BULLETIN OF THE INSTITUTE OF JAMAICA

SCIENCE SERIES, NO. 21

THE SCOLYTIDAE AND PLATYPODIDAE OF JAMAICA

(COLEOPTERA)

by

DONALD E. BRIGHT, JR.

Entomology Research Institute, Canada Department of Agriculture, Ottawa

THE INSTITUTE OF JAMAICA

KINGSTON, JAMAICA

1972

TABLE OF CONTENTS

ABSTRACT

Sixty-two species of Scolytidae and 7 species of Platypodidae are recorded from Jamaica, West Indies. All known records from the island are included. Keys to all taxa, descriptions of all species and illustrations of various morphological features are included.

New species are: *Platypus jamaicensis*, *P. perplexus*, *Bothrosternus isolatus*, *Hylastes suspectus*, *Chaetophloeus howdeni*, *Chramesus brevisetosus*, *Cladoctonus brevisetosus*, *Hypothenemus comosus*, *Xyleborus lepidus*, *X. nuperus*, *X. insolitus*, *X. novus*, *X. jamaicensis*, *X. simulatus*, *X. beckeri*, *Pityophthorus diversus*, *P. abnormalis* *P. formosus*, *P. suspiciosus*, *Neodryocoetes niger*, *N. montanus*, *N. decorus*, *Tricolus unidentatus*, *T. ignotus*, *Corthylus pisinnus* and *C. curiosus*.

New combinations are: *Chaetophloeus chapini* (Blackman) (= *Renocis chapini* Blackman), *Hypothenemus glabratulus* (Schedl) (= *Stephanoderes glabratulus* Schedl), *H. birmanus* (Eichhoff) (= *S. birmanus* Eichhoff), *H. brunneus* (Hopkins) (= *S. brunneus* Hopkins), *H. bolivanus* (Eggers), (= *S. bolivanus* Eggers), *H. obscurus* (Fabricius) (= *Hylesinus obscurus* Fabricius), *H. georgiae* (Hopkins) (= *S. georgiae* Hopkins), *Cryphalomorphus knabi* (Hopkins) (= *Ernoporides knabi* Hopkins), *Monarthrum brittoni* (Schedl) (= *Pterocyclon brittoni* Schedl) and *M. minutissimus* (Schedl) (= *Microcorthylus minutissimus* Schedl).

A lectotype for *Stephanoderes intersetosus* Eggers is designated. A new name, *Monarthrum schedli*, is proposed to replace *Monarthrum minutissimum* (Schedl) (1954) not *Monarthrum minutissimum* (Schedl) (1952).

INTRODUCTION

The bark and ambrosia beetles, or Scolytidae and Platypodidae, have never been treated for any area within the West Indies or for the West Indies as a whole. Judging from Blackwelder's (1947) Checklist, the fauna of Jamaica is one of the least known of all the islands. The first known Jamaican species, *Tomicus interstitalis*, was described by Eichhoff in 1868. *Xyleborus perforans* (Wollaston) was added to the Jamaican list by Leng and Mutchler (1917), and in the same year.

Lepicerinus ritchiei was described by Sampson. Additional species were added in the lists by Gowdey (1926) and Blackwelder (1947). More recently, Schedl (1952, 1955, 1957) and Wood (1961) have each added a few more species. Prior to this study, only 19 species of Scolytidae and Platypodidae were known from Jamaica.

The primary collection upon which this study is based was made in July and August, 1966, by H. and A. Howden and E. C. Becker. This collection was augmented by material borrowed from several institutions and individuals. Accordingly, all known records of Scolytidae and Platypodidae are included. The present paper contains discussions and descriptions of 29 genera containing 69 species; 26 species are described as new.

The Scolytidae and Platypodidae are small beetles that feed and reproduce under the bark, in the wood or in nuts and seeds of various trees and shrubs. They may, at times, become serious economic pests, especially in the commercially utilized forests of Canada and the United States. Direct economic damage in Neotropical forests has not been shown, due, no doubt, to the presently low economic value of forest products. Damage does occur in coffee (in Brazil) and cocoa plantations due to the ability of the beetles to transmit several plant diseases. Ornamentals are sometimes heavily damaged by species of *Xyleborus*. Seed and nuts are occasionally heavily infested by species of *Neodryocoetes*, *Coccotrypes* and *Hypothenemus*. *Pagiocerus frontalis* (Fabricius) is considered to be a serious pest of stored soft maize in parts of tropical America. *Hypothenemus moschatae* (Schauf.) is reported injuring the pods of the tamarind tree, *Tamarindus indica* (L.) (McFarlane, 1961).

The host plants of only a few species of these two families in Jamaica are known. Almost all of the Howden and Becker collection was made by beating the foliage of trees or from specimens taken at light and the borrowed specimens usually do not include data on the host plant. Therefore, host relations are not discussed in this work, except when host data is available in the literature.

ACKNOWLEDGEMENTS

In order to make this study as complete as possible, specimens were borrowed from a number of institutions and individuals. In the list that follows, the abbreviations in parenthesis are used in the text to indicate the location of the material; the names of the curators responsible for the loans follows the abbreviations:

British Museum (Natural History), London, (BM), R. T. Thompson.
Canadian National Collection, Ottawa, Ontario, (CNC).
Howden, Anne T., Ottawa, Ontario, (ATH).
Illinois Natural History Survey, Urbana, (INHS), M. W. Sanderson.
Institute of Jamaica, Kingston, (IJ), T. H. Farr.

Museum of Comparative Zoology, Cambridge, Massachusetts, (MCZ), J. F. Lawrence.

Schedl, K. E., Lienz, Austria (KES).

United States National Museum, Washington, D.C., (USNM), D. M. Anderson.

I wish to thank Prof. Dr. Karl E. Schedl, for his assistance in loaning several species from his collection. Dr. S. L. Wood, Brigham Young University, Provo, Utah, allowed me access to his collection in order to compare specimens and assisted in the identification of several species. I also appreciate the assistance given by Dr. D. M. Anderson, Systematic Entomology Laboratory, U.S. National Museum, for comparing specimens with material in the USNM, answering my numerous letters and helping in many ways. The completeness of this work is due to the co-operation of these individuals.

I also wish to thank my colleagues, Dr. E. C. Becker and Dr. J. M. Campbell for reading and criticizing the manuscript of this paper.

DISTRIBUTION

It is extremely difficult to discuss the distribution of Jamaican Scolytidae and Platypodidae since the fauna of the remaining West Indian islands and northern South America is very poorly known. The fauna of Mexico and Central America is better known but no detailed analysis of the fauna of those regions is yet available. Because of their secluded habitats, these insects are infrequently collected. The majority of the species discussed herein were collected either at light or by beating vegetation. While many species of Scolytidae and Platypodidae can be collected by these methods, these are not the most profitable methods one can use. Attraction to light is common for some species in *Xyleborus*, *Platypus* and possibly *Hypothenemus* but many species in the other Jamaican genera are only rarely taken in this way. Beating is useful only during the relatively short flight period of each species when individual specimens can be found resting on vegetation. I believe, therefore, that only a small percentage of the total scolytid fauna of Jamaica is discussed herein.

The following table shows the distribution of the genera of Scolytidae and Platypodidae as presently known for the major islands or island groups of the West Indies, and selected surrounding regions. Africa is included because of the large number of genera common to both areas. As seen from the table, no genus is endemic to Jamaica. Of the 42 genera known from the West Indies, 29 are recorded from Jamaica, 25 from the Lesser Antilles (mainly Guadeloupe), 24 from Cuba, 8 from Puerto Rico and 5 from Hispaniola. The low figures for the latter two islands are no doubt due to insufficient collecting.

All the genera in Jamaica have species that occur in Middle America or in

TABLE OF DISTRIBUTION OF WEST INDIAN GENERA OF SCOLYTIDAE AND PLATYPODIDAE

Genus	Jamaica	Cuba	Hispaniola	Puerto Rico	Lesser Antilles	Northern South America	Middle America	Africa	USA
Platypodidae									
Platypus	*	*	*	*	*	*	*	*	*
Tachyostus	*							*	
Scolytidae									
Bothrosternus	*					*	*		
Ceratolepsis					*	*	*		
Chaetophloeus	*	*					*		*
Chalcohyus				*					
Chramesus	*	*			*	*	*		*
Cladoctonus	*	*				*		*	
Cnesinus					*	*	*		*
Coccotrypes	*	*	*	*	*	*	*	*	*
Corthylus	*				*	*	*		*
Cryphalomorphus	*				*		*	*	*
Cryptocarenus	*	*			*	*			*
Cryptuloclepsus		*				*	*		*
Dendrocranulus		*			*	*	*		*
Dendrosinus	*			*		*	*		*
Hexacolus	*	*			*	*	*		*
Hoplites					*	*			
Hylastes	*						*	*	*
Hylocurosoma					*	*(?)			
Hylocurus		*				*	*	*	*
Hypothenemus	*	*	*	*	*	*	*	*	*
Ips	*						*		*
Micracis		*				*	*		*
Microborus	*				*		*	*	
Mimips	*						*	*	
Monarthrum	*	*			*	*	*		*
Neodryocoetes	*	*		*	*	*	*		
Pagiocerus	*	*			*	*	*	*	*
Phloeoborus	*					*	*		
Phloeosinus	*						*	*	*
Phloeotribus	*	*			*	*	*		*
Phrixosoma		*					*		
Pityophthorides (=Myeloborus)		*				*			
Pityophthorus	*	*			*	*	*	*	*
Poecilips	*	*	*	*	*		*	*	
Problechilus					*	*	*		
Pycnarthrum	*	*			*	*	*	*	
Scolytopsis		*				*	*		
Scolytus	*	*				*	*		*
Tricolus	*				*		*		
Xyleborus	*	*	*	*	*	*	*	*	*
Totals 42	29	24	5	8	24	30	35	16	24

northern South America. The fauna appears to be a blending of elements from these 2 regions with the Middle American derivitives being slightly more common.

Of the 69 species discussed, 26 are described as new, 11 are more or less widely distributed in the Neotropical Region, 12 are known only from the West Indies, 6 were previously known only from Mexico and/or Central America, 2 are common to Africa and the West Indies, 1 was known only from Africa and 3 were previously known from the United States and the West Indies. Six species could be considered cosmopolitan and 4 others have a broad distribution in the Old and New World that does not fit any of the above categories. The total number of species listed above exceeds 69, due to placing several species in 2 or more categories.

Among the 26 new species, 12 are from areas above 1200 meters in elevation, 11 are from areas between 150m and 1200m and 3 are from coastal areas, below 150m. Those from areas above 1200m probably should be considered endemic to the island. The others may eventually be found on other West Indian islands.

The genera *Cnesinus*, *Micracis* and *Hylocurus* are most conspicuous by their absence. Each of these genera contains numerous species from throughout the Neotropical Region where they form a conspicuous part of the fauna. No species in these genera were collected on Jamaica. One would also expect a better representation of the Corthylini and Hexacolini since these tribes are important constituents of the Neotropical fauna.

TAXONOMY SECTION

KEY TO THE FAMILIES SCOLYTIDAE AND PLATYPODIDAE

1. Anterior tarsi with segment 1 longer than segments 2, 3 and 4 combined (Fig. 1); head always visible from above and as wide as thorax; body more than 4 times longer than wide . . . . . Platypodidae Shuck

Anterior tarsi with segment 1 shorter than segments 2, 3 and 4 combined (Figs. 2, 3); head sometimes visible and often invisible from above and never as wide as thorax; body less than 4 times longer than wide . . . . . Scolytidae Westwood

FAMILY PLATYPODIDAE SHUCK

This family contains hundreds of species distributed throughout the world, mostly in tropical and subtropical areas. In addition to the characters given in the key above, members of this family can be recognized by their elongate, cylindrical

shape, by the broad, flattened head, by the compressed, solid antennal club (Fig. 11) and by the elongate, striate elytra which is prolonged into spine-like processes in the male.

KEY TO THE JAMAICAN GENERA OF PLATYPODIDAE

1. Elytra steeply declivious at apex; posteriolateral margin of pronotum with a distinct tooth just behind lateral indentation . . . . . *Tachyostus* Schedl
   Elytra not declivious at apex; posteriolateral margin of pronotum smooth behind lateral indentation . . . . . *Platypus* Herbst

GENUS TACHYOSTUS SCHEDL

Tachyostus Schedl, 1939, Verh. int. Kongress Ent. 1: 400.
Type species: *Platypus schaufussi* Strohmeyer, monotypic.

This genus consists of about 10 species which occur in the tropical regions of Africa and Madagascar. The 1 species found in Jamaica has obviously been introduced, probably in fairly recent times.

1. *Tachyostus schaufussi* (Strohmeyer)

(Fig. 4)

Platypus schaufussi Strohmeyer, 1913, Ent. Bl. Bio. Syst. Käfer 7/8: 161.
Tachyostus schaufussi: Schedl, 1939, Verh. int. Kongress Ent. 1: 400.

Male. – Length 5.3 mm, 3.2 times longer than wide; reddish.

Frons flattened, weakly impressed about the level of antennal insertions, more strongly impressed at level of lower margin of eyes; surface moderately dull, reticulate, punctures rather shallow, oval, irregularly placed, becoming more regular toward epistomal margin.

Pronotum 1.3 times wider than long; sides moderately constricted at about middle; surface brightly shining, rather closely punctured, punctures somewhat larger on anterior half; darkened area of median line visible on basal third, line not reaching posterior margin; lateral areas smooth, indented portion terminating in a stout spine located just behind middle, spine visible in dorsal view.

Elytra 1.8 times longer than wide, subinflated on basal half; basal margins finely, sharply raised, rugose behind; striae distinctly impressed, opaque, becoming wider and converging at upper level of declivity, punctures numerous, small, oval, denser near upper level of declivity: interspaces smooth, shining, at least twice as wide as striae on disc, narrower than striae at upper level of declivity, punctures rather numerous, irregularly placed. Declivity abrupt, steep; suture and first

interspace elevated to near apex; interspace 2 slightly elevated on upper third, other interspaces flat; surface details obscured by an incrustation; vestitutre consisting of short, flattened setae along interspaces 1, 3 and 5 and several setae clustered on subtuberculate elevation near center of interspace 5.

Female. – Not represented in material at hand.

Distribution. – Central Africa and Jamaica (introduced).

JAMAICA: *St. Ann:* Moneague, 1 January?, W. S. Brooks, 1 (MCZ).

Remarks. – This African species is obviously introduced and is probably not established. Adults are easily recognized by the very steep elytral declivity with 1 tubercle on each elytron near the center of interspace 5.

Mr. F. G. Browne (personal correspondence) states that this specimen represents the subspecies *minor* Schedl. This subspecies is known from Ghana, Ivory Coast, Kenya and the Republic of the Congo.

GENUS PLATYPUS HERBST

Platypus Herbst, 1793, *in* Jablonsky, Natursyst. Ins.; Kafer 5: 128.
Type species: *Bostrichus cylindrus* Fabricius, monotypic.

This is a cosmopolitan genus that is well represented in the Neotropical Region. Only 9 species are recorded from the West Indies; 5 species were collected on Jamaica.

KEY TO THE JAMAICAN SPECIES OF PLATYPUS

1. Length less than 3.5 mm; elytral apex broadly rounded, serrate in male, not extended into long terminal processes (Fig. 5) . . . . 2. *ustulatus* Chapuis
   Length more than 3.5 mm; elytral apex of male extended into long terminal processes 2
2. Disc of pronotum with 2 pores. 3
   Disc of pronotum without pores 5
3. Length more than 4 mm; terminal processes of male elytra truncate at tip (Fig. 6) . . . . . 3. *jamaicensis* n. sp.
   Length less than 4 mm; terminal processes of male elytra acute or blunt at tip 4
4. Elytra distinctly wider behind middle, sides arcuate; elytral apex between terminal processes curved (Fig. 7); elytral striae distinctly impressed . . . . . 4. *hians* Chapuis
   Elytra only slightly wider behind middle, sides nearly straight; elytral apex between terminal processes straight (Fig. 8); elytral striae faintly impressed . . . . . 5. *perplexus* n. sp.
5. Elevated apical portion of first interspace of male granulate along summit, dull; surface of female frons minutely reticulate between punctures, opaque over entire surface . . . . . 6. *linearis* Stephens

Elevated apical portion of first interspace of male smooth and shining along summit; surface of female frons smooth and shining between punctures except for an arcuate, reticulate portion just above epistomal margin . . . . . 7. *pulicarius* Chapuis

2. *Platypus ustulatus* Chapuis

(Fig. 5)

Platypus ustulatus Chapuis, 1866, Monographie Platypides, p. 224.

Platypus petersi Chapuis, 1866, Monographie Platypides, p. 226; Schedl, 1960. Memoires Inst. R. Sci. Nat. Belgique 2(62): 41 (= *ustulatus*).

Platypus obsoletus Chapuis, 1866, Monographie Platypides, p. 228; Schedl, 1960, Memoires Inst. R. Sci. Nat. Belgique 2(62): 41 (= *ustulatus*).

Males. – Length 2.8 to 3.5 mm, 4.0 times longer than wide; pronotum and head dark reddish-brown, elytra lighter reddish-brown, very dark brown, almost black on posterior one-fourth.

Frons flattened, shining; surface densely, closely punctured with a larger, deeper puncture at midpoint about on line with lower edge of eyes; vestiture consisting of erect, upward pointing, hair-like setae on and near vertex, some of these on vertex longer than others. Antennal club 1.3 times longer than wide.

Pronotum 1.2 times longer than wide; sides distinctly constricted near middle; surface shining, smooth, rather finely punctured, the punctures of various sizes, all shallowly impressed; darkened portion of median line visible on posterior third, slightly impressed.

Elytra 1.9 times longer than wide, widest on posterior third; sides slightly arcuate, apex broadly rounded, serrate when viewed from above, devoid of long spine-like processes or extensions; striae, except first, not impressed except near apex, punctures oval, weakly impressed; interspaces convex, smooth, shining, impunctate; interspace 1 ending just before apex in a slightly elevated spine; interspace 2 ending before apex by convergence of striae 1 and 2; interspace 3 extending beyond other interspaces, ending in a short, extended spine, below this spine are several others, joined by a acute ridge; remaining interspaces ending before apex; lateral margins serrate beyond the spine of interspace 3 to a point where the dark color meets the light color.

Female. – Not represented in the material at hand.

Distribution. – Known from Brazil, Colombia, Jamaica, Mexico and Venezuela.

JAMAICA: *Kingston:* Kingston, 3–8 March 1908, M. Cameron, 1 (BM).

Remarks. – This species is in Chapuis' group Platypi terminati. Adults can be easily distinguished from those of other species of *Platypus* in Jamaica by their smaller size, by the distinct color pattern and by the broadly rounded, serrate elytral apex of the male.

3. *Platypus jamaicensis* n. sp.

(Fig. 6)

Holotype (♂). – Length 5.0 mm, 4.2 times longer than wide; very dark reddish-brown.

Frons flattened, faintly longitudinally concave, more so at lateral margins of epistoma; surface shining, densely punctate, punctures rather deep, closely placed. Antennal club 1.2 times longer than wide, densely pubescent.

Pronotum 1.2 times longer than wide; sides distinctly constricted just behind middle; surface shining, rather sparsely punctured, punctures shallow, widely separated; darkened portion of median line visible on posterior fourth, extending between 2 large pores situated on posterior fourth of disc; lateral margin acute over lateral indentation.

Elytra 2.4 times longer than wide, widest at posterior third; sides slightly arcuate; striae slightly impressed in regular rows, punctures oval, separated by a distance equal to half their own diameters; interspaces smooth, convex, at least 4 times wider than striae; interspace 1 ending in elevated spine just before elytral apex; other interspaces blending into the large truncate elytral process, these processes separated by a distance equal to half their own width, concave below, with a small spine at elytral apex.

Female. – Similar in size and proportions to male. Frons flattened, dull, reticulate, a few very fine punctures scattered over surface, these denser and deeper above level of eyes; elytral striae not as deeply impressed, punctures finer; interspaces dull, reticulate; elytral apex simple, truncate, pubescent.

Type Material. – Holotype, male, Hardwar Gap, St. Andrew Parish, Jamaica, 4000', 29 July 1966, Howden and Becker (No. 11474 in CNC). Allotype, female, same data as holotype except collected on 23 July 1966. Paratypes 23, same data as holotype except collected between 10–25 July, Howden and Becker and A. T. Howden.

The holotype, allotype and most of the paratypes are in the CNC, other paratypes are in the collections of the Institute of Jamaica, Kingston, and A. T. Howden, Ottawa, Ontario.

Remarks. – This species is apparently in Chapuis' group Platypi trispinati. Adults are easily recognized by the very large, truncate terminal processes on the male elytra, by their larger size (4.7 to 5.1 mm) and by their very dark color. This species occurs at high altitudes in the Blue Mountains and is probably endemic to Jamaica.

4. *Platypus hians* Chapuis

(Fig. 7)

Platypus hians Chapuis, 1866, Monographie Platypides, p. 167; Schedl, 1960, Memoires Inst. R. Sci. Nat. Belgique 2 (62): 27.

Platypus apertus Chapuis, 1866, Monographie Platypides, p. 169; Schedl, 1960, Memoires Inst. R. Nat. Sci. Belgique 2(62): 27 (= *hians*).

Platypus perpusillus Chapuis, 1866, Monographie Platypides, p. 171; Schedl, 1960, Memoires Inst. R. Nat. Sci. Belgique 2(62): 27 (= *hians*).

Males. – Length 3.6 to 4.0 mm, 4.1 times longer than wide; light reddish-brown, usually darker at elytral apex.

Frons flattened, slightly impressed between antennal insertions; surface rather dull, densely punctate, punctures large, shallow, closely placed. Antennal club about 1.3 times longer than wide.

Pronotum 1.1 times longer than wide; sides distinctly constricted at middle; surface shining, rather sparsely punctured, punctures small, shallow; darkened portion of median line visible on posterior third, extending between 2 large pores situated on posterior third of disc; lateral margins acute over lateral indentation.

Elytra 2.6 times longer than wide, widest on posterior third; sides arcurate; striae impressed, punctured in regular rows, punctures oval, nearly touching; interspaces convex, smooth, at least 4 times wider than striae; interspaces 1, 3, 5 and 7 ending in distinct elevated spines just before apex, spines tubercule-like on interspaces 3, 5 and 7; terminal processes blunt, tips widely separated, beneath these processes is a downward projecting, blunt spine; surface between terminal processes distinctly, minutely granulate.

Females. – Similar in size and proportions to male. Frons flattened, dull, surface minutely reticulate, sparsely punctured; elytral striae not as deeply impressed, punctures finer; elytral apex simple, truncate, pubescent.

Distribution. – Known from Brazil, Guadeloupe, Jamaica and Venezuela. Probably occurs throughout the Neotropical Region.

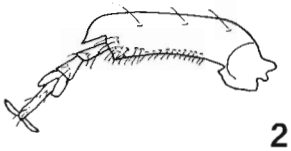
JAMAICA: *Portland:* Port Antonio, 1–7 August 1966, Howden and Becker, 3 (CNC). *St. Andrew:* Irish Town, 24 August 1966, Howden and Becker, 1 (CNC). *Trelawny:* Good Hope, 17 August 1966, H. F. Howden, 2 (CNC); Duncans, 23 August 1966, Howden and Becker, 1 (CNC).

Remarks. – This species is in Chapuis' group Platypi trispinati. Adults may be

---

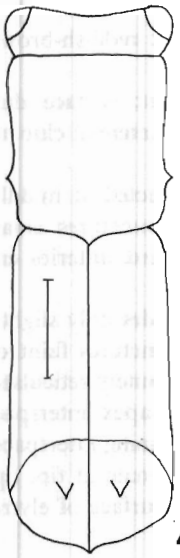
Figs. 1–11. Anterior tarsi: 1, *Platypus linearis;* 2, *Scolytus dimidiatus;* 3, *Pityophthorus abnormalis.* 4, *Tachyostus schaufussi*, dorsal outline. 5, *Platypus ustulatus*, ♂ elytral apex. 6, *Platypus jamaicensis*, ♂ elytral apex. 7, *Platypus hians*, ♂ dorsal outline. 8, *Platypus perplexus*, ♂ dorsal outline. 9, *Platypus linearis*, ♂ elytral apex. 10, *Platypus pulicarius*, ♂ elytral apex. 11, *Platypus lincaris*, ♂ antennas. Lines in figures equal 1 mm.

1

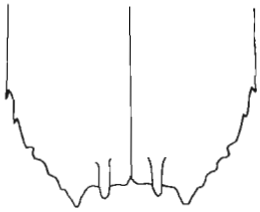


2

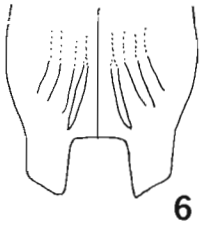
3



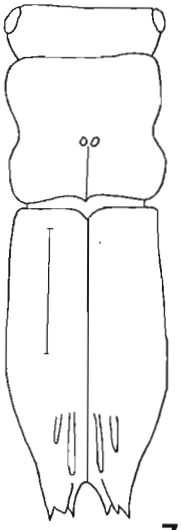
4



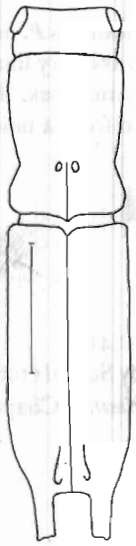
5



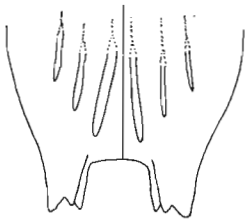
6



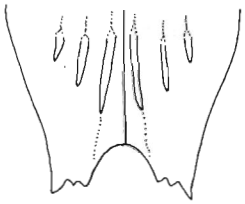
7



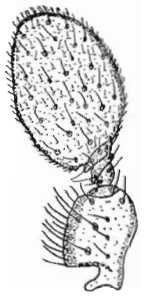
8



9



10



11

recognized easily by the presence of 2 pores on the pronotum of both sexes, by the smooth summit of interspace 1 of the male and by the smaller size. *Platypus hians* closely resembles *P. perplexus* but can be distinguished by the distinctly wider elytra and by the curved elytral apex of the male.

5. *Platypus perplexus* n. sp.

(Fig. 8)

Holotype (♂). – Length 3.8 mm, 4.2 times longer than wide; reddish-brown, darker at elytral apex.

Frons flattened, slightly impressed above epistomal margin: surface dull, minutely reticulate, punctures large, shallow, rather indistinct. Antennal club 1.4 times longer than wide.

Pronotum 1.4 times longer than wide; sides distinctly constricted at middle; surface rather dull, minutely reticulate, sparsely punctured, punctures small, shallow; darkened portion of median line visible on posterior third, anterior end extending just beyond 2 distinct pores.

Elytra 2.4 times longer than wide, widest in posterior third; sides only slightly arcuate; striae feebly impressed, punctured in regular rows, punctures faint on disc, oval; interspaces flat, at least 4 times wider than striae, minutely reticulate; interspace 1 ending in a rounded, blunt elevation just before elytral apex; interspace 3 extending to terminal process, forming the dorsal margin; remaining interspaces blending into terminal process; terminal process broadly emarginate at tip, tips widely separated, the spine below processes long, acute at tip; surface of elytral apex between processes minutely reticulate, shining.

Female. – Unknown.

Type material. – Holotype, male, Good Hope, Trelawny Parish, Jamaica, 17 August 1966, H. F. Howden (No. 11475 in CNC).

Remarks. – This species, in Chapuis' group Platypi trispinati, resembles *P. hians* but the adults are easily distinguished by the more slender body, by the very faintly impressed elytral striae and by the different structure of the elytral apex. This species may possibly be the male of *P. aerolatus* Chapuis, described from a unique female from Cuba.

6. *Platypus linearis* Stephens

(Figs. 9, 11)

Platypus linearis Stephens, 1835, Illustr. Brit. Ent., Mandibulata 5: 419.

The following New World species names are given as synonyms by Schedl (1960): *compressus* Chapuis, *dejeani* Chapuis, *difficilis* Chapuis, *emarginatus* Chapuis,

kraatzi Chapuis, *laevicollis* Chapuis, *lebasi* Chapuis, *maeklini* Chapuis, *marseuli* Chapuis, *oblongus* Chapuis, *poeyi* Guérin-Méneville, *praevius* Chapuis, *proximus* Chapuis, *punctulatus* Chapuis, *regularis* Chapuis, *reticulatus* Chapuis, *rotundatus* Chapuis, *rugulosus* Chapuis, *subaequalis* Chapuis, *subcostulatus* Jacquelin-Duval and *wesmaeli* Chapuis.

Males. – Length 3.6 to 4.2 mm, 3.6 times longer than wide; reddish-brown, apex of elytra usually darker.

Frons flattened; surface minutely reticulate, rather brightly shining, densely punctured, punctures large, close, usually smaller near epistomal margin. Antennal club 1.3 times longer than wide.

Pronotum 1.1 times longer than wide; sides distinctly constricted behind middle; surface brightly shining, smooth, rather densely punctured, punctures irregular in shape and size, shallow; darkened portion of median line visible on posterior third.

Elytra 2.2 times longer than wide, widest in posterior third; sides rather strongly arcuate; striae distinctly impressed, punctured in regular rows, punctures oval, separated by a distance equal to about half their own length, slightly impressed; interspaces 1, 3, 5 and 7 more strongly, distinctly elevated on disc, surface generally dull, reticulate, sometimes smooth, shining; interspace 1 ending in an elevated process some distance before elytral apex, surface dull, minutely reticulate, distinctly granulate along summit; interspaces 3, 5 and 7 slightly elevated before continuing into terminal process, surface dull, finely granulate along summit; terminal processes rather short, blunt, tips widely separated, the spine below processes short, acute; surface of elytral apex between terminal processes very dull, strongly reticulate-punctate.

Female. – Similar in size and proportions to male. Frons flattened, minutely reticulate, shining, punctures finer than in male, transverse on lower half; elytral striae not as deeply impressed; interspaces nearly flat, dull; elytral apex simple, truncate, pubsecent.

Distribution. – Throughout the tropical and subtropical regions of the New World and Africa.

JAMAICA: *Kingston:* Palisadoes, 25 August 1966, Howden and Becker, 6 (CNC, ATH). *Manchester:* Mizpah, 16 August 1966, 1 (CNC). *Portland:* Port Antonio, 28 July 1952, A. M. Laessle, 2 (IJ): Port Antonio, 1–7 August 1966, E. C. Becker, 13 (CNC). *St. Andrew:* Beverly Hills, August 1961, R. P. Bengry, 1 (IJ); Crossroads, 12 December 1951, R. P. Bengry, 1 (IJ); Halfway Tree, 5 February 1960, T. H. Farr, 1 (IJ); Irish Town, 24 August 1966, Howden and Becker, 41 (CNC, ATH); Meadowlands, March 1960, A. M. Wiles, 4 (IJ). *St. Ann:* St. Anns Bay, 24–26 December 1953, G. R. Proctor, 1 (IJ). *St. Catherine:* Guanaboa Vale, 19 January 1958, T. H. Farr, 2 (IJ). *St. Thomas:* Bath, 18 July 1961, J. Maldonado and T. H. Farr, 3 (IJ). *Trelawny:* Barbecue Bottom, 13 August 1966, H. F. Howden, 1 (CNC); Duncans, various dates in August 1966, Howden and Becker, 124 (CNC,

ATH); Good Hope, 11 August 1966, H. F. and A. T. Howden, 32 (CNC, ATH); Windsor, 30 August 1955, R. P. Bengry, 2 (IJ). In addition, 2 females that are referred to this species were taken at Hardwar Gap, 11 July 1966 by Howden and Becker.

Remarks. - This is by far the most common species of *Platypus* found on Jamaica. Adults are easily recognized by the dull, reticulate surface of the elytral apex of the male and by the distinctly granulate posterior portion of interspace 1 of the male. In addition, when viewed from above, the apical border of the male elytra is straight between the terminal processes.

7. *Platypus pulicarius* Chapuis

(Fig. 10)

Platypus pulicarius Chapuis, 1866, Monographie Platypides, p. 165; Schedl, 1960, Memoires Inst. R. Sci. Nat. Belgique 2(62): 26.

Platypus melanurus Chapuis, 1866, Monographie Platypides, p. 180; Schedl, 1960, Memoires Inst. R. Sci. Nat. Belgique 2(62): 26 (= *pulicarius*).

Platypus schaumi Chapuis, 1866, *Monographie Platypides*, p. 181; Schedl, 1960, Memoires Inst. R. Sci. Nat. Belgique 2(62): 26 (= *pulicarius*).

Males. - Length 3.7 to 4.7 mm, 3.7 times longer than wide; reddish-brown, usually darker at elytral apex.

Frons flattened; surface brightly shining, densely punctate, punctures large, shallow, closely placed except just above epistoma. Antennal club 1.5 times longer than wide.

Pronotum 1.2 times longer than wide; sides distinctly constricted at middle; surface brightly shining, rather sparsely punctured, punctures small, widely scattered, surface between punctures very finely punctate-reticulate; darkened portion of median line visible on posterior third.

Elytra 2.5 times longer than wide, widest on posterior third; sides arcurate; striae impressed, punctured in regular rows; punctures oval, closely placed; interspaces convex, smooth, at least 4 times wider than striae; interspace 1 ending in a smooth elevated spine just before elytral apex; interspaces 3, 5 and 7 ending in low, inconspicuous elevations; terminal processes blunt, tips widely separated, less so than in *linearis;* spines beneath processes small, blunt, set more closely together than in *linearis;* surface of elytral apex between terminal processes more finely granulate than in *linearis*.

Females. - Similar in size and proportions to male. Frons flattened, brightly shining except just above epistomal margin, punctures deep, large at upper level of eyes, becoming shallower and transversely elongate in median portion. Pronotum duller, more evenly reticulate. Elytral striae less deeply impressed; interspaces duller, very minutely, densely punctate; apex simple, truncate, pubescent.

Distribution. – Known from Argentina, Brazil, Jamaica and Puerto Rico, but probably occurs throughout the Neotropical Region.

JAMAICA: *St. Andrew:* Hardwar Gap, 4000', various dates in July 1966, Howden and Becker, and A. T. Howden, 15 (CNC, ATH); Irish Town, 24 August 1966, Howden and Becker, 2 (CNC). *Trelawny:* Good Hope, 8 August 1966, H. F. Howden, 2 (CNC); 7 miles northwest of Quickstep, 17 March 1962, J. Poulter, 3 (IJ). One male, tentively referred to this species, is from Barbecue Bottom, Trelawny Parish, 13 August 1966, H. F. Howden.

Remarks. – This species, in Chapuis' group Platypi trispinati, closely resembles *P. linearis* but the adults of *P. pulicarius* may be distinguished by the smooth surface of the elevated portion of interspace 1 of the male and by the dull, reticulate epistomal region of the female.

FAMILY SCOLYTIDAE WESTWOOD

This family is world-wide in distribution, being found in all forested regions. It contains approximately 6000 species. In addition to the characters given in the key on page 13, members of this family are characterized by their rather stout to moderately elongate, cylindrical shape and by their geniculate antennae which have a distinct, usually annulated club.

KEY TO THE JAMAICAN GENERA OF SCOLYTIDAE

1. Lateral margin of anterior and posterior tibiae unarmed except for a single curved process at outer apical angle that curves toward and extends beyond process of inner apical angle (Fig. 2); elytra not declivous behind, abdomen ascending abruptly behind to meet them; antennal funicle 7-segmented (Fig. 36). (Subfamily Scolytinae. tribe Scolytini) . . . . *Scolytus* (page 27)

   Lateral margins of anterior tibiae armed by several tooth-like processes none of which curve toward process of inner apical angle (Fig. 3); elytra declivous behind, the abdomen horizontal, antennal funicle variable 2

2. Anterior margins of elytra raised and bearing a series of crenulations; pronotum usually unarmed; head usually visible from above (subfamily Hylesininae) 3

   Anterior margins of elytra smooth, rounded or with a fine raised line; pronotum usually bearing granules or asperities on at least anterior third; head usually concealed from above (subfamily Ipinae) 11

3. Pronotum longitudinally strigose; protibiae bearing a curved bifid process at

apex; antennal funicle 7-segmented (tribe Bothrosternini) 4
Pronotum never longitudinally strigose; protibiae bearing several teeth along margin and at apex; antennal funicle variable 5

4. Sutures of antennal club straight (Fig. 37); rostrum at tip distinctly wider than distance between eyes; prothorax with a defined lateral margin . . . . . *Bothrosternus* (page 28)
Sutures of antennal club curved (Fig. 38); rostrum at tip as wide as distance between eyes; prothorax lacking a defined lateral margin . . . . . *Pagiocerus* (page 29)

5. Lateral prosternal area bearing an elevated ridge extending from coxa to anterior margin; crenulations on elytral bases poorly developed; head subrostrate (tribe Hylastini). 6
Lateral prosternal area without an elevated ridge; crenulations on elytral bases more strongly developed; head not prolonged. 7

6. Body elongate, less than 4 mm long; frons flattened to weakly convex; pronotum smooth, distinctly punctured; eyes widely separated on frons . . . . . *Hylastes* (page 30)
Body compact, stout, very large, more than 6 mm long; frons concave to flattened; pronotum punctate-rugose, asperate at anterior lateral angles; eyes nearly touching on frons . . . . . *Phloeoborus* (page 32)

7. Crenulations on elytral bases restricted to area between the fifth interspaces; antennal funicle 5-segmented, club oval (Fig. 40) (tribe Hypoborini) . . . . . *Chaetophloeus* (page 33)
Crenulations on elytral bases more generally distributed extending beyond fifth interspaces: antennal funicle 5- or 7-segmented, club variable (tribe Hylesenini) 8

8. Antennal funicle 7-segmented: scutellar notch between elytra very deep, acute; anterior margin of elytra V-shaped . . . . . *Dendrosinus* (page 37)
Antennal funicle 5-segmented; scutellar notch obtuse; anterior margin of elytra nearly straight, transverse. 9

9. Pronotum entirely punctate, not asperate; eye deeply emarginate; antennal club with 3 oblique sutures . . . . . *Phloeosinus* (page 38)
Pronotum asperate in anterolateral areas; eye entire; antennal club laminate or solid and devoid of sutures. 10

10. Antennal club deeply divided into 3 units (Fig. 41); vestiture hair-like . . . . . *Phloeotribus* (page 39)
Antennal club solid, unmarked by sutures (Fig. 42); vestiture scale-like . . . . . *Chramesus* (page 40)

11. Metepisternum visible to posterior extremity; antennal club usually thickened basally, obliquely truncate or elongate, if elongate then sutures usually, strongly displaced apically on posterior surface 12
Metepisternum largely covered by elytra, only anterior portion visible; an-

tennal club strongly flattened, bearing sutures on both sides, those on posterior surface not strongly displaced apically 23

12. Antennal funicle 6-segmented (Fig. 43); lateral margin of pronotum bearing a sharp, finely raised line (tribe Hexacolini) 13

Antennal funicle 2- to 5-segmented; lateral margin of pronotum usually rounded 16

13. Eyes very large; antennal club wider than long, sutures of basal area strongly procurved . . . . . *Microborus* (page 41)

Eyes not very large; antennal club longer than wide or as long as wide, sutures variable 14

14. Antennal club round, as long as wide, sutures recurved; anterior coxae contiguous. . . . . *Cladoctonus* (page 45)

Antennal club longer than wide, sutures transverse; anterior coxae separated by an intercoxal piece 15

15. Body glabrous; anterior portion of pronotum longitudinally rugose . . . . . *Hexacolus* (page 47)

Body bearing abundant vestiture consisting of erect, scale-like setae; anterior portion of pronotum uniformly punctate . . . . . *Pycnarthrum* (page 43)

16. Antennal club strongly flattened, bearing sutures on both sides, those on posterior face strongly procurved and limited to apical half; costal margins of elytra ascending slightly posteriorly (tribe Cryphalini) 17

Antennal club obliquely truncate or flattened, at least with sutures of posterior face restricted to less than apical one-fourth; costal margins of elytra descending posteriorly 19

17. Antennal club bearing a strongly oblique septum on one side, no sutures indicated (Fig. 45); pronotum bearing a fine, indistinct lateral line . . . . . *Cryphalomorphus* (page 60)

Antennal club bearing distinct sutures, no septum present (Fig. 44); pronotum bearing a distinct, raised lateral line 18

18. Antennal club not septate; raised lateral margin of pronotum extending two-thirds of distance from basal margin; elytra glabrous except for a few subcapitate interstrial bristles . . . . . *Cryptocarenus* (page 62)

Antennal club with first sutures partly septate (Fig. 44); raised lateral margin of pronotum extending only one-third of distance from basal margin; elytra vestiture abundant, consisting of rows of scale-like setae or hair-like seate . . . . . *Hypothenemus* (page 48)

19. Pronotum either punctured or else finely granulate over entire surface, dorsal profile evenly convex, not strongly declivous anteriorly, anterior margin never armed; declivity unarmed (tribe Dryocoetini) 20

Pronotum coarsely asperate over surface, usually punctate on posterior one-third at least, dorsal profile not evenly convex, strongly declivous anteriorly, anterior margin sometimes armed; declivity frequently bearing spines, teeth

or granules 21

20. Pronotal asperities very fine, widely separated; pronotum moderately to weakly convex both transversely and longitudinally . . . . . *Poecilips* (page 64)

Prontal asperities larger, very close, their bases almost touching; pronotum very strongly convex both transversely and longitudinally . . . . . *Coccotrypes* (page 66)

21. Meso- and metathoracic tibiae rather broadly dilated to a point slightly beyond middle, then gradually narrowed to apex, and bearing on outer margin, a series of small, closely set teeth of nearly uniform size and shape; antennal club distinctly obliquely truncate (Fig. 50) (except *X. cavipennis*) (Tribe Xyleborini) . . . . . *Xyleborus* (page 71)

Meso- and metathoracic tibiae rather slender, abruptly narrowed apically, armed by a few rather widely spaced coarse teeth; antennal club flattened 22

22. Small species, less than 3 mm in length; elytral declivity shallowly sulcate, lateral margins bearing 3 small teeth; sutures of antennal club strongly procurved (Fig. 47) . . . . . *Mimips* (page 69)

Larger species, more than 4 mm in length; elytral declivity deeply sulcate, lateral margins bearing 6 large teeth; sutures of antennal club bisinuate, sharply angled at middle (Fig. 48) . . . . . *Ips* (page 70)

23. Antennal funicle 5-segmented, club usually smaller; posterior oral region including pregula flush with surrounding surface of head; pregula broad, its lateral sutures apparently diverging to run behind oral ridge (tribe Pityophthorini) 24

Antennal funicle 1- to 3-segmented, club usually larger; posterior oral region including pregula depressed below surrounding surface of head or pregula narrow, greatly reduced in size, its sutures extending into oral cavity (tribe Corthylini) 25

24. Pronotum with definite summit near middle; antennal club with first 2 sutures arcuate, and usually chitinized at lateral margins (Fig. 51) . . . . . *Pityophthorus* (page 86)

Pronotum without definite summit near middle, evenly arched from base to anterior margin; antennal club with first suture chitinized at lateral margins, second and third sutures indicated by rows of setae (Figs. 52, 53) . . . . . *Neodryocoetes* (page 91)

25. Apical margin of elytra emarginate or notched at apex of suture; antennal funicle 2- or 3-segmented 26

Apical margin of elytra entire at apex of suture; antennal funicle 1-segmented (Fig. 56) . . . . . *Corthylus* (page 103)

26. Antennal funicle 3-segmented (Fig. 54) . . . . . *Tricolus* (page 98)

Antennal funicle 2-segmented (Fig. 55) . . . . . *Monarthrum* (page 100)

SUBFAMILY SCOLYTINAE

TRIBE SCOLYTINI

GENUS SCOLYTUS GEOFFROY

Scolytus Geoffroy, 1762, Hist. abreg. Ins. Paris 1: 309.

Ekkoptogaster Herbst, 1793, *in* Jablonsky, Natursyst. Ins., Käfer 5: 124.

(Emended to *Eccoptogaster* by Erichson (1836).

Type species: *Bostrichus scolytus* Fabricius (subsequent designation by Curtis, 1824).

The genus *Scolytus* contains a large number of species described from Europe, Asia, Malaya, Japan, North Africa and the New World. One species is known from the West Indies, none have previously been recorded from Jamaica.

8. *Scolytus dimidiatus* Chapuis

(Figs. 2, 12, 36)

Scolytus dimidiatus Chapuis, 1869, Syn. Scolytides, p. 57.

Females. – Length 2.8 to 3.1 mm, 1.9 times longer than wide; black, except legs and antennae reddish.

Frons flattened from eye to eye, slightly impressed above epistomal margin; surface shining, faintly punctured above the strongly elevated median tubercle, impunctate and more brightly shining below; epistomal margin emarginate; vestiture consisting of long, curved yellowish hair-like setae arising only along the sides of the frons and a few yellowish setae along the epistomal margin. Antennal club 1.4 times longer than wide; first suture strongly arcuate.

Pronotum as long as wide; sides strongly arcuate; base broadly bisinuate, margined by a fine, elevated line; surface finely, sparsely punctured on disc, more strongly punctured on lateral areas, these punctures large, deeply impressed becoming very fine over middle; lateral line prominent, area below rather strongly punctured.

Elytra 1.1 times wider than long; sides weakly arcuate, apex nearly truncate; striae distinctly impressed, punctures rather large, deep; interspaces punctured in nearly regular rows, punctures usually smaller than strial punctures and slightly less deeply impressed; vestiture consisting of scattered, interstrial, scale-like setae.

Ventral surface of abdomen with sternite 1 horizontal, distinctly punctate, clothed with short, yellowish setae; sternite 2 vertical, surface dull, distinctly punctured, the punctures smooth, shining, anterior margin bearing a laterally compressed, blunt tubercle, above which is located a tuft of hair as long as or slightly longer than the tubercle; sternites 3 and 4 about equal in width, surface

similar to second except punctures smaller and with narrow scales forming a median row; sternite 5 3.0 times wider than 4, surface similar to 4 except scales and hairs are intermixed.

Males. – Similar in size and proportions to female. Frons completely concealed by a dense fringe of yellowish hairs, thickest at vertex, reaching the epistomal margin; surface beneath hair convex, deeply, longitudinally grooved. Pronotum more deeply punctured on sides. Elytral punctures somewhat larger. Ventral sternite 2 more deeply punctured, tuft of setae above tubercle absent, scales narrower, longer.

Distribution. – Known from Cuba, Guatemala, Jamaica and Mexico.

JAMAICA: *Manchester:* Grove Place, 25 January 1961, T. H. Farr, 1 (IJ).

Remarks. – This species is rather easily recognized by the characters of the frons and by the venter of the female.

SUBFAMILY HYLESININAE

TRIBE BOTHROSTERNINI

GENUS BOTHROSTERNUS EICHHOFI

Bothrosternus Eichhoff, 1868, Berl. Ent. Zeit. 12: 150.

Type species: *Bothrosternus truncatus* Eichhoff, monotypic.

This genus contains about 15 species distributed in Central and South America. No species were previously known from the West Indies.

9. *Bothrosternus isolatus* n. sp.

(Figs. 13, 37)

Holotype (♂). – Length 2.4 mm, 2.2 times longer than wide; dark reddish-brown.

Frons transversely impressed just below level of eye emargination; upper portion convex, reticulate, moderately shining; epistomal region flattened below transverse impression, irregularly punctured in median portion, reticulate at lateral angles; vestiture consisting of stout, yellowish setae restricted to transverse impression and along lateral margins to near upper level of eyes; eyes separated by a distance equal to 1.75 times greatest width of eye. Antennal club 2.0 times longer than wide; funicle rather densely pubescent.

Pronotum 1.1 times wider than long, strongly convex, widest at about middle; sides strongly arcuate; anterior margin rather broadly rounded; surface closely, coarsely punctured, the punctures reticulate, longitudinally confluent; interspaces

smooth, shining, moderately elevated; median line weakly elevated from about middle to base; vestiture consisting of extremely short, fine, spatulate setae scattered over surface.

Elytra 1.6 times longer than wide; sides almost straight on basal two-thirds, narrowly rounded behind; striae rather deeply impressed, punctures not visible; interspaces weakly convex, at least 4 times wider than striae, surface dull, reticulate, sparsely, irregularly granulate, granules more prominent on interspace 1. Declivity convex, faintly impressed between third interspaces; striae more deeply impressed than on disc; interspaces as on disc except the smooth granules more prominent; interspaces 1 and 2 extending to apex, 3 joining 9; vestiture consisting of a row of spatulate setae on each interspace on posterior third of elytra, extending farther along disc on interspace 1.

Female. – Unknown.

Type Material. – Holotype, male, Clydesdale, St. Andrew Parish, Jamaica, 18 July 1966, H. and A. Howden (No. 11476 in CNC).

GENUS PAGIOCERUS EICHHOFF

Pagiocerus Eichhoff, 1868, Berl. Ent. Zeit. 12: 148.

Type species: *Pagiocerus rimosus* Eichhoff (subsequent designation by Hopkins, 1914).

This genus consists of 1 widely distributed species, *P. frontalis* (Fab.) and 3 additional species that may be synonyms of *P. frontalis*. This species is widely distributed in the New World and has been transported by commerce to many areas of the Old World.

10. *Pagiocerus frontalis* (Fabricius)

(Figs. 14, 38)

Bostrichus frontalis Fabricius, 1801, Syst. Eleuth. 2: 389.

Pagiocerus frontalis: Eggers, 1929, Wein. Ent. Zeit. 46(2): 42.

Pagiocerus rimosus Eichhoff, 1868, Berl. Ent. Zeit. 12: 148; Eggers, 1929, Wein. Ent. Zeit. 46(2): 46 (= *frontalis*).

Hylastinus fiorii Eggers, 1908, Ent. Bl. Biol. Syst. Käfer 4: 215; Schedl, 1960, Coleopts Bull. 14: 6 (= *frontalis*).

Pagiocerus chiriquensis Eggers, 1928, Arch. Inst. Biol. Sao Paulo 1: 92; Schedl, 1960, Coleopts Bull. 14: 6 (= *frontalis*).

Pagiocerus zeae Eggers, 1928, Arch. Inst. Biol. Sao Paulo 1: 92; Schedl, 1960, Coleopts Bull. 14: 6 (= *frontalis*).

Pagiocerus nitidus Eggers, 1930, Ent. Bl. Biol. Syst. Käfer 26(4): 170; Schedl, 1960. Coleopts Bull. 14: 6 (= *frontalis*).

Pagiocerus caraibicus Eggers, 1940, Arb. morph. taxon. Ent. Berl. 7: 136; Schedl, 1960, Coleopts Bull. 14: 6 (= *frontalis*).

Adults. – Length 2.0 to 2.4 mm, 1.9 times longer than wide; reddish-brown, pronotum usually darker.

Frons longer than wide, width at apex equal to distance between eyes, distinctly concave from epistoma to near upper level of eyes, strongly margined opposite antennal insertions; epistoma feebly elevated, bearing a strongly developed, median tubercle, this tubercle larger in males; surface brightly shining, feebly punctate; vestiture consisting of minute setae near lateral carinae and median tubercle, these longer, more prominent on lateral areas near eye margin. Antennal club 1.7 times longer than wide, oval, with 2 curved sutures.

Pronotum as long as wide, sides rather strongly arcuate, slightly constricted just behind the anterior margin, surface brightly shining, densely punctate, the punctures oblong, longitudinally confluent; area between punctures appearing convex, smooth, shining; median line not evident; vestiture consisting of extremely short, fine pubescence.

Elytra 1.4 times longer than wide, widest behind middle; sides slightly arcuate, rather broadly rounded behind; striae rather deeply impressed, punctures large, deep, closely placed; interspaces convex, 1.5–2.0 times wider than striae, surface brightly shining, irregularly punctate and rugose. Declivity convex; striae less deeply impressed than on disc; interspaces flatter. Vestiture consisting of a uniserrate row of spatulate setae on each interspace on posterior half of elytra, the length of these equal to or less than a distance equal to width of an interspace.

Distribution. – Throughout the tropical and subtropical areas of the New World, imported into Europe, Asia and Africa.

JAMAICA: *Manchester:* Mandeville, 16 July 1966, Howden and Becker, 2 (CNC). *St. Andrew:* Hardwar Gap, 4000', 29 July 1966, Howden and Becker, 2 (CNC, ATH); Newcastle, 19–22 August 1908, M. Cameron, 1 (BM).

Remarks. – This species is an important economic pest of corn throughout the soft maize producing countries. It has been imported into the Old World in infested maize.

Adults of *P. frontalis* are easily recognized by the narrow, subrostate head which bears a distinct tubercle on the epistoma and by the other characters given in the key to genera.

TRIBE HYLASTINI

GENUS HYLASTES ERICHSON

Hylastes Erichson, 1836, Archiv. f. Naturgesch. 1: 47.

Type species: *Bostrichus ater* Paykull (subsequent designation by Westwood, 1840).

In the New World, this genus is represented by about 24 species distributed

throughout the pine-growing regions. No species have been previously reported from the West Indies.

Consult Blackman (1941) for a more complete discussion of generic synonymy and for complete descriptions of the North American (except Mexican) species.

11. *Hylastes suspectus* n. sp.

(Fig. 15)

Holotype (♀). – Length 3.8 mm, 3.46 times longer than wide; very dark reddish-brown.

Frons generally convex, length from upper level of eyes to tips of epistomal lobes about equal to width between the eyes; epistoma broadly, shallowly concave on each side of median carina; the median carina distinct, elevated, extending from epistomal margin to upper level of eyes; surface below upper level of eyes rather dull, shallowly punctured and distinctly granulate, each granule distinctly elevated and bearing an erect, spatulate seta; vertex more strongly punctured, glabrous, more brightly shining. Antennal club slightly flattened, 1.2 times longer than wide.

Pronotum 1.4 times longer than wide, widest in front of middle; sides arcuate on anterior third, becoming straight and weakly converging to base; surface rather dull, deeply punctured, the punctures rather large, deeply impressed, occasionally 2 to 4 punctures overlap resulting in 1 large, elongate puncture; area between punctures convex, minutely reticulate; median line evident, extending from near base to anterior third; vestiture consisting of minute, scattered, appressed, hair-like setae.

Elytra 1.9 times longer than wide, distinctly wider than pronotum; sides weakly arcuate on anterior three-fourths, then rather narrowly rounded behind; surface moderately shining; striae slightly impressed, more so on declivity, punctures rather large, deeply impressed; interspaces at least twice as wide as striae, strongly rugose and weakly granulate on disc. Declivity convex, interspaces more strongly convex than on disc; granules much more prominent and conspicuous than on disc. Vestiture consisting of short, hair-like setae on discal interspaces, becoming scale-like and more abundant on declivity.

Male. – Unknown.

Type material. – Holotype, female, Hope River, St. Andrew Parish, Jamaica, 26 May 1908, M. Cameron, B. M. 1936–555. In British Museum (Natural History), London.

Remarks. – The description of this species is undertaken with some hesitation. I originally felt that this specimen must represent a described species that had been imported into Jamaica in pines. However, the specimen could not be matched with any species from Europe or the New World. Several Japanese species were also examined to no avail. The only conclusion remaining was that this specimen repre-

sented an unknown species, probably native to Cuba or Hispaniola or, less likely, Central America. Species of this genus live in pines, and since pines are native only to Cuba and Hispaniola (plus several small islands nearby), I feel that this is a valid conclusion.

Adults of this species are easily distinguished from those of bark-beetles species in Jamaica by the very dark reddish-brown (almost black) color, by the subrostate head, by the granulate elytral declivity, by the 7-segmented antennal funicle and by the conical club. Adults may be distinguished from those of other species of *Hylastes*, by the distinctly granulate frons, in which each granule bears a flattened, narrowly spatulate seta, by the deeply punctured pronotum on which from 2 to 4 punctures overlap, forming 1 elongate puncture and by the distinctly granulate declivital interspaces.

GENUS **PHLOEOBORUS** ERICHSON

Phloeoborus Erichson, 1836, Archiv. f. Naturgesch. 1: 54.

Type species: *Phloeoborus rudis* Erichson (subsequent designation by Hopkins, 1914).

This genus contains the largest specimens of Scolytidae occurring in the New World. About 28 species are known, all from the New World; 1 is known from Jamaica.

12. *Phloeoborus scaber* Erichson

(Figs. 16, 39)

Phloeoborus scaber Erichson, 1836, Archiv. f. Naturgesch. 1: 55.

Phloeoborus sericeus Chapuis, 1869, Syn. Scolytides, p. 13; Blandford, 1897, Biol. Cent-Am. 4(6): 152 (= *scaber*).

Males. – Length 7.1 to 8.7 mm, about 1.9 times longer than wide; dark reddish-brown.

Frons wider than long, distinctly arcuately impressed below eyes, impression divided by a longitudinal raised carina, lateral margins slightly elevated, bluntly carinate above antennal insertions bearing a blunt convex protuberance before lateral margin; surface moderately shining, rather densely punctured except near carina, punctures large, shallowly impressed. Antennal club acuminate, 1.3 times longer than wide; 2 distinct sutures visible. Eyes coarsely granulate, nearly touching on vertex.

Pronotum subquadrate, 1.5 times wider than long; sides broadly arcuate, anterior margin broadly rounded; surface moderately shining, roughly, closely punctured and asperate except for a small area on disc between median line and

lateral margin, asperities more common on anterior and lateral areas; median line evident on disc, broad and impunctate; preplural area not foveolate.

Elytra about 1.2 times longer than wide; sides parallel, posterior margin broadly rounded; striae distinctly impressed in regular rows, punctures rather large, deep, separated by a distance equal to their own diameters; interspaces dull, minutely reticulate, convex, at least 3 times wider than striae, surface transversely rugose, rugae biserrate beyond middle, becoming uniserrate over declivity. Declivity convex, rather steep; striae and interspaces as on posterior portion of disc except tubercles on interspaces smaller, blunter, more widely spaced; interspace 9 elevated, serrate from near middle of elytra to near apex.

Females. Similar in size and proportions to male. Frons not as deeply impressed; pronotal sculpture finer, preplural area foveolate, fovae fringed with yellowish setae; elytral sculpture finer.

Distribution. Known from Brazil, Colombia, Guatemala, Guyana, Jamaica, Mexico, Nicaragua and Panama.

JAMAICA: *Portland:* Port Antonio, 1 April 1906, A. E. White, 7 (MCZ, CNC); Port Antonio, 5 February 1952, F. A. McDermott, 1 (IJ); Port Antonio, 3 March 1955, B. Heineman, 1 (IJ); Port Antonio, 22 April 1956, T. H. Farr, 1 (IJ). *St. Andrew:* Hardwar Gap, 11 July 1966, Howden and Becker, 1 (CNC); Hardwar Gap, 19 July 1966, A. T. Howden, 1 (ATH). Schedl (1966) gives Dolphin Head, 22 March 1955, A. M. Nadler.

Remarks. – According to Blandford (1897), this is probably the most common species of the genus. The adults vary greatly in the structure and placement of the pronotal and elytral punctures and asperities and in the degree of development of the frontal impression.

TRIBE HYPOBORINI

GENUS CHAETOPHLOEUS LECONTE

Chaetophloeus Leconte, 1876, Proc. Am. phil. Soc. 15(96): 382.

Renocis Casey, 1886, Bull. Calif. Acad. Sci. 2: 257; Schedl, 1963, Ent. Abh. 28(6): 263 (= *Chaetophloeus*).

Pseudocryphalus Swaine, 1917, Dom. Canada Dept. Agric., Ent. Brch., Tech. Bull. 14(2): 20; Blackman, 1940, Proc. U.S. Nat. Mus. 88: 374 (= *Renocis*).

Type species: *Hylesinus histrix* Leconte, monotypic.

This genus contains about 20 species known from North America, Mexico, Brazil and West Indies. Two species are known from Jamaica, 1 of which is undescribed.

KEY TO THE JAMAICAN SPECIES OF CHAETOPHLOEUS

1. Length 1.5 to 1.6 mm; antennal club small, nearly equal in length to funicle; pronotal scales, at least in female, very small, slightly longer than wide and apparently divided to the base . . . . . 13. *chapini* (Blackman)

   Length 1.7 to 2.0 mm; antennal club large, about 1.7 to 2.0 times longer than funicle (Fig. 40); pronotal scales of both sexes much longer than wide, spatulate . . . . . 14. *howdeni* n. sp.

13. *Chaetophloeus chapini* (Blackman), n. comb

Renocis chapini Blackman. 1943, Proc. U.S. Nat. Mus. 94: 390.

Females. – Length 1.5 to 1.6 mm. 1.9 times longer than wide; reddish-brown with lighter scales and setae.

Frons flattened, broadly impressed above epistomal margin; surface shining, minutely reticulate, faintly punctured except for median portion of epistoma that is smooth and brightly shining; vestitutre rather dense, consisting of yellowish setae and divided scales. Antennal club small, about 1.5 times longer than wide, nearly equal in length to funicle.

Pronotum 1.6 times wider than long, widest near base; sides strongly arcuate, slightly constricted just behind the broadly rounded anterior margin; surface shining, densely punctured, punctures fine; asperities arranged on lateral portions of disc in 2 widely separated groups, each group consisting of 2 small asperities; vestiture dense, consisting of short, broad, bifurcate scales with longer, narrower scales along anterior margin and on basal portion of median line.

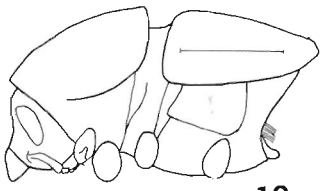
Elytra 1.1 times longer than wide; sides parallel on anterior two-thirds, then broadly rounded behind; striae moderately impressed, more strongly so over declivity, punctures rather large, close; interspaces convex, 1.5 times wider than striae, surface minutely punctate; vestiture dense, consisting of small, round, appressed scales over interstrial surface and a median row of longer, erect scales on each interspace. Declivity convex, unmodified except erect scales slightly longer than on disc.

Male. – Unknown.

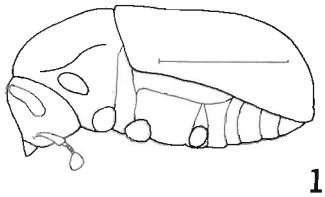
Distribution. – Known only from Jamaica.

JAMAICA: *Trelawny:* Barbecue Bottom, 13 August 1966, H. F. Howden, 1 (CNC). The type series, consisting of 2 females, came from Ocho Rios, St. Ann Parish, 2 February 1937, E. A. Chapin and R. E. Blackwelder (USNM).

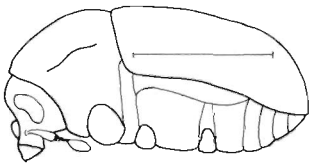
Figs. 12–24. Outline sketches of various species: 12, *Scolytus dimidiatus*; 13, *Bothrosternus isolatus;* 14, *Pagiocerus frontalis;* 15, *Hylastes suspectus;* 16, *Phloeoborus scaber;* 17, *Chaetophloeus howdeni;* 18, *Dendrosinus bourreriae;* 19, *Phloeotribus asperatus;* 20, *Chramesus brevisetosus;* 21, *Microborus camerunus;* 22, *Pycnarthrum hispidum;* 23, *Cladoctonus brevisetosus;* 24, *Hexacolus glaber*. Lines in figures equal 1 mm.



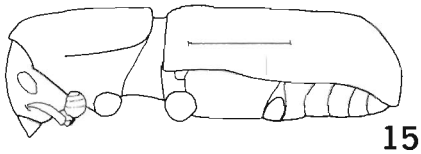
12



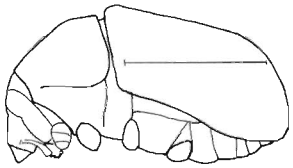
13



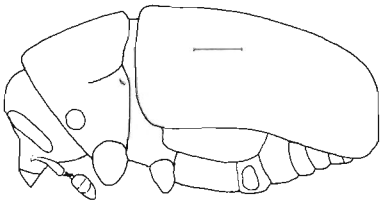
14



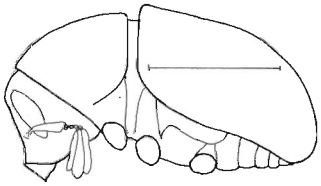
15



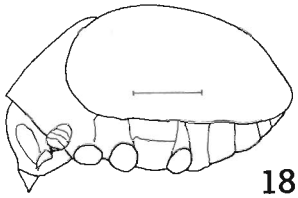
17



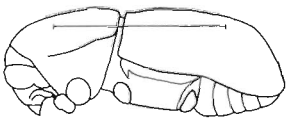
16



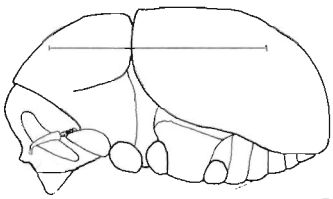
19



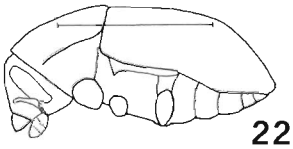
18



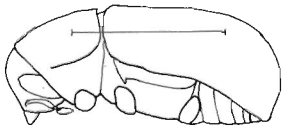
21



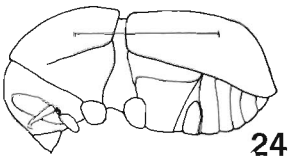
20



22



23



24

Remarks. – The key characters should adequately distinguish the adults of *C. chapini* and *C. howdeni*.

14. *Chaetophloeus howdeni* n. sp.

(Figs. 17, 40)

Holotype (♀). – Length 2.0 mm, 1.9 times longer than wide; dark reddish-brown with light scales and setae.

Frons weakly convex, arcuately impressed in median portion above epistoma; surface rather dull, minutely reticulate, faintly punctured, evenly granulate except for a smooth, arcuate impression; vestiture dense, consisting of nearly recumbent plumose setae and erect scales, these scales hair-like on epistoma, becoming broader towards vertex, the setae much longer on epistomal margin. Antennal club large, broadly oval, 1.2 times longer than wide, 1.7 times longer than funicle.

Pronotum 1.7 times longer than wide, widest near base; sides strongly arcuate, slightly constricted just behind the broadly rounded anterior margin; surface dull, minutely reticulate, densely punctured, punctures fine; asperities on lateral portion of disc arranged in 3 widely separated groups, each group consisting of 3 to 6 erect asperities; vestiture dense, consisting of narrow setae and broad scales intermixed over surface, also longer, spatulate scales are located on anterior margin and on basal portion of median line.

Elytra 1.3 times longer than wide; sides parallel on basal two-thirds, then broadly rounded behind; striae impressed, more strongly so over declivity, punctures large, close; interspaces convex, about 2.0 times wider than striae, surface dull, minutely reticulate; vestiture dense, consisting of narrow, semi-erect scales over surface and longer, erect, spatulate scales in median row on each interspace. Declivity convex, unmodified.

Male. – Similar to female in size and proportions. Frons strongly flattened from epistoma to upper level of eyes, slightly concave in median portion; surface dull, minutely reticulate, finely punctured; vestiture consisting of short, yellowish setae over frontal surface, longer and incurved on periphery, setae originating on vertex reaching epistomal margin; antennal club narrower and longer, 2.0 times longer than funicle; elytral striae slightly deeper and setae slightly longer.

Type material. – Holotype, female, Barbecue Bottom, Trelawny Parish, Jamaica, 10 August 1966, H. F. Howden (No. 11,477 in CNC). Allotype, male, same data. Paratypes, 14: same date as holotype (3); same data except collected 12 August 1966 (7); St. Ann Parish, Mt. Diablo, 20 August 1966, H. F. Howden (1); St. Thomas Parish, 14.5 miles east of Kingston, 22 May 1960, T. H. Farr (1) and 3 to 4 miles north of Mandeville, 20 June 1958, M. W. Sanderson (2).

The holotype, allotype and most of the paratypes are in the CNC. Additional

paratypes are in the collections of A. T. Howden, the Institute, of Jamaica, Kingston, and the Illinois Natural History Survey, Urbana.

Remarks. – This species appears to be related to *C. mexicanus* (Blackman) but the adults are distinctly larger and the pronotum bears 3 groups of distinct asperities, whereas in adults of *C. mexicanus* there are only 2 inconspicuous groups of coarse granules on the pronotum.

Specimens in the type series range in size from 1.8 to 2.1 mm.

TRIBE HYLESENINI

GENUS DENDROSINUS CHAPUIS

Dendrosinus Chapuis, 1869, Syn. Scolytides, p. 28.
Type species: *Hylesinus globosus* Eichhoff, monotypic.

This genus consists of 8 species distributed throughout the Neotropical Region. Only 1 species is known from the West Indies.

15. *Dendrosinus bourreriae* Schwarz

(Fig. 18)

Dendrosinus bourreriae Schwarz, 1920, Proc. Ent. Soc. Wash. 22: 225.
Dendrosinus lima Eggers, 1930, Ent. Bl. Biol. Syst. Käfer 26: 166; Eggers, 1934, Ent. Nachr.Bl. 8: 27 (= *bourreriae*).

Adults. – Length 3.8 to 4.0 mm, 1.6 times longer than wide; black.

Frons flattened, transversely impressed just above epistoma; surface brightly shining in median portion, punctate-reticulate above epistoma, along sides and on vertex: vestiture consisting of long, black setae arising from lateral margins and curled into a complete circle in median portion and short, light yellow setae arising from punctate area above epistoma and on vertex. Antennal club 1.4 times longer than wide, oval, truncate at tip. 2 slightly angulate sutures evident on basal half.

Pronotum 2.0 times wider than long, widest opposite lateral elytral angles; sides arcuate; anterior margin broadly rounded; posterior margin strongly extended toward scutellar notch; surface dull, reticulate, densely punctate, punctures close, rather deep; median line slightly elevated, narrow; vestiture consisting of short, black setae arising from each puncture.

Elytra (measured along suture) about as long as wide; sides arcuate, rather broadly rounded behind; anterior margin strongly extended laterally along pronotum making scutellar notch very deep; striae moderately impressed, punctures rather small, widely spaced; interspaces flat, 3 to 4 times wider than striae, surface dull, reticulate except for abundant, small, widely spaced, shining granules;

vestiture consisting of black setae arising from each granule. Declivity not deeply sloping, unmodified.

Distribution. – Cuba, Florida Keys, Jamaica and Puerto Rico.

JAMAICA: *Trelawny:* Duncans, 15 August 1966, Howden and Becker, 1 (CNC).

Remarks. – This curious species is easily recognized by the figure and by the characters given in the key.

GENUS PHLOEOSINUS CHAPUIS

Phloeosinus Chapuis, 1869, Syn. Scolytides, p. 37.

Type species: *Hylesinus thujae* Perris (subsequent designation by Hopkins, 1914).

This genus contains species found in all parts of the world; the greatest number of species occurs in North and Central America. In general, the species of this genus feed and reproduce under the bark of various cupressine and taxodiine trees. One species is known from Jamaica.

16. *Phloeosinus neotropicus* Schedl

Phloeosinus neotropicus Schedl, 1939, Proc. R. ent. Soc. Lond., Ser. B, 8: 12.

Female. – Length 2.9 mm, 2.0 times longer than wide; elytra reddish-brown, pronotum and head darker.

Frons convex, slightly impressed on each side of a distinctly elevated, longitudinal carina, this carina extends to the midpoint of the frons; surface shining, densely granulate-punctate; vestiture consisting of abundant, moderately short, erect, yellowish setae. Antennal club 1.8 times longer than wide, the sutures oblique.

Pronotum 1.2 times wider than long, widest at posterior angles; sides arcuate, convergent on posterior three-fourths, distinctly constricted just before the rather narrowly rounded anterior margin; surface shining, densely punctured; median line faint.

Elytra 1.2 times longer than wide; sides parallel, broadly rounded at apex; anterior margin arcuate, crenulations erect, separated; striae rather deeply impressed, punctures large, widely separated; interspaces convex, at least twice as wide as striae, surface shining, rather densely covered with transverse rugae; vestiture consisting of yellowish, hair-like setae. Declivity convex; interspaces 1 and 3 slightly more elevated, bearing a row of acute, prominent tubercles; interspace 2 flattened, obscurely punctate; remaining interspaces tuberculate; vestiture as on disc but finer.

Male. – Not represented in the material at hand.

Distribution. – Jamaica.

JAMAICA: *St. Andrew:* Cinchona, 1 August 1923, C. C. Gowdey, 1 (Holotype examined) (BM).

Remarks. The host of this species is not recorded but it probably is *Juniperus barbadensis*.

GENUS PHLOEOTRIBUS LATREILLE

Phloiotribus Latreille, 1802/03, Hist. nat. generale et particuliere des crustaces et des insectes 3: 50.

Phloeotribus Erichson, 1836, Archiv. f. Naturgesch. 1: 43 (Emendation).

Type species: *Bostrichus oleae* Fabricius (subsequent designation by Latreille, 1810).

Phloeotribus contains about 65 New World species, of which 2 are known from the West Indies. One species is found on Jamaica.

17. *Phloeotribus asperatus* Blandford

(Figs. 19, 41)

Phloeotribus asperatus Blandford, 1897, Biol. Cent-Am. 4(6): 166.

Females. – Length 2.1 to 2.5 mm, 2.0 times longer than wide; reddish-brown, black on head and anterior half of pronotum.

Frons longer than wide, transversely impressed above epistoma, flattened above impression, strongly protuberant opposite antennal insertions; epistoma feebly elevated at sides, more strongly so in median area, bearing 2 elevated protuberances in median portion; surface reticulate, moderately shining, punctures sparse, very faint; lateral areas above antennal insertions and area at upper level of eyes sparsely granulate, the granules small but prominent; vestiture consisting of yellowish, hair-like setae on epistoma and transverse impression and narrow, flattened scales on lateral areas above antennal insertions. Antennal club 2.4 times longer than wide, divided into 3 lamellae, each lamella 6.0 times longer than wide at base; funicle densely pubescent.

Pronotum 1.3 times wider than long; sides evenly arcuate, anterior margin rather broadly rounded; surface reticulate, moderately shining; asperities on anterior slope erect, prominent, irregularly arranged; posterior portion closely punctate, punctures shallow, rather large; median line not evident; vestiture consisting of sparse, narrow scales, more hair-like on sides and in front.

Elytra 1.3 times longer than wide: sides parallel on basal two-thirds, rather narrowly rounded behind; striae slightly impressed, punctures rather large, only slightly impressed; interspaces convex, a little wider than striae, surface uniserrately tuberculate, these tubercles blunt, each one extending all the way across interspace; vestiture consisting of yellowish setae, equal to or slightly longer than a distance equal to the width of an interspace, arising from each interstrial tubercle. Declivity convex; similar to disc except interstrial tubercles a little larger, acute and interspaces narrower.

Males. – Similar in size and proportions to female. Frons convex, flattened, transversely impressed above epistoma; surface reticulate-punctate; lateral areas not elevated. Antennal funicle very sparsely pubescent; club as in female. Pronotum and elytral disc as in female except sculpture finer; interstrial tubercles on elytral declivity smaller.

Distribution. – Central America and Jamaica.

JAMAICA: *Trelawny:* Duncans, 2 August 1966, H. F. Howden, 1 (CNC); Duncans, 21 August 1966, Howden and Becker, 1 (CNC); Barbecue Bottom, 13 August 1966, H. F. Howden, 1 (CNC); Good Hope, 17 August 1966, H. F. Howden, 1 (CNC).

Remarks. – Specimens from the Jamaica series were compared with Wood's homotype and other specimens of *P. asperatus*. This species is very variable and specimens were found in Wood's series from Costa Rica that very closely resemble the Jamaican specimens. Schedl (1951) described *P. atlanticus* from Cuba and, judging from the description, it closely matches the Jamaican specimens. It is therefore very possible that *P. atlanticus* is a synonym of *P. asperatus*, but until specimens from Cuba are available this assumption cannot be verified.

GENUS CHRAMESUS LECONTE

Chramesus Leconte, 1868, Trans. Am. Ent. Soc. 2: 168.

Rhopalopleurus Chapuis, 1869, Syn. Scolytides, p. 46; Leconte and Horn, 1876, Proc. Am. Phil. Soc. 15(96): 374 (= *Chramesus*).

Type species: *Chramesus hicoriae* Leconte, monotypic.

This very distinctive genus contains about 55 species distributed from eastern Canada to Argentina. Three species are known from the West Indies; 1 species was collected on Jamaica.

18. *Chramesus brevisetosus* n. sp.

(Figs. 20, 42)

Holotype (♂). – Length 1.5 mm, 1.7 times longer than wide; reddish-brown, almost black on head and pronotum.

Frons longer than wide, longitudinally impressed from epistoma to near upper level of eyes, flattened above; lateral margins elevated, ending in a sharp tooth-like projection just below antennal insertions; surface dull, minutely reticulate, punctures not evident; vestiture consisting of sparse, fine, yellowish setae. Antennal club 2.5 times longer than wide; funicle rather densely pubescent.

Pronotum 1.4 times wider than long, widest behind middle; sides broadly arcuate, distinctly constricted behind narrowly rounded anterior margin; surface moderately dull, reticulate; asperities on anterior half widely scattered, rather

small, extending to lateral margin; posterior area distinctly punctured, punctures impressed, separated by a distance equal to about their own diameters; median line faintly elevated; vestiture consisting of narrow, spatulate scales arising from each puncture or asperity, shorter on posterior lateral areas.

Elytra about as long as wide; sides slightly arcuate, broadly rounded behind; striae broad, not impressed, punctures rather large, close, impressed; interspaces brightly shining, about half as wide as striae, the second and third bearing 2 rows of small tubercles, remaining interspaces with 1 row of tubercles; vestiture consisting of erect, narrow setae, 2-ranked on interspaces 2 and 3, a single row on remaining interspacrs. Declivity convex; similar to disc except setae and tubercles in single rows on all interspaces and tubercles slightly smaller.

Female. – Similar in size and proportions to male. Frons flattened, not longitudinally concave, transversely impressed above epistoma; surface reticulate, punctures very faint. Pronotum with sides subparallel on basal half, then constricted to the rather broadly rounded anterior margin; surface as in male but devoid of asperities. Elytra as in male except interspaces a little more brightly shining and tubercles a little larger. Declivital interstrial scales shorter.

Type material. – Holotype, male, Whitefield Hall, St. Thomas Parish, Jamaica, 28 July 1966, A. T. Howden (No. 11,478 in CNC). Allotype, female, same data. One paratype from St. Ann Parish, Mt. Diablo, 20 August 1966, H. F. Howden.

The holotype and allotype are in the CNC, the paratype is in the collection of A. T. Howden, Ottawa, Ontario.

Remarks. – This species is apparently closely related to *C. robustus* Schedl of Cuba. It differs by the brightly shining elytral interspaces, by the longer interstrial scales, by the distinctly arcuate pronotal sides and by the longer, spatulate pronotal scales.

SUBFAMILY IPINAE

TRIBE HEXACOLINI

GENUS MICROBORUS BLANFORD

Microborus Blandford, 1897, Biol. Cent-Am. 6(4): 175.

Pseudocrypturgus Eggers, 1919, Ent. Bl. Biol. Syst. Käfer 15: 236; Wood, 1961, Gt. Basin Nat. 21: 101 (= *Microborus*).

Type species: *Microborus boops* Blandford, monotypic.

This small genus contains 4 species known from Central America and the West Indies. One species, *M. camerunus*, has apparently been introduced into Africa.

19. *Microborus camerunus* (Eggers)

(Fig. 21)

Pseudocrypturgus camerunus Eggers, 1919, Ent. Bl. Biol. Syst. Käfer 15: 236.
Microborus camerunus: Wood, 1961, Gt. Basin Nat. 21: 101.

Adults. – Length 1.3 to 1.6 mm, 2.5 times longer than wide; reddish, darker on head and dorsal surface of pronotum.

Frons generally convex to below eye level, flattened just above epistomal margin; surface dull, faintly reticulate, punctures widely spaced, small and shallow; vestiture sparse, consisting of short, yellowish hair-like setae. Eyes very large, narrowly separated on front, broadly emarginate opposite antennal insertion; facets very large, arranged in rows of fives. Antennal club oval, appearing subtruncate, slightly wider than long; sutures recurved, confined to apical half.

Pronotum 1.2 times longer than wide; sides nearly parallel on posterior two-thirds, converging toward the broadly rounded anterior margin; surface evenly convex, shining, rather densely punctured, the punctures rather large, deep and somewhat close; median line smooth, impunctate; lateral margins bearing a fine, elevated line.

Elytra 1.7 times longer than wide; sides parallel, broadly rounded at apex; anterior margin truncate, smooth; striae shallowly impressed at base, becoming more strongly impressed toward declivity, punctures large, deep; interspaces convex, about as wide as striae, surface smooth, shining, punctures very faint; vestiture consisting of short, yellowish interstrial setae confined to posterior half of disc. Declivity convex; striae slightly more impressed than on disc; interspaces faintly granulate; interspace 7 modified into an acute, elevated ridge extending from lateral margin of elytra to junction with interspace 9, continuing on to apex; vestiture longer and more abundant than on disc.

Distribution. - Probably distributed generally throughout Central America and the West Indies.

JAMAICA: *Kingston:* Kingston, 12 February 1937, Chapin and Blackwelder, 1 (USNM). *St. Catherine:* Spa[nish] Town, 2 February 1937, Chapin and Blackwelder, 1 (USNM). *Trelawny:* Duncans, 7 August 1966, Howden and Becker, 1 (CNC).

Remarks. – Adults of this species are easily recognized by the very small size and by the very large eyes.

Wood (1961) recorded *M. camerunus* from Jamaica and Honduras. This species was described from Africa; obviously having been introduced from the Neotropical Region. It closely resembles *M. boops* Blandford from Guatemala and, in fact, they may be the same species. The lack of adequate material makes it impossible to be certain.

Nemobius Chapuis, 1869, Syn. Scolytides, p. 41 (preoccupied).

Pycnarthrum Eichhoff, 1878, Ratio, descriptio, emandatio, eorum tomicinorum, p. 104.

Type species: *Pycnarthrum gracile* Eichhoff (subsequent designation by Hopkins, 1914).

Pycnarthrum is probably one of the most difficult genera of Scolytidae to study. The differences between species are very minute and therefore difficult to interpret. The differences consist of slight modifications in shape, color, type of vestiture and depth of punctation.

The genus contains about 8 species, all from the New World. One species, *P. hispidum* (Ferrari), has previously been recorded from Jamaica by Schedl (1955).

KEY TO THE JAMAICAN SPECIES OF PYCNARTHRUM

1. Erect setae on elytral interspaces of declivity narrow, nearly hair-like, at least 4 times longer than wide, distal ends acuminate, vestiture on pronotum consisting of hair-like setae only; male frons deeply concave; uniformly light brown . . . . . 20. *reticulatus* Schedl

   Erect setae on elytral interspaces of declivity broad, about 2 times longer than wide, distal ends broadly rounded; vestiture on pronotum consisting of hair-like setae and flattened scales intermixed; male frons strongly flattened, slightly concave only in middle; pronotum and head usually dark brown, elytra lighter . . . . . 21. *hispidium* (Ferrari)

20. *Pycnarthrum reticulatus* Schedl

(Fig. 43)

Pycnarthrum reticulatus Schedl, 1939, Anales de la E.N. Ciencias Biol. I: 335.

Females. – Length 1.9 to 2.0 mm, 2.2 times longer than wide; light brown, pubescence yellowish.

Frons evenly convex to just above epistoma, flattened or very slightly impressed on epistoma; surface dull, reticulate except for a small smooth area just above epistomal process, punctures close, shallow; vestiture abundant, consisting of rather short, yellowish setae arising from each puncture. Eyes elongate-oval, narrowly separated in gular area, separated on frontal area by about twice their width. Antennal club 1.8 times longer than wide; first 2 sutures slightly arcuate, third suture strongly arcuate.

Pronotum about as long as wide, widest in front of middle; sides evenly arcuate, definitely margined by a fine, raised line, anterior margin broadly rounded; surface moderately shining, punctures shallow, close; median line faintly evident; vestiture consisting of short, hair-like, yellowish setae arising from each puncture.

Elytra 1.3 times longer than wide; sides parallel on basal two-thirds, narrowly rounded behind; striae slightly impressed on disc, more so over declivity, punctures of moderate size, close; interspaces convex, about 2 to 3 times wider than striae, surface smooth, faintly punctured; vestitutre consisting of very fine, strial setae and usually 3 rows of short, yellowish interstrial setae, the median of these longer, more abundant and scale-like, about 4 to 5 times longer than broad with acuminate distal ends. Declivity convex, not especially modified except striae more deeply impressed than on disc.

Males. – Similar in size and proportions to female. Frons rather deeply concave, surface reticulate except just above epistomal margin, margin of concavity fringed with elongate, flattened setae. Pronotum and elytra as in female.

Distribution. – Known from Jamaica and Chiapas, Oaxaca, and Vera Cruz, Mexico.

JAMAICA: *Trelawny:* Barbecue Bottom, 13 August 1966, H. F. Howden, 1 (CNC); Duncans, 3 August 1966, A. T. Howden, 1 (ATH) and Good Hope, 11 August 1966, H. F. Howden, 1 (CNC).

Remarks. – No type material or authentic examples of *P. reticulatus* have been seen but the specimens from Jamaica fit Schedl's description rather closely and are presumed to be the same species.

Adults of this species are readily distinguished from those of the other species of this genus on Jamaica by the characters summarized in the above key.

21. *Pycnarthrum hispidum* (Ferrari)

(Fig. 22)

Hypoborus hispidus Ferrari, 1867, Die forst- und baum. Borkenkäfer, p. 19.

Pycnarthrum hispidum: Eichhoff, 1878, Ratio, descriptio, emandatio, eorum tomicinorum, p. 104.

Pycnarthrum gracile Eichhoff, 1878, Ratio, descriptio, emandatio, eorum tomicinorum, p. 104.

Females. – Length 1.6 to 1.8 mm, 2.2 times longer than wide; elytra light brown, darker on pronotum and head, pubescence yellowish.

Frons evenly convex, very slightly flattened above epistomal margin; surface dull, minutely reticulate and distinctly granulate; vestiture abundant, consisting of short, inconspicuous, hair-like setae and longer, flattened, scale-like setae intermixed, the scale-like setae arising from near each granule. Eyes and antennae as in *P. reticulatus*.

Pronotum about as long as wide, widest in front of middle; sides somewhat sinuate, definitely margined by a fine raised line; anterior margin very broadly rounded; surface moderately shining, punctures shallow and close; median line not evident; vestiture consisting of short, inconspicupus, hair-like setae intermixed with longer, scale-like setae.

Elytra 1.4 times longer than wide; sides parallel on basal two-thirds, narrowly rounded behind; striae slightly impressed on disc, more so over declivity, punctures rather large, close; interspaces convex, about twice as wide as striae, surface smooth, faintly punctured: vestiture consisting of very fine, hair-like strial setae and 3 rows of interstrial setae, the median row of these much longer, more erect and scale-like, about 2 to 3 times longer than broad and with rounded distal ends. Declivity convex, not especially modified except striae more deeply impressed than on disc.

Males. Similar in size and proportions to female. Frons distinctly flattened or slightly concave, faintly protuberant opposite antennal insertions; vestiture entirely hair-like, distributed over entire frons. Pronotum and elytra essentially as in female except scale-like setae broader.

Distribution. – Cuba and Jamaica.

JAMAICA: *Clarendon:* Milk River, 25 February 1937, Chapin and Blackwelder, 1 (USNM). *Kingston:* Palisadoes, 25 August 1966, Howden and Becker, 1 (CNC). *Manchester:* Porus, 13 February 1937, Chapin and Blackwelder, 1 (USNM). *St. Andrew:* Beverly Hills, September 1961, R. P. Bengry, 1 (IJ). *St. Catherine:* Bog Walk, 2 February 1937, Chapin and Blackwelder, 2 (USNM); Guanaboa Vale, 19 January 1958, T. H. Farr, 2 (IJ); Spa[nish] Town, 2 February 1937, Chapin and Blackwelder, 2 (USNM). *St. Elizabeth:* Santa Cruz, 24 February 1937, Chapin and Blackwelder, 2 (USNM). *St. Thomas:* Trinity Vale, 28 February 1937, Chapin and Blackwelder, 2 (USNM). *Trelawny:* Duncans, 7 to 23 August 1966, Howden and Becker, 6 (CNC); Good Hope, 11 to 17 August 1966, H. F. Howden, 3 (CNC).

GENUS CLADOCTONUS STROHMEYER

Cladoctonus Strohmeyer, 1911, Ent. Bl. Biol. Syst. Käfer 7: 17.

Hoplitophthorus Wood, 1961, Gt. Basin Nat. 21: 2; Schedl, 1963 Ent. Abh. 28(6): 264 (= *Cladoctonus*).

Type species: *Cladoctonus affinus* Strohmeyer, monotypic.

This genus contains 4 New World species and 5 African species. *Cladoctonus cubensis* (Wood), described from Cuba, was the only species previously known from the West Indies.

22. *Cladoctonus brevisetosus* n. sp.

(Fig. 23)

Holotype. – Length 1.8 mm, 2.3 times longer than wide; light yellowish-brown, vestiture yellowish.

Frons convex, slightly flattened above epistomal margin; surface shining, punctures rather deep, separated by a distance equal to more than their own diameters on vertex, closer together above epistomal margin; vestiture sparse, consisting of small, hair-like setae arising from each puncture, these longer along epistomal margin, reaching their greatest length above epistomal lobes. Antennal club round, thick, with 1 distinct and several indistinct sutures.

Pronotum 1.1 times wider than long, widest at about middle; sides evenly arcuate, slightly constricted just behind the broadly rounded anterior margin; surface shining, distinctly, densely punctured over entire surface, punctures deep, closer than a distance equal to their own diameters; glabrous except for a single broken row of erect hair-like setae along anterior margin.

Elytra 1.5 times longer than wide; sides parallel on basal three-fourths, then broadly rounded behind; striae slightly impressed on disc, more so over declivity, punctures large, deeply impressed and close; interspaces convex, about as wide as striae, surface shining, smooth on disc becoming granulate toward declivity. Declivity broadly convex; all interspaces except 2, 6 and 8 elevated, the first more so, each with a few sharp-pointed tubercles; second interspace narrower than 1 or 3 and devoid of tubercles; interspace 9 with a slightly elevated costa which joins costal margin near apex of interspace 3; vestiture sparse, confined to declivity, consisting of short, hair-like setae arising from the base of each tubercle, these setae equal to or shorter than the width of an interspace.

The sexes are indistinguishable in the material at hand.

Type material. Holotype, Duncans, Trelawny Parish, Jamaica, 8 August 1966, Howden and Becker (No. 11,479 in CNC). One paratype, same locality, 4 August 1966, A. T. Howden.

The holotype is in the CNC and the paratype is in the collection of A. T. Howden, Ottawa, Ontario.

Remarks. – This species is closely related to *C. cubensis* (Wood) from Cuba, however, the holotype of Wood's species was compared to specimens of *C. brevisetosus* and found to differ in a number of respects. Declivital interspaces 1 and 3 of *C. brevisetosus* are more strongly elevated, the declivital tubercles are slightly larger, the elytral striae are more deeply impressed and the declivital setae are shorter. Adults of *C. brevisetosus* are also slightly larger (1.7 and 1.8 vs. 1.6 mm) and the pronotum is proportionally wider (1.1 vs. 1.04 mm).

Hexacolus Eichhoff, 1867, Berl. Ent. Zeit. 11: 399.

Hylocurosoma Eggers, 1940, Arb. morph. taxon. Ent. Berl. 7: 138; Schedl, 1952, Dusenia 3(5): 346 (= *Hexacolus*).

Type species: *Hexacolus glaber* Eichhoff, monotypic.

It is difficult to give the number of species in this genus since the generic concepts are not completely understood. Recent authors (Wood, 1969a, for example) have treated *Hexacolus* as a subgenus of *Scolytodes* Ferrari, while others (various papers by Eggers and Schedl, for example) have treated it as a separate genus. *Hexacolus* (s. str.) is strictly a Neotropical genus and contains approximately 50 species. *Scolytodes* (s. str.) also a strictly Neotropical genus, contains about 40 species. I have used *Hexacolus* in this work to avoid any possible confusion.

23. *Hexacolus glaber* Eichhoff(?)

(Fig. 24)

Hexacolus glaber Eichhoff, 1867, Berl. Ent. Zeit. 11: 400.

Female. – Length 1.8 mm, 2.4 times longer than wide; elytra and basal portion of pronotum light brown, almost black on elytral suture, elytral basal margin, anterior portion of pronotum and head, vestiture yellowish.

Frons convex; surface dull, reticulate above eyes, smooth and shining in a roughly diamond-shaped median portion extending to epistomal margin; vestiture consisting of moderately long setae arranged around the impunctate median portion, these longer on upper margin and directed downward, also longer on median portion of epistomal margin. Antennal club 1.5 times longer than wide.

Pronotum about as long as wide; sides straight, definitely margined by a fine raised line; anterior margin broadly rounded; surface dull, reticulate, distinctly asperate on anterior half, the asperities low, blunt; posterior portion punctate, the punctures shallow, separated by a distance equal to less than their diameters; median line not evident; vestiture sparse, inconspicuous, consisting of very short, hair-like setae.

Elytra 1.4 times longer than wide; sides parallel on basal three-fourths, narrowly rounded behind; striae not impressed except slightly so on sutural striae, punctures shallow, closely placed; interspaces about as wide as striae, punctures as numerous as on striae but slightly smaller, all elytral punctures not regularly placed giving elytra a rather confusedly punctured appearance. Declivity convex; strial punctures much reduced in size otherwise resembling those on elytral disc. Vestiture consisting of minute strial and interstrial setae.

Male. – Not represented in material at hand.

Distribution. – Cuba and Jamaica.

JAMAICA: *Portland:* Port Antonio, Mar. 30, A. E. Wright; F. C. Bowditch, coll., 1 (MCZ).

Remarks. – Although no authenically determined specimens or type material of *H. glaber* has been seen, the unique specimen reported on here agrees fairly well with Eichhoff's original description and the subsequent comments by Blandford (1897). Until more information is available, the present tentative identification must suffice.

TRIBE CRYPHALINI

GENUS HYPOTHENEMUS WESTWOOD

Hypothenemus Westwood, 1836, Trans. Ent. Soc. London 1: 34.

Stephanoderes Eichhoff, 1871, Berl. Ent. Zeit. 15: 132: Browne, 1963, Ent. Berichten 23: 53 (= *Hypothenemus*).

Homoeocryphalus Lindeman, 1876, Bull. Mosc., p. 168; Fauvel. 1884, Rev. d'Ent. 3: 315 (= *Hypothenemus*).

Adiaeretus Hagedorn, 1909, Deut. Ent. Zeit., p. 744; Schedl, 1939, Rev. Zool. Bot. Afr. 32: 380 (= *Hypothenemus*).

Type species: *Hypothenemus eruditus* Westwood, monotypic.

Species of this genus are found throughout the tropical and subtropical regions of the world. They are, in general, twig borers, but have been found in seeds, stems of herbaceous plants and various unusual places. Because of their ability to infest a wide variety of plant material they have been introduced into numerous countries in plants of commercial value. About 35 species have been described from the West Indies, but it is probable that when the fauna is restudied and the variation recognized a number of these will be placed in synonymy. Eight species are discussed here, but 4 specimens, representing 3 species, are unidentified and not included in the key or discussions.

KEY TO THE JAMAICAN SPECIES OF HYPOTHENEMUS
(Females only)

1. Pubescence entirely hair-like on elytra; anterior margin of pronotum bearing 4 asperities, the median pair much longer. . . . . 24. *comosus* n. sp.
   Pubescence on elytra consisting of erect, flattened, scale-like setae on interspaces and shorter, hair-like setae on striae and/or interspaces; anterior margin of pronotum bearing various combinations of asperities, but not as

above 2

2. Length 1.1 to 1.3 mm 3

Length 1.4 to 2.0 mm (slightly smaller in *georgiae*) 4

3. 1.10 to 1.25 mm in length, more than 2.3 times longer than wide; usually reddish-brown in color; elytral surface subopaque . . . . . 25. *eruditus* (Westwood)

1.25 to 1.30 mm in length, no more than 2.3 times longer than wide; black in color; elytral surface brightly shining . . . . . 26. *glabratulus* (Schedl)

4. Anterior slope of pronotum bearing 8 to 20 distinctly erect asperities; elytra (at least on declivity) with uniserial rows of long, erect, interstrial bristles and abundant, short, recumbent strial and interstrial setae 5

Anterior slope of pronotum bearing more than 20 asperities, these smaller and less erect; elytra with uniserial rows of erect interstrial bristles and minute, inconspicuous strial setae, 1 arising from each puncture 8

5. Anterior margin of pronotum bearing 6 teeth . . . . 27. *intersetosus* (Eggers)

Anterior margin of pronotum bearing less than 6 teeth 6

6. Frons evenly convex, slightly flattened on epistomal region; anterior margin of pronotum bearing 2 to 4 asperities, if 4 then the lateral ones much smaller . . . . . 28. *birmanus* (Eichhoff)

Frons transversely carinate, concave below carina; anterior margin of pronotum with 2 widely separated teeth or with 4 equal sized teeth (3 or 4 teeth rarely in *brunneus* but then the median ones much smaller) 7

7. Lateral area of pronotum minutely reticulate, dull, punctures indistinct; anterior margin of pronotum bearing 2 widely separated teeth, rarely with 1 or 2 smaller teeth between them; length 1.4 to 1.5 mm . . . . . 29. *brunneus* (Hopkins)

Lateral area of pronotum smoother, shining, punctures faintly impressed; anterior margin of pronotum bearing 4 equal-sized teeth; length 1.7 to 1.8 mm . . . . . 30. *setosus* (Eichhoff)

8. Length 1.9 to 2.0 mm; anterior margin of pronotum bearing 4 teeth; surface of posterior half of elytra duller, more rugose than anterior half . . . . . 31. *bolivanus* Eggers

Length 1.3 to 1.6 mm; anterior margin of pronotum bearing 6 teeth; surface of posterior half of elytra similar to anterior half 9

9. Frons distinctly, subtuberculately elevated medially at upper level of eyes with a smooth space extending from elevation to epistoma . . . . . 32. *obscurus* (Fabricius)

Frons convex, not distinctly elevated at upper level of eyes, surface evenly sculptured with no smooth space evident . . . . . 33. *georgiae* Hopkins

24. *Hypothenemus comosus* n. sp.

Holotype (♀). – Length 1.7 mm, 2.5 times longer than wide; dark reddish-brown.

Frons convex, faintly transversely impressed above epistoma, a rather broad, weakly elevated, smooth carina extends from epistomal margin to near upper level of eyes, this carina faintly grooved in median portion; surface on each side of carina subopaque, minutely rugose-reticulate, punctures obscure; vestiture consisting of sparse, fine, hair-like setae. Antennal club 1.6 times longer than wide.

Pronotum 1.2 times wider than long; sides evenly arcuate; anterior margin broadly rounded, bearing 4 asperities, the median pair contiguous at their bases and much longer than lateral pair; anterior slope bearing rather numerous, erect asperities; posterior and lateral portion subopaque, distinctly granulate on disc, less so on sides; vestiture entirely hair-like, consisting of moderately long, rather abundant hair-like setae, these somewhat longer on sides.

Elytra 1.7 times longer than wide; sides parallel on anterior two-thirds, rather narrowly rounded behind; striae impressed, punctures rather large, weakly impressed; interspaces wider than striae, shining, bearing minute, sparse punctures. Declivity convex; striae and interspaces as on disc except narrower. Vestitutre entirely hair-like, consisting of very short strial setae, each seta arising from a puncture, and longer interstrial setae, these about 1.0 to 1.5 times longer than the width of an interspace on the disc, becoming much longer, 2.0 to 4.0 times longer than the interstrial width, and more abundant on the declivity.

Male. – Unknown.

Type material. – Holotype, female, Clydesdale, St. Andrew Parish, Jamaica, 18 July 1966, H. and A. Howden (No. 11,480 in CNC).

Remarks. – Adults of this very distinctive species are easily recognized by the entirely hair-like vestiture on the body. No flattened scale-like setae are present. This is the only species of *Hypothenemus* with this type of vestiture in Jamaica. Other distinctive features are the low, smooth, grooved, frontal carina and the 4 asperities on the anterior margin of the pronotum, the median pair of these being much larger than the lateral pair.

25. *Hypothenemus eruditus* Westwood

Hypothenemus eruditus Westwood, 1836, Trans. Ent. Soc. London 1: 34.

Wood (1954) lists the following names as synonyms: *Bostrichus areccae* Horning, *B. boieldieni* Perroud, *Hypothenemus pruni* Hopkins, *H. rumseyi* Hopkins, *H. asiminae* Hopkins, *H. hamamelidis* Hopkins, *H. punctifrons* Hopkins, *H. subelongatus* Hopkins, *H. nigripennis* Hopkins, *H. germari* Hopkins, *H. juglandis* Hopkins, *H. citri* Ebling and *Stephanoderes evonymi* Hopkins.

Females. – Length 1.1 to 1.25 mm, 2.3 to 2.6 times longer than wide; brown to almost black.

Frons convex, very faintly impressed above epistoma, a faint median elevation extends from epistomal margin to near upper level of eyes; surface rather coarsely reticulate, punctures obscure or very faint; vestiture consisting of sparse, fine, hair-like setae, conspicuous only along epistomal margin. Antennal club 1.4 times longer than wide.

Pronotum 1.1 times wider than long; sides parallel on basal half; anterior margin broadly rounded, bearing 5 to 7 (usually 6) erect asperities, each asperity separated from adjacent ones by a distance equal to the basal width; anterior slope bearing numerous small asperities; posterior area shining, minutely reticulate, rather coarsely granulate-punctate; vestiture consisting of erect, scale-like setae intermixed with shorter, hair-like setae.

Elytra 1.5 times longer than wide; sides parallel on posterior two-thirds, rather narrowly rounded behind; striae weakly impressed, punctures small and shallow; interspaces as wide as striae, surface shining, reticulate, punctures obsolete. Declivity convex, not especially modified except hair-like pubescence more abundant. Vestiture consisting of erect, scale-like, interstrial setae, these about 3 times longer than wide and small recumbant striae and interstrial hair-like setae.

Males. – Similar to female except smaller, 0.7–0.8 mm long; eye reduced in size to about half as long as in female; antennal funicle 3-segmented; pubescence longer and more slender.

Distribution. – Throughout the tropical and subtropical regions of the world.

JAMAICA: *Kingston:* Kingston, 12 February 1937, Chapin and Blackwelder, 1 (USNM); Kingston, May 1958, ex pigeon peas, J. A. McFarlane, 4 (BM). *St. Andrew:* Hardwar Gap, 25 July 1966, Howden and Becker, 1 (CNC). *St. Catherine:* Bog Walk, 2 February 1937, Chapin and Blackwelder, 1 (USNM); Caymanas Estate, 1962, ex birds nest, A. Ventura, 7 (BM); Lluidas Vale, 14 May 1950, 2 (INHS). *St. Elizabeth:* Maggotty Falls, 15 May 1950, 3 (INHS). *St. Thomas:* Trinity Vale, 28 February 1937, Chapin and Blackwelder, 3 (USNM). *Trelawny:* Barbecue Bottom, 10 August 1966, H. F. Howden, 2 (CNC). *Westmoreland:* Cornwall Mountain, 18 August 1966, ex *Terminalia latifolia*, H. F. Howden, 3 (CNC).

Schedl (1957) gives the following localities: Cane River Falls, near Mammee River and below "Maryland", all in St. Andrew Parish, and 3 miles north of Negril, Westmoreland Parish.

Remarks. – This species occurs at low elevations throughout the tropical regions of the world. All the localities recorded above are below 650 meters, except the one record from Hardwar Gap.

Adults of this species are primarily bark-borers but are often twig-borers in diseased or dying trees. They are unselective in their host material having been recorded from at least 113 species of plants in 46 families throughout the world. Schedl (1961) and Browne (1961) discuss the biology of this species.

Hypothenemus eruditus is a very variable species, with different populations

sometimes differing greatly. The most obvious difference noted was the character of the declivital pubescence of the adults. In specimens from the United States the short, hair-like strial and interstrial setae are generally in distinct rows at the elytral apex. In specimens originating from Central America, Jamaica and Brazil, these setae are longer and much more abundant on the interspaces of the declivity. A complete range of the amount and placement of these setae can be seen in almost any population examined.

Adults of this species are easily recognized by their very small size, by the 6 (usually) asperities on the anterior margin of the pronotum and by the narrow elytral scales.

26. *Hypothenemus glabratelus* (Schedl), n. comb.

Stephanoderes glabratelus Schedl, 1957, Jour. New York Ent. Soc. 65: 192.

Female. – Length 1.30 mm, 2.3 times longer than wide; black.

Frons convex, apparently faintly impressed above epistoma; surface rather densely punctured; vestiture consisting of fine, short, hair-like setae.

Pronotum 1.2 times wider than long, widest just before base; sides distinctly arcuate; anterior margin narrowly rounded, bearing 6 erect asperities, each asperity separated from adjacent ones by a distance equal to the basal width; anterior slope bearing numerous, small, erect asperities; posterior area shining, very densely punctate-granulate; vestitute consisting of erect, scale-like setae intermixed with shorter, hair-like setae.

Elytra 1.35 times longer than wide, sides weakly arcuate on anterior two-thirds, rather narrowly rounded behind; striae not impressed, punctures placed in regular rows, the punctures small, finely impressed; interspaces brightly shining, wider than striae, very finely punctured, punctures scattered. Declivity convex, not especially modified except hair-like pubescence more abundant. Vestiture consisting of erect, scale-like, interstrial setae, these about 4 times longer than wide, and short, recumbent, hair-like strial and interstrial setae, these more abundant on declivity.

Male. – Not available in material at hand.

Distribution. – Known only from Jamaica.

JAMAICA: *St. Ann:* Rum Cave, 1 January 1955, leaf littr, P. F. Bellinger, 1 (KES).

Remarks. – Adults of this species can be recognized by the strongly shining and finely punctured elytra, by their small size and by their black color. The description was prepared from one female paratype kindly loaned for my use by K. E. Schedl, Lienz, Austria.

27. *Hypothenemus intersetosus* (Eggers)

Stephanoderes intersetosus Eggers, 1928, Arch. Inst. Biol. São Paulo 1: 85.
Hypothenemus intersetosus: Schedl, 1957, Jour. N.Y. ent. Soc. 65: 192.

Female. – Length 1.4 mm, 2.3 times longer than wide; black to reddish-brown.

Frons and antennal club as in *H. eruditus.*

Pronotum as in *H. eruditus* except 1.2 times wider than long.

Elytra as in *H. eruditus* except strial punctures slightly coarser and declivity bearing more abundant and longer hair-like, interstrial setae.

Male. – Not available in material at hand.

Distribution. – Neotropical Region; known from Argentina, Brazil, Cuba, Guadeloupe and Jamaica.

JAMAICA: *St. Andrew:* Beside road east of Lindo's Gap, 31 March 1956, ex dead leaves, P. F. Bellinger (KES) (Schedl, 1957).

Remarks. – This species was originally believed to be a synonym of *H. eruditus* but, following correspondence with K. E. Schedl, it was thought best to treat it as a distinct species until further information is available.

Adults of this species resemble *H. eruditus* but, judging from the very limited sample seen, are slightly larger, have coarser strial punctures on the elytral disk and the declivity is more densely pubescent.

Two syntypes of this species were seen, each mounted on a separate card but placed together on the same pin. In order to definitely establish the identity of this species, I designate the uppermost specimen as lectotype of *Stephanoderes intersetosus* Eggers. The pin bears the labels: *Stephanoderes intersetosus,* Cotype, Eggers det 1926/Sao Paulo, capital, V-1925/20929/*Gynerium argentatum* cotype/ and my lectotype label. It has been returned to the collection of Prof. Dr. K. E. Schedl, Lienz, Austria.

28. *Hypothenemus birmanus* (Eichhoff), n. comb.

Triarmocerus birmanus Eichhoff, 1878, Ratio, descriptio, emandatio, eorum tomicinorum, p. 486.
Cosmoderes birmanus: Schedl, 1942, B. P. Bishop Mus. Bull. 172: 148.
Stephanoderes birmanus: Wood, 1960, Ins. Micronesia 18(1): 35.
Stephanoderes alter Eggers, 1923, Zool. Meded. R. Mus. Hist. Leyden 7: 219; Wood, 1960, Ins. Micronesia 18(1): 35 (= *birmanus*).
Stephanoderes pacificus Beeson, 1940, Occ. Pap. B. P. Bishop Mus. 15(18): 197; Wood, 1960, Ins. Micronesia 18(1): 35 (= *birmanus*).
Hypothenemus vafer Blandford, 1896, Ann. Ent. Soc. Belgique 40: 241.
Stephanoderes vafer: Beeson, 1940, Occ. Pap. B. P. Bishop Mus. 15(18): 198; Wood, 1960, Ins. Micronesia 18(1): 35 (= *birmanus*).
Stephanoderes castaneus Wood, 1954, Univ. Kansas Sci. Bull. 36, 2(15): 1027;

Wood, 1960, Ins. Micronesia 18(1): 35 (= *birmanus*).

Females. – Length 1.5 to 1.9 mm, 2.3 times longer than wide; yellowish brown to black.

Frons convex, weakly flattened above epistoma; surface minutely aciculate, punctures on lower half moderate in size, shallow and inconspicuous; vestiture consisting of sparse, fine, moderately long, hair-like setae, longer and more conspicuous along epistomal margin. Antennal club 1.3 times longer than wide.

Pronotum 1.2 times wider than long; sides strongly arcuate, anterior margin rather broadly rounded, usually bearing 4 erect, contiguous asperities, the median pair of these large, the lateral pair minute, sometimes inconspicuous or missing; anterior slope bearing about 20 erect, distinct asperities; posterior area minutely reticulate, very faintly punctured; vestiture consisting of moderately long, sparse, hair-like setae intermixed with shorter (usually), scale-like setae.

Elytra 1.5 times longer than wide; sides parallel on posterior three-fourths, rather broadly rounded behind; striae weakly impressed, punctures small; interspaces at least 2 times wider than striae, surface reticulate, somewhat dull. Declivity convex, not especially modified. Vestiture consisting of erect, broad, truncate, interstrial setae, these 2 or 3 times longer than wide and numerous, short, inconspicuous, hair-like, interstrial setae, these more abundant on declivity.

Males. - Similar to female except smaller, 1.3 to 1.5 mm long; eye reduced; pronotal asperities sometimes reduced and vestiture longer.

Distribution. - Southern Florida, West Indies, Africa, Indo-Malayan Region and Micronesia.

JAMAICA: *St. Andrew:* Irish Town, 27 August 1966, Howden and Becker, 2 (CNC). *St. Catherine:* Port Henderson, 25 June 1958, M. W. Sanderson, 1 (INHS). *Trelawny:* Duncans, 13 August 1966, Howden and Becker, 2 (CNC).

Remarks. – Adults of this species are readily distinguished from those of the other Jamaican representatives of the genus by the presence of 4 (variable), erect asperities on the anterior pronotal margin and by its relatively larger size.

This species is recorded from numerous host plants (Wood, 1954) but is not considered an economic pest.

29. *Hypothenemus brunneus* (Hopkins), n. comb.

(Figs. 25, 44)

Stephanoderes brunneus Hopkins, 1915, U.S. Dept. Agric., Rept. 99: 31.

Stephanoderes frontalis Hopkins, 1915, U.S. Dept. Agric., Rept. 99: 31; Wood, 1954, Univ. Kansas Sci. Bull. 36, 2(15): 1031 (= *brunneus*).

Females. - Length 1.4 to 1.5 mm, 2.3 times longer than wide; light brown to black.

Frons transversely carinate at upper level of eyes, area below carina concave or

distinctly flattened, shining, smooth to sparsely punctured; vestiture consisting of short, moderately abundant setae in concave area below carina, longer along epistomal margin. Antennal club 1.2 times longer than wide.

Pronotum 1.1 times wider than long; sides strongly arcuate, anterior margin broadly rounded, bearing 2 (usually) widely separated, erect asperities, sometimes 1 or 2 teeth between them; anterior slope bearing about 15 to 20 erect asperities; posterior area shining, minutely reticulate, punctures faint; vestiture consisting of hair-like setae.

Elytra 1.5 times longer than wide; sides parallel on anterior three-fourths, broadly rounded behind; striae not impressed, punctures small, shallow and obscure; interspaces shining, about twice as wide as striae, punctures minute. Declivity convex, not modified. Vestiture consisting of uniserial rows of erect interstrial scales, these about twice as long as wide and short, slender, hair-like, strial setae.

Males. – Similar to female except smaller, 1.0 to 1.1 mm long; eye reduced in size and pubescence longer and more slender.

Distribution. – Southern United States along the Gulf Coast to Vera Cruz, Mexico, and the West Indies.

JAMAICA: *St. Andrew:* Bull Run, 19 April 1959, Farr and Sanderson, 1 (INHS). *St. Catherine:* Port Henderson, 25 June 1958, M. W. Sanderson, 36 (CNC). *Trelawny:* Duncans, 15 August 1966 and 23 August 1966, Howden and Becker, 4 (CNC).

Remarks. – Adults of this species can be readily distinguished by the prominent transverse carina on the frons, by the presence of 2 widely separated teeth on the anterior margin of the pronotum (variable) and by the elytral vestiture.

The number of teeth on the anterior margin of the pronotum varies from 2 to 4, 2 being slightly more common. Of the 37 specimens examined, 16 had 2 teeth, 15 had 3 teeth and 6 had 4 teeth. No other obvious differences were noted.

A species "near *brunneus*" (det M. W. Blackman) is reported from mangrove seed balls in Puerto Rico (Wolcott, 1936).

29. *Hypothenemus setosus* (Eichhoff)

Hypoborus setosus Eichhoff, 1867, Berl. Ent. Zeit. 11: 391.
Stephanoderes setosus: Eichhoff, 1878, Ratio, descriptio, emandatio, eorum tomicinorum, p. 149.
Cryphalus setosus: Hagedorn, 1910, Coleopt. Cat. 4: 45.
Hypothenemus setosus: Reitter, 1913, Wein. Ent. Zeit. 32, Beiheft, p. 71.

Females. – Length 1.7 to 1.8 mm, 2.3 times longer than wide; light brown to black.

Frons similar to preceeding species except frontal carina more strongly elevated and the concave depression is deeper.

Pronotum similar in size and shape to preceeding species except the anterior margin bears 4 erect asperities and the lateral areas are more distinctly punctured.

Elytra similar to proceeding species except the strial and interstrial punctures are more impressed and the erect interstrial bristles are narrower, at least 4 times longer than wide and the strial setae are longer.

Male. – Not present in the material at hand.

Distribution. – Guadeloupe and Jamaica.

JAMAICA: *St. Andrew:* Gordon Town, 4 February 1937, Chapin and Blackwelder, 1 (USNM). *St. Ann:* Ocho Rios, 2 February 1937, Chapin and Blackwelder, 1 (USNM). *St. Thomas:* Trinity Ville, 28 February 1937, Chapin and Blackwelder, 1 (USNM). *Westmoreland:* Cornwall Mountain, 18 August 1966, H. F. Howden, 1 (CNC). Island record only, F. Klages, Holland collection, 1 (Carnegie Museum).

Remarks. – This species is very closely related to *Hypothenemus obesus* (Hopkins) and, in fact, the 2 may be synonymous. The only difference seem to be that in the adults of *H. setosus* the strial and interstrial punctures are impressed. No other differences are evident.

It is also very similar to *H. brunneus* (Hopkins) but adults may be distinguished by the characters mentioned in the key and description.

31. *Hypothenemus bolivanus* (Eggers) n. comb.

Stephanoderes bolivanus Eggers, 1931, Wein. Ent. Zeit. 48(1): 29.

Females. – Length 1.9 to 2.0 mm, 2.2 times longer than wide: brown to black.

Frons convex, faintly transversely impressed above epistoma; surface dull, reticulate, punctures widely separated, shallow; vestiture consisting of short, parse, hair-like setae, longer and more conspicuous along epistomal margin. Antennal club 1.3 times longer than wide.

Pronotum 1.2 times wider than long; sides strongly arcuate, anterior margin broadly rounded, bearing 4 erect asperities, the median pair the longest; anterior slope bearing more than 30 asperities, these smaller and less erect than in preceeding species; posterior area dull, minutely reticulate and distinctly granulate; vestiture consisting of fine, hair-like setae intermixed with narrow, flattened, scale-like setae, the hair-like setae absent or nearly so on lateral areas.

Elytra 1.6 times longer than wide; sides parallel on anterior three-fourths, broadly rounded behind; striae impressed, punctures rather large, distinctly impressed; interspaces convex, about twice as wide as striae; surface rather dull, strongly reticulate along basal margins, along sutural interspace and over declivity, smoother on discal and lateral portions of elytra. Declivity convex; interspaces somewhat narrower than on disc; surface distinctly, strongly reticulate blending into smoother area at upper and lateral portions. Vestiture consisting of uniserial rows of flattened, scale-like setae on disc becoming 2 ranked on some declivital

interspaces, these scales on disc about 2 to 3 times longer than wide, narrower on declivity and intermixed with short, inconspicuous, strial setae.

Male. – Not present in available material.

Distribution. – Neotropical Region, known from Bolivia, Brazil, Costa Rica and Jamaica.

JAMAICA: *St. Andrew:* St. Peters, 9 July 1966, 2 (CNC).

Remarks. – Adults of *Hypothenemus bolivanus* are easily distinguished from the adults of the other Jamaican members of the genus by the dull, strongly reticulate, almost granulate declivital and pronotal surface and by their larger size.

32. *Hypothenemus obscurus* (Fabricius), n. comb.

Hylesinus obscurus Fabricius, 1801, Syst. Eleuth. 2: 395.
Stephanoderes obscurus: Eggers, 1929, Wein. Ent. Zeit. 46(2): 50.
Cryphalus hispidulus Leconte, 1868, Trans. Am. Ent. Soc. 2: 156; Wood, 1954, Univ. Kansas Sci. Bull. 36, 2(15): 1041 (= *obscurus*).
Stephanoderes seriatus Eichhoff, 1871, Berl. Ent. Zeit. 15: 133; Wood, 1954, Univ. Kansas Sci. Bull. 36, 2(15): 1041 (= *obscurus*).
Stephanoderes guatemalensis Hopkins, 1915, U.S. Dept. Agric., Rept. 99: 26; Wood, 1954, Univ. Kansas Sci. Bull. 36, 2(15): 1041 (= *obscurus*).
Stephanoderes brasilensis Hopkins, 1915, U.S. Dept. Agric., Rept. 99: 26; Wood, 1954, Univ. Kansas Sci. Bull. 36, 2(15): 1041 (= *obscurus*).
Stephanoderes lecontei Hopkins, 1915, U.S. Dept. Agric., Rept. 99: 27; Wood, 1954, Univ. Kansas Sci. Bull. 36, 2(15): 1041 (= *obscurus*).

Females. – Length 1.4 to 1.6 mm, 2.3 times longer than wide; dark brown to black.

Frons convex, with a smooth, median, subtuberculate elevation at upper level of eyes and a smooth, flattened or grooved space extending from this elevation to epistomal margin; surface somewhat flattened on lower half, coarsely reticulate with a few scattered punctures; vestiture consisting of scattered, fine, hair-like setae becoming more conspicuous along epistomal margin. Antennal club 1.3 times longer than wide.

Pronotum 1.1 times wider than long; sides arcuate, anterior margin rather broadly rounded, bearing 6 erect asperities of approximately equal size, these separated from one another by a distance less than the basal width of 1 tooth; anterior slope bearing numerous, suberect asperities; posterior area minutely reticulate, granulate; vestiture consisting of flattened, scale-like setae intermixed with fine, hair-like setae on lateral and posterior portions, hair-like setae only present on anterior slope.

Elytra 1.4 times longer than wide; sides parallel on posterior three-fourths, broadly rounded behind; striae weakly impressed, the punctures of moderate size, deeply impressed, closely placed; interspaces convex, about as wide or slightly

narrower than the striae, punctures fine, surface shining. Declivity convex; striae slightly more impressed than on disc. Vestiture consisting of erect, flattened, scale-like interstrial bristles, each 2 to 3 times longer than wide, these intermixed with inconspicuous, hair-like, strial setae.

Male. – Not available in the material at hand.

Distribution. – Southern and Eastern States, West Indies, Mexico, Central America to Brazil.

JAMAICA: *Kingston:* Palisadoes, 25 August 1966, Howden and Becker, 1 (CNC). *Manchester:* Mizpah, 16 August 1966, 2 (CNC); Oxford Cave, 15 May 1950, 1 (INHS). *St. Andrew:* Constant Spring, April 1908, M. Cameron, 2 (BM). *St. Catherine:* Bog Walk, 2 February 1937, Chapin and Blackwelder, 1 (USNM); Spa[nish] Town, 2 February 1937, Chapin and Blackwelder, 1 (USNM). *St. Thomas:* Trinity Ville, 28 February 1937, Chapin and Blackwelder, 1 (USNM). *Trelawny:* Barbecue Bottom, 10 August 1966, H. F. Howden, 1 (CNC); Duncans, 10 August 1966, Howden and Becker, 1 (CNC).

Remarks. – According to Wood (1954), this species is very variable, having a distinct north-south cline illustrated by differences in the sculpture of the adult frons. Specimens from Pennsylvania have virtually no frontal tubercle but have a distinct median groove; those from Key West, Florida, have a strong tubercle and a relatively weak groove. As would be expected, the specimens from Jamaica resemble those from Key West, Florida and further illustrate the clinal differences.

Adults of this species are easily distinguished from those of the other Jamaican species of the genus by the presence of 6 asperities on the anterior margin of the pronotum, by the evenly uniseriate rows of interstrial scales, by the shining elytra and by the presence of a subtuberculate elevation on the median portion of the frons with a smooth groove or flattened area extending from the elevation to the epistomal margin.

33. *Hypothenemus georgiae* (Hopkins), n. comb.

Stephanoderes georgiae Hopkins, 1915, U.S. Dept. Agric., Rept. 99: 26.

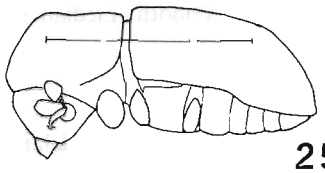
Wood (1954) gives the following species as synonyms: *texanus* Hopkins, *pini* Hopkins, *salicis* Hopkins, *floridensis* Hopkins, *ficus* Hopkins, *soltaui* Hopkins, *lucasi* Hopkins, *virentis* Hopkins, *pecanis* Hopkins and *robustus* Blackman.

Females. – Length 1.3 to 1.5 mm, 2.5 times longer than wide; dark reddish-brown.

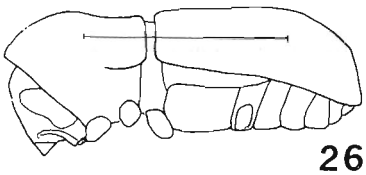
Frons similar to preceeding species except frontal elevation and vertical groove

---

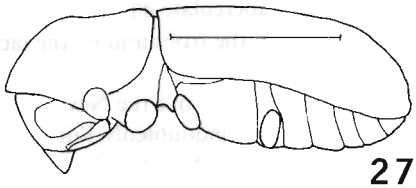
Figs. 25–35. Outline sketches of various species: 25, *Hypothenemus brunneus;* 26, *Cryphalomorphus knabi;* 27, *Cryptocarenus seriatus;* 28, *Coccotrypes dactyliperda;* 29, *Mimpis mimicus;* 30, *Ips calligraphus;* 31, *Pityophthorus abnormalis;* 32, *Neodryocoetes montanus;* 33, *Tricolus ignotus;* 34, *Monarthrum brittoni;* 35, *Corthylus curiosus.* Lines in figures equal 1 mm.



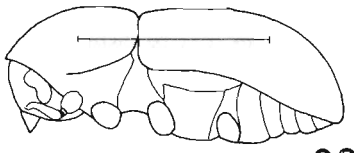
25



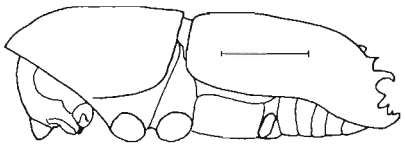
26



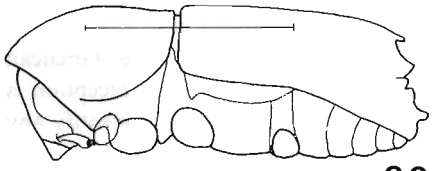
27



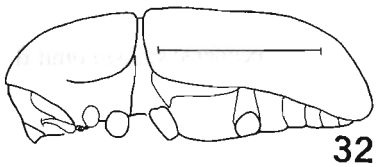
28



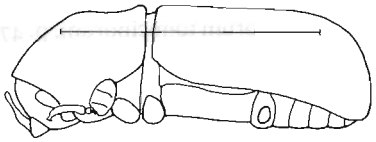
30



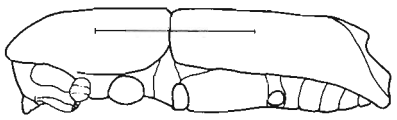
29



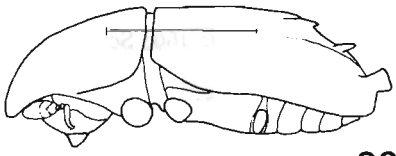
32



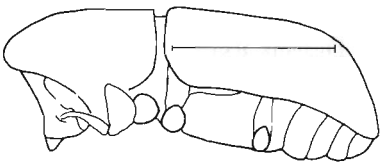
31



34



33



35

absent; surface evenly reticulate except for a small, smooth, median spot on epistoma. Antennae as in preceeding species.

Pronotum and elytra as in preceeding species.

Male. – Not present in material at hand.

Distribution. – Southern United States, Jamaica and the Mariana Islands.

JAMAICA: *St. Andrew:* Irish Town, 27 August 1966, Howden and Becker, 1 (CNC).

Remarks. – This species is very closely allied to *H. obscurus* but the adults of *H. georgiae* may be distinguished by the lack of a subtuberculate elevation on the frons, by the lack of a vertical groove or smooth spot on the frons and by the lack of distinct punctures on the frons.

Wood (1954) believes that this species has been introduced into the New World and into the Mariana Islands in the Pacific region. It is undoubtedly known by older names in other parts of the world but specimens from Africa and southeast Asia are not available for study.

It is reported as occurring in guava fruit in Puerto Rico (Wolcott, 1936).

Hypothenemus spp.

Three additional species of *Hypothenemus* are represented in the Jamaican material at hand. All but 1 species are represented by uniques; the exception is represented by 2 specimens, both in poor condition. I am unable to identify any of these specimens, so, will omit them until more material is available.

GENUS CRYPHALOMORPHUS SCHAUFUSS

Lepicerus Eichhoff, 1878, Ratio, descriptio, emandatio, eorum tomicinorum, p. 476. (Preoccupied).

Cryphalomorphus Schaufuss, 1891, Tijdschr. Ent. 35: 12.

Letznerella Reitter, 1913, Wein. Ent. Zeit. 32. Beiheft, p. 68; Schedl, 1940, Mitt. Munch. Ent. Ges. 30(2): 588. (= *Lepicerinus*).

Ernoporides Hopkins, 1915, U.S. Dept. Agric., Rept. 99: 34; Schedl, 1940, Mitt. Munch. Ent. Ges. 30(2): 588. (= *Lepicerinus*).

Hypothenoides Hopkins, 1915, U.S. Dept. Agric., Rept. 99: 11; Schedl, 1961, Rev. Ent. Moc. 4(2): 523. (= *Cryphalomorphus*).

Neocryphalus Eggers, 1922, Ent. Bl. Biol. Syst. Käfer 18(4): 169; Schedl, 1952, Dusenia 3(5): 344. (= *Cryphalomorphus*).

Negrites Eggers, 1923, Zool. Meded. R. Mus. Hist. Leyden 7: 141; Schedl, 1961, Rev. Ent. Moc. 4(2): 523. (= *Cryphalomorphus*).

Lepicerinus Hinton, 1936, Ann. Mag. Nat. Hist., (Ser. 10), 17: 472; Schedl, 1940, Mitt. Munch. Ent. Ges. 30(2): 587; Schedl, 1952, Dusenia 3(5): 344 (= *Cryphalomorphus*).

Type species: *Cryphalomorphus communis* Schaufuss, monotypic.

This genus is known by a number of species from the tropical and subtropical areas of the world. Most of the species are found in the Australian and Oriental regions, with a smaller concentration of species in Africa. Two species (possibly 3) occur in the New World, 1 of which is known from Jamaica.

34. *Cryphalomorphus knabi* (Hopkins), n. comb.

(Figs. 26, 45)

Ernoporides knabi Hopkins, 1915, U.S. Dept. Agric., Rept. 99: 34.

Ernoporides floridensis Hopkins, 1915, U.S. Dept. Agric., Rept. 99: 34; Wood, 1966, Gt. Basin Nat. 26: 22 (= *knabi*).

Hypothenemus ritchiei Sampson, 1917, Bull. Ent. Res. 8: 295; Wood, 1966, Gt. Basin Nat. 26: 23 (= *knabi*).

Lepicerinus ritchiei: Hinton, 1936, Ann. Mag. Nat. Hist. (Ser. 10) 17: 473.

Cryphalomorphus caraibicus Schedl, 1951, Dusenia 2(2): 96; Wood, 1966, Gt. Basin Nat. 26: 23 (= *knabi*).

Cryphalomorphus subtriatus Schedl, 1952, Dusenia 3(5): 360; Wood, 1966, Gt. Basin Nat. 26: 23 (=*knabi*).

Females. – Length 1.3 to 2.0 mm, 2.6 times longer than wide; brown.

Frons convex, with an indistinct, median, longitudinal elevation extending to near upper level of eyes, also a weak transverse impression above epistomal margin; surface minutely reticulate, punctures sparse, indistinct and shallow; vestiture sparse, consisting of short, fine, hair-like setae, somewhat longer and more abundant along epistomal margin. Antennal club large, longer than scape, 1.3 times longer than wide.

Pronotum 1.1 times longer than wide; sides weakly arcuate, anterior margin broadly rounded, unarmed or bearing 2 small, submarginal asperities; anterior slope bearing numerous (more than 30) small, erect asperities; posterior area shining, punctate-granulate; vestiture consisting of short, hair-like setae intermixed on posterior portion with equally long scale-like setae.

Elytra 1.6 times longer than wide; sides parallel on anterior three-fourths, broadly rounded behind; striae not impressed except on first, punctures fine, rather deep, separated by a distance greater than their own diameters; interspaces at least 2 to 3 times wider than striae, shining, very finely, confusedly punctured. Declivity convex; striae slightly more impressed and punctures slightly larger than on disc. Vestiture of erect, scale-like, interstrial setae intermixed with shorter, more abundant, scale-like strial and interstrial setae.

Males. – Similar to female but slightly smaller.

Distribution. – Florida; West Indies; Vera Cruz, Mexico; Central America and Jamaica.

JAMAICA: *St. Andrew:* SW slope Long Mountain, Kingston, 28 June 1958, M. W. Sanderson, beating palm frond shelter, 1 (CNC). *Trelawny:* Barbecue Bottom, 10 August 1966, H. F. Howden, 1 (CNC). Island record only, 1917, A. H. Ritchie, 3 (BM) (cotypes).

Remarks. – This species occurs in a wide variety of host plants including *Candiosperma, Ipomoea* and *Caloncytion*. It is recorded as "... causing serious injury to dried sweet potato chips" in Jamaica (Sampson, 1917).

GENUS CRYPTOCARENUS EGGERS

Cryptocarenus Eggers, 1933, Trav. Lab. d'Ent. Mus. Nat. Hist. Mem. Orig. No. 1: 10.

Tachyderes Blackman, 1943, Jour. Washington Acad. Sci. 33: 35; Schedl, 1951, Dusenia 2(2): 72 (= *Cryptocarenus*).

Type species: *Cryptocarenus diadematus* Eggers, original designation.

This genus is represented by 12 species distributed throughout the Neotropical Region. Three species are recorded from the West Indies, but none have previously been reported from Jamaica. Two species are represented in the material at hand.

Cryptocarenus is closely related to *Hypothenemus* but adults of *Cryptocarenus* differ by having a longer, raised lateral line on the pronotum, the antennal club is not septate and the elytra are glabrous except for a few interstrial bristles on the declivity.

KEY TO THE JAMAICAN SPECIES OF CRYPTOCARENUS

1. Length (female) less than 2.0 mm; frons finely rugose on both sides of a weak, transverse impression . . . . . 35. *heveae* (Hagedorn)
   Length (female) more than 2.0 mm; frons coarsely rugose on both sides of a weak, transverse impression. . . . . 36. *seriatus* Eggers

35. *Cryptocarenus heveae* (Hagedorn)

Stephanoderes heveae Hagedorn, 1912, Rev. Zool. Afr. 1/3: 338.

Cryptocarenus heveae: Wood, 1957. Can. Ent. 89(9): 396.

Cryptocarenus porosus Wood, 1954, Univ. Kansas Sci, Bull. 36, 2(15): 1014; Wood, 1957, Can. Ent. 89(9): 396 (= *heveae*).

Females. – Length 1.6 to 1.7 mm, 2.6 times longer than wide; reddish-brown.

Frons transversely impressed above epistoma, impression broad, rather shallow; surface finely rugose at sides near eyes, more strongly rugose above impression, usually a distinct, median tuberculate elevation is evident at upper level eyes; vestiture consisting of short and long hair-like setae intermixed, more abundant

along epistomal margin. Antennal club about as long as wide, oval, the sutures not septate.

Pronotum 1.1 times wider than long; sides rather weakly, evenly arcuate, anterior margin broadly rounded, bearing about 7 or 8 large, erect asperities; anterior slope bearing numerous asperities, these erect, rather large; posterior area smooth, shining, finely, sparsely punctured; median line broad, flattened and smooth; vestiture consisting of narrowly spatulate setae, shorter on posterior area.

Elytra 1.6 times longer than wide; sides parallel on anterior two-thirds, rather narrowly rounded behind; striae not impressed except on first, punctures fine, shallow, separated by a distance greater than their own diameters; interspaces shining, more than 2 times wider than striae, punctures extremely minute, abundant, confusedly placed. Declivity convex; first and second striae impressed. Vestiture consisting of erect, spatulate, interstriae setae on first, third and alternate interspaces on declivity and along lateral margin, sometimes a few of these are located on disc.

Male. – Not present in material at hand.

Distribution. – Southern Florida, Jamaica and Africa.

JAMAICA: *St. Andrew:* St. Peters, 9 July 1966, 1 (CNC). *Trelawny:* Duncans, 15 and 23 August 1966, Howden and Becker, 5(CNC).

Remarks. – This species is known from a variety of plants in Africa but is recorded only from a *Vitis* sp. in southern Florida (Wood, 1954). Schedl (1962) discusses the biology of the species in Africa.

It is difficult to distinguish the female of this species from the male of *C. seriatus* but the smaller eye and finer sculpture of the frons of the male *C. seriatus* should be sufficient to distinguish between the two. The less strongly sculptured frons, the minutely punctate elytral interspaces and the smaller size will distinguish the female of *C. heveae* from adults of the following species.

36. *Cryptocarenus seriatus* Eggers

(Fig. 27)

Cryptocarenus seriatus Eggers, 1933, Trav. Lab. d'Ent. Mus. Nat. Hist. Mem. Orig. No. 1: 10.

Tachyderes floridensis Blackman, 1943, Proc. U.S. Nat. Mus. 94: 36; Schedl, 1962, Ent. Bl. Biol. Syst. Käfer 58(3): 205 (= *seriatus*).

Females. – Length 2.2 to 2.5 mm, 2.7 times longer than wide; reddish-brown.

Frons flattened or shallowly impressed above epistoma; surface coarsely rugose and granulate, bearing a distinct, median, subtuberculate elevation at upper level of eyes, sometimes bearing several additional tubercles on each side of median one; vestiture consisting of sparse, short and long, hair-like setae intermixed, longer

and more prominent along epistomal margin. Antennal club 1.2 times longer than wide, oval, the sutures not septate.

Pronotum about as long as wide; sides evenly, rather weakly arcuate, anterior margin broadly rounded, bearing 7 or 8 erect asperities; anterior slope as in preceeding species, asperities larger; posterior area smooth, shining, punctures sparse, weakly impressed; vestiture as on adult of preceeding species.

Elytra 1.8 times longer than wide; sides parallel on anterior two-thirds, broadly rounded behind; striae not impressed except on first, punctures fine, impressed, separated by a distance greater than their own diameters; interspaces shining, smooth, impunctate, at least 3 times wider than striae. Declivity convex; first and second striae impressed. Vestiture consisting of very narrowly spatulate setae on interspaces 1, 3, 5, 7 on the declivity and along lateral margin, sometimes with a few setae on discal interspaces.

Males. – Similar to female except smaller, 1.5 to 1.6 mm; eye reduced in size; sculpture of frons finer; asperities on pronotum smaller; setae on elytral declivity slightly broader.

Distribution. – Florida to southern Texas; south to Tampico, Vera Cruz, Mexico; and Jamaica.

JAMAICA: *St. James:* 3 miles west of Flamingo, 19 August 1966, 1 (CNC). *St. Thomas:* Morant Bay Road, 14.5 miles east of Kingston, 22 May 1960, T. H. Farr, 3 (IJ). *Trelawny:* Barbecue Bottom, 10–13 August 1966, H. F. Howden, 4 (CNC); Duncans, 2 and 21 August 1966, H. F. Howden, 2 (CNC).

Remarks. – This species is known from a large variety of plants including *Chenopodium*, *Coccoloba*, *Conocarpus*, *Dipholis*, *Ficus*, *Galactea*, *Ipomoea*, *Metopium*, *Ocotea*, *Persea*, *Pithocellobium*, *Rhizophora*, *Rhus*, *Torrubia* and *Vitis* (Wood, 1954).

The larger size and the rougher sculpture of the frons will distinguish the female of *C. seriatus* from adults of the other Jamaican members of the genus. The male may be distinguished by the smaller eyes and rougher sculpture.

TRIBE DRYOCOETINI

GENUS POECILIPS SCHAUFUSS

Poecilips Schaufuss, 1897, Berl. Ent. Zeit. 42: 110.
Thamnurgides Hopkins, 1915, U.S. Dept. Agric., Rept. 99: 45.
Spermatoplex Hopkins, 1915, U.S. Dept. Agric., Rept. 99: 48.
Dendurgus Eggers, 1923, Zool. Meded. R. Mus. Hist. Leyden 7: 144.
Type species: *Poecilips sannio* Schaufuss, monotypic.

This is a moderately large genus occurring mainly in Africa, Southeast Asia, East Indies, Australia and the Pacific Islands. Because these insects are easily

transported by commerce in seed or fruits, the same species have been described under different names in different parts of the world, resulting in a great deal of taxonomic confusion. The species are very similar in general appearance and no doubt races and/or subspecies exist causing further confusion. Wood (1960) states that 3 species have been introduced into the New World. I believe this total is still correct but the names of the species are probably not the same as those considered by Wood. The species known from the New World are: *Poecilips advena* (Blandford), *P. caraibicus* (Schedl) and *P. confusus* Eggers. All may occur on Jamaica, but *P. confusus* is the only one definitely known to occur there.

37. *Poecilips confusus* Eggers

Poecilips confusus Eggers, 1940, Rev. Zool. Bot. Afr. 33: 106.

Females. – Length 2.5 to 2.7 mm, 1.25 times longer than wide: reddish brown, some-what darker on anterior portion of pronotum.

Frons convex; surface brightly shining, convergently aciculate to median lobe of epistoma, with a smooth, feebly elevated, median, longitudinal carina; vestiture consisting of sparse, moderately long, hair-like setae. Antennal club 1.25 times longer than wide, oval, distal margin of corneous basal portion broadly bisinuate.

Pronotum 1.05 times longer than wide; sides distinctly arcuate, anterior margin broadly rounded, unarmed; surface shining; anterior half and lateral portions distinctly asperate, the asperities rather small, closely placed, smaller on lateral portions; posterior half smooth, distinctly punctured.

Elytra 1.5 times longer than wide; sides parallel on anterior two-thirds, narrowly rounded behind; striae, except first, not impressed, punctures rather large, closely placed, somewhat weakly impressed; interspaces shining, about as wide as striae, minutely punctured. Declivity convex, unmodified except strial punctures slightly smaller. Vestiture consisting of a regular row of rather long, hair-like setae on each interspace.

Male. – Not represented in present material.

Distribution. – Recorded from Ivory Coast, Nigeria, British Cameroons, Sierra Leone and the Belgium Congo in Africa; Madagascar and Jamaica.

JAMAICA: *Clarendon:* Colonel's Ridge, 14 May 1950, M. W. Sanderson, 1 (CNC). *St. Andrew:* Irish Town, 28 August 1966, Howden and Becker, 1 (CNC).

Schedl (1957) reports this species from St. Andrew Parish, trail from Guava Ridge to Bellevue, 18 December 1955, mixed pine and hardwood litter, P. F. Bellinger.

Remarks. – Besides the characters given in the key to genera, adults of this species can be recognized by the asperate anterior half of the pronotum, by the convergently aciculate sculpturing on the frons, by the convex, unmodified, elytral declivity and by the uniserrate row of erect, hair-like setae on each elytral interspace.

Coccotrypes Eichhoff, 1878, Ratio, descriptio, emandatio, eorum tomicinorum, p. 391.

Type species: *Bostrichus dactyliperda* Fabricius (Hopkins 1914).

This genus is very closely related to *Poecilips* and distinguishing between the 2 genera may be difficult. In general the characters given in the key to genera will distinguish them.

The habitat of this genus is similar to *Poecilips* and, like *Poecilips*, the species have been transported throughout the world. Consequently, the taxonomy is quite confused. About 15 species are known from the New World; 8 have been described or recorded from the West Indies. None have previously been recorded from Jamaica. Two species are reported herein, but undoubtedly several more species occur on the island.

KEY TO THE JAMAICAN SPECIES OF COCCOTRYPES

1. Asperities on pronotum separated by a distance less than their basal width; elytral interspaces uniserrately punctate-setose . . . . . 38. *dactyliperda* (Fabricius)

   Asperities on pronotum separated by a distance much greater than their basal width; elytral interspaces smooth, setose, not granulate . . . . . 39. *distinctus* (Motschulsky)

38. *Coccotrypes dactyliperda* (Fabricius)

(Figs. 28, 46)

Bostrichus dactyliperda Fabricius, 1801, Syst. Eleuth. 2: 387

Dryocoetes dactyliperda: Eichhoff, 1864, Berl. Ent. Zeit. 8: 38.

Anisandrus dactyliperda: Ferrari, 1867, Die forst- und baum. Borkenkäfer, p. 26.

Coccotrypes dactyliperda: Eichhoff, 1878, Ratio, descriptio, emandatio, eorum tomicinorum, p. 309.

Bostrichus palmicola Horning, 1846, Stett. Ent. Zeit. 7: 116.

Bostrichus laboulbenei Decaux, 1890, Etudes sur les insectes recueillis a l'exposition universelle, 16 pp.

Coccotrypes dactyliperda var. *obscurus* Rey, 1892, L'Exchange 8(86): 30.

Coccotrypes eggersi Hagedorn, 1904, Allg. Zeit. Ent. 9: 448; Schedl, 1948, Tijdschr. Ent. 91: 113 (= *dactyliperda*).

Coccotrypes moreirai Eggers, 1928, Arch. Inst. Biol. 1: 86; Schedl, 1948, Tijdschr. Ent. 91: 113 (= *dactyliperda*).

Coccotrypes tanganus Eggers, 1935, Rev. Zool. Bot. Afr. 27: 307; Schedl, 1948, Tijdschr. Ent. 91: 113 (= *dactyliperda*).

Females. – Length 1.5 to 2.5 mm, 2.3 times longer than wide; reddish-brown.

Frons convex; surface shining, finely, convergently aciculate; epistoma broadly emarginate; vestiture consisting of inconspicuous, fine, scattered, hair-like setae, more conspicuous along epistomal margin. Antennal club oval ,1.45 times longer than wide, obliquely truncate.

Pronotum slightly wider than long, widest just behind middle; sides distinctly arcuate, very slightly constricted on anterior third, anterior margin narrowly rounded, bearing several, acute, small asperities; entire surface finely asperate, the asperities scattered, more acute on anterior slope, becoming granulate behind summit; vestiture consisting of fine, moderately long, hair-like setae.

Elytra 1.4 times longer than wide; sides slightly arcuate, rather broadly rounded at apex; striae, except first, not impressed, punctured in regular rows, the punctures rather large, finely impressed; interspaces about as wide as striae, each bearing a row of fine punctures. Declivity convex, beginning at middle of elytra; strial punctures slightly smaller than on disc, and interspaces slightly narrower. Vestiture consisting of rather long, erect, hair-like interstrial setae and semi-recumbent, shorter, hair-like strial setae.

Males. – Not represented in material at hand, but is similar to female except smaller, about 1.6 mm and more finely sculptured.

Distribution: – Cosmopolitan.

JAMAICA: *St. James:* Montego Bay, 18 March 1911, 1 (AMNH).

Remarks. – In spite of the fact that only 1 specimen was seen during this study, this species is very common throughout most parts of the world. It is likely to be found in any city in imported nuts and seeds. It's origin is unknown and its distribution is not necessarily contiguous over the wide range that has been described, since its dispersal depends on the transport of infested host material.

The species is well known for its destruction of date seeds, which are an important commodity in some parts of northern Africa. Additional hosts are *Areca, Attalea, Chamaedora, Howea, Phoenix, Pritchardia, Syagnis* and *Washingtonia* (Browne, 19161). It also breeds in buttons of ivory nut and has been known to destroy large numbers of these buttons while in storage in Hong Kong and Singapore.

Besides the characters given in the key, adults of this species may be distinguished from those of the other representative of the genus in Jamaica by the weaker constriction on the anterior third of the pronotum and by the larger, somewhat deeper strial punctures on the elytra.

39. *Coccotrypes distinctus* (Motschulsky)

Anodius distinctus Motschulsky, 1866, Bull. Moscou 39(2): 403.
Xyleborus distinctus: Hagedorn, 1910, Coleopt. Cat. 4: 103.

Coccotrypes distinctus: Wood, 1969, Gt. Basin Nat. 29(3): 117.

Coccotrypes floridensis Schedl, 1948, Tijdschr. Ent. 91: 117; Wood, 1969, Gt. Basin Nat. 29(3): 117 (= *carpophagus*).

Coccotrypes carpophagus Horning: Wood, 1960, Ins. Micronesia 18(1): 46; Wood, 1969, Gt. Basin Nat. 29(3): 117.

Females. – Length 1.6 to 1.9 mm, 2.1 times longer than wide; reddish-brown.

Frons convex; surface shining, convergently aciculate; epistoma broadly emarginate, the emargination deeper than in *dactyliperda;* vestiture consisting of scattered, fine, hair-like setae, more conspicuous along epistomal margin. Antennal club oval, 1.2 times longer than wide.

Pronotum about as long as wide, widest at about middle; sides arcuate, distinctly constricted on anterior third, anterior margin rather narrowly rounded, bearing a few, low, blunt asperities; entire surface shining, bearing numerous, small, widely scattered, acute asperities, these smaller and more widely separated than in *dactyliperda*, becoming granulate on sides and posterior portion; vestiture consisting of fine, widely scattered, hair-like setae.

Elytra 1.3 times longer than wide; sides nearly parallel on anterior two-thirds, broadly rounded at apex; striae not impressed, the punctures large, distinct, shallowly impressed; interspaces smooth, shining, wider than striae, each bearing a row of fine, granulate punctures. Declivity convex, beginning at middle of elytra; first and second striae weakly impressed, other striae as on disc, the punctures smaller than on disc; interspaces slightly narrower than on disc. Vestiture consisting of long, erect, hair-like interstrial setae and much shorter, semi-recumbent, hair-like strial setae.

Males. – Not present in material at hand, but is smaller, about 1.3 mm and more finely sculptured.

Distribution. – Southern Asia to Australia, the Pacific Islands, Florida and Jamaica. Probably circumtropical.

JAMAICA: *Clarendon:* Portland Ridge, 24 July 1958, at light, M. W. Sanderson, 1 (CNC).

Remarks. – The taxonomy and distribution of this species is somewhat confused. This species was known as *Coccotrypes carpophagus* (Horning) by Wood (1960, 1969b) with *C. floridensis* Schedl as a synonym. The *Coccotrypes carpophagus* of Schedl is a different species, with *C. pygmaeus* Eichhoff and several other Eggers' and Hopkins' names as synonyms. Evidently, *C. distinctus* (*carpophagus* of Wood) is known from the Oriental Region, the islands of the Pacific Ocean and Florida. Undoubtedly it is known by other names in other parts of the world and is probably found throughout the tropical and subtropical regions of the world.

Adults of this species resemble those of *C. dactyliperda* in general features but, in addition to the characters mentioned in the key, they may be distinguished by the deeper epistomal emargination, by the stronger constriction at the anterior

third of the pronotum and by the slightly smaller strial punctures on the elytra.

The habits of this species are similar to those of *C. dactyliperda.*

TRIBE IPINI

GENUS MIMIPS EGGERS

Mimips Eggers, 1932, Rev. Zool. Bot. Afr. 22: 33.

Type species: *Ips pilosus* Eggers, original designation.

This genus contains about 25 species, only 2 of which occur in the New World. The remainder of the species occur in Africa.

The species are found in the phloem-cambial layer under the bark of various trees and vines.

40. *Mimips mimicus* Schedl

(Figs. 29, 47)

Mimips mimicus Schedl, 1961, Pan-Pac. Ent. 37: 227.

Adults. – Length 1.9 to 2.1 mm, 2.7 times longer than wide; light brown.

Frons convex at upper level of eyes, shallowly, broadly, transversely flattened above epistoma; surface densely and closely punctured; vestiture consisting of rather long, erect setae over entire surface, shorter and denser along epistomal margin. Antennal club circular, about as long as wide, sutures strongly arcuate.

Pronotum 1.1 times longer than wide; sides weakly arcuate, anterior margin broadly rounded, unarmed; anterior slope with numerous, small, scattered asperities; posterior area shining, punctate, punctures rather large, close; median line slightly elevated, smooth.

Elytra 1.6 times longer than wide; sides parallel on anterior three-fourths, posterior margin broadly rounded; striae not impressed, the punctures rather large and close; interspaces wider than striae, punctures as large and about as numerous as those in striae, making striae and interstriae difficult to distinguish. Declivity abrupt, steep; at upper level, a distinct tooth located in the second interspace, a larger tooth located in the third interspace, and on the ridge further down, 3 blunt tubercles are located about equal distance from one another; apical margin slightly elevated, undulate; declivital face shining, broadly impressed, rather densely, shallowly punctured. Vestiture consisting of erect strial and interstrial setae, those in interstriae about twice as long as those in the striae.

Distribution. – Known from Costa Rica, Jamaica and Mexico.

JAMAICA: *Trelawny:* Good Hope, 11 August 1966, A. T. Howden, 1 (ATH).

Remarks. – Besides the typical ipine characters, adults of this species are easily

recognized by the steep, concave elytral declivity armed by granules on the lateral margin and the strongly arcuate antennal sutures. It is distinctly different from the other ipine representative in Jamaica, *Ips calligraphus* (Germar).

GENUS IPS DEGEER

Ips DeGeer, 1775, Mém. pour servir à l'histoire nat. 5: 190.
Bostrichus Fabricius, 1777, Syst. Ent., p. 59 (in part).
Tomicus Latreille, 1807, Gen. Crust. et Ins. 2: 276 (in part).
Cumatotomicus Ferrari, 1867, Die forst- und baum. Borkenkäfer, p. 48 (in part).
Type species: *Dermestes typographus* Linnaeus (Hopkins. 1914).

This is a large genus, the species of which occur throughout the pine and spruce forests of the world. Hopping[1] recognizes 30 species in North America but more recent studies may reduce this total.

Adults of the species in this genus feed and reproduce in the phloem-cambial layer of the trunks and larger limbs of various species of pines and spruces. They are important economic pests in many areas of North America.

41. *Ips calligraphus* (Germar)

(Figs. 30, 48)

Bostrichus calligraphus Germar, 1824, Ins Spec. Nov., p. 461.
Ips calligraphus: Smith, 1900, Cat. Ins. New Jersey, p. 363.
Bostrichus exesus Say, 1826, Jour. Acad. Nat. Sci. Philad. 5: 255; Leconte, 1876, Proc. Amer. Philos. Soc. 15: 363 (= *calligraphus*).
Bostrichus chloroticus DeJean, 1837, Dej. Cat., p. 232; Eichhoff, 1878, Ratio, descriptio, emendatio, eorum tomicinorum, p. 224 (= *calligraphus*).
Bostrichus conformis DeJean, 1837, Dej. Cat., p. 232; Eichhoff, 1878, Ratio, descriptio, emendatio, eorum tomicinorum, p. 224 (= *calligraphus*).
Tomicus praemorsus Eichhoff, 1867, Berl. Ent. Zeit. 11: 401; Leconte, 1876, Proc. Amer. Soc. 15: 363 (= *calligraphus*).
Tomicus interstitialis Eichhoff, 1868, Berl. Ent. Zeit. 12: 273; Hopping, 1965, Can. Ent. 97: 803 (= *calligraphus*).
Ips ponderosa Swaine, 1925, Can. Ent. 57: 197: Hopping, 1965, Can. Ent. 97: 803 (= *calligraphus*).

Females. – Length 4.1 to 4.9 mm, about 2.6 times longer than wide; black to dark brown with lighter legs and antennae.

Frons convex, sometimes slightly impressed on each side of a raised median area; surface distinctly, evenly granulate except for a large median tubercle above

[1] Hopping, in a series of 10 papers published between 1963 and 1965, discussed the genus *Ips*. See Hopping (1965)for a discussion of the 1 species pertinent here and for a list of all 10 papers.

epistomal margin; vestiture consisting of erect, hair-like setae, denser along epistomal margin. Antennal club oval, 1.1 times longer than wide. sutures strongly arcuate.

Pronotum 1.2 times longer than wide; sides slightly arcuate, anterior margin broadly rounded, unarmed; anterior slope with numerous, scattered, small asperities; posterior portion smooth, shining, punctures moderately large and deep, coarser towards lateral margins.

Elytra 1.5 times longer than wide; sides parallel on anterior three-fourths, broadly rounded behind; striae moderately impressed, punctures coarse; interspaces convex, as wide or wider than striae, punctate-setose, more so near declivity and on lateral areas. Declivity abrupt, steep; lateral margin with 6 teeth, the third the largest: punctures on declivital face slightly smaller than strial punctures. Vestiture consisting of scattered. moderately long, hair-like setae.

Males. – Similar in most respects to female except the median tubercle of the frons is larger, the sculpture is coarser and the third declivital tooth is notched on the ventral side near the tip.

Distribution. – Eastern Canada, most of the United States, south to Honduras and on some Caribbean Islands.

JAMAICA: *Clarendon:* Christiana, February 1966, K. Hall, 3 (IJ).

Remarks. – The 6 spines on the lateral margins of the declivity will readily distinguish the adults of this species.

The galleries of this species are constructed under the bark on the trunk and larger limbs of various species of pines (*Pinus caribaea* in Jamaica).

TIRBE XYLEBORINI

GENUS XYLEBORUS EICHHOFF

Anodius Motschulsky, 1863, Bull. Soc. Imp. Moscou 36: 511; Wood, 1969, Gt. Basin Nat. 29 (3): 113 (nomen oblitum).

Phloeotrogus Motschulsky, 1863, Bull. Soc. Imp. Moscou 36: 512; Wood, 1969, Gt. Basin Nat. 29 (3): 113 (nomen oblitum).

Xyleborus Eichhoff, 1864, Berl. Ent. Zeit. 8: 37.

Anisandrus Ferrari, 1867, Die forst-und baum. Borkenkäfer, p. 24; Eichhoff, 1878, Ratio, descriptio, emandatio, eorum tomicinorum, p. 321 (= *Xyleborus*).

Premnobius Eichhoff, 1878, Ratio, descriptio, emandatio eorum tomicinorum, p. 404; Schedl, 1957, Ann. R. Mus. Belg. Congo, Sci. Zool. 56: 84 (= *Xyleborus*).

Xyleborinus Reitter, 1913, Wein. Ent. Zeit. 32, Beiheft, p. 83; Schedl, 1957, Ann. R. Mus. Belg. Congo, Sci. Zool. 56: 84 (= *Xyleborus*).

Ambrosiodmus Hopkins, 1915, U.S. Dept. Agric. Rept. 99: 55; Bright, 1968, Can. Ent. 100: 1296 (= *Xyleborus*).

Type species: *Bostrichus monographus* Fabricius (Lacordaire, 1866).

This genus contains more species than any other genus of Scolytidae. More than 1500 names have been proposed throughout the world. Species are found in all forested areas, especially the tropics. The species bore in the woody tissues of various plants where they feed on the ambrosial fungus that grows along the walls of their galleries.

Thirteen species are reported herein from Jamaica. Two species are left unidentified.

The following key is based on females only, but this sex is usually the only one represented in collections. Males are very rare and are not likely to be represented.

KEY TO THE JAMAICAN SPECIES OF XYLEBORUS
(FEMALES)

1. Antennal club flattened, basal corneous area small, its distal margin procurved (Fig. 49) . . . . . 42. *cavipennis* (Eichhoff)
   Antennal club obliquely truncate, not strongly flattened, basal corneous area larger, its distal margin recurved (Fig. 50). 2
2. Anterior coxae narrowly separated by a complete intercoxal piece; anterior pronotal margin armed with several asperities. . . . . 43. *lepidus* n. sp.
   Anterior coxae contiguous; anterior pronotal margin unarmed 3
3. Pronotum wider than long 4
   Pronotum longer than wide. 5
4. Length 2.7 to 2.9 mm; declivital teeth large, the longest tooth about as long as the width of an interspace (Fig. 59) . . . . . 44. *lecontei* (Hopkins)
   Length 2.4 mm; declivital teeth much shorter than width of an interspace (Fig. 60) . . . . . 45. *nuperus* n. sp.
5. Scutellum conical 6
   Scutellum flat. 7
6. Elytral declivity broadly sloping, apex very narrowly rounded (Fig. 61) . . . . . 46. *insolitus* n. sp.
   Elytral declivity abrupt, apex broadly rounded to truncate (Fig. 62) . . . . . 47. *novus* n. sp.
7. Vestiture of declivity scale-like . . . . . 48. *spinulosus* Blandford
   Vestiture of declivity hair-like or absent 8
8. Declivital interspace 2 with a row of small, acute granules (Fig. 64) . . . . . 49. *jamaicensis* n. sp.
   Declivital interspace 2 devoid of granules. 9
9. Tubercles on declivital interspace 1 and 3 unequal in size (Figs. 65, 66) . . 10
   Tubercles on declivital interspaces 1 and 3 equal in size (Figs. 67, 68) . . 11

10. Largest declivital tooth at apex of interspace 1 (Fig. 65) . . . . . 50. *simulatus* n. sp.
    Largest declivital tooth in middle of interspace 3 (Fig. 66) . . . . . 51. *ferrugineus* (Fabricius)
11. Declivity dull, minutely reticulate (Fig. 67) . . . . . 52. *affinus* Eichhoff
    Declivity shining 12
12. Black to very dark reddish-black; usually larger, 2.7 to 3.2 mm; high elevations. . . . . 53. *beckeri* n. sp.
    Light brown to reddish-brown: usually smaller, 2.3 to 2.7 mm; widely distributed at lower elevations . . . . . 54. *volvulus* (Fabricius)

42. *Xyleborus cavipennis* (Eichhoff)

(Figs. 49, 57)

Premnobius cavipennis Eichhoff, 1878. Ratio, descriptio, emandatio, eorum tomicinorum. p. 404.

Xyleborus cavipennis: Schedl, 1957, Ann. R. Mus. Belg. Congo, Sci. Zool. 56: 84.

Females. – Length 2.8 to 3.1 mm, 3.2 times longer than wide; reddish-brown, darker near declivity.

Frons convex, surface finely punctuate, sparsely granulate, vestiture sparse, consisting of short, yellowish setae. Antennal club flattened, 1.1 times longer than wide.

Pronotum 1.2 times longer than wide; sides straight, anterior margin broadly rounded, unarmed; anterior slope with numerous, broad, slightly elevated asperities, extending as far back on disc as on sides; posterior portion smooth, brightly shining, punctures small, widely separated.

Elytra 1.8 times longer than wide; sides parallel on basal three-fourths, truncate behind; striae not impressed, punctures large, shallow, in regular rows; interspaces smooth, shining, punctures numerous, often in 2 rows, much smaller than strial punctures. Declivity abrupt, concave, acutely margined on a complete circle; lateral margins with 2 (sometimes 3) distinct teeth, granules sometimes visible along suture; declivital face punctured.

Male. – Not represented in material at hand.

Distribution. – Throughout the Neotropical and Ethiopian regions.

JAMAICA: *Manchester:* Kendal, 26 May 1950, J. A. Dale, 1 (IJ). *St. Andrew:* Beverly Hills, August 1961, R. P. Bengry, 1 (IJ); Collins Green, 10 July 1950, A. M. Wiles, 1 (IJ); Irish Town, 24 August 1966, Howden and Becker, 4 (CNC); Irish Town, 27 August 1966, Howden and Becker, 2 (CNC); Irish Town, 28 August 1966, Howden and Becker, 7 (CNC); Irish Town, August 1966, Howden and Becker, 8 (CNC). *St. James:* Montego Bay, 1920, Coconut trunk, A. H. Ritchie, 2 (BM). *Trelawny:* Barbecue Bottom, 13 August 1966, A. F. Howden, 1 (CNC);

Duncans, 3, 6, 21 and 23 August 1966, Howden and Becker, 4 (CNC); Good Hope, 11 and 17 August 1966, H. F. Howden, 3 (CNC). Island record only, F. Klages, 1 (Carnegie Museum).

Remarks. – The distinctive antennal club and elytral declivity will immediately distinguish the adults of this species from those of other representatives of the genus in Jamaica. They probably occur in a wide variety of host plants but are definitely recorded only from *Rhizophora* sp. in southern Florida (Wood, 1957).

43. *Xyleborus lepidus* n. sp.

(Fig. 58)

Holotype (♀). – Length 2.9 mm, 2.1 times longer than wide; very dark reddish-brown, almost black.

Frons evenly convex, faintly impressed above epistoma on each side of a faintly elevated, longitudinal, median line; surface shining, minutely reticulated, punctures shallow, fairly large and widely scattered, somewhat closer just above epistoma; vestiture consisting of a few, scattered, hair-like setae, more prominent just above epistoma and along epistomal margin. Antennal club circular, slightly longer than wide.

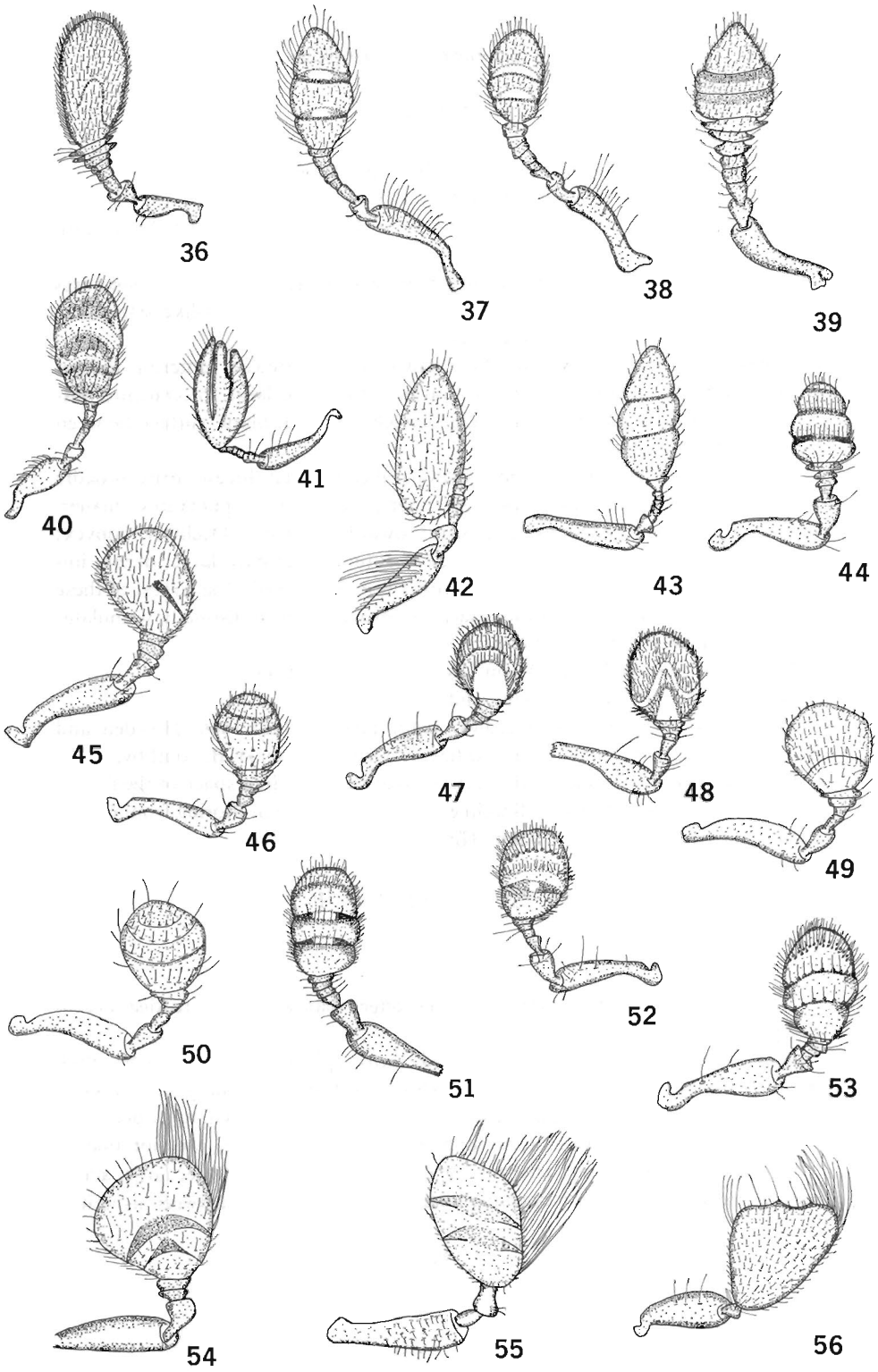
Pronotum circular in outline, 1.1 times wider than long; sides strongly arcuate, anterior margin slightly produced in median area, bearing fine asperities; anterior slope with numerous, scattered asperities, surface between asperities dull, minutely reticulate; posterior area smooth, dull, with very faint, widely scattered punctures.

Elytra 1.1 times longer than wide; sides parallel on basal two-thirds, broadly rounded behind; striae not impressed, punctures very fine, shallow; interspaces much wider than striae, smooth, dull, impunctate. Declivity beginning about mid-point of elytra, abrupt, steep; interspaces as on elytra except for a few small granules at upper level; strial punctures somewhat larger than on disc; striae 2 diverging toward, then away from suture at mid-point of declivity causing interspace 3 to be wider at this point.

Male. – Unknown.

Type material. – Holotype, female, Irish Town, St. Andrew Parish, Jamaica, 25 August 1966, Howden and Becker (No. 11,481 in CNC).

Figs. 36–56. Antennae of various species: 36, *Scolytus dimidiatus;* 37, *Bothrosternus isolatus;* 38, *Pagiocerus frontalis;* 39, *Phloeoborus scaber;* 40, *Chaetophloeus howdeni;* 41, *Phloeotribus asperatus;* 42, *Chramesus brevisetosus* ♂; 43, *Pycnarthrum reticulatus;* 44, *Hypothenemus brunneus;* 45, *Cryphalomorphus knabi;* 46, *Coccotrypes dactyliperda;* 47, *Mimips mimicus;* 48, *Ips calligraphus;* 49, *Xyleborus cavipennis;* 50, *Xyleborus beckeri;* 51, *Pityophthorus suspeciosus;* 52, *Neodryocoetes niger;* 53, *Neodryocoetes montanus;* 54, *Tricolus ignotus;* 55, *Monarthrum brittoni* ♂; 56, *Corthylus curiosus* ♂.


36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56

44. *Xyleborus lecontei* Hopkins

(Fig. 59)

Ambrosiodmus lecontei Hopkins, 1915, U.S. Dept. Agric., Rept. 99: 56.
Xyleborus lecontei: Bright, 1968, Can. Ent. 100: 1302.

Females. – Length 2.7 to 2.9 mm., 2.3 times longer than wide; light to dark brown.

Frons convex, slightly protuberant above epistoma; surface dull, punctures shallow, widely separated; vestiture consisting of scattered, hair-like setae. Antennal club circular, slightly longer than wide.

Pronotum slightly wider than long, sides weakly arcuate, anterior margin broadly rounded, unarmed; asperities on anterior slope large, prominent; posterior portion finely asperate, asperities scarcely elevated, blunt, surface between asperities minutely reticulate.

Elytra 1.4 times longer than wide; sides parallel on basal three-fourths, broadly rounded behind; striae not impressed; interspaces smooth, punctures smaller, slightly impressed, becoming granulate toward declivity. Declivity convex; suture and striae 1 impressed; punctures of sutural interspace large, deeply impressed; interspace 2 slightly elevated, with 3 prominent teeth, the largest of these about as long as width of an interspace; interspaces 3 to 6 distinctly granulate; ridge of interspace 7 entire, smooth.

Male. – Not available. See Bright (1968) for a description.

Distribution. – Florida and West Indies.

JAMAICA. – *St. Andrew:* Hardwar Gap, 4000', 9 July 1966, Howden and Becker, 1 (CNC). *St. James:* Montego Bay, 25 October 1950, H. B. Southby, 1 (IJ).

Remarks. – The 3 distinct teeth on the second declivital interspace of the female easily distinguishes this species. Specimens have been taken in Florida from *Carya*, *Terminalia*, *Pleiogynum* and "Palm" (Bright, 1968).

45. *Xyleborus nuperus* n. sp.

(Fig. 60)

Holotype (♀). – Length 2.4 mm, 2.4 times longer than wide; light reddish-brown except elytra much darker.

Frons evenly convex, faintly impressed above epistoma; surface rather dull, minutely reticulate, punctures large, shallow; vestiture consisting of scattered, moderately long, hair-like setae. Antennal club 1.2 times longer than wide.

Pronotum 1.1 times wider than long; sides slightly arcuate, anterior margin broadly rounded, unarmed; anterior slope bearing numerous, rather large, acute, erect asperities, these nearly reaching anterior margin, surface between asperities

minutely reticulate; posterior area finely asperate, asperities low, blunt.

Elytra 1.6 times longer than wide; sides parallel on basal three-fourths, broadly rounded behind: striae feebly impressed, punctures rather large, deeply impressed; interspaces slightly wider than striae, shining, punctures about half the size of strial punctures, not as deeply impressed, becoming granulate toward declivity. Declivity convex; striae more deeply impressed than on disc; strial and interstrial punctures closer and somewhat deeper; all interspaces, except first, with a median row of small teeth, about 5 teeth in each interspace; ridge of interspace 7 acute, forming elevated, ventral margin of declivity.

Male. – Unknown.

Type material. – Holotype, female, Hardwar Gap, 4000′, St. Andrew Parish Jamaica, 12 July 1966, Howden and Becker (No. 11,482 in CNC).

Remarks. – This species is closely related to *X. tachygraphus* Zimmerman and *X. lecontei*. Adults of *X. nuperus* are easily distinguished from the adults of these species by their smaller size and by the much smaller and more numerous declivital teeth.

46. *Xyleborus insolitus* n. sp.

(Fig. 61)

Holotype (♀). – Length 1.9 mm, 2.8 times longer than wide; light brown.

Frons convex, slightly impressed above epistomal margin: surface minutely reticulate, punctures rather large, faintly impressed, rather widely scattered; vestiture consisting of scattered, erect, hair-like setae. Antennal club 1.1 times longer than wide.

Pronotum 1.2 times longer than wide; sides parallel, anterior margin broadly rounded, unarmed; anterior slope bearing numerous, low, rather small asperities; posterior and lateral portions dull, minutely reticulate, punctures small and very faint, more prominent near median line.

Scutellum conical, pointed at apex.

Elytra 1.8 times longer than wide; sides parallel on anterior half, then narrowing gradually to the apex; striae feebly impressed, punctures of moderate size, slightly impressed; interspaces as wide as striae, interspaces 1, 3, 5 and 7 with acute, backward pointing granules, becoming large and prominent toward declivity, those on interspace 1 extending nearly to base, progressively shorter on alternate interspaces: vestiture consisting of long, interstrial, hair-like setae and much shorter, recumbent, strial setae, the interstrial setae longer than a distance equal to width of an interspace. Declivity broadly sloping; striae more distinctly impressed than on disc, punctures obsolete; interspaces 1, 3 and 7 slightly elevated, 3 more so than others, all with numerous, acute teeth, those on interspaces 3 and 7 larger; interspace 2 bearing a few smaller granules in median portion.

Male. – Unknown.

Type material. – Holotype, female, Irish Town, St. Andrew Parish, Jamaica, 24 August 1966, Howden and Becker (No. 11,483 in CNC).

47. *Xyleborus novus* n. sp.

(Fig. 62)

Holotype (♀). – Length 2.7 mm, 3.0 times longer than wide; light brown.

Frons somewhat flattened, faintly impressed on each side of median, longitudinal elevation, transversely impressed above epistoma; surface moderately shining, minutely reticulate. punctures rather large and deep, separated by a distance equal to more than their own diameter; vestiture consisting of moderately long, fine, hair-like setae, each of these arising from a puncture. Antennal club 1.1 times wider than long.

Pronotum 1.1 times longer than wide; sides parallel, anterior margin broadly rounded, unarmed; anterior slope bearing numerous, small asperities, surface between asperities smooth, shining; posterior and lateral half duller, minutely reticulate, punctures very small, shallow, widely separated; vestiture consisting of short, hair-like setae arising from each puncture.

Scutellum conical, acute, hidden by dense, short setae.

Elytra 1.9 times longer than wide; sides parallel on anterior four-fifths, nearly truncate behind; striae not impressed, punctures of moderate size, shallowly impressed, rather close together; interspaces smooth, faintly punctate, punctures very fine, shallow, much smaller than strial punctures; vestiture consisting of long, hair-like interstrial setae and much shorter, strial setae. Declivity abrupt, steep; striae shallowly impressed, punctures smaller than on disc; all interspaces with acute tubercles, less numerous on interspace 2, these teeth larger, more prominent on lateral margins; declivital face duller than surface of disc.

Male. – Unknown.

Type material. – Holotype, female, Hardwar Gap, 4000', St. Andrew Parish, 6 July 1966, Howden and Becker (No. 11,484 in CNC).

48. *Xyleborus spinulosus* Blandford

(Fig. 63)

Xyleborus spinulosus Blandford, 1898, Biol. Cent-Am. 4(6): 201.

Xyleborus spinosulus Schedl, 1934, Stylops 3: 178; Wood, 1966, Gt. Basin Nat. 26: 32 (= *spinulosus*).

Females. – Length 2.1 to 2.3 mm, 2.4 times longer than wide; dark reddish-brown.

Frons evenly convex, with a faint, median, longitudinal line; surface dull,

minutely reticulate, punctures very faint, widely separated, epistomal area slightly elevated, smooth and shining; vestiture consisting of scattered, erect, hair-like setae. Antennal club as long as wide.

Pronotum subcircular, as long as wide; sides arcuate, anterior margin broadly rounded, feebly armed with several, low, indistinct asperities; anterior slope bearing numerous asperities, these rather low and broad; posterior and lateral surface minutely reticulate, moderately shining, punctures very small, very indistinct; vestiture consisting of short, erect, hair-like setae, each of these arising from a puncture.

Elytra 1.6 times longer than wide; sides weakly arcuate from base to apex; striae not impressed, punctures of moderate size, slightly impressed; interspaces wider than striae, indistinctly punctured; vestiture consisting of erect, hair-like, interstrial setae, becoming flattened toward declivity. Declivity broadly sloping, beginning at about mid-point of elytra; strial punctures larger and more deeply impressed than on disc; interspaces 1 and 2 mostly smooth, but with a few, small, acute teeth, especially at upper level; interspace 3 with a row of 3 or 4 acute teeth, the row ending in a very large, acute spine located near middle of declivity; interspace 4 with a few, small, acute teeth; interspace 5 slightly elevated, forming ventral margin of declivity, with a row of progressively larger, acute teeth, the largest of these is directly beneath the large spine in interspace 3 and is equal in size to it; vestiture between lateral margins consisting of flattened, erect, scale-like setae, a few of these extend beyond lateral margins.

Male. – Not available in present material.

Distribution. – Apparently common in Neotropical Region, also in Hawaii. Known from Argentina, Brazil, Costa Rica. Guadeloupe, Guatemala, Jamaica, Trinidad and Venezuela.

JAMAICA: *Trelawny:* Barbecue Bottom, 12 August 1966, A. T. Howden, 1 (ATH) and H. F. Howden, 2 (CNC).

49. *Xyleborus jamaicensis* n. sp.

(Fig. 64)

Holotype (♀). – Length 2.7 mm, 3.0 times longer than wide; reddish-brown.

Frons convex, faintly, narrowly impressed over epistoma; faintly longitudinally elevated from impression to above eyes; surface minutely reticulate, moderately shining, punctures large, shallow, widely placed; vestiture consisting of sparse, hair-like setae arising from each puncture, more conspicuous along epistomal margin. Antennal club about as long as wide.

Pronotum 1.2 times longer than wide; sides slightly converging on posterior half, anterior margin broadly rounded, unarmed; anterior slope bearing numerous, small asperities, surface between asperities faintly reticulate; posterior and lateral

area finely rugose, reticulate, opaque, punctures very faint and hardly visible; vestiture consisting of sparse, hair-like setae scattered over surface.

Elytra 2.0 times longer than wide; sides parallel on basal three-fourths, narrowly rounded behind; striae not impressed, punctures shallow, close, moderate in size; interspaces smooth, shining, weakly convex, punctures small, inconspicuous; vestiture consisting of erect, sparse, hair-like interstrial setae and inconspicuous strial setae. Declivity sloping, somewhat concave from interspace 2 to lateral margin; striae weakly impressed, diverging away from suture, then back to apex, punctures a little larger than on disc; interspaces 1 to 4 with a median row of small, acute, equal-sized granules; lateral ridge of interspace 7 acute.

Male. – Unknown.

Type material. – Holotype, female, Hardwar Gap, 4000′, St. Andrew Parish, Jamaica, 6 July 1966, A. T. Howden (No. 11,485 in CNC).

50. *Xyleborus simulatus* n. sp.

(Fig. 65)

Holotype(♀).- Length 2.9 mm, 3.2 times longer than wide; very dark reddish-brown.

Frons evenly convex, very faintly, transversely impressed below middle; surface shining, minutely reticulate except for a very slightly elevated spot below middle, punctures fairly large, shallow, widely separated. Antennal club as long as wide.

Pronotum 1.2 times longer than wide; sides parallel, anterior margin broadly rounded, unarmed; summit prominent; anterior margin bearing numerous, small asperities, surface between asperities moderately shining, faintly, minutely reticulate; posterior and lateral region weakly sculptured, punctures fine, shallow and widely separated; vestiture consisting of moderately long, hair-like setae on anterior slope and along lateral margins.

Elytra 1.9 times longer than wide; sides parallel on anterior three-fourths, broadly rounded behind; striae not impressed, punctures moderately fine, slightly impressed; interspaces shining, very finely punctured; vestiture consisting of a few scattered, erect, stout, interstrial setae. Declivity sloping; striae as on disc except 1 and 2 strongly diverging from the suture, making interspace 1 much broader below mid-point of declivity; a large, acute, upward-pointing tooth is located in widened area of interspace 1 and a smaller tooth is located at the top of the declivity; interspace 2 unarmed; interspace 3 bearing 1 or 2 small, acute, teeth; ventral margin acute.

Male. – Unknown.

Type material. – Holotype, female, Hardwar Gap, St. Andrew Parish, 4000′, Jamaica, 16 July 1966, Howden and Becker (No. 11,486 in CNC). Paratypes, 7, same locality and collectors; 6 July 1966, 1; 9 July 1966, 1; 10 July 1966, 1; 16 July 1966, 1; 17 July 1966, 1; 19 July 1966, 1 and 29 July 1966, 1.

The holotype and most of the paratypes are in the CNC. Additional paratypes are deposited in the Institute of Jamaica, Kingston.

Remarks. - Specimens in the type series range in length from 2.6 mm to 2.9 mm. In several specimens the smooth median spot on the frons is elongated into a longitudinal, smooth, faint ridge. Other variations observed among the paratypes are the length and placement of the large declivital spine and the sculpturing of the elytra and pronotum.

This species resembles *X. similis* Ferrari very closely but the adults of *X. simulatus* are distinguished by their larger size, by the larger declivital teeth and by their coarser sculpture.

Adults of *Xyleborus simulatus* are readily distinguished from the adults of the other Jamaican representatives of the genus by the larger tooth in interspace 1 near the apex of the elytra and by the sutural striae diverging from the suture near the elytral apex and passing laterally to the large tooth in interspace 1.

51. *Xyleborus ferrugineus* (Fabricius)

(Fig. 66)

Bostrichus ferrugineus Fabricius, 1801, Syst. Eleuth., p. 388.
Xyleborus ferrugineus: Zimmerman, 1868, Trans. Amer. Ent. Soc. 1: 145.
Xyleborus fuscatus Eichhoff, 1867, Berl. Ent. Zeit. 11: 400; Schedl, 1960, Coleopts. Bull. 14: 8 (= *ferrugineus*).
Xyleborus impressus Eichhoff, 1867, Berl. Ent. Zeit. 11: 400; Schedl, 1960, Coleopts. Bull. 14: 8 (= *ferrugineus*).
Xyleborus confusus Eichhoff, 1867, Berl. Ent. Zeit. 11: 401; Schedl, 1962, Rev. Ent. Moc. 5(1): 425 (= *ferrugineus*).
Xyleborus bispinatus Eichhoff, 1868, Berl. Ent. Zeit. 12: 146; Schedl, 1962, Rev. Ent. Moc. 5(1): 425 (= *ferrugineus*).
Xyleborus amplicollis Eichhoff, 1868, Berl. Ent. Zeit. 12: 280; Schedl, 1962, Rev. Ent. Moc. 5(1): 425 (= *ferrugineus*).
Xyleborus retusicollis Zimmerman, 1868, Trans. Amer. Ent. Soc. 1: 146; Bright, 1968, Can. Ent. 100: 1312 (= *ferrugineus*).
Xyleborus nyssae Hopkins, 1915, U.S. Dept. Agric. Rept. 99: 66; Schedl, 1960, Coleopts. Bull. 14: 8 (= *ferrugineus*).
Xyleborus soltaui Hopkins, 1915, U.S. Dept. Agric., Rept. 99: 66; Bright, 1968, Can. Ent. 100: 1312 (= *ferrugineus*).
Xyleborus argentinensis Schedl, 1931, Ann. Mag. Nat. Hist. (Ser. 10) 8: 345; Schedl, 1962, Rev. Ent. Moc. 5(1): 426 (= *ferrugineus*).
Xyleborus schedli Eggers, 1934, Ent. Bl. Biol. Syst. Käfer 30: 83; Schedl, 1962, Rev. Ent. Moc. 5(1): 426 (= *ferrugineus*).

Xyleborus notatus Eggers, 1941, Arb. morph. taxon. Ent. 8: 107; Schedl, 1962, Rev. Ent. Moc. 5(1): 426 (= *ferrugineus*).

Xyleborus subitus Schedl, 1949, Rev. Brasil Biol. 9: 280; Schedl, 1962, Rev. Ent. Moc. 5(1): 426 (= *ferrugineus*).

Additional names in synonymy are listed by Schedl (1962) for areas outside the New World.

Females. - Length 2.1 to 3.0 mm, 2.8 times longer than wide; reddish-brown.

Frons convex, faintly transversely elevated in median area; surface minutely reticulate, punctures widely scattered, sparse, faintly impressed; vestiture consisting of fine, hair-like setae arising from each puncture, longer along epistomal margin. Antennal club 1.2 times longer than wide.

Pronotum 1.2 times longer than wide; sides parallel to weakly arcuate, anterior margin broadly rounded, unarmed; anterior slope bearing numerous, low asperities; posterior and lateral areas smooth, shining or opaque, punctures small, very faint.

Elytra 1.8 times longer than wide; sides parallel on basal three-fourths, broadly rounded behind; striae not impressed, punctures moderate in size, rather shallowly impressed; interspaces wider than striae, smooth, shining, sparsely punctured; vestiture consisting of scattered, erect, hair-like, interstrial setae. Declivity flattened, sloping; interspace 2 slightly impressed below level of the slightly elevated interspaces 1 and 3, unarmed; interspace 1 with 1 small tooth at upper level; interspace 3 with several small teeth at upper level and 1 large, prominent tooth in middle; interspaces 4, 5, and 6 bearing several small teeth.

Male. – Not available in material at hand. See Bright (1968) for a description.

Distribution. - Cosmopolitan.

JAMAICA: Kingston: Kingston, 1 July 1966, H. F. Howden, 1 (CNC); Kingston Gardens, 23 August 1952, G. R. Proctor, 2 (IJ). *Portland:* Port Antonio, 1 7 August 1966, E. C. Becker, 1 (CNC). *St. Andrew:* Beverly Hills, August to September, 1961, R. P. Bengry, 5 (IJ); Ferry, 9 February 1952, C. Stampp, 2 (IJ); Hardwar Gap, 9-29 July 1966, Howden and Becker, 10 (CNC); Irish Town, 27–28 August 1966, Howden and Becker, 7 (CNC). *St. Ann:* St. Anns Bay, 24–26 December 1953, G. R. Proctor, 1 (IJ); Meadowbrook, March-April 1960, A. M. Wiles, 8 (IJ). *St. James:* Montego Bay, 1920, ex coconut trunk, A. H. Ritchie, 6 (BM). *St. Mary:* Tryall, 1920, ex heart leaves of coconut with bud rot, A. H. Ritchie, 5 (BM). *Trelawny:* Duncans, 1 23 August 1966, Howden and Becker, 63 (CNC); Good Hope, 11–17 August 1966, Howden and Becker, 31 (CNC). Island label only, 5 (Carnegie Mus.).

Remarks. – This species is one of the most common species of bark beetles collected on Jamaica and is definitely the most common species of *Xyleborus*. Adults are readily distinguished from those of other Jamaican *Xyleborus* by the flattened, sometimes slightly sulcate, elytral declivity which has 1 large tooth in the middle of interspace 3 and several smaller teeth at the upper margin of interspaces 1 and 3.

Browne (1962) and Schedl (1962) give a complete, worldwide list of host plants. In North America, *X. ferrugineus* has been recorded from a wide range of host plants, mostly deciduous trees (Bright, 1968). Wolcott (1936) records this species in Puerto Rico under the name *X. confusus* from under bark of dead bucare tree, from *Erythrina glauca*, from coconut palm and in orange fruit.

52. *Xyleborus affinus* Eichhoff

(Fig. 67)

Xyleborus affinus Eichhoff, 1867, Berl. Ent. Zeit. 11: 401.
Xyleborus mascarensis Eichhoff, 1878, Ratio, descriptio, emandatio, eorum tomicinorum, p. 372; Wood, 1960, Ins. Micronesia 18(1): 71 (= *affinus*).
Xyleborus sacchari Hopkins, 1915, U.S. Dept. Agric., Rept. 99: 61; Schedl, 1962, Rev. Ent. Moc. 5(1): 331 (= *affinus*).
Xyleborus subaffinus Eggers, 1933, Trav. Lab. d'Ent. Mus. Nat'l. Hist. Mem. Orig. No. 1: 36; Schedl, 1962, Rev. Ent. Moc. 5(1): 331 (= *affinus*).

Females. – Length 2.3 to 2.8 mm, 2.9 times longer than wide; yellowish-brown.

Frons convex, usually faintly elevated between eyes; surface minutely reticulate, shining, punctures rather large and closely placed; vestiture sparse except along epistomal margin. Antennal club as long as wide.

Pronotum 1.1 times longer than wide; sides parallel, anterior margin rather broadly rounded, unarmed; anterior slope bearing numerous. low asperities: posterior and lateral portion smooth, shining, sparsely punctured.

Elytra 1.7 times longer than wide; sides parallel on basal two-thirds, broadly rounded behind; striae not impressed, punctures moderate in size, slightly impressed; interspaces smooth, shining, punctures small, rather sparse; vestiture consisting of moderately long interstrial setae and minute strial setae. Declivity broadly convex, sloping; surface dull. opaque; all interspaces with 1 to 4 small granules, these sharper on interspaces 1 and 3, sometimes absent on 2; interspace 7 forming a low, sharp. lateral margin; vestiture as on disc except setae somewhat longer.

Male. – Not available. See my earlier description (1968).

Distribution. – Cosmopolitan.

JAMAICA: Kingston: Kingston, 1920, ex pods of Locust tree, *Hymenaea courbaril*, A. H. Ritchie, 3 (BM). *Portland:* Port Antonio, 1 -7 August 1966, E. C. Becker, 3 (CNC); Priestman's River, 6 January 1952, G. R. Proctor, 1 (IJ). *St. Andrew:* Halfway Tree, 5 February 1960, T. H. Farr, 1 (IJ); Hardwar Gap, 4000′, 6–31 July 1966, Howden and Becker, 13 (CNC); Irish Town, 24 28 August 1966, Howden and Becker, 68 (CNC). *St. James:* Montego Bay, 1920, coconut trunk, A. H. Ritchie, 2 (BM). *St. Mary:* Boscobel, near Oracabessa, 2 May 1952, R. P. Bengry, 1 (IJ); Tryall, 1920, ex leaves of coconut with bud rot, A. H. Ritchie, 6

(BM). *Trelawny:* Barbecue Bottom, 12 August 1966, H. F. Howden, 1 (CNC); Duncans, 3–21 August 1966, Howden and Becker, 3 (CNC); Good Hope, 8–17 August 1966, H. F. Howden, 12 (CNC).

Remarks. – Adults of this common species are easily recognized by the dull, opaque declivity in contrast to the shining elytral disc, and by the small teeth on the declivital interspaces.

This species is known from a variety of woody plants. Schedl (1962) gives a complete list under the name *X. mascarensis.* North American records were given by Bright (1968). Wolcott (1936) records this species in Puerto Rico from *Inga vera*, coconut palm, on orange fruit, sugar cane and guava fruits.

53. *Xyleborus beckeri* n. sp.

(Figs. 50, 68)

Holotype (♀). Length 3.1 mm, 2.8 times longer than wide; very dark reddish-brown to almost black.

Frons convex, faintly impressed above epistomal margin, faintly elevated between eyes; surface minutely reticulate, shining, punctures moderate in size, rather deeply impressed; vestiture consisting of sparse, long, hair-like setae arising from each puncture, these more conspicuous along epistomal margin. Antennal club 1.2 times longer than wide.

Pronotum 1.1 times longer than wide; sides slightly arcuate, anterior margin broadly rounded, unarmed; anterior slope bearing numerous, small asperities, surface between asperities dull, opaque; posterior and lateral portions smooth, moderately shining, punctures fine, widely separated.

Elytra 1.8 times longer than wide; sides parallel on basal three-fourths, rather narrowly rounded behind; striae weakly but distinctly impressed, punctures large, close, moderately impressed; interspaces convex, about twice as wide as striae, punctures smaller, more shallowly impressed and less numerous than strial punctures; vestiture consisting of long, rather stout, interstrial setae and very fine, short, strial setae. Declivity convex, steep, appearing faintly concave in central and lateral portions; surface shining; interspaces 1 and 3 each with 2 to 4 acute tubercles, these about as long as a distance equal to width of interspace; interspaces 4, 5 and 6 each with several smaller granules; strial punctures somewhat larger than on disc.

Type material. - Holotype, female, Hardwar Gap, 4000′, St. Andrew Parish, Jamaica, 6 July 1966, Howden and Becker (No. 11,547 in CNC). Paratypes 35; all same locality: 5 July 1966, A. T. Howden, 1; 6 July 1966, Howden and Becker and A. T. Howden, 6; 7 July 1966, A. T. Howden, 3; 9 July 1966, Howden and Becker, 1; 10 July 1966, Howden and Becker, 3; 13 July 1966, Howden and Becker, 4, 16 July 1966, Howden and Becker, 4; 18 July 1966, Howden and Becker, 4; 19

July 1966, Howden and Becker, 4; 21 July 1966, A. T. Howden, 1; 29 July 1966, Howden and Becker, 3 and 31 July 1966, Howden and Becker, 1.

The holotype and most of the paratypes in the CNC. Additional paratypes are in the collection of the Institute of Jamaica, Kingston and in the collection of A. T. Howden, Ottawa, Ontario.

Remarks. – Specimens in the type series range in size from 2.7 mm to 3.2 mm. Most of the specimens are black or very dark reddish-brown but several specimens are light brown (teneral?). The size of the declivital teeth and the size and depth of the strial punctures also shows variation.

This species is evidently closely related to *X. morulus* Blandford but in the adults of *X. beckeri* the declivity is more roughly sculptured, slightly flatter and the ventral margin is more strongly elevated.

54. *Xyleborus volvulus* (Fabricius)

Bostrichus volvulus Fabricius, 1775, Syst. Ent. 4: 454.
Xyleborus volvulus: Eggers, 1929, Wein. Ent. Zeit. 46: 47.

Females. – Length 2.3 to 2.7 mm, 2.9 times longer than wide; light to dark reddish-brown.

Frons convex, sometimes very faintly impressed above epistoma, with a faintly elevated, longitudinal line, or a subtuberculate median elevation, or neither; surface shining, minutely reticulate, punctures large, close, shallow, giving a rugose appearance to surface; vestiture consisting of scattered, hair-like setae, these more conspicuous along epistomal margin. Antennal club 1.25 times longer than wide.

Pronotum 1.2 times longer than wide; sides slightly arcuate, anterior margin broadly rounded, unarmed; anterior slope bearing numerous, low asperities, surface between asperities shining, faintly reticulate; posterior and lateral surface smooth, shining or minutely reticulate either over entire surface or in restricted areas; vestiture consisting of scattered, hair-like setae, these longer along sides.

Elytra 1.8 times longer than wide; sides parallel on basal two-thirds, broadly rounded behind; striae impressed or unimpressed, punctures rather large, shallow; interspaces convex, smooth, shining, punctures about half the size of strial punctures and slightly less numerous; vestiture consisting of erect, hair-like interstrial setae and inconspicuous, hair-like strial setae. Declivity convex; surface shining; interspace 2 slightly depressed below level of 1 and 3: interspaces 1, 3, 5 and 7 with 4 to 6 acute tubercles; interspace 2 unmodified.

Male. – Not available in material at hand.

Distribution. – Cosmopolitan.

JAMAICA: *Portland:* Palisodoes, 25 August 1966, Howden and Becker, 1 (CNC); Port Antonio, 1–7 August 1966, E. C. Becker, 3 (CNC). *St. Andrew:* Hardwar Gap, 4000′, 11 July 1966, Howden and Becker, 1 (CNC); Irish Town.

24–27 August 1966, Howden and Becker, 6 (CNC). *St. James:* Montego Bay, 1920, coconut trunk, A. H. Ritchie, 13 (BM). *St. Mary*: Tryall, 1920, ex base of heart leaves of coconut with bud rot, A. H. Ritchie, 14 (BM). *Trelawny:* Barbecue Bottom, 13 August 1966, 5 (CNC); Duncans, 1–23 August 1966, Howden and Becker, 38 (CNC); Good Hope, 11 August 1966, H. F. Howden, 23 (CNC).

Remarks. – Under this name, 2 species are possibly represented. Certain specimens resemble *X. volvulus* while others resemble *X. torquatus* Eichhoff and a large number of specimens seem intermediate between the two. I am unable to adequately separate the two forms. Wood (1960) encountered the same difficulty and suggested that *X. volvulus* and *X. torquatus* represented the same species. He did not, however, formally synonymize the two names. No action should be taken until the types can be examined.

Xyleborus spp.

Two other species, represented by 1 specimen each, are represented in the Jamaican collection. I am unable to identify them and hesitate to describe them as new species. Both are from lowland areas and most likely are found in other areas of the West Indies or Central America.

TRIBE PITYOPHTHORINI

GENUS PITYOPHTHORUS EICHHOFF

Pityophthorus Eichhoff, 1864, Berl. Ent. Zeit. 8: 39.
Type species: *Bostrichus lichensteinii* Ratzeburg (Hopkins, 1914).

This is a very large genus, containing several hundred names in the New World. Species are found in all parts of the world except in the Oriental-Australian Region (1 species occurs in the Philippine Islands). No species have previously been recorded from Jamaica. Four species are described herein and 2 other species are left undescribed.

Species of this genus are found in the phloem-cambial layer of various species of recently dead or dying trees or shrubs.

KEY TO THE JAMAICAN SPECIES OF PITYOPHTHORUS

1. Asperities on anterior slope of pronotum arranged in 3 to 4 definite, concentric rows 2

   Asperities scattered over anterior slope of pronotum, not arranged in concentric rows 3

2. Interspace 2 of declivity as wide as on elytral disc; frons convex; first striae deeply impressed on declivity; mandibles alike in both sexes . . . . . 55. *diversus* n. sp.

   Interspace 2 of declivity wider than on disc; frons concave; first striae not deeply impressed on declivity; mandibles of female bearing a long, horn-like process . . . . . 56. *abnormalis* n. sp.

3. Length 1.2 mm; elytral declivity not sulcate; declivital vestiture consisting of spatulate, interstrial setae . . . . . 57. *formosus* n. sp.

   Length 2.3 mm; elytral declivity deeply sulcate; declivital vestiture consisting of long, hair-like interstrial setae . . . . . 58. *suspiciosus* n. sp.

55. *Pityophthorus diversus* n. sp.

Holotype (♂). – Length 1.3 mm, 2.6 times longer than wide; reddish-brown, apical half of elytra darker.

Frons convex, somewhat flattened to upper level of eyes; a short, longitudinal, median carina on vertex, the lowest point of this just below upper level of eyes, faintly elevated below; surface shining, faintly minutely reticulate, punctures close, rather deep; vestiture sparse, consisting of short, hair-like setae. Antennal club 1.5 times longer than wide; first 2 sutures nearly straight, chitinized only near lateral margin.

Pronotum about as long as wide; sides arcuate, distinctly but weakly constricted in front of middle; anterior margin broadly rounded, serrate; anterior slope bearing numerous asperities, these joined and arranged in 3 to 4 distinct, concentric rows; summit weakly elevated; posterior and lateral portions smooth, faintly reticulate, punctures of moderate size, rather deeply impressed, separated by about their own diameter; median line impunctate, very faintly elevated.

Elytra 1.6 times longer than wide; sides parallel on anterior two-thirds, rather broadly rounded behind; striae not impressed, except first, punctured in regular rows, these punctures rather large, deep; interspaces wider than striae, smooth, shining, impunctate except near declivity. Declivity convex; sutural striae only deeply impressed; other striae as on disc except punctures smaller; each interspace bearing a median row of narrow, flattened to subspatulate setae, hair-like on sides.

Female. – A specimen thought to be the female of this species is very similar to the male but it slightly larger, 1.5 mm; frons slightly flatter and vestiture of declivity more abundant.

Type material. - Holotype, male, Cornwall Mountain, Westmoreland Parish, Jamaica, 18 August 1966, H. F. Howden (No. 11,487 in CNC). Allotype, female and 2 paratypes, all same data as holotype.

The holotype, allotype and one paratype are in the CNC, the other paratype is in the Institute of Jamaica, Kingston.

Remarks. - Variations among the specimens of the type series are not evident

except for the normal differences in size and color. One specimen, however, has no setae on the second declivital interspace but otherwise it fits the description of this species.

56. *Pityophthorus abnormalis* n. sp.

(Figs. 3, 31)

Holotype (♀). - Length 1.3 mm, 2.8 times longer than wide; light reddish-brown.

Frons flattened, slightly concave from eye to eye and from epistomal margin to well above eyes; surface smooth, shining, minutely punctate, sparsely pubescent; a long, sinuate, horn-like process arises from the cutting edge of each mandible and extends upward to near upper level of eyes. Antennal club oval, 1.6 times longer than wide; first 2 sutures slightly arcuate, chitinized at lateral margin.

Pronotum 1.1 times longer than wide; sides arcuate, very faintly constricted in front of middle; anterior margin broadly rounded, serrate; anterior slope bearing numerous asperities, these united and arranged in 4 concentric rows.

Elytra 1.7 times longer than wide; sides parallel on anterior three-fourths, broadly rounded behind; striae not impressed, punctures shallowly impressed, separated by a distance equal to about half their diameters; interspaces about as wide as striae, shining, impunctate except near declivity. Declivity convex, flattened, suture slightly elevated; first stria impressed faintly; interspace 2 slightly widened, unmodified; remaining striae and interspaces as on disc except strial punctures finer. Vestiture consisting of sparse, widely separated, hair-like setae on declivital interspaces.

Male. - Similar to female in size; frons flattened on a smaller area, distinctly punctured; mandibles lacking horn-like structure; declivity deeper, impression broader; declivital setae narrow, flattened, not hair-like.

Type material. – Holotype, female, Duncans, Trelawny Parish, Jamaica, 15 August 1966, Howden and Becker (No. 11,488 in CNC). Allotype, male, same data except collected 13 August 1966. Paratypes, 209; all collected at type locality, 13-15 August 1966, Howden and Becker.

The holotype, allotype and most of the paratypes are in the CNC, other paratypes are in the Institute of Jamaica, Kingston.

Remarks. – Adults of this remarkable species are easily recognized by the peculiar, horn-like projections on the mandibles of the female. In addition, the flat frons of both sexes, the concentric rows of pronotal asperities and the unmodified declivity should distinguish this species.

57. *Pityophthorus formosus* n. sp.

Holotype (♂). – Length 1.2 mm, 3.0 times longer than wide; reddish-brown.

Frons flattened to slightly concave below an arcuate, semicircular carina, convex above; space between eye and carina about equal to the width at apex of tibia; a small, subtuberculate, median elevation is located at center of transverse carina; flattened area shining, finely punctured and rugose, sparsely pubescent. Antennal club oval, 1.5 times longer than wide; sutures arcuate without chitinized septa, indicated by rows of setae and notches on sides.

Pronotum as long as wide; sides subparallel on basal half, faintly constricted in front of middle; anterior margin broadly rounded, finely serrate; anterior slope bearing numerous, small asperities scattered over surface in no apparent order; posterior area smooth, shining, punctures very fine, shallow, rather sparse; vestiture consisting of short, sparse, inconspicuous, hair-like setae.

Elytra 1.7 times longer than wide; sides parallel on basal two-thirds, broadly rounded behind; striae not impressed, punctures very faint, minute, nearly invisible; interspaces smooth, shining, impunctate. Declivity convex; suture very feebly elevated; punctures of striae 1 and 2 slightly more conspicuous than those on elytral disc; interspaces smooth, unmodified; vestiture consisting of interstrial rows of short, stout, spatulate setae.

Female. – Not recognizable in material at hand.

Type material. – Holotype, male, Barbecue Bottom, Trelawny Parish, Jamaica, 10 August 1966, H. F. Howden (No. 11,489 in CNC). Paratypes, 4, all with same data as holotype.

The holotype and 3 of the paratypes are in the CNC, one paratype is in the Institute of Jamaica, Kingston.

Remarks. – This species should probably be placed in the genus *Pityophthorides* Blackman, which Schedl (1964) considers a synonym of *Myeloborus* Blackman. Because the generic concepts within the Pityophthorini are not yet fully understood, I prefer to use *Pityophthorus* as the generic name for this species.

Apparently, this species is closely related to *Myeloborus* (*Pityophthorides*) *pudens* (Blackman) described from Cuba. The adults differ by the presence of a small, median, subtuberculate elevation on the transverse carina of the frons, by the irregular placement of the pronotal asperities and by the size.

58. *Pityophthorus suspicious* n. sp.

(Fig. 51)

Holotype (♀). – Length 2.3 mm, 2.8 times longer than wide; dark reddish-brown.

Frons concave on a semi-circular area, deeply punctured except for a small, impunctuate, median space, these punctures of moderate size, close, separated by a distance less than their diameters; surface rather densely pubescent in concave area, setae on median portion golden yellow, about as long as antennal funicle,

longer on periphery; vertex minutely reticulate, faintly punctured. Antennal club 1.7 times longer than wide; first 2 sutures slightly arcuate, chitinized.

Pronotum about as long as wide; sides arcuate, constricted slightly in front of middle; anterior margin rather narrowly rounded, weakly serrate; anterior slope bearing numerous, low, blunt asperities, these arranged in no special order; posterior and lateral portions smooth, moderately shining, punctures rather deep, separated by a distance equal to their own diameters; median line impunctate, weakly elevated; vestiture consisting of sparse, short, hair-like setae, longer on margins.

Elytra 1.7 times longer than wide; sides parallel on basal three-fourths, rather broadly rounded behind; striae weakly impressed, the first more so, punctured in regular rows, punctures about the size of pronotal punctures, moderately deeply impressed; interspaces convex, smooth, shining, impunctate except near declivity. Declivity steep; interspace 2 widened, sulcate; interspace 3 higher than suture; interspaces 1 and 3 bearing a median row of distinct granules; remaining interspaces rugose; vestiture consisting of a row of rather long, hair-like setae in each interspace.

Male. – Similar to female except frons very slightly concave, vestiture much sparser, declivital granules somewhat larger and setae somewhat longer.

Type material. – Holotype, female, Blue Mountain Peak, Jamaica, 7400′, 27 28 July 1966, Howden and Becker (No. 11,490 in CNC). Allotype, male, and 4 paratypes bearing same data as holotype.

The holotype, allotype and 3 of the paratypes are in the CNC, 1 paratype is the Institute of Jamaica, Kingston.

Remarks. – This species is described in the genus *Pityophthorus* with some hesitation. In most respects, it resembles species in the genus *Neodryocoetes* Eggers; however, the antennal club and declivity are clearly a *Pityophthorus* type. Since the genera of the *Pityophthorini* have not been clearly elucidated, it seems best to describe this species in the genus *Pityophthorus*.

No meaningful variations were observed in the small type series seen. Adults of this species can be distinguished from those of the other Jamaican *Pityophthorus* by the deeply sulcate elytral declivity and by the evenly arched pronotum when viewed laterally. From species of *Neodryocoetes*, they can be distinguished by the first 2 segments of the antennal club being slightly arcuate and both chitinized.

Pityophthorus spp.

Two additional species of *Pityophthorus* represented by 1 specimen each, are included in the Jamaican material. One of these specimens, from Mizpah, Manchester Parish, closely resembles *P. suspiciosus* and could possible be a variety of that species. It differs in a number of characters however, so will be left unidentified. The other specimen represents an entirely different species from any reported

on in this paper. It is from Irish Town, St. Andrews Parish, and is distinguished by the densely pubescent, shallowly sulcate elytral declivity and by the densely punctured posterior portion of the pronotum. It will be left undescribed until more material is available.

GENUS NEODRYOCOETES EGGERS

Neodryocoetes Eggers, 1933, Trav. Lab. d'Ent. Mus. Natl. d'Hist. Mem. Orig. 1: 9.
Neopityophthorus Schedl, 1938, Arch. f. Naturgeschichte 7: 180; Schedl, 1951, Dusenia 2: 72 (= *Neodryocoetes*).

Type species: *Neodryocoetes hymenaeae* Eggers, monotypic.

This genus contains nearly 50 species distributed throughout the Neotropical Region. It is very poorly known and doubtlessly contains many more undescribed species. At least 10 species occur in Jamaica, but only 5 are discussed here because the other 5 are represented each by a single specimen. The various species usually feed in the seeds or pods of various forest trees and shrubs.

KEY TO THE JAMAICAN SPECIES OF NEODRYOCOETES

1. Frons convex, rather sparsely punctured with no evidence of a longitudinal carina. 2
   Frons flattened, more densely punctured, longitudinal carina evident, but indistinct in *hubbardi* 4
2. Length less than 1.6 mm. . . . . 59. *insularis* Eggers
   Length more than 1.6 mm 3
3. Black or very dark reddish-black, except legs and antennae; body glabrous declivity slightly impressed along suture . . . . . 60. *niger* n. sp.
   Reddish-brown; vestiture consisting of short, stout setae; declivity strongly impressed along suture . . . . . 61. *montanus* n. sp.
4. Lateral margin of pronotum sharply elevated from anterior to posterior margin; length 2.2–2.3 mm . . . . . 62. *hubbardi* Blackman
   Lateral margin of pronotum sharply elevated on posterior half only; length 1.8 mm . . . . . 63. *decorus* n. sp.

59. *Neodryocoetes insularis* Eggers

Neodryocoetes insularis Eggers, 1940, Arb. morph. taxon. Ent. 7: 128.

Adults. – Length 1.4 to 1.5 mm, 2.8 times longer than wide; light reddish-brown.

Frons evenly convex, sometimes faintly impressed just above epistoma; surface brightly shining, smooth, punctures rather sparse, fine; vestiture consisting of fine,

yellowish, hair-like setae arising from each puncture. Antennal club about as long as wide, first 2 sutures slightly arcuate.

Pronotum 1.1 times longer than wide; sides evenly arcuate, anterior margin rather broadly rounded, bearing numerous, fine serrations; anterior slope bearing numerous, scattered asperities; posterior area brightly shining, finely asperate on each side of a broad, smooth, median line.

Elytra 1.8 times longer than wide; sides parallel on anterior three-fourths, rather broadly rounded behind; striae not impressed, punctures very faint and indistinct; interspaces about as wide as striae, smooth and shining. Declivity convex, not especially modified except suture very faintly elevated. Vestiture consisting of widely separated, erect, hair-like setae on interspaces 1, 3, 5, 7, 8 and 9, the setae becoming flatter over declivity and located on all declivital interspaces except second.

The sexes are not distinguishable in the present material.

Distribution. – West Indies and northern South America.

JAMAICA: Island label only. 10 December 1937, in *Browneu* seeds; Lot No. 37–27093, 7 (USNM).

Two paratypes from Guadeloupe were examined.

Remarks. – Adults of this species are the smallest specimens of this genus seen from Jamaica. Besides their smaller size, they may be distinguished from the adults of other representatives of the genus by their smooth, brightly shining frons, by the finely asperate posterior portion of the pronotum, by the indistinctly punctured elytral striae and by the scattered, erect, interstrial setae which are nearly spatulate-shaped on the declivity.

This species has been intercepted at quarantine stations in the United States several times in various species of seeds.

The history of this species is extremely confusing. Eggers (1936), when discussing the genus *Neodryocoetes*, stated that "*N. insularis* Eggers (Guadeloupe)" was included in the genus, apparently overlooking the fact that he had not described the species. Two years later, Schedl (1938), when describing *Neopityophthorus*, included *Pityophthorus insularis* Eggers (new combination?) in the genus but did not include any species named "*insularis*" when discussing *Neodryocoetes*. Schedl also described *Neopityophthorus insularis* var. *costaricensis* in the same paper. Still later, Eggers (1940) described *Neodryocoetes insularis* and *Neopityophthorus insularis*. Schedl (1951) placed *Neopityophthorus* in synonymy under *Neodryocoetes* and proposed that *Neopityophthorus insularis* Eggers and the variety *costaricensis* Schedl be renamed *Neodryocoetes guadeloupensis*. It appears that now there are two different species, i.e., *Neodryocoetes insularis* Eggers, 1940 and *Neodryocoetes guadeloupensis* Schedl, 1951.

60. *Neodryocoetes niger* n. sp.

(Fig. 52)

Holotype. – Length 2.1 mm, 2.6 times longer than wide: black, antennae and legs light reddish-brown; glabrous.

Frons weakly convex, distinctly punctured over entire surface except for a small, smooth area at mid point of epistoma, punctures close together, moderately large, deep, surface between punctures shining, finely reticulate; vestiture consisting of fine, hair-like setae arising from each puncture. Antennal club 1.3 times longer than wide; first suture nearly straight, chitinized; remaining sutures indicated only by rows of setae.

Pronotum 1.1 times longer than wide, widest near base; sides weakly arcuate, faintly constricted in anterior third, anterior margin rather narrowly rounded, bearing several blunt serrations; anterior slope bearing numerous, low, scattered asperities; posterior portion and lateral portions dull, distinctly punctured, the punctures closely placed, of moderate size.

Elytra 1.7 times longer than wide; sides parallel on basal three-fourths, rather broadly rounded behind; striae not impressed, punctured in nearly regular rows, punctures small, moderately impressed; interspaces flat, dull, very sparsely punctured. Declivity convex, very slightly impressed along suture; first striae weakly impressed but more so than on disc; second striae faintly impressed; third and remaining striae not impressed; strial punctures fainter than on disc; interspaces duller than on disc, otherwise the same as on disc.

The sexes have not been distinguished.

Type material. – Holotype, Hardwar Gap, 4000′, St. Andrew Parish, Jamaica, 2 July 1966, Howden and Becker (No. 11,491 in CNC). One paratype bearing same data.

The holotype and paratype are in the CNC.

Remarks. – Adults of this species are readily distinguished from adults of the other Jamaican species of the genus by the black body and reddish-brown legs and antennae, and by the completely glabrous pronotum and elytra.

No meaningful variations could be observed in the 2 specimens at hand.

61. *Neodryocoetes montanus* n. sp.

(Figs. 32, 53)

Holotype. – Length 2.3 mm, 2.7 times longer than wide; reddish.

Frons convex, narrowly, weakly impressed just above epistomal margin; surface shining, minutely reticulate above upper level of eyes and on lateral portions, punctate with large and small punctures intermixed in median portion, the larger

punctures rather weakly impressed, closely placed, of moderate size, the smaller punctures minute. Antennal club 1.3 times longer than wide; the 2 visible sutures slightly arcuate, chitinized.

Pronotum about as wide as long, widest near base; sides distinctly arcuate, faintly constricted just before narrowly rounded anterior margin, the anterior margin bearing a finely serrate elevated ridge; anterior slope bearing numerous serrations, arranged in broken concentric rows; posterior and lateral portions rather densely punctured with large and small punctures intermixed, the large punctures deeply impressed, the surface between these punctures bearing dense, minute punctures.

Elytra 1.6 times longer than wide; sides parallel on posterior three-fourths, broadly rounded behind; striae weakly impressed, distinctly punctured in distinct rows, the impressed punctures rather large, closely placed; interspaces smooth, impunctate except near declivity. Declivity steep; suture impressed below general elytral surface; striae essentially as on disc; interspaces bearing a uniserrate row of short, stout setae.

The sexes were not distinguishable in the material at hand.

Type material. – Holotype, Hardwar Gap, 4000', St. Andrew Parish, Jamaica, 19 July 1966, Howden and Becker (No. 11,492 in CNC). Paratypes, 6; same data except 9 July 1966, 1; 29 July 1966, 5.

The holotype and most of the paratypes are in the CNC. Additional paratypes are in the Institute of Jamaica, Kingston.

Remarks. Specimens in the type series range in size from 2.1 mm to 2.4 mm. Other variations are not obvious but consist of minute differences in surface punctation, vestiture and color.

Adults of this species can be distinguished from those of the other members of the genus in Jamaica by the impressed elytral declivity, by the vestiture being confined to the declivital region, and by the lack of a longitudinal carina on the frons.

62. *Neodryocoetes hubbardi* Blackman

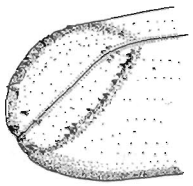
Neodryocoetes hubbardi Blackman, 1942, Proc. U.S. Nat. Mus. 92 (3147): 182.

Females. Length 2.1 to 2.4 mm, 2.4 times longer than wide; reddish-brown.

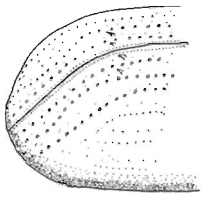
Frons convex, weakly flattened on a semicircular region from eye to eye, bearing a fine, very slightly elevated, longitudinal carina, this carina more strongly elevated at upper end; surface subopaque, finely, closely reticulate-granulate, bearing

---

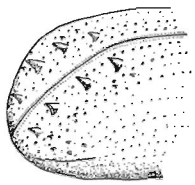
Figs. 57–68. Declivities of *Xyleborus* spp.: 57, *cavipennis;* 58, *lepidus;* 59, *lecontei;* 60, *nuperus;* 61, *insolitus;* 62, *novus;* 63, *spinulosus;* 64, *jamaicensis;* 65, *simulatus;* 66, *ferrugineus;* 67, *affinus;* 68, *beckeri.* Figs. 69–70. Declivities of *Tricolus* spp.: 69, *unidentatus;* 70, *ignotus.* Figs. 71–72. Declivities of *Monarthrum* spp.: 71, *brittoni;* 72, *minutissimus.*



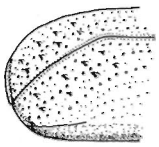
57



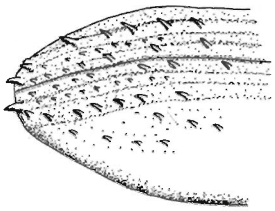
58



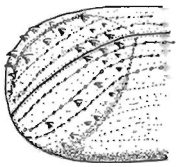
59



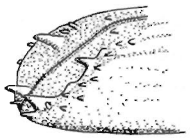
60



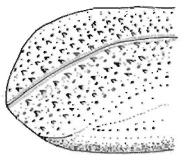
61



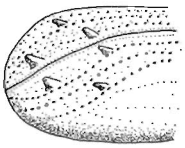
62



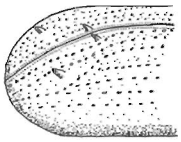
63



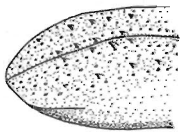
64



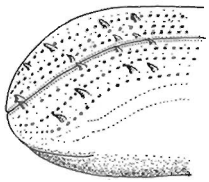
65



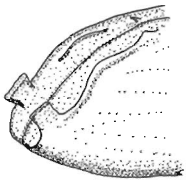
66



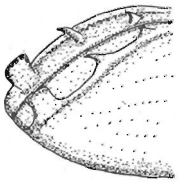
67



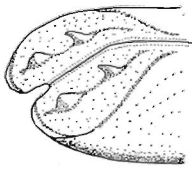
68



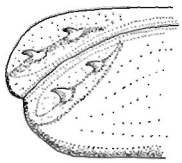
69



70



71



72

moderately long, sout setae. Antennal club 1.3 times longer than wide; first suture arcuate, chitinized except in center portion; remaining sutures not obvious.

Pronotum 1.1 times longer than wide; sides distinctly arcuate, slightly constricted in anterior one-fourth, anterior margin narrowly rounded, bearing 12 to 15 close-set asperities, the median ones somewhat subopaque, minutely reticulate; posterior area finely asperate at sides, punctured on disc, the punctures rather fine, slightly impressed and rather widely separated. surface between punctures dull. minutely reticulate; median line broad, impunctate, very faintly elevated on posterior area; a fine, raised, lateral line extends from posterior angles almost to anterior margin.

Elytra 1.5 times longer than wide; sides parallel on anterior three-fourths. rather broadly rounded behind; striae, except first, not impressed, punctured in regular rows, the punctures closely placed, of moderate size, finely impressed; interspaces shining, finely rugulose. occasionally bearing a few punctures. Declivity convex; sutural interspace slightly elevated; first and ninth striae slightly impressed, remaining striae not impressed; interspaces as on disc. Vestiture consisting of minute, inconspicuous, strial setae and a short row of longer setae in ninth interspace at elytral apex.

Males. – Similar to females in most respects. Frons somewhat more coarsely punctured; median carina fine, not extending to epitomal margin.

Distribution. – Jamaica.

JAMAICA: Island record only, intercepted in quarantine at Washington, D.C., 7 August 1964, F. T. Kenworthy, in ornamental seed heads, 5 (USNM); London, Ontario, 23 October 1968, W. W. Judd, in seeds from Jamaica, 25 (CNC). Blackman (1942) gives Kingston, Jamaica, ex seed heads of *Mucuna fawcetti*.

Remarks. – The nearly glabrous pronotum and elytra, the fine median carina on the frons, the long lateral margin on the pronotum and the unmodified elytral declivity should distinguish adults of this species from those of the other known representatives of the genus in Jamaica.

This species is apparently common in seeds, nuts, etc., in Jamaica. It has been intercepted at quarantine stations several times in the United States. It has also been found in Canada in seeds strung as beads and bought in Jamaica. The host seeds were: *Mucuna urens* (Sea Bean), *Hevea brasiliensis* (Para Rubber) and *Delonix regia* (Poinciana) (Judd, 1970).

63. *Neodryocoetes decorus* n. sp.

Holotype (♂). – Length 1.8 mm, 2.2 times longer than wide, reddish-brown.

Frons convex above upper level of eyes, flattened, somewhat concave below caused by a shallow, broad, median impression; median carina prominent, faintly elevated at epistomal margin, becoming more strongly elevated at median area and upwards, extending to above upper level of eyes; surface shining, rather densely punctured, appearing minutely rugose caused by upraised edges of close-

set punctures, the punctures close, rather deeply impressed. Antennal club large, 1.1 times longer than wide; 2 strongly arcuate sutures visible, the first, in basal one-fourth, strongly arcuate. the second, in median portion, more broadly arcuate.

Pronotum 1.1 times longer than wide, widest just behind middle; sides arcuate, more strongly so on anterior half; anterior margin narrowly rounded, bearing 10 to 15 contiguous, blunt asperities; anterior slope bearing numerous, scattered, low asperities, not arranged in any order; posterior and lateral areas finely asperate-punctate, the asperities formed by the upraised edges of each puncture, the punctures rather large, close, impressed; lateral line sharply elevated only on posterior half.

Elytra 1.6 times longer than wide; sides parallel on anterior two-thirds, rather broadly rounded behind; striae, except first, not impressed, punctures of moderate size, impressed in irregular rows; interspaces convex, finely rugose, bearing abundant, distinct punctures, these slightly smaller than strial punctures, giving entire elytra a confusingly punctured appearance. Declivity convex; suture and interspace 3 slightly elevated; interspace 2 flattened, very slightly impressed; striae essentially as on disc. Vestiture consisting of very short, stout, strial and interstrial setae, the interstrial setae somewhat longer than strial setae on disc and posterior-lateral areas, all setae equal in length on declivity; each seta separated from one another on declivity by a distance about equal to their own length.

Female. – Similar in size and proportion to male. Frons distinctly, shallowly concave, densely pubescent in concavity, bearing longer, incurved setae on periphery, no median carina is evident; surface sculpture of pronotum and elytra finer; pubescence finer.

Type material. – Holotype, male, Good Hope, Trelawny Parish, Jamaica, 17 August 1966, H. F. Howden (No. 11,493 in CNC). Allotype, same date except, 11 August 1966. Paratype, 1: Trelawny Parish, Barbecue Bottom, 10 August 1966, A. T. Howden (ATH).

The holotype and allotype are in the CNC, the paratype is in the collection of A. T. Howden, Ottawa, Ontario.

Remarks. - Specimens in the type series range in size from 1.7 to 1.9 mm. No other meaningful variations were observed in the small series examined.

Adults of this species are easily recognized by the rather prominent longitudinal carina on the frons of the male, by the slightly concave, pubescent frons of the female, by the densely punctured elytra and by the slightly elevated first and third declivital interspaces.

Neodryocoetes spp.

At least 5 additional species of *Neodryocoetes* are represented in our material. Unfortunately, each species is represented by only 1 specimen. I am not able to

place them in existing species and because this genus is so poorly known and because of the sexual dimorphism displayed by other species, I hesitate to describe them as new.

TRIBE CORTHYLINI

GENUS TRICOLUS BLANDFORD

Tricolus Blandford, 1904, Biol. Cent. Am. 4(6): 286.
Type species: *Tricolus ovicollis* Blandford (Hopkins, 1914).

At present, this genus contains 16 species distributed throughout the Neotropical Region. None have been previously recorded from the West Indies.

Species in this genus are difficult to distinguish from those in *Monarthrum*, but may be separated by the 3-segmented antennal funicle (2-segmented in *Monarthrum*) and by the oval club. Also, the pronotum of species in *Tricolus* is nearly evenly convex from the base to the apex and is declivous in front. No other obvious characters separating the two genera were noted.

KEY TO THE JAMAICAN SPECIES OF TRICOLUS

1. Length less than 2.0 mm: lateral margin of elytral declivity with 1 large, truncate tooth and a very low, blunt elevation above this (Fig. 69) . . . . . 64. *unidentatus* n. sp.

   Length more than 2.0 mm; lateral margins of elytral declivity with 3 teeth, the largest broad, truncate, above this is a narrow, blunt tooth and at top of declivity, a small, acute tooth (Fig. 70) . . . . . 65. *ignotus* n. sp.

64. *Tricolus unidentatus* n. sp.

(Fig. 69)

Holotype (♀). – Length 1.9 mm, 3.2 times longer than wide; light brown on elytral disc, dark reddish-brown on pronotum and elytral declivity.

Frons somewhat retracted into pronotum, visible portion is convex, with a low, wide, circular, median elevation; surface minutely reticulate, rather dull, more coarsely reticulate on median elevation; vestiture consisting of short, fine, yellowish setae. Eye large, separated on gular area by a distance nearly equal to greatest width of antennal club; facets rather large; emargination extending inward about the distance of 4 facets. Antennal club triangular, about 1.2 times longer than

wide; first 2 sutures arcuate, chitinized; long setae arising on posterior face extending beyond tip.

Pronotum 1.3 times longer than wide; sides weakly arcuate; anterior margin narrowly rounded, serrate; anterior slope bearing numerous, low asperities, surface between asperities dull, minutely reticulate; posterior and lateral area smooth, opaque, minutely reticulate, punctures very faint, small and shallow; a few smooth, raised lines are visible on base.

Elytra 1.65 times longer than wide; sides weakly arcuate; striae not impressed, punctured in nearly regular rows except somewhat confused near suture, punctures fine, slightly impressed; interspaces smooth, impunctate. Declivity deeply, broadly concave; lateral margin broad, bearing a large, truncate tooth on lower portion, this tooth about as broad as long, directed inward; above this the lateral margin is weakly margined, extending to near suture, slightly elevated in median portion forming a very low, broad elevation; upper margin bearing a very small, blunt tooth in line with interspace 1; apex rounded, with a broad, round notch at sutural apex; face shining, rather deeply, densely punctured, glabrous.

Male. - Unknown.

Type material. – Holotype, female, Barbecue Bottom, Trelawny Parish, Jamaica, 12 August 1966, H. F. Howden (No. 11,494 in CNC).

65. *Tricolus ignotus* n. sp.

(Figs. 33, 54, 70)

Holotype (♀). – Length 2.5 mm, 3.1 times longer than wide; light brown on elytral disc, dark reddish-brown on pronotum and posterior half of elytra.

Frons convex, bearing a median, circular elevation just above epistomal margin; surface opaque, very minutely reticulate, the median elevation more coarsely reticulate; vestiture consisting of short, fine, hair-like setae, confined to epistomal region. Eye large, separated on gular area by a distance equal to greatest width of antennal club; facets rather large; emargination extending inward about the distance of 4 facets. Antennal club triangular, about as long as wide; first 2 sutures arcuate, chitinized; long setae arising on posterior face extending beyond tip.

Pronotum 1.3 times longer than wide; sides weakly arcuate on posterior half, narrowing rapidly to anterior margin; anterior margin narrowly rounded, serrate; anterior slope bearing numerous, low asperities, surface between asperities opaque, minutely reticulate; posterior and lateral portions opaque, reticulate, punctures very faint, small and shallow; a few smooth, slightly raised lines are visible on basal portion.

Elytra 1.8 times longer than wide; sides weakly arcuate; striae not impressed, punctured in regular rows except near suture, punctures of moderate size, slightly impressed; interspaces smooth, impunctate. Declivity deeply, broadly concave;

lateral margin elevated, rounded, bearing 3 teeth, the lower one large, broad, truncate; above this is an elevated, narrow, blunt tooth located in middle of lateral margin; upper margin bearing a small, acute spine in line with interspace 1; apex rounded, with a broad, round notch at sutural apex; face shining, rather densely punctured, glabrous.

Male. – Similar in size and proportions to female. Antennal club narrower, 1.15 times longer than wide, lacking the very long setae on posterior face: sculpture of pronotum rougher; strial punctures larger, more prominent; declivital armature larger, more massive.

Type material. – Holotype, female. Hardwar Gap, 4000′, St. Andrew Parish, Jamaica, 19 July 1966, Howden and Becker (No. 11,495 in CNC). Allotype, male, same data except collected on 11 July 1966. Paratypes, 3: same data as holotype, except collected on 18 July 1966, 2 and 28 July 1966, 1.

The holotype, allotype and 2 of the paratypes are in the CNC. One paratype is in the Institute of Jamaica, Kingston.

Remarks. – Adults of this species can be most easily distinguished from those of *T. unidentatus* by their larger size and by the character of the middle declivital tooth. In the adults of this species it is a distinct, elevated tooth; in adults of *T. unidentatus* it is merely a slight elevation in an otherwise evenly arcuate lateral margin.

GENUS MONARTHRUM KIRSCH

Monarthrum Kirsch, 1866, Berl. Ent. Zeit. 10: 213.

Corthytomicus Ferrari, 1867, Die forst-und baum. Borkenkäfer, p. 48; Blandford, 1904, Biol. Cent.-Am. 4(6): 268 (= *Monarthrum*).

Cosmocorymus Ferrari, 1867, Die forst-und baum. Borkenkäfer, p. 62; Blandford, 1904, Biol. Cent.-Am. 4(6): 268 (= *Monarthrum*).

Pterocyclon Eichhoff, 1868, Berl. Ent. Zeit. 12: 277; Wood, 1966, Gt. Basin Nat. 26 (1–2): 19 (= *Monarthrum*).

Type species: *Monarthrum chapuisii* Kirsch, monotypic.

This genus contains numerous species distributed throughout tropical America. No adequate treatment of this genus is available so the actual number of species is not known; at least 90 names have been proposed in *Pterocyclon* and *Monarthrum*.

Species in this genus are relatively easy to distinguish by the 2-segmented antennal funicle, by the small antennal club (when compared with *Corthylus*), by the relatively large length-width ratio and by the fore tibiae bearing denticles on the outer or posterior face.

KEY TO THE JAMAICAN SPECIES OF MONARTHRUM

1. Elytral declivity convex, bearing 2 acute teeth in line parallel to suture (Fig.71); length more than 2 mm . . . . . 66. *brittoni*(Schedl)

Elytral declivity steep, flat, bearing 3 small, acute teeth on an elevated ridge diverging from suture (Fig. 72); length less than 2.0 mm . . . . . 67. *minutissimus* (Schedl)

66. *Monarthrum brittoni* (Schedl) n. comb.

(Figs. 34, 55, 71)

Pterocyclon brittoni Schedl, in press.

Females. – Length 2.2 to 2.4 mm, 3.2 times longer than wide; light yellow-brown on posterior half of pronotum, anterior discal portion of elytra, legs, antennae and ventral surface, dark brown on head, anterior half of pronotum and apical portion of elytra.

Frons evenly convex, transversely impressed on each side of an elevated, smooth tubercle located just above epistoma; surface opaque, evenly reticulate; vestiture consisting of very few, short, hair-like setae along epistomal margin. Antennal club ovate, 1.1 times longer than wide; 2 visible sutures slightly arcuate, transverse, chitinized; long setae on posterior face extending beyond apex a distance equal to about half the length of the club.

Pronotum 1.4 times longer than wide; sides parallel on posterior two-thirds; anterior margin broadly rounded, unarmed; anterior slope bearing small, low asperities, surface between asperities minutely reticulate; posterior and lateral portion opaque, finely reticulate, bearing a few, extremely fine, shallow punctures.

Elytra 1.8 times longer than wide; sides weakly arcuate, posterior margin sharply, deeply emarginate at sutural apex; striae not impressed, punctured in nearly regular rows but confused near suture, punctures small, shallow, rather widely spaced; interspaces flat, surface dull, evenly, finely reticulate, punctures sparce, apparently a little larger than those on striae. Declivity convex; suture impressed below general level of elytral surface; 2 acute tubercles located in a parallel line on each side of suture; apex rounded, acutely margined by a fine raised line, notched at sutural apex.

Males. – Similar in size, proportion and color to female. Frons evenly convex, faintly punctured, lacking the elevated, smooth tubercle and transverse impressions; antennae narrower, lacking the long setae on posterior face; asperities on anterior slope of pronotum larger, more elevated; declivital teeth slightly larger.

Distribution. – Known only from Jamaica.

JAMAICA: *St. Andrew:* Hardwar Gap, 4000′, 2-29 July 1966, Howden and Becker, 67 (CNC); same data, A. T. Howden, 9 (ATH). Schedl (1957) gives Corn

Puss Gap, St. Thomas-Portland Parish line, 2200′, 27 June 1954, in humus and soil, P. F. Bellinger, collector.

Remarks. – Adults of this species are easily recognized by the color pattern, by the evenly reticulate, opaque female frons and by the sloping, convex elytral declivity of the female that bears 2 acute tubercles in line parallel to the suture. The male is very similar but is distinguishable by the characters mentioned in the description.

67. *Monarthrum minutissimus* (Schedl) n. comb.

(Fig. 72)

Microcorthylus minutissimus Schedl, 1952, Dusenia 3: 361.

Females. Length 1.3 to 1.5 mm, 2.8 times longer than wide: light brown, anterior portion of pronotum and declivity somewhat darker.

Frons convex, finely reticulate over entire surface, sometimes a smoother, more shining median spot is evident at uppr level of eyes. Antennal club ovate, 1.4 times longer than wide; long setae on posterior face extending beyond margin a distance less than half the length of the club; first 2 sutures transverse, slightly arcuate, chitinized at lateral margins.

Pronotum 1.1 times longer than wide; sides weakly arcuate; anterior margin broadly rounded, weakly serrate; anterior slope bearing weak, low asperities, surface between asperities opaque: posterior and lateral portions opaque, finely reticulate, punctures very faint, shallow, widely separated.

Elytra 1.75 times longer than wide; sides very weakly arcuate, posterior margin nearly truncate; striae not impressed, punctures faint, shallow; interspaces flat, dull, finely reticulate. Declivity steep, broadly, shallowly sulcate; lateral margins diverging away from suture, bearing 2, fine, equal sized, acute, curved spines, the lowest 1 at about middle of declivity and a very small, acute spine is usually visible at upper level near suture; declivital face finely reticulate, impunctate; apex rounded, notched at suture.

Males. – Similar in size and proportions to female, except antennal club without long setae on posterior face; asperities on anterior slope of pronotum larger, more erect; declivital spines slightly larger.

Distribution. – Jamaica and Brazil.

JAMAICA: *St. Andrew:* Hardwar Gap, 4000′, 25 July 1966, Howden and Becker, 2 (CNC). *Trelawny:* Barbecue Bottom, 2 August 1966, H. F. Howden, 1 (CNC).

Remarks. – Because of the denticulate posterior faces of the fore tibia this species should be removed from *Microcorthylus* and placed in the genus *Monarthrum*. Unfortunately, this action creates a homonym with *Pterocyclon minutissimum* Schedl (1954), described from Brazil. I propose the name *Monarthrum schedli new name* to replace *Pterocyclon minutissimum*.

Adults of this little species are easily distinguished from the adults of other Jamaican members of the genus by the structure of the head and elytral declivity, as mentioned in the key and description.

GENUS CORTHYLUS ERICHSON

Corthylus Erichson, 1836, Archiv. f. Naturgesch. 1: 64.
Pseudocorthylus Ferrari, 1867, Die forst-und baum. Borkenkäfer, p. 71; Blandford, 1904, Biol. Cent.-Am. 4(6): 251 (= *Corthylus*).
Morizus Ferrari, 1867, Die forst-und baum. Borkenkäfer, p. 69; Blandford, 1904, Biol. Cent.-Am. 4(6): 251 (= *Corthylus*).
Type species: *Bostrichus compressicornis* Fabricius, monotypic.

This large genus contains about 60 species distributed mainly throughout the American tropics. Two species occur in the temperate, eastern United States; 1 of these extends into southern Canada. Several additional species are known from the island of Guadeloupe in the West Indies. No species have been recorded from Jamaica.

KEY TO THE JAMAICAN SPECIES OF CORTHYLUS

1. Length 1.8 mm; female frons concave on 2 oval areas, these areas separated by a flat, grooved, median space: declivital interspace 3 slightly elevated, bearing a few fine, setaceous granules; remaining interspaces smooth . . . . . 68. *pisinnus* n. sp.

   Length 2.3 mm; female frons broadly concave from eye to eye, densely, finely punctured; declivital interspace 3 not elevated, bearing more numerous distinct granules; remaining interspaces granulate . . . . 69. *curiosus* n. sp.

68. *Corthylus pisinnus* n. sp.

Holotype (♂). – Length 1.8 mm, 2.5 times longer than wide; dark reddish-brown, antennae and legs lighter.

Frons concave on 2 oval areas on each side of a wide, smooth, longitudinally grooved, shining, median line; the 2 concave areas each smaller than antennal club, densely pubescent, the setae scale-like, acuminate at tips; surface above these areas convex, minutely reticulate; vestiture consisting of moderately long, hair-like setae along epistomal margin, along margins of concave areas and inter-mixed with scale-like setae in concave areas. Antennal club broadly oval, very large, 1.2 times longer than wide; 2 visible transverse sutures weakly arcuate.

Pronotum 1.2 times longer than wide: sides weakly arcuate, weakly converging

on posterior third; anterior margin broadly rounded, serrate; anterior slope bearing numerous, low asperities, surface between asperities moderately shining, reticulate; posterior and lateral portions smooth, opaque, finely reticulate, punctures very fine, very shallow, widely separated.

Elytra 1.4 times longer than wide; sides parallel on anterior three-fourths, broadly rounded behind; striae not impressed, punctures in nearly regular rows, small, slightly impressed; interspaces wide, brightly shining, very faintly punctured. Declivity convex; sutural interspace faintly elevated; interspace 3 slightly more strongly elevated, bearing several, very small granules; interspace 2 distinctly narrowed caused by divergence of striae 2 around the elevated portion of interspace 3; elytral apex entire; vestiture consisting of a very few stout, hair-like setae arising from granules on interspace 3 and a few additional setae on other interspaces.

Male. – Unknown.

Type material. – Holotype, female, Penlyne Castle, St. Thomas Parish, Jamaica, 20 July 1966, Howden and Becker (No. 11,496 in CNC).

Remarks. – Adults of this small species are easily distinguished from those of *C. curiosus* by their small size and by the features of the elytral declivity as brought out in the key. The females can be separated by the character of the frons.

This species might possibly be better placed in the genus *Corthylocurus* Wood (Wood, personal communication), but the one specimen examined does not appear to possess all the generic characters of *Corthylocurus*. The antennal club is nearly round, not elongate or acuminate and the fore tibiae does not appear to bear minute tubercles on the posterior face, which tends to remove the species from *Corthylocurus*. The cirrus on the antennal club is poorly developed and the club has two sutures, both of these characters are characteristic of *Corthylocurus*. Until more information is available, it seems best to include this species in *Corthylus*.

69. *Corthylus curiosus* n. sp.

(Figs. 35, 56).

Holotype (♀). – Length 2.3 mm, 2.5 times longer than wide; dark reddish-brown on elytra, lighter on pronotum, antennae, legs and ventral surface.

Frons broadly concave from eye to eye, somewhat more deeply so on lower portion, surface finely, densely punctured, these punctures small, rather deeply impressed, each bearing a minute, scale-like seta; vestiture around cavity consisting of moderately long, incurved, minutely plumose setae. Antennal club large, triangular, 1.25 times longer than wide; sutures not visible; anterior angle bearing a group of longer, curved setae, these setae about as long as anterior margin.

Pronotum 1.1 times wide than long; sides arcuate; anterior margin broadly

rounded, serrate; anterior slope bearing numerous low asperities, surface between asperities finely reticulate; posterior and lateral areas smooth, dull, minutely reticulate, punctures fine, shallow, widely separated.

Elytra 1.4 times longer than wide; sides very weakly arcuate; posterior margin broadly rounded; striae at most very weakly impressed, first more impressed than others, punctures fine, shallowly impressed; interspaces weakly convex, shining very finely punctured, each bearing a row of small, rounded granules placed near strial punctures on posterior part of disc. Declivity convex; sutural interspace weakly elevated, granulate; other interspaces as on disc except the granules form a median row; surface slightly more strongly reticulate.

Male. – Unknown.

Type material. – Holotype, female, Hardwar Gap, 4000′, St. Andrew Parish, Jamaica, 11 July 1966, Howden and Becker (No. 11,497 in CNC). Paratypes, 2: 1, same data as holotype except collected 10 July 1966; 1, Whitefield Hall, St.Thomas Parish, Jamaica, 27 July 1966; Howden and Becker.

All the type material is in the CNC.

REFERENCES CITED

BLACKMAN, M. W.
1941 Bark Beetles of the genus *Hylastes* Erichson in North America.
U.S. Dept. Agric., Misc. Publ. 417, 27 pp.
1942 New species of bark beetles (Pityophthorini) from Mexico and tropical America (Coleoptera, Scolytidae).
Proc. U.S. Nat. Mus. 92(3147): 177–228.

BLACKWELDER, R. E.
1947 Cchecklist of the Coleopterous insects of Mexico, Central America, the West Indies, and South America, Part 5.
U.S. Nat. Mus. Bull. 185: 765–925.

BLANDFORD, W. F. H.
1895 Fam. Scolytidae. *In* Biologia Centrali – Americana 4(6): 81–298.

BRIGHT, D. E.
1968 Review of the tribe Xyleborini in America north of Mexico (Coleoptera: Scolytidae).
Can. Ent. 100(12): 1288–1323.

BROWNE, F. G.
1961 The biology of Malayan Scolytidae and Platypodidae.
Malayan For. Rec. 22, 255 pp.
1962 Notes on *Xyleborus ferrugineus* (F.) (Coleoptera: Scolytidae).
Rep. W. Afr. Timb. Borer Res. Unit. 5: 47–55.

CURTIS, J.
1824 British Entomology; being illustrations and descriptions of the genera of insects found in Great Britain and Ireland, Vol. 1. London.

EGGERS, H.
1936 Borkenkafer aus Sudamerika (Ipidae, Col.). VIII. Vergessene und neue Gattungen (2, Teil).
Rev. de Ent. 6(3–4): 388–394.
1940 Borkenkafer aus Sudamerica (Coleoptera: Ipidae) IX. Insel Guadeloupe.
Arb. morph. taxon. Ent. Berl. 7: 123–141.

EICHHOFF, W.
1868 Neue amerikanische Borkenkafer-Gattungen und Arten.
Berl. ent. Zeit. 12: 145–152, 273–282.

ERICHSON, W. F.
1836 Systematische Auseinandersetzung der familie der Borkenkäfer (Bostrichidae).
Archiv. f. Naturgesch. II, 1: 45–65.

GOWDEY, C. C.
1926 Catalogus Insectorum Jamaicensis.
Jamaica Dept. Agric., Ent. Bull. 4, pt. 1, 114 pp.

HOPKINS, A. D.
1914 List of generic names and their type-species in the coleopterous superfamily Scolytoidea.
Proc. U.S. Nat. Mus. 48: 115–136.

HOPPING, G. R.
1965 The North American species in group X of *Ips* De Geer (Coleoptera: Scolytidae).
Can. Ent. 97(8): 803–809.

JUDD, W. W.
1970 Beetles, *Neodryocoetes hubbardi* Blackman (Scolytidae), infesting seeds strung as necklaces imported from Jamaica.
Can. J. Zool. 48(4): 895–896.

LACORDAIRE, J. T.
1866 Historic naturelle des Insects. Genera des Coleopteres. Volume VII, Famille LXII, Scolytides.
Roret: Paris. 620 pp.

LATREILLE, P. A.
1810 Considerations generales sur l'ordre naturel des Crustaces, des Arachnides et des Insectres.
Paris: Schoell. 444 pp.
LENG, C. W. and A. J. MUTCHLER
1917 Supplement to preliminary list of the coleoptera of the West Indies.
Bull. Amer. Mus. Nat. Hist. 37(5): 191–220.
MCFARLANE, J. A.
1961 A note on the field infestations of pods of the Tamarind tree, *Tamarindus indica* L., in Jamaica.
Ent. mon. Mag. 97: 198–199.
SAMPSON, W.
1917 A new scolytid injurious to dried sweet potatoes in Jamaica.
Bull. ent. Res. 8: 295.
SCHEDL, K. E.
1938 Die Einteilung der Pityophthorinae.
Archiv. f. Naturgeschichte 7(2): 157–188.
1951 Neotropische Scolytoidea IV. 112. Beitrag zur Morphologie und Systematik der Scolytoiden.
Dusenia 2(2): 71–130.
1952 Neotropische Scolytoidea III. 110. Beitrag zur Morphologie und Systematik der Scolytoiden.
Dusenia 3(5): 343–366.
1954 Neotropische Scolytoidea VI. 142. Beitrag zur Morphologie und Systematik der Scolytidea.
Dusenia 5(1): 21–48.
1955 Borken- und Ambrosiakafer des Museums Frey. (I. Teil). 149. Beitrag zur Morphology und Systematik der Scolytoidea.
Ent. Arb. Mus. Frey 6: 267–276.
1957 A few Scolytidae from the West Indies. Jour. N.Y. ent. Soc. 65: 191–194.
1960 Chapuis Platypodidae. Eine revision mit erganzungen. 184. Beitrag zur Morphologie und Systematik der Scolytoidea.
Memories Inst. R. Sci. Nat. Belgique 2(62). 68 pp.
1961 Scolytidae und Platypodidae Afrikas, I.
Rev. Ent. Moc. 4(2): 235–742.
1962 Scolytidae und Platypodidae Afrikas.
Rev. Ent. Moc. 5: 1–1352.
1964 Zur synonymie der Borkenkafer XV. 228. Beitrag zur Morphologie und Systematik der Scolytidea.
Reichenbachia 3(29): 303–317.
1966 Neotropische Scolytidea VIII. 238. Beitrag zur Morphologie und Systematik der Scolytoidea.
Ent. Arb. Mus. Frey 17: 74–128.
WESTWOOD, J. O.
1840 An introduction to the modern classification of Insects; founded on the natural habits and corresponding organisation of the different families. Vol. 2.
London: Longman, Orme, Brown, Green and Longmans 745 pp.
WOLCOTT, G. N.
1936 "Insectae Borinquenses". A revised annotated check list of the insects of Puerto Rico.
Journ. of Agric., Univ. of Puerto Rico. 20(1): 1–600.
WOOD, S. L.
1954 A revision of North American Cryphalini (Scolytidae, Coleoptera).
Univ. Kansas Sci. Bull. 36, 2(15): 959–1089.
1957 Distributional notes and synonymies of some North American Scolytidae (Coleoptera).
Can. Ent. 89(9): 396–403.

1960 Insects of Micronesia. Coleoptera: Platypodidae and Scolytidae.
Ins. Micronesia 18(1): 1–73.
1961 New species of bark beetles (Coleoptera: Scolytidae), mostly Mexican, Part VI.
Gt. Basin Nat. 21(4): 87–107.
1969a New records and species of Neotropical bark beetles (Scolytidae: Coleoptera), Part IV.
Brigham Young Univ. Sci. Bull., Biol. Ser. 10(2): 1-46.
1969b New synonymy and records of Platypodidae and Scolytidae (Coleoptera).
Gt. Basin Nat. 29(3): 113-127.