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NEW SPECIES OF BARK BEETLES (PITYOPHTHORINI)  
FROM MEXICO AND TROPICAL AMERICA (COLEOP-  
TERA, SCOLYTIDAE)

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FOR many years specimens of Neotropical Pityophthorini have been accumulating in the National Museum. Many of these were recognized as belonging to undescribed genera and species, but other duties have, until recently, prevented a thorough study of these interesting forms. In the meantime several authors have described most of the new genera and several of the new species. The genera with which we are concerned in this paper are *Thamnophthorus* Schedl, *Neodryocoetes* Eggers, *Neopityophthorus* Schedl, *Myeloborus* Blackman, *Spermophthorus* Costa Lima, *Pityoborus* Blackman, *Pityophthorus* Eichhoff, *Gnathotrichus* Eichhoff, and the new genus *Pityophthoroides* described herein.

Of the 43 new species described in this paper, 13 are based upon specimens collected by Dr. Donald DeLeon in Mexico during January and February 1936; 8 upon specimens taken by Dr. E. A. Schwarz in Mexico, Central America, and Cuba; 12 on specimens intercepted by inspectors of the Bureau of Entomology and Plant Quarantine; 2 on specimens taken by August Busck in Panama; 1 each on specimens taken by J. D. Hood, H. G. Hubbard, H. F. Dietz, R. C. Shannon, R. P. Roba, and A. Fenyés; while two species are based on specimens taken by collectors of which we have no record.

Just as in North Temperate regions, species of *Pityophthorus* Eichhoff breed in the bark (occasionally in the pith) of either coniferous or broadleaf trees, as instanced by many species. *Pityoborus* Blackman, as instanced by *P. tertius*, new species, from Mexico, breeds in the bark of pine. *Pityophilus* Blackman is not yet known from the Neotropics.

*Pseudopityophthorus* Swaine breeds in the bark of broadleaf trees. *Myeloborus* Blackman breeds in the small twigs of pines. *Conophthorus* Hopkins breeds in the cones of pines. *Gnathotrichus* Eichhoff lives as an ambrosia beetle in the wood of conifers.

So far as known the habits of the genera peculiar to tropical America are as follows: The two known species of *Pityophthoroides*, new genus, breed in the bark of deciduous trees or shrubs. The two known species of the genus *Spermophthorus* Costa Lima breed in the seeds of Caesalpiniaceae. *Thamnophthorus* Schedl (as represented by *T. schwarzi*, new species) breeds in the seeds of *Persea* spp. of the family Lauraceae. All species of the typical *Neodryocoetes* Eggers and also some of the subgenus *Neopityophthorus* Schedl are found in the seeds or pods of various members of the families Asclepiadaceae, Sterculaceae, Palmaceae, Fabaceae, Leguminosae, and Caesalpiniaceae. One species of the subgenus *Neopityophthorus* Schedl was taken on several occasions from the bark of unidentified wood used in shipping crates. It is very probable that several species of this subgenus will be found to breed in bark, and it is not at all improbable that some species of *Neodryocoetes* s. str. may also be found in such material.

#### Genus THAMNOPHTHORUS Schedl

*Thamnophthorus* SCHEDL, Arch. für Naturg., vol. 7, p. 174, 1938.

No genotype is indicated, but the author described three species, *Thamnophthorus linearis* Schedl, *T. volastos* Schedl, and *T. nudus* Schedl. *T. volastos* Schedl is hereby designated as the genotype.

#### THAMNOPHTHORUS SCHWARZI, new species

##### PLATE 20, FIGURES 1, 2

*Female*.—Piceous-black, with elytra piceous-brown, shining; 2.43 mm. long, 2.41 times as long as wide.

Frons mostly concealed in type, but dissected paratype with frons transversely flattened, subconclave between upper angles of eyes, subopaque, very finely and densely punctured, with fine, short hairs, median line shining, not carinate; epistomal region in middle third elevated and shining. Eye moderately large, rather coarsely faceted, inner border rather widely, not deeply emarginate. Antenna (fig. 1) with club and scape nearly equal in length, funiculus slightly less than half as long as either; club irregularly obovate, nearly 1.5 times as long as wide, first suture notched on upper border, strongly, diagonally septate on upper half, lower half with no indication of annulation, septum, or setal row.

Pronotum nearly exactly as wide as long, widest at base, which is margined and feebly arcuate, posterior angles somewhat rounded,

sides with posterior third nearly straight or feebly arcuate, distinctly converging, then strongly, arcuately narrowed and constricted, rather narrowly rounded in front, with margin indefinitely serrate; dorsal contour nearly evenly arcuate from base to apex, without hump or transverse impression; anterior half and sides with subconcentric rows of very low, wide asperities, extending nearly to base at sides, posterior disk with distinct punctures and fine granules; median line wide, impunctate, scarcely elevated; hairs very short and fine on posterior disk, longer and coarser on sides and anterior area.

Elytra slightly wider than pronotum and 1.67 times as long, 1.56 times as long as wide, widest behind middle; sides subparallel, moderately narrowly rounded behind; surface brightly shining, stria punctures moderately coarse, in irregular rows, only the first stria impressed; interspaces flat, somewhat rugulose, punctures similar to those of striae but less numerous; sides with punctures more or less confused; vestiture scanty. Declivity sloping, shallowly sulcate at each side of the moderately elevated suture; first stria rather strongly impressed, punctures obsolescent; second stria slightly impressed, these and intervening second interspace forming a sulcus at each side; lateral elevations moderately high, finely, rather roughly punctured; vestiture of rather sparse, moderately short hairs.

*Male*.—Slightly smaller and stouter (2.07 mm. long, 2.3 times as long as wide); frons convex, shining, roughly but finely punctured, feebly, transversely impressed well above epistoma; pronotum more strongly constricted in front of middle, with asperities slightly stronger; elytral declivity with sulci narrower and deeper and lateral elevations higher than in female.

*Type locality*.—Boquete, Panama.

*Additional locality*.—San José, Costa Rica; Queretaro, Mexico.

*Host*.—Seeds of *Persea pittieri* and *P. americana*.

*Type material*.—Holotype, allotype, and 17 paratypes, U.S.N.M. No. 55998.

The holotype, allotype, and 5 paratypes bear the labels "Ex seed *Persea* n. sp., Boquete, Panama, E. A. Schwarz, collector"; 2 paratypes, "Collected in seeds of *Persea pittieri*, from San José, Costa Rica; Washington, at quarantine, May 6, 1914, E. R. Sasser, collector"; 10 paratypes obtained from seeds of avocado, from Queretaro, Mexico, by J. D. Neuls, October 10, 1912.

#### Genus NEODRYOCOETES Eggers

*Neodryocoetes* EGGERS, Trav. Lab. Ent. Mus. Nat. Hist. Nat. Paris, Mem. orig. 1, p. 9, 1933; Rev. Ent., vol. 6, pp. 388-392, 1936.—SCHEDEL, Arch. für Naturg., vol. 7, pp. 177-180, 1938; Anal. Esc. Nac. Cienc. Biol. México, vol. 1, p. 346, 1940. (Genotype, *Neodryocoetes hymenaeae* Eggers. Monobasic.)

*Neopityophthorus* SCHEDL, Arch. für Naturg., vol. 7, pp. 180-182, 1938; Anal. Esc. Nac. Cienc. Biol. México, vol. 1, pp. 346-347, 1940. (No genotype designated.)

The genus *Neodryocoetes* Eggers contains beetles allied to *Conophthorus*, with cylindrical body, weakly sculptured pronotum and elytra, the latter having setal rows on the interspaces in the posterior half only; head convex, eyes large, coarsely faceted, emarginate; antenna with 5-segmented funicle, club obovate with first suture notched at sides, with row of setae and strong septum, incomplete at center, second and third sutures indicated only by strongly arcuate rows of setae; pronotum evenly arched, without hump, with anterior half finely and densely asperate, posterior half finely punctured, margined at sides and base; elytra finely punctured in rows, declivity weakly to strongly arched, without especial modifications.

Schedl's genus *Neopityophthorus* is described as usually rather shining, stout to slender; antennal club short oval to circular, the notch and septate suture similar to that in *Neodryocoetes*, the septum not so strongly developed and not so strongly arcuate; pronotum like *Pityophthorus* with summit and transverse impression; elytra cylindrical, usually strongly shining, finely sculptured, declivity arched to weakly impressed.

The writer is acquainted with 18 species in the combined *Neodryocoetes-Neopityophthorus* group, 15 of which had never been previously described. A number of these species fall readily in one or the other of the groups, but others do not fit readily in either group. For instance, the antennal club of *cubensis*, new species, resembles more closely the structure characteristic of *Neodryocoetes*, but the pronotum shows very strongly the characters found in species of *Neopityophthorus*. On the other hand, *hostilis*, new species, has an intermediate type of antennal club, while the pronotum is distinctly *Neodryocoetes* as to dorsal contour but intermediate in respect to sculpture. These instances and others which could be readily cited seem to indicate that there is no sufficiently sharp line to justify the segregation of the complex of species into two distinct genera. I believe, therefore, that *Neopityophthorus* Schedl should be considered as no more than a subgenus of *Neodryocoetes* Eggers and am so using it in this paper.

The most reliable characters separating the two subgenera have to do with the dorsal contour and the sculpture of the pronotum. The dorsal line of the pronotum of typical *Neodryocoetes* is evenly arcuate from base to anterior margin, without an elevated summit or transverse impression. The anterior half of the pronotum is usually finely, rather densely asperate with the asperities continued behind the middle, but reduced greatly in size. These reduced asperities often consist of only a slight elevation of the lateral rim of each puncture. In some species even the punctures of the pronotal disk have the lateral rim slightly elevated.



In typical *Neopityophthorus* the pronotum has the summit more or less elevated, with a more or less distinct transverse impression behind it. Both these characters are in some species indistinctly shown, as in *N. schedli*, new species, and *exquisitus*, new species, from Mexico and in *teres*, new species, from Panama Canal Zone. The best character in this group is the absence of asperities or of elevated lateral margins in connection with the punctures on the sides of the posterior half of the pronotum.

Among the true *Neodryocoetes* there are several small species that are very closely related to the type species *hymenaeae* Eggers. All these are less than 2 mm. in length and are similar in habitus, and all live in various tropical seeds. Differences in the structure and vestiture of the frons in both sexes furnish the best diagnostic characters in separating such species as *hymenaeae* Eggers, *amazonicus* Eggers, *caribaeus*, new species, *guianae*, new species, *humilis*, new species, and *hoodi*, new species. Other differences are present, however, and are brought out in the descriptions.

In the following treatment of the species those belonging to *Neodryocoetes* s. str. are *mucunae*, new species, *hubbardi*, new species, *columbianus* Schedl, *tabogae*, new species, *caribaeus*, new species, *guianae*, new species, *hoodi*, new species, *humilis*, new species, *hostilis*, new species, and *teres*, new species; while *insularis* (Eggers), *schedli*, new species, *exquisitus*, new species, *tenuis*, new species, *lenis*, new species, *cubensis*, new species, *buscki*, new species, and *pallidus*, new species, belong to the subgenus *Neopityophthorus* Schedl.

NEODRYOCOETES MUCUNAE, new species

PLATE 20, FIGURE 5

*Female*.—Light reddish brown, with elytra darker reddish brown, 2.26–2.63 mm. long; holotype 2.46 mm. long, 2.38 times as long as wide; allied to *obscurus* Eggers and *hubbardi*, new species.

Frons somewhat flattened below on a semicircular area, opaque to subopaque, very finely and densely punctured, with fine, rather short hairs (shorter than in *hubbardi*); median carina fine but distinctly elevated; upper frons and vertex finely reticulate, subopaque, with sparse, rather fine punctures. Eye large, coarsely faceted, half divided by a deep, rather wide emargination. Antenna (fig. 5) with club broadly obovate, 1.23 times as long as wide, 1.37 times as long as funicle, first suture notched at sides, setose, arcuately, incompletely septate; second and third sutures marked by setae.

Pronotum 1.06 times as long as wide; shape very similar to that of *hubbardi* but anterior margin with less distinct serrations; dorsal contour evenly arcuate; anterior area with irregularly concentric rows of broad, low asperities; posterior area similar to that of *hubbardi*

but showing more of a concentric arrangement of punctures and their accompanying elevated margins; median line not elevated, narrower than in *hubbardi*.

Elytra notably wider behind middle than pronotum at its widest part, and 1.49 times as long, 1.48 times as long as wide; sides very feebly diverging to behind middle, then weakly converging, broadly rounded behind; surface shining, subglabrous on disk; strial rows all irregular (notably more so than in *hubbardi*), the first weakly impressed, the others not impressed; interspaces flat, strongly rugulose, basal third with numerous punctures, distal two-thirds with only occasional punctures on disk; sides with punctures smaller, very strongly rugulose. Declivity moderately sloping, originating well behind middle; not sulcate but with suture slightly elevated and first stria moderately impressed, the others not impressed but consisting of definite rows of punctures; interspaces sparsely punctured, with a few rather short, erect hairs (more numerous than in *hubbardi*).

*Male*.—Similar in size and proportions; frons convex above, but below with a deep, shining, impunctate, triangular concavity, extending from epistomal margin to level of upper angles of eyes; median carina elevated on lower half of concavity; vestiture of elytral declivity slightly coarser than in female.

*Type locality*.—Perené River, Peru.

*Host*.—Seeds of *Mucuna* sp.

*Type material*.—Holotype, allotype, and five paratypes, U.S.N.M. No. 55999.

The type series was taken from seed of *Mucuna* sp. (parrot bean), Perené River, Peru.

NEODRYOCOETES HUBBARDI, new species

PLATE 20, FIGURES 3, 4

*Female*.—Light reddish brown; 2.37 mm. long, 2.62 times as long as wide.

Frons convex above, flattened below on an approximate semicircle, subopaque, very finely, closely punctured, with very fine, light-yellow hairs of moderate length; median carina very fine and indistinct; surface subopaque above, very finely reticulate, with sparse, very fine punctures. Eye large, coarsely faceted, nearly half divided by a deep emargination. Antenna (fig. 3) with club obovate, 1.35 times as long as wide, more than one-half longer than funicle; first suture notched at sides, well marked by setae and by a strong, arcuate septum incomplete at center; second and third sutures indicated only by rows of setae.

Pronotum 1.07 times as long as wide, posterior outline weakly arcuate, posterior angles rounded; sides very weakly arcuate on slightly more than posterior half, then arcuately narrowed to the constriction, rather narrowly rounded in front, with anterior margin bearing about 12 to 15 distinct, closely placed serrations, those near median line higher; dorsal contour evenly arcuate from base to apex; anterior area with slightly irregular, concentric rows of very broad, low asperities, continued posteriorly at sides; posterior area subopaque, finely reticulate, finely, shallowly punctured, with lateral rim of each puncture often slightly elevated and shining; median line impunctate, feebly elevated only on posterior sixth, but extending nearly to center.

Elytra not perceptibly wider than pronotum and 1.48 times as long, 1.62 times as long as wide; sides subparallel on anterior two-thirds, then feebly narrowed, very broadly rounded behind; surface moderately shining, glabrous; strial rows all somewhat irregular, only the first rather shallowly impressed; interspaces flat, somewhat reticulate, finely rugulose, with only occasional single punctures; sides similar to disk in sculpture except that seventh and ninth interspaces are convex, and punctures on eighth and ninth striae are somewhat confused. Declivity somewhat sloping, originating well behind middle of elytra; not sulcate but with suture slightly elevated and first stria impressed; other striae in regular rows but not impressed; interspaces finely reticulate, with very few, very fine punctures; vestiture very fine and sparse, with very minute hairs from strial punctures.

*Male*.—Similar to female in nearly all respects; with frons convex throughout except for shallow, transverse impression just above epistomal margin, frontal punctures slightly coarser and sparser, with very fine, short hairs, median carina fine, interrupted by transverse impression; elytral punctures slightly coarser than in female.

This species is closely allied to *Neodryocoetes obscurus* Eggers from Brazil but differs in several characters brought out in the description.

*Type locality*.—Kingston, Jamaica.

*Host*.—Seeds of *Mucuna fawcetti*.

*Type material*.—Holotype, allotype, and seven paratypes, U.S.N.M. No. 56000.

The holotype, allotype, and five paratypes were taken from the seed of *Mucuna fawcetti*, at Kingston, Jamaica; two paratypes were taken by H. G. Hubbard at Jamaica, West Indies.

NEODRYOCOETES COLUMBIANUS Schedl

PLATE 20, FIGURE 6

Four lots of this species were examined; one from San Vicente, Colombia, collected from cacao by L. M. Murillo; the second lot from

Dept. Santander, Colombia, taken from moldy fruit of *Theobroma cacao* by R. P. Roba; the third lot taken at quarantine, Washington, D. C., by H. L. Sanford, from pods of condurango, originated in Guayaquil, Ecuador; and a single specimen taken by F. J. Dyer in Honduras.

Schedl's otherwise excellent description does not distinguish between the sexes. His description apparently applies to the female with the frons convex, slightly flattened below, very finely, densely punctured, with moderately abundant, fine hairs and a distinct median carina. The frons of the male is neither so finely nor densely punctured, with fewer, much shorter hairs, with the median carina much more distinct on the upper frons and reduced just above the epistoma.

NEODRYOCOETES TABOGAE, new species

PLATE 20, FIGURE 7

*Female*.—Reddish brown; 1.83 mm. long, 2.67 times as long as wide.

Frons flattened from eye to eye on more than a semicircle, slightly concave at center, weakly shining, very finely, densely punctured, with very fine hairs of moderate length over most of surface, and a sparse border of slightly coarser, much longer hairs at sides and above; median carina represented by an indistinct, indefinite elevation on epistoma. Eye large, rather coarsely faceted, about one-fourth divided by the emargination. Antenna (fig. 7) with club very broadly obovate, 1.16 times as long as wide, first suture notched at sides, strongly arcuate, strongly incompletely septate; second and third sutures marked only by very irregular setal rows.

Pronotum 1.10 times as long as wide, widest at base, posterior outline weakly arcuate, distinctly margined, posterior angles scarcely rounded; sides nearly straight and subparallel on more than posterior half, very feebly constricted in front of middle, broadly rounded in front, anterior margin with fine, broad serrations; dorsal contour evenly arcuate from base to apex; anterior area with small, broad asperities in very irregular, concentric arrangement, extending past middle at sides; with numerous, moderately short, golden-yellow hairs directed toward summit; posterior area moderately shining, finely reticulate, finely, closely punctured, with fine, rather short hairs; median line moderately wide, distinctly elevated, impunctate, extending anteriorly past middle of pronotum.

Elytra scarcely wider than pronotum, 1.62 times as long as wide, 1.50 times as long as pronotum; sides subparallel on anterior half, then very gradually narrowed; broadly rounded behind; surface shining; striae nearly entirely regular except near base, only first



stria impressed, punctures rather small; interspaces flat, rugulose, impunctate on disk and sides except near base and declivity; nearly entirely devoid of vestiture except for minute hairs from strial punctures. Declivity moderately steep, originating behind middle of elytra; suture elevated; first stria impressed, with obsolescent punctures; those on other striae somewhat reduced; all interspaces, including the second, sparsely, uniseriately punctured and with a few moderately short, rather stout hairs.

The male is unknown.

*Type locality*.—Taboga Island, Panama.

*Host*.—Unknown.

*Type material*.—Holotype, U.S.N.M. No. 56002.

The holotype was collected on Taboga Island, Republic of Panama, by H. F. Dietz. No other specimen has been seen.

NEODRYOCOETES CARIBAEUS, new species

PLATE 20, FIGURE 11

*Female*.—Light reddish brown, 1.6–1.91 mm. long; holotype 1.75 mm. long, 2.61 times as long as wide; allied to *hymenaeae* Eggers and *amazonicus* Eggers.

Frons somewhat flattened between eyes, strongly reticulate, punctures shallow, fine, rather close, with very fine, rather short hairs; median carina fine, elevated; vertex less closely punctured, median line broadly impunctate. Eye very large, with facets coarse, nearly half divided by an emargination. Antenna (fig. 11) with club obovate, 1.25 times as long as wide, about 1.45 times as long as funicle, first suture arcuate, strongly, incompletely septate.

Pronotum 1.09 times as long as wide, widest through base, posterior outline arcuate, margined, posterior angles rounded, sides weakly, nearly evenly arcuate from base to weak constriction in front of middle, broadly rounded in front, with anterior margin bearing numerous very small serrations; dorsal contour evenly arcuate from base to apex; anterior area with irregular concentric rows of low, broad asperities; posterior area glabrous, subopaque, its surface finely reticulate, moderately finely, shallowly punctured with outer rims of punctures elevated; median line broad at base, somewhat narrowed anteriorly, impunctate.

Elytra slightly wider than pronotum, 1.61 times as long as wide, 1.58 times as long as pronotum; sides subparallel on anterior two-thirds, moderately rounded behind; surface shining; strial rows slightly irregular, punctures small, rather shallow, only first stria weakly impressed; interspaces rugulose, with a few single, fine punctures; sides confusedly punctured from fifth to seventh interspaces,

seventh and ninth interspaces widened and elevated posteriorly, with a uniseriate row of bristles; eighth narrowed posteriorly. *Declivity* rounded, originating well behind middle; first stria distinctly impressed, others very lightly or not at all impressed; vestiture nearly entirely lacking on anterior half, posterior disk, sides, and declivity with widely spaced, erect, stout, yellowish hairs.

*Male*.—Very similar to female, but with frons triangularly concave (not so deep as in *guianae*); the concavity shining (not granulate at sides as in *guianae*), finely punctured, and with inconspicuous, short hairs; median carina fine, as in female, elevated, completely bisecting concavity.

*Type locality*.—Trinidad, British West Indies.

*Hosts*.—*Hymenaea* sp.; *Erythrina* sp. seed.

*Type material*.—Holotype, allotype, and 34 paratypes, U.S.N.M. No. 56004.

The holotype, allotype, and 30 paratypes were taken at the Plant Quarantine station, at New Orleans, from the pods of *Hymenaea* sp.; 4 paratypes were intercepted at quarantine, at New York, in seeds of *Erythrina* sp.

NEODRYOCOETES GUIANAE, new species

PLATE 20, FIGURE 12

*Female*.—Light reddish brown, 1.77–1.94 mm. long; holotype 1.86 mm. long, 2.63 times as long as wide; allied to *caribaeus*, new species, but slightly larger, less shining, and differently sculptured on pronotum and elytra.

Frons flattened below between eyes, finely, very densely punctured, with very fine hairs, longer and more numerous than in *caribaeus*; median carina rather fine, distinctly elevated; vertex subopaque, finely reticulate, shallowly, not closely punctured. Eye very large, with facets coarse, half divided by a deep emargination. Antenna (fig. 12) with club obovate, 1.32 times as long as wide, 1.5 times as long as funicle, first suture notched at sides, arcuate, strongly, incompletely septate; second and third sutures indicated only by setal rows.

Pronotum 1.08 times as long as wide, widest through base, posterior outline arcuate, distinctly margined; sides nearly evenly arcuate from base to anterior lateral constriction, moderately rounded in front (more narrowly than in *caribaeus*), anterior margin scarcely serrate; dorsal contour evenly arcuate from base to apex; anterior area rather weakly asperate; posterior area with surface feebly shining or subopaque, finely reticulate, punctures moderately large and deep (larger and deeper than in *caribaeus*), their outer rims scarcely or not at all elevated; median line impunctate, only feebly elevated.

Elytra wider than pronotum, 1.58 times as long as wide, 1.57 times as long as pronotum; sides subparallel on anterior three-fifths, then arcuately narrowed, moderately narrowly rounded behind; surface weakly shining, striae rows somewhat irregular, punctures rather small, rather shallow, but deeper than in *caribaeus*, only first stria impressed; interspaces reticulate, rugulose, with occasional single punctures; punctures somewhat confused on sides. Declivity with only first stria impressed, vestiture similar to that of *caribaeus* but less abundant.

*Male*.—Similar to female in habitus; with frons very deeply concave above epistoma, the concavity extending from eye to eye below, and upward to level of upper angle of eye, its sides punctured and distinctly granulate; median carina small, but visible in lower half of concavity; hairs on declivity more conspicuous.

*Type locality*.—British Guiana.

*Additional localities*.—Trinidad, British West Indies; Dominican Republic.

*Host*.—*Cajanus* sp. seeds.

*Additional hosts*.—*Hymenaea courbaril*, *Ceratonia* sp. seeds.

*Type material*.—Holotype, allotype, and 29 paratypes, U.S.N.M. No. 56003.

The holotype, allotype, and 12 paratypes were taken at quarantine from seeds of *Cajanus* sp., from British Guiana; 6 paratypes intercepted in seeds of *Hymenaea courbaril* from Trinidad, British West Indies; 11 paratypes intercepted in seeds of *Ceratonia* sp. from Dominican Republic.

#### NEODRYOCOETES HOODI, new species

#### PLATE 20, FIGURE 14

*Female*.—Light reddish brown, with anterior pronotum and elytra darker; 1.58 mm. long, 2.52 times as long as wide; belonging to the *hymenaeae* group.

Frons convex above, only slightly flattened below, with a very fine, elevated, median carina; surface feebly shining, finely and densely punctured, with numerous very fine, rather short hairs (shorter than in *humilis*, new species). Eye large, very coarsely faceted; slightly less than half divided by the emargination. Antenna (fig. 14) with club obovate, 1.43 times as long as wide, 1.50 times as long as funicle; first suture rather strongly arcuate, strongly, not quite completely septate, the others not septate, indicated by setal rows.

Pronotum 1.09 times as long as wide, widest near base, posterior outline arcuate, margined, posterior angles weakly rounded; sides weakly arcuate and converging from base to very feeble anterior lateral constriction, moderately rounded in front, with anterior margin feebly

serrate; dorsal contour evenly arcuate from base to apex, without elevation or transverse impression; anterior area with irregularly concentric rows of low asperities, extending behind middle at sides; posterior area with surface subopaque, very finely reticulate, punctures fine and very shallow, with outer rim of each slightly elevated; median line rather narrow, impunctate, feebly elevated.

Elytra scarcely wider than pronotum, 1.52 times as long as wide, 1.43 times as long as pronotum; sides subparallel on more than anterior half, then arcuately narrowed, with apex moderately broad; surface moderately shining, reticulate; strial rows very irregular on anterior disk; punctures appearing confused, becoming more regular near declivity, only first striae impressed; interspaces weakly rugulose, with a few fine punctures back of middle, each bearing an erect, yellow hair; sides with strial rows slightly irregular. Declivity moderately strongly arched; suture scarcely at all elevated, first stria weakly impressed; first, third, and alternate interspaces with rather short, erect, stout hairs, often club-shaped.

*Male*.—Similar to female in most particulars; frons convex, shining, finely granulate-punctate between eyes, with a fine, distinctly elevated median carina; hairs short, fine, much sparser than in female.

*Type locality*.—Taboga Island, Panama.

*Host*.—Unknown.

*Type material*.—Holotype, allotype, and seven paratypes, U.S.N.M. No. 56006.

The type series was collected October 16–23, 1913, on Taboga Island, Panama, by J. D. Hood.

NEODRYCOETES HUMILIS, new species

PLATE 20, FIGURE 13

*Female*.—Reddish brown; 1.54 mm. long, 2.55 times as long as wide; allied to *hymenaeae* Eggers.

Frons moderately shining, convex above, somewhat flattened between eyes, finely and densely punctured, with very fine yellowish hairs of moderate length; median carina fine, but distinct from vertex to epistoma. Eye very large, coarsely faceted, half divided by the emargination. Antenna (fig. 13) with club ovovate, 1.35 times as long as wide, 1.52 times as long as funicle; first suture arcuate, strongly, nearly completely septate.

Pronotum 1.10 times as long as wide, widest through base, posterior outline arcuate, distinctly margined, posterior angles scarcely rounded; sides weakly, convergently arcuate from base to very weak constriction anterior to middle, rather narrowly rounded in front, with anterior



margin weakly serrate; dorsal contour evenly arcuate from base to apex, without elevated summit or posterior impression; anterior area with irregular, concentric rows of low, broad asperities, extending behind middle at sides; posterior area with surface subopaque to weakly shining, finely reticulate, punctures moderately fine and deep, with outer rim of more lateral punctures slightly elevated; median line impunctate, scarcely elevated.

Elytra scarcely wider than pronotum, 1.55 times as long as wide, 1.49 times as long as pronotum; sides straight and subparallel on slightly less than anterior two-thirds, then gradually, arcuately narrowed, with apex moderately broad; surface moderately shining, finely, imperfectly reticulate, strial rows slightly irregular, punctures small, moderately shallow, only first striae impressed; interspaces flat, finely rugulose, with a few punctures, bearing fine, upright, light-colored hairs on disk; sides with strial rows still more irregular. Declivity originating well behind middle; first stria impressed, the others not impressed, suture slightly elevated, devoid of granules, lateral elevations not higher than suture, without granules; each of declivital interspaces with a few conspicuous, light-colored, erect, often stout hairs of moderate length.

*Male*.—Very similar to female, but with frons convex above, transversely impressed below, with fewer and shorter hairs and sparser punctures.

*Type locality*.—Bonito, Pernambuco, Brazil.

*Host*.—Unknown.

*Type material*.—Holotype and four paratypes, U.S.N.M. No. 56005.

NEODRYOCOETES HOSTILIS, new species

PLATE 20, FIGURE 10

*Male*.—Dark reddish brown; 2.17 mm. long, 2.58 times as long as wide.

Frons shining, convex above, broadly, transversely impressed below; punctures rather sparse, of moderate size above, smaller, finer, obsolescent below, with short, fine, inconspicuous hairs; median carina on lower half only, very weak. Eye large, coarsely faceted, less than one-third divided by emargination. Antenna (fig. 10) with club obovate, 1.28 times as long as wide; first suture notched at each side, arcuate, with incomplete septum; second suture indicated by row of setae and by notch on upper margin; third suture near distal margin indicated by incomplete row of setae.

Pronotum 1.07 times as long as wide, widest just behind middle, posterior outline arcuate, with definite margin, posterior angles distinctly rounded; sides distinctly arcuate from base to rather strong anterior lateral constriction, rather narrowly rounded in front, front

margin slightly extended and with distinct, rather fine serrations; dorsal contour nearly evenly arcuate, without elevated summit or transverse impression; anterior area with rather dense, irregularly arranged asperities, not extending back of middle at sides; posterior area smooth, shining, glabrous, only faintly reticulate, with punctures small and sparse; median line impunctate, very feebly elevated anteriorly.

Elytra scarcely wider than pronotum, 1.54 times as long as wide, 1.47 times as long as pronotum; sides subparallel on anterior two-thirds, then gradually arcuately narrowed, moderately rounded behind; surface brightly shining; striae rows nearly regular except near base, first striae weakly, the others not at all impressed; interspaces flat, distinctly rugulose, with a few punctures, similar in size to those of striae, hairs few in number, short and inconspicuous except behind. Declivity originating well behind middle, moderately sloping; suture weakly elevated, finely punctured, not granulate; first stria distinctly impressed, punctures scarcely reduced, second stria very feebly impressed; lateral elevations low, no higher than suture; vestiture consisting of short, erect, rather stout, yellowish hairs.

*Female*.—Similar to male in habitus, with frons flattened from eye to eye, finely, densely punctured, with numerous yellow hairs of moderate length. (The female is represented by only a single broken specimen.)

*Type locality*.—Unknown.

*Host*.—*Erythrina cristagalli*.

*Type material*.—Holotype, allotype, and one paratype, U.S.N.M. No. 56001.

The type series was taken from seeds of *Erythrina cristagalli* in a shipment of seeds from Paris, France, December 3, 1930, at the plant quarantine inspection house at Washington, D. C. The original source of the seeds is unknown.

NEODRYOCOETES TERES, new species

PLATE 21, FIGURE 16

*Female*.—Piceous-brown; 1.43 mm. long, 2.63 times as long as wide.

Frons shining, flattened between eyes, very finely, very densely punctured, with numerous rather long, fine, yellowish hairs; median line not elevated to form carina. Eye moderately large, facets of moderate size, about one-third divided by the emargination. Antenna (fig. 16) with club broadly obovate, 1.16 times as long as wide, 1.50 times as long as funicle, first suture moderately arcuate, incompletely, not strongly septate; second and third sutures rather indistinctly indicated by setal rows.

Pronotum 1.07 times as long as wide, widest near base, posterior outline feebly arcuate, distinctly margined, posterior angles scarcely

rounded; sides nearly regularly arcuate from base to the moderate anterior lateral constriction, moderately broadly rounded in front, with anterior margin weakly serrate; dorsal contour even, without elevated summit or transverse impression; anterior area with close, low, irregularly arranged asperities, continued at sides well behind middle, with fine, short hairs; posterior area finely, shallowly punctured, usually with lateral rim of each puncture elevated; median line slightly elevated and impunctate, extending from base nearly to middle.

Elytra very slightly wider than pronotum, 1.60 times as long as wide, 1.52 times as long as pronotum; sides very feebly arcuate, broadly rounded behind, conjointly rounded at apex; surface smooth, brightly shining; stria rows fairly regular, only first stria impressed on disk and sides, punctures fine and very shallow; interspaces flat, finely regulose, impunctate on disk and sides, surface reticulate. Declivity moderate; suture wide, slightly elevated, devoid of granules; first stria weakly impressed, its punctures obsolete; lateral elevations low, scarcely higher than low sutures, devoid of granules; apical portion of declivity with a few fine, erect hairs.

*Male*.—Similar to female in habitus; frons convex above, broadly, transversely impressed between eyes, brightly shining, with punctures sparser and not so fine as in female, median carina weakly developed.

*Type locality*.—Paraiso, Panama Canal Zone.

*Host*.—Unknown.

*Type material*.—Holotype and allotype, U.S.N.M. No. 56007.

The holotype and allotype were collected at Paraiso, Canal Zone, April 26 and January 11, 1911, by E. A. Schwarz.

NEODRYOCOETES CUBENSIS, new species

PLATE 20, FIGURES 8, 9

*Female*.—Reddish brown, with elytra often darker, 1.51–1.91 mm. long; holotype 1.80 mm. long, 2.42 times as long as wide.

Frons feebly shining, flattened from eye to eye, on nearly circular area, finely, moderately closely punctured, with hairs fine and rather short over most of surface, but with those on margin above level of eyes much longer and slightly coarser, extending nearly to epistoma in a rather thin veil; median carina lacking. Eye very large, coarsely faceted, about one-third divided by emargination. Antenna (fig. 8) with club obovate, 1.36 times as long as wide, 1.80 times as long as funicle; first suture strongly arcuate, strongly, nearly completely septate, second and third more strongly arcuate, not septate, indicated by rows of setae.

Pronotum 1.01 times as long as wide, widest through base, posterior outline feebly arcuate, posterior angles not rounded, sides with posterior half nearly straight and subparallel, then moderately, arcuately

narrowed to the constriction; broadly rounded in front with the margin distinctly serrate; dorsal contour not evenly arcuate, its summit higher than basal portion and separated by a wide, rather deep, transverse impression; anterior area with asperities fused to form 5 (including the marginal serrations) regular, serrate, concentric ridges, with interstices reticulate, finely, sparsely punctured, and with a few fine hairs; posterior area reticulate, moderately shining, with punctures of moderate size and spacing; median line rather wide, impunctate, not elevated.

Elytra not wider than pronotum, 1.46 times as long as wide, 1.46 times as long as pronotum; sides nearly straight and subparallel on anterior half, then arcuately narrowed, moderately rounded behind; surface rather brightly shining; striae rows often irregular, due to crowding, only first striae impressed, punctures moderately coarse; interspaces flat, rugulose, nearly impunctate and subglabrous on disk; sides with striae rows nearly regular, interspaces with only occasional single punctures. Declivity sloping, originating about midway on elytra; suture slightly widened near apex, first stria strongly impressed, its punctures only slightly reduced, punctures of other striae as on disk but more regular; lateral elevations higher than suture, devoid of granules; vestiture very scanty.

*Male*.—Similar to female in habitus; with frons strongly convex above, transversely impressed above epistoma; surface shining, finely reticulate; sparsely, very finely and shallowly punctured, with a few very fine, very short hairs.

*Type locality*.—Cayamas, Cuba.

*Host*.—Unknown.

*Type material*.—Holotype, allotype, and 24 paratypes, U.S.N.M. No. 56010.

The type series was collected at Cayamas, Cuba, by E. A. Schwarz in January and February.

NEODRYOCOETES BUSCKI, new species

PLATE 21, FIGURE 15

*Female*.—Light yellowish red (probably somewhat immature); 1.51 mm. long, 2.82 times as long as wide; dorsal surface nearly glabrous except on declivity, ventral surface unusually hairy for the group.

Frons unusually narrow between eyes, distinctly flattened, very finely and densely punctured, with numerous short, very fine hairs of nearly uniform length; median line elevated to form a low, blunt, median carina, impunctate and more shining below on epistoma. Eye very large, very coarsely faceted, less than one-fourth divided by a rather narrow and shallow emargination. Antenna (fig. 15) with club very



broadly ovate, 1.1 times as long as wide, nearly twice as long as funicle; first suture more strongly arcuate, indicated by a row of setae and a slight notch at each side but with weak septum; third suture indicated only by an incomplete row of setae; hairs on both club and funicle longer than usual but often fimbriated.

Pronotum 1.19 times as long as wide, widest at base, posterior outline nearly straight, distinctly margined; posterior angles scarcely rounded; sides nearly straight and very feebly convergent on posterior half, scarcely at all constricted in front of middle, very broadly rounded in front, anterior margin finely serrate; summit low, at middle, feebly, transversely impressed posterior to it; anterior area with numerous low, broad asperities in irregularly concentric arrangement; posterior area shining, finely reticulate, with punctures fine, shallow, and rather sparse; median line scarcely elevated, very narrow at transverse impression; sides nearly devoid of punctures.

Elytra nearly exactly as wide as pronotum and 1.44 times as long, 1.68 times as long as wide; sides straight and subparallel on anterior two-thirds, then gently, arcuately narrowed, moderately rounded behind, not conjointly rounded but emarginate at suture, exposing tip of abdomen; surface brightly shining, finely, indistinctly reticulate; stria rows regular, with punctures fine and shallow, first stria weakly impressed, others not impressed on disk and sides; interspaces flat, impunctate, and devoid of hairs. Declivity moderately sloping, originating well behind middle; suture distinctly elevated, with a few moderate granules; first stria impressed, its punctures obsolescent; lateral elevations not so high as suture, finely granulate on third and more lateral interspaces, with numerous fine, moderately short, erect hairs.

*Male*.—Similar to female in habitus, but with frons more coarsely punctured, and with fewer, coarser hairs; elytral declivity with coarser granules and longer, coarser hairs.

*Type locality*.—Cabima, Panama.

*Host*.—Unknown.

*Type material*.—Holotype, allotype, and two paratypes, U. S. N. M. No. 56008.

The type series was collected at Cabima, Panama, May 21, 22, and 25, 1911, by August Busck.

NEODRYOCOETES PALLIDUS, new species

PLATE 21, FIGURE 17

*Female*.—Yellowish red (somewhat immature) with the elytra paler except at apex; 1.77 mm. long, 2.69 times as long as wide.

Frons strongly convex above eyes, lunately impressed between eyes; punctures rough and of moderate size above, fine and rather dense

below, with short, fine, inconspicuous hairs, without distinct median carina. Eye large, coarsely faceted, less than one-third divided by an emargination. Antenna (fig. 17) with club very broad oval, nearly as wide as long, 1.5 times as long as funicle; first suture moderately arcuate, the septum rather weak; second and third sutures indicated only by arcuate setal rows.

Pronotum 1.11 times as long as wide, widest at base, posterior margin scarcely arcuate, posterior angles slightly rounded; sides straight and subparallel on posterior half, arcuately narrowed to the constriction, broadly rounded in front; anterior margin finely but distinctly serrate; dorsal contour not evenly arcuate, its summit scarcely elevated, with surface posterior to it broadly, very shallowly impressed; anterior area with moderate-sized asperities not arranged in regular concentric rows; posterior area subopaque, densely, finely granulate-punctate in transverse impression, finely and rather roughly punctured behind, median line indistinct.

Elytra equal in width to pronotum, 1.65 times as long as wide, 1.5 times as long as pronotum; sides nearly straight and subparallel on anterior two-thirds, moderately rounded behind; surface faintly reticulate, shining; stria punctures of moderate size, in regular stria rows, only the first impressed; interspaces scarcely rugulose, impunctate on disk except in first interspace near declivity; sides with regular stria rows and without hairs except near ventral border. Declivity moderately sloping, originating well behind middle; suture elevated; with fine granules, first stria rather strongly impressed, its punctures obsolete, those of second stria obsolete; lateral elevations slightly higher than suture, with a few minute granules; all of interspaces except second punctured and bearing short, erect, rather stout hairs.

*Male*.—Similar to female in habitus, with frons more strongly convex, transversely impressed only just above epistomal margin, with punctures much sparser than in female and with much fewer, shorter hairs.

*Type locality*.—Cayamas, Cuba.

*Host*.—Unknown.

*Type material*.—Holotype, allotype, and one paratype, U.S.N.M. No. 56009.

The short type series was collected by E. A. Schwarz at Cayamas, Cuba, in May and June.

NEODRYOCOETES INSULARIS (Eggers)

PLATE 21, FIGURE 19

This species was described from Guadaloupe as of the genus *Pityophthorus* by Eggers in 1925. In 1936 (Rev. Ent., vol. 6, p. 390) Eggers placed it in *Neodryocoetes* Eggers. Schedl in 1938 (Arch.

für Naturg., vol. 7, p. 180) placed it in his newly described genus *Neopityophthorus* Schedl and described a new variety from Costa Rica.

In addition to two paratypes received from Eggers, the writer has studied two lots taken at quarantine and totaling 36 specimens. Of these, 13 specimens came from Jamaica in seeds of *Brownea* sp. and 23 were shipped from Dutch Guiana in seeds of *Euterpe oleracea*.

NEODRYOCOETES SCHEDLI, new species

PLATE 21, FIGURE 20

*Male*.—Reddish brown, with anterior fourth of pronotum piceous-brown; 1.26 mm. long, 2.44 times as long as wide.

Frons convex above, somewhat flattened below, rather finely and closely roughly punctured, with fine, short hairs, those on epistoma longer and directed downward; with faint indications of a median carina. Eye rather large, with moderate facets, emargination rather shallow. Antenna (fig. 20) with club 1.45 times as long as funicle, 1.38 times as long as wide; first suture notched at sides, weakly arcuate, partially septate; second and third sutures strongly arcuate, indicated by rows of setae.

Pronotum almost exactly as long as wide, widest near posterior angles; posterior border margined, feebly arcuate; sides nearly straight and subparallel on posterior third, then arcuately narrowed, constricted in front of middle, moderately narrowly rounded in front, anterior margin with about 8 serrations, the median ones distinctly longer; contour of disk as seen from side almost evenly convex, the summit low, and posterior impression seen only at each side of median line and there indistinctly; anterior area with asperities in irregularly concentric rows near summit, but with the first row behind margin fused to form a nearly regular serrate ridge; posterior area moderately shining, with punctures of moderate size, interstices finely reticulate; median line weakly elevated, wide behind, narrowed anteriorly; pronotum nearly glabrous.

Elytra slightly wider than pronotum and 1.78 times as long, about 1.47 times as long as wide; sides subparallel, very feebly arcuate on anterior two-thirds, moderately rounded behind; surface reddish brown, moderately shining; punctures rather small, in nearly regular stria rows, the first row impressed; interspaces flat, very finely rugulose, nearly impunctate; vestiture minute on sides, minute and very scanty on disk. Declivity arched, without sulcus; suture weakly elevated, not granulate, first stria no more strongly impressed than on disk, punctures slightly smaller than those on disk, hairs only slightly longer and more numerous than on sides.

*Female*.—Similar in habitus to male, but distinctly larger (1.51 mm. long); frons flattened from eye to eye on a nearly circular area, very finely, closely punctured, with long, fine yellow hairs, those from periphery longer and curved inward, concealing much of surface.

*Type locality*.—Tampico, Mexico.

*Host*.—Unknown.

*Type material*.—Holotype, allotype, and one paratype, U.S.N.M. No. 55976.

Described from a single female and two male specimens taken at Tampico, Mexico, December 26, 1909, by E. A. Schwarz.

NEODRYOCOETES EXQUISITUS, new species

PLATE 21, FIGURES 21, 21a

*Female*.—Piceous-black, shining; 1.41 mm. long, 2.75 times as long as wide.

Frons concave between eyes, probably with concavity finely, closely punctured, but surface normally completely hidden by dense, long, shining, yellow hairs, extending downward from above and sides nearly to the epistomal margin, peripheral margin indented and very finely and closely punctured. Eye rather large, with moderate facets, about one-third divided by a rather broad emargination. Antenna (fig. 21) with club about 1.5 as long as 5-segmented funicle; first suture notched at sides, partially septate, septum only feebly arcuate; second and third sutures indistinct, indicated only by incomplete rows of setae.

Pronotum 1.14 times as long as wide, widest behind; posterior border margined, weakly arcuate, sides very feebly arcuate, subparallel on posterior half, distinctly constricted in front of middle, moderately narrowly rounded in front, with four to six serrations, median pair slightly longer; contour of disk as seen from sides nearly evenly convex, the summit therefore scarcely elevated and the posterior transverse impression nearly absent; anterior area with slightly irregular, concentric rows of low asperities; posterior area shining, with moderately coarse, close, deep punctures, interstices distinctly, finely reticulate; median line of moderate width, slightly elevated; appearing glabrous, but with minute hairs.

Elytra slightly wider than pronotum and 1.63 times as long, about 1.72 times as long as wide, sides nearly straight and subparallel on anterior two-thirds, broadly rounded behind; surface piceous black, brightly shining; strial punctures in nearly regular rows, only the first row impressed; interspaces narrow, finely rugulose, almost entirely impunctate; vestiture consisting of minute hairs from strial punctures and a few slightly larger ones from interspaces. Declivity moderately arched, not truly sulcate, but with suture slightly elevated, first stria impressed, with punctures smaller than those on disk; second



interspace not below level of third; declivity with fine, short hairs; declivity without granules.

*Male*.—Similar to female in habitus; frons convex, feebly transversely impressed above epistoma, rather finely but roughly punctured, with a median fine, indistinct carina originating in a median elevation above on vertex; frontal hairs short and fine; sculpture and vestiture of pronotum and elytra similar to those of female.

*Type locality*.—Mexico.

*Host*.—Unknown.

*Type material*.—Holotype, allotype, and 43 paratypes, U.S.N.M. No. 55977.

Holotype, allotype, and 43 paratypes taken at quarantine stations from bark of unknown crate wood from Mexico.

NEODRYOCOETES TENUIS, new species

PLATE 21, FIGURE 23

*Female*.—Reddish brown; 1.74 mm. long, 3.02 times as long as wide; subglabrous as seen from above except on declivity.

Frons convex above, distinctly flattened below on semicircular area, surface finely, densely punctured, with fine, moderately long hairs of nearly even length; median line elevated into a broad, low carina, impunctate and brightly shining. Eye rather large, the facets moderate, emargination rather wide and shallow. Antenna (fig. 23) with club obovate, 1.3 times as long as wide, 1.68 times as long as funicle; first suture notched at sides, with a strong but incomplete, arcuate septum; second and third sutures indicated only by arcuate setal rows.

Pronotum 1.19 times as long as wide, widest behind middle, posterior outline feebly arcuate, distinctly margined; posterior angles scarcely rounded, sides feebly arcuate on more than posterior half, then very feebly constricted well in front of middle, very broadly rounded in front, anterior margin with numerous fine serrations; dorsal contour nearly evenly convex, with summit low, well in front of middle, scarcely at all impressed posterior to it; anterior area with numerous rather low, broad asperities in somewhat irregular, concentric rows; posterior area moderately shining, finely reticulate, with deep, moderate-sized punctures, rather sparsely arranged; median line rather broad, impunctate, slightly elevated, extending from base to middle of pronotum.

Elytra scarcely at all wider than pronotum, and 1.63 times as long, 1.94 times as long as wide; sides straight and subparallel on anterior three-fourths, moderately narrowly rounded at apex; surface shining; striae regular on disk, only the first impressed, punctures rather

fine, moderately close; interspaces flat, impunctate on disk and sides, finely rugulose; disk and sides glabrous except for very minute hairs from strial punctures. Declivity steep, suture elevated, first striae more strongly impressed than on disk, with punctures reduced; lateral elevations no higher than suture, interspaces not granulate, finely punctured, with rather numerous, rather short, erect, yellow hairs.

The male is unknown.

*Type locality*.—Tampico, Mexico.

*Host*.—Unknown.

*Holotype*.—U.S.N.M. No. 55978. -

The holotype was taken by E. A. Schwarz at Tampico, Mexico.

NEODRYOCOETES LENIS, new species

PLATE 21, FIGURE 22

*Male*.—Reddish brown, with summit of pronotum slightly lighter; 1.27 mm. long, 2.69 times as long as wide.

Frons convex above, transversely impressed below, surface brightly shining, very finely, not very closely punctured, with fine, inconspicuous hairs; median carina very feebly indicated. Eye of moderate size, with moderate facets, less than half divided by emargination. Antenna (fig. 22) with club obovate, 1.25 times as long as wide, 1.60 times as long as funicle; first suture moderately arcuate, incompletely, moderately strongly septate, second and third sutures indicated only by imperfect rows of setae.

Pronotum 1.15 times as long as wide, widest at base, posterior outline weakly arcuate, posterior angles feebly rounded; sides nearly straight, feebly arcuate from base to weak constriction anterior to middle, moderately rounded in front, with margin finely, closely serrate; summit low, with transverse impression behind it very shallow; anterior area with asperities arranged in irregularly concentric rows, not extending behind middle at sides; posterior area somewhat shining, finely reticulate, punctures deep, moderate in size and spacing; median line impunctate, not elevated, extending to summit; disk glabrous, anterior area with short, fine hairs.

Elytra scarcely at all wider than pronotum, 1.64 times as long as wide, 1.46 times as long as pronotum; widest near middle, with sides very feebly arcuate, moderately narrowly rounded behind; surface rather weakly shining, finely reticulate; strial rows nearly regular, only first striae impressed and these very slightly, punctures fine, not very deep; interspaces flat, impunctate on disk and sides, glabrous. Declivity evenly arched, suture scarcely more elevated than on disk, first striae very weakly impressed; with only minute hairs and these mostly from strial punctures, devoid of granules.

The female is unknown.

*Type locality*.—Cordoba, Veracruz, Mexico.

*Host*.—Unknown.

*Holotype*.—U.S.N.M. No. 55979.

The holotype was collected at Cordoba, Veracruz, Mexico, April 23, 1908, by A. Fenyès.

#### PITYOPHTHOROIDES, new genus

*Genotype*.—*Pityophthoroides pudens*, new species, described herein.

Body elongate cylindrical, resembling *Pseudopityophthorus asperulus* (LeConte) in general habitus; pronotum with summit elevated, posterior area finely punctulate; elytra indistinctly punctulate-striate, declivity normal; fore tibia with three submarginal socketed teeth and several serrations; antenna of the Pityophthorini type, with club distinctly longer than 5-segmented funicle, first two sutures arcuate, notched at each side, with setal rows, but entirely devoid of septa, as in *Conophthorus* Hopkins and *Myeloborus* Blackman.

#### PITYOPHTHOROIDES PUDENS, new species

#### PLATE 21, FIGURES 26, 27

*Female*.—Reddish brown, with summit of pronotum lighter, and apical portion of elytra darker; 1.25 mm. long, 2.84 times as long as wide; superficially resembling *Neodryocoetes insularis* (Eggers).

Frons convex above, finely, distinctly reticulate, subopaque, with fine, deep, distinct punctures; flattened below on less than a semicircle, punctures finer and more shallow than above, surface weakly shining, with very fine, moderately long hairs; median line distinctly elevated on vertex and upper frons, rather weak below. Eye of moderate size, facets rather small, about one-third divided by emargination. Antenna (fig. 26) with club 1.33 times as long as wide, 1.60 times as long as funicle; sutures without septa, first and second indicated by notches at sides and incomplete rows of setae, third indicated by setal row.

Pronotum 1.13 times as long as wide, widest behind, posterior outline nearly straight, posterior angles slightly rounded; sides straight and subparallel on posterior half, scarcely constricted in front of middle, broadly rounded in front, with anterior margin strongly, finely serrate; anterior area with rather strong asperities in irregularly concentric rows, not extending behind middle at sides; summit moderately elevated, slightly before middle, transverse impression shallow and indefinite; posterior area moderately shining, finely reticulate, with very fine, shallow, rather sparse punctures; median line not elevated, impunctate; hairs very fine, short, and inconspicuous.

Elytra scarcely wider than pronotum, 1.69 times as long as wide, 1.53 times as long as pronotum; sides subparallel on more than anterior

two-thirds, narrowly rounded behind, not conjointly rounded at apex, but broadly emarginate at suture; surface shining, very finely, indistinctly reticulate; punctures inconspicuous, minute, not in complete, regular rows on disk and sides; interspaces impunctate. Declivity moderately arched, suture feebly elevated, none of striae impressed; interspaces entirely devoid of granules, with minute punctures from which arise conspicuous, erect, stout, cinereous, spatulate hairs.

*Male*.—Very similar to female in size and habitus; frons slightly more roughly punctured above, transversely impressed below, with hairs less numerous and shorter.

*Type locality*.—Cayamas, Cuba.

*Host*.—Unknown.

*Type material*.—Holotype and 14 paratypes, U.S.N.M. No. 56016.

The type series was taken by E. A. Schwarz at Cayamas, Cuba, during January and February. No host record is available.

PITYOPHTHOROIDES ROBAI, new species

PLATE 21, FIGURE 28

*Female*.—Very dark reddish brown, with summit of pronotum lighter; larger and slightly stouter than *pudens*.

Frons mostly concealed, convex above, transversely flattened below; surface reticulate, subopaque, moderately punctured above, more finely and closely below, with fine hairs of moderate length. Eye moderately small, with rather small facets, less than half divided by emargination. Antenna (fig. 28) with club 1.24 times as long as wide, 1.37 times as long as funicle; all of sutures arcuate, the first and second notched at sides, none of sutures septate.

Pronotum longer than wide, widest near base, posterior outline nearly straight, angles scarcely rounded; sides nearly straight and subparallel on posterior half, broadly rounded in front, with anterior margin distinctly serrate; anterior area with moderate-sized asperities in irregular, concentric rows, not extending behind middle at sides; summit moderate, transverse impression rather shallow; posterior area shining, faintly reticulate, somewhat rugulose, with very fine, inconspicuous punctures, median line impunctate, not elevated; hairs fine and short.

Elytra slightly wider than pronotum, 1.63 times as long as wide; sides subparallel on more than anterior half, moderately narrowly rounded behind, emarginate at apex of suture; surface faintly reticulate; punctures minute and inconspicuous, in incomplete rows, none of striae impressed on disk and sides; interspaces impunctate and devoid of hairs. Declivity moderately arched, surface feebly shining; striae not impressed, interspaces without granules, with very fine punctures, giving origin to rather conspicuous, short, erect, spatulate bristles.



*Type locality*.—Dept. Santander, Colombia, South America.

*Host*.—*Psidium guajava*.

*Type material*.—Holotype, U.S.N.M. No. 56017.

The holotype was taken from the dried branches of guava (*Psidium guajava*), Dept. Santander, Colombia, at an elevation of 700 to 1,300 meters, by R. P. Roba, in whose honor the species is named.

Genus **MYELOBORUS** Blackman

**MYELOBORUS DELEONI**, new species

PLATE 22, FIGURES 29-31

*Female*.—Dark piceous-brown, with elytra and summit of pronotum lighter; 3.07–3.66 mm. long, holotype 3.56 mm. long, about 2.65 times as long as wide; larger than any species previously described.

Frons very wide between eyes, frontal rectangle about 0.4 as long as wide; convex, slightly flattened below, surface brightly shining, finely, moderately sparsely punctured, median carina distinct on epistoma and above level of eyes, often interrupted above epistoma, variable; hairs short and inconspicuous. Eye with moderate facets, half divided by a moderately wide emargination. Antenna (fig. 31) testaceous, with club subequal in length to funicle, widest through second segment, first two sutures strongly annulate, distinctly arcuate, neither septate, third suture faintly indicated by incomplete row of setae.

Pronotum 1.1 times as long as wide, widest posteriorly, posterior outline nearly straight, posterior angles slightly rounded; sides arcuately narrowed to the faint constriction, rather broadly rounded in front, anterior margin with 6 to 8 small serrations; anterior area with many moderately developed asperities in irregularly concentric rows; summit high, with rather strong transverse impression behind it; posterior area shining, rather finely, moderately closely punctured; median line wide, impunctate, slightly elevated; hairs short and inconspicuous.

Elytra slightly wider than pronotum, about 1.6 times as long as wide, widest at about middle, sides subparallel, faintly arcuate on anterior three-fourths, broadly rounded behind; surface light reddish brown, shining; disk with striae, except first, not impressed, punctures moderately coarse, rather close, in irregular rows, especially near base; interspaces flat, somewhat rugulose, the punctures notably smaller and sparse; more numerous and larger on sides; disk subglabrous. Declivity with sulcus of moderate depth and width, striae punctures scarcely smaller than on disk, except in first stria, which is strongly impressed; suture moderately elevated, moderately wide, with only minute vestiges of granules; second interspace not wider than on

disk, impunctate, feebly rugulose; lateral elevations moderate, with a few minute vestigial granules in third interspace; ninth interspace somewhat elevated: hairs short, fine, sparse, and inconspicuous.

*Male*.—Very similar to female in general habitus; frons scarcely flattened, more strongly punctured than in female; antennal club (fig. 30) narrower than in female; pronotum and elytra slightly more strongly punctured throughout; elytral striae very irregular.

*Type locality*.—El Seco, Puebla, Mexico.

*Host*.—*Pinus* sp.

*Type material*.—Holotype and seven paratypes, U.S.N.M. No. 55975.

Holotype and seven paratypes collected by Donald DeLeon, at El Seco, Puebla, Mexico, from a 5-needled pine, the identity of which was not established.

### Genus PITYOBORUS Blackman

#### PITYOBORUS TERTIUS, new species

PLATE 22, FIGURES 32, 33

*Female*.—Very dark reddish brown; 2.46–2.63 mm. long, holotype 2.54 mm. long, about 2.96 times as long as wide; allied to *secundus* Blackman, but with the patches of plushlike pubescence light yellow and not extending so far posteriorly.

Frons very wide between eyes, frontal rectangle about 0.41 as long as wide; surface piceous-brown, subopaque, finely reticulate, flattened from eye to eye, subconcave in median two-fifths; punctures very fine, rather sparse, confined to outer third at sides and above, with rather sparse, fine moderately long hairs. Eye large, broadly and deeply emarginate, moderately coarsely faceted. Antenna (fig. 32) with club twice as long as funicle, 1.4 times as long as wide.

Pronotum about 1.05 times as long as wide (exclusive of pubescent patches); posterior outline very feebly arcuate, posterior angles rounded, sides weakly arcuate, scarcely constricted before middle, broadly rounded in front, with about 16 moderately fine serrations; anterior area rather sparsely, weakly, irregularly asperate; each side bearing an irregularly ovate patch of light yellow, plushlike pubescence, the posterior limits of which extend barely behind the middle; summit low, at center, transverse impression lacking in median area; posterior area subopaque, finely reticulate, with very fine and shallow punctures and minute hairs; median longitudinal line distinctly elevated, impunctate.

Elytra slightly wider than pronotum, about 1.93 times as long as wide, sides subparallel on anterior two-thirds, then strongly, arcu-

ately narrowed, the 2 sides meeting at suture in an obtuse angle; surface subopaque to feebly shining, reticulate, punctures rather deep and moderately fine, in nearly regular striae rows, only first striae impressed; interspaces with very few, somewhat smaller punctures. Declivity convex, suture rather wide, slightly elevated, with a row of sparse, obsolescent granules; first and second striae with punctures nearly obsolete, first striae impressed; second interspace flat, not depressed, devoid of punctures except near apex; third interspace with granules nearly entirely obsolete. Disk and sides nearly glabrous but with rather conspicuous hairs on declivity.

*Male*.—Similar in color, size, and general habitus: frons flattened between eyes, the surface subopaque, reticulate, with sparse, small punctures giving rise to a few hairs which are shorter than in female, median line broadly elevated to form a very blunt carina; pronotum similar to that of female, but with the pilose areas lacking, corresponding area slightly depressed, finely sparsely punctured, with a few small asperities on anterior half; elytra similar to those of female, but with the second interspace on declivity very feebly subsulcate.

This species is closely allied to *Pityoborus secundus* Blackman, but is distinguished by the slightly more slender form, the distinctly smaller patch of pronotal pubescence, with its posterior outline nearly straight, and by the weaker development of the declivital sulcus and the granules on both suture and third interspace. *Pityoborus comatus* (Zimmerman) is slightly smaller and stouter than the two more western species.

*Type locality*.—Chalco, D. F., Mexico.

*Host*.—*Pinus leiophylla*.

*Type material*.—Holotype, allotype, and seven paratypes. U.S.N.M. No. 55980.

The type material was collected January 27, 1936, from *Pinus leiophylla*, Chalco, D. F., Mexico, by Donald DeLeon.

### Genus SPERMOPHTHORUS Costa Lima

#### SPERMOPHTHORUS CAESALPINIAE, new species

#### PLATE 21, FIGURES 24, 25

*Female*.—Reddish brown; 1.91 mm. long, 2.65 times as long as wide.

Frons flattened at each side of the elevated, rather broad median carina; rather finely, closely punctured, with rather fine, rather short hairs. Eye of moderate size, coarsely faceted, less than a third divided by emargination. Antenna (fig. 25) somewhat similar to those of various *Pityophthorus* but with scape more strongly clavate, funiculus with four distal segments more strongly, progressively widened, and the club relatively smaller; club 1.28 times as long as wide, 1.11 times

as long as funicle, first and second segments together comprising much more than half of length, first and second sutures transverse, partially septate, third suture indicated by row of setae.

Pronotum 1.15 times as long as wide, widest near base, posterior outline weakly arcuate, distinctly margined, posterior angles rounded; sides weakly arcuate from base to anterior lateral constriction, moderately rounded in front, with anterior margin weakly serrate; dorsal contour evenly arcuate from base to apex, without elevated summit or transverse impression; anterior area with asperities in irregularly concentric rows, continued at sides nearly to base; posterior area strongly punctured, usually with lateral rim of each puncture elevated; median line narrow, elevated; vestiture of short, stout hairs, often somewhat spatulate.

Elytra distinctly wider than pronotum, 1.34 times as long as wide, 1.30 times as long as pronotum; sides subparallel on anterior half, then gradually arcuately narrowed, very broadly rounded at apex; surface shining, feebly reticulate; first stria impressed, the punctures in fairly regular rows, rest of disk and sides confusedly punctured, with all punctures about equally deep and coarse, many of them (from interspaces) with short, stout hairs, often spatulate, especially on sides and behind. Declivity sloping, originating slightly behind middle of elytra, distinctly sulcate; suture rather narrow, slightly elevated; first stria strongly, second stria feebly impressed, with intervening second interspace forming fundus of sulcus; lateral elevations much higher than suture, with third and more lateral interspaces strongly punctured and bearing stout, erect, spatulate hairs, not so conspicuous as in *apuleiae* Costa Lima.

*Male*.—Very similar to female in habitus; frons more shining, less closely punctured, with very small, inconspicuous hairs; median carina more strongly, sharply elevated; elytral declivity with sulcus slightly deeper.

*Spermophthorus caesalpiniae* is rather closely related to *S. apuleiae* Costa Lima, of which I have a single specimen taken from the seed of *Caesalpinia ferrea* from Brazil. The most easily recognized differences concern the vestiture of the elytra, which in *apuleiae* is more conspicuous, with the individual setae more flattened and scalelike. Differences in the frons, elytral declivity, etc., are also present but are not so conspicuous; also the elytral punctures are in nearly regular rows.

*Type locality*.—Paraguay.

*Host*.—*Caesalpinia melanocarpa*.

*Type material*.—Holotype, allotype, and four paratypes, U.S.N.M. No. 56011.

The type series bears the data labels, "Paraguay, 6054; *Caesalpinia* (sic) *melanocarpa*."



## Genus PITYOPHTHORUS Eichhoff

## PITYOPHTHORUS LEIOPHYLLAE, new species

## PLATE 23, FIGURE 37

*Female*.—Dark reddish brown; 2.11 mm. long, 2.60 times as long as wide; allied to *scalptor* Blackman, *anceps* Blackman, etc. of Group I.

Frons flattened on more than a semicircle extending from eye to eye, surface shining, very finely, moderately closely punctured at sides and above, polished and impunctate in median line on lower half, with fine, moderately long hairs, those at periphery incurved. Eye with moderate facets, nearly half divided by a rather wide emargination. Antenna (fig. 37) with club oval, 1.2 times as long as wide, almost 1.6 times as long as funicle, widest through third segment, first two segments together less than half total length of club; first suture arcuate, partly septate, second more strongly arcuate, partly septate; third not septate, very strongly arcuate.

Pronotum almost exactly as wide as long, widest in posterior fourth; posterior outline feebly arcuate, strongly margined, posterior angles rounded, sides arcuate on posterior half, distinctly constricted in front of middle, very broadly rounded in front, with anterior margin distinctly serrate; anterior area moderately strongly asperate, with asperities arranged in nearly regular concentric rows; summit moderately high, near middle, with distinct transverse impression behind it; posterior area moderately shining, reticulate, finely, not deeply, somewhat roughly punctured; median line rather narrow, impunctate, not elevated; hairs very small and inconspicuous on disk, slightly larger on sides.

Elytra wider than pronotum, about 1.61 times as long as wide; sides subparallel on anterior two-thirds, moderately rounded behind; surface rather weakly shining, reticulate, subglabrous; punctures of moderate size, in closely crowded, slightly irregular rows, only first striae impressed; interspaces not quite flat, with only a few smaller punctures on disk, slightly more numerous on sides; ninth interspace distinctly convex. Declivity with sulci of moderate depth, moderately narrow, suture rather weakly elevated, with a few faint granules; punctures of first and second striae reduced; second interspace (fundus of sulcus) shining, devoid of granules and punctures; lateral elevations rather weak, with a few small granules in third interspace; vestiture of declivity rather scanty, with hairs very fine, moderately short, and suberect.

The male is unknown.

*Type locality*.—Chalco, Mexico.

*Host*.—*Pinus leiophylla*.

*Type material*.—Holotype, U.S.N.M. No. 55981.

The holotype was taken from *Pinus leiophylla* at Chalco, Mexico, by Donald DeLeon, January 27, 1936. No other specimen has been seen.

PITYOPHTHORUS REGULARIS, new species

PLATE 22, FIGURE 33

*Female*.—Light reddish brown (somewhat immature); 1.37 mm. long, 2.52 times as long as wide, allied to *rhois* Swaine.

Frons brightly shining, convex above, with small, rather close punctures, imperfectly flattened below on an approximate semicircle, with punctures fine around periphery, obsolescent toward center, with only a few very fine, inconspicuous hairs; median carina represented by a small tubercle on epistomal margin. Eye rather small, with moderate facets, nearly half divided by emargination. Antenna (fig. 33) with club 1.20 times as long as wide, 1.55 times as long as funicle, widest through third segment, with septa of first two sutures incomplete, nearly transverse.

Pronotum 1.02 times as long as wide, widest near base, posterior outline nearly straight, distinctly margined, angles rounded; sides weakly arcuate on posterior half, then more strongly, convergently arcuate to the constriction, narrowly rounded in front, with anterior margin extended and distinctly serrate; anterior area with asperities fused to form 5 (including marginal serrations) perfectly regular, concentric lines, with a row of fine, dorsally directed hairs from each; summit high, at about middle, with a wide, transverse impression behind it; posterior area with surface shining, distinctly reticulate; punctures moderate in size, depth, and spacing; median line broad, impunctate, not elevated; vestiture very scanty, consisting of very fine, short hairs.

Elytra as wide as pronotum, 1.49 times as long as wide, 1.48 times as long as pronotum; sides subparallel on anterior two-thirds, moderately rounded behind; surface brightly shining, stria rows regular, with punctures deep, close, and moderately coarse, only first stria impressed; interspaces flat, somewhat rugulose, impunctate anteriorly, with a few punctures on posterior third of disk and sides. Declivity moderately steep; suture elevated, with very fine granules; first stria strongly impressed, with punctures reduced, second stria feebly impressed, lateral elevations scarcely higher than suture; all of interspaces punctured and with numerous rather short, erect, yellowish hairs.

*Male*.—Similar to female but slightly stouter and with apex of elytra more broadly rounded; frons convex, transversely impressed below; punctures sparser, deeper, more uniformly distributed; median carina faint.

*Type locality*.—Cayamas, Cuba.

*Host*.—Unknown.

*Type material*.—Holotype, allotype, and 40 paratypes, U.S.N.M. No. 56012.

The type series was taken by E. A. Schwarz at Cayamas, Cuba, during January and February.

PITYOPHTHORUS SAMBUCL, new species

PLATE 23, FIGURE 38

Reddish brown to piceous-brown, brightly shining: 1.43–1.65 mm. long, holotype 1.6 mm. long, 2.7 times as long as wide; allied to *Pityophthorus rhois* Swaine of Group II.

Frons broadly, transversely impressed below in both sexes, shining, deeply, somewhat roughly, moderately finely and closely punctured below, more sparsely and roughly so above; median carina indicated by a small tubercle on epistoma; hairs short, fine, inconspicuous. Eye with moderate facets, about one-third divided by a rather wide emargination. Antenna (fig. 38) with club about 1.33 times as long as wide, widest through second segment, first two sutures partly septate, transverse.

Pronotum about 1.09 times as long as wide; posterior angles rounded, sides weakly arcuate on posterior two-thirds, definitely constricted just behind broadly rounded, serrate front margin; anterior area with asperities fused at bases to form 4 (including front margin) continuous, concentric ridges; summit slightly anterior to middle, distinctly impressed behind it; posterior area with deep, moderately large, rather sparse punctures (coarser and sparser than in *rhois*), smaller on sides, with a nearly impunctate area; median line rather wide, impunctate, very feebly elevated.

Elytra very slightly wider than pronotum and 1.56 times as long, widest slightly before middle, about 1.64 times as long as wide, sides nearly straight (very feebly arcuate) and subparallel on anterior three-fourths, very broadly rounded behind; surface piceous-brown, brightly shining; punctures deep, moderately large and close, in definite striae rows, only first striae impressed; interspaces rugulose, often more strongly near base, impunctate on anterior two-thirds of disk. Declivity rather abrupt, suture wider and more elevated than on disk, more strongly near apex, without granules and nearly devoid of punctures and hairs; first and second striae with strong punctures; second interspace depressed, forming fundus of sulcus at each side, lateral convexity higher than suture, with numerous punctures, a few small, obsolescent granules and with rather long, erect hairs.

There is little difference between the sexes of this species. Some specimens, supposedly females, are slightly larger and slenderer.

Small differences in sculpture evident in the series are believed to be individual variations.

*Type locality*.—Jalisco, Mexico.

*Host*.—*Sambucus* sp.

*Type material*.—Holotype and 175 paratypes, U. S. N. M. No. 55982.

The holotype and 19 paratypes were taken at the plant quarantine station, port of New York, from *Sambucus* sp. used in crates in several shipments from the state of Jalisco, Mexico. More than 150 additional paratypes taken from unidentified crate wood in nine other interceptions are also at hand.

**PITYOPHTHORUS PUDICUS, new species**

*Male*.—Reddish brown, shining; 1.35 mm. long, 2.63 times as long as wide.

Frons convex above, strongly punctured, with median line elevated, impunctate, plainly reticulate; transversely impressed below, with punctures smaller toward epistoma, with fine, short, inconspicuous hairs; median carina fine, sharply elevated. Eye of moderate size, with fine facets; about one-third divided by emargination. Antennal club with all sutures arcuate, first and second partly septate.

Pronotum 1.09 times as long as wide, widest behind; posterior outline nearly straight, strongly margined, posterior angles weakly rounded; sides evenly arcuate from base to anterior lateral constriction, rather narrowly rounded in front, with anterior margin bearing six small serrations, the middle pair being longer; dorsal contour nearly evenly arched, with summit and transverse impression both very poorly developed; anterior area with small, rather wide asperities, more or less united at their bases to form incomplete, somewhat irregular, concentric rows, hairs short, fine and inconspicuous; posterior area with surface moderately shining, finely reticulate, with rather coarse, deep, moderately close punctures on disk, smaller on sides; median line rather wide, slightly elevated, impunctate; disk and sides with minute, scarcely visible hairs.

Elytra slightly wider than pronotum, 1.55 times as long as wide, 1.53 times as long as pronotum; sides subparallel on anterior two-thirds, moderately rounded behind; surface brightly shining, finely indistinctly reticulate; punctures small, moderately deep, in nearly entirely regular rows, only first striae weakly impressed; interspaces flat, finely rugulose, impunctate on anterior two-thirds of disk, sides similar; anterior disk and sides appearing glabrous, but with minute hairs from striae punctures. Declivity moderately abrupt, not sulcate, first striae weakly impressed; interspaces, including suture, not granulate, finely punctured and bearing very fine, rather short, yellowish hairs.



The female is unknown.

*Type locality*.—Guadalajara, Jalisco, Mexico.

*Host*.—*Sambucus* sp.

*Type material*.—Holotype, U.S.N.M. No. 55983.

The holotype was intercepted at the port of New York in a shipment from Guadalajara, Jalisco, Mexico, in the wood of *Sambucus* sp.

PITYOPHTHORUS ALNI, new species

• PLATE 23, FIGURES 39, 40

*Female*.—Black, subopaque to feebly shining; 1.83–2.47 mm. long; holotype 2.47 mm. long, 2.85 times as long as wide.

Frons convex, somewhat flattened below, very wide between eyes, frontal rectangle about 0.50 as long as wide; surface rather weakly shining, finely, roughly punctured, subgranulate above and at sides, punctures nearly lacking on median third just above epistoma; with a rather variable median carina; vestiture consisting of cinereous hairs, short and fine at sides and above, longer and coarser in area at sides and above median impunctate area. Eye small, with moderate facets, more than half divided by a rather wide emargination. Antenna (fig. 39) testaceous, club large, about 1.5 times as long as funicle, widest through third segment, first two sutures feebly arcuate-septate, third more strongly arcuate and devoid of septum.

Pronotum about 1.19 times as long as wide, widest behind; posterior border margined, feebly arcuate; sides nearly evenly arcuate from base to moderately broadly rounded front margin, the constriction scarcely indicated; contour of disk as seen from side nearly evenly convex, without distinct transverse impression behind summit; anterior margin scarcely serrate; disk subopaque to moderately shining; summit slightly behind middle, surrounded by dense, slightly irregular, concentric lines of low, wide asperities, which at sides gradually become lower, but extend backward nearly to posterior margin; disk behind summit deeply, rather roughly punctured; median line punctured across base, but impunctate on a narrow, scarcely elevated area from near base to summit; vestiture rather short and fine on asperate surface, posterior disk nearly glabrous.

Elytra slightly wider than pronotum, about 1.81 times as long as wide, slightly widest behind middle, sides subparallel on anterior two-thirds, narrowly rounded behind; surface black, feebly to moderately shining; striae distinctly impressed, deeply, closely, rather finely punctured; interspaces wider than striae, convex, impunctate or nearly so on anterior half of disk, finely, sparsely punctured behind, with a few short, fine, cinereous hairs. Declivity sloping, not sulcate, with suture slightly elevated; first striae strongly, the others more weakly impressed, striae punctures much smaller than on disk and sides, inter-

spaces weakly convex, with fine uniseriate punctures and moderately numerous, conspicuous, cinereous hairs, stouter and longer than those on disk.

*Male*.—Very similar to female, but with frons less flattened, transversely impressed below, with median carina somewhat stronger, hairs shorter and less numerous.

*Type locality*.—Jalapa, Veracruz, Mexico.

*Host*.—*Alnus* sp.

*Type material*.—Holotype, allotype, and six paratypes, U.S.N.M. No. 55984.

Holotype, allotype, and 6 paratypes collected from *Alnus* sp., at Jalapa, Veracruz, Mexico, by Donald DeLeon, February 9, 1936.

PITYOPHTHORUS SUBOPACUS, new species

PLATE 23, FIGURES 41, 42

*Female*.—Dark reddish brown, 1.8–2.2 mm. long; holotype 2.11 mm. long, about 2.93 times as long as wide.

Frons convex, slightly flattened on a semicircular area outlined by an indented margin, surface subshining, reticulate, somewhat rugose, with fine, rather sparse punctures and very fine, sparse hairs of moderate length; median carina usually poorly developed. Eye moderately finely faceted, half divided by wide, deep emargination. Antennal club (fig. 41) rather narrow, 1.3 times as long as funicle, more than one-third longer than wide, widest through second segment; first two sutures nearly straight and partly septate, third suture strongly arcuate, not septate.

Pronotum nearly 1.2 times as long as wide, widest slightly behind middle, posterior angles strongly rounded, sides distinctly arcuate from base to lateral constriction, broadly rounded in front; anterior margin with rather strong, sharp serrations; anterior area with irregular concentric rows of rather sharp asperities; summit rather high, slightly in front of middle, with a distinct transverse impression behind it; posterior area subopaque to weakly shining, with deep, moderately sparse punctures of moderate size, interstices reticulate; median line moderately wide, impunctate, not elevated; disk with short, nearly invisible hairs.

Elytra wider than pronotum, about 1.82 times as long as wide; sides nearly straight and subparallel on anterior three-fourths, moderately rounded behind; surface feebly shining or subopaque, finely reticulate; strial punctures deep, moderately large, in regular strial rows, only first striae impressed; interspaces nearly flat, nearly entirely impunctate except near declivity; vestiture of disk and sides consisting nearly entirely of minute, short, fine hairs from strial punctures. Declivity arched, not sulcate, suture wide, slightly elevated, not granulate;

first striae more strongly impressed than on disk, punctures reduced; second and third striae feebly impressed, punctured as on disk, interspaces, including second, feebly convex, rather sparsely punctured, with fine, erect, moderately long hairs.

*Male*.—Similar to female in habitus; frons convex above, transversely impressed below, with a strong, rather blunt median carina, punctures sparse and small, with short, fine, inconspicuous hairs; pronotum and elytra similar to those of female.

This species is not very closely allied to any of the species known from Mexico or from the United States. It apparently belongs to group III, although somewhat larger than any other species of that group.

*Type locality*.—Chalco, Mexico.

*Additional localities*.—Rio Frio, Puebla; Jalapa, Veracruz, Mexico.

*Host*.—*Pinus leiophylla*.

*Additional hosts*.—*Pinus montezumae*, *Pinus cembroides*.

*Type material*.—Holotype, allotype, and 22 paratypes, U.S.N.M. No. 55985.

The holotype, allotype, and nine paratypes were taken from *Pinus leiophylla* at Chalco, Mexico, January 27, 1936; five paratypes from *P. leiophylla*, at Rio Frio, Puebla, Mexico, February 10, 1936; four paratypes from *Pinus* sp., Rio Frio, February 1936; two paratypes from *Pinus* sp., at Rio Frio, February 10, 1936; and two paratypes from *P. montezumae*, Jalapa, Veracruz, Mexico, February 9. All were collected by Donald DeLeon.

#### PITYOPHTHORUS CILIATUS, new species

PLATE 23, FIGURES 43, 44

*Female*.—Piceous, with elytra reddish brown, 1.77–2.06 mm. long; holotype 1.86 mm. long, about 2.70 times as long as wide.

Frons flattened on more than a semicircle extending from eye to eye, margined around outside, finely, densely punctured, with fine, long hairs, those at periphery incurved; median carina faintly indicated below on epistoma. Mandible with fringe of fine hairs rising from near its base and masking basal half. Eye with moderate facets, about half divided by a deep emargination. Antenna (fig. 43) with club 1.27 times as long as wide, much longer than funicle, first 2 sutures nearly straight, partially septate, third suture strongly arcuate, not septate.

Pronotum about 1.11 times as long as wide, widest near base, posterior margin weakly arcuate, posterior angles rounded; sides weakly, arcuately convergent, weakly constricted in front of middle, moderately rounded in front, with anterior margin armed with rather broad, low serrations; anterior area with irregular, concentric rows of rather low

asperities; summit high, slightly in front of middle, with a distinct, broad, transverse impression posterior to it; posterior area rather weakly shining, surface of interstices slightly reticulate, punctures deep, of moderate size, rather sparse; median line wide, impunctate, scarcely elevated; disk subglabrous, sides with a few very fine, short hairs.

Elytra slightly wider than pronotum and about 1.53 times as long, 1.65 times as long as wide; sides nearly straight and subparallel on anterior two-thirds, narrowly rounded behind; surface moderately shining, reticulate, striae punctures moderately small, in nearly regular rows, only first striae impressed; interspaces scarcely rugulose, impunctate on disk except near declivity, sides with a few interstitial punctures, bearing short, fine hairs. Declivity deeply sulcate, suture narrow above, somewhat widened near apex, obsolete subgranulate, only feebly elevated; punctures of first and second striae obsolete; lateral elevations moderately high, higher than suture, with a row of small, inconspicuous granules in third interspace; vestiture of fine, erect, moderately numerous hairs on third to ninth interspaces.

*Male*.—Similar to female in size and proportions; frons convex, strongly, roughly punctured, with a rather weak median carina which may be nearly obliterated by the rough punctures; mandible without the conspicuous fringe of hairs as in female, but with a very small tuft of hairs near ventral border; elytral declivity much more deeply sulcate, with sulci slightly narrowed by an in-pushing of lateral convexities.

*Type locality*.—Jalapa, Veracruz, Mexico.

*Host*.—*Pinus patula*.

*Type material*.—Holotype, allotype, and nine paratypes, U.S.N.M. No. 55986.

The holotype, allotype, and nine paratypes were collected from *Pinus patula* near Jalapa, Mexico, by Donald DeLeon, February 9, 1936.

PITYOPHTHORUS RUDIS, new species

PLATE 23, FIGURE 46

*Female*.—Dark reddish brown, 2.46–2.74 mm. long; holotype 2.60 mm. long, 2.71 times as long as wide; resembling *crassus* Blackman in appearance, but more slender, more regularly punctured on elytra and with notably longer declivital setae.

Frons flattened on a semicircular area extending from eye to eye, margined at periphery, surface moderately shining, with moderately spaced, deep, rather fine punctures, hairs fine, rather long, those at periphery longer and incurved. Mandible with basal fringe of setae in two groups. Eye with moderate facets, half divided by a wide, deep emargination. Antenna (fig. 46) broadly oval, equally wide



through second and third segments; first suture nearly straight, second distinctly arcuate, each with strong but incomplete septum.

Pronotum about 1.05 times as long as wide, widest at base, posterior margin nearly straight, posterior angles rounded; sides feebly convergent and arcuate from base to constriction slightly anterior to middle, moderately rounded in front; anterior margin with 8 to 10 serrations; anterior area with numerous irregularly arranged asperities; summit prominent, slightly in front of middle, with a broad, rather deep, transverse impression posterior to it; posterior area somewhat shining, finely, moderately closely punctured, interstices finely reticulate; median line moderately wide, impunctate, scarcely elevated; disk with short, inconspicuous hairs, those on sides larger.

Elytra slightly wider than pronotum and 1.9 times as long, about 1.82 times as long as wide; sides straight and subparallel on anterior three-fourths, then narrowed to the subtruncate posterior margin; surface moderately shining; strial punctures rather coarse, deep, close, in nearly regular rows, only first striae impressed; interspaces very finely reticulate, nearly impunctate; disk nearly devoid of hairs except for very minute ones from strial punctures. Declivity much less abrupt than in *crassus*, deeply, moderately broadly sulcate, brightly shining; suture narrow, slightly elevated, with fine granules becoming obsolete near apex; punctures of first and second striae obsolete; lateral convexities high (neither so abrupt nor so high as in *crassus*), with a rather close series of moderate-sized granules in the third interspace (smaller and more numerous than in *crassus*); convexities and sides of declivity with numerous, strong punctures bearing long, fine hairs (much longer than in *crassus*).

*Male*.—Similar to female, but slightly stouter; frons slightly flattened below, with strongly elevated median carina, highest well above epistoma; pronotum as broad as long, with anterior serrations coarser than in female; elytra with punctures appearing somewhat confused, due to numerous similar-sized punctures on interspaces; lateral convexities of declivity higher and more abrupt than in female, with sulcus deeper and narrower.

*Type locality*.—Amecameca, D. F., Mexico.

*Host*.—*Pinus* sp.

*Additional host*.—*Abies religiosa*.

*Type material*.—Holotype, allotype, and seven paratypes, U. S. N. M. No. 55987.

Holotype and two paratypes collected from unidentified 3-needle pine and allotype and four paratypes from *Abies religiosa*, at Amecameca, D. F., Mexico, by Donald DeLeon.

## PITYOPHTHORUS AUCTOR, new species

*Female*.—Dark reddish brown, 2.14–2.40 mm. long; holotype 2.40 mm. long, 2.61 times as long as wide; allied to *caelator* Blackman, but slightly stouter.

Frons shining, flattened on a semicircle extending from eye to eye, margined at the sides, very finely, moderately closely punctured at sides and above, with very fine, moderately long hairs, median area below shining, impunctate or nearly so, with a broad, rather low median carina. Eye rather short, with moderate facets, half divided by a wide, deep emargination. Antenna with club nearly one-half longer than funicle, very broad oval, widest through third segment, first suture weakly arcuate, second and third progressively more strongly arcuate; first suture strongly septate, second weakly septate, third not septate.

Pronotum about 1.03 times as long as wide, widest at base, posterior margin weakly arcuate, angles scarcely rounded; sides weakly, arcuately convergent from base to constriction, moderately rounded in front, the anterior margin with eight rather low serrations (lower than in *caelator*); anterior area with moderate asperities, in irregular, concentric rows; summit rather high, with a distinct, broad, transverse impression posterior to it; posterior area feebly shining to subopaque, surface reticulate, with moderately coarse, deep punctures; median line rather wide, smooth, impunctate; vestiture of fine, short, inconspicuous hairs on disk, those on sides slightly larger.

Elytra slightly wider than pronotum and 1.66 times as long, 1.64 times as long as wide; sides straight and subparallel on anterior two-thirds, moderately rounded behind (not so broadly as in *caelator*); surface feebly shining, reticulate, subglabrous, striae punctures moderate (slightly larger than in *caelator*), in nearly regular rows, only first striae impressed; interspaces slightly rugose, punctures nearly lacking except near declivity and near base. Declivity moderately sloping; sulci shallow, of moderate width; suture moderately elevated, with fine granules; punctures of first and second striae obsolescent; lateral elevations rather low, no higher than suture, with a row of small, distinct granules in third interspace; vestiture sparse and inconspicuous; entire declivity not so brightly shining as in *caelator*.

*Male*.—Similar in size and proportions; frons strongly transversely impressed below, with a strongly elevated median carina, extended to form a toothlike structure above epistomal margin; pronotal and elytral structure similar to that of female.

*Type locality*.—Near Perote, Veracruz, Mexico.

*Additional locality*.—Limon, Puebla, Mexico.

*Host*.—*Pinus teocote*.

*Additional host*.—*Pinus cembroides*.

*Type material*.—Holotype, allotype, and three paratypes, U.S.N.M. No. 55988.

The holotype, allotype, and three paratypes taken from *Pinus teocote* near Perote, Veracruz, by Donald DeLeon, February 9, 1936; two paratypes taken from *P. cembroides*, February 9, 1936, at Limon, Puebla, by DeLeon.

PITYOPHTHORUS HIDALGOENSIS, new species

PLATE 23, FIGURE 45

*Female*.—Piceous-brown, with posterior part of elytra reddish brown, 1.57–1.85 mm. long; holotype 1.80 mm. long, about 2.74 times as long as wide; allied to *hubbardi* Blackman, but stouter and usually smaller.

Frons flattened on a nearly circular area with impressed margin, extending from eye to eye, with central half feebly concave, finely and closely punctured, with numerous rather fine, yellowish hairs of moderate length, those at periphery longer and incurved. Eye moderately finely faceted, less than half divided by a rather narrow, angular emargination. Antenna (fig. 45) testaceous, with club oval, first and second sutures weakly arcuate, partially septate, third suture strongly arcuate, without septum.

Pronotum about 1.05 times as long as wide, widest near base, posterior margin nearly straight, posterior angles somewhat rounded, sides nearly straight (very feebly arcuate) and subparallel on posterior half, slightly constricted before middle, moderately broadly rounded in front; anterior margin with numerous rather broad, low serrations; anterior area with rather low asperities in irregular concentric rows; summit moderately high, at center of disk, distinctly, broadly impressed behind it; posterior area with small, rather deep punctures; median line not elevated, rather wide (wider than in *hubbardi*); surface usually moderately shining.

Elytra slightly wider than pronotum, about 1.69 as long as wide; sides subparallel on anterior two-thirds, rather narrowly rounded behind; surface moderately shining, indistinctly reticulate; striae punctures rather close, of moderate size, in regular rows, only first striae impressed; interspaces nearly impunctate anteriorly on disk, subglabrous. Declivity rather sloping, brightly shining, suture normal, not granulate; sulcus rather shallow and narrow, punctures of first and second striae much reduced, obsolescent; lateral elevations not strong, with several obsolescent granules on third interspace; hairs scanty and rather short.

*Male*.—Similar to female in general habitus; frons transversely impressed above epistoma, transversely elevated (subcarinate) above, with faint median carina below, finely punctured, more sparsely than

in female and with hairs short, fine, and inconspicuous; declivity with nearly obsolete granules as in female.

This species is very closely allied to *hubbaridi*, and specimens readily run to that species in the key to Group VI but do not quite agree in several essential characters.

*Type locality*.—Jacala, Hidalgo, Mexico.

*Host*.—*Pinus lawsoni*.

*Type material*.—Holotype, allotype, and eight paratypes, U.S.N.M. No. 55989.

The holotype, allotype, and eight paratypes were collected from *Pinus lawsoni* at Jacala, Hidalgo, Mexico, by Donald DeLeon, January 18, 1936.

**PITYOPHTHORUS CRIBRATUS, new species**

*Female*.—Reddish brown, 2.0–2.57 mm. long; holotype 2.14 mm. long, 2.76 times as long as wide; with elytra deeply, closely, confusedly punctured.

Frons convex above, flattened below on less than a semicircle, not definitely margined; surface shining, finely, closely, rather roughly punctured, with moderately short, fine hairs. Eye rather short, moderately finely faceted, about one-third divided by a rather broad emargination. Antenna with club moderately broad oval, widest through second segment; septa of first two sutures subtransverse; third suture not septate, strongly arcuate, subparallel to and very near distal outline.

Pronotum 1.15 times as long as wide, widest near base; sides weakly, arcuately converging from base to constriction anterior to middle, front margin broadly rounded, armed with numerous low, broad serrations; anterior area with rather sparse, broad, low asperities, in incomplete, irregularly concentric rows; summit behind center, of moderate height, impressed at each side behind it; posterior area deeply, closely, coarsely punctured; median line rather narrow, impunctate, strongly elevated anteriorly; hairs short and inconspicuous on disk, slightly longer on sides, much longer and coarser at each side just behind lateral constrictions.

Elytra scarcely wider than pronotum and about 1.57 times as long, 1.72 times as long as wide, sides subparallel on anterior four-fifths, then strongly narrowed to the slightly elevated suture; surface brightly shining, punctures rather coarse and close, very deep, confused, with little indication of strial rows on disk, all of punctures bearing fine, rather short hairs; sides with strial rows irregular, with vestiture as on disk. Declivity rather sloping, broadly, rather shallowly sulcate at each side of the elevated suture, lateral convexity not strongly elevated, slightly lower than suture, both suture and convexity with a few small, obsolescent granules; entire declivity includ-



ing sulci shining, confusedly, cribrately punctured as on disk; hairs distinctly longer than on disk.

*Male*.—Similar to female but somewhat stouter; frons with an arcuate, transverse carina above, impressed below at each side of a median elevation, more coarsely and less closely punctured than in female and with shorter hairs.

*Type locality*.—Mexico, D. F.

*Host*.—Unknown.

*Type material*.—Holotype, allotype, and seven paratypes, U.S.N.M. No. 55990.

The holotype, allotype, and seven paratypes were taken from the bark of "crate wood" (species unknown) at the plant quarantine station at Nogales, Ariz., in two truck shipments originating at Mexico, D. F., April 3 and April 29, 1941.

**PITYOPHTHORUS CUSPIDATUS, new species**

*Female*.—Dark reddish brown, 1.7–2.2 mm. long; holotype 2.19 mm. long, 3.06 times as long as wide.

Frons flattened on a nearly circular area extending nearly from eye to eye, feebly concave in middle, with an indented margin at periphery, very finely and densely punctured, with fine hairs, long and incurved at outside, shorter and very fine elsewhere. Eye with moderate facets, nearly half divided by a deep, wide emargination. Antennal club rather broad oval, much longer than funicle, all three sutures arcuate, first two partly septate.

Pronotum considerably longer than wide, widest near base, posterior margin weakly arcuate, posterior angles scarcely rounded, sides nearly straight and subparallel on slightly more than posterior half, then feebly constricted, very broadly rounded in front; anterior margin with broad, low serrations; anterior area with nearly regular concentric rows of moderate asperities; summit moderately elevated, with posterior transverse impression rather weak; posterior area weakly shining, punctures moderate in size and spacing, interstices reticulate; median line moderately wide, scarcely elevated; hairs scanty and minute on disk, slightly larger but still small at sides.

Elytra scarcely wider than pronotum, about 1.98 times as long as wide; sides straight and subparallel on anterior two-thirds, then gradually narrowed, strongly acuminate at the suture; surface moderately shining, stria punctures deep, of moderate size, in nearly regular stria rows, first striae moderately impressed, others scarcely at all impressed; interspaces narrow, very feebly or not at all convex; scarcely rugulose, nearly impunctate on disk. Declivity rather deeply sulcate; suture narrow, wider behind, moderately strongly elevated, with moderately small but distinct granules; punctures of first and second striae

obsolete; lateral convexities higher than suture, very feebly granulate on third interspace; suture and lateral elevations with erect hairs of moderate length.

*Male*.—Slightly smaller and stouter than female (1.74 mm. long, about 2.88 times as long as wide); frons convex, transversely impressed below, transversely carinate above; elytra less acuminate behind, punctures somewhat coarser, stria rows less regular; with granules of lateral convexities of declivity slightly coarser and hairs more conspicuous.

*Type locality*.—Jacala, Hidalgo, Mexico.

*Host*.—*Pinus* sp., probably *lawsoni*.

*Type material*.—Holotype, allotype, and 12 paratypes, U.S.N.M. No. 55991.

The type material was taken from *Pinus* sp., tentatively identified as *P. lawsoni*, by Donald DeLeon, at Jacala, Hidalgo, Mexico, January 18, 1936.

The species is most closely allied with *Pityophthorus cacuminatus* Blandford among known Central American forms but differs especially in the different structure of the elytral declivity. Among American forms described from north of Mexico it is fairly close to *P. acutus* Blackman and *P. solers* Blackman, but is readily recognized as different from both of these.

#### PITYOPHTHORUS PEROTEL, new species

*Female*.—Reddish brown, 1.51–2.08 mm. long; holotype 1.84 mm. long, 2.77 times as long as wide; allied to *amoenus* Blanford but with declivital sulcus much shallower.

Frons flattened on more than a semicircle, occupying about four-fifths of diameter between eyes, with a slightly impressed margin, closely and finely punctured, with very fine, moderately long hairs, those at periphery slightly longer and incurved. Eye finely faceted, deeply and broadly emarginate. Antennal club broad oval, first two sutures weakly arcuate, partly septate, third suture strongly arcuate, not septate.

Pronotum about 1.12 times as long as wide, widest at base, posterior margin weakly arcuate, posterior angles rounded, sides feebly, arcuately convergent behind, scarcely constricted in front of middle, broadly rounded in front; anterior margin with numerous broad, low serrations; anterior area with numerous broad, low asperities in irregularly concentric rows; summit moderately elevated, with a weak, broad, transverse impression; posterior area moderately shining, with numerous rather small, rough punctures, many with minute granules, interstices somewhat reticulate; median line rather narrow, impunctate, not elevated; disk subglabrous.

Elytra slightly wider than pronotum, about 1.72 times as long as wide; sides nearly straight and subparallel on anterior three-fourths, then narrowed to the acuminate point, produced at sutural angles; surface feebly to moderately shining; strial punctures small, moderately shallow, in nearly regular strial rows, only first striae distinctly impressed; interspaces of moderate width, flat, distinctly rugulose, nearly impunctate except near declivity; disk nearly glabrous, sides with a few small hairs. Declivity with rather shallow sulci each side of the elevated, finely granulate suture; punctures of first and second striae obsolete; second interspace shining, impunctate; lateral convexities no higher than suture, with a few obsolescent granules in third interspace, hairs fine, erect, rather short.

*Male*.—No unmistakable male of this species was seen, but several specimens that may possibly be males have the frontal vestiture shorter and the declivital vestiture considerably longer than in the female *perotei*.

*Type locality*.—Perote, Veracruz, Mexico.

*Host*.—*Pinus teocote*.

*Type material*.—Holotype and 14 paratypes, U.S.N.M. No. 55992.

The type material was collected from *Pinus teocote* at Perote, Veracruz, New Mexico, by Donald DeLeon, February 9, 1936.

PITYOPHTHORUS SPADIX, new species

*Female*.—Dark reddish brown, 2.4–3.1 mm. long; holotype 2.80 mm. long, about 3.06 times as long as wide; allied to *confertus* Swaine.

Frons flattened on a nearly circular area extending about three-fourths of distance between eyes, with an indented peripheral margin; finely and densely punctured, with numerous moderately long, fine hairs, those at periphery longer and incurved. Eye moderately faceted, about half divided by a deep, rather wide emargination. Antennal club oval, much longer than funicle, widest through second segment; first two sutures weakly arcuate, partially septate, third suture strongly arcuate, with septum entirely lacking.

Pronotum about 1.12 times as long as wide, widest at posterior angles; posterior margin weakly arcuate, posterior angles rounded; sides nearly straight and feebly converging on posterior two-thirds, very feebly constricted in front of middle, very broadly rounded in front; anterior margin armed with 8 to 10 broad, low serrations; anterior area with irregular, concentric rows of broad, low asperities; summit moderate, with a distinct broad, transverse impression posterior to it; posterior area with deep, rather close, moderately coarse punctures, interstices reticulate; median line not wide, scarcely elevated behind, strongly elevated across transverse impression; disk weakly shining, appearing glabrous, sides with small, inconspicuous hairs.

Elytra wider than pronotum and 1.76 times as long, about 1.98 times as long as wide; sides nearly straight and subparallel on anterior three-fourths, then narrowed to the very strongly acuminate apex, with sutural angles produced; surface moderately shining, faintly alutaceous; stria punctures deep, coarse, and close, in nearly regular stria rows, first striae distinctly impressed, others not at all or very faintly impressed; interspaces rather narrow, with only a few punctures except near declivity; disk nearly glabrous, except in sutural interspaces; sides with a few small hairs. Declivity very deeply, rather broadly sulcate, with sulcus subopaque, suture moderately wide, strongly elevated, more strongly so behind, distinctly granulate and with rather long setae; punctures of first and second striae obsolete; lateral elevations rather strongly elevated, with a continuous row of strong granules in third interspace, forming summit of elevation at each side; finely punctured and with numerous small granules on lateral interspaces; with numerous rather long erect setae.

*Male*.—Slightly stouter (about 3.01 times as long as wide) and more coarsely and roughly punctured; frons transversely impressed below, with an elevated, arcuate, transverse carina above, more coarsely and roughly punctured than in female, with smaller inconspicuous hairs; elytral disk notably more coarsely punctured, with interspaces narrower and stria rows less regular; declivity with sulci deeper and both suture and lateral elevations slightly higher and with coarser granules.

*Type locality*.—Rio Frio, Puebla, Mexico.

*Host*.—*Pinus leiophylla*.

*Type material*.—Holotype, allotype, and five paratypes, U.S.N.M. No. 55993.

The type series was collected from *Pinus leiophylla*, near Rio Frio, Puebla, February 10, 1936, by Donald DeLeon.

PITYOPHTHORUS CORONARIUS, new species

*Female*.—Reddish brown, 1.5–1.88 mm. long; holotype 1.79 mm. long, 2.95 times as long as wide, with ends of elytra acuminate.

Frons flattened on more than a semicircle, extending nearly from eye to eye, with an indented peripheral margin; very finely and densely punctured, with very fine hairs of moderate length covering most of surface, and with a margin of coarser, longer, incurved hairs at sides and above. Eye with moderate facets, about one-fourth divided by a broad, shallow emargination. Antennal club rather broadly oval, much longer than funicle, first 2 sutures partly septate, weakly arcuate, third suture strongly arcuate, not septate.

Pronotum about 1.15 times as long as wide, widest near base, posterior margin weakly arcuate, posterior angles scarcely rounded, sides



nearly straight and subparallel on posterior half, then slightly narrowed, very feebly constricted in front of middle, very broadly rounded in front, with margin armed with 8 to 10 low, rather broad serrations; summit rather low, surface not strongly impressed behind it; anterior area with broad, low asperities, in rather irregular concentric rows; posterior area rather feebly shining, punctures small, not deep, with interstices reticulate; median line rather narrow, indefinite, not elevated, often slightly impressed.

Elytra slightly wider than pronotum and 1.68 times as long, 1.83 times as long as wide; sides straight and subparallel on anterior three-fourths, then arcuately narrowed to suture, which is extended to form an acumination; surface moderately shining; striae punctures of moderate size, not deep, in nearly regular rows, only the first striae row impressed; interspaces narrow, surface reticulate, rugulose, impunctate except near base and declivity, subglabrous except at sides. Declivity with suture slightly widened, distinctly elevated, with a few small, distinct granules and a few short, erect hairs; first and second striae with punctures obsolete, with intervening second interspace forming a rather narrow, moderately deep sulcus at each side, impunctate and feebly shining; lateral convexity slightly higher than suture, with a row of small granules in third interspace and a few lateral to third interspace; all declivity except sulci with moderately numerous, fine, erect, moderately long hairs.

*Male*.—Stouter than female, about 2.7 times as long as wide; frons convex above, transversely flattened below, surface shining, moderately finely and closely punctured; sculpture of pronotum and elytra slightly coarser than in female.

*Type locality*.—Jalisco, Mexico.

*Host*.—*Sambucus* sp.

*Type material*.—Holotype, allotype, and 65 paratypes, U.S.N.M. No. 55994.

The holotype, allotype, and 65 paratypes were taken at quarantine from the bark of *Sambucus* sp. and from bark of unknown crate wood, in shipments from Mexico.

**PITYOPHTHORUS DIMIDIATUS, new species**

*Female*.—Reddish brown, very small; holotype 1.22 mm. long, about 2.82 times as long as wide, elytra acuminate at apex.

Frons flattened on an approximate circle, occupying about three-fourths of distance between eyes, without an indented margin, very finely and densely punctured and densely clothed with very fine, moderately short hairs, not longer at periphery; with a distinct carinal tubercle in median line of epistoma. Eye finely faceted, less than half divided by a V-shaped emargination. Antennal club moderately broad

oval, much longer than funicle, first 2 sutures partly septate, nearly straight, third suture arcuate, not septate.

Pronotum about 1.17 times as long as wide, widest near base, posterior margin weakly arcuate, posterior angles rounded, sides nearly straight and subparallel, on posterior two-thirds, slightly constricted in front of middle, broadly rounded in front, with anterior margin armed with numerous small, sharp serrations; summit moderate, weakly impressed behind; anterior area with asperities fused to form 4 perfectly regular, concentric rows; posterior area subopaque, densely reticulate, with very fine, very shallow, sparse, rather indistinct punctures, median line not elevated, moderately narrow; disk apparently glabrous.

Elytra slightly wider than pronotum and 1.65 times as long, about 1.68 times as long as wide; sides subparallel on anterior two-thirds, then narrowed and extended into an acuminate apex; surface weakly shining; striae punctures not deep, close, fine, in nearly regular rows, only first row impressed; interspaces rather narrow, not convex, finely rugulose, impunctate on disk; appearing glabrous. Declivity somewhat sloping, suture elevated and widened posteriorly, with a few minute granules and fine, rather short, erect hairs; punctures of first striae obsolete, those of second obsolescent, second interspace forming a rather deep sulcus each side of suture, subshining, reticulate, impunctate; lateral elevations high, with a row of very small granules along their summits in third interspaces; sides of declivity finely punctured, with rather fine, short, erect hairs.

*Male*.—Slightly stouter, widest through pronotum, the sides of which are arcuate; frons transversely flattened below, arcuately elevated above, with punctures not so fine and close as in female, with a few short hairs; declivity with granules and hairs better developed than in female.

*Type locality*.—Mexico (taken at quarantine).

*Host*.—Unknown.

*Type material*.—Holotype, allotype, and one paratype, U.S.N.M. No. 55995.

**PITYOPHTHORUS ATTENUATUS, new species**

*Female*.—Reddish brown; holotype 1.62 mm. long, 3.23 times as long as wide, with elytra acuminate and pronotal asperities fused to form regular concentric ridges.

Frons flattened on an approximate semicircle, occupying three-fourths of distance between eyes, feebly concave at center, very finely and closely punctured, with fine hairs of moderate, nearly uniform length. Eye with moderate facets, one-third divided by a rather wide V-shaped emargination. Antennal club rather broad oval, considerably longer than funicle, sutures arcuate.

Pronotum about 1.2 times as long as wide, widest near base, posterior margin slightly arcuate, posterior angles rounded, sides nearly straight and subparallel on posterior two-thirds, weakly constricted in front of middle, broadly rounded in front, with margin armed with numerous serrations; summit elevated, distinctly, transversely impressed behind; anterior area with asperities fused to form four perfectly regular, concentric ridges (including front margin); posterior area shining, punctures small, shallow, moderately sparse, interstices reticulate; median line not elevated, moderately narrow; hairs scanty and small, minute on disk.

Elytra scarcely wider than pronotum and 1.75 times as long, 2.06 times as long as wide; widest through anterior third, sides nearly straight, subparallel on anterior three-fourths, acuminate behind, with sutures slightly extended; surface moderately shining, striae punctures deep, moderately fine, in regular striae rows, only first striae impressed; interspaces narrow, not convex, impunctate on disk except for a very few punctures near base and declivity; subglabrous. Declivity moderately, rather shallowly sulcate; suture rather narrow, strongly elevated; with small, distinct granules, and with a few fine, moderately short hairs; punctures of first and second striae entirely obsolete; sulcus at each side, impunctate, shining; lateral convexities little higher than suture, distinctly granulate in third interspace, finely, moderately closely punctured, with fine, moderately short hairs.

*Male*.—Not quite so slender as female, about 3.16 times as long as wide; frons broadly impressed below, with median tubercle on epistoma, transversely carinate above, surface shining, finely punctured, less closely than in female; elytral declivity with sulci slightly deeper.

*Type locality*.—Mexico.

*Host*.—Unknown.

*Type material*.—Holotype, allotype, and 48 paratypes, U.S.N.M. No. 55996.

Intercepted at quarantine from unidentified crate wood.

PITYOPHTHORUS COSTALIMAL, new species

PLATE 22, FIGURE 34

*Female*.—Reddish brown; 1.96 mm. long, 2.79 times as long as wide; allied to *fortis* Blackman and *virilis* Blackman but with declivital sulcus strongly punctured.

Frons flattened on more than a semicircle extending from eye to eye, brightly shining, moderately finely and closely punctured, with fine hairs from most of area, with longer, coarser, incurved, golden-yellow hairs from periphery. Eye of moderate size, rather coarsely faceted, nearly half divided by a V-shaped emargination. Antenna (fig. 34) with club 1.28 times as long as wide, 1.43 times as long as funicle; first

two sutures weakly arcuate, strongly, not completely septate; third suture more strongly arcuate, indicated by row of setae nearly parallel to distal outline.

Pronotum 1.24 times as long as wide, widest behind middle, posterior outline weakly arcuate, posterior angles rounded; sides nearly evenly arcuate from base to anterior, lateral constriction, very broadly rounded in front, anterior margin with broad serrations; anterior area with broad, rather low asperities in irregular concentric arrangement, with rather long, fine hairs; summit low, transverse impression very indistinct; posterior area shining, punctures rather fine, moderately spaced; median line impunctate, very feebly elevated; disk subglabrous; anterior area with hairs longer than usual.

Elytra as wide as pronotum and 1.29 times as long, 1.63 times as long as wide; sides subparallel on anterior three-fourths, then broadly rounded but with the suture slightly extended to form a subacuminate apex; surface shining, with coarse, deep, confused punctures, only first stria row impressed; punctures on sides less confused than on disk; hair scanty on anterior disk and sides. Declivity originating considerably behind middle, steep; suture elevated, rather narrow at summit but widened toward apex, with a few granules on posterior third; with a distinct sulcus at each side, involving first and second striae and intervening second interspace, strongly, deeply confusedly punctured; lateral elevations strong, higher than suture above, with several moderate granules; sides strongly punctured; with conspicuous, erect, rather numerous hairs.

*Male*.—Similar to female in habitus; frons shining, broadly transversely impressed below, convex above, with a rather weak, arcuate, transverse carina, punctures coarser, deeper, and not so close as in female, with a few moderate hairs; pronotal asperities slightly coarser than in female; elytral declivity with sulci deeper, lateral elevations higher, and bearing larger granules.

*Type locality*.—Brazil.

*Host*.—Undetermined wood.

*Type material*.—Holotype, allotype, and two paratypes, U.S.N.M. No. 56013.

The type series, consisting of three females and one male, were taken at quarantine, April 22, 1936, in a shipment from Brazil in the bark of undetermined wood.

PITYOPHTHORUS SHANNONI, new species

PLATE 22, FIGURE 36

*Female*.—Light reddish brown (probably somewhat immature); 1.73 mm. long, 3.10 times as long as wide; with apex of elytra rather weakly acuminate.



Frons very short and wide, less than half as long as wide, convex above, flattened below on less than semicircle, brightly shining, densely, minutely punctured below with very numerous, very fine, yellow hairs of moderate, nearly uniform length. Eye very large, coarsely faceted, nearly half divided by a sharp V-shaped emargination. Antenna (fig. 36) with club 1.25 times as long as wide, 1.35 times as long as funicle; first 2 sutures arcuate, with moderately developed, partial septum, third suture slightly more strongly arcuate, indicated by setae.

Pronotum 1.28 times as long as wide, widest behind, posterior outline weakly arcuate, finely, distinctly margined, posterior angles scarcely rounded; sides straight and subparallel on more than posterior half, feebly constricted in front of middle, very broadly rounded in front, with anterior margin bearing very wide, rather low serrations; anterior area with very broad, low asperities, arranged in nearly regular, concentric rows (but not fused at bases), hairs numerous and moderately short; summit moderate, slightly in front of middle, with transverse impression posterior to it shallow; posterior area subopaque, distinctly reticulate, finely, shallowly, not closely punctured; median line very narrow, slightly elevated; disk glabrous; sides slightly more shining, with a few hairs near lateral margin.

Elytra as wide as pronotum, 1.85 times as long as wide, 1.44 times as long as pronotum; sides nearly straight and feebly converging on anterior two-thirds, then more strongly, arcuately narrowed, and extended into a short acumination; surface moderately shining, finely, indistinctly reticulate; punctures deep, moderately coarse, close, in nearly regular rows, only first stria impressed; interspaces narrow, flat, with only a few punctures of same size as those of striae; with very few erect hairs on disk, longer and more numerous on sides. Declivity moderately steeply arched; suture moderately elevated near summit, strongly elevated at apex, with a few punctures and setae but no granules; first and second striae narrow, strongly impressed, punctures obsolescent, with intervening second interspace forming fundus of sulcus; lateral elevations much higher than suture, punctate, with 3 large granules in third interspace and a few much smaller granules lateral to it; all except second interspace with rather numerous yellow, erect setae.

*Male*.—Very similar to female in habitus; frons flattened below as in female, but with punctures much coarser and much less dense, with sparse, short hairs; declivital sulci with coarser punctures and lateral elevations higher.

*Type locality*.—Cano Saddle, Gatun Lake, Panama.

*Host*.—Unknown.

*Type material*.—Holotype, allotype, and one paratype, U.S.N.M. No. 56015.

The type series was collected by R. C. Shannon at Cano Saddle, Gatun Lake, Panama, May 3, 1923.

PITYOPHTHORUS ZETEKI, new species

PLATE 22, FIGURE 35

*Female*.—Reddish brown; 1.71 mm. long, 2.93 times as long as wide; with elytral apex acuminate and declivital interspaces setose.

Frons flattened from eye to eye on more than a semicircle, feebly shining, punctures very fine, moderately close, with fine, long, yellow hairs, longer and curved inward at periphery. Eye rather large, coarsely faceted, about one-third divided by emargination. Antenna (fig. 35) with club 1.24 times as long as wide, 1.44 times as long as funicle; first 2 sutures scarcely arcuate, with septa strong but incomplete; third suture strongly arcuate, indicated by row of setae.

Pronotum 1.23 times as long as wide, widest on posterior half, posterior outline weakly arcuate, margined, posterior angles rounded; sides straight and subparallel on posterior half, feebly narrowed at weak lateral constrictions, very broadly rounded in front, with anterior margin finely serrate; anterior area with small, low, weak asperities, in irregularly concentric arrangement, with rather short, fine hairs, inconspicuous except in profile; summit low, with posterior transverse impression broad and shallow; median line unmodified, with punctures as on rest of disk; sides shining; disk and sides apparently glabrous.

Elytra as wide as pronotum, 1.76 times as long as wide, 1.44 times as long as pronotum, sides nearly straight and subparallel for more than three-fourths of length, then strongly narrowed, with sutural region drawn out into a sharp acumination; surface brightly shining, with rather coarse, deep, very close punctures forming regular, impressed striae, first stria more deeply impressed; interspaces rather narrow, devoid of setae except near declivity; sides with punctures smaller, striae not entirely regular and not impressed except on posterior third. Declivity rather steeply arched; suture elevated throughout, strongly extended at apex, finely punctured and with moderately small granules; first stria strongly impressed, all striae strongly punctured, all interspaces punctured and all but second more or less granulate, with first and alternate interspaces more strongly granulate; lateral elevations not so high as suture; all interspaces bearing moderately short, stout, erect, yellowish setae.

*Male*.—Slightly shorter and stouter than female, 2.77 times as long as wide; frons convex, transversely impressed below, moderately coarsely punctured, with hairs sparse, short, and fine; elytral declivity more strongly sculptured, with much coarser granules, especially on third interspace; declivital hairs coarser than in female.

*Type locality*.—Trinidad River, Panama.

*Additional locality.*—Alhajuelo, Panama.

*Host.*—Unknown.

*Type material.*—Holotype, allotype, and four paratypes, U.S.N.M., No. 56014.

The type, allotype, and two paratypes were taken at Trinidad River, Panama, May 2 and 4, 1911, and June 9, 1912; one paratype was taken at Alhajuelo, Panama, April 5, 1911. All were collected by A. Busck.

Genus GNATHOTRICHUS Eichhoff

GNATHOTRICHUS DELEONI, new species

*Male.*—Light reddish brown; 3.23 mm. long, 3.32 times as long as wide; allied to *sulcatus* (LeConte) and *aciculatus* Blackman.

Frons convex above, somewhat flattened below, convergently aciculate, with very evident punctures among aciculations; slightly indefinitely elevated in median line below. Eye broad oval, moderately coarsely faceted, broadly, moderately emarginate on inner margin. Antenna lighter in color, with club 1.7 times as long as funicle, 1.28 times as long as wide, slightly widest through third segment, first and second sutures septate, strongly arcuate. Pregula normal.

Pronotum 1.2 times as long as wide; sides subparallel, feebly arcuate, broadly rounded in front, with front margin slightly extended, with broad, low serrations; anterior area dark reddish brown, with somewhat irregular, subconcentric rows of broad, low asperities; summit anterior to middle, scarcely elevated, with surface posterior to it scarcely flattened; posterior area yellowish brown, opaque, finely reticulate, with extremely minute, very indistinct punctures, glabrous; beaded marginal line imperfectly developed, or apparently absent. Anterior tibia with only two submarginal, socketed teeth.

Elytra scarcely wider than pronotum, twice as long as wide; sides subparallel, very feebly narrowed posteriorly, very narrowly rounded behind with posterior margins slightly extended; surface subopaque, finely reticulate, minutely rugulose; punctures very minute and very indistinct, not in entirely regular strial rows; disk and sides glabrous. Declivity sloping, not truly sulcate, but feebly, indefinitely impressed each side of suture, lateral elevations almost entirely lacking, with a few very faint indications of minute, obsolete granules; vestiture scanty, consisting of very fine, rather short hairs.

No female of this species has been seen.

*Type locality.*—Chalco, D. F., Mexico.

*Host.*—*Pinus leiophylla*.

*Type material.*—Holotype and three paratypes, U.S.N.M., No. 55997.

The holotype and three paratypes were taken from Chihuahua pine (*P. leiophylla*) at Chalco, D. F., Mexico, by Donald DeLeon, in whose honor the species is named.

**NOTE**

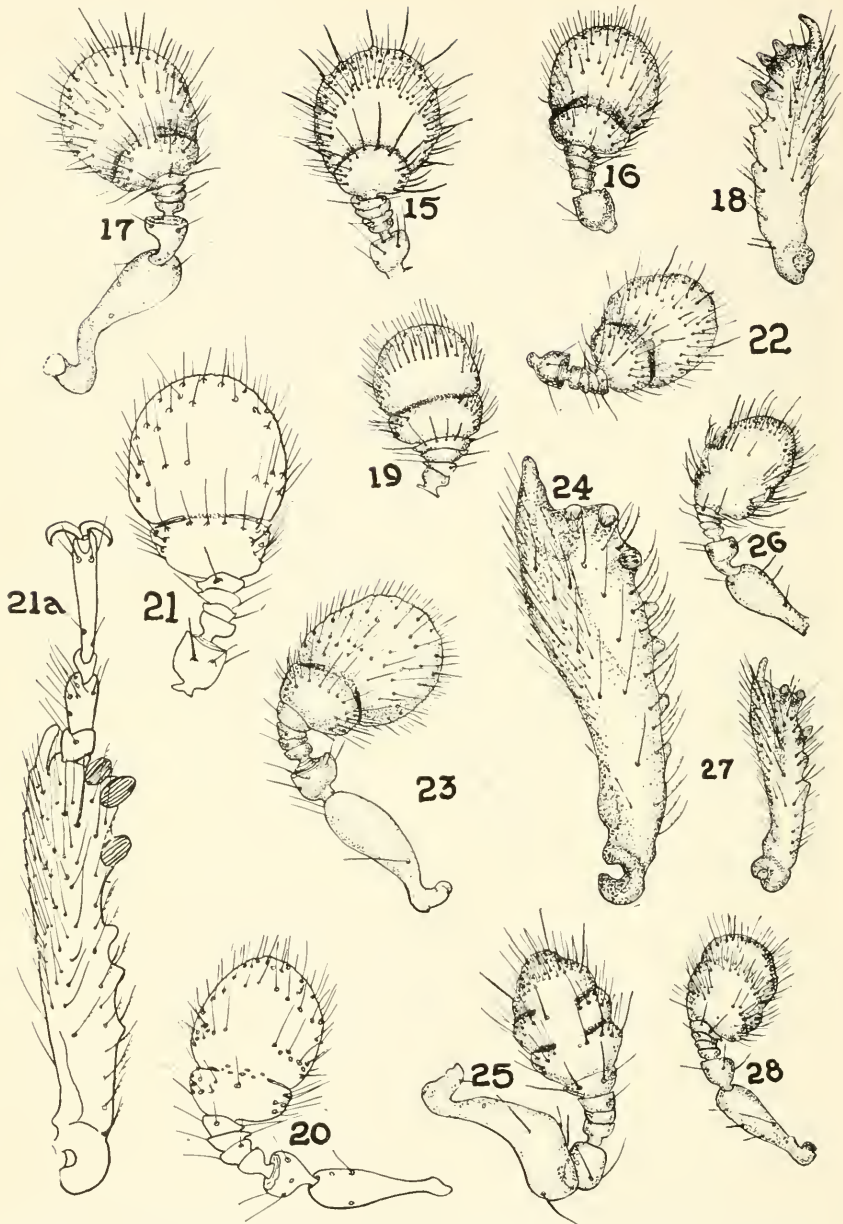
All the drawings for the plates that follow were made from camera-lucida outlines by Mrs. Claudelle L. Gaddis under the author's direction.





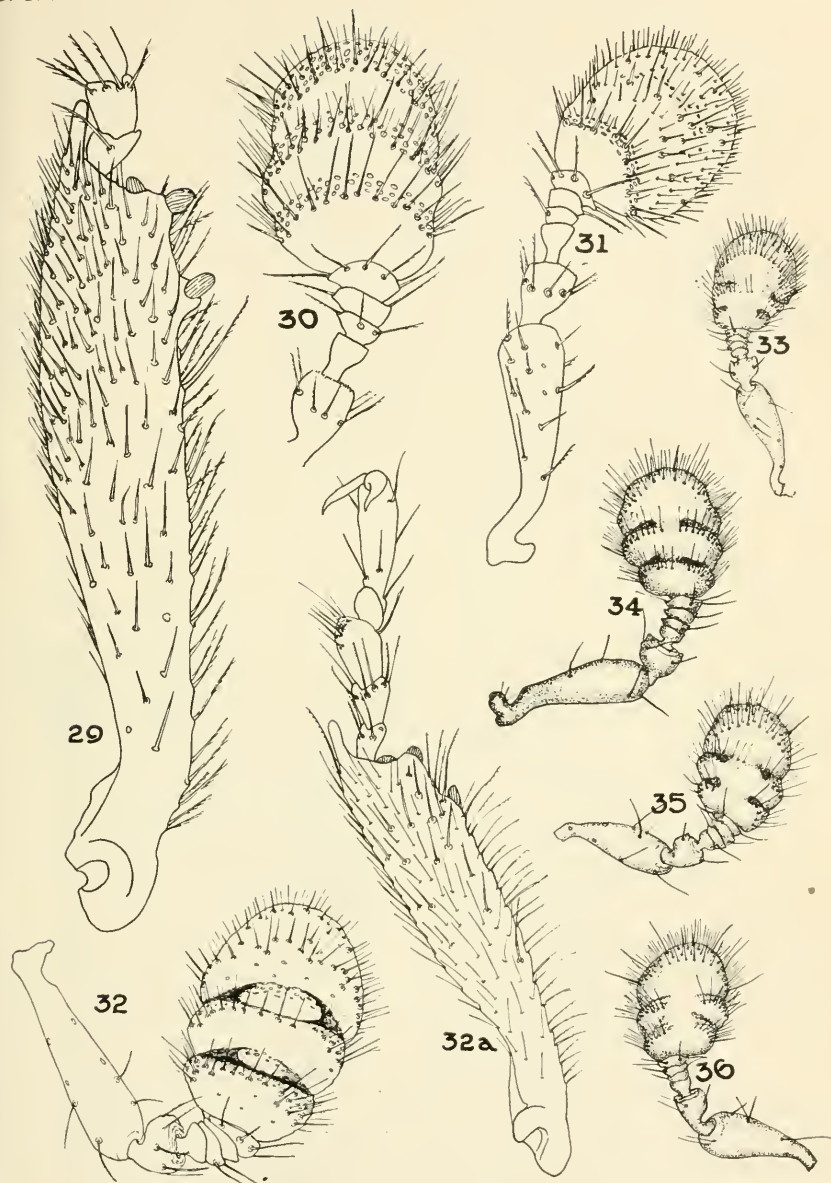
## SPECIES OF THAMNOPHTHORUS AND NEODRYOCOETES

- 1, *Thamnophthorus schwarzi*, antenna; 2, *T. schwarzi*, fore tibia and tarsus; 3, *Neodryocoetes hubbardi*, antenna; 4, *N. hubbardi*, fore tibia and tarsus; 5, *N. mucunae*, antenna; 6, *N. columbianus* Schedl. antenna; 7, *N. tabogae*, antenna; 8, *N. cubensis*, antenna; 9, *N. cubensis*, fore tibia; 10, *N. hostilis*, antenna; 11, *N. caribaeus*, antenna; 12, *N. guianae*, antenna; 13, *N. humilis*, antenna; 14, *N. hoodi*, antenna.



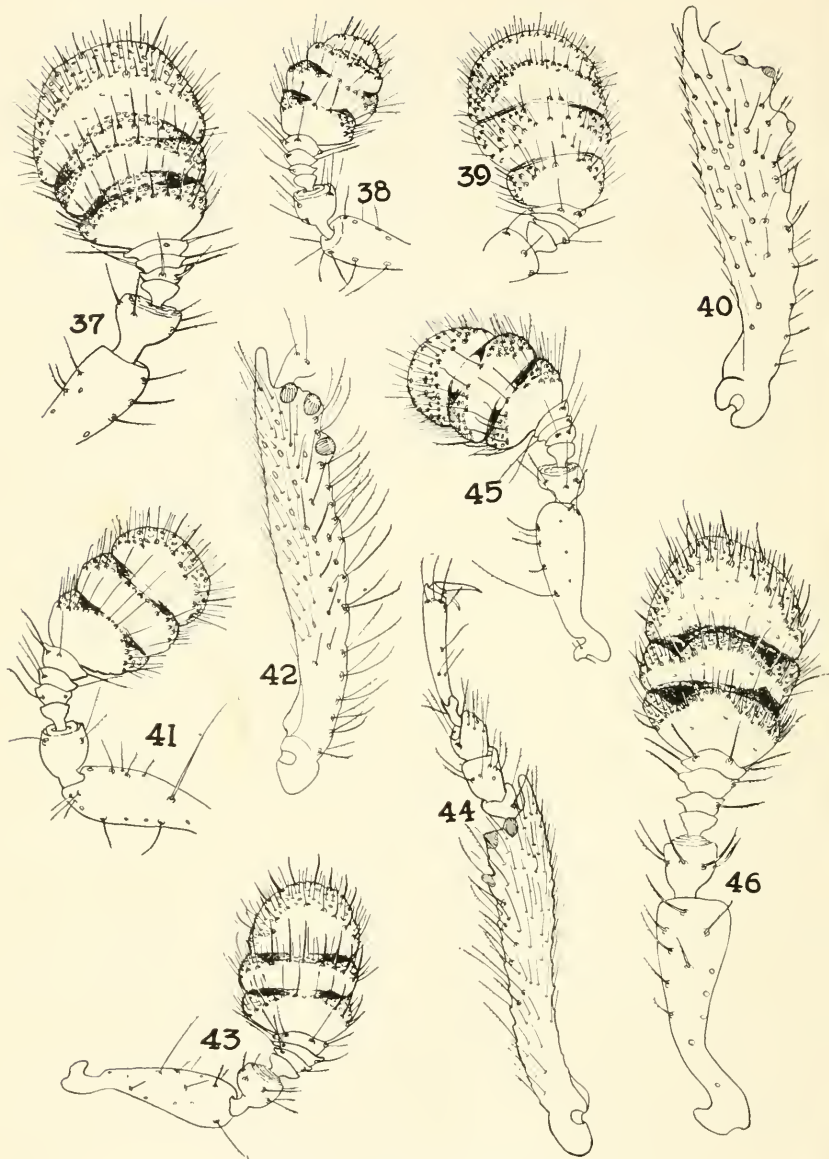
## SPECIES OF NEODRYOCOETES, SPERMOPHTHORUS, AND PITYOPHTHOROIDES

- 15, *Neodryocoetes buscki*, antenna; 16, *N. teres*, antenna; 17, *N. pallidus*, antenna; 18, *N. lenis*, fore tibia; 19, *N. insularis* (Eggers), antenna; 20, *N. schedli*, antenna; 21, *N. exquisitus*, antenna; 21a, *N. exquisitus*, fore tibia; 22, *N. lenis*, antenna; 23, *N. tenuis*, antenna; 24, *Spermophthorus caesalpiniae*, fore tibia; 25, *S. caesalpiniae*, antenna; 26, *Pityophthoroides pudens*, antenna; 27, *P. pudens*, fore tibia; 28, *P. robai*, antenna.



## SPECIES OF MYELOBORUS, PITYOBORUS, AND PITYOPHTHORUS

- 29, *Myeloborus deleoni*, fore tibia; 30, *M. deleoni*, antenna of male; 31, *M. deleoni*, antenna of female; 32, *Pityoborus tertius*, antenna; 32a, *P. tertius*, fore tibia; 33, *Pityophthorus regularis*, antenna; 34, *P. costalimai*, antenna; 35, *P. zeteki*, antenna; 36, *P. shannoni*, antenna.



## SPECIES OF PITYOPHTHORUS

- 37, *Pityophthorus leiophyllae*, antenna; 38, *P. sambuci*, antenna; 39, *P. alni*, antenna; 40, *P. alni*, fore tibia; 41, *P. subopacus*, antenna; 42, *P. subopacus*, fore tibia; 43, *P. ciliatus*, antenna; 44, *P. ciliatus*, fore tibia; 45, *P. hidalgoensis*, antenna; 46, *P. rudis*, antenna.