. Sarstoan (Blancaneaux); Guatemala¹² (Sallé), Sabo, Tactic, and elsewhere in Alta Vera Paz (Champion).

B. Antennal leaflets moderately elongated.

PROCULEJUS.

Proculejus, Kaup, Monogr. der Passal. p. 60.

Kaup gives the antennal leaflets as “short.” They are certainly much shorter than in Proculus, but not so short as in the restricted genus Passalus and its allies. The first and second leaflets are more than twice the length of the body of the joints, and the third leaflet is moderately slender.

The leaflets have an extremely finely-shagreened sensitive surface and short pubescence; in Proculus the surface is sparsely punctured and shining, and the pubescence very long.

Five species have been described, four from Mexico and one from Ecuador.

§ 1. Marginal interstices of the elytra more or less punctulate and hairy.

1. Proculejus brevis.


Hab. Mexico¹, Jacale (Sallé), Jalapa (Höge), Mirador² (Dr. Sartorius).

Kaup’s P. brevis is cited with doubt, as he says the mandibles have three apical teeth. M. Sallé’s specimens from Jacale, the locality whence came M. Truqui’s types, have only two apical teeth.

2. Proculejus hirtus.

Proculejus hirtus, Kaup, Monogr. der Passal. p. 62⁴.

Hab. Mexico¹ (Sallé), Huachinango² (coll. Mniszech).


4. *Proculejus sartorii.*

*Proculejus sartorii,* Kaup, Harold’s Col. Hefte, iv. p. 17; id. Monogr. der Passal. p. 64.

*Hab. Mexico,* Mirador (Dr. Sartorius), Oaxaca (var. ?, Sallé).

A specimen in the Sallé collection agrees well with Kaup’s description, especially in the flattened surface of the thorax and elytra and the bidentate apex of the mandibles. It differs, however, in the much less extent of the punctulate and hairy lateral interstices of the elytra, the basal portion of the tenth interstice only being so sculptured and clothed. Kaup describes *P. sartorii* as having the second, third, and fourth marginal (i.e. eighth, ninth, and tenth from the suture) interstices punctulate throughout.

5. *Proculejus pubicostis.* (Tab. I. figg. 4, 4a.)

Brevior oblongus; verticis cornu elongato antico libero et paullulum elevato, apud basim utrinque tuberculo subrotundato; carinis frontalibus vix acutis divaricatis usque clypeal tuberculum lateralem extensis ibique tuberculatis; clypeo acuto marginito, fronte lavisima; thorace sicut in *P. brevis,* sulcatis marginalibus passim angustis, punctatis, foreaque laterali punctulato-pubescenti; elytris relative quam in haec specie brevioribus, sed antice medio paullulo minus prominentibus, sulcatis, sulcis subtilius punctulatis; interstitiis 1°-6° latis, planis, 7° angustiori, glabro, 8°-10° punctulato-pubescentibus, 9° angusto subcarinato; tibias 4 posticia extus absque spinis.

*Hab. Mexico,* Orizaba (Sallé). One example.

Named *P. mexicanus,* Truqui, in the Sallé collection, but evidently in error as it does not at all agree with Truqui’s description. The antennal club has three moderately long, thin leaflets, as in the other species of *Proculejus.*

This species differs from the others of this section in the tubercle of the vertex being prolonged into a long, horizontal, laterally subcompressed horn, and in the frontal carinae being widely divergent and ending in a tubercle very close to a similar clypeal tubercle over the base of the mandibles. As it resembles in all other characters *P. brevis,* the modification in the armature of the head can scarcely be taken as a generic character.

§ 2. Elytra entirely glabrous.

6. *Proculejus championi.* (Tab. I. figg. 5, 5a.)

Brevior oblongus, elytris subovatis, convexus, niger politus; clypeo lato, carinaque antico et postico sulco lavi marginita; tuberculo verticis parum elevato, compresso-conico, postico late sulcato, apice declivi carinisque frontalibus brevibus divergentibus utrinque in tuberculum validum longe ante clypeum terminatis; man-
PECTINICORNIA.

debulis apice bidentatis; thorace relative magno, sulco marginali undique lavi, antice intus dilatato; elytris profunde striatis, striis fundo punctulatis, interstitiis omnibus aequilibus. Long. 30 millim.; thorax 9, elytra 18 millim. long.

Hab. GUATEMALA, Purula in Vera Paz 4000 feet (Champion).

Very similar to P. brevis, Truqui, in all its proportions and in the sculpture of the head, the only differences in the latter being that the frontal carinae terminate long before the sulcus which limits the clypeus; the horn or tubercle of the vertex is broadly sulcate behind and the depressed areas are much smoother. The thorax differs in the dilated sulcus on the anterior margin and the perfectly smooth lateral fovea. The antennal club has the leaflets moderately elongated and minutely sculptured in both species, and the lobes of the mentum are very coarsely punctured and hairy. The elytra in both are almost angularly prominent in the middle of the base, and the basal edge runs obliquely backwards to the rectangular shoulders. The mesosternum is glabrous and impunctate; the flanks of the thorax densely hairy. The legs have only a few hairs; the middle tibiae two strong spines, the hinder tibiae only one.

Although Kaup gives the punctulate-hairy sides of the elytra as one of the chief characters of the genus, he admits one species (P. quitensis) which has glabrous sides; this may be included in the same section as P. championi, although it differs in some important particulars.

Several examples, found in the dense humid forest.

OILEUS.

Oileus, Kaup, Monogr. der Passal. p. 58; id. ibid. p. 117.

Differs from Proculejus in the tubercle of the head being developed into a long horizontal horn, with a free tip projecting beyond the edge of the clypeus, and in the obsolete frontal carinae. The sole species is much larger than the Proculejus, and differs from them in the slightly impressed elytral striae. The elytra are relatively longer, but have the same prominence in the middle of the base and rather more obtuse shoulders.

Kaup founded his genus Oileus in his Prodromus (Harold’s Col. Hefte, v.) on a miscellaneous set of species four in number, which he subsequently, in his monograph, separated into three genera with new names, transferring the name Oileus to a species which was not included in the original genus. It is perhaps expedient to overlook this irregularity, as a shifting of the names again, according to the rules of nomenclature, would only tend to increase the confusion.

1. Oileus heros. (Tab. I. figg. 6, 6a.)


Oileus heros, Kaup, Monogr. der Passal. p. 58¹.

Hab. MEXICO, Huachinango ¹ (Truqui, type in coll. Sallé).
OXYGES.—PROSOCILITUS.

OXYGES.

*Oxyges*, Kaup, Monogr. der Passal. p. 69.

Kaup refers the following two species to this genus.

1. **Oxyges lævissimus.** (Tab. I. figg. 7, 7a.)


*Oxyges lævissimus*, Kaup, Monogr. der Passal. p. 69 1.

*Hab.* **Guatemala** (*Wagner* 1, *Satté*).

2. **Oxyges lævior.**

*Oxyges lævior*, Kaup, Monogr. der Passal. p. 70 1.

*Hab.* **Guatemala** (*Wagner* 1).

PROSOCILITUS.

Gen. *Proculejo* affinis, sed elytris relative longioribus humerisque magis rotundatis. Clypeus flexuosus absque tuberculis; frons valde inaequalis, medio longitudinaliter usque ad clypei sulcums subcata; cornu verticis latum, basi utrique tabeulo alate et valido, apico liberum, ante apicem cum carinis frontibus obtusis confusum, his subrecte usque carinae ouculorum extensis. Thorax convexus; sulculo marginali punctato, antice intus sat elongato vix dilatato; media laterali laxe. Elytra elongato-ovata, convexa, medio basi prominencia, humeris obtusis, basi declive punctulato-pubescenti, lateribus glabris; punctulato-sulcata, intarsi is equilibus sat latis. Tibiae 4 posteriores spina valida.

Differs from all the genera of the section in the shape and position of the cephalic prominences, and from *Proculejus*, with which it best agrees and to which it is further allied by the moderate length of the antennal leaflets, by the much greater relative length of the elytra.

The clypeus is distinct and separated from the front by a groove as in the allied genera, but the groove is multiflexuous instead of straight, and, probably in consequence of the transverse direction of the very obtuse frontal carinae, there is no distinct conical tubercle at each end of the groove. The metasternum has a patch of coarse punctures on each side near the apex, its sides have a very narrow punctured groove, and the base on each side near the middle coxae is punctulate-pubescent. The upper carina of the intermediate tibiae only has a fringe of hairs, as in *Proculejus*.

1. **Prosoclitus obesus.**

Convexus, politus; labro (sit profundo emarginato), antennis, prothorace, episternis tibiiisque posticis fulvo-birtitas; prosterno antice opaco, postice polito, convexo, acuminato; metasterno medio ventreque politissimis; thorace subtiliter punctulato, sulco dorsali margine anteriorem longe haud attingente; elytris elongato-ovatis, punctulato-sulcatis, intarsi is sat latis equilibus.

Long. 42 millim.; thorax 11, elytra 22 millim. long.

*Hab.* **México** (*Deyrolle, coll. Bates*).
PECTINICORNIA.

TRIAENURGUS.


In its quadridentate clypeus this genus agrees with Pseudacanthus, Kaup, the typical species of which I have not seen. The two forms must, however, be generically distinct, as Kaup says of Pseudacanthus that the antennal leaflets are "ziemlich kurz."

1. TRIAENURGUS SUBOPACUS. (Tab. I. figs. 8, 8a.)

Sat elongato-ovatus, valde convexus, politus; elytra fero opacis, valde punctato-sulcatis, interstitiis convexis, inaequalibus, 6° 7°que angustioribus; thoracis fovea lateralis levissima; mesosterno lateribus punctatis; metasterno lateribus late punctulato-pubescentibus, apice utrinque plaga grosse punctata.

Long. 36 millim.; thorax 11, elytra 19 millim. long.

Hab. GUATEMALA, Totonicapam (Champion).

Two examples, found beneath pine bark at an elevation of about 10,000 feet.

C. Antennal leaflets very short.

PSEUDACANTHUS.

Pseudacanthus, Kaup, Monogr. der Passal. p. 73.

Kaup's definition of this genus is not satisfactory, and although I have not seen the typical species (P. mexicanus) I doubt whether his second species (P. laticornis) can remain associated with it. His third species (P. aztecs) is certainly not congenereic with P. laticornis. In the doubt concerning the form of the base of the elytra and the length of the antennal leaflets of the typical species, it seems advisable to leave P. laticornis at present in the genus. All the species are from Mexico.

1. PSEUDACANTHUS MEXICANUS.


Hab. MEXICO 1, Vera Cruz 2.

No specimen of this species has reached us. One named P. mexicanus in the Sallé collection, as before mentioned, is a Proculeius.

2. PSEUDACANTHUS (? LATICORNIS. (Tab. I. figs. 9, 9a.)


Hab. MEXICO 1, Jacale (Sallé).
According to the type specimen, which I have examined, this species belongs to the same section of the family as Proculeius, the base of the elytra being prominent in the middle; but the leaflets of the antennae are extremely short. The flanking tubercles of the horn of the vertex are visible, though short and little elevated. The frontal carinae and their terminal tubercles are obsolete.

3. Pseudacanthus (?) jalapensis. (Tab. I. figg. 10, 10a.)

P. laticorni similis; minor, elytris relative brevioribus. Parum convexus, nitis; cornu verticis basi lato, apice elongato libero, tuberculis basalisibus sicut in P. laticorni conspicuis, brevibus, paulllo elevatis; carinis frontalisibus late curvatis, obtusiis, in tuberculum ante elypei suturam terminantibus; antennarum lamellae mediocrer elongatis; thoracis angulis anticiis rotundatis, sulculo marginali undique angusto punctulato, fovea laterali et lateribus levibus; elytris medio basi parum prominenteribus fere rectis, valde punctato-striatis, glabris, interstitiones subequales; tibias internedius carina superiori in medio gradatim elevata ibique dense ciliata, bispinosis; metasternum (juxta coxas internedias grosse punctato excepto) levissimo.

Long. 25 millim.; thorax 6/7, elytra 13/7 millim. long.

Hab. Mexico, Jalapa (Höge).

PLATYVERRES.


Kaup placed the species for which this genus is rendered necessary in his genus Verres, belonging to his subfamily “Passalina,” and therefore as far as possible apart from Proculeius, with which undoubtedly lie its true affinities. In the very short leaflets of the antennae it no doubt resembles the “Passalinae,” but this is not more than a specific character in many of the Old World genera of the family, and cannot outweigh the form of the base of the elytra and the large size of the thorax. The parallel-sided and narrow lateral groove of the metasternum is also not unimportant as an indication of its true place. In Verres and all the allied large “Passalinae” this groove is broadly dilated behind. In Proculeius and allies it is always narrow, and sometimes reduced to an impressed line.

1. Platyverres intermedius. (Tab. I. figg. 11, 11a, 12.)

Verres intermedius, Kaup, Monogr. der Passal. p. 115.

Hab. Mexico 1 (Sallé, ex coll. Sturm), Juquila (Sallé), Misantla (Höge).

The type specimen is in the British Museum and has been compared with one of M. Sallé’s examples by Mr. C. O. Waterhouse.

A specimen (Tab. I. fig. 12) taken by Herr Höge at Misantla has a thorax of extra-

ordinary size, considerably wider than the elytra. The following are its measurements: long. corp. 47 millim.; thorax long. 12½, lat. 18 millim.; elytra long. 24, lat. basi 15 millim. The difference between this and the originally described specimen is probably sexual.

Section II. Elytra relatively long, the base broadly emarginate.

A. Antennal leaflets moderately elongated.

RIMOR.

Oileus (partim), Kaup, Monogr. der Passal. p. 60.
Rimor, Kaup, ibid. p. 119.

Two species are known, both from Central America.

1. Rimor sagittarius.

Rimor sagittarius, Kaup, Monogr. der Passal. p. 120 3.

Hab. Mexico 1 2 3, Orizaba (Sallé, spec. typ.).

2. Rimor sargi.


Hab. Guatemala (Sarg 1), San Joaquin, Cerro Zunil, Dueñas (Champion); Costa Rica, Volcan de Irazú (Rogers).

TRUQUIUS.


A genus rendered necessary for the reception of Passalus (Pseudacanthus) aztecs, Truqui, which differs from the other species in the relatively great difference in length between the thorax and the elytra.

1. Truquiuis aztecs.

Pseudacanthus aztecs, Kaup, Monogr. der Passal. p. 74 2.

Hab. Mexico 1 2, Toxpan (Sallé, specimen typ.), Orizaba (Sallé), Jalapa (Höge).