

Article VIII.—THE LYCIDÆ, LAMPYRIDÆ AND CANTHARIDÆ
(TELEPHORIDÆ) OF THE WEST INDIES

BY CHARLES W. LENG AND ANDREW J. MUTCHLER

INTRODUCTION

In the following pages we aim to give a list of the species of Lycidæ, Lampyridæ, and Cantharidæ found in the West Indies, with brief description and detailed distribution of each. The number of new species that it has been necessary to describe makes it probable that the list is still incomplete, although we have had the advantage of being able to study an aggregate of specimens (more than 2000) that is probably larger than has been previously assembled. These include the collections made by the expeditions conducted by this Museum to the Bahamas, Cuba, Jamaica, Dominica, and several of the smaller islands; those made by the New York Academy of Sciences in conjunction with this Museum to Porto Rico, Mona, etc.; and those made by the expeditions, due to the generosity of Mr. B. Preston Clark, to Hispaniola, Jamaica, and the Bahamas, carried through either by Mr. W. M. Mann, or by Mr. Frank E. Watson. The collections by H. G. Barber, H. E. Crampton, F. E. Lutz, A. J. Mutchler, and F. E. Watson in Porto Rico and by F. E. Lutz in Desecheo and Mona were made on expeditions to those islands, in conjunction with the Scientific Survey of Porto Rico and the Virgin Islands by the New York Academy of Sciences. The collections of several museums and private individuals have also been studied, including that of the U. S. National Museum, loaned by the permission of Dr. L. O. Howard, Honorary Curator of Insects, and containing the specimens collected by the late H. G. Hubbard in Montserrat and those collected by Mr. E. A. Schwarz at Cayamas, Cuba. This collection embodies not only the studies of Mr. Schwarz, but also those of the late Ernest Olivier, who made exhaustive studies of certain genera. A valuable series collected in Grenada and St. Vincent was loaned by the British Museum through the kindness of Dr. Charles J. Gahan; the collection of the Academy of Natural Sciences of Philadelphia, containing the Poey Collection from Cuba, was loaned through the kindness of Dr. Henry Skinner; a collection made in the Isle of Pines was studied at the request of Dr. W. J. Holland of the Carnegie Museum. Prof. H. F. Wickham, of the University of Iowa, and Dr. Charles T. Ramsden, of Guantanamo, Cuba, furnished valuable additions to the material examined. To all these

friends and to Mr. Herbert S. Barber, of the U. S. National Museum, we extend our grateful thanks for their hearty coöperation in our work.

The collection of M. Ed. Fleutiaux from Guadeloupe and Martinique could not be studied until 1920, and then only in part, and that of Dr. Juan Gundlach, in Havana, though seen by the senior author through the kindness of Dr. Carlos de la Torre, could not be removed for study. Less than a dozen of the described species are, however, included in such unstudied material known to us.

We owe those whose material was thus borrowed an apology for the long delay in publication. This was due to several causes, among which were the puzzling questions that arose as the extensive material was studied, not alone in the surprising number of new species and new characters such as were found in the *Thonalmus* from Montserrat and the *Leptolycus* from Porto Rico, but also in the sexual characters, the number of abdominal segments, the structure of the head, etc. The greatest pains have been taken to consult the work of previous authors (though we have not attempted to enumerate all the citations) and this has disclosed some errors we have had to correct, for example, *Pygolampis* being a preoccupied name, *P. blandus* a name cited in error, etc.

We have, when known, given the collector's name (in parentheses) after the locality records. We have also indicated the collections in which the various species are located.

The figures illustrating this paper have been drawn by Mrs. E. M. Fulda for whose patient care and artistic skill we feel greatly indebted.

DEFINITION AND PRELIMINARY DIVISIONS

The above families include the beetles commonly known as fireflies and some allied beetles which do not emit light. They constitute the family Lampyridæ of LeConte (1881, Trans. Amer. Ent. Soc., IX, pp. 15-72) and the Malacodermidæ of Sharp (1899, 'Camb. Nat. Hist.,' VI, 'Insects,' II, p. 248) except that the latter author included the Drilidæ, not represented as far as we know in America. In Dr. Sharp's opinion they are probably the most primitive of beetles, and Kolbe (1908, Zeitschr. für wiss. Insekten Biologie, IV, p. 247), in studying the phylogeny of Coleoptera, reaches a similar conclusion.

Dr. Gahan (1911, The Entomologist, XLIX, p. 121 *et seq.*) considers the Malacodermata, one of the natural series of beetles, especially in a restricted sense, nearly equivalent to the term Lampyridæ of LeConte, comprising the Lycidæ, Lampyridæ, and Cantharidæ. Sharp and Muir (1912, Trans. Ent. Soc. London, pp. 477-642, Plates XLII-LXXVIII),

have found that they possess also a distinctive and comparatively primitive type of genitalia.

The families Melyridæ, Cleridæ, and Othniidæ, which appear to be also related, constitute the Trichodermata of Kolbe and are not included in the present study.

The Lycidæ, Lampyridæ and Cantharidæ are technically characterized by the following structures.

Seven or eight visible ventral segments. Integument softer than usual in Coleoptera, with many of the parts of the body not accurately co-adapted. The front coxæ are conical, prominent, usually large. The tarsi are five-jointed. The elytra usually cover the abdomen. The head is usually not prolonged into a beak. The antennæ are usually serrate, never lamellate. The hind trochanters sometimes intervene directly between the coxæ and the femora.

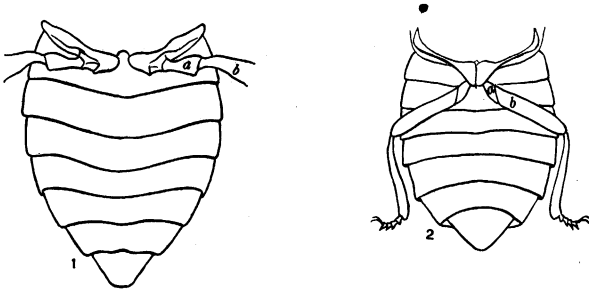


Fig. 1. Underside of a Lycid, showing attachment of femur and trochanter. a, trochanter; b, femur.

Fig. 2. Underside of a Lampyrid, showing attachment of femur and trochanter. a, trochanter; b, femur.

The definition given by Brues and Melander (1915, 'Key to the Families of North American Insects'), upon which ours is based, requires modification, for it is too precise in some respects and would exclude the larviform females of *Phengodes* and the brachypterous females of *Photinus*, as well as all the lycids with prolonged heads.

As defined above, the West Indian representatives of these families (called subfamilies by LeConte and families by Brues and Melander, Ernest Olivier, and other recent authors) may be distinguished as follows.

1. Middle coxæ distant; femora joined to the trochanters at the end of the latter (Fig. 1); elytral epipleuræ wanting, elytra usually with reticulate sculpture; thorax narrow, elongate, triangular, narrowed in front; adults not luminous.

LYCIDÆ.

Middle coxæ in contact; femora joined to the trochanters at the side of the latter (Fig. 2); elytral epipleuræ distinct. 2.

2. Episterna of metathorax sinuate on the inner side; head nearly or quite covered by the thorax; epipleuræ usually wide at the base of the elytra; abdomen of adults more or less luminous. LAMPYRIDÆ.

Episterna of metathorax not sinuate; head not at all covered by the thorax which is short, rounded at sides and front angles, squarely truncate at base; epipleuræ narrowed at base of elytra; adults not luminous.

CANTHARIDÆ (Telephoridæ *auct.*).

The figures given by Olivier (1911, Rev. Sci. du Bourbonnais, XXIV, p. 108) will assist in the technical separation of the families, but the general resemblance of most of the species to a few well-defined types renders this easy in practice. There are a few extremely specialized forms to which attention should be drawn, such as *Leptolycus* (p. 430), *Thonalmus hubbardi* (p. 426), and some species of *Belotus* and *Silis* (pp. 486-489 and 490-492), in which extraordinary structures, not mentioned in the key to the families, are found.

GEOGRAPHICAL DISTRIBUTION

Each of the three families treated in this paper has representatives in all the zoölogical regions. There is, however, a fourth family, Drilidæ, which is confined, as far as we know now, to the Old World; and recent authors recognize also, in *Phengodes* and allied genera, a fifth family, Phengodidæ, which is confined to continental America. The families are divisible into tribes which have a narrower distribution, some of these tribes, as we show later, being confined to the American continent.

LYCIDÆ

DIVISION AND DISTRIBUTION OF LYCIDÆ

Following LeConte (*loc. cit.*, 1881) the species of Lycidæ fall into tribes which may be distinguished as follows.

1. Prothoracic spiracle with elevated chitinous peritreme (Fig. 3), more or less prominent in the usual position of the epimeron, behind and at the outer extremity of the front coxæ (*Calopteron*), or, if the spiracle is not distinctly prominent, pronotum with a median carina in front, continued posteriorly by a median channel¹ (*Thonalmus*).....LYCINI.
Prothoracic spiracle not prominent; pronotum never channeled.....2.
2. Elytra costate, cancellate or reticulate.....EROTINI.
Elytra dehiscent, pubescent; antennæ with long hairs.....LEPTOLYCINI.



Fig. 3. Head of *Calopteron*, side view. a, peritreme.

We are obliged to add the last tribe for the remarkable genus described below (p. 430). Of these tribes, the Lycini are represented by two closely related genera, *Calopteron* and *Thonalmus*, readily separated by the coloration; the Erotini by one genus,

¹There are some *Calopteron*, found in localities outside of the West Indies, in which the median carina is continued posteriorly by a median channel, but we believe this character, combined with the color pattern, will hold good for all of the species of *Thonalmus*.

Plateros; and the *Leptolycini* by one genus, *Leptolycus*. The last is peculiar to the West Indies. The *Lycidæ* as a whole are numerous throughout tropical Africa and South America, extending to Madagascar and Australasia; in the Palæarctic and Nearctic regions a few species extend their range to the most northern parts thereof, and still fewer occur in eastern Asia. The West Indian species exhibit a strong individuality but also in many cases a relation with those inhabiting the American continent.

Lycini

This tribe is represented by two genera, separable as follows.

Elytra orange or bright red, with the posterior part only bluish green or metallic violet.....*Thonalmus*.
Elytra yellow with black markings, sometimes faintly metallic.....*Calopteron*.

Calopteron is widely distributed in North and South America, and allied genera occur in Africa and Australasia. The separation of *Thonalmus* is based upon feeble characters; in addition to those given above, the prothoracic spiracle is less prominent and the pronotal carina is channeled posteriorly; there are usually fewer elevated costæ on the elytra; and the abdominal characters discovered by the junior author in the Montserrat species (see pp. 421 and 426) are, as far as known, unparalleled elsewhere.

THONALMUS Bourgeois

1883, Ann. Soc. Ent. France, (6) III, p. 376

The West Indian species were first detached from *Calopteron* by Waterhouse, 1878, Trans. Ent. Soc. London, p. 98, but the description of the genus appears to be due to Bourgeois. They are all elongate, glabrous insects, with long, feebly serrate antennæ (or slightly branched in the male of one species), and subparallel elytra, usually bearing three more or less elevated ridges or costæ. The elytra are of a brilliant orange or red color, with the posterior portion metallic green or violet.

The species are numerous, quite closely related, and therefore difficult to separate; all are confined to the West Indies, most of them to a single island. Although in the original description of *bicolor* Linnæus gave the type locality as Africa, which locality was also cited by the earlier authors, we believe he did so in error and the statement that *Thonalmus* is exclusively West Indian to be correct. The first citation of a West Indian locality we have been able to find is that by Gosse, 1848, Ann. and Mag. Nat. Hist., (3) I, p. 268. The work of Chevrolat, 1870, Ann. Soc. Ent. France, (4) X, p. 73, also serves to fix the true locality of this

species as the West Indies. A translation of one paragraph in Chevrolat's article reads "The study which I have made of the authors has convinced me that four different species have been described under this name and that the old writers (*les anciens*) have wrongly designated Africa as the habitat of these species, the group in reality belonging to the Antilles."

Including the species described below, we now have records of two from Guadeloupe, two from Montserrat, one from Jamaica, none from Porto Rico (except by recent commercial importation), two from Hispaniola, three from Cuba (three more have been described but we believe one of them to be a synonym and the others color variations), and one from the Bahamas. We know of none from Florida, none from the islands south of Guadeloupe, nor from the islands between Porto Rico and Montserrat, in which, however, (judging from the discovery by the late Mr. Hubbard of peculiar species in the latter island) there may be still undescribed species. The apparent failure of the genus to have become established in Porto Rico is singular.

The preponderance of females in the large series we have examined is also remarkable. The males are easily distinguished by examining the penultimate ventral segment, which in that sex is so deeply incised at the middle as to consist of two side lobes embracing the last segment. In one species our collections show a preponderance of males, but in all other cases the females are greatly in excess of males.

Two sections of the genus can be recognized, the one containing species with strongly costate elytra, the other species with merely a trace of costæ; and it is interesting to note that the species of the second section are confined to Cuba and the Bahamas. The following key, based in part upon this character, is as complete as we have been able to devise; the separation of most of the described species is comparatively easy, but *aulicus*, *elegantulus*, *distinguendus*, and *nigritarsis* show no differences except in size and color pattern of the legs. As these differences are bridged in the large series before us, we are compelled to regard them as one species but for convenience have included the last two names as color varieties.

KEY TO THE SPECIES OF *Thonalmus*

1. Apical third of elytra bluish green or metallic violet. 2.
 Apical half of elytra bluish green or metallic violet. 7.
2. Scutellum subquadrate. 3.
 Scutellum triangular; hind margin of pronotum elevated at middle; head black;
 basal part of elytra orange in color, not vermilion. *bicolor*.
3. Basal part of the elytra red; head concolorous with pronotum. 4.
 Basal part of elytra orange; head black. *subquadratus*.

4. Elytra subparallel; costæ not or at most feebly elevated on apical part of elytra . 5.
Elytra expanded apically; outer and middle costæ abruptly elevated, forming two
crests on the apical part of each elytron.....*dominicensis*.
Elytra expanded apically; outer and middle costæ somewhat strongly elevated,
but not forming crests on any portion of the elytra.....*chevrolati*.
5. Outer and middle costæ not united into a curve on the apical portion of the
elytra.....6.
Outer and middle costæ united into a rounded curve on the apical portion of the
elytra.....*suavis*.
6. Antennæ of male slightly branched from joint 4 to joint 10; antennæ of female
serrate.....*amabilis*.
Antennæ of both sexes serrate; femur red nearly to the apex, tibiæ and tarsi
black; length 8.5 to 12.5 mm.....*aulicus*.
[Base of femur red, legs otherwise black, length 6 to 10 mm... var. *distinguendus*.
Femur and tibia in great part red, length 6 to 10 mm.... var. *nigritarsis*.]
7. One or more elytral costæ prominent throughout their entire length; female with
abdominal processes.....8.
Costæ of the elytra barely traceable on the apical portion; humeral angles not
sharply defined; female without abdominal processes.....*bahamæ*.
8. Third abdominal segment of female with a chitinous lobe or process, extending
from the middle of the segment to near its lateral margin; elytral costæ
somewhat prominent, the middle one less so basally.....*hubbardi*.
Third abdominal segment of female with a chitinous lobe or process extending
from the middle of the base to near the side; elytra each with a sinuate
costa starting at the humerus and gradually diverging from the margin
until it reaches the middle of the violet apical area, where it curves outward,
reaching the apex some distance from the suture. There is also a short
costa parallel to the apical portion of the main costa and sometimes joined
to it.....*sinuaticostis*.

***Thonalmus bicolor* (Linnæus)**

Cantharis bicolor LINNÆUS, 1763, *Amœn. Acad.*, VI, p. 395.

Lampyris bicolor LINNÆUS, 1767, 'Syst. Natura,' 12th Ed., I, part 2, p. 646.

Pyrochroa bicolor FABRICIUS, 1775, 'Syst. Entom.,' p. 203; 1781, 'Spec. Insect.,'
I, p. 255; 'Mant. Insect.,' I, p. 163.

Lycus bicolor G. A. OLIVIER, 1789, 'Entomologie,' II, No. 29, p. 9, Pl. I, figs. 9a-b.
FABRICIUS, 1792, 'Entom. Syst.,' I, part 2, p. 108; 1801, 'Syst. Eleuth.,' II,
p. 113. COQUEBERT, 1804, 'Illustr. Iconog. Insect.,' III, p. 128, Pl. xxix, fig. 4.
SCHÖNHERR, 1817, 'Syn. Insect.,' I, part 3, p. 77.

Lycus militaris DALMAN, 1817, in Schönherr's 'Syn. Insect.,' I, part 3, appendix, p. 30.
Calopteron bicolor GOSSE, 1848, *Ann. Mag. Nat. Hist.*, (2) I, p. 268.

Calopteron denominatum CHEVROLAT, 1870, *Ann. Soc. Ent. France*, (4) X, p. 74.

Thonalmus militaris BOURGEOIS, 1883, *Ann. Soc. Ent. France*, (6) III, p. 378.

Thonalmus bicolor FLEUTIAUX AND SALLÉ, 1889, *Ann. Soc. Ent. France*, (6) IX, p.
415. GORHAM, 1898, *Proc. Zool. Soc. London*, p. 317. BOURGEOIS, 1901, *Ann.*
Soc. Ent. France, LXX, p. 50.

Orange, with the head (excepting a small spot between the antennæ), antennæ
and legs (excepting basal half of femora) black. Scutellum triangular. Elytra black-

ish blue in apical third; tricostate. Length, 6–10 mm., the smaller size being exceptional.

This is the only species of the genus with triangular scutellum; it has the base of the pronotum more elevated and the head more prolonged than any of the other species.

Recorded from Jamaica by Dalman, Bourgeois, Chevrolat, and Becker; from Guadeloupe by Fleutiaux; and, in error, from Africa by Linnæus. We have seen specimens from the following localities in Jamaica. Coll. U. S. Nat. Mus.: no definite locality, (Hubbard). Coll. Acad. Nat. Sci. Philadelphia: Bath. Coll. H. F. Wickham: Mandeville, April. Coll. Amer. Mus. Nat. Hist.: Kingston, July, (Wirt Robinson); Hope Gardens, February, and Montego Bay, March, (J. A. Grossbeck); Montego Bay, December, Dunrobin District, Clarendon, December, and Constant Spring, January, (F. E. Watson); Constant Spring, May or June, (H. E. Machado). Gosse recorded it as excessively abundant in June, 1845 and 1846, sometimes hundreds on a single tree, resting principally on horizontal branches at the forest edge each side of Hampstead Road, Jamaica.

There has been some confusion respecting the description by Linnæus of this species, which may account for the erroneous (?) records from Haiti by Chevrolat in 1870. We have followed the opinion of Bourgeois, based on information received from M. René Oberthur, that the true *bicolor* of Linnæus is the Jamaican insect.

***Thonalmus subquadratus*, new species**

Figure 4

Head and antennæ black, the later with a moderate covering of erect yellowish hairs. Thorax, scutellum, and basal two-thirds of elytra orange-yellow; apical third of elytra violet or bluish green with a metallic lustre. Thorax wider at base than long with an impression at each side reaching from base to front angles; lateral and basal margins elevated; apex with a carina divided at basal third. Scutellum subquadrate; deeply notched at apex in the male, broadly emarginate in the female. Elytra with the outer costæ well defined at the humeri and remaining somewhat prominent throughout their length; middle costæ not so well defined at the base but becoming more so after reaching the apical third; inner costæ evident at the base, entirely obliterated in apical third. Body beneath yellow; male with last ventral segment black. Legs black, excepting basal part of femora, which is orange-yellow; the yellow color on the first pair being confined to a comparatively small part, that on the middle pair to about one-third, and that on the hind pair covers one-half to two-thirds of each. Length, 6–8 mm.

Occurs in Jamaica. None of our specimens has more definite locality data.

Holotype male and one female paratype in the collection of U. S. National Museum, both collected by the late H. G. Hubbard. Allotype female, No. 24517, in

collection of The American Museum of Natural History, collected by Col. Wirt Robinson.

This species is quite similar to *T. bicolor* in appearance, but differs in having the scutellum subquadrate and in the basal margin of the pronotum being less elevated and broadly rounded at the middle.

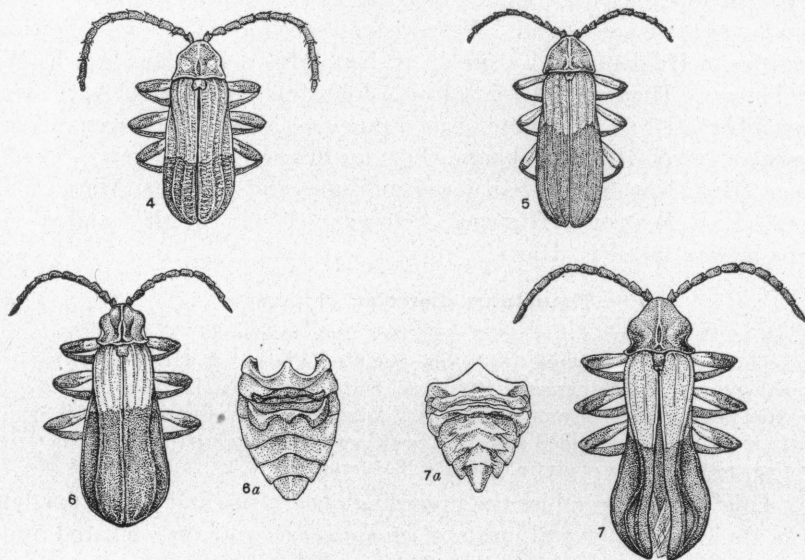


Fig. 4. *Thonalmus subquadratus*, new species.

Fig. 5. *Thonalmus bahamæ*, new species.

Fig. 6. *Thonalmus hubbardi*, new species.

Fig. 6a. *Thonalmus hubbardi*, underside of female, showing ventral processes.

Fig. 7. *Thonalmus sinuaticostis*, new species.

Fig. 7a. *Thonalmus sinuaticostis*, underside of female, showing ventral processes.

***Thonalmus dominicensis* (Chevrolat)**

Charactus blandus DEJEAN, 1873, 'Catalogue des Coléoptères,' III, p. 112 (no description).

Calopteron bicolor CASTELNAU, 1840, 'Hist. Nat. et icon. Coléop.,' I, p. 282.

Calopteron dominicense CHEVROLAT, 1870, Ann. Soc. Ent. France, (4) X, p. 73.

Thonalmus dominicensis BOURGEOIS, 1883, Ann. Soc. Ent. France, (6) III, p. 377.

GORHAM, 1889, Proc. Zool. Soc. London, p. 317. FLEUTIAUX AND SALLÉ, 1889, Ann. Soc. Ent. France, (6) IX, p. 415. BOURGEOIS, 1901, Ann. Soc. Ent. France, LXX, p. 50.

Luteous red; palpi, antennæ, and tarsi black; posterior third of elytra blackish blue or greenish blue. Each elytron with three elevated lines, of which the outer two are cristate before the apex; the intervals between the elevated lines reticulate. Length, 8–12 mm., few specimens being less than 10 mm. in length.

In the majority of the specimens of this species the anterior margin of the blue portion of the elytra is less regular than in the species that follow; but the best character for separating it from allied species is the strongly elevated crests near apex of elytra.

Chevrolat records the species from Santo Domingo and says that, according to Sallé, it is common near the city of Santo Domingo, but is found over the whole island. We have seen specimens from the following localities in Hispaniola. Coll. U. S. Nat. Mus.: Romano, April, (W. V. Tower); Higueral, April, (J. R. Johnston); Sanchez, April and November, (P. G. Russell); San Francisco Mts., September, (Aug. Busck). Coll. H. F. Wickham: Port au Prince, (R. J. Crew). Coll. Amer. Mus. Nat. Hist.: San Lorenzo, June, and Sanchez, March and April, (F. E. Watson); Higueral, February, (E. G. Smyth);¹ and specimens merely labeled "Haiti."

***Thonalmus chevrolati* Bourgeois**

Calopteron bicolor CHEVROLAT, 1870, Ann. Soc. Ent. France, (4) X, p. 73.

Thonalmus bicolor BOURGEOIS, 1883, Ann. Soc. Ent. France, (6) III, p. 378.

Thonalmus chevrolati BOURGEOIS, 1901, Ann. Soc. Ent. France, LXX, p. 50.

Red with apex of elytra violaceous. Antennæ compressed; black, first joint partly red. Elytra expanded and with costæ somewhat strongly elevated, but not forming crests on apex of elytra. Length, 8–12 mm.

This species resembles the preceding ones in size and coloration, but lacks the elevated elytral crests of *dominicensis* and the elevated prothoracic hind margin of *bicolor*. In the majority of the specimens examined, the blue portion of the elytra is transversely limited in front with but little irregularity in its outline.

Occurs in Hispaniola and, by commercial introduction only, in Porto Rico.

Chevrolat (1870) gives "Saint-Domingue, San-Yago, Collection de l'auteur. Exempleire de la collection d'Olivier." Bourgeois (1883) says "Saint-Domingue (Hogard Mission du Saint-Esprit: Coll. Bosc. 1828; Sallé, 1851. ♂ ♀." We have seen specimens from the following localities. Coll. U. S. Nat. Mus.: Romano, Dominican Republic, April, (W. V. Tower). Coll. H. F. Wickham: Port au Prince, Haiti, (R. J. Crew). Coll. Amer. Mus. Nat. Hist.: San Lorenzo, Dominican Republic, June, (F. E. Watson); Higueral, Dominican Republic, February, (E. G. Smyth); Guanica, Porto Rico, April, in a boat-load of cane from Higueral, (R. H. Van Zwaluwenburg).

¹All of the above localities, excepting Port au Prince, are in the Dominican Republic part of the island of Hispaniola, but in the published records of some species we are unable to say to which part of the island they refer.

***Thonalmus suavis* (Jacquelin Duval)**

Charactus elegans DEJEAN, 1837, 'Catalog. Coléop.,' 3 Ed., p. 112 (no description).

Calopteron suave JACQUELIN DUVAL, 1857, in Ramon de la Sagra's 'Hist. Phys. Polit. et Nat. de L'île de Cuba,' Anim. Artic., p. 80. CHEVROLAT, 1870, Ann. Soc. Ent. France, (4) X, p. 75. GUNDLACH, 1894, 'Contribucion à la Entom. Cuba,' III (?), part 4, p. 254.

Thonalmus suavis BOURGEOIS, 1883, Ann. Soc. Ent. France, (6) III, p. 378. GORHAM, 1898, Proc. Zoöl. Soc. London, p. 317. BOURGEOIS, 1901, Ann. Soc. Ent. France, LXX, p. 51.

Red; hind part of elytra blue; antennæ and legs, except base of femora, black. Costæ of elytra not strongly elevated; the submarginal one is curved in its posterior third; the second one is almost straight. Length, 7.6-11 mm.

Distinguished from closely related species by the form of the elytral costæ, which are not strongly elevated and coalesce at the apex of the elytra. The anterior margin of the blue color of the elytra forms a nearly regular curve. The blue color is also slightly more advanced on each elytron than in the preceding species.

Confined to Cuba. Chevrolat (1870) says "Cuba, Collections de M. M. Guérin-Ménéville (types ♂), Gundlach et Poey." Gundlach (1894) records it as found throughout the island. We have seen specimens from the following Cuban localities. Coll. U. S. Nat. Mus.: Cayamas, February, March, April, May and December, (E. A. Schwarz); Baracoa, August and September, (Aug. Busck); near Guantanamo, (C. F. Baker). Coll. Acad. Nat. Sci. Philadelphia: Guantanamo, February, (Henry Skinner); Santa Ana, March. Coll. H. F. Wickham: Isle of Pines, December, (Oertel); Bahia Honda, June. Coll. Amer. Mus. Nat. Hist.: Guantanamo, April, at light, (Chas. T. Ramsden); Cabañas and Zaza del Medio, September, (Lutz and Leng); Guantanamo, October, (F. E. Lutz); Delcias, March, (S. Bevin); Santiago.

According to Mr. E. A. Schwarz, this species is more abundant in the spring of the year.

***Thonalmus amabilis* (Jacquelin Duval)**

Calopteron amabile JACQUELIN DUVAL, 1857, in Ramon de la Sagra's 'Hist. Phys. Polit. et Nat. de L'île de Cuba,' Anim. Artic., p. 80. CHEVROLAT, 1870, Ann. Soc. Ent. France, (4) X, p. 75. GUNDLACH, 1894, 'Contribucion à la Entom. Cuba,' III (?), part 4, p. 254.

Thonalmus amabilis BOURGEOIS, 1883, Ann. Soc. Ent. France, (6) III, p. 379. GORHAM, 1898, Proc. Zoöl. Soc. London, p. 317. BOURGEOIS, 1901, Ann. Soc. Ent. France, LXX, p. 51.

Red. Antennæ of male with joints four to ten inclusive, slightly branched. Elytra subparallel; apex blue; costæ not united at apical portion of the elytra. Length, 6-9 mm.

Coloration as in preceding species. Differs by the male antennæ having each joint from the fourth to the tenth inclusive provided with a small branch from its apical angle; and by the elytral ridges failing to unite at apex, though they are as strongly elevated nearly to their extremity. The female is not easily separated from the same sex of *T. aulicus*.

Confined to Cuba. Chevrolat (1870) says "Cuba. Collections de M. M. Guérin-Méneville (types), Gundlach, Poey." Bourgeois gives "Cuba; Mayari (baie de Nipe) [Chapter, 1883]. ♂, ♀." Gundlach (1894) records it as living in both halves of the island. We have seen specimens from the following Cuban localities. Coll. U. S. Nat. Mus.: Cayamas, May and December, (E. A. Schwarz); Guantanamo (C. F. Baker). Coll. Carnegie Mus.: Nueva Gerona, Isle of Pines, May, (G. Link). Coll. Amer. Mus. Nat. Hist.: Guantanamo, April, (Chas. T. Ramsden and F. E. Lutz).

***Thonalmus aulicus* (Jacquelin Duval)**

Calopteron aulicum JACQUELIN DUVAL, 1857, in Ramon de la Sagra's 'Hist. Phys. Polit. et Nat. de L'île de Cuba,' Anim. Artic., p. 80. CHEVROLAT, 1870, Ann. Soc. Ent. France, (4) X, p. 76. GUNDLACH, 1894, 'Contribucion à la Entom. Cuba,' III (?), part 4, p. 255.

Calopteron elegantulum JACQUELIN DUVAL, in Ramon de la Sagra's 'Hist. Phys. Polit. et Nat. de L'île de Cuba,' Anim. Artic., p. 80. CHEVROLAT, 1870, Ann. Soc. Ent. France, (4) X, p. 76. GUNDLACH, 1894, 'Contribucion à la Entom. Cuba,' III (?), part 4, p. 255.

Thonalmus aulicus BOURGEOIS, 1883, Ann. Soc. Ent. France, (6) III, p. 379. GORHAM, 1898, Proc. Zool. Soc. London, p. 317. BOURGEOIS, 1901, Ann. Soc. Ent. France, LXX, p. 51.

Thonalmus elegantulus BOURGEOIS, 1883, Ann. Soc. Ent. France, (6) III, p. 380.

Red. Antennæ black, basal joint sometimes wholly red, or with two or three of the basal joints more or less marked with red. Elytra at posterior part either metallic blue or coppery green. Legs black, excepting base of femora which are red nearly to the apex. Length, 8.5–12.5 mm.

This species and the following two color varieties are generally of a bright red color, but they sometimes become dull red in dried specimens.

Confined to Cuba. Gundlach (1894) gives Cardenas for the locality of *aulicus* but says *elegantulum* is found throughout the island. Bourgeois (1901) says "Cuba (de Brémond, 1839); idem: Mayari (baie de Nipe) [Chaper, 1883]." We have seen specimens from the following Cuban localities. Coll. U. S. Nat. Mus.: Cayamas, February and May, (E. A. Schwarz); Cayamas, April, (Dimmock); Jovellanos, March, (Hunter). Coll. Acad. Nat. Sci. Philadelphia: Santa Ana, March. Coll. Amer.

Mus. Nat. Hist.: Havana, May, (Cook); seven kilom. north of Viñales, (F. E. Lutz); Guantánamo, April, at light, and June, (Chas. T. Ramsden), also October, (Lutz and Ramsden).

***Thonalmus aulicus* var. *distinguendus* (Jacquelin Duval)**

Calopteron distinguendum JACQUELIN DUVAL, 1857, in Ramon de la Sagra's 'Hist. Phys. Polit. et Nat. et L'île de Cuba,' Anim. Artic., p. 80. CHEVROLAT, 1870, Ann. Soc. Ent. France, (4) X, p. 77. GUNDLACH, 1894, 'Contribucion à la Entom. Cuba,' III (?), part 4, p. 256.

Thonalmus distinguendus BOURGEOIS, 1883, Ann. Soc. Ent. France, (6) III, p. 379. GORHAM, 1898, Proc. Zool. Soc. London, p. 317. BOURGEOIS, 1901, Ann. Soc. Ent. France, LXX, p. 51.

Legs black, base only of femora red. Length, 6-10 mm.

As stated in the discussion of the genus, we can not find any characters to separate this and the following form from the above species and therefore cite them merely as color varieties.

Recorded from Cardenas and Trinidad, Cuba, by Gundlach. We have seen specimens from the following Cuban localities. Coll. U. S. Nat. Mus.: Cayamas, May and June, Havana, March, (E. A. Schwarz); Baracoa, September, (Aug. Busck). Coll. Amer. Mus. Nat. Hist.: Guantánamo, October, and Cabañas, September, (F. E. Lutz); Havana, May and August, (Mel. T. Cook); Santiago de Cuba.

***Thonalmus aulicus* var. *nigritarsis* (Chevrolat)**

Calopteron nigritarse CHEVROLAT, 1870, Ann. Soc. Ent. France, (4) X, p. 77. GUNDLACH, 1894, 'Contribucion à la Entom. Cuba,' III (?), part 4, p. 255.

Thonalmus nigritarsis BOURGEOIS, 1883, Ann. Soc. Ent. France, (6) III, p. 380; 1901, idem., LXX, p. 51.

Femora and tibiae in great part red; tarsi, only black. Length, 5-10 mm.

Recorded from Cardenas, Cuba, by Gundlach and, erroneously we believe, from Haiti by Jacquelin Duval. We have seen specimens from the following Cuban localities. Coll. U. S. Nat. Mus.: Cayamas, Cuba, February, March and May, (E. A. Schwarz). Coll. Acad. Nat. Sci. Philadelphia: Cuba, (Poey Coll.).

***Thonalmus bahamæ*, new species**

Figure 5

Elongate; subparallel. Head, thorax, body beneath, and basal half of the elytra reddish yellow. Antennæ black; basal joints tinged with reddish yellow. Palpi black. Elytra with the posterior part purplish or greenish blue; costæ very feeble, barely traceable on the posterior half of the elytra; humeri as sharply angled as usual. Legs variable in color; the femora red at base, or red for nearly the whole length; tibiae dark, often partly red or tinged with red; tarsi always dark. Length, 5-9 mm.

Nineteen specimens from New Providence, near Blue Hills, Bahama Islands, May 31, 1904, (W. M. Wheeler), and fourteen specimens, Andros Island, Fresh Creek and Mangrove Cay, May and June, 1917, (W. M. Mann).

Holotype male, No. 24519; allotype female, No. 24520; and paratypes, Nos. 24521 to 24524 inclusive; Coll. Amer. Mus. Nat. Hist. Paratypes, a male and a female, have been deposited in the U. S. National Museum.

This species is generally smaller than any other species known to us. The blue color of the elytra extends from the apex quite to the middle of the elytra; in this respect it resembles the species of Montserrat, but in the absence of strong elytral costæ it resembles the Cuban species.

Thonalmus hubbardi, new species

Figures 6 and 6a

Elongate. Yellow. Antennæ, tarsi, tibiæ and apices of femora black; apical half of elytra blue. Basal margin of prothorax arcuately elevated at middle. Elytra with three strongly elevated costæ, of which the outer is entire and slightly sinuate, the middle one obsolete at base, the inner obsolete at apex; the outer margin and suture are also moderately elevated. Ventral abdominal segments of male similar to those of other species of the genus; those of female, however, very different, the first and second segments being elevated at middle forming a crest, the second segment also with a process attached to the middle of its base, which process occupies about two-thirds the width of the segment and extends nearly to the side margins. Attached to the center of the third segment is a chitinous process which extends towards each side to about three-fifths the width of the segment which, at the point of attachment, is triangular and then becomes somewhat suddenly constricted and again broadens out into a somewhat triangular shape with a broad curved base and acutely pointed apex, the points being directed toward the basal segment (Fig. 6a). The middle of the fourth, fifth, and sixth segments pubescent. Length, 9–12 mm.

Montserrat, March 2, 11 and 21, 1894 (H. G. Hubbard).

Holotype male, allotype female, and paratypes (four males and one female) in Coll. U. S. Nat. Mus. Three males and one female, paratypes, Nos. 25072 and 25073, in Coll. Amer. Mus. Nat. Hist.

This species resembles in some respects *T. bicolor* from Jamaica but differs in having half, instead of a third, of the elytra blue, in the absence of the sharp elevation of the hind prothoracic margin at middle, and in possessing the female ventral processes. The discovery of these processes in this, and the next species, is due to the junior author's study of the morphology of the specimens; they seem to be quite unique in Coleoptera.

Thonalmus sinuaticostis, new species

Figures 7 and 7a

Elongate. Yellow. Antennæ, tarsi, tibiæ and apices of femora black. Apical half of elytra blue. Basal margin of prothorax arcuately elevated at middle. Elytra with a strongly elevated costa, starting at the humerus and gradually diverging from the margin until it reaches the middle of the blue area, where it curves outward and

ends in an arc which reaches the apex at a distance from the suture; also with a shorter, arcuate costa, running parallel to the curved portion of the outer costa, and between it and the suture, ending at the sutural angle; also with the outer margin of the elytra moderately elevated. Ventral abdominal segments of the male similar to those of other species of the genus; those of female, however, very different, the first and second segments being elevated at middle forming a crest, the second segment with a process attached to the middle of its base, which occupies about two-thirds the width of the segment and extends nearly to its side margins. Attached to the center of the third segment is a chitinous process which extends towards each side to about three-fifths the width of the segment which, at the point of attachment, is triangular and then becomes somewhat suddenly constricted and again broadens out into an ovate mass, the apices of which are pointed toward the apical segments (Fig. 7a). The middle of the fourth, fifth and sixth segments is densely pubescent in the female. Length, 9-13 mm.

Montserrat; March 1 and 21, 1894 (H. G. Hubbard); December 17, 1906 (H. A. Ballou, No. 885).

Holotype male, allotype female, and three female paratypes in Coll. U. S. Nat. Mus. One male and two female paratypes, Nos. 25074 and 25075, in Coll. Amer. Mus. Nat. Hist.

The outer costa on each elytron is much more prominent and sinuate and the pubescence on the fourth, fifth and sixth ventral abdominal segments is much denser than in *hubbardi*. In some specimens the shorter inner costa is lacking, or more or less consolidated with the outer costa.

***Calopteron* Guérin**

1830, 'Voyage Coquille,' p. 72

The few species of *Calopteron* described from the West Indies are black, with the upper surface and prothorax yellow, and the elytra yellow with black markings, never blue as in *Thonalmus*, and seldom with the metallic sheen characteristic of that genus. *Calopteron* is represented by numerous species on the mainland of North and South America, from whence it appears to have spread to the southern West Indian islands of Grenada, St. Vincent, and Guadaloupe. The species *semiflavum*, described from Cuba by Chevrolat, has not been seen but, from the description, seems certainly to belong to some other genus.

***Calopteron oblitum* Gorham**

Figure 8

Calopteron oblitum GORHAM, 1898, Proc. Zool. Soc. London, p. 316.

Black; prothorax and elytra dirty yellow. Elytra with the apical third and the suture as far as the second costa more or less black. Antennæ of female strongly serrate. Length, 8-10 mm.

Grand Etang, Grenada; Kingstown and windward side up to an elevation of 1500 feet, St. Vincent; Coll. British Mus.

Our figure is drawn from specimen kindly loaned by the British Museum.

***Calopteron delicatum* Kirsch**

Figure 9

Calopteron delicatus KIRSCH, 1865, Berliner Ent. Zeit., IX, p. 61. BOURGEOIS, 1879, Ann. Soc. Ent. France, (5) IX, p. 37. GORHAM, 1898, Proc. Zoöl. Soc. London, p. 316.

Black. Thorax yellow, longitudinally black at middle. Elytra yellow, with the suture in front, a complete fascia before the middle, and apex, broadly, black. Length, 7-10 mm.

Balthazar, Mt. Maitland, and Chantilly Estate, Grenada; Coll. British Mus.

Our figure is drawn from specimens kindly loaned by the British Museum.

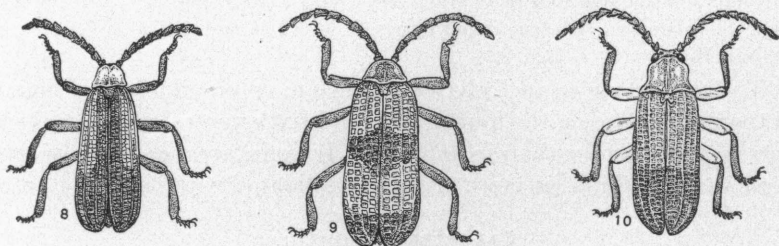


Fig. 8. *Calopteron oblitum* Gorham.

Fig. 9. *Calopteron delicatum* Kirsch.

Fig. 10. *Calopteron pectinicornis* Chevrolat.

***Calopteron smithi* Gorham**

Calopteron smithi GORHAM, 1898, Proc. Zoöl. Soc. London, p. 315, Pl. xxxvii, fig. 2.

Black. Sides of prothorax and elytra orange, the latter with a large common black dorsal spot scarcely reaching either margin; apex black. Antennæ scarcely serrate. Length, 6-10 mm.

St. Vincent, (H. H. Smith); Coll. British Mus.

Similar to *C. delicatum*. The central black spot of the elytra, however, always reaches the margin in *delicatum*, and the suture, from the central spot to the base, is sometimes black in that species; in *smithi*, the central black spot is less extended and the suture is never black.

***Calopteron pectinicornis* Chevrolat**

Figure 10

Calopteron pectinicornis CHEVROLAT, 1870, Ann. Soc. Ent. France, (4) X, p. 74.

FLEUTIAUX AND SALLÉ, 1889, Ann. Soc. Ent. France, (6) IX, p. 415.

Elongate. Head, thorax, scutellum, and about the basal three-fifths of the elytra yellow. Antennæ strongly serrate, almost pectinate; compressed; black excepting

the basal joint which is flavous. Palpi yellow at base; apex black. Head impressed at the front between the base of the antennæ and labrum; antennal tubercles somewhat prominent above; vertex somewhat flattened finely punctate and pubescent. Thorax wider at base than long; apex rounded; sides arcuately emarginate, margin reflexed; disk impressed more deeply near the base, and with a raised median line; base bisinuate, angles acute. Scutellum broadly incised at the middle of the apex. Elytra with sutural and lateral margin raised, and with two well-defined and two ill-defined costæ, between which are transverse lines forming more or less quadrate cells; apical two-fifths black; apex moderately narrowly rounded. Underside of thorax yellow. Ventral segments of the abdomen, black. Femora yellow; tibiæ and tarsi, black. Length, 5.5-8 mm.

This description and the drawing were made from two specimens collected by Vitrac and Delauney from the type locality (Guadeloupe) and kindly loaned to us by M. Ed. Fleutiaux.

Calopteron (?) semiflavum Chevrolat

Calopteron (?) semiflavum CHEVROLAT, 1870, Ann. Soc. Ent. France, (4) X, p. 78.

GUNDLACH, 1894, 'Contribucion à la Entom. Cuba,' III (?), part 4, p. 256.

The following is a translation of Chevrolat's description of this species.

Small, elongate, flat, black, with last joint of antennæ and anterior third of the elytra yellow. Head free, subquadrate, anterior margin crassate, reflexed, transversely sulcate. Eyes placed laterally, small and globose. Antennæ compressed broad. Prothorax subquadrate, reflexed anteriorly and posteriorly; sides oblique; with three longitudinal furrows; with posterior angles cut off straight behind; divaricate and acute. Scutellum quadrate; black. Elytra rugose; twice as wide as the prothorax; flat, obtusely rectangular at the humeri, parallel, each of them rounded, each elytra with three elevated lines; humeral line carinate; black, base yellow. Femora and tibiæ flattened; canaliculate. Length, 2.66 mm., width, .5 mm.

Cuba. Collections Gundlach and Poey.

This pretty and very small species should probably constitute a distinct genus, on account of its head not being covered and free from the prothorax and its broadened flat antennæ, which are longer than the elytra.

This species may be a female belonging to our genus *Leptolycus*, though evidently not the same as the Porto Rican species.

Not seen by us in Poey collection in Philadelphia. Gundlach (1894) records it from Rangel.

Erotini

This tribe, well developed on the mainland, is represented in the West Indies by two species of the genus *Plateros* which occur in St. Vincent.

PLATEROS Bourgeois

1879, Ann. Soc. Ent. Belgique, XXII, Comptes-Rendus, p. XIX

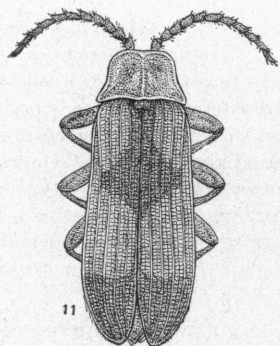


Fig. 11. *Plateros palliatus*
Gorham.

***Plateros palliatus* Gorham**

Figure 11

Plateros palliatus GORHAM, 1898, Proc. Zoöl. Soc. London, p. 317.

Head, antennæ, and body black. Pronotum yellow; wider at base than long; disk with a deep central channel. Elytra yellow at the humeri and margins, black at apical fourth and with a large sub-basal black spot. Length, 9–10 mm.

St. Vincent, (H. H. Smith); Coll. British Mus.

Our figure is drawn from a specimen kindly loaned by the British Museum.

***Plateros fraternus* Gorham**

Plateros fraternus GORHAM, 1898, Proc. Zoöl. Soc. London, p. 317.

Black. Thorax and scutellum yellow, shining. Elytra yellow, with the basal third and apical fourth blackish. Length, 7.5–8 mm.

Recorded by Gorham from St. Vincent, (H. H. Smith).

This species is said to mimic the markings of *Photinus notatus*. We regret that we have not seen it.

Leptolycini

This tribe is erected to contain the new genus described below.

LEPTOLYCUS, new genus

Body small and delicate. Head large, gibbous; mouth-parts beneath; eyes globose, distant, coarsely granulated. Antennæ long; subserrate in female, slightly angulate at apex of each joint and with flying hairs in male. Thorax trapezoidal, narrowed in front, very narrow beneath in male. Elytra strongly dehiscent, entire, separately rounded at apex. Coxæ not contiguous, small, globular, borne at apex of tubular protuberances; trochanters slender, intervening between coxæ and femora and more than a fourth as long as femora.

***Leptolycus heterocornis*, new species**

Figures 12 and 12a

Black. Basal fifth of elytra yellow. Last joint of antennæ entirely white in the male; white, tipped with black in the female. Head coarsely granulate; sides parallel, projecting strongly beyond the eyes and bent so that the front is oblique and the mouth-parts entirely beneath, these parts in the male with many long black hairs. Eyes prominent, globose, coarsely granulate, similar in both sexes; distant above, more approximate beneath. Antennæ with the scape short, stout and thick, and the second and third joints also very short in both sexes; joints three to eight, nearly equal in length, different in the sexes; in the male (Fig. 12), linear, with uneven sur-

face, from the elevations of which proceed long hairs; in the female (Fig. 12a), flattened, subserrate and pubescent; the last joint is rounded at the apex in both sexes. Thorax black, granulate, conical, truncate in front, sinuate on the sides; twice as wide behind as in front; base bisinuate; hind angles prominent, produced but not acute. Seen from the side, the surface of the pronotum is deeply concave at middle and the anterior and posterior margins are elevated, the latter standing far above the elytra. The thorax beneath differs in form in the sexes, the male being much shorter and bearing granulate and hairy, tubular extensions, which support the legs. Elytra as long as the abdomen; yellow in basal fifth, black elsewhere; silky with fine pubescence; rounded at humeral angles; separated at base by the large black scutellum and throughout their length by their extreme dehiscence; broader than thorax at base; becoming rapidly narrower and separately rounded at their apices. The wings, which are also clothed with short hairs but more sparsely, project beyond the elytra. Legs long, flattened, clothed with short hair; coxæ small, globular; trochanters about half as long as tarsi, slender, feebly arcuate, cylindrical; femora elliptical, flattened, slightly bent; tibiæ longer, slightly broader at apex; tarsi with first joint short, second about twice as long as first, joints three and four together about equal to second, fifth longer and about equal to second, all slender, cylindrical, hairy; claws simple. Abdomen black, pubescent; penultimate segment of male emarginate, as is usual in the Lycidæ. Length, 3 mm.

Porto Rico: Aibonito, July 14-17, 1914, (H. G. Barber); Cayey, May 31, 1915, (Lutz and Mutchler). Both localities are in the mountainous interior of Porto Rico and the five specimens known were swept from vegetation.

Holotype male, No. 24525, and allotype female, No. 24526, also paratypes, Nos. 24527 and 24528, in the collection of The American Museum of Natural History. A paratype female has been deposited in the U. S. National Museum.

***Leptolycus heterocornis flavicollis*, new variety**

This variety agrees with the typical form, except that the color of the thorax and scutellum is yellow.

Aibonito, Porto Rico, July 1914, (H. G. Barber).

Holotype female, No. 24529, in the collection of The American Museum of Natural History.

LAMPYRIDÆ

The true Lampyridæ are nocturnal or crepuscular insects, whose life history beyond the obvious power of emitting an intermittent light is not well known. The larvæ have been described for a few species. These larvæ appear to be carnivorous and to live, in some cases for more than a year, in the soil or under vegetable débris. The adults are elongate, with comparatively soft elytra, short and robust legs, and long,

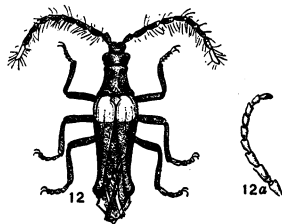


Fig. 12. *Leptolycus heterocornis*, new species, male.

Fig. 22a. *Leptolycus heterocornis*, antennæ of female.

falciform, sharp-pointed mandibles. The light they emit from the posterior ventral segments, giving rise to their common name of "fireflies," has been the subject of many memoirs; an extended bibliography will be found in 'Coleopterorum Catalogus,' part 9, 1920, and recent additional contributions have appeared in 'Science.' The work of Herbert S. Barber of the U. S. National Museum, by which the life history of many species has been traced, is unfortunately still unpublished.

The determination of the sexes requires some care. The males in most species show an eighth segment, similar to the last segment in *Thonalmus*, and, furthermore, have the front of the head between the eyes concave, sometimes to the extent of a deep impression, while the front in the female is nearly flat.

The classification has received the attention of Castelnau, Lacordaire, Motschulsky, LeConte, Gorham, and in recent years of Ernest Olivier (grandson of G. A. Olivier), who, from 1885 to his death, wrote copiously on the subject and produced the essay in 'Genera Insectorum,' fasc. 53, upon which, with little alteration, we base the following key.

KEY TO SUBFAMILIES OF ANTILLEAN LAMPYRIDÆ

1. Head usually completely covered by the pronotum, neck never visible. 2.
Head never completely covered by the pronotum; antennæ filiform, without branches. PHOTURINÆ.
2. Antennæ simply filiform, without branches. PHOTININÆ.
Antennæ serrate or pectinate. 3.
3. Antennæ generally pectinate, not compressed, each joint being provided with projecting branches, sometimes merely with each joint excavated at apical end. LAMPROCERINÆ.
Antennæ compressed, serrate, the joints sometimes branching, but if so, by an extension of the whole substance of the joint. LUCIDOTINÆ.

Lamprocerinæ

This subfamily, except for a few species described from Japan and Sumatra, appears to be American. In the West Indies it is represented, so far as known, by a single genus, which occurs in Cuba.

ALECTON Castelnau

1833, Ann. Soc. Ent. France, II, p. 135

The peculiarities of the antennæ in this genus were not sufficiently illustrated by E. Olivier; we think the figures we give show that the variety *improvisus*, described by that author, is entitled to specific rank. With a heretofore undescribed species in the Poey collection, we recognize three species for this genus, each with characteristic antennæ (Figs. 13, 14 to 16).

***Alecton discoidalis* Castelnau**

Figures 14 and 15

Alecton discoidalis CASTELNAU, 1833, Ann. Soc. Ent. France, II, p. 135; 1840, 'Hist. nat. et icon. Coléop.,' I, p. 266. JACQUELIN DUVAL, 1857, in Ramon de la Sagra's 'Hist. Phys. Polit. et Nat. de L'île de Cuba,' Anim. Artic., p. 83, Pl. VII, figs. 19 and 20. GUNDLACH, 1894, 'Contribucion à la Entom. Cuba,' III (?), part 4, p. 253. GORHAM, 1898, Proc. Zool. Soc. London, p. 320. E. OLIVIER, 1907, 'Gen. Insect.,' fasc. 53, Pl. I, fig. 5 (male antennæ); Rev. sci. du Bourbonnais, XXV, 1912, p. 19.

Alecton dorsalis LACORDAIRE, 1857, 'Hist. Nat. Insect. (Coléoptères),' IV, p. 320, Atlas, Pl. XLIV, fig. 3.

Fig. 13. *Alecton flavum*, new species. Antennæ.Fig. 14. *Alecton discoidalis* Castelnau, antennæ of male.Fig. 15. *Alecton discoidalis* Castelnau, antennæ of femaleFig. 16. *Alecton improvisus* Ernest Olivier.

Head, pronotum, scutellum and body beneath dark yellow; antennæ of female (Fig. 15) eleven-jointed, yellow with the three apical joints brown; that of the male (Fig. 14) twelve-jointed, yellow; joints three to eleven each furnished beneath with a short wide branch, or eccentrically perfoliate. Elytra black; external margins with a yellow border which commences at about the basal third and extends to the apical suture. Length, 8 mm.

Cuba. Recorded from Cardenas by Gundlach. Two Cuban specimens in the Amer. Mus. Nat. Hist. collection are from Delcias, March 5, 1913, (S. Bevin), and Solidar, 10 miles west of Cienfuegos, (Barnum Brown).

***Alecton improvisus* E. Olivier**

Figure 16

Alecton discoidalis var. *improvisus* ERNEST OLIVIER, 1909, Bull. Soc. Ent. France, p. 221; 1911, Rev. sci du Bourbonnais, XXIV, p. 43; idem, 1912, p. 19.

Head, thorax, scutellum and body beneath, bright yellow. Antennæ of female twelve-jointed; the six apical joints dark brown; joints very strongly serrate; subpectinate. Elytra black; external margins with a pale yellow border, which commences quite close to the base and extends to the apical suture. Length, 8 mm.

This species, which was described by E. Olivier as a variety of *discoidalis*, may be separated from that species by its brighter yellow color,

by the antennæ having the six apical joints dark brown, and by the yellow marginal border which commences much nearer the humeral angle.

Described from Havana, Cuba, by E. Olivier. Two specimens in the Amer. Mus. Nat. Hist. collection are from seven kilom. north of Viñales, Cuba, September, collected by F. E. Lutz and C. W. Leng.

Alecton flavum, new species

Entirely pale yellow, above and beneath, the eyes only being black. Antennæ (Fig. 13) in the type, apparently a male, twelve-jointed, short, entirely yellow; second joint short; the succeeding joints excavated at the apex, each receiving the base of the next joint. Length, 9 mm.

Cuba, marked "1527, Poey coll."

Holotype male (?); Coll. Acad. Nat. Sci. Philadelphia.

This species resembles the two preceding in form, but it is entirely pale yellow. The antennæ are shorter, more excavated at the apex, and without projecting branches.

Lucidotinæ

This subfamily, represented on the American mainland by a few species of *Lucidota* with strongly compressed antennæ and a relatively broad body, is developed in Cuba, Porto Rico, and Hispaniola into a considerable number of species, which at one extreme approach *Alecton* in their broad outline, while at the other extreme they have a relatively narrow form combined with feebly serrate antennæ. Three genera may be separated by the form of the antennæ.

Antennæ strongly compressed, serrate . . . *Lucidota*.

Antennæ feebly serrate *Callopisma*.

Antennal joints narrow, oval in section . . . *Erythrolychnia*.

In addition to these three genera, several others have been proposed which seem to us too feebly defined to maintain, though *Pyropyga*, with antennæ more feebly compressed, has been used by Olivier for the species *incognita* from Grenada and St. Vincent. We believe that, with more material for study, an advantageous division of the species now placed in *Callopisma* might be made, but we refrain from doing so at present.

LUCIDOTA Castelnau

1833, Ann. Soc. Ent. France, II, p. 136

A translation of Castelnau's description is as follows.

Antennæ almost as long as the body; eleven-jointed; the first joint large, the second short, all of the rest broad, much compressed, each provided in the males with a somewhat long branch. Labial palpi with last joint triangular; the maxillary

terminated by a very large joint pointed at the extremity. Tarsi with first joint as long as the two next united; the fourth bilobed; claws somewhat strong. Body elongate. Mandibles somewhat projecting. Head covered by the thorax, which is slightly angulate at the front. Scutellum triangular. Elytra elongate, almost parallel. Abdomen almost always with the two last segments luminous. Legs moderate; femur compressed.

The species which we have placed in this genus have the last ventral abdominal segment of the female broadly triangular and incised at the apex; the males have what looks like an eight segment, this segment being regarded by Ernest Olivier, 1911, *Rev. sci. du Bourbonnais*, XXIV, pp. 39-40, as part of the male genital apparatus. We also find that the males of the species have the antennæ more strongly serrate than the females, this character showing more plainly in *decorus* than in the other species.

On account of Castelnau's description of the antennal joints, "each provided in the males with a somewhat long branch," there is some doubt about the correctness of referring the following species to *Lucidota*; we have assumed that the above-mentioned stronger serration of the male antennæ is sufficient justification.

Excepting *incognita*, placed in *Pyropyga* by Ernest Olivier, none of the species of *Lucidota* occur in the Lesser Antilles.

***Lucidota incognita* E. Olivier**

Photinus minutus GORHAM, 1898, *Proc. Zool. Soc. London*, p. 319 (*nec* LeConte).

Pyropyga incognita ERNEST OLIVIER, 1912, *Rev. sci. du Bourbonnais*, XXV, p. 21.

The following is a free translation of Olivier's description: "Similar to *minuta* LeConte (of the U. S.) but larger, prothorax at most incompletely sulcate at base, and with two prominent transverse tubercles each side in front of the scutellum." The length is not given by Gorham, and E. Olivier merely says that it is larger than *minutus* LeConte.

Recorded by Gorham from "St. Vincent; windward and leeward side, Kingstown. Grenada; windward side, Grand Etang, Chantilly and La Force Estates; and leeward side, Mount Gay, Vendôme and St. George's Estates (H. H. Smith.)"

There are no specimens of this species from either of these islands at hand, but there are four male and two female specimens in the collection of the U. S. National Museum from Dominica, June and July, collected by H. W. Foote of the Yale Expedition, 1913, which have all the characters given in the meagre description by E. Olivier. The following is a description of the U. S. National Museum specimens.

Elongate, brown. Antennæ between one-third and one-half the length of the body, moderately compressed; joints from third onward subequal in length and barely noticeably serrate. Head somewhat prominent between the insertion of the antennæ. Pronotum moderately broadly rounded at apex; base sinuate, angles acute; sub-basal margin with an impressed row of coarse punctures, the row of coarser punctures continues around the whole submargin; disk dark brown, and with a slight transverse elevation on each side at base, the ends being nearly in contact at the base and extending along the submargin to the edges of the brown color; side margins transparent yellowish, the discal color extends to the apex but is more or less faded in color; pubescence sparse and very short. Scutellum elongate, triangular, apex truncate, angles rounded. Elytra brown, sides appearing slightly paler where they do not cover the body; granulate punctate; submargins with a row of medium coarse and somewhat closely placed impressed punctures; the whole elytra covered with short, sparse yellowish pubescence. Length, 4.5–6.25 mm.

Male.—Last dorsal segment slightly narrowed, broadly truncate, next to last ventral (seventh) segment slightly narrower than the preceding and with a broad \wedge -shaped incision at the apex; last (eighth) segment somewhat narrower than the preceding and broadly rounded at apex.

Female.—Last dorsal segment less broadly truncate than in the male. Last ventral slightly narrower than the preceding and gradually narrowing from the basal fourth and with a shallow \wedge -shaped incision at the apical end.

Lucidota decorus (Gemminger and Harold)

Rabopus roseicollis [preoccupied] MOTSCHULSKY, 1853, 'Etudes Entom.,' II, p. 42.

E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 34.

Photinus decorus GEMMINGER AND HAROLD, 1869, 'Catalog. Coleop.,' VI, p. 1642.

Pygolampis decorus E. OLIVIER, 1907, 'Gen. Insect.,' fasc. 53, p. 35.

We believe two male and three female specimens in the collection of The American Museum of Natural History and one female specimen in the U. S. National Museum Collection to be this species. We think they should be placed in the genus *Lucidota* as the original description of *Rabopus* says "Antennæ filiform" and the specimens before us, especially the males, have the antennæ strongly serrate. The following is a translation of Motschulsky's description of *roseicollis*.

Elongate, oval, narrow, blackish; thorax red at the middle; yellowish at the margin; without spots; head, base of the antennæ, and the palpi, legs, and the whole border of the elytra yellowish white. Wings and last joint of the tarsi brownish. Eyes black. Length, 3 lines, width $\frac{1}{2}$ line.

The several male and female specimens which are in the collections before us may be known by the following description.

Elongate. Head and basal joint of antennæ varying in shade from yellowish to light brown, the remaining joints of the antennæ dark brown. Thorax somewhat broadly rounded in front; slightly sinuate at base; margin narrowly and feebly raised at front, more distinctly so at base; basal angles nearly right; disk longitudinally impressed at the middle; coarsely but not very closely punctured; sparsely pubes-

cent; color varying from a light to dark pink; apical and side margin yellowish, transparent, which in some specimens is more or less scattered with patches of the discal color. Elytra dark brown, completely margined with yellowish; not very coarsely but somewhat closely punctate; sparsely pubescent; apex separately rounded. Underside brown; apical abdominal segments more or less waxy white. Legs yellowish to light brown, fourth and sometimes all of the tarsal joints slightly darker.

Male.—Antennæ about as long as the body; somewhat strongly serrate. Dorsal abdominal segments brown; last segment slightly narrowed; broadly and squarely truncate at apex. Last ventral (eighth) segment somewhat abruptly narrowed and pointed at apex. Length, 6–7 mm.

Female.—Antennæ a little more than one-half the length of the body; slightly serrate. Dorsal abdominal segments brown; apex of last segment slightly paler, gradually narrowing and narrowly truncate at apex. Last ventral segment triangular and with a deep \wedge -shaped incision at apex. Length, 7.5–9.5 mm.

These are very similar in color to specimens from Cuba which we believe to be *Lucidota miniatocollis*.

The Motschulsky species was described from Porto Rico, but the Gemminger and Harold Catalogue and 'Genera Insectorum' give Santo Domingo as the locality. The specimens from which our description was made are from Porto Rico: two females and one male from Naguabo, March, (F. E. Lutz); one male, Coamo Springs, January, and one female, near Corozol Cave, January, (H. E. Crampton), Coll. Amer. Mus. Nat. Hist.; also one female, Bayamon, January, (Aug. Busck), Coll. U. S. Nat. Mus.

***Lucidota miniatocollis* (Chevrolat)**

Lychnuris miniatocollis CHEVROLAT, 1858, Rev. et. Mag. de Zoöl., (2) X, p. 209.

Lucidota miniatocollis GORHAM, 1898, Proc. Zoöl. Soc. London, p. 320.

Callophisma miniatocollis E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 20.

There are in the collection of The American Museum of Natural History two specimens which do not agree in every detail with Chevrolat's original description but we believe them to be the above species. The following is a description of the specimens at hand.

Male.—Antennæ black, not quite as long as the body, plainly but not strongly serrate. Front of head blackish brown; mouth-parts yellow; apex of mandibles brown. Disk of pronotum longitudinally impressed, bright pink, not coarsely or very closely punctate, sparsely clothed with whitish yellow pubescence; side and front margin transparent, yellowish; basal margin broadly sinuate, angles slightly acute; sub-basal margin with a confused row of coarser punctures. Scutellum yellow with a pink tinge, moderately coarsely but not closely punctate. Elytra brownish black, excepting the side margin which are bordered from humeri to the apical third with a dirty white color; moderately finely and closely granulate-punctate; sub-marginal area with a row of coarser indented punctures which extend from the humeri

around the apex to the scutellum; sparsely clothed with short yellowish pubescence. Dorsal segments of abdomen brown with the apex of last segment white; last segment broadly sinuately emarginate at the apex. Pro- and mesosternum pinkish; remainder of underside, excepting the last two abdominal segments, brown; last two segments white; last segment (eighth) triangularly pointed. Femora yellow, shading to brown at apex tibiae and tarsi darker. Length, 7.5 mm.

Female.—Antennæ about one-half as long as the body, flattened, very feebly serrate, black, basal joints infusate. Front of head blackish brown; mouth-parts yellowish; apex of mandibles darker. Disk of pronotum slightly impressed, dull pink, not coarsely or very closely punctate; pubescence very sparse; side and front margins transparent, yellowish; basal margin broadly sinuate, angles slightly acute; sub-basal margin with a confused row of coarser punctures. Scutellum yellow, tinged with pink, somewhat coarsely but not closely punctured. Elytra lighter brown than in the male; side and sutural margins dirty white, the marginal color is disconnected at the apex; closely granulate punctate; submarginal row of punctures broken and indistinct; very sparsely clothed with yellowish pubescence. Dorsal segments of abdomen, excepting the last, dark brown; last segment pale yellow, narrowly emarginate. Pro- and apex of mesosternum, pinkish, remainder of the underside, excepting the last abdominal segment, brown, with the central part of the abdominal segments paler; last segment very pale yellow and with a very shallow \wedge -shaped incision at its apex. Length, 7.25 mm.

The two specimens from which the above description was made were collected by Dr. Chas. T. Ramsden at Rio Seco, San Carlos Estate, Guantanamo, Cuba (male, February 9, 1915; female, May 9, 1914). There is in the collection of Acad. Nat. Sci. of Philadelphia a female specimen which we believe belongs to this species, but it is in such poor condition that we are unable to see some of the important characters.

The locality given by Chevrolat in the original description is simply "Cuba."

***Lucidota marginipennis*, new species**

Elongate. Head and antennæ brownish black. Pronotum somewhat narrowly rounded at front (more narrowly than in the other two species); outer and basal margins slightly raised; disk convex with a longitudinal impressed line from the base to about the middle; apical half coarsely and closely punctate; basal half moderately, finely and somewhat closely punctate; sub-basal margin with a row of coarse punctures; sparsely pubescent at sides; very dark brown nearly black, with basal, or finely punctured, portion somewhat broadly bordered at the sides with pink; margins transparent yellowish, apical portion much narrower than at sides. Scutellum yellow, brown in some specimens. Elytra blackish brown, side and sutural margins bordered with dirty white, the marginal border does not extend entirely around the apex; granulate punctate. Underside blackish brown. Legs light to dark brown; coxæ, base of femora, base of tibiae and, sometimes, basal part of tarsal joints paler than the apical parts.

Male.—Antennæ, from third joint on, serrate. Apical dorsal abdominal segment bordered at sides with lighter color, broadly truncate; angles rounded. Next

to last (seventh) ventral abdominal segment brown at the middle, sides paler, yellowish; last (eighth) segment entirely brown. Length, 7.5–8 mm.

Female.—Antennæ slightly serrate. Apical dorsal abdominal segment as in the male. Last ventral abdominal segment yellowish white, bordered at apex with brown, apex suddenly narrowed and with a medium \wedge -shaped incision at the apical end. Length, 8.5 mm.

Holotype male, No. 24592, allotype female, No. 24593, also one male and one female paratypes, No. 24594, all from Aibonito, Porto Rico, June, (H. G. Barber and F. E. Watson); Coll. Amer. Mus. Nat. Hist.

CALLOPISMA Motschulsky

1853, *Etudes Entomologiques*, I, p. 42

The type assigned to this genus by Motschulsky is *rufa* G. A. Olivier, having the broad form of *Alecton* and long, compressed, serrate antennæ. Many of the species since assigned to the genus are not strictly congeneric; one of these, *miniatocollis*, we have removed to *Lucidota* and perhaps still more should be removed. They may be separated by the following key.

KEY TO THE SPECIES OF *Callophisma*

1. Elytra unicolorous.....2.

Elytra bicolored.....5.

2. Elytra black without violet reflection.....3.

Elytra brownish black with a strong violet reflection.....*janthinipennis*.

3. Thorax reddish yellow with slightly paler margin.....4.

Thorax yellow, without paler margin; mesosternum and abdomen (apex excepted) black.....*demissa*.

4. Body beneath rust-red; tibiæ and tarsi blackish.....*militaris*.

Body beneath flavous, ventral abdominal segments sometimes more or less marked with blackish; tibiæ and tarsi black or dark brown...*flavilabris*.

5. Elytra black, with with pale or yellow margin.....6.

Elytra yellow or orange, at least in basal part.....7.

6. Elytra margined with yellow on the base, basal third of the suture and slightly beyond the basal half of the lateral margin.....*bellicosa*.

7. Elytra parallel or subparallel sided.....8.

Elytra broadly oval.....11.

8. Elytra with not more than basal half yellow.....9.

Elytra yellow for nearly two-thirds from base; legs yellow, tarsi dark.*postica*.

9. Yellow portion covering less than basal half of elytra.....10.

Yellow portion extending over approximately the basal half of elytra.*dimidiatipennis*.

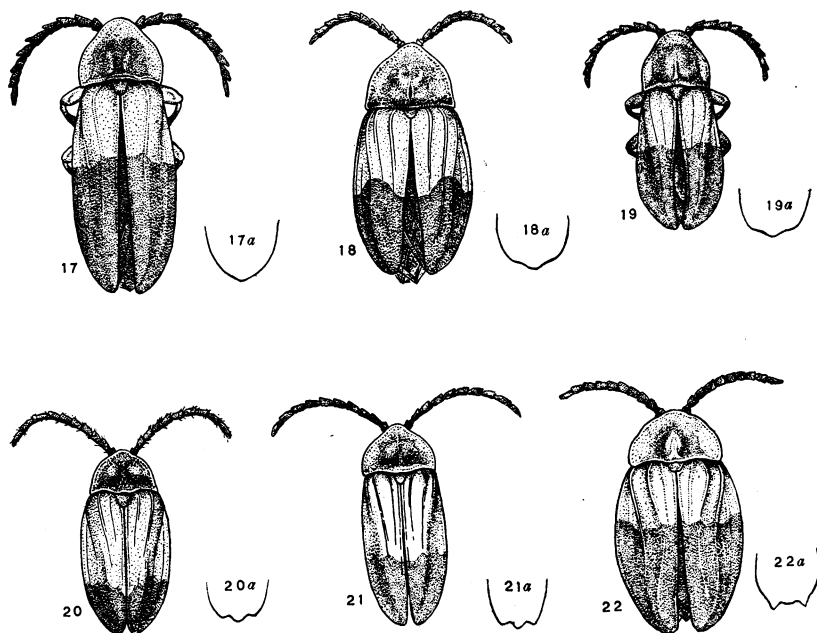
10. Yellow portion extending over basal third or less of elytra, small species 4.5 to 8 mm.....*adjuncta*.

Yellow portion extending over basal third or more of elytra, large species, 11 to 12 mm.....*boreonona*.

11. Antennæ short, about half as long as body.....12.

Antennæ nearly as long as body; dark portion of elytra confined to approximately apical third; tibiæ and tarsi black.....*ramsdeni*.

12. Body very broad, about two-thirds, or more, as broad as long.....13.
 Body not over one-half as wide as long; dark portion of the elytra variable,
 sometimes reduced to a small spot on the apex, generally confined to the
 apical half; or even with a basal spot (var. *humeralis*).....*rufa*.
 13. Color pale red, apical third of elytra and antennæ black.....*mariposa*.
 Color reddish yellow, apical half of elytra and antennæ black. *emarginata*.



- Fig. 17. *Callopisma borencona*, new species.
 Fig. 17a. *Callopisma borencona*, pygidium of male.
 Fig. 18. *Callopisma rufa* (Olivier).
 Fig. 18a. *Callopisma rufa*, pygidium of male.
 Fig. 19. *Callopisma dimidiatipennis* (Jacquelin Duval).
 Fig. 19a. *Callopisma dimidiatipennis*, pygidium of male.
 Fig. 20. *Callopisma mariposa*, new species.
 Fig. 20a. *Callopisma mariposa*, pygidium of male.
 Fig. 21. *Callopisma ramsdeni*, new species.
 Fig. 21a. *Callopisma ramsdeni*, pygidium of male.
 Fig. 22. *Callopisma emarginata*, new species.
 Fig. 22a. *Callopisma emarginata*, pygidium of male.

***Callopisma borencona*, new species**

Figures 17 and 17a

Elongate; yellow, with apical two-thirds of elytra, tibiæ and antennæ black. Antennæ of male more than half as long as body, serrate, pubescent, strongly compressed from the third joint; similar in the female but less than half as long as body. The apex of the third joint in the male is very oblique and the outer angle is somewhat prolonged. Head prolonged into a short beak. Prothorax rounded in front, projecting over the head, feebly punctured and channeled, somewhat rosy on the disk.

Pygidium (Fig. 17a) of male rounded, very feebly sinuate each side, that of female deeply arcuately emarginate. Length, 11–12 mm.

Holotype male, No. 24537, Mayaguez, Porto Rico, May, (R. H. Van Zwaluwenburg); allotype female, No. 24538, Adjuntas, Porto Rico, June, (Lutz and Mutchler); and two female paratypes, Nos. 24539, Martin Peña, Porto Rico, January, (H. E. Crampton); Coll. Amer. Mus. Nat. Hist.

Resembles *C. adjuncta* E. Olivier from Cuba, but is much larger and the apical black color of elytra does not extend as far toward the base.

***Callopisma rufa* (G. A. Olivier)**

Figures 18 and 18a

Lampyris rufa G. A. OLIVIER, 1790, 'Entomologie,' II, No. 28, p. 28, Pl. III, fig. 30.

Callopisma rufa MOTSCHULSKY, 1853, 'Etudes Entom.,' I, p. 42. E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 19.

Photinus rufus GORHAM, 1880, Trans. Ent. Soc. London, p. 23; 1898, Proc. Zoöl. Soc. London, p. 320.

Callopisma rufa var. *humeralis* E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 19.

Orange yellow. Elytra black at the apex and sometimes at the humeri, humeral spots when present sometimes reduced to nebulous clouds. Last abdominal segment different in the sexes. The pygidium (Fig. 18a) of the male is more or less rounded at the apex, and the last ventral segment truncate. The female pygidium is elongate, triangular or conical with the last ventral segment triangular. Length, 8.5–10 mm.

The specimens with a black spot on the base of the elytra have been called variety *humeralis* but we have not recognized them as such, as this spot has a tendency to disappear in some specimens. This species resembles *Erythrolychnia fulgidus* (G. A. Olivier), but differs in being generally smaller. The antennal joints are wider. The pronotum is longer and angulated instead of rounded in front. The apical black spot on the elytra has a faint purplish reflection, this spot being dull black in *E. fulgidus*. The color of the last ventral abdominal segment is red; this segment is black in *E. fulgidus*.

Described from Haiti. We have seen one specimen from Port au Prince, Haiti; Coll. U. S. Nat. Mus. Three, Port au Prince, Haiti, (R. J. Crew); Coll. H. F. Wickham. Two of the latter are what has been called variety *humeralis*.

Motschulsky says the species also occurs in St. Thomas.

***Callopisma dimidiatipennis* (Jacquelin Duval)**

Figures 19 and 19a

Lychnuris dimidiatipennis JACQUELIN DUVAL, 1857, in Ramon de la Sagra's 'Hist. Phys. Polit. et Nat. de L'île de Cuba,' Anim. Artic., p. 84. GUNDLACH, 1894, 'Contribucion à la Entom. Cuba,' III (?), part 4, p. 251.

Lucidota dimidiatipennis GORHAM, 1898, Proc. Zool. Soc. London, p. 320.

Callopisma dimidiatipennis E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 19.

Coloration similar to that of *C. rufa*, of which it has been incorrectly, we think, called a synonym; it is more narrow, the antennal joints are more dilated, and the apical black spot extends beyond the middle of the elytra. The pygidium (Fig. 19a) of the male is triangularly emarginate; truncate in the female. Length, 4.5–8 mm. In the specimens examined by us, there has been none smaller than 6 mm.

Recorded from Cardenas and Matanzas, Cuba, by Gundlach and from Porto Rico by E. Olivier. We have seen specimens from the following Cuban localities. Coll. U. S. Nat. Mus.: Baracoa, (Aug. Busck); Havana and Guantanamo, (C. F. Baker). Coll. Amer. Mus. Nat. Hist.: La Victoria, Guantanamo, May, (Chas. T. Ramsden).

The National Museum specimens were sent to E. Olivier but were returned by him unidentified. We believe they are *dimidiatipennis*.

***Callopisma mariposa*, new species**

Figures 20 and 20a

Male.—Broadly oval; pale red with only the antennæ and apical fifth of elytra black. Antennæ two-thirds as long as body; joints three to eleven, strongly compressed, pubescent, broad, and feebly serrate. Head deeply sunk in the thorax but slightly prolonged beyond the moderate eyes. Thorax rounded in front, wider than long, surface minutely tuberculate. Elytra together almost as broad as long, closely punctate, with strongly reflexed epipleuræ, rapidly narrowing but reaching the apex. Legs strongly compressed, yellowish red, the tarsi scarcely darker, joints short, the fourth deeply emarginate. Pygidium (Fig. 20a) rounded at apex, strongly sinuate each side, obtusely elevated through the median line. Length, 7 mm.

Female.—Unknown.

Hispaniola: Dominican Republic.

Holotype male, No. 24527, from Sanchez, May 11, 1915, (F. E. Watson), and paratype male, No. 24528, from Santo Domingo, April 1, 1913, in Coll. Amer. Mus. Nat. Hist.

This species indicates a different genus and by its broad form looks very different from the following species, but is provisionally attached to *Callopisma* until more material permits further study.

***Callopisma ramsdeni*, new species**

Figures 21 and 21a

Male.—Broadly oval; reddish yellow with the apical third of elytra, margin of ventral abdominal segments, tibiae and antennæ black. Antennæ nearly as long as the body; joints three to eight strongly compressed, feebly serrate, and very broad, joints nine to eleven becoming gradually narrower. Head prolonged in a short, sub-triangular beak. Thorax broadly rounded in front, concealing the head; coarsely punctate around the margin, more finely on the disk which is channeled. Elytra moderately punctured, very obsoletely costate; the apical third black with a very

faint violet lustre, the black area arcuately limited in front and extending further on the margin than the suture. Legs strongly compressed, black. Pygidium (Fig. 21a) biemarginate or bisinuate. Length, 6 mm.

Female.—Unknown.

Cuba: Belona, Guantanamo and La Maya.

Holotype male, No. 24529, from Belona, Guantanamo, June 16, 1914, and five male paratypes, No. 24530, Belona, Guantanamo, June, and La Maya, July, (Chas. T. Ramsden); Coll. Amer. Mus. Nat. Hist. Two male paratypes from La Maya, Coll. Chas. T. Ramsden. A specimen (Poey Coll. No. 711) in Coll. Acad. Nat. Sci. Philadelphia seems to be identical.

This species is dedicated to Dr. Chas. T. Ramsden in recognition of his many years of study and his success in making known the insect fauna of Cuba.

***Callopisma emarginata*, new species**

Figures 22 and 22a

Broadly oval; reddish yellow, apical half of elytra, antennæ and tibiæ, black. Antennæ half as long as body; third and following joints strongly compressed, feebly serrate and densely pubescent. Head prolonged and narrowed in front. Palpi large, dark, four-jointed. Thorax wider than long, rounded in front, rosy on disk, coarsely punctured around the margin, feebly on disk; median channel very short and broad. Elytra closely punctate; apical half black, with a strong blue reflection. Legs compressed as usual. Pygidium (Fig. 22a) emarginate, bottom of emargination strongly bisinuate in the male, truncate in the female. Length, 8–9 mm.

Described from Porto Rico.

Holotype male, No. 24531, and allotype female, No. 24532, from Mayaguez, June and July, (Lutz and Mutchler). Five male paratypes, Nos. 24533–24536 inclusive, from Mayaguez, April and July, (R. H. Van Zwaluwenburg); Mayaguez, June and July, and Adjuntas, June, (Lutz and Mutchler); Rio Blanco Valley, January, (H. E. Crampton). These are in Coll. Amer. Mus. Nat. Hist. One male paratype from Utuado, January, (Aug. Busck), in Coll. U. S. Nat. Mus.

By its shorter antennæ, this species loses one of the characters that separate *Callopisma* from *Photinus*. In coloration it resembles *C. dimidiatipennis* but is much broader, with shorter antennæ and different pygidium. The paratype from Utuado was sent to E. Olivier for determination but was returned by him unnamed.

***Callopisma adjuncta* (E. Olivier)**

Lychnuris adjuncta E. OLIVIER, 1899, Bull. Soc. Zoöl. France, XXIV, p. 90.

Callopisma adjuncta E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 19.

Similar in form and coloration to *C. rufa*, but the apical dark part of the elytra extends far beyond the middle so that only a basal band remains orange. Length, 7 mm.

Described from Cuba. We have seen specimens from the following localities. Coll. U. S. Nat. Mus.: Cayamas, Cuba, May, (E. A. Schwarz). Coll. Acad. Nat. Sci. Philadelphia: Cuba, (Poey Coll.).

Callopisma postica (E. Olivier)

Lychnuris postica E. OLIVIER, 1899, Bull. Soc. Zoöl. France, XXIV, p. 90.

Callopisma postica E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 20.

Very narrow, elongate; entirely yellowish red, excepting a black spot at apex of elytra, covering about the apical third, and the brownish antennæ and tarsi. Length, 6.5 mm.

The pygidium in the specimens before us, which appear to be males, is concealed by the wings; as far as it can be seen, it seems to be simply rounded.

Described from Santo Domingo. We have seen specimens from San Lorenzo and Sanchez, Dominican Republic, June, (F. E. Watson), Coll. Amer. Mus. Nat. Hist.

Callopisma bellicosa (E. Olivier)

Lychnuris bellicosa E. OLIVIER, 1899, Bull. Soc. Zoöl. France, XXIV, p. 91.

Callopisma bellicosa E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 20.

Pronotum and scutellum orange-yellow. Antennæ black, with the first joint orange-yellow at the side. Elytra black, with about the basal third of the suture, the basal margin and the external margin narrowly bordered with orange-yellow. The ventral surface, the femora, a very small part of the base and the inner side of the tibiæ are orange-yellow; the remaining portion of the tibiæ and the tarsi are dark brown. The pygidium of the male is rounded; of the female, acutely triangular. Length, 9-10 mm.

The first joint of the antennæ in the specimens before us is yellowish at the side and not red above, as described by E. Olivier.

Described from Cuba. We have seen specimens from Coll. Acad. Nat. Sci. Philadelphia: Cuba, female, (Poey Coll. No. 1715). Coll. Amer. Mus. Nat. Hist.: Viñales, Cuba, September, (Lutz and Leng).

Callopisma demissa (E. Olivier)

Lychnuris demissa E. OLIVIER, 1899, Bull. Soc. Zoöl. France, XXIV, p. 90.

Callopisma demissa E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 20.

Prothorax yellow, without paler margin. Elytra black; narrower and more nearly parallel than *flavilabris*, and with the basal angles of the prothorax less prominent. Pygidium rounded in the female, male not seen. Length, 6.5 mm.

Described from Cuba. We have seen specimens from the following localities. Coll. U. S. Nat. Mus.: Cayamas, Cuba, June, (E. A. Schwarz). Coll. Acad. Nat. Sci. Philadelphia: Cuba, (Poey Coll. No. 362). Coll. Carnegie Mus.: Isle of Pines, November, (Link).

Callopisma flavilabris (E. Olivier)

Lychnuris flavilabris E. OLIVIER, 1899, Bull. Soc. Zoöl. France, XXIV, p. 90.

Callopisma flavilabris E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 20.

Prothorax yellow with slightly paler margin. Elytra black. Body beneath flavous, with ventral abdominal segments in some specimens more or less blackish. Pygidium feebly truncate in the male. Length, 7 mm.

Described from Cuba, from which island we have seen specimens, (Poey Coll. No. 1767 and No. 1715) Coll. Acad. Nat. Sci. Philadelphia.

***Callopisma militaris* (E. Olivier)**

Lychnuris militaris E. OLIVIER, 1899, Bull. Soc. Zoöl. France, XXIV, p. 91.

Callopisma militaris E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 21.

Identical with *C. flavilabris* except as stated in the key. Length, 8 mm.

With more material for study, we would perhaps unite *flavilabris* and *militaris* under the former name; and it may prove that both are the males of *demissa*.

Described from Cuba. We have seen specimens from Guantanamo, Cuba, June, (Chas. T. Rasmden), Coll. Amer. Mus. Nat. Hist.

***Callopisma janthinipennis* (Jacquelin Duval)**

Lychnuris janthinipennis JACQUELIN DUVAL, 1857, in Ramon de la Sagra's 'Hist. Phys. Polit. et Nat. de L'île de Cuba,' Anim. Artic., p. 83. GUNDLACH, 1894, 'Contribucion à la Entom. Cuba,' III (?), p. 251.

Lucidota janthinipennis GORHAM, 1898, Proc. Zoöl. Soc. London, p. 320.

Callopisma janthinipennis E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 21. (The specific name is here misspelled.)

Very small. Prothorax yellow with a small brown spot. Elytra brown with a violet reflection. Length, 3.7 mm.

Described by Duval from one specimen in the Guérin-Ménéville collection from Cuba. Recorded from Bayamo, Cuba, by Gundlach, (1894). We have seen two specimens from Cayamas, Cuba, May, (E. A. Schwarz), and one specimen from Havana, Cuba, (Baker), Coll. U. S. Nat. Mus.

There is in the Amer. Mus. collection one male specimen from Guantanamo, Cuba, which is very similar to this species but the thorax is pinkish red with approximately the apical third yellow. The antennæ are more strongly serrate. The elytra are dark brown, but the violet reflection is not as pronounced as in the National Museum specimens which were determined by E. Olivier as *janthinipennis*.

In concluding our study of *Callopisma*, we regret that we were unable to see longer series of certain species, for conclusions that we suspected could not be sufficiently verified.

ERYTHROLYCHNIA Motschulsky

1853, 'Etudes Entom.,' I, p. 29

In our study of the species contained in the genus *Photinus*, we could not satisfactorily place *fulgidus* and several somewhat closely allied species in that genus, one difference which we considered of importance being that the eighth ventral abdominal segment did not appear in the males. We have also extracted the male genital apparatus from specimens which do not show the eighth ventral abdominal segment and from specimens of *Photinus pallens* and other well-known species of *Photinus*. The difference in structure is very notable, as will be seen in figures 23 and 24. We consider these differences sufficient reasons for removing *fulgidus* and its allied species from the genus *Photinus*. We have, therefore, restored the genus *Erythrolychnia* Motschulsky, the type species of which is *fulgidus* (*dimidiatipennis*), and have included under this heading the allied species, *bipartitus*, *quinquenotatus*, and two new species which we are describing in this paper.

The following is a translation of Motschulsky's description of the genus.

Shape oval; depressed. Pronotum halfmoon-shaped, a little projecting, margined, its posterior angles prominent, sharp. Antennæ half the length of the body, filiform, thinner towards the apex; first joint as long as the second and third together; the fourth and the following of equal length and a little shorter. Three distinct veins on the elytra. First joint of the tarsi nearly as long as the two following together, the fourth shorter, bilobed. Lobes projecting, but obtuse. Last segment of the upper and underside of the abdomen triangular, the abdomen emarginate at the apex. Type, *Erythrolychnia dimidiatipennis* Mannerheim. From Sto. Domingo in the Antilles.

This genus has been placed in synonymy by previous authors and was treated as a synonym of the genus *Pygolampis* by E. Olivier, 1912, Rev. sci. du Bourbonnais, XXV, p. 24.

The following additional notes on characters not mentioned in the original description will be of some assistance to the student.

Thorax strongly rounded, large, completely concealing the head. The elytra broad, each elytron three times as long as broad. Antennæ eleven-jointed; joints three to eleven feebly compressed, narrowly oval in section; second joint short, about one-fourth as long as adjacent joints; eleventh joint narrower than preceding, fusiform; all densely pubescent. Labial palpi three-jointed; last joint large triangular. Maxillary palpi four-jointed; last joint oval, pointed. Eyes large, globular, finely granulate. Coxæ contiguous. Trochanters triangular, articulating with the femora externally, somewhat intermediate in this respect between Lycidæ and Lampyridæ. Legs compressed as usual; the tarsi stout with fourth joint deeply bilobed. Abdomen

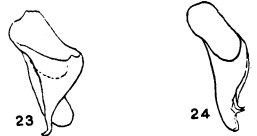


Fig. 23. *Erythrolychnia quinquenotatus* (Castelnau), male genital tube.

Fig. 24. *Photinus pallens* (Fabricius), male genital tube.

with seven segments; with slight evidence of luminous character on third from last segment; the eighth ventral segment of the male (or part of genital apparatus) does not appear in the species of this genus.

***Erythrolychnia fulgidus* (G. A. Olivier)**

Figure 25

Lampyris fulgida G. A. OLIVIER, 1790, 'Entomologie,' II, No. 28, p. 16, Pl. II, fig. 9.
Erythrolychnia dimidiatipennis MOTSCHULSKY, 1853, 'Etudes Entom.,' p. 29; idem., 1854, p. 5.

Pygolampis fulgidus E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 24.

Reddish testaceous. Head black. Pronotum in some specimens with two small, almost contiguous, black spots on the disk. Scutellum triangular. Elytra with black on the apical half. Last two ventral abdominal segments black, bordered with testaceous on the lateral edges; last ventral triangular in both sexes; emarginate at the apex in the female. Length, 10 mm.

In some specimens two small, almost contiguous, black spots appear on the middle of the disk of the pronotum, these are lacking in G. A. Olivier's figure of the species but are mentioned by Motschulsky (1854).

Motschulsky (1853) gives *dimidiatipennis* as the type of the *Erythrolychnia*, and this same author (1854) says "a second species of this genus appears to be *Lamp. fulgida* Ol. of the same locality." The former species is considered a synonym of *fulgidus* by E. Olivier.

Described from Santo Domingo by G. A. Olivier.

We have before us three specimens from San Francisco Mts., Dominican Republic, and one with no more definite locality than "St. Domingo," Coll. U. S. Nat. Mus. All were determined as *Pygolampis fulgidus* by E. Olivier in 1911, which was previous to his description of *bipartitus*. We have concluded that only two of the specimens from San Francisco Mts. are *fulgidus*, the others being *bipartitus* described by E. Olivier, in 1912. There is also one specimen from Puerto Plata, Dominican Republic, March, in the American Museum collection, which we have determined as *E. fulgidus*.

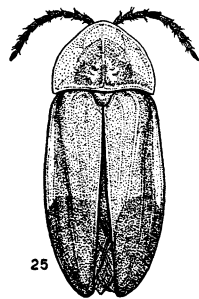


Fig. 25. *Erythrolychnia fulgidus* (Olivier).

***Erythrolychnia bipartitus* (E. Olivier)**

Pygolampis bipartitus E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 24.

Red. Head black or brown. Antennæ black with first three joints piceous. Elytra with black apical spot, covering one-third of their length. The last two ventral abdominal segments and base of pygidium black. Tarsi piceous. Prothorax short, rounded in front, cribrately punctate at margin; disk shining. Length, 9–11 mm.

Described from Santo Domingo. We have seen specimens from Coll. U. S. Nat. Mus., San Francisco Mts., September, (Aug. Busck); and Coll. Amer. Mus. Nat. Hist., Puerto Plata, January or February. Both of the above localities are in the Dominican Republic.

***Erythrolychnia olivieri*, new species**

Reddish to yellowish brown. Antennæ blackish brown. Pronotum broadly rounded in front; basal angles slightly acute; margin broadly bisinuate; frontal part, (reaching well up on the disk and sides) coarsely and closely punctate; basal part of disk with an irregular callous-like spot which is more finely punctate; middle of pronotum with a slight carina, more noticeable in the female. Elytra somewhat coarsely and closely granulate punctate; each with a black spot at the base, reaching back to a little more than twice the length of the scutellum, but only touching the scutellar area at the basal part; also with a black spot at the apex which covers about the apical third, the apical spots are more advanced on the disk on the suture or sides; disk with two carina which do not reach either the base or the apex. Underside of male with last two abdominal segments dark. The female has the last three segments dark. Length, 9 mm.

Holotype male, No. 24588, Higueral, Dominican Republic, (E. G. Smyth), Coll. Amer. Mus. Nat. Hist.; allotype female, San Francisco Mts., Dominican Republic, September, (Aug. Busck), Coll. U. S. Nat. Mus.

The female specimen which we have made the allotype was determined as "*Pygolampis 5-notatus* var." by E. Olivier, but we believe it to be deserving of specific rank. There are no markings on the pronotum and the basal markings are longer and of a deeper black than in *quinquenotatus*. The apical black markings are very similar to *bipartitus*.

***Erythrolychnia quinquenotatus* (Castelnau)**

Photinus quinquenotatus CASTELNAU, 1840, 'Hist. nat. et icon. Coléop.,' I p. 269.

Pygolampis quinquenotatus E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 24.

Red. Pronotum with a black spot on disk. Elytra with a black spot near the humerus and another near the apex, the apical ones are sometimes reduced to nebulous clouds. Length, 10-12.5 mm.

Type locality: Port au Prince, Haiti. We have seen specimens from the following localities. Coll. H. F. Wickham: Port au Prince, Haiti, (R. J. Crew). Coll. Amer. Mus. Nat. Hist.: Diquini, Haiti, (Wm. M. Mann).

***Erythrolychnia albopalpis*, new species**

Male.—Broadly oval. Dull yellow, except for a black area on the apex of each elytron, starting from a point on the lateral margin of the elytra about two-thirds of the distance from the base, the anterior border of each black area is \wedge -shaped near the lateral margin and then runs obliquely back to a point on the sutural margin near the apex. Antennæ and palpi brown. Antennæ with the two basal joints paler and the

basal part of all of the joints pale. Apical end of each joint of palpi waxy white. Pronotum with front and sides coarsely punctate; base of disk more finely punctate. Elytra somewhat coarsely and closely punctate and sparsely pubescent. Femora yellow; tibiæ and tarsi slightly darker, which is caused in part by darker pubescence. Length, 9 mm.

Female.—Unknown.

Holotype, No. 24518, Saona, Haiti, July or August; Coll. Amer. Mus. Nat. Hist.

Photininae

This subfamily includes the largest number of species and presents the greatest difficulty in its classification. The genus *Photinus*, from which it derives its subfamily name, includes 143 species, of which about 20 per cent were separated without any definite characters by Motschulsky under the name *Pygolampis*. This name was used by E. Olivier, 1912, Rev. sci. du Bourbonnais, XXV, in his 'Contribution à la faune entomologique des Antilles,' but we have rejected the unsatisfactory attempts to divide this genus and have retained the name *Photinus* for the West Indian species. A further account of the different genera will be found under the generic headings. We divide the genera as follows.

KEY TO WEST INDIAN GENERA OF PHOTININÆ

1. Body oval.....2.
- Body oblong.....3.
2. Eyes in male very large, often contiguous; pronotum with two glassy spots.
Cratomorphus.
- Eyes not contiguous, glassy spots lacking.....*Aspisoma*.
3. Pronotum prolonged at side, angulate at apex.....*Pyrractomena*.
- Pronotum rounded at apex, not distinctly angulate.....*Photinus*.

Cratomorphus is a Central and South American genus erected in 1853. It occurs in Trinidad but, so far as we know, not in the West Indies proper. The description of *Lampyris dorsalis* Gyllenhal (referred to *Cratomorphus* by Motschulsky) has been included in this paper, as Gyllenhal in his original description gives "Insula Bartholemy" as the type locality. This species may be West Indian but unrecognized because erroneous reference to the genus *Cratomorphus*.

We have not included the genus *Macrolampis* in this paper. Our record, in the 'Preliminary List of the Coleoptera of the West Indies,' of *M. perelegans* is based merely on the citation of the locality "Antigua" in 'Biologia Centrali Americana,' (Coleoptera) III, part 2, p. 40, and we have now decided to omit the species until further proofs of it being West Indian are obtainable. The genus is from Central and South America.

The genus *Heterophotinus*, which was erected by E. Olivier for a species in which the elytra of the female are shorter than the abdomen, has been disregarded by us, there being, as far as we can see, no other character to separate the species from *Photinus*; we find that there are also other species in the genus *Photinus* which have the elytra of the female shorter than the abdomen.

ASPISOMA Castelnau

1833, Ann. Soc. Ent. France, II, p. 145

This genus, 55 species of which occur in South and Central America, contains a few species in the most southern Antillean islands; these may be separated as follows.

KEY TO WEST INDIAN SPECIES OF *Aspisoma*

1. Oblong shield-shaped; pronotum yellow or brownish yellow, with darker markings.....2.
- Oblong oval; pronotum ochraceous with an indistinct darker spot at middle of disk, bisinuate in outline, and in some specimens with two very obscure spots at middle of base; elytra pitchy black, sides and suture with entire margin.....*superciliosum*.
2. Outer margin of the elytra with a rectangular yellowish spot near the humerus. 3.
- Elytra margined on the sides and suture with yellow, margin widest at base of lateral margin, and enclosing two brown spots, one near the humerus, the other near the middle.....*insperatum*.
3. Disk of elytra with three, more or less well-marked, fine, yellow lines. *ignitum*.
[Three yellow lines better defined, extending almost throughout the length of the elytra, and a fourth starting from the humerus and coalescing with and extending beyond the marginal spot.....var. *polyzonum*.]

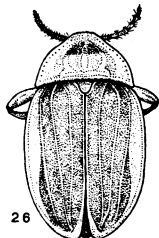


Fig. 26. *Aspisoma superciliosum* Gorham.

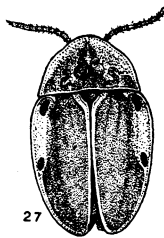


Fig. 27. *Aspisoma insperatum* Ernest Olivier.

Aspisoma superciliosum (Gorham)

Figure 26

Aspidosoma superciliosum GORHAM, 1898, Proc. Zoöl. Soc. London, p. 318.

Aspisoma superciliosum E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 23.

Pronotum yellow, with three small brown spots, one on the disc and two approximate (sometimes wanting) above the scutellum. Elytra brown, with the margin, broadly, and the suture, narrowly, bordered with yellow. Length, 7-8 mm.

Described from St. Vincent; Grenada, leeward and windward sides; and Union Island, Grenadines, (H. H. Smith). Coll. British Mus.

Our figure is drawn from a cotype specimen kindly loaned by the British Museum.

***Aspisoma insperatum* (E. Olivier)**

Figure 27

Aspidosoma ignitum (Linnæus) GORHAM, 1898, Proc. Zoöl. Soc. London, p. 318.

Aspisoma insperatum E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 22.

Leathery brown. Pronotum testaceous with a sinuous brown spot reaching the base but not passing beyond the middle; also with darkish spot in each basal angle. Elytra with the lateral margins bordered with yellow, broadly as far as the middle, narrowly beyond it to the suture, within the yellow border are two brown spots, one on the humeral callus, the other a little beyond the middle; there are also, in some specimens, traces of longitudinal pale lines, not prominent, on the disk. Tibiæ and basal half of femora testaceous. Length, 11-12 mm.

Recorded as *ignitum* Linnæus by Gorham from Kingstown, St. Vincent; Grenada, leeward and windward sides; Union Island and Mustique Island, Grenadines, (H. H. Smith). We have seen specimens from the following localities. Coll. U. S. Nat. Mus.: St. Lucia ("Ac. 21, 699, U. S. F. C."). Coll. Brit. Mus.: Mount Gay Estate, leeward side, Grenada, (H. H. Smith); Castries, St. Lucia.

Our figure is drawn from a specimen kindly loaned by the U. S. National Museum.

***Aspisoma ignitum* (Linnæus)**

Lampyris ignita LINNÆUS, 1767, 'Syst. Natura,' I, part 2, p. 645. DE GEER, 1774, 'Mém. pour servir à l'histoire Insect.,' IV, p. 49, (French edition), p. 29, Pl. xvii, fig. 2, (German translation by Goeze, 1781, p. 29, Pl. xvii, fig. 2). FABRICIUS, 1775, 'Syst. Entom.,' p. 201. G. A. OLIVIER, 1790, 'Entomologie,' II, No. 28, p. 15, Pl. I, fig. 7. CASTELNAU, 1840, 'Hist. nat. et icon. Coléop.,' I, p. 269. *Aspisoma polyzona* CHEVROLAT, 1834, 'Coléoptères du Mexique Cent.,' I, fasc. 3, No. 51.

Myctophanes ignita MOTSCHULSKY, 1853, 'Etudes Entom.,' II, p. 11.

Aspidosoma ignitum GORHAM, 1880, Trans. Ent. Soc. London, p. 83; 1881, 'Biol. Cent. Amer.,' (Coleoptera) III, part 2, p. 55.

Aspidosoma polyzonum GORHAM, 1880, Trans. Ent. Soc. London, p. 83.

Aspisoma ignitum E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 21.

Pronotum brownish yellow, with four black stripes on disk (of which the two inner are the longer) separated by spots of rosy yellow. Scutellum brown. Elytra brown, with a narrow rectangular yellow spot on the margin, extending one-fourth

from base, and with three yellow lines on the disk. In the male the last ventral abdominal segment is short and emarginate; in the female it is triangular and rounded at the apex. Length, 11-14 mm.

This widely distributed species is very variable; the prothoracic stripes may be sharply defined or obscured by the paler color; the yellow spot at margins of elytra also varies in extent, and the yellow lines on disk of elytra may be lacking. The most strongly marked form, in which the three discal lines are very well marked for almost the entire length of the elytra, and even a fourth, starting from the humerus, coalescing with the marginal spot and continuing beyond it, can be distinguished, has been called variety *polyzonum* by Chevrolat, 1834, 'Col. Mex. Cent.,' I, fasc. 3, No. 51, and recognized by E. Olivier, 1912, Rev. sci. du Bourbonnais, XXV, p. 22. Most of the Antillean specimens we have seen belong to this variety.

The following data will give some idea of the distribution of this species.

Recorded from Cayenne, South America, by Motschulsky; Central America to Yucatan by Gorham; St. Pierre and Fort de France, Martinique, and Ste. Anne, Guadeloupe, by Fleutiaux. Specimens in the U. S. National Museum collection from the island of Trinidad. We have seen specimens from the following localities in the West Indian Islands. Coll. U. S. Nat. Mus.: Dominica, June and July, (H. W. Foote); Dominica, (A. H. Verrill). Coll. British Mus.: St. Kitts, (J. J. Quelch). Coll. Amer. Mus. Nat. Hist.: Mt. Pelée, Martinique, April, (P. B. Whelpley); Roseau, Dominica, July, (F. E. Lutz). Coll. H. F. Wickham: Dominica, November, (A. F. Porter).

The specimens from Trinidad and Dominica in the National Museum collection were determined by E. Olivier as this species.

PYRACTOMENA LeConte

1850. 'Agassiz, Lake Superior,' IV, p. 228

This genus comprises about nine species which occur in the United States, Mexico, and Central America, as far south as Panama; also three species, including a new species described in this paper, from the more northern islands of the West Indies.

The species are apparently separated from *Photinus* by the angulated form of the pronotum. We do not agree with E. Olivier in substituting the name *Lecontea* for *Pyractomena* on account of the similarity in spelling to *Pyractonema* Solier.

***Pyractomena galeata* E. Olivier**

Pyractomena galeata E. OLIVIER, 1899, Bull. Soc. Zoöl. France, XXIV, p. 91.

Lecontea galeata E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 23.

Pronotum yellow, with a large triangular black spot extending almost to apex. Scutellum yellow. Elytra black, bordered with yellow. Male with fifth and sixth ventral abdominal segments long, waxy white; the last segment truncate or slightly emarginate; female with all the segments brilliant, the last segment triangular, incised. Length, 10–11 mm.

Recorded from Porto Rico and St. Thomas by E. Olivier. We have seen specimens from the following localities in Porto Rico. Coll. U. S. Nat. Mus.: Fajardo and Arroyo, February, and Aguadilla, January, (Aug. Busck). Coll. Amer. Mus. Nat. Hist.: Manati, Aibonito and Arcibo, June, (Lutz and Mutchler); Santa Rita, October, (E. G. Smyth). We have also seen one specimen from Vieques Island, February, (Aug. Busck), Coll. U. S. Nat. Mus.

The National Museum specimens were determined by E. Olivier.

***Pyractomena watsoni*,¹ new species**

Figure 28

Elongate, brown. Pronotum yellow with an elongate, somewhat triangular, brown spot on the disk which does not quite extend to the apical or basal margins; there is also a brown spot on each side margin about midway between the apex and base, which does not extend to the very edge of the side but leaves the margin very narrowly yellow. Scutellum brown. Elytra margined with yellow, except at base. Underside of body brown.

Male.—Antennæ brown; basal joint slightly paler; second and third joints slightly paler at their base. Pronotum (in specimen at hand) with the dark marginal spots coalescing with the middle spots at the basal part. First three ventral abdominal segments narrowly yellow at the middle; fourth and fifth segments yellowish white with an indentation on each side slightly nearer the base than apex and about midway between the median line and side margins. These segments margined at the sides with brown, the brown color not quite reaching the apex of the fourth and to about the apical two-thirds of the fifth segment; sixth segment brown. Last dorsal segment broadly crescently truncate. Legs brown, basal two-thirds of femur and tibiæ yellow. Length, 8.25 mm.

Female.—Underside brown; sides of abdominal segments bordered with yellow and central portion of all but the last two more or less yellow, last two segments yellow at apex; apical segment with a small \wedge -shaped incision at the apex. Last dorsal segment as in the male. Length, 10 mm.

Hispaniola: Dominican Republic.

Holotype male, No. 24540, and allotype female, No. 24541, San Lorenzo, June 29, 1915, (F. E. Watson), Coll. Amer. Mus. Nat. Hist.

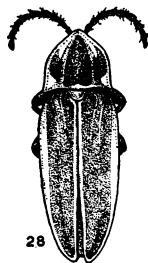


Fig. 28. *Pyractomena watsoni*, new species.

¹Dedicated to Frank E. Watson, in recognition of his success in collecting Lampyridæ on his several Antillean expeditions.

This species is very close to *vitticollis* Motschulsky and may be a variety of that species, but differs in having one elongate spot ("band") on the disk of the pronotum and the spots on the sides are brown instead of red or orange. The scutellum is concolorous and not margined with flavous as in *vitticollis*. It also approaches *angulata* Say in color and in the markings on the pronotum and elytra.

***Pyrractomena gamma* (Jacquelin Duval)**

Photinus gamma JACQUELIN DUVAL, 1857, in Ramon de la Sagra's 'Hist. Phys. Polit. et Nat. de L'île de Cuba,' Anim. Artic., p. 85. GUNDLACH, 1894, 'Contribucion a la Entom. Cuba,' III (?), part 4, p. 251.

Lecontea gamma E. OLIVIER, 1910, 'Coleop. Catalog.,' part 9, p. 25; 1912, Rev. sci. du Bourbonnais, XXV, p. 23.

Pronotum yellow, with four brown vittæ, the two internal ones prolonged to the apex. Elytra brown, with the suture, external margin, and a longitudinal discal line yellow. Length, 8.7 mm.

Recorded from Cuba, Collection Guérin-Ménéville, by Duval, and throughout the island by Gundlach. We have seen specimens from the following localities. Coll. U. S. Nat. Museum: Cayamas, Cuba, May, (E. A. Schwarz); Havana, Cuba, (C. F. Baker). Coll. Acad. Nat. Sci. Philadelphia: Cuba, (Poey Coll.). Coll. Carnegie Mus.: Los Indos, Isle of Pines, October, (G. Link). Coll. Amer. Mus. Nat. Hist.: Guane, Cuba, September, (F. E. Lutz); Montego Bay, Jamaica, March, (J. A. Grossbeck).

***Pyrractomena vitticollis* Motschulsky**

Pyrractomena vitticollis MOTSCHULSKY, 1853, 'Etudes Entom.,' I, p. 38; idem, II, 1854, p. 38. GORHAM, 1880, Trans. Ent. Soc. London, p. 33.

Lecontea vitticollis E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 23.

Pronotum testaceous with two very approximate brown vittæ, each having at base an orange spot which reaches the margin in some examples. Elytra black, bordered with testaceous. Scutellum black, bordered with yellow. Length, 8.6 mm.

Recorded from St. Domingo by Motschulsky, Gorham and E. Olivier. We have not seen any specimens which agree with the descriptions.

PHOTINUS Castelnau

1833, Ann. Soc. Ent. France, II, p. 141.

This genus, to which the abundant insects known as "fireflies" belong, as defined by Castelnau, would include several other genera, but a later résumé by Lacordaire, 1857, 'Hist. Nat. Insect. (Coléoptères),' IV, pp. 321-325, was in great part followed by Gorham, 1880, Trans.

Ent. Soc. London, p. 22. The genus as defined by the latter author includes the West Indian species which were separated from *Photinus* and placed by E. Olivier in the genus *Pygolampis* Motschulsky. We see no good reasons for this change but, even if there were reasons, the name *Pygolampis* Motschulsky, 1853, 'Etudes Entom.,' I, p. 48, could not be used, as it was used by Germar, 1824, 'Fauna Europ.,' VIII, p. 22, for a genus in the Heteroptera.

Photinus as here defined (see p. 449) is found in all the West Indian islands and is represented by numerous species. Usually a single species is confined to one island.

A great many species, from their superficial resemblance, are difficult to separate in a key. Sexual differences are found in the ventral segments, which, however, are difficult to observe in dried, and therefore possibly distorted, specimens; there are also sexual differences in the form of the head, usually more deeply excavated between the eyes in the males than in the females. In at least two species the elytra are abbreviated in the females. The differences in the color of the upper surface supply the most convenient characters for separation. We have, therefore, divided the species of this genus into six groups, based on type of color markings, but, as these markings sometimes vary within a species, an explanation of some of these variations seems desirable before presenting a key to the groups.

In the first (*glaucus*) group we have species which are a dirty white and superficially resemble each other. *P. glaucus* and *dominicensis* from Hispaniola and *ceratus* from Jamaica have the pronotum pale, without rosy tint. *P. dubiosus* from Porto Rico shows a rosy tint on the disk of the pronotum. All of the species, especially *ceratus* and *pallens*, may have the disk of the pronotum slightly darker than the margins.

The species in the next (*xanthophotis*) group also have the elytra without markings, some of them being very similar to those in the first group. *P. ebriosus*: the dark spot on the disk of the pronotum in one of our specimens has nearly disappeared, leaving only two small lines on each side of the disk to indicate the spot, but the elytra is enough darker than the thorax to consider the species as belonging in this group. *P. triangularis* is another pale-colored species, but it can be separated from all of the others by the pronotum being triangularly produced at the apex. The spot on the pronotum of this species is large and seems to be constant. The other species in this group, excepting in the extreme cases, have the elytra much darker than the margins of the pronotum.

Pantoni group.—In this and the following groups, the elytra are more or less bicolored. They have paler margins or other markings.

Those in the *pantoni* group are simply narrowly margined with paler color. The species *pantoni* has the lateral pale margins broader than the sutural. *P. suavis* is a pale-colored, not very well-marked species, but in fully mature specimens the pale margins are similar to, but not as well marked as in, *pantoni*. The rest of the species in this group have the margins very markedly pale.

Nefarius group.—The species in this group are so complex that we think it better to refer the reader to the discussion under the group heading, where we have given our opinions as to synonymy, etc., of some of the species.

Vittiger group.—The species in this group are marked with longitudinal vittæ on the disk of the elytra. *P. vittiger* is dark brown and plainly shows the vitta on the disk of each elytron, but in the varieties *infernus* and *littoralis* this vitta is nearly or quite obsolete. In *limbipennis* the discal vitta is not very pronounced. *P. singularis* has several more or less broken vittæ on each elytron. *P. vittatus* may superficially be considered as belonging in the *pantoni* group, but on examination it will be found that the vittæ at the sutural part of each elytron do not run along the margins but are subsutural, more markedly so basally.

Albicollis group.—The three species in this group have the elytra black, with more or less median, transverse, white markings which separate them from all the foregoing species.

We hope the following key may assist the student in separating his species into groups, but in doubtful cases it may be well to take in consideration the locality of the species, as in our study of the family we have not found any one species distributed over widely separated islands, and to remember, also, that immature specimens do not show fully developed markings.

KEY TO THE GROUPS OF *Photinus*

1. Pronotum and elytra pale (white or dirty white) in color; disk of pronotum sometimes rosy or with small darker spots; elytra unicolorous, sometimes slightly darker than the pronotum; antennal joints sometimes appearing annulate; species 8-12 mm. in length (see also *xanthophotis* group containing more or less pale-colored species) *Claucus* Group.
 Pronotum at least in part usually paler than the general color of the elytra; pronotal disk often with a central dark spot which is sometimes longitudinally divided at the middle; elytra either unicolorous, margined with paler or with paler cross-bars or spots 2.
2. Elytra unicolorous (aborted elytra of female *cubanus* margined with yellow); pronotum usually paler than the elytra, disk of pronotum usually with a dark spot (sometimes absent within the species), leaving margins paler than the elytra; pronotum triangularly produced in one species. *Xanthophotis* Group.
 Elytra with paler colored markings 3.

3. Margins of the elytra usually narrowly (not sinuately) pale, without submarginal or discal markings, species 3-10 mm. in length (see also *vittiger* group which contains varieties with the discal markings nearly or quite obsolete).

Pantoni Group.

Margins of the elytra usually not narrowly pale, if so then combined with submarginal or discal vitta or other markings..... 4.

4. Elytra more or less sinuately margined with pale brown, the pale color sometimes reaching the suture and dividing the dark color into apical and basal spots or merely apical or basal spots, or leaving merely a discal dark line which is sometimes prolonged inwardly, about the center and again near the apex, forming a more or less elongate basal and subapical spot along the suture.

Nefarius Group.

Elytra with subsutural or discal vitta or with broad, white transverse discal stripes or spots..... 5.

5. Elytra with longitudinal subsutural or discal vitta (sometimes nearly or quite obsolete var. *infernus* and var. *littoralis*)..... *Vittiger* Group.

Elytra with white transverse markings sometimes appearing as broad spots on the lateral margins..... *Albicollis* Group.

Glaucus Group

KEY TO SPECIES

1. Antennal joints paler at their points of contact making them appear annulate at this point. Length, usually about 15 mm..... *pallens*.
Antennæ not noticeably paler at their points of contact..... 2.
2. Antennæ (reaching approximately to base of pronotum) and palpi short, compact; ventral segments all pale, distinctly punctulate..... *heterodoxus*.
Antennæ and palpi longer..... 3.
3. Ventral segments unicolorous, white or very pale brown..... *ceratus*.
Ventral segments not unicolorous, closely punctate..... 4.
4. Head in male triangularly excavated, ventral segments, except penultimate, dark; head in female nearly flat, ventral segments, except the sixth, pale.
glaucus.
Head longitudinally excavated, more deeply in male..... 5.
5. Ventral segments, except the last two, dark..... *lutzi*.
Ventral segments, except the fourth, rosy, often darker in the male..... *dubiosus*.

Photinus heterodoxus, new species

Figure 29

Female.—Elongate, parallel; yellowish above and beneath, the eyes only black; the antennæ (except first joint), the palpi, tibiæ, tarsi, and dorsal segments dusky. Head (Fig. 29) concealed beneath projecting pronotum; arcuately depressed between the eyes. Palpi short, compact. Antennæ as long as pronotum, linear, hairy, reddish brown, except first joint which is yellow. Pronotum rounded in front; hind angles produced; surface uneven, closely and finely punctate. Elytra parallel, rounded at apex, closely and finely punctate, pubescent. Ventral segments all pale, very finely punctate; the last three waxy white. Length, 12 mm.

Male.—Unknown.

Porto Rico.

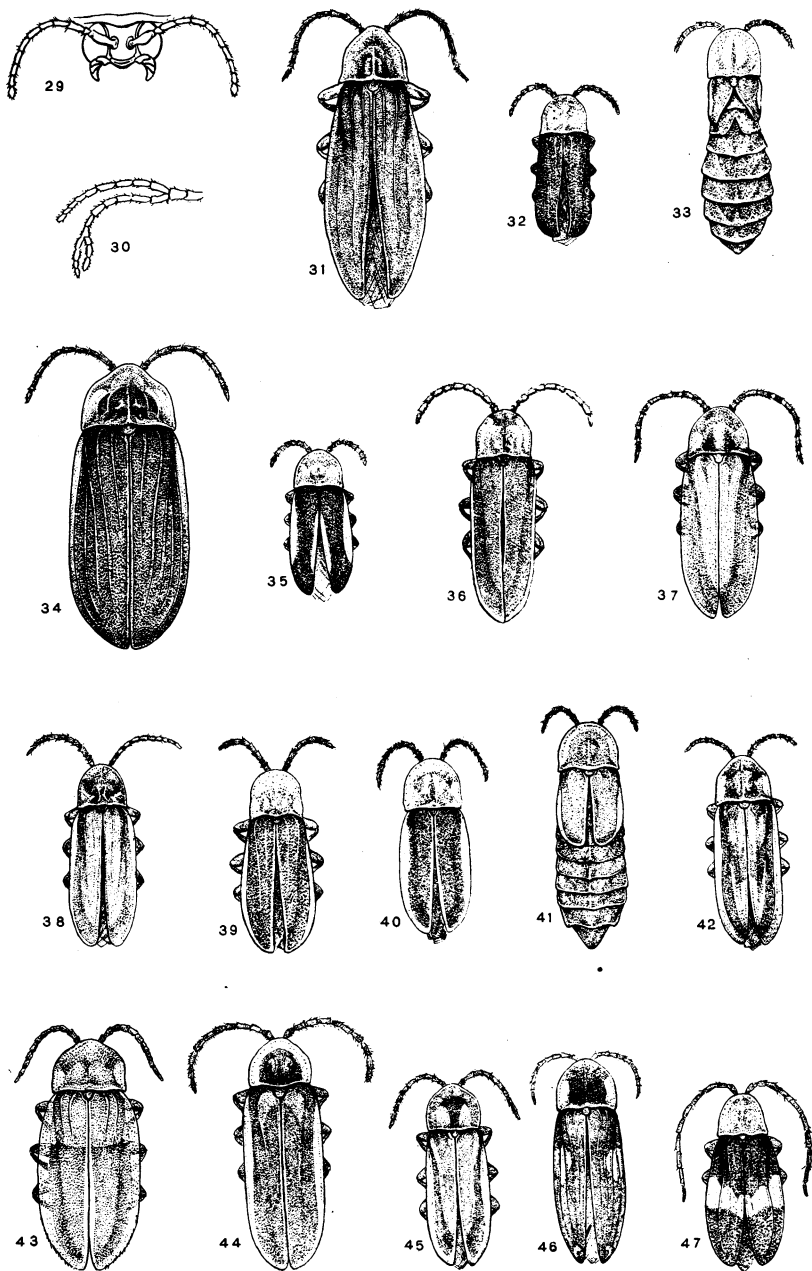


Fig. 29. *Photinus heterodoxus*, new species, front view of head.

Fig. 30. *Photinus dubiosus*, new species, deformed antennae.

Fig. 31. *Photinus triangularis* Ernest Olivier.

Fig. 32. *Photinus nanus* (Ernest Olivier).

Fig. 33. *Photinus cubanus*, new species, female.

Fig. 34. *Photinus xanthophotis* (Gosse).

Fig. 35. *Photinus pygmaeus* Ernest Olivier.

Fig. 36. *Photinus manni*, new species.

Fig. 37. *Photinus pantoni* Ernest Olivier.

Fig. 38. *Photinus suavis* Ernest Olivier.

Fig. 39. *Photinus apoplecticus* Ernest Olivier.

Fig. 40. *Photinus simplex* Ernest Olivier, male.

Fig. 41. *Photinus simplex* Ernest Olivier, female.

Fig. 42. *Photinus commissus* Ernest Olivier.

Fig. 43. *Photinus discoideus* (Sahlberg).

Fig. 44. *Photinus vittiger* (Gyllenhal).

Fig. 45. *Photinus limbipennis* Jacquelin Duval.

Fig. 46. *Photinus sanctus* Ernest Olivier.

Fig. 47. *Photinus albicollis* (Chevrolat).

Holotype, No. 24542, Adjuntas, June, 1915, (Lutz and Mutchler), Coll. Amer. Mus. Nat. Hist. Paratype, Fajardo, February, (Aug. Busck), Coll. U. S. Nat. Mus.

With a longer series, including both sexes, it might be advisable to base a new genus on this remarkable species.

Photinus pallens (Fabricius)

Pyralis.....Patrick BROWNE, 1756, 'Nat. Hist. Jamaica,' p. 431, Pl. XLIV, figs.

9a-b. (Described and figured, but without name.)

Lampyris pullens FABRICIUS, 1798, 'Entom. Syst.,' Suppl., p. 124.

Photinus pallens GEMMINGER AND HAROLD, 1869, 'Catalog. Coleop.,' VI, p. 1643 (The specific name was here emended to read *pallens*). GORHAM, 1898, Proc. Zool. Soc. London, p. 320. E. OLIVIER, 1907, 'Gen. Insect.,' fasc. 53, p. 36, Pl. II, fig. 11.

Photinus melanodactylus E. OLIVIER, 1888, Ann. Soc. Ent. France, (6) VIII, p. 56.

Pygolampis pallens E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 33.

Chalky white, with a yellowish shade. The eyes, a greater part of each antennal joint and the last two joints of the tarsi black. Disk of the pronotum often with a maroon spot. Penultimate ventral abdominal segment deeply emarginate in the male; entire in the female. Length, usually 15 mm.

This species differs from the other species of this group in its large size and parallel form. It also differs in the form of the head, which is very feebly excavated between the eyes in the male and not at all excavated in the female.

Confined to Jamaica. We have seen specimens from the following localities. Coll. U. S. Nat. Mus.: Cinchona, Blue Mts., October, Lucca, October, McCattys' Estate, Catadupa, August, (E. J. Lund); Jamaica, (Hubbard). Coll. British Mus.: no definite locality. Coll. H. F. Wickham: Mandeville, April. Coll. Amer. Mus. Nat. Hist.: Cinchona and Catadupa, March, (J. A. Grossbeck); Montego Bay, December, Georges Valley, November; Bath, January and February, Mandeville, November, December and January, and Cumberland District, December, (F. E. Watson); no definite locality, (Wirt Robinson).

Photinus ceratus, new species

Elongate; pale brown to nearly white. Antennæ filiform, clothed with a coarse and moderately long pubescence. Pronotum rounded in front; basal angles slightly acute; apex and sides with a broad, somewhat coarsely but not closely punctate border; disk finely punctate, more or less marked with darker color; base broadly sinuate and with a row of coarse punctures on the inner margin; pubescence sparse, whitish yellow on the margins and brown on the disk. Elytra generally darker than the pronotum, but only slightly so in most of the males, granulate punctate; sparsely covered with yellowish-white pubescence. Wings dark brown. Underside waxy white, or with a slight brownish tinge, sparsely pubescent. Legs yellowish white, with three, four, or sometimes all of the tarsal joints and apex of tibiae brown. Length, 8-10 mm.

Male.—Front of head between the eyes variable in color from dark brown to yellowish, and spotted with brown; somewhat deeply excavated in the form of a triangle, the apex of which reaches very nearly to the antennal pits. Antennæ usually with all the joints dark brown, slightly paler at the base, but in some specimens one or two of the basal joints are completely pale. Fifth and sixth ventral abdominal segments with a moderately emarginate curve at the apex; there is also an impressed spot on each side of these segments, the one on the fifth being about the middle of the side, and on the sixth above the middle, nearer the base, these impressions are nearly obliterated in one specimen.

Female.—Front of head between the eyes of the same color as in the male, but the excavation is nearly obsolete. Antennæ in all of our specimens brown with base of the joints in some specimens slightly paler. The fourth, fifth and sixth ventral abdominal segments have a curved emargination, very broad and shallow in the fourth and becoming narrower and deeper in the fifth and sixth segments.

Described from six male and nine female specimens collected in Jamaica during November and December, 1919, and January and February, 1920, by F. E. Watson, and two male specimens from the U. S. National Museum.

Holotype male, No. 24563, and allotype female, No. 24564, Cumberland District, Clarendon, December; Coll. Amer. Mus. Nat. Hist. Paratypes Nos. 24565 to 24569 inclusive; Cumberland District, December; Mandeville, November, December and January; Bath, January and February; Georges Valley, November; Coll. Amer. Mus. Nat. Hist. Two paratypes, Montego Bay and Cinchona, (E. J. Lund); Coll. U. S. Nat. Mus.

This species resembles *glaucus* in the general color of the upperside, but the underside has not the darker segments and is in this respect similar to *heterodoxus* but differs from that species in having antennæ and palpi similar to *glaucus*. The dorsal abdominal segments in this species are either white or nearly so, while in all the other species in the *glaucus* group the dorsal segments are dark brown. The general resemblance of this species of *glaucus* may account for the records of that species from Jamaica.

***Photinus glaucus* (G. A. Olivier)**

Lampyrus glauca G. A. OLIVIER, 1790, 'Entomologie,' II, No. 28, p. 13; Pl. I, fig. 4.
Pygolampis glaucus E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 30.

Oblong, greenish, becoming pale testaceous in drying. Pronotum with coarsely punctate margins; disk with a rosy blotch, channeled; disk more finely punctured than the margins. Abdomen and legs whitish. Eyes black. Antennæ and palpi dusky. The head between the eyes is nearly flat in the female; in the male it is excavated, the excavation triangular in outline. The ventral segments in the female are pale, except that the last three are more or less clouded, the sixth conspicuously dark; in the male they are darker, the anterior more or less rosy with the penultimate conspicuously waxy white, and often lying deeply in the excavation of the last segment. Length, 9–10 mm.

Type locality, St. Domingo; also recorded from Cuba (Coll. Pic.) and Jamaica by E. Olivier. We have seen specimens from the following localities in the Dominican Republic. Coll. U. S. Nat. Mus.; San

Francisco Mts., September, (Aug. Busck). Coll. Amer. Mus. Nat. Hist.: Sanchez, May and June, San Lorenzo, June, (F. E. Watson). One specimen from Cuba (Poey Coll.) in the Acad. Nat. Sci. Philadelphia.

The U. S. Nat. Mus. specimens were determined by E. Olivier.

We have numerous specimens allied to *glaucus* before us from Dominica, Porto Rico, and Cuba; the Cuban specimens, following E. Olivier, we identify as *glaucus*; the others we feel obliged to separate as distinct therefrom. We may add that such of these specimens as were in the U. S. Nat. Mus. collection were examined by E. Olivier and returned unnamed.

***Photinus lutzii*, new species**

This species closely resembles *glaucus* but differs in the form of the head between the eyes, the excavation being broader and deeper and with the triangular incision narrowing towards apex, as well as in the color beneath. In the female, the four anterior segments are dark, the remainder pale; in the male, five anterior segments are dusky.

The species is as far as known confined to Dominica, British West Indies, the following localities being represented.

Holotype male, No. 24556; allotype female, No. 24557. Roseau, June, (F. E. Lutz); and paratypes, Nos. 24558 to 24562 inclusive, Roseau, Laudet, and Long Ditton, June, (F. E. Lutz), and Picard, June, (R. W. Miner); Coll. Amer. Mus. Nat. Hist. Paratypes in Coll. U. S. Nat. Mus.: Roseau, (A. H. Verrill); no definite locality, June and July, (H. W. Foote, Yale Exped. 1913). Paratype in Coll. H. F. Wickham: no definite locality, November, (A. F. Porter).

***Photinus dubiosus*, new species**

This species resembles *glaucus* so closely that a statement of the differences is preferable to a detailed description. It is smaller, less elongate, much darker in color beneath. The ventral segments especially differ from these of *glaucus*. The male has six dark segments, of which the basal are slightly rosy, the others becoming darker progressively until the black sixth makes a somewhat strong contrast to the more or less waxy-white terminal segment and the very pale legs. The female, instead of being pale beneath as in *glaucus*, is nearly as dark as the male. Length, 8-9 mm.

Known only from Porto Rico as follows.

Holotype male, No. 24543, and allotype female, No. 24544, from Adjuntas, June; Coll. Amer. Mus. Nat. Hist. Paratypes male and female, Nos. 24545-24555 inclusive, from Adjuntas, Manati, and Arecibo, June, and Mayaguez, July, (Lutz and Mutchler); Mayaguez, January and March, (E. G. Smyth), June, (F. E. Watson); Cagues, Corozol Cave, January, (H. E. Crampton); Aibonito and Maricao, July, (H. G. Barber); Anasco, June, (R. H. Van Zwaluwenburg); Coll. Amer. Mus. Nat. Hist. Paratypes from Arroyo, February, (Aug. Busck), and no definite locality (E. A. Wagner); Coll. U. S. Nat. Mus.

Among the numerous specimens examined, several deformities were found; one, in which the right antenna bore an eight-jointed branch on apex of second joint and a three-jointed branch on apex of eighth joint, is figured (Fig. 30).

Xanthophotis Group

KEY TO SPECIES

1. Elytra only slightly darker than the pronotum; pronotum triangularly produced at the apex, disk with a central dark spot.....*triangularis*.
Elytra much darker than the pronotum.....2.
2. Species not more than 8 mm. in length.....3.
Species 12 to 18 mm. in length.....5.
3. Length less than 3 mm.; thorax without darker markings.....*nanus*.
Length more than 3 mm.....4.
4. Thorax and scutellum pale; female with aborted elytra.....*cubanus*.
Thorax with discal dark spots; scutellum concolorous with the elytra; female normal.....*maritimus*.
5. Length 12 mm.; head deeply excavated between the eyes in the male; elytra light brown.....*ebriosus*.
Length 18 mm.; head not excavated between the eyes in either sex; elytra brown-black.....*xanthophotis*.

***Photinus triangularis* E. Olivier**

Figure 31

Photinus triangularis E. OLIVIER, 1912, Ann. Soc. Ent. Belgique, LVI, p. 25; Rev. sci. du Bourbonnais, XXV, p. 33.

Male.—Testaceous; body beneath except the luminous segments darker. Head excavated between the eyes. Antennæ almost entirely black. Pronotum more triangular than usual; basal angles acute; apical angles obtuse; disk darker than the margins, deeply channeled. Elytral costæ very distinct. The penultimate ventral segment of the abdomen is emarginate, though not deeply, at the apex. Length, 13 mm.

Female.—Unknown.

This species, by the form of the thorax, approaches *Pyractomena*. The excavation of the head between the eyes is not as deep as in many species of *Photinus*. The five specimens before us range from very pale whitish to yellowish brown and the disk of the pronotum is very dark in some specimens to quite pale in others, a specimen from Culebra being the darkest. The disk of the thorax and the body beneath, excepting the last two (including the eighth) abdominal segments, are very dark brown.

The type locality of this species is El Yunque, Porto Rico. We have seen five paratypes from there, also specimens from Culebra, February, (Aug. Busck); Coll. U. S. Nat. Mus.

Our figure was drawn from paratype specimens.

***Photinus nanus* (E. Olivier)**

Figure 32

Pygolampis nanus E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 29.

Pronotum reddish yellow, rugosely punctate at apex. Scutellum yellow. Elytra black with an extremely narrow sutural yellow border. Length, 2 mm.

This is the smallest species of *Photinus* in the West Indies.

Described from Cuba. We have seen three female specimens: two, Cayamas, Cuba, May 6th and 18th, (E. A. Schwarz), Coll. U. S. Nat. Mus., determined by E. Olivier; and one, Cuba, (Poey Coll. No. 1021), Coll. Acad. Nat. Sci. Philadelphia.

***Photinus cubanus*, new species**

Figure 33

Male.—Oblong oval. Head between the eyes very deeply excavated, yellowish; eyes very large, black. Antennæ very dark brown, very moderately compressed. Pronotum yellow, rounded in front, punctate, more distinctly on the disk; disk rather feebly channeled. Scutellum yellow. Elytra brown, separately rounded at the apex, arcuate at the sides, chagrined with two or three feeble costæ. Body beneath yellow; tibiæ, tarsi and the three middle segments of the abdomen darker; penultimate segment arcuately emarginate at the apex.

Female.—(Fig. 33). Elytra, very short and dehiscent, covering only two segments of dorsum, which are modified to receive them on either side of a Λ -shaped elevation; they differ from the male elytra, also, in being margined with yellow. Head black, not excavated between the eyes; eyes small. Abdomen extending far beyond the elytra.

Length, male and female, 8 mm.

Holotype male: Cuba, from Poey Collection; Coll. Acad. Nat. Sci. Philadelphia. Allotype female: Cuba, from Poey Coll., No. 1022; Coll. Acad. Nat. Sci. Philadelphia. Paratype male; from Nueva, Gerona, Isle of Pines, July 4, 1900, (Palmer and Riley, No. 526); Coll. U. S. Nat. Mus.

The male resembles the Jamaican *P. suavis* and *P. maritimus* in form and color but differs greatly in structure. The female allotype has become somewhat distorted in drying.

The paratype specimen was borrowed from the U. S. Nat. Mus. by E. Olivier and returned by him without identification.

***Photinus maritimus*, E. Olivier**

Photinus maritimus E. OLIVIER, 1899, Bull. Soc. Zool. France, XXIV, p. 92.

Photinus contemptus E. OLIVIER, 1907, 'Gen. Insect.,' fasc. 53, p. 34.

Pygolampis maritimus E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 29.

Pygolampis contemptus E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 30.

Head black, sometimes varying to light brown. Antennæ, tibiæ and tarsi, brownish. Pronotum strongly punctate, yellow, with a brown spot of variable size on the disk. Scutellum and elytra varying from pale brown to blackish brown. Apex on scutellum sometimes slightly yellow. Underside whitish yellow; first four abdominal segments often brown. Length, 7–8 mm.

Male.—With head between the eyes moderately excavated. Last ventral segment of abdomen short, emarginate at the middle.

Female.—With head between the eyes nearly flat. Last ventral segment of abdomen triangular, incised.

Described from, and we believe confined to, Jamaica. We have seen specimens from the following Jamaican localities. Coll. U. S. Nat. Mus.: Montego Bay, June, Lucca, August, Cinchona, (E. J. Lund); no definite locality, (W. Schaus and H. G. Hubbard). Coll. Acad. Nat. Sci. Philadelphia and Coll. British Mus.: no definite locality. Coll. Amer. Mus. Nat. Hist.: Mandeville, November, December and January, Bath, January; Dunrobin District, Montego Bay, Constant Spring, Kings House District, and Cumberland District, December, (F. E. Watson); Montego Bay, March and Hope Gardens, February, (J. A. Grossbeck).

We have a series of more than 150 specimens from the above localities and can see no way of separating *maritimus* from *contemptus*, there being intermediates between the lighter and darker forms which, according to the determination by E. Olivier of the specimens in the U. S. Nat. Mus. collection, is the only difference between these two species. We have, therefore, concluded to consider *contemptus* a synonym, it being merely a paler form of this species.

Photinus ebriosus E. Olivier

Photinus ebriosus E. OLIVIER, 1907, 'Gen. Insect.,' fasc. 53, p. 35.

Pygolampis ebriosus E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 30.

Prothorax yellowish, with the disk largely covered by a brown spot. Elytra clear brown. Body beneath yellowish white. Length, 12 mm.

Male.—With head deeply excavated between the eyes. Last three ventral segments of the abdomen brilliant white, impressed or unipunctate on each side and emarginate at middle of the posterior margin; last segment very short.

Female.—With head very feebly excavated between the eyes and paler in color than the male. Last four ventral segments of the abdomen whitish yellow, the last segment triangular, incised.

Described from Jamaica and we believe confined to that island. We have seen specimens from Bath, January, and Mandeville, December, (F. E. Watson), also Cinchona; Coll. Amer. Mus. Nat. Hist.

Photinus xanthophotis (Gosse)

Figure 34

Pygolampis xanthophotis GOSSE, 1848, Ann. Mag. Nat. Hist., (2) I, p. 268; E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 30.

Photinus opulentus E. OLIVIER, 1907, 'Gen. Insect.,' fasc. 53, p. 36.

Large, thick, trapezoidal, oblong, broad. Head in male and female very feebly impressed, ornamented with yellow spots. Prothorax yellowish brown with a darker spot on the disk. Elytra and scutellum brown-black. Abdomen of a paler color with the last three or four segments brilliant waxy white. Length, 18–20 mm.

The original description by Gosse reads as follows: "Length 9 lines [18 mm.] breadth $3\frac{3}{4}$ lines [7.5 mm.]. Elytra smoke-black; thorax drab,

the central portion dark brown; abdomen pale, the last three or four segments cream white. Specimens in British Mus."

This species was originally described from Jamaica and we believe it to be confined to that island. We have seen specimens from the following localities. Coll. U. S. Nat. Mus.: Montego Bay, June, (E. J. Lund). Coll. Acad. Nat. Sci. Philadelphia: Bath. Coll. Amer. Mus. Nat. Hist.: "Jamaica," July, (Wirt Robinson).

Pantoni Group

KEY TO SPECIES

1. Pronotum with dark spot or markings on the disk or apex.....2.
Pronotum yellow or rosy, margins generally paler.....5.
2. Pronotum with dark spot on apical portion, length 4 mm. or less....*pygmæus*.
Length 8-10 mm.....*manni*.
Pronotum with dark spot on disk, length 6-15 mm.....3.
3. Discal dark spot on pronotum longitudinally divided in the middle, with pale line, length 7-9 mm.....*pantoni*.
Discal dark spot on pronotum not longitudinally divided.....4.
4. Discal spot on pronotum more or less elongate, margins grayish brown, basal angles slightly paler, length 6 mm.....*suavis*.
Brownish gray with margins of pronotum more or less whitish; outer margins of elytra, especially towards the apex, black; length 12 to 15 mm. (from description only).....*elongatus*.
5. Pale margins of the elytra narrow; female with normal elytra....*apoplecticus*.
Lateral pale margins of the elytra broader than the sutural; female with aborted elytra.....*simplex*.

***Photinus pygmæus* E. Olivier**

Figure 35

Photinus pygmæus E. OLIVIER, 1899, Bull. Soc. Zoöl. France, p. 92.

Pygolampis pygmæus E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 29.

Antennæ long, thick. Prothorax narrowed in front and feebly angulate at apex, yellow, or rosy bordered with yellow, with a small black spot reaching the apex. Scutellum black. Elytra black, rugose, finely margined with yellow; the apical angle entirely black. Body beneath, leathery brown; the last two ventral segments brilliant white. The excavation of head between the eyes cannot be satisfactorily observed in the few specimens before us, but it is apparently not as pronounced as usual in the male. Length, 3-3.5 mm.

The name used in the original description of this species was spelled *pygmæus* but in the list of 'Espèces et genres Nouveaux,' 1899, Bull. Soc. Zoöl. France, XXV, p. 244, Olivier emended it to read *pygmæus*. This emendation was also used by him in 1912.

Described from Cuba. We have seen specimens from Cayamas, Cuba, May and June, (E. A. Schwarz); Coll. U. S. Nat. Mus., and Soledad, Cuba, June, (Barnum Brown); Coll. Amer. Mus. Nat. Hist.

Photinus manni, new species

Figure 36

Male.—Elongate, parallel. Eyes large. Head black, moderately excavated between the eyes. Antennæ black, compressed. Pronotum rounded in front, concealing the head; explanate margins punctate; disk impunctate, finely channeled, rosy-testaceous with a dark transverse subapical spot. Elytra separately rounded at the apex, chagrined with one or two costæ, blackish. Each elytron narrowly margined with yellow, except at base. Body beneath and legs blackish. Last three segments of abdomen luminous, irregularly impressed, feebly emarginate at the middle. Length, 8–10 mm.

Female.—Unknown.

Described from Bahamas, Mangrove Cay and Andros Island, May and June, 1917; W. M. Mann, collector.

Holotype, No. 24589, Mangrove Cay and six paratypes, No. 24590; Coll. Amer. Mus. Nat. Hist. One paratype has been deposited in the U. S. National Museum.

This species resembles *P. collustrans* LeConte, from Texas and Florida, in size and coloration but differs in the flattened antennæ.

Photinus pantoni E. Olivier

Figure 37

Photinus pantoni E. OLIVIER, 1907, 'Gen. Insect.', fasc. 53, p. 36.

Pygolampis pantoni E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 32.

Oblong, elongate, brown. Head of the male with a much deeper excavation between the eyes than that of the female. Antennæ annulate. Pronotum yellowish; disk dark brown, the dark color generally divided by a paler, longitudinal, median line. Elytra brown, with the suture narrowly and the external margin widely bordered with yellowish white. Body beneath more or less blackish, except last abdominal segment whitish. Length, 7–9 mm.

The description given by E. Olivier refers to mature specimens; many of ours are immature and, in such, the feeble development of the brown color is hard to see.

It is interesting to note that in the specimens examined by us the ventral abdominal segment preceding the last, or palest segment, is often the darkest of all.

Described from and, as far as known, confined to Jamaica. We have seen specimens from the following locations. Coll. U. S. Nat. Mus.: Cinchona, Blue Mts., June and October; Catadupa, McCatty's Estate, August, (E. J. Lund). Coll. Acad. Nat. Sci. Philadelphia: Jamaica. Coll. Amer. Mus. Nat. Hist.: Cinchona, February, (J. A. Grossbeck); Cumberland District, December, and Bath, January, (F. E. Watson).

Photinus saavis E. Olivier

Figure 38

Photinus saavis, E. OLIVIER, 1907, 'Gen. Insect.,' fasc. 53, p. 38.*Pygolampis saavis* E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 28.

Opaque black. Pronotum and elytra margined with yellowish white. Scutellum, legs, and abdomen whitish. Male with very deep excavation between the eyes. Length, 6 mm.

In this species especially, the variation in color due to immaturity or lack of pigment is liable to be puzzling, for in the many specimens collected by Mr. Watson, while the majority might be described as "opaque black," there are a number that are much paler in color and a few that are distinctly pale brown. The species has, however, a short, ovate form that is unmistakable.

Described from and, as far as known, confined to Jamaica. We have seen specimens from the following localities. Mandeville, November, December, and January, Dunrobin District, December, Montego Bay, December, and Bath, January, (F. E. Watson); Coll. Amer. Mus. Nat. Hist.

Photinus elongatus (Motschulsky)*Ellipolampis elongatus* MOTSCHULSKY, 1854, 'Etudes Entom.,' II, p. 35 [1853, idem, I, p. 36, no description].*Photinus elongatus* GORHAM, 1896, Proc. Zool. Soc. London, p. 320.*Ellipolampis elongatus* E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 34.

We have not seen any specimens which agree with Motschulsky's description of this species and have, therefore, followed earlier authors and placed the species in the genus *Photinus*. The following translation of the descriptions of Motschulsky's genus *Ellipolampis* and species *elongatus* (this being his type of the genus) may be useful in identification.

Ellipolampis M., n. g.—Shape elongate-ovate, a little narrowed behind, rather convex. Pronotum halfmoon-shaped, raised in the middle; margined and often marked with two translucent spots as in the *Lychnuris*. Antennæ not longer than half the body, filiform; first joint as long as the third or a little longer; the fourth and following joints of equal length, a little compressed. Scutellum broadly, arcuately truncate. Elytra with the veins more or less visible. First joint of the hind tarsi not longer than the two following together, the fourth shorter and bilobate. Last dorsal segment of the abdomen rounded; the last ventral segment broadly emarginate; the penultimate sinuate in the middle. Lobes not visible. Type: *Ellipolampis elongata* Mannerheim, from the Island of St. Thomas in the Antilles. *Ellipolampis elongata* Mannh.; rather regularly ovate and distinctly impressed along each lateral margin. Brownish gray with the margins of the pronotum and of the elytra¹

¹The margins of the elytra here referred to must mean the sutures, as in the following part of this sentence the outer margins of the elytra are described as blackish.

more or less whitish; the outer margins of the elytra, especially toward the apex, the wings, the legs, the antennæ and the underside of the body, blackish. Eyes black. The entire insect pubescent above. Length, 6–7½ lines; width, 2⅓–3⅓ lines. Antilles.

Photinus apoplecticus E. Olivier

Figure 39

Photinus apoplecticus E. OLIVIER, 1899, Bull. Soc. Zool. France, XXIV, p. 92.

Pygolampis apoplecticus E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 28.

Male.—Head black; excavation between the eyes deep. The eyes are very large, spherical objects, that seem to compose nearly the entire head. Pronotum testaceous, elongate, wide, with the sides parallel at base, slightly wider in front of the base, and suddenly rounding at the apex. Elytra brown, finely bordered with whitish yellow. Underside of body black; abdominal segments brownish, bordered with testaceous; last segment yellow. The female is unknown to us. Length, 5–6 mm.

We have seen specimens from the following localities. Coll. U. S. Nat. Mus.: three specimens, Cayamas, Cuba, March, May and June, (E. A. Schwarz). Coll. Acad. Nat. Sci. Philadelphia: one specimen, Cuba, (Poey Coll. 1631). Coll. Carnegie Mus.: one specimen, Nueva Gerona, Isle of Pines, June.

The National Museum specimens were determined by E. Olivier.

Photinus simplex (E. Olivier)

Figures 40 and 41

Pygolampis vitiosus var. *simplex* E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 28.

Male.—(Fig. 40). Oblong, parallel, testaceous. Antennæ brown, basal joint testaceous. Head moderately excavated between the eyes, the excavation granulate. Pronotum rounded in front, coarsely punctate at apex and sides, more finely on the disk; disk channeled, rosy. Elytra covering the abdomen, black; margins, excepting the base, bordered with testaceous. Body beneath and legs testaceous; abdomen pale brown, last three segments white. Length, 5–6 mm.

Female.—(Fig. 41). Slightly paler in color than the male. Head feebly excavated between the eyes. Elytra less than one-half as long as the abdomen. Otherwise as in the male. Length, 5 mm.

Allotype female, No. 25077, Coll. Amer. Mus. Nat. Hist.: Laudet, Dominica, June 12, 1911, collected by F. E. Lutz.

The male of this species was described as from San Domingo, perhaps erroneously, by E. Olivier. We have seen specimens from the following localities. Coll. U. S. Nat. Mus.: Dominica, March, (H. G. Hubbard); June and July, (H. W. Foote, Yale Exp., 1913). Coll. Amer. Mus. Nat. Hist.: Laudet, Roseau and Long Ditton, Dominica, June, (F. E. Lutz); South End of St. Croix, (R. W. Miner).

The specimens in the U. S. National Museum were determined by E. Olivier as *vitiosus* var. *simplex* in 1911, which was prior to his descrip-

tion of the variety. We believe these specimens, which were all males, were all or part of the material on which he based his reasons for making this new variety and the locality San Domingo was an error in copying the locality record. The female in the American Museum collection is doubtless conspecific. It has aborted elytra and, as this character apparently does not occur in the species *vitiosus*, we have raised the variety to specific rank. The species bears a closer resemblance to *apoptecticus* from Cuba than to *vitiosus*.

Nefarius Group

There are five species listed by Ernest Olivier, 1912, Rev. sci. du Bourbonnais, XXV, pp. 25-27, which would come in this group, but we have concluded that only three of these are really species, the others being merely extremes in size or due to coalescence of basal and apical elytral spots, or the breaking up of the elytral bands into basal and apical spots, in markings. There has also been considerable difference of opinions in the citations of a species described under the name *blandus* by Motschulsky and one described from Cuba by Jacquelin Duval under the same name. We believe that the species described by these two authors are entirely different. The following list of somewhat complicated citations will show where the Duval species has been considered a synonym of the Motschulsky species and where E. Olivier, possibly through neglect or for convenience, has entirely ignored the Duval species in two of his citations and the Motschulsky species in a later paper on the West Indian Lampyridæ.

Pygolampis blandus DEJEAN, 1837, 'Catalog. Coleop.,' III, p. 115 (without description); locality, Cuba.

Pygolampis blanda Dejean. MOTSCHULSKY, 1854, 'Etudes Entom.,' p. 25; locality, St. Domingo. Size "Long, $2\frac{3}{4}$ lines, large, $1\frac{1}{4}$ lines."

Photinus LACORDAIRE, 1857, 'Hist. Nat. Insect. (Coléoptères),' IV, p. 323. With the following note referring to the Motschulsky species: "Le *Pyg. blanda* de Dejean, petite espèce du Bresil que M. de M. place dans ce groupe. A les deux derniers segments abdomineux et le facies d'une *Ellipolampis*." This author apparently believed the type locality of the species to be San Domingo, Brazil.

Photinus blandus JACQUELIN DUVAL, 1857, in Ramon de la Sagra's 'Hist. Phys. Polit. et Nat. de L'île de Cuba,' Anim. Artic., p. 87. Locality Cuba, Coll. Guérin-Ménéville. Size "Long, $6\frac{2}{3}$ -11 millim."

Photinus blandus Motschulsky. GEMMINGER AND HAROLD, 1869, 'Catalog. Coleop.,' VI, p. 1641; locality, Cuba. These authors cite Duval's species as a synonym and also refer to Dejean's and Lacordaire's citations.

Photinus blandus Jacquelin Duval. GUNDLACH, 1894, 'Contribucion à la Entom. Cuba,' III (?), part 4, p. 252. Cuba, with note by Gundlach "Se encuentra en toda la isla."

- Photinus blandus* Motschulsky. GORHAM, 1880, Trans. Ent. Soc. London, p. 25. "Cuba: Mus. Brus. [Guérin-Mén.]; Coll. Chev." This citation probably refers to the Duval species, it being from Guérin-Ménéville.
- Photinus blandus* Motschulsky. E. OLIVIER, 1907, 'Gen. Insect.,' fasc. 53, p. 34 (sp. 19). Locality St. Domingo. No reference is made to the Duval species in synonymy or otherwise.
- Photinus blandus* Motschulsky. E. OLIVIER, 1910, 'Coleop. Catalog.,' part 9, p. 27. Locality St. Domingo. This catalogue, supposedly containing a complete bibliography, does not mention the Duval species.
- Pygolampis blandus* Jacquelin Duval. E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 27. Locality Cuba. This paper, which is a review of the West Indian Lampyridæ, does not mention the Motschulsky species in synonymy or otherwise.

We have not seen any specimens which agree with Motschulsky's description of *blandus*, which, according to Lacordaire, is a Brazilian insect, and we are inclined to accept it as such, there being no authentic records of it having been found in Santo Domingo (Hispaniola).

Motschulsky's species is generally smaller and the elytral markings differ from the Duval species; for this reason and the fact that they were described from different places, we believe they are not synonymous. The name being used by Motschulsky prior to Duval would naturally cause *blandus* Duval to be a homonym and another name must be used for the Cuban species. The name which should be used, according to our identification of the species, in *nefarius* E. Olivier, as in our study of the Cuban specimens which belong in this group we have found intermediates between the smaller specimens which were determined as *blandus* Jacquelin Duval and the larger ones (all of which are females), determined as *nefarius* E. Olivier. These determinations were made by the author of the latter species. We also consider that the specimens in the U. S. National Museum collection which were determined by E. Olivier as "*4-notatus* Motschulsky" are extremes in markings (with the sinuate elytral line broken into apical and basal spots) and should be placed under *nefarius*.

In our studies of this group we have seen many convincing proofs of the tendency of the elytral bands to break up into more or less elongate basal and apical spots, or, if one looks at it the other way, of the spots coalescing and forming a more or less continuous band. With this tendency in mind we have carefully read over the Castelnau description of *quadrimaculatus* and the Motschulsky descriptions of *interrupta* and have concluded that they are synonymous. Taking *quadrimaculatus* Castelnau as the type, which shows (according to description) the bands broken up into spots, we have *interrupta* Motschulsky with the spots forming more or less continuous bands.

We have not seen any specimens which agree with the description of *quadrinotata* Motschulsky but we believe this to be a distinct species more closely related to *nefarius* than to *quadrinotata*.

We will not attempt to form a key to the above species but merely note that in *quadrinotata* the spots or bands do not reach the margins of the elytra, but in *nefarius* and *quadrinotata* they extend to the apical margins. We have also included two other species in this group, namely *commissus* and *discoideus*, which may be readily separated from the others as follows:

P. commissus.—Elytra with outer pale margin, at most, narrowly sinuate at middle, sutural pale margin broad and divided at the middle and subapical part into a more or less irregular sub-basal and subapical spot by an inward prolongation of the dark discal stripe. Thorax with a dark discal spot, sometimes longitudinally divided at the middle by a paler color.

P. discoideus.—Elytra margined with yellow and with the pale yellow color extending over, approximately, the basal third. Thorax pale yellow.

Photinus nefarius (E. Olivier)

Photinus blandus [preoccupied] JACQUELIN DUVAL, 1857, in Ramon de la Sagra's 'Hist. Phys. Polit. et Nat. de L'île de Cuba,' Anim. Artic., p. 87. GUNDLACH, 1894, 'Contribucion à la Entom. Cuba,' III (?), part 4, p. 252.

Pygolampis nefarius E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 26.

Pygolampis blandus E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 27.

The following is a translation of Duval's original description and discussion of *blandus*.

Flavo-testaceous. Head brown. Antennæ brown, base paler or testaceous. Thorax nearly semicircular; behind the middle rosy, slightly variegated. Elytra closely punctate; brown with a broad flavo-testaceous sutural and lateral line, often slightly dilated behind the middle which is abbreviated or occasionally more or less broadly joined. Penultimate abdominal segment brown; ultimate pale whitish. Femora flavo-testaceous; tibiæ and tarsi brown. Length, 6.66–11 mm.

Body elongate-oblong, dull, clad with a very fine and very short pubescence of a yellowish gray. Head brown, sometimes testaceous and brown in the center only; eyes black. Antennæ brown; testaceous or of a lighter brown at the base. Prothorax of a flavous testaceous, sometimes uniform and sometimes varied with rosy behind; almost semicircular; sides and anterior margin continuously rounded; posterior angles right; above densely punctured; punctures finer toward the middle of the disk posteriorly. Scutellum of a flavous testaceous. Elytra brown; showing on their suture a vitta shortened posteriorly and in the majority of cases a little dilated behind, and quite a wide lateral border starting from the base, widening slightly behind and ending at the posterior two-thirds or three-quarters, of a flavous testaceous, these

two longitudinal bands sometimes reunited, toward their posterior part, by the interruption more or less wide of the brown part at the middle; about of the width of the prothorax at their base; widening slightly behind, showing their greatest width toward the posterior two-thirds, contracted thereafter gradually toward the extremity, where they are each rounded; above very densely punctured; slightly chagrined, showing two longitudinal lines that are slightly raised, very slightly marked, arranged altogether like the two yellow longitudinal lines of *Ph. gamma*. The body beneath flavous testaceous; penultimate, or the two segments before the last abdominal segment brown; the last segment a pale white. Femora flavous testaceous; tibiae and tarsi brown. Collection of M. Guérin-Ménéville.

We have also made the following translation of E. Olivier's description and discussion of *nefarius*, which in our opinion agrees with Duval's description in all of the essential points.

Elongate rufous. Antennæ black; the first two joints rufous. Prothorax in front attenuate and angulate with margin rugoso-punctate; red; disk rosy; sulcate. Scutellum testaceous; apex truncate. Elytra not broader than prothorax; oblong-elongate, punctate, costate, rufo-testaceous, with two black maculations on each, one basal triangular prolonged to beyond the middle, covering the suture but not the margin, the other ones smaller, these two maculations sometimes joined. The two penultimate ventral segments black; ultimate and pygidium waxy. Tibiæ and tarsi black. Length, 12 mm.

Elytra oblong, elongate, reddish testaceous; each showing two black spots, one triangular starting from the base and prolonged to about the middle of the elytral length always leaving the suture narrowly and the margin more widely bordered with testaceous. The other spot covers the apical angle of which it colors the suture and the marginal side but not reaching past one-third the length of the elytra.

In some specimens the two spots are united by a narrow stripe which gives them a resemblance to *P. divisus* Gemm. but they can always be distinguished by the apical spot entirely covering the angle including the margin and suture; by the prothorax being much more elongate and angulate in front; by the fifth and sixth segments of the abdomen being black; by the darker color of the tibiae and tarsi; etc., etc.

Recorded from Cuba. We have seen specimens as follows. Coll. U. S. Nat. Mus.: Cayamas, May, (E. A. Schwarz); El Guama, March, (Palmer and Riley); Havana, (Roig). Coll. Acad. Nat. Sci. Philadelphia: "Cuba," (Poey Coll.), Coll. Amer. Mus. Nat. Hist.: Baños de Ciego, Montero, (Barnum Brown); Santiago de Cuba.

Photinus quadrimaculatus (Castelnau)

Photinus quadrimaculatus CASTELNAU, 1840, 'Hist. nat. et icon. Coléop.,' I, p. 269.

Pygolampis quadrimaculata MOTSCHULSKY, 1854, 'Etudes Entom.,' III, p. 24. E

OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 25.

Pygolampis interrupta MOTSCHULSKY, 1854, 'Etudes Entom.,' III, p. 24.

Photinus divisus GEMMINGER, 1870, 'Coleop. Hefte,' VI, p. 119. E. OLIVIER, 1910, 'Coleop. Catalog,' part 9, p. 28.

Pygolampis divisus E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 25.

The translation of Castelnau's description of this species is as follows:

Length $4\frac{1}{2}$ lines, width $1\frac{1}{4}$ lines. Yellow, with a rounded blackish spot on the humeral angle, and another much larger and oval near the extremity of each elytron. Extremity of legs and antennæ black, the latter with the first joint yellow; the two last abdominal segments phosphorescent. Santo Domingo.

We have seen specimens from the following localities: Port au Prince, Haiti, (R. J. Crew), Coll. H. F. Wickham; and San Domingo City, Dominican Republic, December or January, Coll. Amer. Mus. Nat. Hist.

In one specimen from Port au Prince the apical elytral spots extend to the apical margin.

***Photinus quadrinotatus* (Motschulsky)**

Pygolampis quadrinotata MOTSCHULSKY, 1854, 'Etudes Entom.,' III, p. 24. E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 25.

The following is a translation of Motschulsky's original description of this species:

Size and form of *L. splendidula*, but a little more oval and the thorax more elongate. The color testaceous; eyes, ten last joints of antennæ, femur, tarsi, and four spots placed in the form of a cross on the elytra brownish black, a well-defined line separates the two large spots which occupy the base also the two small ones which reach the extremity of the elytra. Length, $3\frac{1}{2}$ lines, width $1\frac{1}{2}$ lines. Antilles (St. Domingo).

As said before, we have seen no specimens which agree with this description.

***Photinus commissus* E. Olivier**

Figure 42

Photinus commissus E. OLIVIER, 1907, 'Gen. Insect.,' fasc. 53, p. 34.

Pygolampis commissus E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 28.

Elongate, subparallel. Antennæ and mandibles flavous. Prothorax round in front; closely punctate; disk marked with a quadrate dark spot. Scutellum piceous. Elytra scarcely wider than the thorax. External margin flavous; suture broadly flavous, divided about the central part by a somewhat irregular dark line. The body beneath and legs flavous. Length, 5-7 mm.

A pretty little species, distinct by the pattern of the elytra and pale color of parts beneath. The brown spot of prothorax is sometimes divided by a narrow yellow line. The discal dark part of the elytra in some specimens is reduced to a narrow line, which is dilated at middle and has a transverse oblique branch reaching the suture; in some specimens it is interrupted beyond the branch.

Described from Jamaica and, we believe, confined thereto. We have seen specimens from the following localities. Coll. U. S. Nat. Mus.: Salt Pond, Montego Bay; June, (E. J. Lund). Coll. British Mus.:

"Jamaica." Coll. H. F. Wickham; Mandeville, April, (Van Duzee). Coll. Amer. Mus. Nat. Hist.: Mandeville, November, December and January, and Montego Bay, December and January, (F. E. Watson); Montego Bay, March, (J. A. Grossbeck).

The U. S. National Museum specimens were determined by E. Olivier.

Photinus discoideus (Sahlberg)

Figure 43

Lampyris discoideus SAHLBERG, 1823, 'Peric. Entom.,' p. 3, Pl. I, fig. 1. THON, 1829?, 'Entomol. Arch.,' II, pp. 13 and 80, Pl. II, fig. 1.

Photinus discoideus GORHAM, 1880, Trans. Ent. Soc. London, p. 25. FLEUTIAUX AND SALLÉ, 1889, Ann. Soc. Ent. France, (6) IX, p. 416.

Pygolampis discoideus E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 27.

Yellow. Elytra, each with an elongate, apical brown spot on the disk, which extends to the basal third, but not reaching either the suture or external margin. Length, 10 mm.

Fleutiaux and Sallé (1889) record this species from Camp Jacob, Guadeloupe, January and March, on flowers and leaves; Gourbeyre, February; Gommieux, April, (Delauney); very common everywhere, (Vitrac); Common name, "Mouche à feu." We have seen specimens from Guadeloupe in the Coll. U. S. Nat. Mus., 4000 ft. elev., July 30, (Aug. Busck), and in the Coll. Fleutiaux.

The specimens in both of the above collections were determined by E. Olivier.

Vittiger Group

KEY TO THE SPECIES

1. Pronotum with a darker discal spot.....2.
Pronotum without a dark discal spot.....4.
2. Discal spot on pronotum more or less rounded; elytra with pale discal vitta, distant from the suture (dark specimens with the discal vitta, nearly obliterated var. *infernus*, or paler specimens in which the vitta is obsolete or barely preceptible var. *littoralis*).....*vittiger*.
Discal spot on pronotum more or less elongate, or squarely outlined.....3.
3. Discal spot on pronotum more or less elongate, elytra margined with paler and with paler discal vitta.....*limbipennis*.
Discal spot on pronotum more or less squarely outlined and longitudinally divided in the middle with paler color; elytra margined with paler and with more or less incomplete paler discal vittæ.....*singularis*.
4. Pronotum yellow; elytra brown entirely bordered with whitish yellow and with median yellow vitta, reaching neither base nor apex (from description only).
vitiosus.
Pronotum rosy, margined with yellow; elytra dark with paler external margins and subsutural vitta.....*vittatus*.

Photinus vittiger (Gyllenhal)

Figure 44

Lampyris vittigera GYLLENHAL, 1817, in Schönherr's 'Syn. Insect.,' I, part 3, appendix, p. 21.

Photinus vittiger MOTSCHULSKY, 1853, 'Etudes Entom.,' II, p. 41; GORHAM, 1880, Trans. Ent. Soc. London, p. 25; 1898, Proc. Zool. Soc. London, 1898, p. 320.

Pygolampis vittiger E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 31.

Oblong, elongate. Antennæ serrate, longer than half the body. Prothorax yellow; margins strongly punctate; disk brown, channeled. Scutellum triangular, yellow. Elytra elongate, subparallel, brown, with the suture, external margin, and a median vitta yellow; the vitta starts at the callus, varies in length, but rarely reaches the apical angle. Body beneath and legs pale testaceous, sometimes brownish; ventral abdominal segments annulate with brown.

Length, according to Motschulsky, $3\frac{1}{2}$ lines, but the specimens which were loaned us for study by M. Ed. Fleutiaux measure 12 mm. in length and were determined by E. Olivier as this species.

The variations in the development of the elytral vittæ are the foundation for the varieties named below.

Rev. T. A. Marshall, 1878, Trans. Ent. Soc. London, Proc., p. xxx, says of this species: "The so-called 'vers luisant' of Martinique. Both sexes shine equally, and exhibit a beautiful effect, like falling stars, among the trees on the mountains. See Newman, Zoölogist, p. 42."

E. Olivier's record for this species is "Martinique; Fort-de-France, Saint-Pierre (coll. Fleutiaux)."

The above locality record is the same as the locality on the specimens loaned to us by M. Ed. Fleutiaux.

Photinus vittiger var. littoralis (Motschulsky)

Ellipolampis littoralis MOTSCHULSKY, 1853, 'Etudes Entom.,' II, p. 35.

Photinus littoralis GORHAM, 1880, Trans. Ent. Soc. London, p. 25; 1898, Proc. Zool. Soc. London, p. 320.

Pygolampis littoralis E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 31.

Oblong, elongate. Prothorax yellow, disk darker; marginal edge more elevated than in the species. Scutellum yellow, triangular. Elytra brown, bordered with yellow, narrowly on the suture, more widely on external margin. Male mesosternum and first segments of abdomen nebulous, the last three brilliant yellowish-white; female, beneath, entirely whitish yellow. Length, 8 mm.

Through the kindness of M. Ed. Fleutiaux, we have been able to examine a specimen from Saint-Pierre, Martinique, which was determined as this variety (species) by E. Olivier. It measures 12 mm. in length and seems to be *vittiger* lacking the vitta. There are also six specimens from Trinidad in the U. S. National Museum collection which were determined by E. Olivier as *littoralis*. These specimens do not agree

with the above description, but rather seem related to *glaucus*. They are 10 mm. in length.

The locality given by Motschulsky is Martinique; and by E. Olivier, Saint-Pierre and Trinité, Martinique.

***Photinus vittiger* var. *infernus* (E. Olivier)**

Pygolampis infernus E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 31.

A translation of E. Olivier's remarks on this variety is as follows.

A fine species, remarkable for its color which is entirely black except following parts, viz.: mandibles; prothoracic border, widely at sides, narrowly along the base; extreme apex of scutellum; sutural edge and margin of elytra and a short vitta at middle; the coxæ; internal part of femora; and a narrow hind margin of ventral segments. Length, 13-14 mm. Martinique, Mt. Pelée (Coll. Fleutiaux).

Through the kindness of M. Ed. Fleutiaux, we have been able to study the specimens determined by E. Olivier. They seem to be dark forms of *vittiger*. The color above and beneath is darkest in var. *infernus* and in one of the types, loaned by M. Ed. Fleutiaux, its darkening has nearly obliterated the discal vitta of the elytra. The color, on the contrary, is lightest in var. *littoralis*, the vitta being barely perceptible. It is in this form only that the entirely white abdomen of the female is found, so that it is quite different in appearance, but we, nevertheless, believe both to be varieties of *vittiger*.

***Photinus limbipennis* Jacquelin Duval**

Figure 45

Photinus limbipennis JACQUELIN DUVAL, 1857, in Ramon de la Sagra's 'Hist. Phys. et Nat. de L'île de Cuba,' Anim. Artic., p. 86. GORHAM, 1880, Trans. Ent. Soc. London, p. 25. GUNDLACH, 1894, 'Contribucion à la Entom. Cuba,' III (?), part 4, p. 252. E. OLIVIER, 1894, Ann. Soc. Ent. France, LXIII, p. 24. GORHAM, 1898, Proc. Zool. Soc. London, p. 320.

Heterophotinus limbipennis E. OLIVIER, 1907, 'Gen. Insect.,' fasc. 53, p. 33; 1912, Rev. sci. du Bourbonnais, XXV, p. 33.

Male.—Head with a deep excavation between the eyes. Pronotum rounded, testaceous; disk dark brown, with a small rosy patch on each side at the base. Elytra brown, slightly darker at the base; margined, except at the base, with testaceous. Length, 8-9.5 mm.

We have not seen the female of this species but E. Olivier says that the wingless female is entirely yellowish-testaceous, with the thorax rosy and a small brown spot at the base of the abbreviated elytra. The elytra are shorter than the metathorax.

The male of this species was described by Jacquelin Duval, but the female was first recognized by E. Olivier (1894).

All of the locality records merely give "Cuba," Gundlach recording it as found throughout the island. We have seen one male specimen from Cayamas, Cuba, December 30, (E. A. Schwarz), Coll. U. S. Nat. Mus. This specimen was determined by E. Olivier as this species.

***Photinus singularis*, new species**

Female.—Elongate, brown. Head with impressions at front ending in a somewhat long pointed angle, deeper than usual in the females of this genus; front part between the eyes and central impressed portion between the antennæ and eyes blackish brown; sides of front adjacent to the eyes and above the antennal pits pale red; mouth-parts yellow; palpi with apical joint darker. Pronotum coarsely and somewhat closely punctate; margined at sides and front with yellow; disk with large somewhat rectangular dark spot divided in the middle and bordered at the sides with reddish yellow; pubescence sparse yellow, very indistinct on margins. Scutellum yellow, coarsely punctate. Elytra brown, with yellow sutural and side margins connected at the apex; disk with yellow lines, one subsutural beginning near the base and joining with the suture at about apical two-thirds, one discal beginning at base and ending at suture near the apex, one at sides beginning at humerus and joining the margin at about apical third; side margin much flattened; broadest about the middle. Underside of thorax rosy. Prosternum and abdomen brown; abdominal segments with yellowish markings on the margins; last segment waxy. Legs yellow; central portion of femur and inner part of tibiæ longitudinally darker; tarsi darker. Length, 13 mm.

Male.—Unknown.

Holotype No. 24591, Coll. Amer. Mus. Nat. Hist.

The single specimen was collected by Dr. Chas. T. Ramsden at Sta. Maria de Loreto, Oriente Province, Cuba.

***Photinus vitiosus* Gemminger**

Lampyris vittata FABRICIUS, 1792, 'Entom. Syst.,' I, part 2, p. 102; 1801, 'Syst. Eleuth.,' II, p. 105. SCHÖNHERR, 1817, 'Syn. Insect.,' I, part 3, p. 65. Cited in error as *vittata* G. A. Olivier.

Photinus vitiosus GEMMINGER, 1870, 'Coleop. Hefte,' VI, p. 120.

Photinus vittatus FLEUTIAUX AND SALLÉ, 1889, Ann. Soc. Ent. France, (6) IX, p. 416.

Photinus vittatus (Fabricius nec G. A. Olivier; *vitiosus* Gemminger) GORHAM, 1898, Proc. Zool. Soc. London, p. 320.

Pygolampis vitiosus E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 27.

Form similar to *vittatus*. Prothorax yellow; elytra brown, entirely bordered with whitish yellow and with a median yellow vitta reaching neither base nor apex.

This species was described from Guadeloupe by Fabricius, who supposed it to be the same as *vittatus* G. A. Olivier, but these two species were separated by Schönherr, 1817, 'Syn. Insect.,' I, part 3, p. 35, with a note, "A specie præcedenti distincta," referring to the Olivierian and Fabrician species. Fleutiaux and Sallé seem to have overlooked this citation, as they list G. A. Olivier's species, giving *suturalis* Schönherr

and *vitiosus* Gemminger as synonyms, and cite the Guadeloupe locality on the Fabrician record. Gorham cites Guadeloupe, San Domingo, and Jamaica as localities; and E. Olivier, in his revision, merely cites Cuba.

We have seen no specimens which agree with the description of this species but can hardly believe that the records from San Domingo, Jamaica, and Cuba refer to it, as the following records of this, and allied species, seem to prove it to be a Guadeloupe species.

Both *vittatus*, described by G. A. Olivier in 1790 from Haiti, and *vittiger*, described by Gyllenhal in 1817 from Martinique, have the elytra margined with pale yellow and a more or less conspicuous vitta; the vitta is, however, near the suture in *vittatus* but not in *vittiger*. In many of the other islands, pale-margined and vittate species occur, the names of which have become confused by mistakes in identifications. Fabricius, in 1792, began this confusion by applying the name *vittatus* G. A. Olivier to an insect he credited to Guadeloupe. Nothing closely resembling *vittatus* G. A. Olivier is found in Guadeloupe as far as we know; the much larger *vittiger* Gyllenhal (1817), described from Martinique, may be what Fabricius had before him. Gemminger in 1870 treated the Fabrician name *vittatus* as cited in error and substituted *vitiosus*. E. Olivier, in his works on Lampyridæ, seems to have applied the name *vitiosus* to allied forms from other islands, probably on the assumption that the Fabrician locality was wrong. This course is hardly defensible, as Fabricius says "habitat in insula Guadeloupe, Dom. de Badier," and we have found this same reference to Guadeloupe species of other families, specimens of which have later been found there. Considering the Fabrician species to be found in Guadeloupe, the application of it as a synonym of *vittiger* may prove to be more correct than the course we have adopted of retaining it as a valid species unrecognized by us; our material from Guadeloupe is, however, insufficient to justify a synonymy not established by Fleutiaux and Sallé.

Photinus vittatus (G. A. Olivier)

Lampyris vittatus G. A. OLIVIER, 1790, 'Entomologie,' II, No. 28, p. 23, Pl. III, fig. 20.

Lampyris suturalis SCHÖNHERR, 1817, 'Syn. Insect.,' I, part 3, p. 65.

Photinus vittatus GORHAM, 1898, Proc. Zool. Soc. London, p. 320.

Pygolampis vittatus E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 27.

Narrow, subparallel in form. Prothorax yellow with carmine disk. Elytra brown, with a narrow slightly oblique juxtasutural pale vitta leaving the suture dark; bordered with a testaceous margin which continues around the apex and often joins the subsutural vitta. Body beneath often tinged with rosy; fifth and sixth ventral abdominal segments blackish; the seventh with two lateral white spots or entirely white, all colors and markings, vaguely defined. Length, 7 mm.

Described from St. Domingo and Porto Rico. We have seen specimens from the following localities in the Dominican Republic. Coll. U. S. Nat. Mus.: San Francisco Mts., September, (Aug. Busck). Coll. Amer. Mus. Nat. Hist.: Sanchez, May and June, and San Lorenzo, June, (F. E. Watson); Sanchez, October and November, (Fred Hagan), La Romana, January, (H. E. Crampton); Puerto Plata, March, (Norman L. Orme, Jr.). We have also seen specimens from the following localities in Porto Rico. Coll. U. S. Nat. Mus.: Arroyo, February, and Utuado, January, (Aug. Busck). Coll. Amer. Mus. Nat. Hist.: Mayaguez, November, December and January, (R. H. Van Zwaluwenburg); Santa Rita, August, (E. G. Smyth); Guayanille, July, (H. G. Barber); Coamo Springs, January, (H. E. Crampton); San Juan, February, (F. E. Lutz); Mayaguez, Manati, Ensenada and Arecibo, June, (Lutz and Mutchler).

Albicollis Group

KEY TO SPECIES

1. Pronotum with a large dark discal spot; elytra black with an ante-median broad white cross-band or spot which sometimes extends narrowly along the outer margin to the humeri *sanctus*.
Disk of pronotum pale 2.
2. Elytra with a broad, median, white, cross-band which is broader than the apical or basal black portion *notatus*.
Elytra with a narrow, median, white cross-band which is narrower than the remaining apical or basal black portion *albicollis*.

Photinus sanctus E. Olivier

Figure 46

Photinus sanctus E. OLIVIER, 1909, Rev. sci. du Bourbonnais, XXII, p. 123.

Pygolampis sanctus E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 32.

Oblong. Pronotum yellowish white with a large discal black spot. Elytra black with a wide transverse yellowish-white band, this band is often interrupted by the black color and does not reach the suture. Last three ventral segments white. Length, 10-17 mm.

Described from St. Thomas. We have not seen any specimens of this species from St. Thomas, but there are two specimens in the U. S. Nat. Mus. collection from Dominica (A. H. Verrill), which were determined by E. Olivier as *sanctus*. The other specimens before us are from the following localities. Coll. U. S. Nat. Mus.: Dominica, June and July, (H. W. Foote, Yale Exped., 1913). Coll. Brit. Mus.: Dominica. Coll. Amer. Mus. Nat. Hist.: Roseau and Laudet, Dominica, June, (F. E. Lutz).

Photinus notatus Gorham

Photinus notatus GORHAM, 1898, Proc. Zool. Soc. London, p. 319, Pl. xxvii, fig. 3.

Pygolampis notatus E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 25.

Antennæ rather long, entirely fuscous. Pronotum testaceous; disk rosy, very even and smooth, central channel faintly indicated. Elytra black, with a broad, transverse, median, testaceous band, covering more than one-third of the elytral length. Legs pale; the tibiæ (a little infusate toward the apex), and tarsi fuscous. Length, given by Gorham, 8 mm.

Gorham (1898) considered this species allied to *blandus* Motschulsky. E. Olivier, 1910, 'Coleop. Catal.,' part 8, p. 30, considered *notatus* Gorham and *quadrinotatus* Motschulsky to be synonyms of *quadrinotatus* Castelnau, but in 1912 the latter author changed his opinion and raised both *notatus* and *quadrinotatus* to specific rank.

Two specimens, one of which is labeled "cotype," were loaned to us by the British Museum. The largest of these is barely 6 mm. in length. This size agrees with the line in Proc. Zool. Soc. London, 1898, Pl. xxvii, fig. 3, indicating the length of the figured specimen. The yellow markings in the specimens before us are much paler than shown in the figure.

Described from St. Vincent, leeward side, (H. H. Smith). Coll. Brit. Mus.

Photinus albicollis (Chevrolat)

Figure 47

Calopteron albicollis CHEVROLAT, 1858, Rev. et Mag. Zool., (2) X, p. 256; 1870, Ann. Soc. Ent. France, (4) X, p. 77. GUNDLACH, 1894, 'Contribucion à la Entom. Cuba,' III (?), part 4, p. 256.

Pygolampis albicollis E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 32.

Oblong. Prothorax narrow, more so apically, white. Antennæ almost as long as body, black. Elytra wider than the thorax, black, with a not very wide white, median transverse band. Length, 7.5 mm.

Chevrolat records this species from Cuba, (Coll. Chevrolat, Gundlach and Poey), and Gundlach says "found in mountains of Trinidad, [Cuba], Mayua estate."

Our figure was drawn from a specimen kindly loaned by the Acad. Nat. Sci. Philadelphia, labeled "Cuba, Poey Coll. Dupl. 1771." It is the only specimen of this species which we have seen.

CRATOMORPHUS Motschulsky

1852, 'Etudes Entom.,' I, p. 35

This Central and South American genus is here used to take care of *Lampyris dorsalis* Gyllenhal, a species unknown to us but which Motschulsky and later authors, if their identifications are correct, considered as belonging in the above genus. We, however, believe that there are some errors in identifications, as will be seen in our discussion under the species.

Cratomorphus dorsalis (Gyllenhal)

Lampyris dorsalis GYLLENHAL, 1817, in Schönherr's 'Syn. Insect.,' I, part 3, p. 67, and appendix, p. 24.

Cratomorphus dorsalis (Gyllenhal?) MOTSCHULSKY, 1854, 'Etudes Entom.,' II, p. 34.

Cratomorphus dorsalis GEMMINGER AND HAROLD, 1869, 'Catalog. Coleop.,' part 6, p. 1645. GORHAM, 1880, Trans. Ent. Soc. London, p. 80; 1881, 'Biol. Cent. Americana,' (Coleoptera) III, part 2, p. 52; 1884, idem, p. 270.

Lampyris dorsalis E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 34.

Oblong ovate, luteo-testaceous. Pronotum, semi-circular, with two pellucid white spots in front. Elytra brown in front. Length, half that of *Lampyris maculata* (9–10 mm. see below) Insula Bartholemy. [Translation of Gyllenhal's description.]

The species was described as *Lampyris dorsalis* by Gyllenhal and said by him to occur in "Insula Bartholemy." It was placed in the genus *Cratomorphus* by Motschulsky (1854, 'Etudes Entom.,' II, p. 34) and recorded by him as from Brazil, but Gorham considered the *dorsalis* of Motschulsky to be a different species, and E. Olivier (1910, 'Coleop. Catalog.,' part 9, p. 22) makes *dorsalis* Motschulsky a synonym of the Argentine *cosyphinus* Perty. We regret that we are unable to straighten out this somewhat complex matter but would like to call attention to the size given by Gyllenhal, who in his discussion of *dorsalis* says "*L. maculata* dimidio minor," which, according to our translation, would refer to an insect not more than 10 mm. in length, as, according to Gorham, *maculatum* Fabricius measures 7–9 lines, and a species described by De Geer under the same name is about one-third smaller. The size given by Motschulsky would refer to an insect only a little larger than given in the original description of *dorsalis*, but the specimens which Gorham, 1881, 'Biol. Cent. Americana,' (Coleoptera) III, part 2, p. 52, refers to *dorsalis* Gyllenhal are 22 to 25 mm. in length, or slightly longer than *L. maculatum*.

Photurinæ

Photuris LECONTE, 1851, Proc. Acad. Nat. Sci. Philadelphia, V, p. 337.

The species of *Photuris*, owing to the head being less completely concealed by the pronotum, present a distinctive appearance, somewhat intermediate between that of Lampyridæ and Cantharidæ (Telephoridæ). They always have, however, the luminous ventral segments of the former and the same insertion of the antennæ, which are almost contiguous and between the eyes. The species are numerous in Central and South America, but none has yet been found south of Brazil. Three inhabit the United States and three are already known from the West Indies. The species have been reviewed by E. Olivier, 1886, Ann. Soc. Ent. France, (6) VI, pp. 201–246, who rejects the division into sub-



Fig. 48. *Photuris jamaicensis* Ernest Olivier, last ventral segment of male.



Fig. 49. *Photuris jamaicensis* Ernest Olivier, last ventral segment of female.

genera by Motschulsky based on the number of luminous segments, because it results in dividing the sexes of one species, but adopts a division based on the form of the claws, by which the species of the United States and those of the West Indies fall together in Section II: "Outer tarsal claw cleft in both sexes, the inner claw entire." The male has the last ventral segment sinuate laterally, ending in a linear, more or less enlarged, lobe, Fig. 48. The female has the last ventral large triangular, obtuse or slightly incised at the apex, Fig. 49.

The West Indian species may be separated by the following key.

KEY TO WEST INDIAN SPECIES OF *Photuris*

1. Elytra with paler stripes on both disk and margins. 2.
Elytral disk unicolorous, margins sometimes paler. 3.
2. Pronotum with darker spot, generally longitudinal, and with a more or less distinct rosy hue at each side of the spot, elytral stripes definitely outlined; femora generally paler at the extreme apex. *pennsylvanicus*.
Spot on pronotum similar but without rosy hue at each side; elytral vittæ often indefinitely outlined; femora much darker at the extreme apex; tibiæ at apex and tarsi often dark. *jamaicensis* (in part).
3. Elytra dark brown margined with yellow; pronotum yellow. *brunnipennis*.
Elytra and pronotum pale yellow. 4.
4. Pronotum pale yellow with a more or less conspicuous dark spot; legs yellow; femora dark at apex, tibiæ at apex and tarsi usually darker. *jamaicensis* (in part).
Pronotum pale yellow, usually with a dark, large circular spot on disk; legs wholly yellow. *livida*.

Photuris brunnipennis Jacquelin Duval

Photuris brunnipennis JACQUELIN DUVAL, 1857, in Ramon de la Sagra's 'Hist. Phys. Polit. et Nat. de L'île de Cuba,' Anim. Artic., p. 89. GORHAM, 1880, Trans. Ent. Soc. London, p. 111. E. OLIVIER, 1886, Ann. Soc. Ent. France, (6) VI, p. 236. GUNDLACH, 1894, 'Contribucion à la Entom. Cuba,' III (?), part 4, p. 253. GORHAM, 1893, Proc. Zool. Soc. London, p. 320. E. OLIVIER, 1912, Rev. sci. du Bourbonnais, XXV, p. 34.

Head and prothorax yellow. Elytra brown; sides and suture bordered with yellow, which does not reach the apex. Antennæ black, with the joints paler at extreme base. Male with the head very moderately excavated between the eyes. Length, 9.8 mm.

Described by Duval from Cuba (Coll. Guérin-Ménéville). Recorded as occurring throughout the island by Gundlach, and from Guantanamo by E. Olivier. We have seen specimens from the following localities in Cuba. Coll. U. S. Nat. Mus.: Cayamas, May, (E. A. Schwarz); Havana, (C. F. Baker). Coll. Amer. Mus. Nat. Hist.: La Maya,

Guantanamo, (Chas. T. Ramsden); Cabañas, Pinar del Rio, September, (C. W. Leng); Vicinity of Havana, May, (Mel. T. Cook); Santiago de Cuba.

The U. S. National Museum specimens were determined by E. Olivier.

***Photuris jamaicensis* E. Olivier**

Photuris versicolor GOSSE, 1848, Ann. Mag. Nat. Hist., (2) I, p. 268. Cited in error as *versicolor* Fabricius.

Photuris pennsylvanica GORHAM, 1880, Trans. Ent. Soc. London, p. 110. Cited in error as *pennsylvanica* De Geer.

Photuris jamaicensis E. OLIVIER, 1886, Ann. Soc. Ent. France, (6) VI, Bulletin, p. lviii; idem, Annals, p. 235, Pl. III, fig. 10; 1907, 'Gen. Insect.', fasc. 53, p. 58, Pl. III, fig. 12; 1912, Rev. sci. du Bourbonnais, XXV, p. 34.

Pale, testaceous above and beneath. Head not excavated between the eyes in either sex. Antennæ with each joint, in a great part, dark. Pronotum with a vague brown spot on the disk. Disk of each elytron with two brown vittæ which are sometimes well marked, but often scarcely discernible. Femora, tibiæ and tarsal joints dark at the apex. Penultimate ventral segment of the female very feebly emarginate. Length, 10–12 mm.

Confined to Jamaica. We have seen specimens from the following localities. Coll. U. S. Nat. Mus.: McCatty's Estate, Catadupa, March, (E. J. Lund); Conant Springs, April and Jamaica, (H. G. Hubbard). Coll. Acad. Nat. Sci. Philadelphia: "Jamaica." Coll. H. F. Wickham: Conant Springs, April, and Mandeville, October, (T. D. A. Cockerell). Coll. Amer. Mus. Nat. Hist.: Catadupa, March, (J. A. Grossbeck); Mandeville, November, December and January, Georges Bay, November, Montego Bay, December, Cumberland District, December, and Bath, January and February, (F. E. Watson).

While certain forms of this species are difficult to distinguish from *P. pennsylvanicus*, the majority of the specimens differ greatly, the elytral vittæ not being well defined or almost entirely obliterated in some specimens. Philip Henry Gosse 'On the Insects of Jamaica,' 1848, Ann. Mag. Nat. Hist., (2) I, p. 268, says of the fireflies of the tropics and this species in particular:

At all times the species are to be seen, fitfully gleaming by scores about the margins of woods and in open and cultivated places. It is in the woods of St. Elizabeth's, in the month of June, that I have seen the Lampyridæ in their glory; and particularly along the road leading up the mountain from Shrewsbury to Content, where it is cut through the tall forest, which overhangs it on each side, making it sombre even by day, and casting an impenetrable gloom over the scene by night. The darkness here, however, and especially at one point, a little dell, which is most obscure, is studded thick with fire-flies of various species, among which the two large ones

(*xanthophotis* and *versicolor*¹) are conspicuous. I have delighted to watch and study their habits in this lonely spot, while the strange sounds, snorings, screeches, and ringings, of nocturnal reptiles and insects, sounds unheard by day, were coming up from every part of the deep forest around, giving an almost unearthly character to the scene. *P. xanthophotis* is seen only in flight; its light is of a rich orange colour when seen abroad, but when viewed in the light of a candle appears yellow. It is intermittent; when held in the fingers, it will frequently illuminate the antepenultimate segment of the abdomen, over which the light plays fitfully, sometimes momentarily clouded more or less, but generally saturated, as it were, with the most brilliant effulgence. This species occasionally comes in at open windows at night, but much more rarely than *P. versicolor* and the smaller kinds. *P. versicolor* is noticeable by its frequent resting on a leaf or twig in the woods, when it will gradually increase the intensity of its light until it glows like a torch; then it gradually fades to a spark and becomes quite extinct; it thus remains unseen for some time, but in about a minute, or, it may be, two, it will begin to appear, and gradually increase to its former blaze strongly reminding the beholder of a revolving light at sea. The light of this species is of a brilliant green hue. I have seen a passing *P. xanthophotis*, attracted by the glow of a stationary *P. versicolor*, fly up and play around it; when the intermingling of the green and orange rays had the same charming appearance as the two lights of *Pyrophorus noctilucus*.

Photuris pennsylvanicus (De Geer)

Lampyrus pennsylvanicus DE GEER, 1774, 'Mém. pour servir à l'histoire Insect.,' IV, p. 52, Pl. xvii, fig. 8; 1871, idem, German translation, p. 31, Pl. xvii, fig. 8.

This common United States species is so well known that a description outside of that given in the key to the species seems unnecessary.

It apparently occurs in the Bahamas, as we have before us one specimen from the Academy of Natural Science collection labeled "Bahamas."

Photuris livida (G. A. Olivier)

Lampyrus livida G. A. OLIVIER, 1790, 'Entomologie,' II, No. 28, p. 24, Pl. iii, fig. 23.

Photuris livida E. OLIVIER, 1886, Ann. Soc. Ent. France, (6) VI, p. 230, Pl. iii, fig. 7; 1912, Rev. sci. du Bourbonnais, XXV, p. 34.

Grayish testaceous with a brownish spot on the prothorax. Length, 14 mm.

This species is mentioned as West Indian by E. Olivier and may occur there. As undeveloped specimen from Barbados in the American Museum collection approaches this species but, being immature, it does not tally in all details with the specimens from Trinidad in the U. S. National Museum collection, which were determined by E. Olivier as *livida*.

¹*Photuris versicolor* Fab. is a synonym of *P. pennsylvanicus* of the U. S. The only *Photuris* thus far described from Jamaica is *P. jamaicensis* E. Olivier, which is therefore presumably the species here referred to by Gosse, whose description, "a large species with drab colored elytra," is too brief to admit of definite identification. His mention of the species is not noticed in E. Olivier's review of *Photuris*, in Ann. Soc. Ent. France, 1886.

The species was described from Cayenne and may not occur north of Trinidad, the fauna of which we do not include as West Indian. There is also a species from Panama described by Gorham, 1885, 'Biol. Cent. Americana,' (Coleoptera) III, part 2, p. 273, under the name *livida*, which, according to his description, cannot refer to the species described by G. A. Olivier. The Gorham species does not seem to have been recognized by E. Olivier in any of his works on Lampyridæ.

CANTHARIDÆ

On account of *Cantharis* Linnæus (1758) having been proposed eight years previous to *Telephorus* Schaeffer (1766), the name for the family lately known as Telephoridæ has to be based upon that of the Linnean genus.

As composed by Lacordaire, the family includes the genera, like *Phengodes*, in which the antennæ are biflabellate; these have been segregated by later authors to form a separate family Phengodidæ, and some favor including *Tytthonyx* also in that family. We have included in our treatment of the Cantharidæ the species we have assigned to *Tytthonyx*. Eight West Indian species belonging in this family had been described when we commenced our study five years ago; one has been added by Pic while our studies have been in progress; the material before us (far less complete than that representing Lycidæ and Lampyridæ) indicates seventeen more new species; and there is no doubt in our minds that still more await discovery. Our arrangement of the genera and species, which follows the studies of Lacordaire and Champion, must, therefore, be regarded as provisional, especially in its inference that all the species are congeneric with those of the mainland.

KEY TO CANTHARID (TELEPHORID) GENERA OF WEST INDIES

1. Elytra covering only part of abdomen.....2.
 Elytra entirely covering the abdomen.....3.
2. Last joint of palpi subsecuriform or stout; antennæ at most feebly serrate.
 Belotus.
 Last joint of palpi oval and acuminate; antennæ flattened, strongly serrate.
 Tytthonyx.
3. Mentum small, quadrate.....4.
 Mentum very large, wider in front.....*Chauliognathus*.
4. Last abdominal segment bilobed, forcipiform beneath in male; head long.
 Silidiscodon.
 Last abdominal segment not bilobed.....5.
5. Sides of prothorax strongly incised, often lobed in male; head very short...*Silis*.
 Sides of prothorax never lobed, at most feebly nicked or emarginate in male....6.
6. Sides of prothorax nicked in male; head short and broad.....*Polemius*.
 Sides of prothorax not nicked; head moderately long.....7.

7. Antennæ inserted on frontal tubercles. *Tylocerus*.
 Antennæ inserted directly on front of head, without intervening tubercle.
Cantharis.

It is somewhat doubtful if any of the species described as *Cantharis* (*Telephorus*) are destitute of the frontal tubercle, but, as we have unfortunately been unable to see them all, we cannot affirm, though we suspect, that all belong to *Tylocerus*. In the above key we have given as one of the divisions separating *Tylocerus* "Sides of prothorax not nicked"; there is one species which seems to have all of the other characters of *Tylocerus* but in which the sides of the prothorax are deeply emarginate.

BELOTUS Gorham

Belotus GORHAM, 1881, 'Biol. Cent. Americana,' (Coleoptera) III, part 2, p. 99; 1885, idem, p. 308. CHAMPION, 1915, Trans. Ent. Soc. London, p. 134.

*Lobet*us LECONTE, 1881, Trans. Amer. Ent. Soc., IX, pp. 58 and 59 (*nec* Kiesenwetter).

This genus, although erected by Gorham for *Lobet*us *abdominalis* LeConte and two Central American species, was not described by him, merely the differences in formation of the antennæ between *torticollis* and *abdominalis* being pointed out. The later description by Champion points out the principal characters on which the genus is based.

Belotus minutus, new species

Figure 50

Head and mouth-parts yellowish; sides behind the eyes darker; finely punctate and pubescent. Antennæ with the two basal joints reddish yellow; from the third on fuscous, subequal in length, slightly serrate and covered with a short whitish pubescence. Palpi with the last joint very stout, subsecuriform. Pronotum fuscous, broader than long, with a median impression; margins raised, contiguous; front slightly sinuate; hind margin straight; angles rounded. Scutellum fuscous, short, triangular, truncate at apex. Elytra fuscous, broadly dehiscent, about one-half the length of the body, finely punctate and pubescent. Underside light fuscous; legs paler; tarsi with the basal joints as long as the next three combined. Length, 2.5 mm.

Holotype, male (?), Cayamas, Cuba, (E. A. Schwarz); Coll. U. S. Nat. Mus.

Belotus antillarum, new species

Figures 51 and 51a

Male.—Head, thorax and scutellum yellowish red. Elytra black or brownish black, dehiscent, rounded at apex, densely pubescent with short pale hairs. Antennæ black, densely pubescent, filiform or slightly serrate; first joint twice as long as second; second, third, and fourth, increasing in length; joints five to nine equal, each longer than fourth; tenth and eleventh slightly shorter and thinner. Eyes large, black, hemispherical, prominent. Head and thorax closely and finely punctured; the latter wider than long, widest a little behind the apex. Body beneath blackish, but appearing gray from the dense pubescence; lateral margin yellow. Last abdominal segment

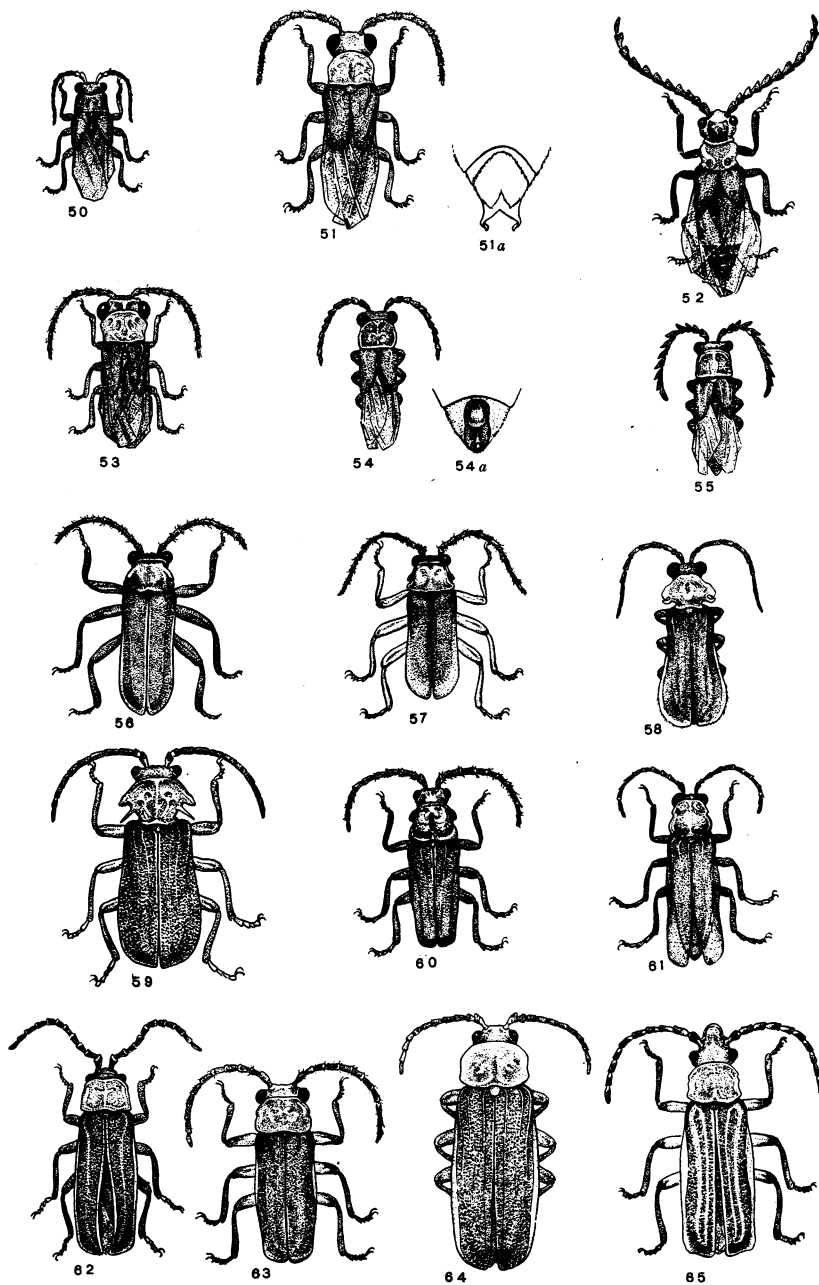


Fig. 50. *Belotus minutus*, new species, male?
 Fig. 51. *Belotus antillarum*, new species, male.
 Fig. 51a. *Belotus antillarum*, last ventral segment of male.
 Fig. 52. *Belotus pallidiventris*, new species, male.
 Fig. 53. *Tythyonyx cubanus*, new species, male.
 Fig. 54. *Tythyonyx discolor*, new species, male.
 Fig. 54a. *Tythyonyx discolor*, last ventral segment of male.
 Fig. 55. *Tythyonyx cavicornis* new species, male.
 Fig. 56. *Silis grenadensis*, new species, male?

Fig. 57. *Silis tenella* Gorham, male.
 Fig. 58. *Silis marginella* Jacquelin Duval, male.
 Fig. 59. *Silis (Haplocrocelis) impressa* (Pic), male.
 Fig. 60. *Silidiscodon rufiventris*, new species, male.
 Fig. 61. *Polemius hispaniola*, new species, male.
 Fig. 62. *Tylocerus lineatus* Gorham, male.
 Fig. 63. *Tylocerus pictipennis*, new species, male.
 Fig. 64. *Tylocerus coriaceus*, new species, female.
 Fig. 65. *Tylocerus barberi*, new species, male.

semicircularly emarginate with, in one specimen, a glabrous wishbone-shaped organ protruding (Fig. 51a); in another, only the apices of the organ are seen. Legs long and slender, penultimate tarsal joint divided, claws long and bifid. Coxæ all contiguous. Length, 4–4.5 mm.

Female.—Unknown.

Holotype and one paratype: Cayamas, Cuba, February and May, (E. A. Schwarz); Coll. U. S. Nat. Mus. One paratype: No. 25136, Cayamas, Cuba, May, (E. A. Schwarz); Coll. Amer. Mus. Nat. Hist. One paratype: Poey Coll. No. 356; Coll. Acad. Nat. Sci. Philadelphia.

The last joint of the palpi is stouter than in the species we assign to *Tythonyx* but not at all securiform.

***Belotus pallidiventris*, new species**

Figure 52

Elongate. Yellowish, with piceous color suffusing a great part of the upper surface, especially the antennæ, thorax and elytra. Antennæ serrate, more strongly in male, blackish, paler beneath; the joints from the second on, gradually increasing in length. Head yellow beneath, brownish black above, strongly arcuately narrowed to the neck. Palpi with the last joint stout. Mandibles long, slender, toothed about the middle. Thorax broader than long, rectangular, yellow beneath, brownish black above; surface vaguely transversely channeled. Elytra about half as long as abdomen, separately rounded and feebly dehiscent at apex, yellowish; disk broadly infusate with piceous. Upper surface feebly granulate, clothed with short black hairs. Beneath entirely pale yellow, the tibiæ and tarsi somewhat darker. Length, 3–4 mm.

Holotype male, marked "Dominica, Laiou, G. A. Ramage, 97–67;" Coll. British Mus. Allotype female, No. 24574, Laudet, Dominica, June, (F. E. Lutz); Coll. Amer. Mus. Nat. Hist.

In the male the last ventral is deeply triangularly incised, permitting, in the one before us, the yellow horny genitalia to be seen.

***Belotus guadeloupensis* (Fleutiaux and Sallé)**

Lobetus guadeloupensis FLEUTIAUX AND SALLÉ, 1889, Ann. Soc. Ent. France, (6) IX, p. 417.

Head red, wide, rounded in front. Pronotum red, transverse; feebly rounded in front, a little wider behind; posterior margin rounded; surface uneven, strongly channeled at middle, with two impressions at base. Elytra yellow, disk blackish, dehiscent, ending before the middle of the abdomen, rounded at apex. Beneath yellow. Legs yellow; apex of tibiæ smoky; last joint of tarsi black. Antennæ long, dark, indistinctly reddish at base and apex. Similar to *L. abdominalis* LeConte. Length, 4.5 mm.

Guadeloupe, Bains-Jaunes, June, (Delaney).

We have not seen any specimens of this species but have concluded that it belongs in the genus *Belotus*, as the above, which is a translation of the original description, says "similar to *L. abdominalis* LeConte."

The LeConte species was originally described as *Malthinus abdominalis* and later considered by LeConte to belong in the genus *Lobetus*; but Gorham, 1881, 'Biol. Cent. Americana,' (Coleoptera) III, part 2, p. 99, erected the genus *Belotus* of which *abdominalis* is the type species and included two other species as belonging in the genus. *B. abdominalis* seems to be the most widely distributed species in the genus, ranging from the southern United States to Panama and perhaps further southward.

Tytthonyx LeConte

1851, Proc. Acad. Nat. Sci. Philadelphia, V, p. 347

This genus has been thought heretofore to be confined to the United States, being represented by only two species. The following three species, which we are describing as new, in the collection before us extend the distribution to the West Indies.

Tytthonyx cavicornis, new species

Figure 55

Elongate. Brownish; pronotum and elytra except the apex, darker; body beneath paler; clothed above and beneath with fine, short pale hairs. Antennæ eleven-jointed; first joint stout, twice as long as second, which is a little shorter than third, none of these flattened; fourth and following joints increasingly longer and flattened, very strongly serrate, almost ramose, diminishing, however, from the eighth joint; eleventh joint elongate-oval; joints three to eight are cup-shaped at apex, deeply excavated and the slender base of each succeeding joint is attached towards the side of the cup and not at its center. Eyes moderate, round, widely separated. Head vermiculate, black behind the antennæ, brownish in front; clypeus arcuately produced; mandibles acute, not prominent. Pronotum subquadrate, truncate in front, bisinuate behind; angles rounded; sides straight; dark piceous, shining; tubercular in sculpture. Elytra about half as long as abdomen, dehiscent; rounded at tip; sculpture and coloration similar to the thorax, except that the apex of the elytra is slightly paler in color. Legs long, slender, pale, pubescent; penultimate joint of tarsi divided; claws feebly toothed. Last ventral segment of the abdomen broadly emarginate to the preceding segment, sides of emargination oblique. Length, 3 mm.

One specimen, apparently male, holotype No. 24577, Mona Island, W. I., February 26, 1914, (F. E. Lutz); Coll. Amer. Mus. Nat. Hist.

Tytthonyx cubanus, new species

Figure 53

Male.—Elongate. Head closely, finely punctate, infusate on the occiput. Antennæ black, densely pubescent; first and second joints reddish piceous; serrate and flattened from the third joint onward. Pronotum yellow, shining, uneven; scarcely visibly punctulate, wider than long, rounded at the sides, truncate in front, feebly sinuate behind, slightly wider at base than at apex; hind angles rounded. Scutellum yellow, trapezoidal, conspicuous. Elytra dehiscent, half as long as the

abdomen, rounded at the tip, blue-black, finely pubescent above and beneath. Body beneath reddish yellow, except the tip of the abdomen which is dark; last ventral segment triangularly emarginate. Legs slender, darker than the abdomen; tibiae and tarsi quite black, the hinder ones darker. Length, 3.75 mm.

Female.—Unknown.

Holotype and one paratype, Cayamas, Cuba, May and June, on cotton, (E. A. Schwarz); Coll. U. S. Nat. Mus. One paratype, No. 25076, Cayamas, Cuba, May, (E. A. Schwarz); Coll. Amer. Mus. Nat. Hist.

Tytthonyx discolor, new species

Figures 54 and 54a

Male.—Elongate; black. Front of head, thorax at sides and beneath, sides of body and the abdomen beneath, pale yellowish-white; meso- and metasternum darker and with two stripes of darker color each side. Clothed above and beneath with short, fine hair. Antennae black, densely pubescent; joints four to nine serrate flattened; joint eight, in the type specimen before us, with a strong sinuation on outer margin; ten and eleven elongate-oval. Head as in *cavicornis* but more finely sculptured. Thorax uneven in surface, finely granulate, narrowly paler at margin. Elytra entirely black, with a faint metallic lustre, dehiscent, rounded at apex, three-fifths as long as abdomen. Legs and body beneath as in *cavicornis* except that the last ventral segment is completely divided; the penultimate segment arcuately emarginate; these two segments forming, together, an elongate cavity in which the genitalia lie (Fig. 54a). Length, 3.25 mm.

Holotype, No. 24575, Aibonito, Porto Rico, June 3, 1915, (Lutz and Mutchler); Coll. Amer. Mus. Nat. Hist.

With this we associate one apparently identical specimen without antennae and four other specimens (No. 24576) from Desecheo Island, February 18, 1914, collected by F. E. Lutz, in which the eighth joint of antennae is not sinuate and the last ventral is deeply emarginate but not divided. These specimens, apparently females, are dark brown rather than black, paler throughout. The hind coxae are contiguous, projecting; the femur is attached to the side of the intervening trochanter, its base not quite reaching the coxa; the front coxae are also contiguous; middle coxae are widely separated, but the trochanter is the same in all. These specimens are also smaller, 2.5–2.75 mm. in length.

SILIS Latreille

1829, in Cuvier's 'Règne Anim.,' 2 Ed., IV, p. 471

Upwards of fifty species were described under this genus by Gorham, 1880 to 1886, 'Biol. Cent. Americana,' (Coleoptera) III, part 2, from Mexico and Central America. Champion, 1915, Trans. Ent. Soc. London, pp. 16–146, Pls. III–IX, in his 'Revision of the Mexican and Central American Telephorinae' describes several new species but places several of the already described species in the genera *Discodon*, *Polemius*, and

Ditemorphus, thereby reducing the number of recognized Mexican and Central American species of *Silis* to thirty-eight. Several species have been described from the United States and there are undoubtedly many undescribed from South America and from other parts of the world.

The genus contains a number of heterogeneous forms which, in the male, have the lateral margins of the pronotum strongly incised, the margins being lobed, lamellate, or dentate, the lobes often imbricate. The tarsal claws are not cleft and the seventh ventral segment is divided down the middle in the male.

The following species, now considered as belonging in this genus, may, with a more detailed study, be separated from it.

***Silis grenadensis*, new species**

Figure 56

Male.—Elongate. Black, except a spot on front of head between eyes. The pronotum and a narrow marginal and sutural stripe on elytra, the latter not reaching the scutellum, yellow. Head pubescent. Pronotum deeply incised behind the middle, the incisure covered, however, by a projecting, pubescent lobe from the anterior portion, surface shining; punctuation invisible; a median impression starting at the base and not reaching the apex; also with a slight subapical impression each side of the central impression. Elytra closely granulate, pubescent, more elongate than usual. Legs long, slender, pubescent; penultimate joint of tarsi deeply bilobed; claws simple. Last dorsal segment of the abdomen, seen from above, deeply concave, the lateral edges of the concavity sharply limited; its apex is broadly emarginate, the base of the emargination squarely truncate. Length, 4.5 mm.

Female.—Unknown.

Described from one specimen loaned by the British Museum, collected by H. H. Smith, Mount Gay Estate, leeward side of Grenada.

The condition of the specimen does not admit of describing the underside.

***Silis tenella* Gorham**

Figure 57

Silis tenella GORHAM, 1898, Proc. Zool. Soc. London, p. 320.

Yellow, with base of head, antennæ (basal joint excepted), body (abdomen yellow margined), and elytra fuscous, the sides and apex of the latter broadly margined with yellow. Male with side margin of prothorax plicate, interrupted before the middle; hind angles acute and prominent; sides elevated into an acute tubercle in front of the incision, leaving a "neck" between the hind angle and the tubercle. Length, 4–5 mm.

Recorded by Gorham from St. Vincent, windward and leeward side, (H. H. Smith).

Figured from two specimens collected by H. H. Smith in St. Vincent, leeward side, and loaned to us by the British Museum.

***Silis marginella* Jacquelin Duval**

Figure 58

Silis marginella JACQUELIN DUVAL, 1857, in Ramon de la Sagra's 'Hist. Phys. Polit. et Nat. de L'île de Cuba,' Anim. Artic., p. 90. GUNDLACH, 1894, 'Contribucion à la Entom. Cuba,' III (?), part 4, p. 257.

Black above; brown beneath; head infusate; scutellum and pronotum testaceous; elytra with lateral and apical margin pale white; legs brownish-testaceous, four front femora and hind knees testaceous. Pronotum transverse; that of the male slightly excised at middle of sides; armed with a large obtuse tooth, behind which the sides are strongly emarginate. Pronotum in the female broadest just behind the apical angle, indented about the middle; the apical and basal angles are broadly rounded. Length, 4.-4.7 mm.

Described by Duval from Cuba, Coll. Guérin-Ménéville. Recorded from Rangel, Cuba, by Gundlach. We have seen specimens from the following Cuban localities. Coll. U. S. Nat. Mus.: Cayamas, March and June, (E. A. Schwarz). Coll. Acad. Nat. Sci. Philadelphia: Cuba, (Poey Coll. No. 147). Coll. Amer. Mus. Nat. Hist.: Solidad, June, (Barnum Brown).

***Silis (Hapalocrosilis) impressa* (Pic)**

Figure 59

Hapalocrosilis impressus PIC, 1916, L'échange Revue Linnéene, XXII, No. 374, p. 8.

Elongate. Head, pronotum and scutellum, yellowish red, antennæ, legs and body black; elytra dark blue. Antennæ pubescent, filiform. Mandibles, long and sharp. Palpi short, equal jointed, shortly pointed at apex. Pronotum of male rounded in front with an obliquely projecting lobe at middle of side, behind which it narrows rapidly to the base and bears a long slender spine which issues from the side behind the lobe; the hind angles are also spiniform, and there is a small spine at base in front of the long one; surface shining, minutely and distantly punctured; disk with slight pubescence becoming more dense at extremity of lobes. Pronotum of female wider than long with angles broadly rounded; sides feebly sinuate, broadest at base; disk smooth and with an impression extending completely around the suture and marginal border. Elytra granulate, dark bluish metallic, pubescent, rounded at apex; suture slightly obtusely produced; side margins feebly translucent. Body beneath pubescent; last ventral segment of the abdomen with a long narrow incision, reaching nearly to its base. Legs long, slender, pubescent; first tarsal joint longest; second and third subequal; fifth somewhat long, with simple claws. Coxæ adjacent. Length, 6 mm.

We have seen specimens from the following Cuban localities. Coll. U. S. Nat. Mus.: four specimens labeled "nr. Guantanamo," (C. F. Baker). Coll. Amer. Mus. Nat. Hist.: two specimens, Guantanamo, May, (Chas. T. Ramsden). One specimen, 7 kilom. north of Viñales, September, (F. E. Lutz).

SILIDISCODON, new genus

Head strongly projecting; sides behind the eyes nearly parallel; eyes somewhat protruding. Antennæ filiform. Pronotum of male arcuately emarginate at the middle, that of the female simply rounded. Apex of elytra with both sutural and lateral angles rounded. Legs long, slender; the front tibiæ of the male provided with a stout long claw; penultimate tarsal joint divided; claws simple. Male with the last abdominal segment inflated and divided beneath; excavate above. Female with a cup-shaped depression between swollen sides.

Similar in appearance to *Silis* but can be readily separated from that genus by the strongly projecting head and by the bilobed forcipiform last abdominal segment in the male. It also approaches the genus *Discodon*, but the simple tarsal claws alone would be sufficient reason to separate it from that genus.

Silidiscodon rufiventris, new species

Figure 60

Elongate. Head, pronotum and elytra, bluish black; beneath entirely red; antennæ from second joint, the tibiæ, tarsi and the mesosternum bluish black, the blue shade being less evident than on the elytra. Head pubescent, more thickly at the sides. Antennæ filiform, pubescent. Pronotum of male arcuately emarginate at the middle, with an obtuse tubercle in front of the emargination; simply rounded in the female, shining, pubescent, very closely, but minutely punctured; hind angles broadly rounded, nearly quadrate. Elytra finely granulate, rounded at apex, finely clothed with yellow pubescence. Legs long, slender, pubescent. The front tibiæ of the male is provided with a stout, long claw, conspicuous from its size and black color; penultimate joint of the tarsi divided; claws simple. Last abdominal segment of the male inflated, divided beneath, excavate above; provided in the female with a cup-shaped depression between swollen sides. Length, male, 4 mm; female, 5 mm.

Holotype male and allotype female, collected April 13, 1913, by W. V. Tower, at Romana, Dominican Republic; Coll. U. S. Nat. Mus.

POLEMIUS LeConte

1851, Proc. Acad. Nat. Sci. Philadelphia, V, p. 338

The following species, which we are describing as new, is the first record, as far as we know, of this genus being found in the West Indies.

Polemium hispaniolæ, new species

Figure 61

Elongate, reddish. Head finely punctate and pubescent, with a vague transverse impression between the eyes; eyes round and moderately prominent. Antennæ black, feebly serrate, first joint yellowish red; second joint less than half as long as the third; outer joints flattened, densely pubescent. Pronotum yellowish red, wider than long; front angles rounded; surface shining, uneven, not visibly punctured; covered with short, pale pubescence intermixed with a few darker hairs; female with hind angles acute, sides rounded, feebly sinuate in front of middle; male with hind angles prolonged obliquely backwards; sides with an incision before the middle; margins orna-

mented with long hairs. Elytra dark bluish-violet, basal two-thirds of the outer margin narrowly bordered with yellow, granulate, rounded at apex. Legs long, slender, pubescent; tarsal claws simple. Underside of male yellowish brown with abdominal segments darker and with last abdominal cleft to base. Legs brown. Underside of female yellowish red; apex of femora, the tibiae and tarsi dark brown. Length, 6 mm.

Holotype male, allotype female, and ten female paratypes: San Francisco Mts., Dominican Republic, August and September, (Aug. Busck); Coll. U. S. Nat. Mus. Eight paratypes: female, No. 24578, Sanchez, Dominican Republic, (F. E. Watson); Coll. Amer. Mus. Nat. Hist.

TYLOCERUS Dalman

1823, 'Analecta Entomologica,' p. 57

This genus was erected by Dalman for the species *crassicornis*. A translation of the description of the genus and species will be found under *Tylocerus crassicornis*.

Tylocerus crassicornis Dalman

Telephorus (Tylocerus) crassicornis DALMAN, 1823, 'Analecta Entomologica,' p. 57.

A translation of Dalman's description is as follows:

Fuscous; head and thorax flavo-testaceous; antennæ clavate; fuscous; basal joint large, incrassate luteous.

Habitat in Jamaica, Mr. Forsström, Mus. D. Paykull.

Length, 5 lines.—A species similar to *Telephorus fuscus* (*Cantharis fuscus* Fabr.) but from that genus it differs distinctly in the peculiar form of the antennæ, wherefore in the collection we have made for it a special subgenus called *Tylocerus*.

Antennæ nearly as long as the body, slightly thickened; basal joint large, oval, yellow; the following obconical, gradually increasing in size; apical joint large, sub-linear, of the length of the first joint, apex cone-shaped. Head depressed, luteous, immaculate; palpi fuscous. Eyes small, black, orbiculate, prominent. Thorax shorter than the head, transverse, subquadrangular, with entire margins strongly reflexed; anterior angles rounded; posterior straight, subprominent; above bicaulous, smooth, yellow, immaculate. Scutellum semioval, testaceous. Elytra scarcely wider than the thorax, linear, rounded at apex, depressed, smooth, fuscous; lateral margins white; dorsal costæ obsolete. Body beneath fuscous, same color as elytra. Legs slender, of the same shape as in the other species of the genus. Anterior ones lutescent at the base.

We have not seen any specimens of this species. Dalman in his description gives Jamaica as the type locality, and later Lacordaire, 1857, 'Genera Coléop,' IV, p. 348, under his remarks on the genus *Tylocerus*, has appended the note, "*T. crassicornis*, Dalm. loc. cit.; l'exemplaire de Dalman provenait de la Jamaïque; celui que j'ai sous les yeux et qui correspond exactement à la description de cet auteur, est de l'île St. Barthélemy." It does not seem plausible that a species should be found in two islands as widely separated as Jamaica and St.

Bartholomew, with no records of it having been found in any of the intervening islands. For this reason, we have looked up records credited as "Dom. Forsström" and have found records from St. Bartholomew and Guadeloupe, but have found only the above Jamaican record.

There are also no records of this species being found in Jamaica, although extensive collecting has been carried on in the island. It is also remarkable that in the number of species recorded from Jamaica, this is the only one which is not represented by one or more specimens in the collections before us. With this combination of facts we are led to believe that the locality cited in the original description is erroneous and the type locality should be St. Bartholomew Island.

***Tylocerus lineatus* Gorham**

Figure 62

Tylocerus lineatus GORHAM, 1898, Proc. Zool. Soc. London, p. 320, Pl. xxvii, fig. 1.

Blackish fuscous, subopaque, with head and thorax orange. Thorax transverse. Head between the eyes black above, with median basal yellow line. Coxæ and trochanters pale yellow. Elytra blackish-fuscous with the suture, lateral and apical margin and a costa extending from humerus nearly to apex white. Scutellum yellow. Males with longer antennæ, the basal joint very large, inflated nearly as long as the next three, sixth ventral segment split. Length, 7-9 mm.

We have seen specimens from the leeward side of St. Vincent and from Balthazar, Mt. Gay, Grenada, (H. H. Smith); Coll. British Mus.

The specimens from Grenada and St. Vincent, loaned to us by the British Museum, agree with the description by Gorham.

***Tylocerus lineatus dominicus*, new variety**

Head smoky black, excepting around the base of antennæ and the basal margin. Femora yellow, darker at apex, tibiæ and tarsi brown, otherwise as in the typical form. Length, 7.5-9.5 mm.

Known only from Dominica. Holotype male, No. 24595, Portsmouth, June, (R. W. Miner). Allotype female, No. 24596, Long Ditton, June, (F. E. Lutz). Paratypes, Nos. 24597-24599 inclusive, Portsmouth, June, (R. W. Miner); Long Ditton and Roseau, June, (F. E. Lutz); and one without definite locality in Dominica. The above are in the Coll. Amer. Mus. Nat. Hist. There are also the following paratypes. Coll. U. S. Nat. Mus.: Dominica, June and July, (H. W. Foote, Yale Exped., 1913); Dominica, (A. H. Verrill). Coll. British Mus.: Castle Bruce, Lawn, (G. A. Ramage), Dominica, (H. A. Nicholls).

We have seen twenty-nine specimens of this new variety. In some of the specimens the femora and tibiæ are quite pale in color, with only the tarsi darker, but in most specimens the femora, tarsi, and apices of the tibiæ are darker. There is also a tendency of the white dorsal stripe to broaden out at the base, but in all of the specimens this stripe is

better marked in this variety than in the specimens of the typical form which are before us.

The antennæ are the same as in the typical form, that of the male being longer and with the basal joint long and swollen. The females have all of the joints shorter and thinner than in the male.

***Tylocerus lineatus melanicus*, new variety**

Head, palpi, mandibles, thorax, scutellum, mesosternum, coxæ and trochanters black, otherwise as in the typical form. Length, 9 mm.

Holotype female, Dominica, November, (A. F. Porter); Coll. H. F. Wickham. Paratype female, Dominica, "June-July," (H. W. Foote, Yale Exped., 1913); Coll. U. S. Nat. Mus.

This may be merely a melanic form of the species but we think it deserving of a varietal name, unless some convincing proofs can show a closer connection between it and the typical form. A male in the Coll. U. S. Nat. Mus. has the same data as the paratype female but is too badly damaged to permit description.

***Tylocerus picipennis*, new species**

Figure 63

Male.—Elongate; yellowish. Antennæ, base of femora, the tibiæ, tarsi and elytra blackish. Antennæ with first joint enlarged, twice as long as the second joint which is about equal to the third, succeeding joints each a little longer, all pubescent. Head channeled between the antennæ, alutaceous; eyes rounded, moderately prominent. Pronotum wider than long; sides nearly straight; angles rounded; explanate and reflexed in front, sinuate behind; uneven and alutaceous on the disk. Elytra very feebly granulate, vaguely costate, rounded at apex. Beneath entirely pale; coxæ very prominent, adjacent, separated slightly from the femora by the short, stout trochanters which are attached at their sides to the femora; legs long and slender; tarsi with penultimate joint divided; claws simple; last ventral segment of abdomen deeply triangularly emarginate; penultimate segment also emarginate but less deeply. Length, 8 mm.

Female.—Unknown.

Represented by one specimen, holotype, Montserrat, March 19; Coll. U. S. Nat. Mus.

A very pale specimen from Santa Lucia, June, 1889, (G. A. Ramage), Coll. British Mus., with the piceous color exhibited only in a vitta on the elytra shows no differences structurally and may be an immature example of this species.

***Tylocerus coriaceus*, new species**

Figure 64

Female.—Elongate; yellowish. Antennæ and disk of elytra piceous. Antennæ with first joint obconical, pale at base; second joint globular, one-third as long as the third joint, succeeding joints increasing in length, not flattened, pubescent. Head with an arcuate transverse impression between the eyes, in front of which the surface

is depressed, finely punctulate; eyes rounded, moderately prominent. Pronotum as in *picipennis* but with a fine median impressed line, reaching neither apex nor base. Elytra leathery in appearance, finely granulate, vaguely costate; side margins, suture and apex margined with paler color, more broadly on the suture near the scutellum; broadly rounded at apex. Beneath as in *picipennis* but with each abdominal segment deeply longitudinally creased at middle. Length, 9 mm.

One specimen, holotype, No. 24579, Sanchez, Dominican Republic, June, 1915, (F. E. Watson); Coll. Amer. Mus. Nat. Hist.

***Tylocerus barberi*, new species**

Figure 65

Elongate, yellow. Head yellow; mandibles brown at apex; palpi brown. Antennæ pubescent with an intermixture of longer hairs; brown with basal end of each joint yellow. Pronotum yellow, subquadrate; front angles broadly rounded; hind angles narrowly rounded; margins somewhat broadly reflexed; disk with median part impressed, this with the reflexed margins making the disk appear as if having a raised bump at each side. Scutellum yellow, subtriangular, apex rounded. Elytra blackish brown, covered with short, yellow pubescence; margins yellow; disk with two narrow yellow stripes beginning at the base, where they are sometimes joined and extending to near the apex at which point they may join, or the one nearer the suture may be shorter (in some specimens it is very faint and cannot be distinguished beyond the basal half of the elytra). Underside yellow; femora yellow, apical tip dark brown; tibia yellow, apical part darker. Tarsi brown, with apical part of each joint slightly paler. Length, 7.5–9.5 mm.

Male.—Antennæ about two-thirds the length of body; basal joint large club-shaped.

Female.—Antennæ less than one-half the length of the body, basal joint club-shaped but much smaller than in the male.

Holotype male, No. 24580, and allotype female, No. 24581, Manati, Porto Rico, June; Coll. Amer. Mus. Nat. Hist. Paratypes Nos. 24582 to 24587: Manati, Aibonito and Adjuntas, June, (Lutz and Mutchler); Aibonito, June, and Coamo Springs, July, (H. G. Barber); Coamo Springs, December and January, (H. E. Crampton); Santa Rita, July, (E. G. Smyth); Mayaguez, April, (R. H. Van Zwaluwenburg); Coll. Amer. Mus. Nat. Hist. Paratypes in Coll. U. S. Nat. Mus.: El Yunque, February, (C. W. Richmond), March, (L. Steineger); Adjuntas, April, (L. Steineger); Bayamon and Mayaguez, January, (Aug. Busck). Paratypes in Coll. Porto Rico Agric. Exp. Sta.: Rio Piedras, (T. H. Jones).

Most of the specimens in the American Museum collection were collected at light, those from Aibonito being from a large tobacco plantation, where a powerful gasoline lamp was used. In Manati and Adjuntas an auto head-light was used to attract the insects.

According to the description of *Telephorus maculicornis*, the markings of the antennæ and legs are very similar to those in *barberi*, but in *Tylocerus barberi* the elytra are nearly black, narrowly margined with yellow and with two narrow, yellow, longitudinal lines on the disk, dividing the black color into three broad vittæ, the two sutural ones being of about the same width, and the outer one about as wide as the other two

combined. According to the description, the elytra of *T. maculicornis* are yellow with two narrow black vittæ.

Our species is undoubtedly a *Tylocerus* and distinct from *maculicornis*, but this latter species also seems to us, from description, to belong in the genus *Tylocerus*.

We take pleasure in dedicating this species to our friends and colleagues, Herbert S. Barber of Washington and Harry G. Barber of New York.

***Tylocerus cinctipennis* (Fleutiaux and Sallé)**

Telephorus cinctipennis FLEUTIAUX AND SALLÉ, 1889, Ann. Soc. Ent. France, (6) IX, p. 416.

Reddish. A triangular black spot on head. Elytra bluish black; narrowly bordered with yellow; beneath yellow. Abdomen and half of tibiæ, blackish. Antennæ blackish, first joint yellow. Head short, rounded, channeled. Thorax twice as wide as long, surface uneven, two elevations on the disk. Elytra a little wider than thorax. Length, 6 mm. Guadeloupe, Camp Jacob, April; Bains-Jaunes, June, (Delauney).

Variety *propinquus* Fleutiaux, loc. cit., p. 417

Same size, a little more robust and a little paler red. Elytra more widely bordered with yellow, especially in front; disk black without bluish reflection. First joint of antennæ sometimes black and legs black with only front femora and half the middle femora yellow. Guadeloupe, Bains-Jaunes (Delauney); Gourbeyre (Vitrac).

We have not seen representatives of the species or variety, the above being a free translation of the original descriptions.

***Tylocerus maculicornis* (Fleutiaux and Sallé)**

Telephorus maculicornis FLEUTIAUX AND SALLÉ, 1889, Ann. Soc. Ent. France, (6) IX, p. 416.

A translation of the original description of this species is as follows.

Length, 8 mm.—Pale yellow. Head and pronotum somewhat reddish. Head protruding (projecting), rounded anteriorly; a little excavation on the vertex; apex of the mandibles red; terminal joint of the palpi pointed (acuminate); flattened and rounded within. Antennæ approximated at the base, inserted between the eyes, black, with the base of all the joints yellow. Pronotum transverse, rounded anteriorly, straight and raised on the sides, a little emarginate posteriorly; anterior angles curved downward; posterior angles emarginate; surface uneven, provided with two protuberances placed transversely. Scutellum narrowed and rounded behind. Elytræ pale yellow, provided each with two blackish, longitudinal, narrow bands which unite before the apex. Underside of the body and legs pale yellow, knees black, tarsi brownish, the base of their joints and claws yellow. Camp Jacob, July; Bains-Jaunes (Del.); Gourbeyre, Petit-Bourg, Trois-Rivières, in the axils of leaves of the large Aroideæ (Vit.).

Not seen by us, but we believe that this and the preceding species should be placed under the genus *Tylocerus*.

***Tylocerus violaceus*, new species**

Elongate, black. Elytra deep violet-blue. Antennæ filiform, pubescent; second joint one-third as long as the third, succeeding joints slightly longer. Head punctate; eyes rounded. Thorax transverse; angles rounded; sides oblique in apical third, straight behind; surface alutaceous, not very closely punctate, uneven, with a median basal impression. Elytra vaguely subcostate, feebly granulate, sparsely covered with a short pale pubescence. Legs moderately long, pubescent. Length, 4.5 mm.

Described from one specimen labeled "Jamaica," in Coll. British Museum.

***Tylocerus depressicollis*, new species**

Female.—Elongate, piceous. Head and thorax yellow. Elytra with a bluish lustre. Antennæ with first joint long; second about one-fourth as long as the third; succeeding joints longer, pubescent. Head punctulate; eyes rounded, large. Thorax transverse, angles rounded, sides deeply emarginate at middle, disk with a large oval depression, sharply defined behind and laterally, but level with the apex in front; surface uneven; side margins reflexed; punctuation scarcely visible; pubescence short, yellow, barely noticeable. Scutellum small, yellow; apex broadly rounded. Elytra vaguely subcostate, scarcely granulate, covered with a fine, very short, yellow pubescence; apex rounded. Legs long, slender; penultimate joint of tarsi divided; claws simple; the last ventral segment of the abdomen acutely incised. Length, 5 mm.

Male.—Unknown.

One specimen, Jamaica, (H. G. Hubbard); Coll. U. S. Nat. Mus.

The reference of this species of *Tylocerus* is doubtful. It possesses the frontal tubercles that characterize that genus, but its emarginate prothoracic margin and subsecuriform palpi suggest a position closer to *Silis*.

***Chauliognathus* Hentz**

1830, Trans. Amer. Philos. Soc., N. S., III, p. 460

It seems well to repeat here the remarks by Champion, 1914, Trans. Ent. Soc. London, p. 134, regarding this genus:

Chauliognathus includes a large number of American forms, the species from New Guinea and Australia referred to it by Bourgeois and Pic probably require a separate genus for their reception. It is apparently replaced in the Antilles by *Tylocerus*.

The following species can hardly be considered West Indian. It seems to have reached the Bahamas from the United States.

***Chauliognathus marginatus* (Fabricius)**

Cantharis marginatus FABRICIUS, 1775, 'Syst. Entom.,' p. 206.

This widely distributed North American species is so well known that the bibliography and description seems unnecessary. The admission of the species in this paper as West Indian is based on a record of Otto Lugger, 1888, Proc. Ent. Soc. Washington, I, p. 57, who records it from the island of Abaca, one of the Bahamas.

