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## ABSTRACT

THE CHARACTERS and history of the subfamily Cholinae together with a comparison with the subfamily Hylobiinae are presented. A taxonomic revision is made of two of the 33 genera of the Cholinae (*Homalinotus* with 21 species, and *Ozopherus*, monotypic). These genera occur in Central and South America and the Antilles, where some of the species breed in and damage palms, especially the coconut palm. A strongly sclerotized basal sclerite or copulating armature is found in the aedeagus of all species. Five new species from South America are described: *Homalinotus alloides*, *praelongus*, *pectinis*, *kuscheli*, and *inopinatus*. *Homalinotus densatus* Desbrochers des Loges is transferred to *Cholus*; *H. cyanicollis* (Olivier) remains unidentified; *H. umbilicatus* Desbrochers des Loges from Guadeloupe is reinstated as a valid species. Five species are placed in synonymy. *Abebaeus* Kirsch is added to the synonymy of *Homalinotus*. Photographs of all species are given.


# INTRODUCTION

THE SUBFAMILY CHOLINAE, which is restricted to the New World in South America, Central America, Mexico, and the Antilles, contains some of the largest, most colorful, and fanciful weevils. Except for a few species less than 8 mm. in length, they are generally 20 mm., with some as long as 50 mm. Some species are black with white spots; some have transverse or vertical black and white or black and yellow bands or stripes; many have white lateral stripes from head to rear; some are solidly yellow or mottled gray. The surface may appear smooth and shining or be covered with black tubercles or granules. The white, gray, or yellow is the color of the setae or scales which may be scattered or overlapping.

The oddities of the subfamily include species in which the males display elongate, horny processes between the front or middle legs; upturned hooks or flanges on the front coxae; large dilated extensions of the base of the elytra that hang over the sides like aprons; semicircular emarginations or cutouts at the base of the elytra; strongly dentate and hairy undersides of the beak; some beaks longer than the elytra; the venter deeply excavate and hairy; bushy, hairy legs; bristly tufts of hair, shiny spines, or blunt bumps and excrescences on various parts of the upper surface; and a varied assortment of genitalic traits. The females are more conservative. In shape the Cholinae may be rhomboidal, elliptic, cylindrical, or conical.

The species of some of the genera (*Amerhinus*, *Homalinotus*, *Odontoderes*) breed in and damage various palms; species of *Astyage*, *Dionychus*, *Erethistes*, *Perideraeus*, and *Rhinastus* are found in bamboo stems; still other species breed in Cyperaceae, Gramineae, Marantaceae, Bromeliaceae, and Palmaceae.

Although the Cholinae and the Hylobiinae appear far removed from one another in the catalogues (Hylobiinae following the Cleoninae, and the Cholinae between the Gymnetrinae and the Cryptorhynchinae), they are not readily differentiated, and in both groups quite similar color patterns and tubercular protuberances are found. The Hylobiinae, a much larger subfamily than the Cholinae, is not restricted to the New World and is characterized chiefly by the contiguous front coxae, the obliquely descending rostral scrobes attaining the lower part of the eye, and in many cases the unidentate tibial apexes. A few species of the Cholinae have been seen with one or more of these characters, and the Hylobiinae, which are in need of revision, may vary in important traits. A distinct difference in the ecology of these subfamilies exists, as reported by Muñiz ("1968" [1970]), which may be of taxonomic significance. Thus the Hylobiinae live in dicotyledons, the larvae eating the pulp or seed of fleshy fruits, whereas the Cholinae, like the Rhynchophorinae, are in monocotyledons (palms, grasses, bromeliads, orchids), the larvae eating the internal tissues of the stems and the herbaceous or partly woody branches. The Hylobiinae breed in the fruits, the Cholinae in the branches or trunks. Unfortunately, the mode of life is known for only a few species.

The most recent catalogue (Blackwelder, 1947) listed 323 species of Cholinae in 33 genera, 14 of which are monotypic. Seventy-five species and five genera have already been reduced to synonymy by Kuschel (1955) in his paper on the Curculionidae. The majority of species (about 200) are at present in the genus *Cholus*; other genera with many species are *Dionychus*, *Erethistes*, *Homalinotus*, and *Odontoderes*. There are, however, many disparate species in *Cholus* which were at one time grouped in separate genera and which may have to be returned to them.

The only studies of the subfamily as a whole are those of Schoenherr (1836, 1844) and Lacordaire (1866). Lacordaire knew only a fraction (67) of presently known species, which he placed in 14 genera. He considered them a perfectly natural group but quite difficult to characterize sharply. The two best characters, he said, were the direction of the rostral scrobes and the structure of the extremity of the tibiae, combined with the nonexcavated prosternum. According to Lacordaire, the scrobes are entirely visible laterally and directed longitudinally (or linearly) toward the eye where they are widened. The tibiae are ciliate on their outer extremity (dorsal comb), usually both uncinate and mucronate, occasionally unarmed, or with only one hook.

After Lacordaire, Kirsch (1869), Pascoe ("1873" [1872]), Chevrolat (1878), and Desbrochers des Loges (1906, 1910) described many new species and genera. Champion (1903) described, illustrated and partially keyed 48 species of five genera from Mexico and Central America. Heller (1906) not only described new taxa, but presented a key to the 25 genera known to him. Costa Lima and Seabra (1955) revised *Rhinastus* and *Homalinotus*, and Vaurie (1973) *Rhinastus*.

The present paper deals with some of the largest but not the most colorful species of the Cholinae, *Homalinotus* (21 species) and *Ozopherus* (one species), and it is hoped that remaining genera will be studied soon. These genera were said to belong to the tribe Cholini by Kuschel (*in litt.*), and I give below a tentative key to the tribes, as suggested by him.

Tarsal segment 1 smaller than 2 and narrowly constricted at base; if size difficult to assess because of hairs, then tibial armature of uncus and mucro distinct (figs. 7, 8, 12–16), except in some small species of 8 mm. or less with scutellum hidden by overlapping of elytra . . . . . Cholini

Tarsal segment 1 as large as or larger than 2 usually not constricted at base; if size doubtful, then apex of tibiae either with uncus or mucro rudimentary and scarcely visible or uncus only present. . Rhinastini

Except for the monotypic genus *Adionychus* with its apparently rare, wingless (or short-winged) species, *grandicollis* (Kirsch), *Ozopherus* is the only monotypic genus of this tribe. There are at least a dozen monotypic genera described in the Rhinastini.

Approximately 1757 specimens of *Homalinotus* and 32 of *Ozopherus* have been examined, including the types of 16 of the 31 forms described. Five species of *Homalinotus* are placed in synonymy along with the eight already synonymized by previous authors. Five new species are described from South America. One species, *H. densatus* Desbrochers des Loges, should be placed elsewhere, probably in *Cholus*, (in the type the eye is round, not elongate and narrowed at one end). One species, *H. cyanicollis* (Olivier) has not been seen (see *Incertae sedis*).

I have omitted five species' names of Dejean (1802) that appear in the catalogues (Klima, 1936; Blackwelder, 1947), either as synonyms of existing species of *Homalinotus* or as earlier names but not supplanting existing names. I believe these names are all *nomina nuda* and should be dropped, as they were listed by Dejean without description. However, they are all cited as appearing on page 86, whereas the 1802 copy I have seen has only 11 pages.

## ACKNOWLEDGMENTS

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I am grateful to Dr. Margarita Ter-Minassian of the Zoologichesky Institut Akademia Nauk, Leningrad, for comparing my specimens with the type of *Homalinotus squamulosus* Gyllenhal, and to Senhor Luiz Paulo R. Cunha of Rio de Janeiro for his photographs of the types of *Homalinotus aragaoi*, *bolivianus*, and *matogrossensis* Costa Lima and Seabra, and of other species. I thank him also and the Instituto de Pesquizas e Experimentação Agropecuarias do Centro-Sul, Rio de Janeiro, for sending me the type of

*matogrossensis*. Dr. Rolf Hertel kindly sent the types of Kirsch from the museum in Dresden.

I wish to thank Drs. J. Proszynski and M. Mroczkowski for their kindness to me at the Institute of Zoology of the Polish Academy of Sciences in Warsaw where I was able to examine Kessel's large collection of South American Curculionidae. Mr. R. T. Thompson of the British Museum and Dr. R. A. Crowson of Glasgow tried unsuccessfully to find the type of *Curculio cyanicollis* Olivier.

Specimens were received from many sources: British Museum (Natural History), Mr. R. T. Thompson; Canadian National Collection, Ottawa, Dr. H. Howden; Kuschel Collection, Entomology Division, Department of Scientific and Industrial Research, Nelson, New Zealand; Museu de Zoologia, Universidade de São Paulo, Dr. H. Reichardt; Muséum National d'Histoire Naturelle, Paris, Miss H. Perrin; National Museum of Natural History, Smithsonian Institution, Washington, D.C., Miss Rose Ella Warner; Naturhistoriska Riksmuseum, Stockholm, Dr. I Persson; Staatliches Museum für Tierkunde, Dresden, Dr. R. Hertel; Universitetets Zoologiske Museum, Copenhagen, Drs. S. G. Larsson and S. L. Tuxen; Zoologische Staatssammlung, Munich, Dr. H. Freude.

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# SYSTEMATIC SECTION

## GENUS *HOMALINOTUS* SAHLBERG[1]

*Homalinotus* SAHLBERG, 1823, p. 43 (type species, by monotypy, *Homalinotus deplanatus* Sahlberg).

*Abebaeus* KIRSCH, 1869, p. 187 (type species not designated; species included: *A. dorsalis* Kirsch, *A. cristatus* Kirsch, new synonymy).

*Sphenus* DESBROCHERS DES LOGES, 1906, p. 356 and footnote, p. 368 (type species: *Curculio validus* Olivier, by subsequent designation of Costa Lima, 1917).

*Anotiscus* DESBROCHERS DES LOGES, 1906, p. 356 and footnote, p. 369 (type species: *Homalonotus humeralis* Gyllenhal, by subsequent designation of Costa Lima, 1917).

### DIAGNOSIS

Generally large, depressed, dark species differing from those of other genera (except *Odontoderes* and *Ozopherus*) in having flat, elongate eyes much narrower at lower end, and lower end extending below level of base of beak. *Odontoderes* differing further in having front coxae virtually touching, mandibles pincer-like, hind tibiae with outer edge bicarinate, and outer apical comb of hind tibiae shorter. *Ozopherus* differing further in having long spines on elytra, very long hind legs, front coxae almost touching, hind coxae very large, and second segment of abdomen short, scarcely longer than third.

[1]Often emended to *Homalonotus*.

### DESCRIPTION

Black or brownish weevils with readily visible yellow or white scales, when present, either scattered at random or forming definite pattern; other scales set among convex or flattened black tubercles or granules.

Length 11 to 50 mm. (average about 22 mm.). Mandibles in most cases with inner surface smooth, but in some species notched (figs. 2, 3, 5). Eye elongate, flat, surrounded by furrow, narrowed at lower end, almost twice longer than width of base of beak (in lateral view), dorsally widely separated except where stated otherwise. Beak not shorter than pronotum except for *squamulosus*. Labium flat, narrow (fig. 1). Antenna inserted at or in front of middle of beak; scape reaching almost to eye; funicle with segment 1 not shorter than 2; segment 2 longer than 3; segments 3 to 6 or 4 to 6 of about same length; terminal segment 7 usually pressed close to and appearing as part of club.

Pronotum wider than long; postocular lobe with no or very short vibrissae. Scutellum punctate. Elytra tuberculate. Prosternum in front distinctly emarginate. Coxae moderately to widely separated. Mesepimeron (fig. 6). Metasternum not shorter than diameter of middle coxa. Metepisternum flat. Abdomen with segment 2 at middle longer than at sides,

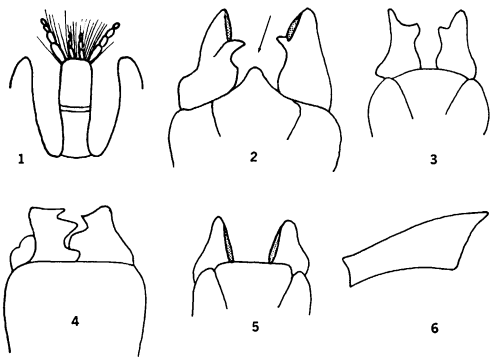



FIG. 1. Labium, *Homalinotus coriaceus*, showing prementum, postmentum, and palpi.

FIGS. 2–5. Mandibles of *Homalinotus*, dorsal view. 2. Notched type, *H. pectinis*, showing also triangular apex of beak. 3. Notched type, *H. dorsalis*. 4. Pincer type of some Cholinae. 5. Smooth type, *H. porosus*.

FIG. 6. Mesepimeron of *Homalinotus*.

almost as long as segment 1, and longer than segments 3 and 4 combined.

Femora with inner margin carinate about one-third from apex where furnished with sharp, backward-pointing tooth (tooth double in some *validus*); tooth often worn and on hind femur often lacking even within species. Tibiae uncinate and mucronate (at apex with two pincer-like spurs or hooks); front and middle tibiae with inner margin, opposite femoral tooth, in some species toothed, in others angulate or merely expanded slightly; hind tibia in outer apical third feebly emarginate and with outer apical fringe of dense setae (apical or dorsal comb) at least one-third length of tibia; inner apical comb less than one-half length of outer apical comb (figs. 14, 15), but of same length in *pectinis*; middle tibia with inner comb apparently absent. Tarsi with segment 1 elongate (triangular at apex, narrower at base), narrower than segments 2 or 3; segment 2 usually wider than long; segment 3 bilobed to near base. Claws free. Genitalia of male with basal sclerite and parameres present.

### Secondary Sexual Characters of Males

In five species (*coriaceus*, *fasciatus*, *praelongus*, *pectinis*, and *squamulosus*) the sexes are virtually indistinguishable externally, although in all species the antennae of males are inserted somewhat farther front on the beak than those of females. In *validus*, long hairs that are typical of males in other species (on the venter, humerus, and inner margins of the hind femora) are present in both sexes.

In some species, males have definite and readily visible characters which are as follows:

Beak ventrally in basal third angulate (fig.10): *dorsalis*; reticulately punctate: *platynotus*; coarsely reticulate: *validus*.

Pronotum much wider and more transverse than that of female, and squared off in front: *lherminieri*; less transverse than that of female, but squared off in front, and with sides subparallel: *umbilicatus*; wider than that of female and as wide as elytra: *dorsalis*, *lherminieri*.

Elytra with subapical callus carinate and tuberculate: *inermis*.

Elytra with widened or elevated intervals more exaggerated than those of female: *cristatus*, *validus*.

Elytra with apexes pointed or more pointed and longer than those of female: *deplanatus*, *validus*.

Elytra with humerus furnished with hairs or bristles: *alloides*, *humeralis*, *kuscheli*.

Prosternum in front of coxae with long, upturned, tuberculate process (fig. 9): *histrix*.

Mesosternum and metasternum (in some species also first abdominal segment and front coxae) with long hairs obscuring surface: *alloides*, *depressus*, *humeralis*, *kuscheli*, *nodipennis*, *platynotus*.

Hind femur with inner margin abundantly hairy: *humeralis*, *kuscheli*.

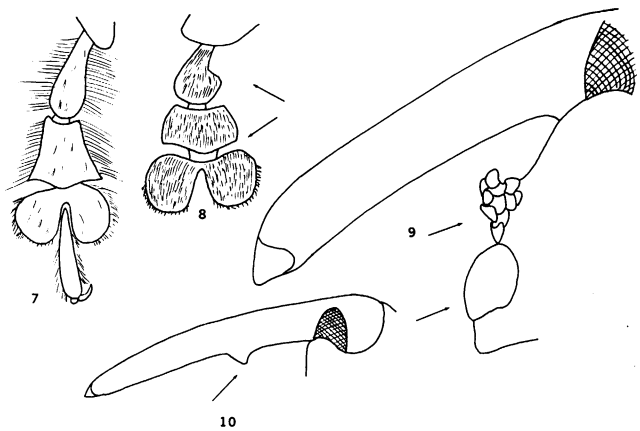
Front tarsus with segment 2 longer than wide and longer than segment 3; segments 1 and 2 with very long hairs (fig. 7): *inermis*, *lherminieri*, *umbilicatus*; segment 3 of tarsus exceptionally large: *histrix*.

All tarsi with very long hairs on all segments: *inermis*.

### Discussion and Synonymy

*Homalinotus* has been credited by the catalogues to Schoenherr, 1826, but Sahlberg's description of his new species (1823) with the first use of the generic name suffices as description of the genus.

In describing *Abebaeus*, Kirsch (1869) said that his genus might be considered as *Homalinotus* with a rather longer prosternal channel, but that *Abebaeus* differed by having longer front legs, the seventh antennal segment more separated from the club, and the elytra wider than the




FIGS. 7–10. *Homalinotus*. 7. *H. umbilicatus*, male, front tarsus; characteristic also of males of *H. lherminieri* and *inermis*. 8. *H. deplanatus* and majority of species, front tarsus. 9. *H. histrix*, male, prosternal projection. 10. *H. dorsalis*, male, subrostral angle.

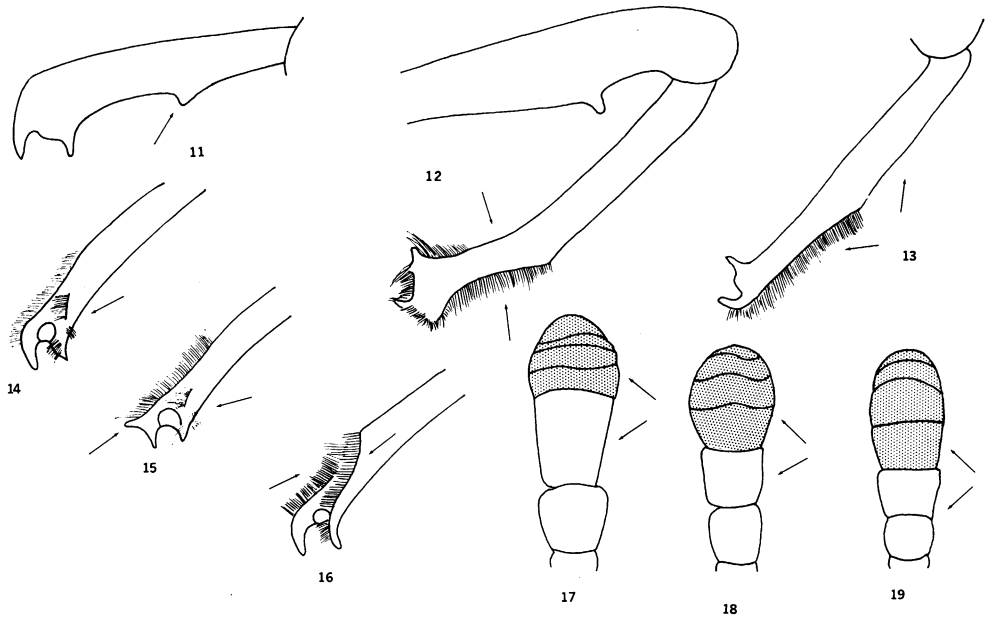
pronotum. All these characters, however, are present in other species and I consider *Abebaeus* a synonym of *Homalinotus*.

*Anotiscus* was first synonymized by Hustache (1930). Both it and *Sphenus* were synonymized with *Homalinotus* by Klima (1936) and were considered as subgenera by Costa Lima and Seabra (1955). The characters used are, in my opinion, either too relative or too variable for separation of the species in subgenera. Some of the characters given for *Anotiscus* are also inexact. In his Latin description of the genus, Desbrochers des Loges (1906) said that all the posterior tibiae were strongly arcuate, but in his description of *inermis* he said "tibiae subrectae." Actually the only species of his "genus" in which the posterior tibiae are arcuate is *humeralis*, for in the other species included (*inermis*, *umbilicatus*, and *densatus*), the tibiae are straight. Desbrochers des Loges also cited for *inermis*, "femora inermia," whereas it is only the hind femur that is unarmed, a condition found in a number of species.

## DISTRIBUTION AND ECOLOGY

It is surprising that so little has been published on the ecology of these large weevils. As far as I know, only five species (*coriaceus*, *deplanatus*, *nodipennis*, *porosus*, and *validus*) have been mentioned in the economic literature (Costa Lima, 1917, 1956, Bondar, 1940; Lepesme, 1947; and Araujo e Silva, 1968), all breeding in palms of various genera, but especially the coconut palm (*Cocos nucifera*). The life history of *Homalinotus coriaceus* was first studied and recorded by Bondar (*op. cit.*) A study on the reproductive organs of this species has appeared recently by Nascimento and Carvalho (1970). Both Lepesme (*op. cit.*) and Bondar (*op. cit.*) published photographs and drawings of the damage done in the trunks, inflorescences, or fruits of palms by larvae and adults. Labels on specimens in museums show that *depressus*, *histrix*, *lherminieri*, *pectinis*, and *validus* are also associated with palms, and that *dorsalis* was taken in large numbers in fruitfly traps in Panama. (See the species for details.) The 3000 species of palms of the world are distributed mostly in warm areas north and south of the equator, not north of latitude 40° or south of 37° (Lepesme, 1947, pp. 17–19). Only rarely, except for the ubiquitous coconut palm, are they found on the coast.

The range of the genus is chiefly South America, with three species occurring also in Central America, two (*pectinis* and *validus*) in Costa Rica, and one (*dorsalis*) in Panama. One species (*depressus*) has been taken on the island of Trinidad, and two (*lherminieri* and *umbilicatus*) are restricted to the Lesser Antilles. The main region where the majority of species is found is the Amazon River basin westward to the rivers of Peru, southwestward to Bolivia, and south to Paraguay and northeastern Argentina (Misiones and Chaco). Species are recorded from every




FIGS. 11–16. Tibiae of *Homalinotus*. 11. *H. coriaceus*, front tibia. 12,13. Left hind tibia, dorsal. 12. *H. humeralis*, arcuate tibia with short apical comb or fringe of setae. 13. *H. kuscheli*, straight tibia with long apical fringe of setae. 14–16. Ventral views. 14. *H. inopinatus*, outer apical comb and short inner comb. 15. *H. histrix*, blunt outer apical tooth and outer comb. 16. *H. pectinis*, outer and inner combs of equal length.

FIGS. 17–19. Antennae. 17. *H. praelongus*, showing round club and very long terminal segment of funicle. 18. *H. depressus*, with round club and short terminal segment. 19. *H. deplanatus*, with elongate club and short terminal segment.

country in South America except Uruguay (because of lack of collecting) and Chile (probably unsuitable). In Brazil they are found in almost every state (see *coriaceus* in Appendix); 15 species occur in Brazil, one of which (*platynotus*) is not recorded elsewhere. In addition, seven species occur in the Guianas, chiefly French Guiana (*coriaceus*, *depressus*, *histrix*, *humeralis*, *inermis*, *nodipennis*, and *validus*); four in Venezuela (*coriaceus*, *deplanatus*, *humeralis*, and *inermis*); five in Colombia (*depressus*, *dorsalis*, *nodipennis*, *pectinis*, and *validus*); and six in Ecuador (*coriaceus*, *histrix*, *inopinatus*, *nodipennis*, *pectinis*, and *praelongus*). Three new species described from one and two specimens will no doubt be found farther afield. (See table 1).

## SPECIES CHARACTERS

One of the characteristics of the genus, in addition to the somber color, is the wide, transverse pronotum which, in about half the species, is at least as wide as the elytra and almost as wide in the remainder. Other readily visible dorsal characters are the depressed form and the tubercular surface. In some species the disc of the pronotum or the elytra is not only flat, but distinctly concave, and even the "convex" species are not totally convex. The surface is covered with tubercles or granules which are flattened and dense in the more depressed species, and convex and sparser in the more convex species. Between and around the tubercles are yellowish, elongate scales that are in many cases worn off.

The scaly pattern when present is a good specific character, but often it is absent. The brownish coloration of about half the species is due to the dense, elongate, yellow or orange scales among the tubercles. In species where a definite scaly pattern is visible to the naked eye (*deplanatus*, *fasciatus*, *lherminieri*, *praelongus*, *nodipennis*, *histrix*) it is composed either of white scales over the yellow or of broader, overlapping yellow scales in dense clusters. With the exception of *deplanatus*, in which the pattern is visible

TABLE 1

GEOGRAPHICAL DISTRIBUTION OF THE SPECIES OF *Homalinotus* AND *Ozopherus*

(Countries are listed from north to south.)

| | Central America | | | South America | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Antilles | Costa Rica | Panama | French Guiana | Surinam | Guyana | Venezuela | Trinidad | Colombia | Ecuador | Peru | Bolivia | Paraguay | Brazil | Argentina |
| *Homalinotus* | | | | | | | | | | | | | | | |
| *alloides* | — | — | — | — | — | — | — | — | — | — | — | — | — | X | — |
| *coriaceus* | — | — | — | X | — | — | X | — | — | X | X | — | X | X | X |
| *cristatus* | — | — | — | — | — | — | — | — | — | — | X | — | — | X | — |
| *deplanatus* | — | — | — | — | — | — | X | — | — | — | — | — | X | X | X |
| *depressus* | — | — | — | X | X | X | — | X | X | — | — | X | — | X | — |
| *dorsalis* | — | — | X | — | — | — | — | — | X | — | — | — | — | — | — |
| *fasciatus* | — | — | — | — | — | — | — | — | — | — | — | X | X | X | X |
| *histrix* | — | — | — | X | — | X | — | — | — | X | X | — | — | X | — |
| *humeralis* | — | — | — | X | — | X | X | — | — | — | — | X | — | X | — |
| *inermis* | — | — | — | X | — | — | X | — | — | — | — | — | — | X | — |
| *inopinatus* | — | — | — | — | — | — | — | — | — | X | — | — | — | — | — |
| *kuscheli* | — | — | — | — | — | — | — | — | — | — | — | — | — | X | — |
| *lherminieri* | X | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| *nodipennis* | — | — | — | X | — | — | — | — | X | X | X | — | — | X | — |
| *pectinis* | — | X | — | — | — | — | — | — | X | X | — | — | — | — | — |
| *platynotus* | — | — | — | — | — | — | — | — | — | — | — | — | — | X | — |
| *porosus* | — | — | — | — | — | — | — | — | — | — | X | X | — | X | X |
| *praelongus* | — | — | — | — | — | — | — | — | — | X | X | X | — | X | — |
| *squamulosus* | — | — | — | — | — | — | — | — | — | — | — | X | X | — | — |
| *umbilicatus* | X | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| *validus* | — | X | — | X | X | X | — | — | X | — | X | X | — | X | — |
| Totals | 2 | 2 | 1 | 7 | 2 | 4 | 4 | 1 | 5 | 6 | 7 | 7 | 4 | 15 | 4 |
| *Ozopherus* | | | | | | | | | | | | | | | |
| *muricatus* | — | — | — | X | — | — | — | — | X | X | X | X | — | X | — |

in virtually all specimens examined (fig. 56), the scales are lacking in many individuals of scaly species, partly due to abrasion and partly to the greasing that obscures the scales. *Homalinotus porosus* appears to have no scales, but readily visible scales in addition to those that cause the brownish color have been seen, though rarely, in most other species.

Other vestiture consists of tufts of bristly hairs emerging from the sides of the pronotum (*depressus*), from the elytral humeri (*validus*), or long, dense hairs on the venter and hind femora (*validus*). In *alloides*, *humeralis*, and *kuscheli* the humeral tufts or femoral hairs are found in males only.

The beak does not have much significance in this genus, nor does it vary much among species. In the majority it is virtually straight, but rather more arcuate in *coriaceus*, *cristatus*, *humeralis*, *kuscheli*, and *validus*. The beak of *praelongus* is extremely long.

In the majority of species the seventh or terminal segment of the antennal funicle is appressed to and appears to be part of the club, but it is more separated in *humeralis*, *inermis*, *inopinatus*, *lherminieri*, *umbilicatus*, and *pectinis*. The club is short and almost round in *alloides*, *depressus*, *nodipennis*, *praelongus*, and *validus* but more elongate in remaining species (figs. 18, 19).

The mandibles, as in some other weevils (*Yuccaborus*, *Rhinostomus*, etc.) that feed on such monocotyledons as palms, are virtually smooth on their inner surface. Two blunt teeth may, however, be seen on the mandibles of a few species, but these teeth are quite different from the pincer-like, interlocking mandibles of the majority of weevils and of some genera of the Cholinae (figs. 2–5).

The eyes of a few species are larger than those of the remaining ones and thus approach one another more closely across the head (*humeralis*, *inermis*, *kuscheli*, *lherminieri*, *umbilicatus*, and *pectinis*). In other species the eyes are separated dorsally by the width of the base of the beak.

The shape, sculpture, and punctation of the pronotum are usually good diagnostic characters, varying sexually in some species. The pronotum, whether as wide as or narrower than the elytra may be flat, concave, or somewhat convex. In *alloides*, *coriaceus*, *deplanatus*, *histrix*, *platynotus*, *porosus*, *and validus* the tubercles are more distinct laterally and in many cases depressed or partially effaced on the disc where they may be replaced by punctures. In other species the pronotum is entirely tuberculate with convex tubercles. In eight species some or all the tubercles whether depressed or convex are umbilicate (punctate at center). Although the pronotum of *validus* and of males of *umbilicatus* appears to be longer than wide it is in reality, as in other species, wider than long. The apical border of the pronotum behind the eye (the postocular lobe) is only feebly advanced in about half the species, but it is never straight as in some genera of the Cholinae, and the extension of the border on the ventral side is distinctly emarginate.

The elytral sculpture is an important character. In all species the intervals, and generally the striae, of the elytra are tuberculate or granulate, although not markedly so in *porosus* in which the striae are characteristically pitted and the elytral surface opaque. The shiny tubercles of other species may be decidedly flattened and dense, obscuring the striae (*coriaceus*, *platynotus*, *praelongus*, *validus*, and *squamulosus*); or flat and rather sparse (*deplanatus*); or convex and dense (*fasciatus*, *histrix*, *lherminieri*, and *umbilicatus*); or convex and not so dense, separated by their diameter or more (the remaining 10 species). One or more intervals are feebly widened and/or feebly or strongly elevated in a number of species, in some species more noticeably in males. In *cristatus* and the majority of *nodipennis*, the elevation is readily visible without magnification; in *cristatus* the third interval in front of the apical declivity is abruptly elevated; in *nodipennis* not only the third, but also other discal intervals are elevated or encrusted with nodules. The third interval at the declivity is feebly elevated or widened in many individuals of *depressus* and *validus*. In the male of *inermis* the subapical callus itself is cristate and tuberculate, and in the male of *alloides* the fourth interval is elevated from the callus to near the base of the elytra. The subapical callus is distinctly prominent in about half the species, indistinct or obsolete in the remaining.

The prosternum, which is in many cases hidden by the deflexed beak, is never carinately channeled as in the Cryptorhynchinae, but in about half the species it is depressed between the coxae; it appears more depressed because of the contrast with the broad, tumid swellings in front of each coxa. The front border of the prosternum varies in the depth of the emargination.

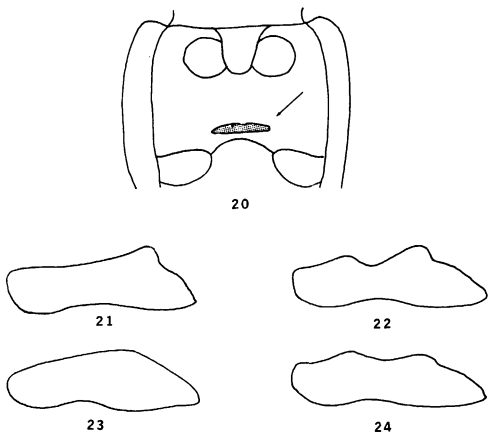



FIG. 20. Metasternal bar in front of hind coxae.
FIGS. 21–24. *Homalinotus nodipennis*, variations in outline of elytral profile.

At the base of the metasternum of *alloides*, *cristatus*, *depressus*, and *nodipennis* is a transverse, shining, black bar or carina not present in other species (fig. 20). In my classification *cristatus* is far removed from the three other species, and I am not too sure of the correct position of *alloides*.

The intercoxal space varies in width among species, but it is a relative and not very useful character. In addition the front intercoxal space, like the prosternum, is difficult to see in most specimens.

A number of differences among species are found in the shape, vestiture, length, and dentation of the femora and tibiae. A spine or tooth of varying size is present on the inner edge of the femora of all species, but the hind femur is unarmed in many individuals of some species and in all 15 individuals examined of *inermis*. I do not know whether the spine is actually lacking on the hind femur or whether it becomes worn. To settle this question newly emerged individuals are needed. In *validus* the front and middle femora are bidentate, but the smaller of the two teeth is not visible in all specimens. The apex of the hind femur usually extends at least to the apex of the elytra, but the femur is much shorter than that in *alloides*, *coriaceus*, *fasciatus*, *histrix*, *platynotus*, *validus*, and *squamulosus*. The femora vary in shape from linear to slightly clavate.

The tooth on the inner edge of the front and middle tibiae, (fig. 11) when present, is about opposite the femoral tooth. It occurs at least on the front tibia in about half the species and is reduced to a feeble angle or sinuation or is only present at random in the remaining species. There is generally no angulation on the hind tibia, but there is a feeble sinuation in some specimens of *deplanatus*, *histrix*, and *pectinis*. The outer edge of the middle and hind tibiae from which the apical comb projects is usually feebly emarginate. The comb of the hind tibia is at least one-third the length of the outer edge of the tibia, but somewhat less in *cristatus*, *inermis*, and *pectinis*.

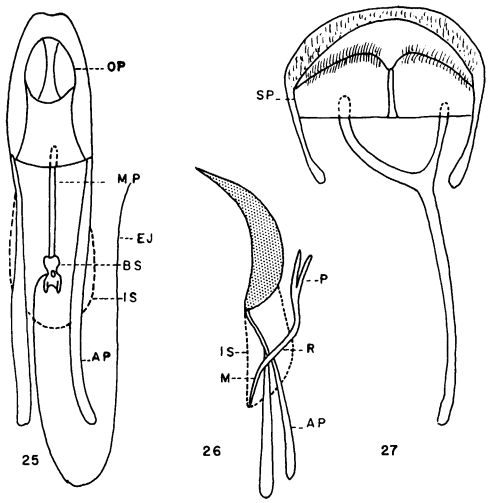
The tarsi (figs. 7, 8) are rather similar in all species except in males of *lherminieri*, *umbilicatus*, and *inermis*. The second segment of the front tarsus of *lherminieri* and *umbilicatus* and of all tarsi of *inermis*, instead of being wider than long, is longer than wide, and is furnished laterally with long, wispy hairs that are longer than the width of the tarsal segments. The first segment is also longer than that of other species. The dorsal surface of the tarsi of the two species from the Lesser Antilles (*lherminieri* and *umbilicatus*) is glabrous and sparsely hairy, whereas the surface in other species is hidden by a covering of dense, reclining hairs in addition to the sparse, semierect hairs present in the Antillean species.

## GENITALIA

The median lobe or aedeagus or phallus is a strongly sclerotized, arcuate tube with a pair of feebly sclerotized basal apodemes or apophyses (figs. 99–119). The lobe in dorsal view (shown in fig. 25 with its apex facing forward) is much foreshortened because of its curvature. In lateral view (fig.26) the lobe is encircled by the sclerotized ring of the tegmen or phallobase which rides astride the base of the lobe (called the cavalier type of genitalia by Grassé (1949).

The tegmen, viewed dorsally (figs. 120–132), is composed of the ring, the manubrium or handle, and the membranous parameres or lateral lobes. The parts of the tegmen vary in their proportions or length among the species, but too much reliance cannot be given to the exactitude of the illustrations because the parts, once extracted, have a tendency to curl, and the ring portion, of course, becomes distorted in a flat drawing.

Near the base of the median lobe within the internal sac (shown by dotted line in figs. 25, 26) is a strongly sclerotized copulating piece or armature, called the basal sclerite by Kuschel




FIGS. 25–27. Genitalia of male *Homalinotus*. 25. *H. coriaceus*, median lobe, dorsal view, with basal sclerite *in situ*. 26. *H. histrix*, median lobe, lateral view, with tegmen *in situ*. 27. *H. coriaceus*, sternite 8 and Y-shaped sternite 9, ventral view.

*Abbreviations*: AP, apodeme; BS, basal sclerite; EJ, ejaculatory duct; IS, internal sac; M, manubrium; MP, median projection; OP, orificial plates; P, parameres; R, ring of tegmen; SP, sternite plates.

(1964), which is formed of a variously shaped base and a sclerotized, awl-shaped, median projection of varying length, shape, and sinuosity, projecting forward toward the ostium or orifice of the lobe. Inserted in the basal sclerite is a long, membranous ejaculatory duct which is shown for *coriaceus* in figures 25 and 66, but is omitted from the remaining drawings. The base of this sclerite in profile appears globular, hammerhead-shaped, or irregularly elongate. Some pairs or groups of species have similar basal sclerites, but the shape of the basal part is not necessarily constant within a species (see figs. 74, 75 of *deplanatus*; 85, 86 of *cristatus*) or it can differ because of the preparation for the illustration.

The shape of the apex of the median lobe (figs. 54–65) differs among some species, but allowance must be made for the extreme curvature of the lobe which may cause the outline of the apex to appear different depending on how far backward the lobe is tipped. In general, the apex is round or truncate, with or without a feeble median emargination, and with narrow or wide apical borders; in *dorsalis* and *porosus* it is subacuminate; in *fasciatus* and *histrix* acuminate; and in *humeralis* and *kuscheli* distinctly emarginate medially. The apodemes of the median lobe are longer than the lobe and in some species almost twice as long (figs. 99–119).

The shape of sternite 8 and of the Y-shaped, sclerotized sternite 9 (fig. 27), (the urosternite, or spiculum gastrale) are about similar in all species.

The female genitalia are composed of two feebly sclerotized, rather flattened hemisternites or coxites, each with a short, cylindrical, apical stylus. In *platynotus* and *praelongus*, and perhaps in other species, darker, more heavily sclerotized areas are present (figs. 92, 94). Sternite 8 or spiculum ventrale is broadly Y-shaped and differs slightly among the species examined for it (figs. 91, 96). Tergite 8 (figs. 93, 95) is dentate apically and differs in shape among some species. The spermatheca (figs. 97, 98) is attached to a long cylinder which may be Kuschel's "spermathecal gland" (1964, p. 427, fig. 12). For the females, only *cristatus*, *platynotus*, and *praelongus* are illustrated, although the genitalia of at least 10 additional species were examined.

## GROUPING OF SPECIES

I have arranged the species according to the checklist below without dividing them into definite species-groups. They are arranged so that if they do not agree in the shape of the basal sclerite of the aedeagus and the great length of its median projection, as do the first six species (figs. 66–71), then they agree in the kind of elytral sculpture (dense, flattened tubercles), the widely spaced eyes, and the dentate tibiae, as in the first 12 species. Among these 12, some are placed together because of their wide pronotum (as wide as the elytra) or their depressed dorsum. In the last nine species the eyes are closer dorsally (except in *dorsalis*), the elytral tubercles are sparser, more convex, the pronotum (except for the males of *dorsalis* and *lherminieri*) is narrower than the elytra and the tibial tooth is obsolete. In the last eight species (*humeralis* through *umbilicatus*) the median projection of the basal sclerite is much shorter (figs. 81–90), but it is also quite short in *validus*, *alloides*, *deplanatus*, and *porosus* (figs. 72–76).

## CHECKLIST OF SPECIES OF *Homalinotus* SAHLBERG, WITH SYNONYMS

1. *coriaceus* Gyllenhal
2. *squamulosus* Gyllenhal

3. *platynotus* (Germar)
   *colosseus* Perty
4. *praelongus*, new species
5. *depressus* (Linnaeus)
   *indus* (Degeer)
   *jamaicensis* (Fabricius)
   *complanatus* Chevrolat
6. *nodipennis* Chevrolat
   *depressus gibbipennis* Voss, new synonymy
7. *alloides*, new species
8. *validus* (Olivier)
   *calcaratus* (Olivier)
   *distinctus* Chevrolat
   *perplexus* (Desbrochers des Loges)
9. *deplanatus* Sahlberg
   *circumdatus* (Germar)
10. *porosus* Gyllenhal
    *conspergatus* Fahraeus, new synonymy
11. *fasciatus* Desbrochers des Loges
    *bolivianus* Costa Lima and Seabra, new synonymy
    *matogrossensis* Costa Lima and Seabra, new synonymy
12. *histrix* (Olivier)
    *aragaoi* Costa Lima and Seabra, new synonymy
13. *pectinis*, new species
14. *humeralis* Gyllenhal
15. *kuscheli*, new species
16. *inopinatus*, new species
17. *dorsalis* (Kirsch)
18. *cristatus* (Kirsch)
19. *inermis* (Desbrochers des Loges)
20. *lherminieri* Chevrolat
21. *umbilicatus* (Desbrochers des Loges)

## KEY TO THE SPECIES OF HOMALINOTUS[1]

1. Pronotum and elytra laterally with distinct, continuous, wide border or stripe of yellow scales among black tubercles, scales generally extending over apical fourth of elytra (fig. 36) . . . . . *deplanatus*
   Pronotum and elytra with scales, if present, not in continuous lateral stripe . . . . . 2
2. Beak ventrally about one-third from base angulate (fig. 10) . . . . . male of *dorsalis*
   Beak ventrally smooth . . . . . 3
3. Species from Lesser Antilles (not Trinidad); tarsi with dorsal surface shining and with only sparse, semierect hairs . . . . . 4
   Species from Trinidad or elsewhere than Antilles; tarsi with dorsal surface dull and with dense, reclining hairs covering surface, as well as sparse, semierect hairs . . . . . 5
4. Male with pronotum transverse, at widest part as wide as elytra (fig. 50), and more than one-third wider than long; both sexes with apex of mesosternal process emarginate or slightly sinuate, but when doubtful, then front of metasternum between coxae concave; front femur in middle third virtually linear; Guadeloupe, Dominica . . . . *lherminieri*
   Male with pronotum almost quadrate, narrower than elytra (fig. 51), and only slightly wider than long; both sexes with apex of mesosternal process truncate and front of metasternum between coxae tumid; front femur in middle third rather clavate; Guadeloupe, St. Vincent, and Grenada . . . . *umbilicatus*
5. Elytra with subapical callus on inner side elevated in distinct, short crest or carina composed of two rows of eight or 10 tubercles; front tarsus as long as tibia, with very long lateral hairs, and segment 2 longer than 3 (fig. 7) . . . . . male of *inermis*
   Elytra with subapical callus not crested or carinate, but can be tumid; front tarsus normal in length and pubescence, with segment 2 not longer than 3 . . . . . 6
6. Species with combination of: metasternum and middle and hind femora with long, reddish gold hairs; pronotum and elytra depressed and with flattish tubercles; pronotum subquadrate; beak arcuate; elytra usually with apexes separately acuminate; . . . . *validus*
   Species not agreeing with all above characters . . . . . 7
7. Elytra at humerus with tuft of yellowish hairs or bristles usually readily visible to naked eye (fig. 42) . . . . . 8
   Elytra at humerus without hairy tuft . . . .10
8. Metasternum at base in front of first abdominal segment with transverse, shiny, black bar or carina (fig. 20); elytra in basal half with intervals 4 and 5 sinuate and incurved . . . . . *alloides*
   Metasternum without transverse bar; elytra with intervals straight . . . . . 9
9. Elytra with interval 5 (just within humerus) elevated at base; humeral tuft of hairs twice length of scutellum; hind tibia incurved (fig. 12) . . . . . male of *humeralis*
   Elytra smooth, no intervals elevated; humeral tuft of hairs no longer than length of scutellum; hind tibia straight (fig. 13) . . . . . male of *kuscheli*
10. Prosternum in front of each coxa with acute, tuberculate, upward-curving projection (fig. 9) extending beyond curve of coxa . . . . . male of *histrix*
    Prosternum in front of each coxa feebly or strongly tumid . . . . . .11
11. Elytra in fresh condition with four large spots of yellow scales (two on humeri and two near

[1]Where the male has a readily recognizable character, the species has been keyed out twice, once for each sex.

subapical calluses); if spots lacking, then middle and hind tibiae with outer apex bluntly dentate (best viewed from behind or below apical comb of hairs) (fig. 15). . . . . female of *histrix*

Elytra without four large spots of scales; middle and hind tibiae with outer apex rounded off, not dentate . . . . . .12

12. Antennal funicle with terminal segment 7 as long as, or longer than, entire club, which is almost round (fig. 17). . . . . *praelongus*

Antennal funicle with terminal segment 7 shorter than club (figs. 18, 19) . . . . . .13

13. Elytra opaque, depressed, without scales, with striae coarsely foveate or pitted; surface surrounding foveae irregular, but rarely truly tuberculate . . . . . *porosus*

Elytra depressed or not, scales usually visible; striae either not foveate, or if some foveae present, then surface surrounding foveae with flattened or convex tubercles. . . . . .14

14. Metasternum at base in front of first abdominal segment with transverse shiny, black bar or carina (fig. 20) . . . . . .15

Metasternum without transverse black carina, but can have vertical impression . . . . .17

15. Pronotum distinctly narrower than elytra; disc convex; sides subparallel from base to middle, thence convergent to apex; abdominal segments 1 and 2 not, or scarcely, tuberculate . . . . . *cristatus*

Pronotum at widest part as wide as, or wider than, elytra; disc concave, even if shallowly; sides widening from base to middle where often obtusely angulate, thence convergent to apex; abdominal segments 1 and 2 tuberculate . . . . . .16

16. Pronotum at middle of sides with tuft of long, curling, orange hairs; sides strongly angulate, bulbous; scutellum usually somewhat elevated . . . . . *depressus*

Pronotum without tuft of hairs laterally; sides angulate or merely arcuate; scutellum usually flat . . . . . *nodipennis*

17. Elytra with tubercles flattened, dense (virtually touching on intervals); subapical callus rather obsolete . . . . . .18

Elytra with tubercles convex, sparser (separated by at least their diameters); subapical callus distinct . . . . . .21

18. Elytra with majority of tubercles umbilicate (each with tiny puncture); pronotum medially at base with distinct longitudinal depression . . . . . *coriaceus*

Elytra with tubercles solid, not punctate; pronotum medially at base usually with only faint depression or no depression . . . . . .19

19. Pronotum with disc flattened or concave, and only a few, if any, tubercles punctate; elytra with apexes usually separately angulate or dentate; antennal funicle with segment 2 almost as long as 1 . . . . . *platynotus*

Pronotum with disc somewhat convex and virtually all tubercles punctate; elytra with apexes conjointly rounded; antennal funicle with segment 2 one-half length of segment 1 . . . . . .20

20. Smaller (16 to 24 mm.); elytral striae with deep, large, well-separated foveae; elytral intervals scarcely wider than striae and with only one or two rows of tubercles; surface of elytra usually with pattern of overlapping yellow scales forming two or three indistinct fasciae and scattered spots (fig. 38) . . . . *fasciatus*

Larger (24 to 35 mm.); elytral striae with shallow, inconspicuous, scarcely visible punctures; elytral intervals much wider than striae and with three or four rows of tubercles; surface without pattern, but with narrow, tiny scales among tubercles . . . . . *squamulosus*

21. Hind tibia with inner margin incurved (fig. 12); pronotum in basal half with median streak of dense whitish scales visible to naked eye (scales can be worn off) . female of *humeralis*

Hind tibia with inner margin straight or with feeble median angulation or sinuation; pronotum without median streak of whitish scales (can have scattered clusters of scales) . . . . . .22

22. Hind tibia with inner apical comb entire, as long as outer comb (fig. 16) . . . . . *pectinis*

Hind tibia with inner apical comb incomplete, much shorter than outer comb (fig. 14) . . 23

23. Scutellum covered with long, dense, coarse whitish scales visible to naked eye (present in 43 of 46 specimens); beak virtually straight; mesosternum between coxae usually forming ledge . . . . . female of *dorsalis*

Scutellum with short, sparse, fine hairs visible only under magnification, if at all; beak feebly or strongly arcuate; mesosternum scarcely convex . . . . . .24

24. Hind tibia with outer apical comb equal in length to almost one-half length of outer margin of tibia (fig. 13); hind femur on inner margin dentate . . . . . female of *kuscheli*

Hind tibia with outer apical comb shorter, about one-third length of outer margin; hind femur not dentate or very rarely . . . . .25

25. Antenna inserted only slightly in front of middle of beak; elytra with tubercles rather dense, separated by their diameter; pronotum with apex constricted; disc medially with tubercles flatter and denser than laterally . . . . . female of *inermis*

Antenna inserted in apical third; elytra with

tubercles sparse and widely separated longitudinally by two or three times their diameter; pronotum with apex not constricted; disc with tubercles medially same as those laterally . . . . . *inopinatus*

*Homalinotus coriaceus* Gyllenhal

Figures 11, 25, 27, 28, 66, 121

*Homalonotus coriaceus* GYLLENHAL, 1836, p. 588 (Brazil; type in Naturhistoriska Riksmuseum, Stockholm, examined).

DIAGNOSIS: Differing from other species by having umbilicate (punctate) tubercles on elytra as well as on pronotum, and deep, longitudinal depression at base of pronotum. Sexes externally alike.

RANGE: Abundant throughout Brazil and French Guiana, occurring also in Paraguay and northern Argentina; in the west in Ecuador and Peru, and in the north in Venezuela. (For data on the 469 specimens examined, see Appendix.)

DESCRIPTION: Length 20 to 50 mm. Black with or without scattered whitish scales or patches of scales. Eyes widely separated. Beak stout, arcuate toward apex, about same length as pronotum, dorsally widened at apex where about same width as apex of front femur, punctate finely, densely, in some specimens sparsely. Antenna with scape inserted at about middle of beak; funicle with segment 1 at least as long as segments 2 and 3 combined; segment 7 as wide and as hairy as base of club; club slightly elongate and flattened.

Pronotum as wide as elytra, either covered with dense, flattened, umbilicate tubercles or, more often, tubercles present on sides but disc merely finely punctate; base at center with deep, longitudinal impression one-third or one-fourth length of pronotum, but some specimens with impression feeble; sides of pronotum subparallel from base to middle, thence strongly arcuate to apex; postocular lobe feeble. Scutellum U-shaped. Elytra not depressed medially, about twice length of pronotum, with subapical callosities obsolete; intervals with dense, irregular, flattened tubercles in single or double rows; striae with tubercles in single rows alternating on disc with small, inconspicuous foveae that in some specimens are not visible.

Prosternum at center not depressed, but slightly or strongly convex in front of each coxa; front and middle intercoxal spaces almost equal to diameter of coxae and at least as wide as beak. Front femur rather clavate; hind femur with inner tooth lacking in many specimens; with apex reaching only to apex of third or fourth segment of abdomen. Front and middle tibiae near middle on inner side usually toothed, but can be only expanded angularly.

Aedeagus with apex truncate, often with shallow median emargination (fig. 25); basal sclerite hammerhead-shaped with long, sinuous median projection (fig. 66); tegmen (fig. 121).

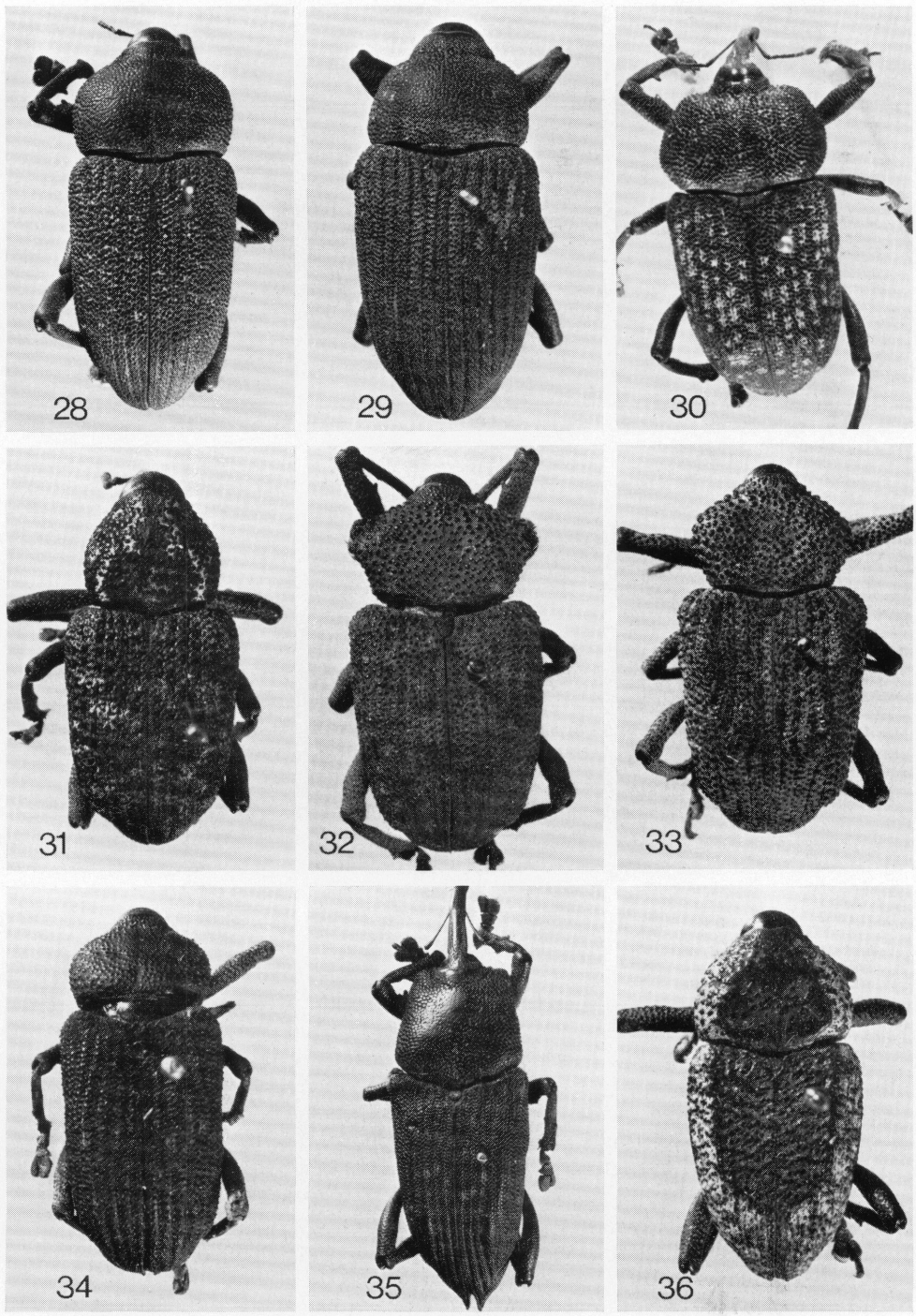
DISCUSSION: The number of individuals examined of *coriaceus* is about half the total number examined of the genus. The species is so numerous in Brazil that it is a cause of the low production of coconuts in which it breeds (Bondar, 1940, p. 50).

According to its age and the amount of abrasion suffered, a specimen is either shining or opaque, with the pronontal disc tuberculate or merely punctate, and the dorsum scaly or not. The scales, when present, generally appear to be random, some singly among the tubercles of the dorsal surface, some in small clusters, but in a few well-marked individuals (from Espirito Santo, Santa Catarina, São Paulo, Rio de Janeiro), the scales form a kind of pattern of clusters alternating on each interval of the elytra with nonscaly areas, and on the pronotum in lateral stripes. Scaly and nonscaly individuals occur also in *platynotus*, *fasciatus*, *histrix*, *lherminieri*, and others.

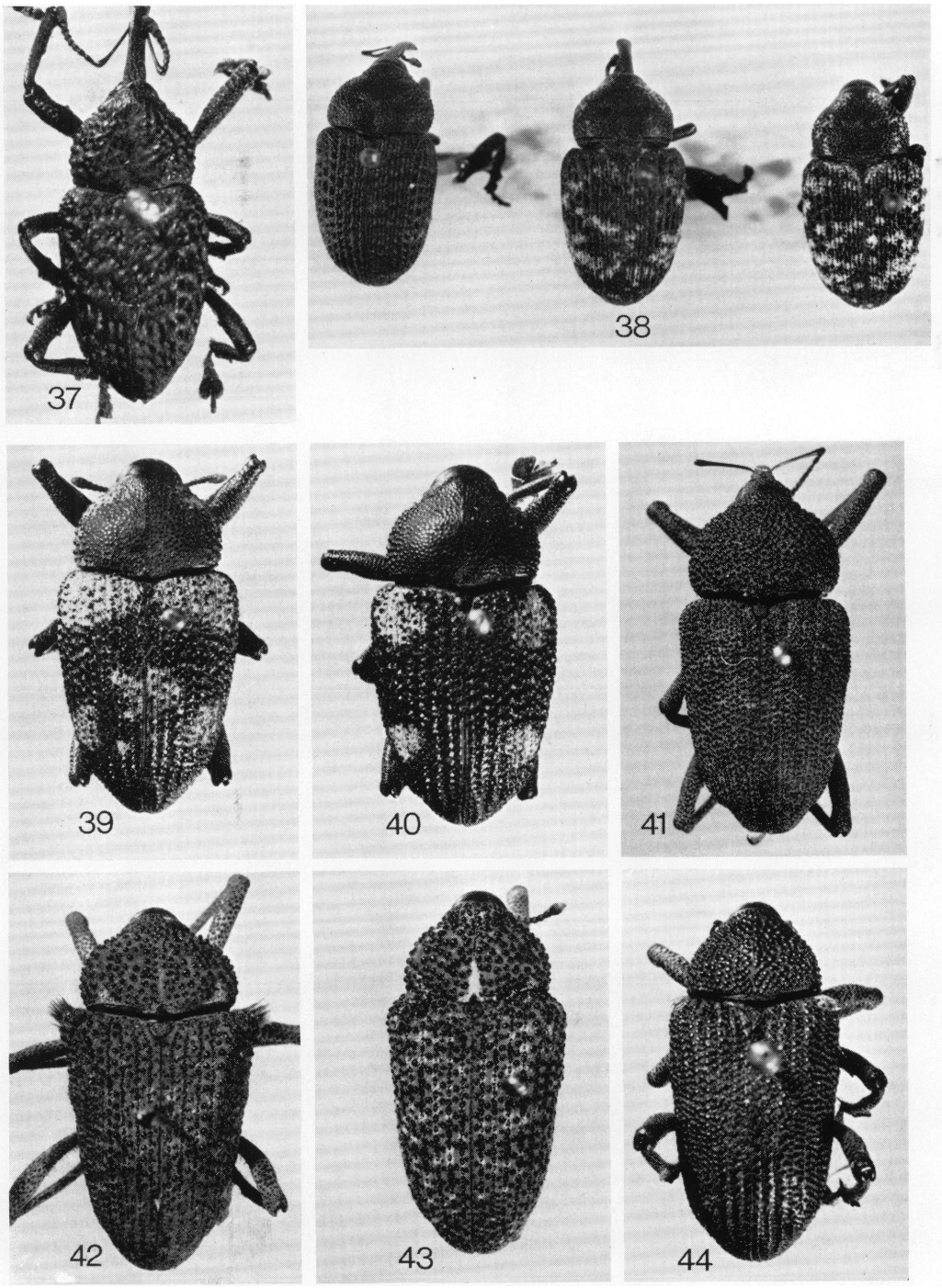
In the majority of specimens examined, the flat, punctate tubercles of the pronotal disc are so abraded that only the punctures remain; an impunctate area is often present at the center. Heavily scaled and presumably less worn individuals tend also to have the tubercles of the pronotum intact, not flattened or obsolete. In only five of the 85 specimens examined for this character, the mandibles were slightly notched basally, therefore not entirely smooth on their inner surfaces.

Four males and one female were dissected.

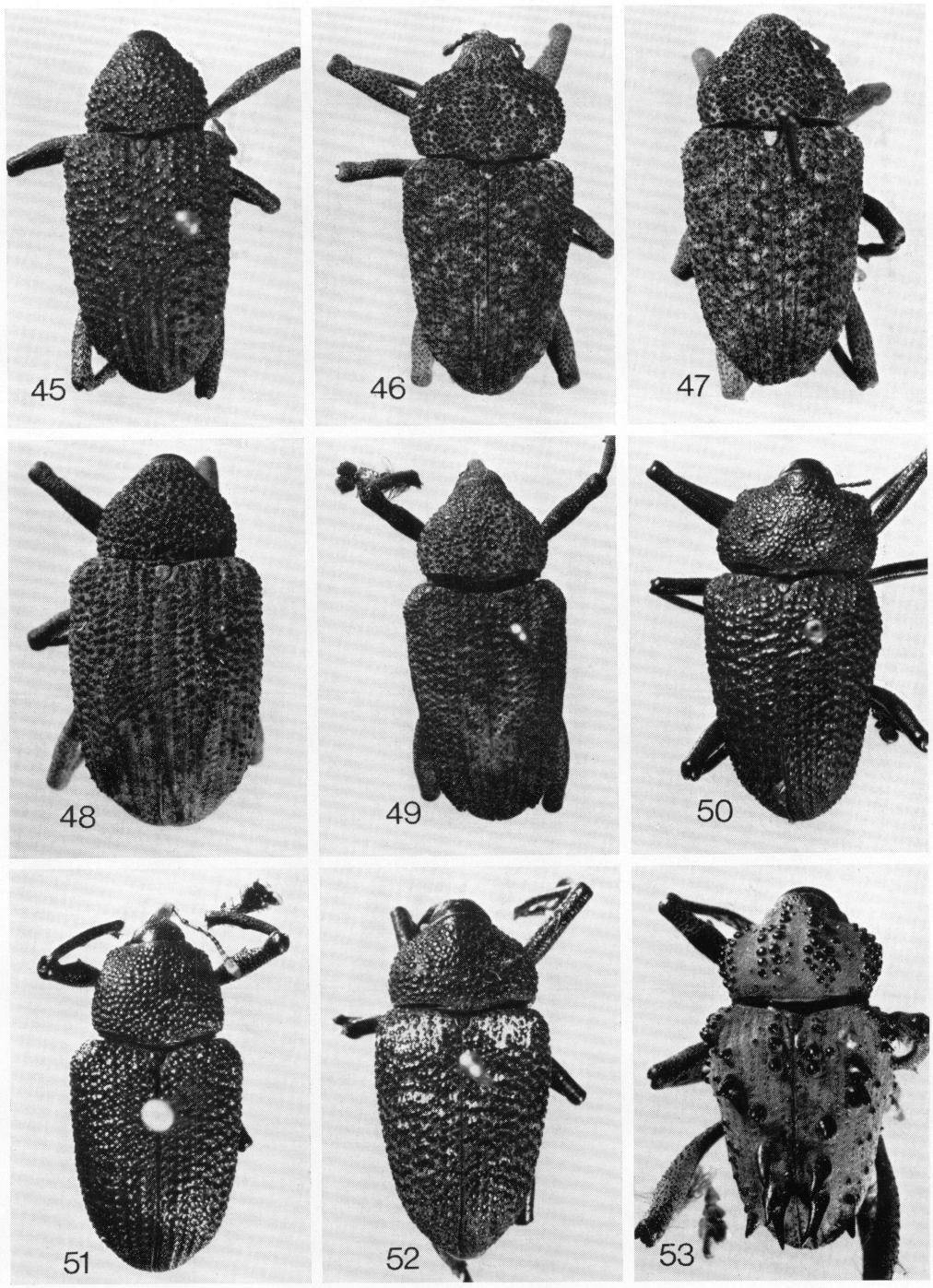
ECOLOGY: The information given by Lepesme (1947), Costa Lima and Seabra (1955), and Costa Lima (1956) on the ecology of *Homalinotus coriaceus* is taken mostly from various works of Bondar. Bondar first published on the biology of the species in 1922, and gave a complete resumé in 1940, from which I paraphrase most of what follows.




FIGS. 28–36. *Homalinotus*. 28. *H. coriaceus*. 29. *H. squamulosus*. 30. *H. platynotus* with white scales (photograph by L. P. J. Cunha). 31. *H. praelongus*. 32. *H. depressus*. 33. *H. nodipennis*. 34. *H. alloides*; humeral hairs obscured. 35. *H. validus*, male. 36. *H. deplanatus*.




FIGS. 37–44. *Homalinotus*. 37. *H. porosus*. 38. *H. fasciatus*, three cotypes of its synonym, *bolivianus* (photograph by L. P. J. Cunha). 39. *H. histrix* with vague bands. 40. *H. histrix* with spots. 41. *H. pectinis*. 42. *H. humeralis*, male. 43. *H. humeralis*, female. 44. *H. kuscheli*; humeral hairs inconspicuous.




FIGS. 45–52. *Homalinotus*. 45. *H. inopinatus*. 46. *H. dorsalis*, male. 47. *H. dorsalis*, female. 48. *H. cristatus*; elevation of elytral intervals 3 obscured. 49. *H. inermis*, male; subapical crests of elytra barely visible. 50. *H. lherminieri*, male. 51. *H. umbilicatus*, male. 52. *H. lherminieri*, female.

FIG. 53. *Ozopherus muricatus*.

As is true of many other species of the genus and subfamily, *coriaceus* breeds in and damages palm trees. Bondar called *coriaceus* the "broca" or borer of the floral peduncles of the coconut palm. The natural host plant is *Cocos coronata* Martius in which *coriaceus* breeds in the stems of the old leaves and does not cause much damage. Other palm host plants are *Attalea funifera* Martius, *A. piassabossu* Bondar and *A. burretiana* Bondar, and *Diplothemium candescens* Martius. These plants are attacked rather more frequently than *C. coronata*, but also in the old or fallen leaves. If there are coconut palms (*Cocos nucifera* Linnaeus) in the vicinity, however, the adults emigrate to them as they are more tender and succulent. When the coconut produces flowers, *coriaceus* lays her eggs in the floral peduncle. Because of their secretive habits, the adults do their harm before they are noticed, and the tree loses its coconuts before the cause is determined. The clandestine habits, Bondar said, are probably the reason why the species remained unknown for so long to coconut planters.

Borers in the trunk or the eye of the coconut, as the rhynchophorus weevil, *Rhinostomus barbirostris* Fabricius, can kill the tree, but individuals of *coriaceus*, even though living in the coconut by the dozens, are not so deadly. Their injury affects the old leaves, the new florescences, the floral peduncle, the female flowers, the new or developed fruits, and the trunk. In young coconuts not yet in flower, the eggs are laid in the sheath of the leaf. As the larva grows it descends to the trunk and scrapes a little superficial canal in the bark where it makes its cocoon from the fibers still protected by the leaf sheaths. When the coconut begins to produce inflorescences, the weevil lays its eggs in the floral peduncles. In descending the peduncle and enlarging its canal, the larva intercepts the juice which the nut of the coconut needs for its nourishment, and thus the nut falls either at once or later in its development. Weakened leaves and flower peduncles also fall, exposing the trunk beneath. External excavations of the larvae in the trunks of parasitized coconuts were illustrated in a photograph by Bondar (1940, fig. 20) along with coconuts with smooth, undamaged trunks. In all stages the larvae are well protected in their shelters against woodpeckers or other predators.

While larvae are working within the floral peduncle, adults pass the time of day in the flowers, eating the buds of female flowers and sucking the juice of the nuts. Holes made by the adults in the flowers serve as entrances for small weevils, microlepidoptera, or fungi which can reduce the flowers to powder.

Although fully winged, the adults evidently prefer not to fly. Bondar said he never saw them fly and that if an individual is put on a stone surrounded by water, it will not try to escape by flying, but will stay for days on the stone. The adult is strongly resistant to hunger and can go for 20 or 30 days without food and remain in perfect health. The life of the adult lasts several months.

Two specimens in the National Museum of Natural History in Washington from Recife, Pernambuco, Brazil, were collected in September, 1936, "on coco nut tree" and on the palm "macahyba" or macauba; two specimens in the Museu de Zoologia, São Paulo, from Sernembetiba, Rio de Janeiro, were collected in July, 1963, by Vanzolini and Reichardt "em bromelias."

### *Homalinotus squamulosus* Gyllenhal

Figures 29, 54, 67, 100, 122

*Homalinotus squamulosus* GYLLENHAL, 1836, p. 589 (America meridionalis; type in Zoologischesky Institut Akademia Nauk, Leningrad).

DIAGNOSIS: Similar to *coriaceus* in large size, bulky body, short, clavate femora, robust beak, and umbilicate (or punctate) pronotal tubercles, but differing by having dorsum more convex, not so flat; beak shorter, less arcuate; and tubercles of elytral intervals smaller, more convex and not umbilicate. Sexes externally alike.

RANGE: Province of Santa Cruz, Bolivia, and Paraguay. (For data on the 12 specimens examined, see Appendix.)

DESCRIPTION: Length 23 to 34 mm. Brownish with whitish dorsal and ventral scales among tubercles. Eyes widely separated. Beak stout, virtually straight, slightly shorter than pronotum, dorsally flattened, widened at apex, punctate densely, at base confluently, medially feebly carinate. Antenna with scape inserted in front of middle of beak; funicle and club as described for *coriaceus*.

Pronotum as wide as elytra, rather convex, with minute, round, flattened, dense umbilicate tubercles; base not impressed; sides subparallel

from base to beyond middle, thence arcuate to apical constriction; postocular lobe feeble. Scutellum shield-shaped or triangular. Elytra not depressed medially, about two and one-half times length of pronotum, with subapical callus obsolete; intervals feebly convex, with three and four rows of dense, flattened or slightly convex, round tubercles of same size as those of pronotum, but not umbilicate; striae with single rows of small round punctures alternating longitudinally with tubercles of same size.

Prosternum at middle scarcely depressed between tumidities in front of coxae; front intercoxal space narrower than beak, about one-third diameter of coxa; middle intercoxal space wider. Femora distinctly clavate; hind femur with tooth of inner margin lacking in two of 12 specimens and very small in several; with apex reaching only to base of abdominal segment 4. Front and middle tibiae near middle on inner side generally toothed, but angulate in some specimens.

Aedeagus (figs. 54, 67) with apex narrowly rounded; basal sclerite hammerhead-shaped; median projection long and sinuous; tegmen (fig. 122).

DISCUSSION: In size, shape, and convexity this species resembles superficially the large species of the genus *Dionychus*, although the males lack the tuberculate and hairy prosternum of males of that genus. Nonetheless, Schoenherr (1844), eight years after Gyllenhal's description, placed *squamulosus* in *Dionychus* without comment. It appeared as *Dionychus* also in Costa Lima (1917) and Klima (1936), but was returned to *Homalinotus* by Costa Lima and Seabra (1955) who noted that the eyes were elongate, not round, and the tibiae on their inner margins toothed. Dr. Margarita Ter-Minassian of the Zoological Institute in Leningrad kindly compared specimens I sent her with the type, and the identity of *squamulosus* as a species of *Homalinotus* is now established.

The dorsal appearance of *squamulosus* once recognized is quite distinctive, and no other species has so short and robust a beak. The tubercles are uniformly small and densely placed, those on the pronotum being rather flat, at least on the disc, and umbilicate, those on the elytra convex, crowded together in three or four rows on each interval, with the intervals convex and alternating with distinctly depressed striae.

Three males and two females were dissected, but no reliable external sexual characters were found, although perhaps the hind femur of males is somewhat more arcuate than that of females.

### *Homalinotus platynotus* (Germar)

Figures 30, 68, 94–97, 115, 130

*Dionychus platynotus* GERMAR, 1824, p. 313 (Brazil; type probably in Halle, Germany.)

*Homalinotus colosseus* PERTY, 1830, p. 81, pl. 16, fig. 9 ("Sebastianopolin" [=Sebastianopolis, São Paulo, Brazil]; type, male, is labeled "Brasilia," in Zoologische Museum, Munich, examined).

DIAGNOSIS: Similar to *coriaceus* and *squamulosus* in having large size and wide pronotum, but differing from them by having dorsum distinctly depressed, not convex; pronotum exceedingly transverse, with sides strongly constricted in front where also asperate; elytral apexes separately, minutely angulate; hind femur longer, and sexes externally distinguishable.

RANGE: Eastern coast of Brazil from the state of Espirito Santo south to Santa Catarina. (For data on the 62 specimens examined, see Appendix.)

DESCRIPTION: Length 17 to 38 mm. Black with dorsal and ventral yellowish scales among tubercles. Eyes widely separated. Beak of female straight, of male virtually so, but feebly bent downward toward apex and proportionally thicker; beak as long as pronotum, dorsally of same width throughout, punctate (male) densely, coarsely or reticulately, especially ventrally where also bicarinate and with crenulate sides; (female) densely, but usually more finely punctate. Antenna inserted in front of middle of beak, slightly farther front in male; funicle with segment 1 scarcely longer than 2; segment 7 almost as long as 3, almost as wide as base of club, and one-half length of club; club slightly elongate.

Pronotum as wide as elytra, flat or even concave on disc, with round, flattened tubercles quite densely placed, especially at middle where some merged together; tubercles not or seldom umbilicate, and on front and side margins sufficiently convex to be visible to naked eye as asperations; sides from base to apical constriction strongly arcuate, front border of largest specimens subparallel with base; postocular lobe feeble. Scutellum subtriangular. Elytra depressed on disc, slightly more than twice length of pronotum; subapical callus obsolete;

interval 4 at declivity in some specimens feebly elevated or widened; apexes at suture minutely toothed; intervals with one or two rows of dense, compact, irregularly shaped, flat tubercles; striae with single row of same kind of tubercles alternating longitudinally with punctures of same size; in some individuals, intervals and striae seemingly merged, not well differentiated.

Prosternum at middle scarcely depressed between tumidities in front of coxae; front and middle intercoxal space much wider than beak, about as wide as coxa. Metasternum at middle with round depression generally hidden by hairs. Front femur clavate; hind femur reaching apex of elytra, with inner tooth lacking in many specimens. Tibiae straight; front and middle tibiae on inner side either strongly toothed or feebly angulate.

Aedeagus with apex truncate and with shallow median emargination (fig. 65); basal sclerite hammerhead-shaped with fairly long, sinuous projection (fig. 68); tegmen (fig. 130).

MALES: Disc of metasternum and abdominal segments 1 and 2 abundantly hairy with long golden hairs; beak ventrally reticulate, carinate, coarsely punctate, and twice width of that of female.

DISCUSSION: With the exception of two new species known from unique specimens, *H. platynotus* is the only species of the genus restricted to Brazil. Unfortunately no information on its habitat or ecology is available although it probably lives in palms, as do *coriaceus, deplanatus*, and *porosus*.

The type specimen of *colosseus* Perty is a male 38 mm. long with the fourth elytral interval at the declivity feebly elevated and widened, the apexes of the elytra separately angulate, and the hairs and beak as described for other males. I agree with Kuschel (1955) who synonymized it with *platynotus*.

Even if the long hairs of the metasternum and abdomen of males are abraded, the sexes can still be differentiated by the beak. In smaller individuals the pronotum seems to be proportionally not quite so transverse as in larger individuals, and the front angles not so abruptly constricted. In some specimens there is a shallow impression each side of the middle of the pronotum; in some, as in *coriaceus*, the elytra are covered with yellow or white scales (fig. 30).

Two males and one female were dissected.

### ***Homalinotus praelongus,*** new species

Figures 17, 31, 69, 91–93, 117, 131

TYPE MATERIAL: Type, male, Bolivia. Also Bolivia: Santa Cruz de la Sierra, Province of Sara, 1904, J. Steinbach, collector, one male paratype, in Kuschel collection, Department of Scientific and Industrial Research, Nelson, New Zealand; Chapare [River], August 8, 1951, Zischka, collector, one, sex not ascertained, in Kuschel collection; Rio Ichilo, November, 1926, J. Steinbach, collector, one, sex not ascertained, in Kuschel collection; Guarayos, 1834, d'Orbigny, collector, one female, in Muséum National d'Histoire Naturelle, Paris. Brazil: Manaus, Amazonas, one, sex not ascertained, in Kuschel collection; Sto. [São] Paulo d'Olivença, de Mathan, collector, one female, in Kuschel collection. Peru: Achinamiza, August 29, 1927, and Rio Ucayali, September 27, 1923, both H. Bassler, collector, two females, in the American Museum of Natural History. Ecuador: Limoncocha, 00° 24′ S, 76° 36′ W, August 16, 1970, Peter Kazan, collector, one, sex not ascertained, to be deposited in National Museum of Natural History, Smithsonian Institution, Washington, D.C.

DIAGNOSIS: Differing from other species in having exceedingly long (fig. 17) seventh (terminal) segment of antennal funicle (as long or longer than club of which it seems a part). Beak very long, pronotum narrower than elytra, dorsum scaled, front coxae rather close, and sexes externally alike.

RANGE: Amazon Basin from Manaus west to Rio Ucayali, Peru, and eastern Ecuador, and south to Santa Cruz, Bolivia.

ETYMOLOGY: The Latin name *praelongus* denotes the "very long" seventh funicle segment and the long beak.

DESCRIPTION OF TYPE: Length 18 mm. Brown with dorsal and ventral yellow scales among tubercles, and clusters of dorsal white scales in vague pattern. Eyes widely separated. Beak virtually straight, one and one-half times length of pronotum, dorsally slightly widened at apex, punctate above and below uniformly finely and densely. Antenna inserted slightly in front of middle of beak; funicle with segment 1 longer than 2; segment 7 as long as segments 5 and 6 combined and slightly longer than club; club markedly short and bulbous.

Pronotum narrower than elytra, slightly flattened, scarcely wider than long, with flattish, dense tubercles, about a dozen on disc umbilicate (punctate); base not impressed; sides subparallel from base to about middle, thence arcuate to feeble apical constriction; postocular lobe feeble. Scutellum shield-shaped. Elytra rather flat but not depressed medially, twice length of pronotum; subapical callus rather obsolete: intervals with dense, irregular, flattened tubercles in single or double rows, those on sutural interval obsolete because merged together longitudinally; striae with single row of more convex, widely separated tubercles (on disc separated by almost twice their diameter) alternating with large foveae.

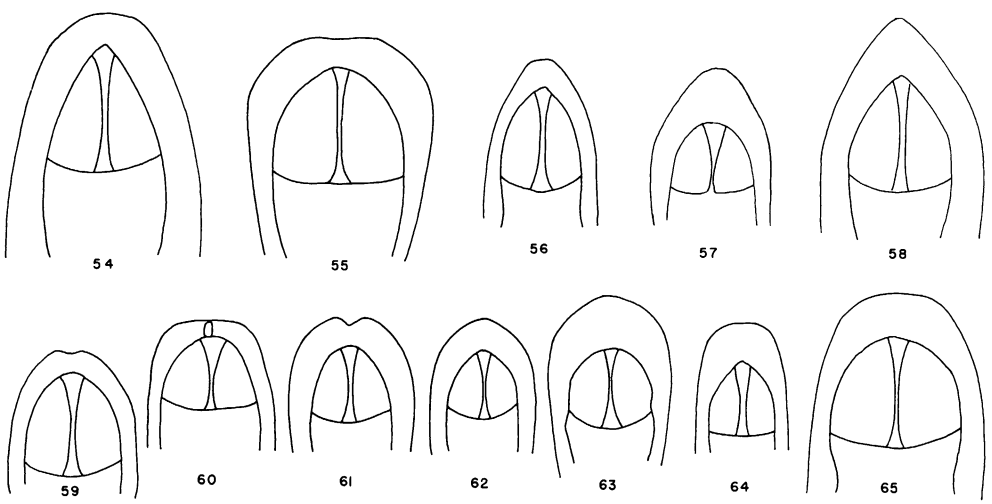
Prosternum at center feebly depressed between tumidities in front of coxae; front and middle intercoxal space less than one-half diameter of coxa; front space narrower than beak. Front femur feebly clavate; hind femur with inner tooth very small; apex reaching almost to apex of elytra; front and middle tibiae near middle on inner side expanded sinuately.

Aedeagus with apex rounded-truncate (fig. 65); basal sclerite hammerhead-shaped with long, sinuous median projection (fig. 69); tegmen (fig. 131).

VARIATIONS FROM TYPE: The paratypes range in length from 16 to 22 mm. In some the sides of the pronotum in the basal half are more arcuate than subparallel; there may be many tubercles of the pronotum umbilicate; the center of the pronotum is impunctate in several paratypes and in some there is a slight longitudinal impression basally. In one specimen, the scales are so thick on the elytra that many of the foveae of the striae are obscured.

DISCUSSION: Of the 10 specimens seen, three are opaque and dusty looking, not showing any scaly clusters, and two show the white scaly pattern on the pronotum only. The pronotal pattern of white scales (fig. 31) is somewhat similar to that of *nodipennis*, but more distinct: an uneven line on the side of the pronotum branches inward at about the middle toward, but not reaching, the center of the disc, then extending forward. The elytral pattern consists of white scales on the humerus, scattered clusters of scales on the intervals, and uniformly dense scales covering the sutural interval. Many scales are missing from the elytra of the type specimen. A well-marked specimen is an old one collected by d'Orbigny in 1834 in Guarayos.

Although in most *Homalinotus* the first segment of the antennal club is distinctly longer than the following segment, in some *praelongus* (the female from Rio Ucayali) it is scarcely longer (fig. 17). Other species with a bulbous, quite short club are *alloides*, *depressus*, *nodipennis*, and *validus* of




FIGS. 54–65. Apexes of aedeagus of *Homalinotus*, dorsal, with orificial plates. 54. *H. squamulosus*. 55. *H. cristatus*. 56. *H. deplanatus*. 57. *H. dorsalis*; characteristic also of *H. porosus*. 58. *H. histrix*; characteristic also of *H. fasciatus*. 59. *H. humeralis*. 60. *H. inopinatus*. 61. *H. kuscheli*. 62. *H. lherminieri*. 63. *H. inermis*. 64. *H. umbilicatus*. 65. *H. validus*; characteristic also of *alloides*, *depressus*, *nodipennis*, *pectinis*, *platynotus*, *praelongus*; median emargination sometimes present.

which the first three differ from *praelongus* by having a transverse black carina on the metasternum, and *validus* by having long hairs on the venter and within the middle and hind femora.

The affinities of *praelongus* seem to be with the species associated with *coriaceus*, at least as far as the aedeagus and the dense, flat elytral tubercles are concerned, but the pronotum is narrower than the elytra, not the same width.

Two males, including the type, and four females were dissected.

### *Homalinotus depressus* (Linnaeus)

Figures 18, 32, 70, 103, 123

*Curculio depressus* LINNAEUS, 1764, p. 49 ("habitat in America"; type probably in Upsala, Sweden).

*Curculio indus* DEGEER, 1775, p. 265, pl. 15, fig. 22 ("des Indes"; type probably in Sweden).

*Curculio jamaicensis* FABRICIUS, 1781, p. 173 ("America meridionali"; type not in the Fabricius collection in Copenhagen). OLIVIER, 1790, pl. 4, fig. 44. HERBST, 1795, pl. 94, fig. 9.

*Homalonotus complanatus* CHEVROLAT, 1878, p. CLXI (Cayenne, French Guiana; type, male, in Naturhistoriska Riksmuseum, Stockholm, examined).

DIAGNOSIS: Distinguished from other species in both sexes having a tuft of long, dense, curling, orange hairs on lateral angles of rather hexagonal pronotum. Except for hairs, very similar in some variations to *nodipennis*.

RANGE: Island of Trinidad, the Guianas, and Amazonian basin in Brazil southwest to Santa Cruz, Bolivia; also Bogota, Colombia, and parts of eastern Brazil. (For data on the 166 specimens examined, see Appendix.)

DESCRIPTION: Length 16 to 30 mm. Brownish with dorsal and ventral yellow scales among tubercles, long golden hairs at angle of pronotum, and whitish scales laterally at base of pronotum. Eyes widely separated. Beak slightly longer than pronotum, dorsally feebly carinate, not widened at apex; densely, confluently punctate, that of male thicker and slightly arcuate, of female straight. Antenna inserted at about middle of beak (female), farther front (male); funicle with segment 1 scarcely longer than 2; segment 7 as wide and almost as long as club; club bulbous, short.

Pronotum as wide or wider than elytra; disc concave or, in a few specimens, merely flattened, and with flattened, sparse or rather dense tubercles of various sizes; sides oblique from base to middle where obtusely angulate, thence oblique to apex; lateral angle covered by conspicuous tuft of dense, stiff, long hairs curling upward over sides of pronotum; sides at base with patch of long whitish hairs (often worn off); postocular lobe strong. Scutellum rather U-shaped and generally slightly elevated. Elytra slightly more than twice length of pronotum, medially slightly depressed to beginning of subapical declivity where interval 3 or intervals 3, 4, and 5 in front of callus feebly widened or elevated or both; subapical callus distinct; sides subparallel; intervals and striae not well differentiated but intervals with double, and striae with single, rows of flattened or convex tubercles separated on disc by about their diameter.

Prosternum at center deeply depressed between large tumidities in front of coxae; front and middle intercoxal spaces about equal to diameter of coxa and distinctly wider than beak. Metasternum near rear border with transverse, elevated black bar. Front femur clavate; hind femur not quite reaching apex of elytra, its inner tooth lacking or very small in one or two individuals. Front and middle tibiae with inner edge feebly angulate or sinuate; hind tibia straight.

Aedeagus with apex rounded truncate (fig. 65); basal sclerite hammerhead-shaped with long, sinuous median projection (fig. 70); tegmen (fig. 123).

MALE: Coxae, mesosternum, disc of metasternum, and first, sometimes also second abdominal segment furnished with long golden hairs.

DISCUSSION: Of the synonyms listed above, *complanatus* Chevrolat was synonymized by Kuschel (1955); Chevrolat did not mention the concave pronotum or the lateral tufts of hair, but both are present in his type (18 mm.) which I have examined. Both *indus* Degeer and *jamaicensis* Fabricius are well illustrated, and Schoenherr (1836, p. 585) made them and *depressus* conspecific. Schoenherr, however, treated the earlier described *depressus* as the synonym of *jamaicensis*, giving the "country" as Cayenne, which is the type locality of *complanatus*. Olivier (1790) said that *jamaicensis* was found "dans la Jamaique," but in spite of the name, the only records from the Caribbean are from Trinidad. Dr. Thomas H. Farr of the Institute of Jamaica in Kingston kindly checked the collections there and also the Gowdey collections, but found no specimens of

the species, and in his extensive collecting on the island he has never seen it.

In Olivier's figure of *jamaicensis*, the hairs on the pronotal angles are not shown, but Olivier mentioned them in his text (1790, p. 519). Fabricius mentioned them also. Linnaeus said that the hairs were present in the male only. His "female," which had hairs on the shoulders of the elytra instead, is evidently the species described later by Gyllenhal as *humeralis*, but the hairs are characteristic of the male. Costa Lima and Seabra (1955) also considered as males those with hairs on the pronontal angles, and from the description their females (without the hairs) were *nodipennis*, the type of which they did not examine. Both *depressus* and *nodipennis* occur in the Amazon Basin, even in some of the same localities (Manaus, Santarem, São Paulo de Olivença, Obidos, Rio Madeira), but *depressus* is common also in the Guianas, Bolivia, and Trinidad where *nodipennis* has not been found, and *nodipennis* occurs in Peru where *depressus* has not been found.

The similarities between *depressus* and *nodipennis*, including the genitalia and the secondary sexual characters of the male, are more numerous than the differences (see description of *nodipennis*). The only differences I find are: hairs present on the pronotal angles of *depressus*; the scutellum of *depressus* is generally elevated and narrower, whereas that of *nodipennis* is generally flat or concave and wider; the elytra of *depressus* are smoother, never having the large, twisted nodules and lateral carinae as in the majority of *nodipennis* (in some *nodipennis*, however, the elytra are about as smooth as the rougher specimens of *depressus*); the angulation of the sides of the pronotum is perhaps more exaggerated in *depressus*; and by actual comparison the beak of *depressus* is slightly shorter than that of *nodipennis*. In two series of specimens from the state of Para, Brazil, one consisting of eight males and nine females of *depressus* (Mocajuba, near Belem), and one of nine males and seven females of *nodipennis* (Obidos), the pronotal tufts are the only reliable character for separation of the species, as the elytra of *nodipennis*, most of which are small specimens (17 to 20 mm.) are flatter than normal and lack the characteristic nodules and strong elevations. In six or seven of these, the scutellum is elevated as is characteristic of *depressus*. Seven males and two females were dissected.

ECOLOGY: A specimen in the British Museum was collected "on leaf axil of coconut palm" in Trinidad by E. Hagley in 1963; a specimen in the the museum in Berlin was collected while eating the fruits of *Oenocarpus baccaba*, the baccaba palm, in Para, Brazil, September 19, 1892, in company with a specimen of *H. histrix*, collected by Schulz S.

### *Homalinotus nodipennis* Chevrolat

Figures 21–24, 33, 71, 112, 113, 128

*Homalonotus nodipennis* CHEVROLAT, 1878, p. CLXI (Moyabamba [=Moyobamba], Peru; type, female in Naturhistoriska Riksmuseum, Stockholm, examined).

*Homalinotus depressus gibbipennis* Voss, 1954, p. 273 (Mishuyacu, Marañon region, Peru; type destroyed; new synonymy).

DIAGNOSIS: Typical individuals readily recognizable by large nodules at declivity of elytra and multiple lateral crests or carinae. Differing from all but *alloides*, *cristatus*, and *depressus* by having transverse bar on metasternum; differs from *alloides* in elytral sculpture; from *cristatus* in wider, concave, not convex pronotum; from *depressus* in absence of hairy tufts on pronotal angles.

RANGE: Amazon Basin west to rivers of Peru and Ecuador; also Colombia and French Guiana. (For data on the 190 specimens examined, see Appendix.)

DESCRIPTION: Length 18 to 32 mm. Brown with dorsal and ventral yellow scales among tubercles, some individuals with additional whitish scales laterally on pronotum and in vague fasciae on elytra. Eyes, beak, antenna, and pronotum as described for *depressus*, but pronotum narrower and angles of pronotum without hairy tufts. Scutellum shield-shaped. Elytra not more than twice length of pronotum, medially slightly depressed or even concave between blunt lateral carinae of interval 5, these carinae densely tuberculate, not uniform in shape; at midway of elytra, interval 4 laterally carinate; intervals 4, 3, and 2 strongly elevated into tubercular hump which is larger and rougher than large subapical callus; all elevations of elytra can be feebler in some individuals; sides subparallel; intervals and striae otherwise as described for *depressus*.

Prosternum, metasternum, femora, tibiae, male characters, and aedeagus as described for

*depressus*. Aedeagus, apex, sclerite, tegmen (figs. 65, 71, 128).

DISCUSSION: In his short description of *gibbipennis*, Voss made no mention of hairs on the pronotal angles, but did state that the intervals of the elytra were strongly callused and that his specimen was from Peru. This information would place *gibbipennis* with *nodipennis* and not, as Voss said, with *depressus*. Costa Lima and Seabra (1955) synonymized *nodipennis* with *depressus* as they thought *nodipennis*, because of the absence of pronotal hairs, was the female of *depressus*.

It has been suggested that *depressus* and *nodipennis* could be considered as subspecies, but the definiteness of the hairy tuft character and the occurrence together of the two forms preclude such a supposition. Both the Junk catalogue (Klima, 1936) and Blackwelder's catalogue (1947) gave Bolivia as the only locality for *nodipennis*, even though it was described from Peru. Of the 190 specimens I have seen, none is from Bolivia, but *depressus* is found in Bolivia.

The tremendous variation in the sculpture of the elytra (figs. 21–24) is evidently not restricted geographically or sexually. Specimens with large, rough nodules are found in Ecuador and Peru as well as in Amazonas, Brazil. In the type, a female of 20 mm., the bulges or protuberances are less elevated than those of some individuals, but more elevated than those of others. Some individuals, including a series from Obidos, have the elytra almost as smooth as those of *depressus* (see there for comparisons). In some individuals the pronotum is not concave and the sides are not drawn out angularly. Eight males and two females were dissected.

ECOLOGY: According to Araujo e Silva (1968) this weevil attacks the principal nerves of the palmeira pato (*Cocos weddellii*).

### ***Homalinotus alloides,*** new species

Figures 34, 72, 99, 120

TYPE: Male, Manaus, Amazonas, Brazil, June 6, 1956, Elias and Roppa, collectors, in Museu Nacional, Rio de Janeiro.

DIAGNOSIS: Unique male specimen differing from other species by having intervals 4 and 5 of elytra sinuate and incurved toward base; basal area concave; and interval 4 at about middle with tuft of yellow hairs or bristles, and elevated from base to in front of subapical callus.

RANGE: Known from type locality only, in Amazon Basin, Brazil.

ETYMOLOGY: The Latin name of the species signifies "of different form or appearance."

DESCRIPTION: Length 23 mm. Black with fringe of yellow bristles on either side of base of elytra and tuft of bristles on interval 4 of elytra near middle, also scattered yellow scales among tubercles. Eyes widely separated. Beak virtually straight, longer than pronotum, dorsally at apex scarcely widened; in basal half confluently punctate, medially carinate; toward apex punctures sparse. Antenna inserted at about middle of beak; funicle with segment 1 scarcely longer than 2; segment 7 longer than 3 and almost as long as club; club bulbous.

Pronotum almost as wide as elytra, with sparse, flattened tubercles except at median line where series of tiny punctures; punctures basally sunk in longitudinal depression; sides strongly arcuate from base to apical constriction; postocular lobe strong. Scutellum somewhat rounded. Elytra slightly more than two and one-half times length of pronotum, flattened except behind scutellum where abruptly concave; base strongly emarginate; humerus dorsally tumid, angulate in front where tuft or fringe of orange hairs projects backward; subapical callus distinct; intervals and striae distinct; interval 4 in front of callus elevated to middle of elytra where tuft of hairs emergent, thence intervals 5 and 4 curving sinuously inward to base of elytra; intervals with single or double rows of flattened tubercles like those of pronotum, separated by about their diameter; striae only obsoletely tuberculate, but with punctures of same size as tubercles of intervals; apexes minutely knobbed.

Prosternum at center not depressed between very feeble tumidities in front of coxae; front and middle intercoxal spaces almost as wide as diameter of coxa and wider than beak. Front femur clavate; hind femur rather arcuate, not reaching apex of elytra; inner margin toothed. Front and middle tibiae on inner margin faintly angulate; hind tibia rather incurved at apical fringe of hairs.

Aedeagus, apex rounded truncate, with shallow median emargination; sclerite subelongate (fig. 72) with short median projection; tegmen (fig. 120).

MALE: Probably found only in the male are the long golden hairs of the coxae and disc of the

mesosternum and metasternum, and the humeral and elytral hairs.

DISCUSSION: The unique male of *alloides* which is so distinctive in its elytral sculpture and tuft of hair on the fourth interval, nonetheless shares a number of traits with other species. The seventh or terminal segment of the antennal funicle is almost as long as that of *praelongus* and the club is also short and bulbous. The base of the metasternum is transversely carinate as in *cristatus*, *depressus*, and *nodipennis*. The shoulders of the elytra are hairy, but in a different manner, as in males of *humeralis*, *kuscheli*, and both sexes of *validus*. The base of the elytra is strongly emarginate as in many specimens of *validus*. An interval of the elytra is elevated as in some individuals, especially males, of *cristatus*, *depressus*, *nodipennis*, and *validus*. The elytral apexes are minutely knobbed as in *deplanatus*, *platynotus*, and *porosus*.

It is difficult to say to which group of species *alloides* is most closely related. The depressed elytra, flattened tubercles, short hind femora, and absence of a prosternal channel ally it with *coriaceus* and its relatives, while the sparseness of the tubercles, the hairy tufts, and the genitalia may place it closer to *humeralis*.

### *Homalinotus validus* (Olivier)

Figures 35, 65, 73, 119

*Curculio validus* OLIVIER, 1790, p. 499, pl. 15, fig. 186 ("Amérique méridionale"; type not found in Muséum National d'Histoire Naturelle, Paris).

*Curculio calcaratus* FABRICIUS, 1792, p. 420 (no locality, no type; based on same plate as *validus* Olivier). HERBST, 1795, pl. 94, fig. 7.

*Homalonotus distinctus* CHEVROLAT, 1878, p. CLXI (Brazil; type, female, in Naturhistoriska Riksmuseum, Stockholm, examined).

*Sphenus perplexus* DESBROCHERS DES LOGES, 1906, p. 368 (Cayenne, [French Guiana]; type, female, in Muséum National d'Histoire Naturelle, Paris, examined).

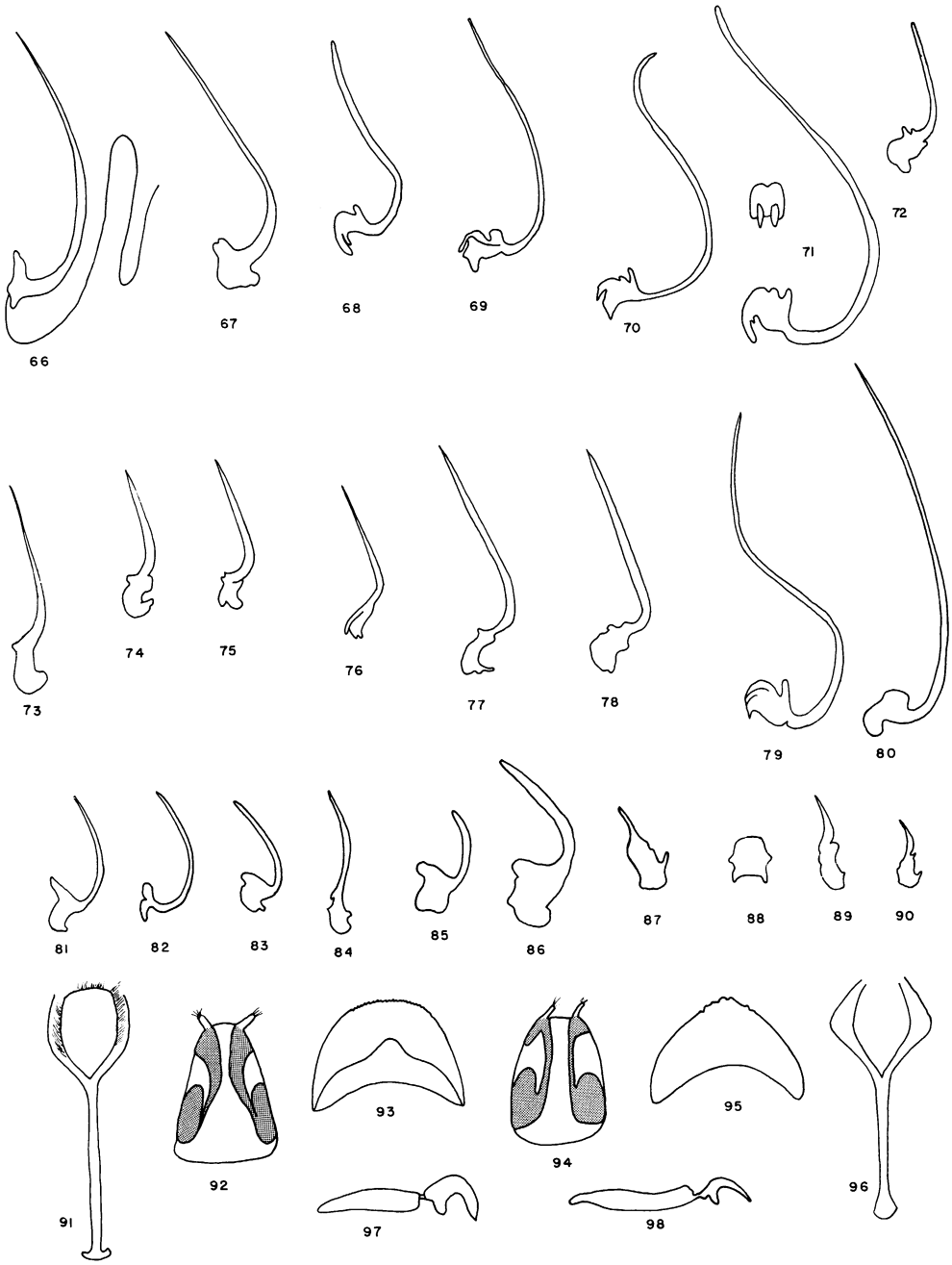
DIAGNOSIS: Distinguished from other species by having in both sexes long golden hairs on ventral surface and on inner margins of middle and hind femora. Usually very large, flattened, with base of elytra obliquely emarginate, apexes separately acuminate, hind femur arcuate, and pronotum appearing subquadrate (fig. 35).

RANGE: The Guianas, the state of Piaui, Brazil, and the Amazon Basin in Brazil west to Peru and Bolivia; one specimen each from Espirito Santo, eastern Brazil, from Colombia, and from Limon in Costa Rica. (For data on the 104 specimens examined, see Appendix.)

DESCRIPTION: Length 22 to 50 mm. Black with dorsal yellow hairs or scales scarcely visible on elytra; reddish gold hairs on humerus of elytra and on sides of base of pronotum, also ventrally and on inner margins of middle and hind tibiae and femora. Eyes widely separated. Beak arcuate, as long as pronotum, dorsally slightly widened at apex, punctate finely, sparsely, or finely and densely, even confluently. Antenna inserted in front of middle of beak (male), at middle (female); funicle with segment 1 as long as 2 and 3 combined; segment 7 as wide as base of club of which it appears a part and as long as at least one-half length of club; club short, bulbous.

Pronotum as wide as elytra, usually appearing as long as, or longer than, wide, with dense, flat tubercles that on disc of many specimens are fused together, forming smooth surface with sparse punctures; sides subparallel or feebly arcuate, narrowing slightly near apex where front angles subrectangular; in many specimens front border parallel with base of pronotum; base at center impressed longitudinally; postocular lobe feeble. Scutellum rather semicircular, in one specimen wider than long. Elytra somewhat depressed medially, slightly longer than twice length of pronotum; base in majority of individuals distinctly obliquely emarginate; humerus, especially of larger individuals, strongly tumid and with large patch of appressed reddish gold hairs, but humerus of some individuals flat; subapical callus obsolete; interval 4 in front of callus area either feebly or strongly widened and elevated, more elevated in males; intervals with double or triple rows of dense, irregular, flattened tubercles; striae with tubercles in single rows and separated by their diameter; apexes at suture separately acuminate, in some males longer than twice length of scutellum.

Prosternum (male) at center feebly depressed between tumidities in front of coxae, (female) tumidities usually merged into one mass; front and middle intercoxal spaces equal to about one-half diameter of coxae and not wider than beak. Femora distinctly clavate; front and middle femora on inner margin with large and small tooth close together, small one sometimes obsolete; middle and hind femora on inner side with long golden hairs; hind femur strongly




FIGS. 66–90. Sclerites or copulating pieces of *Homalinotus*, with length (in mm.) of adult specimen from which they were taken; lateral views except where stated otherwise. The ejaculatory duct is shown for the first species only. 66. *H. coriaceus*, 22. 67. *H. squamulosus*, 25. 68. *H. platynotus*, 25. 69. *H. praelongus*, 19. 70. *H. depressus*, 20. 71. *H. nodipennis*, 22, also from dorsal view. 72. *H. alloides*, 22. 73. *H. validus*, 30. 74. *H. deplanatus*, 17, Rio Vermelho, Brazil. 75. *H. deplanatus*, 17, Pinhal, Brazil. 76. *H. porosus*, 12. 77. *H. fasciatus*, 16. 78. Type of *H. matogrossensis*, 23, synonym of *fasciatus*. 79. *H. histrix*, 23. 80. *H. pectinis*, 20. 81. *H. humeralis*, 21. 82. *H. kuscheli*, 16. 83. *H. inopinatus*, 15. 84. *H. dorsalis*, 18. 85. *H. cristatus*, 26, Peru. 86. *H. cristatus*, 30, Satipo, Peru. 87. *H. inermis*, 17. 88. *H. inermis*, dorsal view. 89. *H. lherminieri*, 20. 90. *H. umbilicatus*, 17.

FIGS. 91–93. Female genitalia of *Homalinotus praelongus*. 91. Sternite 8. 92. Hemisternites. 93. Tergite 8.

FIGS. 94–97. Female genitalia of *Homalinotus platynotus*. 94. Hemisternites. 95. Tergite 8. 96. Sternite 8. 97. Spermatheca.

FIG. 98. *Homalinotus cristatus*, spermatheca.

arcuate, with inner tooth (or angle) in apical fourth at edge of fringe of hairs; apex not reaching apex of elytra. Front and middle tibiae on inner side with sharp, strong tooth near middle; middle and hind tibia on inner side with double fringe of short golden hairs (often worn off).

Aedeagus with apex rounded (fig. 65); basal sclerite elongate, proportionally small, with rather short median projection (fig. 73).

MALE: Elytral apexes with long points; underside of beak coarsely reticulate; elytral interval 4 at declivity usually elevated and widened; prosternum depressed at middle.

DISCUSSION: *Homalinotus validus* is the only species with a double tooth on the femora, but in many specimens the smaller tooth is lacking or present on the front femur only. The characteristic tumid and hairy elytral humeri that oppose the hairy lateral bases of the pronotum, and the deep emargination of the base of the elytra are also not present in all individuals. The humeral hairs cling to the surface as in *alloides*, they do not project laterally in long tufts as in males of *humeralis* and *kuscheli*. The dense tubercles of the elytra are similar to those of *coriaceus* and *platynotus* and others, but the genitalia of the males differ radically, having a short, not a long and sinuous, median projection, and an elongate basal sclerite as in *deplanatus*, *fasciatus*, and *porosus* (figs. 73–78).

There are five or six secondary sexual characters of which the most reliable is perhaps the sculpture of the ventral side of the beak which is coarsely punctate and reticulate, almost tuberculate, in males, and finely punctate or impunctate in females. The front of the prosternum of males is depressed (but not always distinctly) between two large flattish swellings, whereas there is no depression in females, merely a unified, feebly convex mass. The long "tails" of the elytral apexes, when not damaged are diagnostic of males, but large females can have more acuminate and longer apexes than small males. In a small male the fourth elytral interval can be scarcely widened, whereas in a large male it is not only widened, but distinctly elevated. A round depression on the terminal segment of the abdomen of most males has not been found in females. Finally there are the differences in the shape of the pronotum (not strictly sexual) and, as in other species of the genus, the insertion of the antenna of males somewhat farther front on the beak.

There are as many synonyms recorded for *validus* as for *depressus*. Slight variations in the shape of the pronotum, in the degree of elevation or widening of the fourth elytral interval, and in the apexes of the elytra account for the descriptions of *distinctus* and *perplexus*, which Kuschel (1955) synonymized with *validus*. The types of these two forms that I have examined were not dissected, but according to my specifications are both females, although Chevrolat said *distinctus* was a male. Either because of their sex or their small size (respectively 24 and 29 mm.), these types differ from Olivier's typical large male of *validus* (1790, pl. 15, fig. 186) by having the pronotum less flat and less quadrate, the sides feebly arcuate instead of almost straight, and the front angles not so squared off or so deeply constricted; in addition the apexes of the elytra are only minutely angulate, and the fourth interval is scarcely widened and not elevated. In both specimens the ventral, femoral, and tibial hairs characteristic of the species are present. I have not seen any females of *validus* with very long elytral apexes but some large females have the same kind of pronotum as large males. In small males the pronotum and fourth elytral interval can be like those of *distinctus* and *perplexus*, as stated above. For his "genus" *Sphenus* in which he placed *perplexus* and *validus*, Desbrochers des Loges (1906, p. 368, footnote) wrote that the pronotum was "exacte quadratus," which it is not, not even in the largest males, but it appears quadrate. Four of each sex were dissected.

Only two other species have been collected in Central America, *dorsalis* in Panama, and *pectinis* also in Costa Rica.

ECOLOGY: The specimen from La Lola, Limon, eastern Costa Rica, was taken "at light in evening" by Shenefelt. Four specimens were collected by Bondar in October or November of 1952 on the babaçu palm (*Orbygnia speciosa*) in the state of Piaui, northern Brazil. According to Araujo e Silva (1968), adults make holes in the unopened spathes or sheaths and in the little fruits of this palm.

### *Homalinotus deplanatus* Sahlberg

Figures 8, 19, 36, 56, 74, 75, 102

*Homalinotus deplanatus* SAHLBERG, 1823, p. 43, pl. 2, fig. 1, (Brazil; type, probably male, in Naturhistoriska Riksmuseum, Stockholm, examined). HEYNE AND TASCHENBERG, 1908, pl. 31, fig. 30.

*Dionychus circumdatus* Germar, 1824, p. 313 (Brazil; type probably in Halle, Germany).

DIAGNOSIS: Differing from other species not only by having distinct wide vittae of abundant yellow scales on each side of pronotum and elytra, but also by having disc of elytra delimited by blunt lateral carinae. Size, shape, and depressed dorsum as in *porosus*.

RANGE: Espirito Santo in eastern Brazil south to Misiones, Argentina, and southern Paraguay; also "Venezuela." (For data on the 243 specimens examined, see Appendix.)

DESCRIPTION: Length 12 to 22 mm. Black with broad lateral stripes of yellow, overlapping scales extending from front of pronotum to apex of elytra and covering also apical declivity of elytra. Eyes widely separated. Beak virtually straight, that of male just perceptibly decurved beyond insertion of antenna and more robust than that of female; beak about same length as, or slightly longer than pronotum, dorsally not or scarcely widened at apex, punctate finely, and either densely or sparsely. Antenna as described for *coriaceus*, but inserted slightly in front of middle.

Pronotum as wide as elytra; disc depressed or slightly concave, either impunctate or with widely separated, tiny, flattened, umbilicate tubercles; laterally tubercles larger, convex, seldom umbilicate; sides arcuate from base to apex; postocular lobes feeble. Scutellum shield-shaped. Elytra scarcely twice length of pronotum, medially depressed, almost concave, between lateral carinae which extend from within humerus on interval 5 backward to apical third of elytra; interval 9 also carinate; intervals with many tubercles transversely confluent; disc with single rows of large, flattish tubercles separated longitudinally by their diameter, but not well differentiated; on sides of elytra tubercles interspersed with scales; subapical callus obsolete; apexes at suture separately angulate or toothed (often worn).

Prosternum at center not depressed, but feebly convex in front of coxae; front and middle intercoxal spaces equal to diameter of coxa and at least as wide as beak. Front femur rather clavate; all femora with inner side with sharp, backward facing tooth; hind femur with apex reaching to or slightly beyond elytra. Front and middle tibiae with inner side near middle angulate or sinuate; hind tibia with it feebly sinuate.

Aedeagus, apex subacuminate (fig. 56); basal sclerite rather elongate, with short median projection (figs. 74, 75); tegmen (fig. 121).

MALE: Slight differences in beak.

DISCUSSION: *Homalinotus deplanatus*, the type species of the genus, is perhaps the most readily identifiable species. Therefore, although I have not seen the type of *circumdatus* Germar, there is no reason to question Schoenherr's placement of it (1836) in synonymy with *deplanatus*. After *coriaceus*, it is also the most abundant species, at least in collections.

The differences between *deplanatus* and the quite similar *porosus* are as follows: the strial punctures of the elytra are smaller in *deplanatus*, not large foveae, the lateral carinae of the elytra are more developed and the subapical callus less developed in *deplanatus*, and *porosus* has no scales. The median projection of the basal sclerite is short in both species, but the shape of the sclerite differs.

The elytral carinae of *deplanatus* are actually composed of a string of tubercles which in the majority of specimens are merged together. Although in other species the scaly pattern is abraded in many specimens, in *deplanatus* the scales are so thickly placed or so strongly adherent that they are virtually always present. Six males and three females were dissected.

ECOLOGY: At least two specimens were collected in or on palms, one from Nova Teutonia, Santa Catarina, Brazil, and one, collected by Hancock in July, 1923, from Nictheroy, Rio de Janeiro. Lepesme (1947, p. 609) gave as plant hosts for this species, *Cocos romanzoffiana* and *C. botryophora*.

### *Homalinotus porosus* Gyllenhal

Figures 37, 76, 116

*Homalonotus porosus* GYLLENHAL, 1836, p. 590 (Brazil; type in Naturhistoriska Riksmuseum, Stockholm, examined).

*Homalonotus conspergatus* FAHRAEUS, 1844, p. 31 (Brazil; type in Naturhistoriska Riksmuseum, but out on loan; new synonymy.)

DIAGNOSIS: Scarcely differing from *deplanatus* except for lack of scaly pattern and for deeply pitted aspect of elytra.

RANGE: Eastern Brazil from the state of Bahia south to Parana and to Misiones and Chaco in northern Argentina. One specimen from Tarapoto, northern Peru. (For data on the 162 specimens examined, see Appendix.)

DESCRIPTION: Length 11 to 20 mm. Black, opaque, without scales. Eyes, beak, antenna, pronotum, and scutellum as described for *deplanatus*, but pronotum lacking scales, disc punctate rather than tuberculate, and lateral tubercles umbilicate. Elytra at least twice length of pronotum, medially depressed between blunt or rather obsolete carinae extending from within humerus on interval 5 backward to apical third; intervals of disc uneven but not noticeably tuberculate; striae with from seven to 10 deep, large, well-separated pits or foveae, some round, some oblong, some rectangular; subapical callus distinct in most specimens; apexes (best seen from below) minutely toothed at suture.

Prosternum, femora, aedeagus, and tibiae as described for *deplanatus*, but hind tibia usually straight on inner edge, and basal sclerite shaped differently (fig. 76).

MALE: Slight differences in beak.

DISCUSSION: Comparison with the closely related *deplanatus* is shown in the description above and in the discussion of that species. Some specimens of *fasciatus* have rather large strial pits as in *porosus*, but these two species should not be confused (see *fasciatus*).

I have not seen *conspergatus*, but Kuschel (personal commun.) said it is conspecific with *porosus*.

ECOLOGY: *Homalinotus porosus* has been found in Bahia in the flowers of the coconut (*Cocos nucifera*). Bondar (in his notebook)[1] mentioned it as being very damaging to coconuts in Viçosa, Bahia.

### *Homalinotus fasciatus* Desbrochers des Loges

Figures 38, 77, 78, 105

*Homalonotus fasciatus* DESBROCHERS DES LOGES, 1910, p. 131 (Brazil; type, sex undetermined, in Muséum National d'Histoire Naturelle, Paris, examined).

*Homalinotus bolivianus* COSTA LIMA AND SEABRA, 1955, p. 432 (Buena Vista, Department of Santa Cruz, Bolivia; cotypes in Instituto Oswaldo Cruz, Rio de Janeiro, new synonymy).

*Homalinotus matogrossensis* COSTA LIMA AND SEABRA, 1955, p. 430 (Mato Grosso [Brazil]; type, male, in Museu Nacional, Rio de Janeiro, examined, new synonymy).

[1]One of three notebooks, all handwritten, in the Department of Entomology, the American Museum of Natural History.

DIAGNOSIS: Where diagnostic scaly pattern (fig. 38) lacking, *fasciatus* resembles *coriaceus*, but smaller, with beak almost straight, not arcuate, and elytral tubercles solid, not umbilicate. In compact, rather convex aspect agreeing with *histrix*, but elytra of *fasciatus* less attenuate to apex, outer apexes of tibiae rounded, not toothed, and pronontal tubercles distinctly umbilicate, not solid. Sexes externally alike.

RANGE: Amazon Basin from Para and Amazonas in Brazil to Bolivia, Paraguay, and northern Argentina (Misiones); also Goyaz, Minas Gerais, and Mato Grosso, Brazil. (For data on the 39 specimens examined, see Appendix.)

DESCRIPTION: Length 16 to 22 mm. Black with elongate, yellow, overlapping scales arranged as follows: on pronotum encircling "neck," and in line on each side from apex to base; on elytra across base and backward to sides just in front of middle; behind middle in irregular, transverse band; near apex in two small patches; and on disc in several small spots; scales present also ventrally. Eyes widely separated. Beak virtually straight, or very feebly decurved beyond insertion of antenna, about same length as, or slightly longer than pronotum, dorsally scarcely widened at apex, punctate densely throughout or at base only. Antenna as described for *coriaceus*, but inserted slightly in front of middle.

Pronotum almost as wide as elytra, covered densely with flattened, umbilicate tubercles; some specimens with small area at center merely punctate; sides strongly arcuate from base to apical constriction; postocular lobe feeble. Scutellum shield-shaped or subtriangular, densely punctate. Elytra as described for *coriaceus*, but tubercles not umbilicate and strial foveae much larger, often oblong or rectangular, and more distinct; in some specimens tubercles of striae separated by three times their diameter.

Prosternum depressed between tumidities in front of each coxa; front and middle intercoxal spaces equal to about diameter of coxae and at least as wide as beak. Front femur rather clavate; hind femur with apex not quite reaching apex of elytra; inner tooth present in 21 of 21 specimens. Front and middle tibiae with inner side near middle expanded sinuately or angularly.

Aedeagus with apex acuminate (fig. 58); sclerite elongate with long median projection (figs. 77, 78); tegmen (fig. 129).

DISCUSSION: Although superficially *fasciatus* and *histrix* are similar (even the scaly pattern of some individuals does not separate them), there are many differences between them including the shape of the basal sclerite of the aedeagus and the length of the apodemes (see *histrix* for comparison).

The elytral foveae can be as large as those of *porosus*, but there are tubercles surrounding the foveae of *fasciatus*, not merely an uneven, wavy surface, and the pronotum of *fasciatus* is rather convex, not concave.

The type specimen of *fasciatus* is 19 mm. and the scales of its basal fascia are rather worn. I have not seen the cotypes of *bolivianus*, but I have at hand excellent photographs of three of the cotypes kindly made for me by Luiz P. R. Cunha of Rio de Janeiro, and they are without doubt the same species as *fasciatus*. In one of these specimens, as stated by Costa Lima and Seabra (1955), the scales are lacking. In another cotype the basal fascia is mostly worn off, and in the third cotype the scaly pattern is almost complete. A number of specimens examined that appeared entirely black were found to have at least some scales, often not noticeable until the specimens were degreased.

The type specimen of *matogrossensis* is merely a large (23 mm.), much abraded, opaque example of *fasciatus*. The pronotum is actually slightly concave and its tubercles are worn flat and are not, as they should be, umbilicate. When cleaned, however, a few punctures show on the tubercles of the pronotum and some yellow scales on the sides and base of the elytra. I have seen another specimen (locality illegible) with the pronotal tubercles flattened as in the type of *matogrossensis*. The aedeagus agrees with that of other males although the basal sclerite (fig. 78) differs slightly. Four males, including the type of *matogrossensis*, and one female were dissected.

### *Homalinotus histrix* (Olivier)

Figures 9, 15, 26, 39, 40, 58, 79, 106

*Curculio histrix* OLIVIER, 1790, p. 503, pl. 15, fig. 182 (Cayenne, [French Guiana]; type not found in Muséum National d'Historie Naturelle.) HERBST; 1795, pl. 72, fig. 3.

*Homalinotus Aragaoi* Costa Lima and Seabra, 1955, p. 433 ("Barra [Bahia], Rio Grande," [=junction of Rio Grande and Rio San Francisco, northwestern Bahia] Brazil; type in Instituto Oswaldo Cruz, Rio de Janeiro; new synonymy).

DIAGNOSIS: Differing from other species by having tooth on outer apexes of middle and hind tibiae (fig. 15), tooth partially hidden by dorsal comb, and four large spots of yellow scales on elytra, spots fused into bands or lacking altogether in some individuals, Long antecoxal process on each side of prosternum of male also diagnostic (fig. 9).

RANGE: Amazon Basin, the Guianas, and one specimen each from Peru and Ecuador. (For data on the 76 specimens examined, see Appendix.)

DESCRIPTION: Length 14 to 24 mm. Black with elongate yellow or white scales, when present, on sides of pronotum in front, and on elytra in four large or small spots (two on humeri and two in front of subapical callosities), and on reflexed elytral sides another spot; in some specimens humeral or apical spots expanded into irregular bands. Eyes widely separated. Beak about length of pronotum, stout, almost straight, that of female in profile shallowly depressed in front of head; beak dorsally scarcely widened at apex; finely punctate, but in some specimens at base rather rugose. Antenna inserted slightly in front of middle of beak; funicle and club as described for *coriaceus* and *fasciatus*.

Pronotum as wide as elytra; disc with dense or rather dense, flattened tubercles, laterally with sparser, more convex tubercles visible to naked eye, medially with faint carina and/or series of tiny punctures; in several specimens tubercles faintly umbilicate; sides strongly arcuate from base to apex; postocular lobe feeble or distinct. Scutellum as described for *fasciatus*. Elytra not depressed medially, more than twice length of pronotum, rather attenuate toward apex; subapical callus distinct; intervals with single rows of oblong or round, dense tubercles which are merged in some specimens; striae with tubercles more widely separated, alternating longitudinally with oblong or round foveae.

Prosternum at center depressed with (female) large tubercular tumidities and (male) granular, upturned projection or hook extending beyond bulge of coxa; front intercoxal space narrower than coxa and than beak; middle space somewhat wider. Femora as described for *fasciatus*. Front and middle tibiae near middle on inner side toothed or angulate; hind tibia slightly sinuate in 12 of 21 specimens; apexes of middle and hind tibiae, in addition to normal armature, with outer apex toothed or angularly projected.

Tarsi very large, those of front legs of male much larger than those on other legs and about twice width of beak.

Aedeagus with apex acuminate (fig 58); sclerite hammerhead-shaped with long median projection (fig. 79) tegmen (fig. 129).

MALE: Antecoxal processes longer than coxae; base of beak not depressed as in female; front tarsus very large.

DISCUSSION: Scaly patterns of *Homalinotus* are generally variable and not constant. Although I have not seen any *fasciatus* with four yellow spots as in *histrix*, I have seen at least three specimens of *histrix* (two males and one female from Para) with irregular elytral fasciae as in the majority of *fasciatus*. There are many distinguishing characters between these species, however, including the difference in the shape of the basal sclerite of the aedeagus (figs. 77–79). *Homalinotus histrix* is usually larger and differs further by having the subapical callosities of the elytra distinct, not obsolete, the striae of the elytra with smaller, less conspicuous foveae, the middle and hind tibiae toothed on the outer apex, the pronotal tubercles seldom or only faintly umbilicate, and the tarsi larger. In males of *histrix* the tarsi are larger than those of females, but even a female of *histrix* has much larger tarsi than a male of *fasciatus* of the same size.

Although the four dorsal spots of *histrix* are diagnostic of the species they are lacking in many individuals. It is a question whether the basal and subapical bands (the latter in the shape of a wide, inverted V) become reduced to spots, or whether the spots become enlarged into bands.

I have not examined the type of *aragaoi*, but Luiz P. R. Cunha of Rio de Janeiro sent me a photograph. This specimen, in shape, convexity, and very large tarsi, seems to be the same as *histrix*. The only difference is the presence in *aragaoi* of two yellow spots laterally at the base of the pronotum, one within each hind angle. According to the description, the elytra are scaled with vague fasciae, as in three of my specimens from Para. The authors stated that the prosternal process does not exceed the level of the front coxae, but perhaps their specimen is a female.

Three males and one female were dissected.

ECOLOGY: A male specimen in the Zoologisches Museum in Berlin, collected on September 19, 1892, by Schulz S., is noted as eating on the fruits of *Oenocarpus baccaba*, the baccaba palm, in company with a specimen of *H. depressus*.

### ***Homalinotus pectinis,*** new species

Figures 2, 16, 41, 80, 114, 129

TYPE MATERIAL: Type, male, Balzapamba, Ecuador, in Muséum National d'Histoire Naturelle, Paris. From Ecuador: Balzapamba, Bolivar Province, de Mathan or F. Campos R., collectors, 11 paratypes in Paris, in the American Museum of Natural History, National Museum of Natural History, Smithsonian Institution, Washington, D.C., and Kuschel collection in Department of Scientific and Industrial Research, Nelson, New Zealand; Rio Cajapas [Cayapas] and Carondelet, one each in Kuschel collection; S. Zavier [or Savier, Javier?], not found, one male, two females in British Museum (Natural History). From Colombia: Bogota and Muzo, one each in Muséum National d'Histoire Naturelle; Muzo, one in Kuschel collection; Darien, and Cordillera, Rio Yurumangui, one each in Kuschel collection. From Costa Rica: Hamburg Farm, Reventazon, November, 1921, January, 1925, and April, 1926, Nevermann, collector, three in National Museum of Natural History, Washington, D.C.

DIAGNOSIS: Differing from other species in having inner apical comb, or fringe, of hind tibia as long as outer comb (fig. 16), not shorter;

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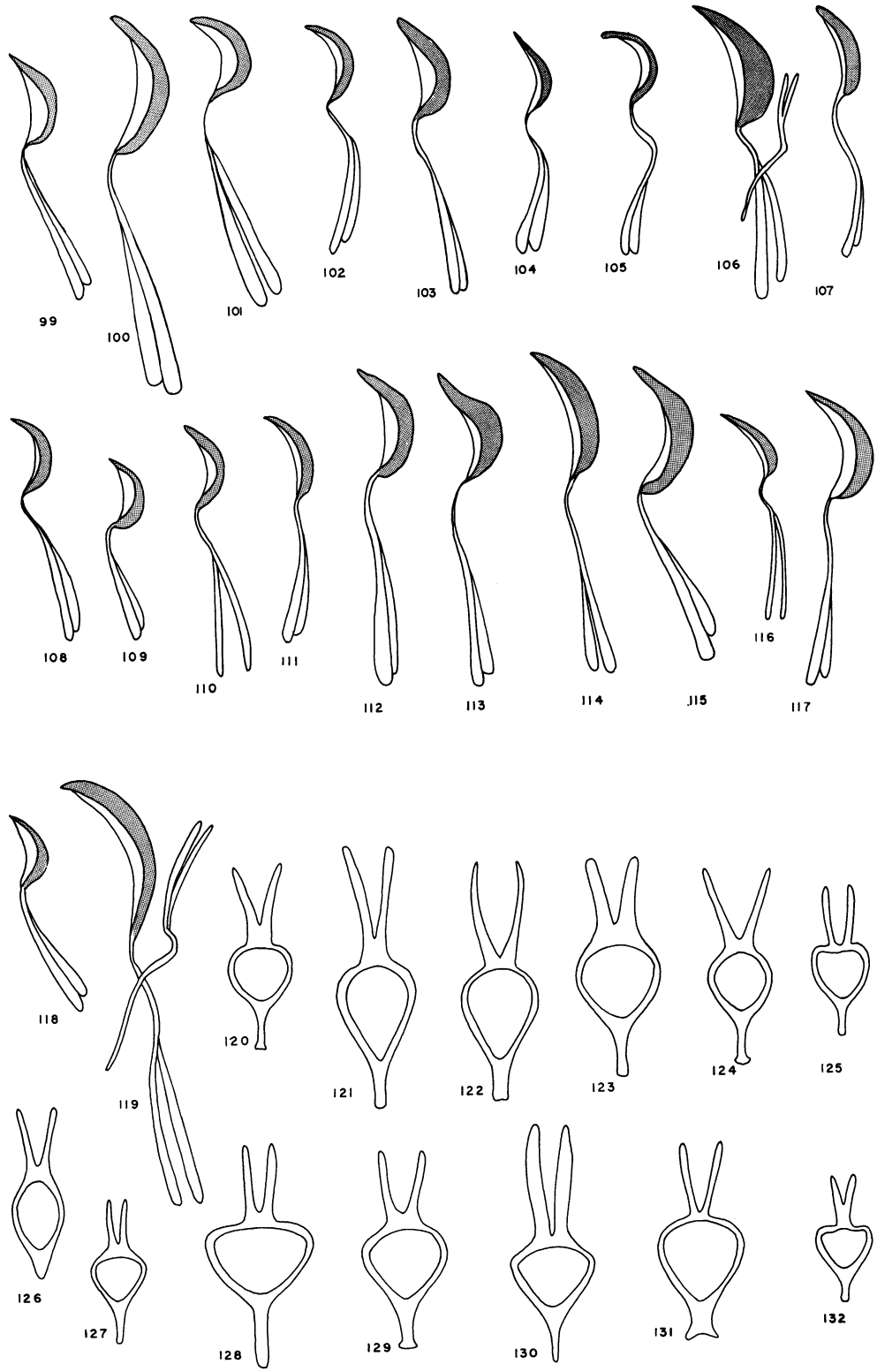
FIGS. 99–119. Aedeagus of *Homalinotus*, lateral views; white parts are membranous. 99. *H. alloides*. 100. *H. squamulosus*. 101. *H. cristatus*. 102. *H. deplanatus*. 103. *H. depressus*. 104. *H. dorsalis*. 105. *H. fasciatus*. 106. *H. histrix*, with tegmen *in situ*. 107. *H. humeralis*. 108. *H. inermis*. 109. *H. inopinatus*. 110. *H. kuscheli*. 111. *H. lherminieri*. 112. *H. nodipennis*, Santa Marta, Venezuela. 113. *H. nodipennis*, Ipiranga, Brazil. 114. *H. pectinis*. 115. *H. platynotus*. 116. *H. porosus*. 117. *H. praelongus*. 118. *H. umbilicatus*. 119. *H. validus*.

FIGS. 120–132. Tegmen of *Homalinotus*. 120. *H. alloides*. 121. *H. coriaceus*; characteristic also of *deplanatus* and *porosus*. 122. *H. squamulosus*. 123. *H. depressus*. 124. *H. humeralis*. 125. *H. inopinatus*. 126. *H. kuscheli*. 127. *H. lherminieri*. 128. *H. nodipennis*. 129. *H. pectinis*; characteristic also of *cristatus*, *dorsalis*, *fasciatus*, *histrix*, and *inermis*. 130. *H. platynotus*. 131. *H. praelongus*. 132. *H. umbilicatus*.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otherwise similar to *humeralis* and allies. Sexes externally alike.

RANGE: Colombia and Ecuador, mostly at high altitudes in the cordillera, and Costa Rica, on the plains of Limon.

ETYMOLOGY: The Latin name *pectinis* refers to the comb or fringe of setae at the apex of the hind tibia.

DESCRIPTION OF TYPE: Length 21 mm. Brownish with dorsal and ventral yellowish, sparse scales among tubercles, and scattered patches of somewhat larger whitish scales on dorsum. Eyes dorsally with space between them narrower than base of beak and scarcely wider than antennal club. Beak feebly arcuate beyond insertion of antenna, longer than pronotum, punctate densely, confluently, medially carinate, dorsally not widened at apex; apical border medially triangulate (fig. 2). Antenna inserted in front of middle of beak; funicle with segment 1 longer than 2; segment 7 rather distinct from club; club elongate, almost equal in length to last four funicular segments combined.

Pronotum and scutellum as described for *humeralis*, but base of pronotum not depressed. Elytra slightly more than twice length of pronotum, rather convex; subapical callus distinct, humerus not especially prominent; intervals and striae not well differentiated; intervals (except interval 3) and striae with single rows of round tubercles slightly smaller than those of pronotum, some dense, some separated by their diameter; punctures of striae somewhat obscured by scales.

Prosternum, coxae, femora, and tibiae as described for *humeralis*, but no long hairs on inner edge of hind femur, and hind tibia with inner edge straight. Front tarsus with segment 2 less transverse, almost as long as wide.

Aedeagus (figs. 65, 80) with apex of median lobe rounded truncate; basal sclerite rather elongate, with median projection long and sinuous; tegmen (fig. 129).

VARIATIONS FROM TYPE: The paratypes range in length from 17 to 25 mm. Females generally show less dense and coarse punctation of the beak, and the beak appears virtually straight. The appearance of the specimens as a whole is quite constant, although in some there are more of the additional whitish flecks of scales. In some specimens the convex tubercles of the pronotum have become flattened medially; in some the beak is slightly widened apically, with more than one carina medially. The little triangular projection at the dorsal apex of the beak is present in eight specimens of both sexes, in addition to the type specimen; it probably becomes worn with feeding.

DISCUSSION: Externally, except for the difference in the inner apical comb of the tibia, *H. pectinis* is similar to females of *humeralis*, *dorsalis*, and *inermis*, but is usually larger and when in good condition it appears darker than the others and is flecked with small clusters of whitish scales (four or five across the middle of the pronotum and about 20 on each elytron). Similar patches of scales are present in *dorsalis*, but in that species the scutellum also is covered with white scales, and the eyes are wider apart across the frons. The narrowly placed eyes agree with those of *humeralis* and the other species that follow (except *dorsalis* and *cristatus*). From females of *humeralis*, *pectinis* differs by having straight, not incurved, hind tibiae and from females of *inermis* by having a distinct, backward curving tooth on the inner edge of the hind femur instead of a minute tooth or no tooth. Males of these three species possess secondary sexual characters not present in males of *pectinis*. I have not found an external character that distinguishes the sexes of *pectinis* except for the slight difference in the beak.

The median projection of the basal sclerite (fig. 80) is long and sinuous as that of *coriaceus* and allies, but the base is more elongate, less hammerhead-shaped.

The only other species found as yet in Central America are *dorsalis* from Panama and *validus* from Costa Rica, both of which occur also in South America. Two of the three paratypes from Costa Rica were labeled as "*Homalonotus*, sp. n.?" by Van Emden in 1931. A specimen from Llanos, Ecuador, in the Dresden Museum, determined by me as *squamulosus*, is actually *pectinis*.

Three males and four females were dissected.

ECOLOGY: One specimen was collected at night on the leaf of a Central American palm, *Chamaedorea*, "im Urwald" by Nevermann, April 10, 1926, at Hamburg Farm, Reventazon, Costa Rica, and another "an Gebüsch" at the same locality, January, 1925.

### *Homalinotus humeralis* Gyllenhal

Figures 12, 42, 43, 59, 81, 107, 124

*Homalonotus humeralis* GYLLENHAL, 1836, p. 586 (Cayenne, [French Guiana]; type, male, in

Naturhistoriska Riksmuseum, Stockholm, examined).

DIAGNOSIS: Differing from other species in having white scaly streak at center of pronotum, and further by long, bristly epaulettes of male. Differing from *kuscheli* (which has somewhat shorter epaulettes in male) in having elytra at base of interval 5 elevated, not smooth, and with larger, usually more convex tubercles than on remainder of elytra.

RANGE: Amazon Basin from Obidos in Brazil north up the Orinoco in Venezuela, west to São Paulo de Olivença, southwest to eastern Bolivia; also the Guianas. (For data on the 73 specimens examined, see Appendix.)

DESCRIPTION: Length 14 to 20 mm. Brownish with dorsal and ventral yellow scales among tubercles; pronotum at middle with longitudinal row of similar scales, but white. Eyes dorsally rather close together, space between them narrower than base of beak. Beak arcuate, longer than pronotum, dorsally at apex not or scarcely widened; sides at base bent inward obliquely to top of eye; in basal half or more than half, scaly, confluently punctate, medially carinate; in apical half (male) with same punctation, (female) very feebly punctate. Antenna inserted about one third from apex (male), and near middle (female); funicle with segment 1 scarcely longer than 2; segment 7 as long as 3 and longer than wide; club bulbous.

Pronotum narrower than elytra, with round, convex tubercles separated by their diameter or less, a few touching, a few of smaller size; base at center longitudinally depressed; sides strongly arcuate from base to apical constriction; postocular lobe strong. Scutellum shield-shaped, with sparse, vertical scales. Elytra medially flattened and slightly depressed, about two and one-half times length of pronotum, attenuate toward apex where subapical callus prominent; humerus prominent, that of male also bulbous and with tuft of long (longer than scutellum) curling orange hairs projecting laterally; intervals and striae distinctly marked; intervals (except for interval 3 which is double) with single row of same kind of tubercles as those on pronotum; striae with smaller tubercles; punctures mostly hidden by scales; tubercles of disc somewhat smaller than those of interval 5; tubercles separated by about their diameter; interval 5 (just within humerus) in basal part strongly elevated, especially in male, and some of its tubercles doubled, some as large as those of pronotum.

Prosternum at center depressed between feeble tumidities in front of coxae; front and middle intercoxal spaces as wide as at least one-half of coxa and about same width as beak. Front femur scarcely clavate; hind femur bypassing elytra, that of male on inner edge with fringe of yellow hairs as long as width of femur at base. Front and middle tibiae of some specimens (including type) on inner edge opposite femoral tooth slightly angulate; hind tibia with inner edge incurved at apical fringe which occupies about one-third of length of tibia.

Aedeagus with apex emarginate at middle (fig. 59); basal sclerite hammerhead-shaped (fig. 81) with short median projection; tegmen (fig. 124).

MALE: Coxae, mesosternum, disc of metasternum, abdominal segment 1 and most of 2 with long golden hairs; similar hairs within hind femur and projecting outward from humerus; humeri more prominent than those of female.

DISCUSSION: Females of *humeralis* in which the median white scales of the pronotum are worn off may be difficult to separate from females of *dorsalis*, *inermis*, and *pectinis*. The hind tibiae of *humeralis*, however, differ from those of these three species by being arcuate and bent inward in the region of the dorsal comb (or apical fringe of hairs). The beak of *humeralis* is distinctly arcuate, not feebly arcuate or virtually straight. Males of *humeralis* have not only humeral hairs, but also abundant, long hairs on the venter and hind femora. Similar hairs are present on the venter of males of *depressus* and *nodipennis*, which differ notably by their flattened or concave upper surface and widely angled pronotum. In *validus*, both sexes are equally hairy ventrally and on the legs.

Two males were dissected.

### ***Homalinotus kuscheli,*** new species

Figures 13, 44, 61, 82, 110, 126

TYPE MATERIAL: Type, male, Curitiba, Parana, Brazil, in Kuschel collection, Entomology Division, Department of Scientific and Industrial Research, Nelson, New Zealand; and paratype, female, Barra do Garça[s], Goyaz [border of Goyaz and Mato Grosso], Brazil, September, 1943, in Museu de Zoologia, São Paulo.

DIAGNOSIS: Differing from other species except *humeralis* and *alloides* by having yellow epaulettes of bristly hairs on shoulders of male. Both sexes differ from *humeralis* by having straight, not apically curved, hind tibiae which have, in addition, longer outer apical comb (more than one-third length of tibia); differing from *alloides* by having beak arcuate, not straight, and elytra not concave at base.

RANGE: Brazil from Barra do Garças on the Rio Araguaia on the border between Goyaz and Mato Grosso south to Curitiba on the coast of Parana.

ETYMOLOGY: Named in honor of the eminent curculionidist, Guillermo Kuschel, who has already done considerable work on the Cholinae and who has been most helpful in the present study with his knowledge, his advice, and his contribution of a wealth of specimens.

DESCRIPTION OF TYPE: Length 17 mm. Probably brownish, but blackened with grease, with dorsal and ventral whitish scales among tubercles. Eyes, beak, and antenna as described for male of *humeralis*, but beak in apical half sparsely, finely punctate, and scales at base quite abraded.

Pronotum as described for *humeralis* but tubercles denser, separated by one-half or less than half their diameter, and base at center scarcely depressed and without white median streak; sides of pronotum less arcuate; apical constriction obsolete. Scutellum shield-shaped, hairs abraded. Elytra evenly flattened, about two and one-half times length of pronotum, scarcely attenuate to apex where subapical callus prominent; humerus not bulbous, with tuft of long (as long as scutellum), curling, yellow orange hairs; intervals, except for interval 3 which is double, with single rows of tubercles like those of pronotum; intervals and striae distinct; striae with tubercles smaller; tubercles separated by their diameter or less; elytra quite smooth, without elevations or depressions.

Prosternum, coxal spaces, and femora as described for *humeralis* although femoral hairs evidently worn, being visible at base only. Metasternum on disc with long golden hairs similar to those on humerus; abdominal segments 1 and 2 lacking long hairs (unless abraded?). Front and middle tibiae with inner margins opposite femoral tooth very slightly expanded; hind tibia straight; dorsal comb or fringe longer than one-third length of tibia.

Aedeagus with apex emarginate at middle (fig. 61); basal sclerite hammerhead-shaped, with short median projection (fig. 82); tegmen (fig. 126).

VARIATION FROM TYPE: The female paratype is 19 mm., and agrees with the male except as follows: the beak is more sparsely punctate throughout; the antennae are inserted at about the middle of the beak; the elytra have no humeral tufts; the subapical callus is not prominent; the hind femora and metasternum lack long hairs; and the center of the metasternum has a round, small depression.

DISCUSSION: As is apparent from the description above, the differences between *kuscheli* and *humeralis* are slight and perhaps I would not have recognized this species as new had it not been so marked by Dr. Kuschel. Examination of additional specimens may obliterate some of the differences, such as the shorter humeral tufts or the absence of white scales on the pronotum of *kuscheli*, but the less attenuate, smoother elytra, the straight hind tibia and, in the male, the less bulbous pronotum of *kuscheli* seem to be good specific characters. The third tarsal segment is even larger in *kuscheli* than in *humeralis*. As for the genitalia, the median projection of a *kuscheli* of 17 mm. is as long as that of a *humeralis* of 21 mm., the apex of the median lobe is emarginate in both species (figs 59, 61), but more deeply in *kuscheli*.

I have not seen any *humeralis* from as far south as Parana, the type locality of *kuscheli*, which is far from the locality of the paratype in the north. Other species recorded from southern Brazil are *coriaceus*, *deplanatus*, *platynotus*, and *porosus*.

### ***Homalinotis inopinatus,*** new species

Figures 14, 45, 60, 83, 109, 125

TYPE: Male, Zamora, Ecuador, 1907, Ohaus, collector, in Staatliches Museum für Tierkunde, Dresden.

DIAGNOSIS: Unique male specimen agreeing with *inermis* by having no tooth on hind femur, but differing in elytral sculpture, aedeagus, and in absence of crest on subapical callus of elytra. Similar to *humeralis* and *kuscheli*, but lacking humeral bristles, aedeagus apically truncate, not emarginate, elytral tubercles sparse, not dense, and beak virtually straight, not arcuate.

RANGE: Known only from Zamora which, according to Brown (1941, p. 851) "lies in the

humid tropical forest but the sub-tropical regions are not far up the valley and on the surrounding hills."

ETYMOLOGY: The species is given the Latin name "unexpected" as it was found among a series of females of another species, *dorsalis*.

DESCRIPTION: Length 15 mm. Brownish black with dorsal and ventral yellow scales among tubercles. Eyes as described for *humeralis*. Beak straight from base to insertion of antenna where feebly decurved, longer than pronotum, dorsally with apex not widened; in basal two-thirds coarsely, confluently punctate and medially carinate; in apical third finely, sparsely punctate. Antenna inserted one-third from apex; funicle with segment 1 almost twice length of 2; segment 7 shorter than 3 and about as wide as long; club elongate.

Pronotum as described for *humeralis*, but base at center not depressed; sides less arcuate, and apical constriction obsolete. Scutellum shield-shaped. Elytra somewhat convex, about two and one-half times length of pronotum, scarcely attenuate to apex where subapical callus prominent; humerus not prominent or hairy; intervals and striae not very distinct; intervals with single rows of tubercles of size of those of pronotum, and sparse, separated by two or three times their diameter; striae with smaller tubercles.

Prosternum and intercoxal spaces as described for *humeralis*. Front femur scarcely clavate; hind femur reaching apex of elytra, not dentate on inner margin. Tibia with inner margin straight, not expanded; hind tibia with outer apical comb one-third length of tibia.

Aedeagus with apex truncate (fig. 60); basal sclerite hammerhead-shaped, with short median projection (fig. 83); tegmen (fig. 125).

DISCUSSION: Dorsally the unique male of *inopinatus* is very similar to females of *dorsalis* and *kuscheli*, although it is very different from males of those species (males of *dorsalis* have an angle under the beak and males of *kuscheli* have shoulder bristles). These females differ from *inopinatus* by having a tooth on the inner margin of the hind femur and the first segment of the antennal funicle proportionally shorter. *Homalinotus inopinatus* is dorsally similar also to *pectinis* which, however, is generally larger and differs radically by having the inner apical comb of the hind tibia as long as the outer comb (the only species in which this is true). The elytral tubercles of *inopinatus* are sparser than those of related species, but this difference may be dispelled when additional specimens are found.

*Homalinotus inopinatus* was labeled "*Abebaeus*, n. sp., " perhaps by Kirsch who proposed that genus for *dorsalis* and *cristatus*. The species would have been named for this nineteenth-century curculionidist, but the name is used elsewhere in the subfamily and might cause confusion in the future.

### *Homalinotus dorsalis* (Kirsch)

Figures 3, 10, 46, 47, 57, 84, 104

*Abebaeus dorsalis* KIRSCH, 1869, p. 191 (Bogota, Colombia; type, female, in Staatliches Museum für Tierkunde, Dresden, examined).

DIAGNOSIS: Females similar dorsally to females of *humeralis*, *inermis*, *kuscheli*, and *pectinis*, but differing, when in good condition, in dense white scales of scutellum; males differing from all species in angulation under beak, both sexes differing in more widely spaced eyes.

RANGE: Panama, chiefly in the Canal Zone, south to Colombia. (For data on the 45 specimens examined, see Appendix.)

DESCRIPTION: Length 12 to 19 mm. Brownish with dorsal and ventral yellow scales among tubercles; scutellum with dense yellow or white scales visible to naked eye. Eyes dorsally widely separated. Beak virtually straight with very slight arcuation toward apex, longer than pronotum, dorsally not widened at apex; beak of male densely, confluently punctate, medially carinate, ventrally about one-third from base angulate; of female finely punctate, especially in apical half, medially carinate at base or in basal half, ventrally not angulate.

Antenna and pronotum as described for *humeralis*, but pronotum of some males virtually as wide as elytra, with strongly bulbous sides, and antennal club less bulbous. Scutellum shield-shaped, with dense scales arranged horizontally on sides, vertically at center. Elytra medially slightly flattened, scarcely more than twice length of pronotum; subapical callus prominent; intervals fairly distinct from striae; intervals and striae (except interval 3) well marked with single rows of round, convex tubercles separated longitudinally by their diameter or more, some of same size as those of pronotum, some smaller; strial punctures usually obscured by scales.

Prosternum, femora, and tibiae as described for *humeralis*, but hind tibia straight and hind femur not hairy within, and intercoxal spaces perhaps slightly wider. Mesosternum in most specimens, but not in type, forming distinct ledge.

Aedeagus with apex subacuminate (fig. 57); basal sclerite elongate, with short median projection (fig. 84); tegmen (fig. 129).

MALE: Beak angulate ventrally, punctate more densely than that of female; median carina of beak longer and pronotum wider than for female.

DISCUSSION: The angulation under the beak of the male may escape observation if the beak is deflected against the prosternum. The reason, however, that this character has not previously been noted is that the unique type of *dorsalis* was a female. Furthermore, the type is not typical of the majority of specimens. It is from Bogota, whereas the remaining specimens examined are from the lowlands of Colombia and Panama; the pronotum lacks as distinct a median furrow as other specimens, and the apical constriction is less pronounced; the scales of the scutellum are worn off and the elytra are darkened; the mesosternum is not noticeably convex. Other characters agree with those of the majority of females.

In about a dozen females the white scales or hairs of the scutellum do not show. Such individuals can be distinguished from females of related species in having the elytra proportionally shorter and the interocular space wider; further from *inermis* in having the hind femur dentate; from *humeralis* in having the hind tibia straight throughout; from *kuscheli* in having the beak scarcely arcuate; and from *pectinis* in having the club bulbous, not elongate, and the inner comb of the hind tibia shorter than the outer comb. None of these other species has been taken in Panama, but *dorsalis* and *pectinis* both occur in Colombia, and *pectinis* in Costa Rica.

ECOLOGY: A series of 10 males and 18 females in the National Museum of Natural History in Washington were taken in fruitfly traps by J. Zetek, at La Campana, Panama, in February and March, 1938; two specimens were taken in a trap at Arraijan, Panama, in 1947.

### *Homalinotus cristatus* (Kirsch)

Figures 48, 55, 85, 86, 98, 101

*Abebaeus cristatus* KIRSCH, 1869, p. 191, footnote ("Chancho majo" [=Chanchamayo, Peru]; type, male, in Staatliches Museum für Tierkunde Dresden, examined).

DIAGNOSIS: Unique in having a single large crest on interval 3 of elytra, in front of callus; crest angularly elevated, visible to naked eye. Pronotum narrower than elytra, size very large, and base of metasternum with transverse black carina.

RANGE: Rivers of northern and central Peru east to Benjamin Constant and the Rio Javary on the border of Peru and Amazonas, Brazil. (For data on the 36 specimens examined, see Appendix.)

DESCRIPTION: Length 22 to 32 mm. Brownish with dorsal and ventral yellow scales among tubercles; pronotum with narrow lateral stripe of whitish scales. Eyes dorsally widely separated. Beak virtually straight, but beyond antennal insertion feebly arcuate; as long as or slightly longer than pronotum, dorsally only slightly widened at apex, densely, confluently punctate, medially carinate. Antenna inserted in front of middle, farther front in male than in female; funicle with segment 1 slightly longer than 2; segment 7 narrower than club; club elongate.

Pronotum rather convex, narrower than elytra, with fairly uniform, round, convex tubercles that are larger than those of elytra and separated by their diameter or less; base at center not depressed; sides subparallel from base to middle, thence arcuate to apex; postocular lobe well developed. Scutellum shield-shaped or oval. Elytra slightly more than twice length of pronotum; sides subparallel; subapical callus distinct; interval 3 at about middle with blunt, tuberculate, elongate crest, approximately length of one-fourth of elytra; intervals with single or double rows of round tubercles separated longitudinally by about their diameter; striae with punctures of same size as tubercles.

Prosternum deeply depressed between tumidities in front of coxae; intercoxal spaces as described for *humeralis*. Metasternum at base with transverse black bar. Front femur feebly clavate; hind femur with apex reaching beyond apex of elytra, with inner tooth lacking in 3 of 28 specimens and in several other specimens scarcely visible. Tibiae not or seldom expanded sinuately on inner edge.

Aedeagus with apex broadly rounded and medially slightly emarginate (fig. 55); sclerite hammerhead-shaped with short median projection (figs. 85, 86); tegmen (fig. 129).

MALE: Antenna inserted farther front; underside of beak more punctate.

DISCUSSION: The rather convex, rather narrow pronotum, the general type of dorsal tuberculation, the virtually nonangulate inner margins of the tibiae, and the short median projection of the basal sclerite are found also in *dorsalis*, *humeralis*, *inopinatus*, and *kuscheli* but the median projection (figs. 85, 86) is stouter and the base of the sclerite proportionally larger than those of any other species. The metasternal bar is the same as that of *alloides*, *depressus*, and *nodipennis*, which are very different species.

In *cristatus*, as in *nodipennis*, I have found one or two aberrant specimens with the elytra almost smooth; thus in a small female from Rio Ucayali, Peru, interval 3 is very feebly elevated. Two males and one female were dissected.

*Homalinotus inermis* (Desbrochers des Loges)

Figures 49, 63, 87, 88, 108

*Anotiscus inermis* DESBROCHERS DES LOGES, 1906, p. 369 (Cayenne, [French Guiana]; type, female, labeled as from "Brazil," in Muséum National d'Histoire Naturelle, Paris, examined).

DIAGNOSIS: Differing from majority of species in the absence of usual tooth on inner margin of hind femur, this femur being long and narrow, not at all clavate. Male unique in having subapical callus of elytra cristate and all, not merely front, tarsi with very long lateral hairs.

RANGE: Caracas, Borburata, and Rancho Grande in northern Venezuela, Cayenne in French Guiana, and Brazil without further locality. (For data on the 15 specimens examined see Appendix.)

DESCRIPTION: Length 15 to 20 mm. Brownish with dorsal and ventral dense, yellow scales among tubercles. Eyes dorsally rather close together, space between them narrower than base of beak and slightly wider than antennal club. Beak virtually straight, feebly curved beyond insertion of antenna, about one-fourth longer than pronotum, dorsally scarcely widened at apex where some individuals have angular projection, punctate densely; in some individuals medially carinate. Antenna inserted about one-third from apex (male), near middle (female); funicle with segment 1 about as long as 2 and 3 combined; segment 7 rather separate from club; club elongate.

Pronotum narrower than elytra; median convex, round tubercles slightly larger and denser than lateral ones; sides strongly arcuate from base to apical constriction; postocular lobe strong. Scutellum shield-shaped. Elytra at middle longitudinally, faintly depressed, more than twice length of pronotum, attenuate to apex; intervals distinct from striae; intervals (except interval 3) and striae with single rows of convex tubercles slightly smaller than those of pronotum; punctures of striae generally obscured by scales; subapical callus distinct, that of male elevated into short crest carrying double row of eight or more tubercles; humerus prominently elevated, tumid, and tuberculate.

Prosternum depressed between tumidities in front of each coxa; front intercoxal space about one-half diameter of coxa, about same width as beak; middle intercoxal space slightly wider. Front femur linear, not clavate; hind femur with apex reaching beyond apex of elytra; inner margin not toothed (but tiny tooth in two females). Tibiae straight or just perceptibly expanded on inner margin near middle.

Aedeagus with apex broadly rounded (fig. 63); basal sclerite elongate, with minute median projection (fig. 87); tegmen (fig. 129).

MALE: Front tarsus larger than other tarsi; segments 1 and 2 of front tarsus distinctly longer than wide and longer than segment 3; all tarsi with long lateral hairs as long as segments are wide; hind femur arcuate; subapical callus of elytra carinate and tuberculate.

DISCUSSION: In general shape and color and in the tuberculation of the elytra, *inermis* resembles closely *humeralis*, but the male of *inermis*, instead of having long hairs on the humerus, has them on the front tarsus, and differs further by having much longer segments 1 and 2 on the tarsus, a short crest on the subapical callus of the elytra, and no white median scaly stripe on the pronotum. In two of 15 specimens, the "unarmed" hind femur does have a tiny tooth, thus females, which lack the male subapical crest of the elytra, can be difficult to identify if they have no tooth. The unique male of *inopinatus* also lacks the tooth of the hind femur, but the elytral tubercles of that species are much sparser than those of *inermis*. In the female of *humeralis* the hind tibia is incurved apically, not straight.

*Homalinotus inermis* is probably more closely related to *lherminieri* and *umbilicatus* than to other species, agreeing with them in the male, not only in the long tarsal segments and long hairs,

but in the very short projection of the basal sclerite (scarcely longer than the sclerite). The dorsal surface of the tarsi, however, is covered with scales in *inermis*, not almost glabrous as in these two Antillean species. The pronotum of *inermis* differs also in having sparser, more convex, less flat tubercles which are not umbilicate. Unfortunately, of these three species I have seen only 10 or 15 specimens each, most of which lack exact locality. Even the type locality of *inermis* is doubtful, as the author specified Cayenne, but the actual specimen is labeled "Brazil."

Klima (1936) in the Junk catalogue listed only "*inermicrus*" Desbrochers des Loges for this species, and Blackwelder (1947) listed "*inermicrus* Klima" as synonym of *inermis* Desbrochers des Loges. I believe that "*inermicrus*" is a *nomen nudum*; Desbrochers des Loges (1906) mentioned it on page 356, but without locality or description, whereas the description of *inermis* appeared 13 pages later.

ECOLOGY: A specimen in the National Museum of Natural History in Washington was collected in Rancho Grande, Venezuela, by mercury vapor lamp by Spangler in 1969.

### *Homalinotus lherminieri* Chevrolat

Figures 50, 52, 62, 89, 111, 127

*Homalonotus Lherminieri* CHEVROLAT, 1878, p. CXLI (Guadeloupe, [Lesser Antilles]; type, male, in Naturhistoriska Riksmuseum, examined).

DIAGNOSIS: Differing from other species except *umbilicatus* in having almost glabrous dorsal surface on tarsi. Males differ from males of *umbilicatus* by transverse, not subquadrate pronotum; females scarcely differing at all, but mesosternal process of *lherminieri* usually emarginate, not truncate, at apex, and femora not at all clavate.

RANGE: Lesser Antilles, on northern islands of Guadeloupe and Dominica. (For data on the 10 specimens examined, see Appendix.)

DESCRIPTION: Length 16 to 20 mm. Black with dorsal and ventral yellowish scales among tubercles; fresh specimens (fig. 52) with additional yellow, overlapping scales at base and apex of elytra, in some individuals also behind base, and on sides of pronotum, on mesepimeron, base of metepimeron, and laterally at base of metasternum. Eyes separated above by scarcely more than width of antennal club. Beak feebly arcuate beyond antennal insertion, slightly longer than pronotum, dorsally not widened at apex, punctate in great part very finely, sparsely, but at base densely; beak of female slightly depressed in front of head. Antenna inserted in apical third of beak; funicle with segment 1 about as long as 2 and 3 combined; segment 7 about as wide as base of club; club elongate.

Pronotum with dense, flat tubercles, some umbilicate (punctate); male with pronotum almost twice wider than long, as wide as elytra; sides feebly arcuate or subparallel from base to near apex where front angles bluntly rectangular; sides of front margin parallel with base of pronotum; pronotum of female not quite so wide as elytra; sides subparallel from base to near middle, thence arcuate to apical constriction. Postocular lobe feeble. Scutellum shield-shaped. Elytra slightly more than twice length of pronotum; disc not depressed; subapical callus obsolete; intervals and striae not well differentiated, both with more or less single rows of rather dense tubercles mostly of same size and convexity, as on pronotum; strial punctures indistinct.

Prosternum at center feebly depressed between feeble tumidities in front of coxae; front and middle intercoxal spaces about equal to diameter of coxa. Metasternum in some specimens at middle foveate. Mesosternum between coxae emarginate apically. Abdomen of some specimens with terminal segment transversely depressed and hairy. Front femur linear, longer than other femora; hind femur with apex reaching at least to apex of elytra. Tibiae with outer apexes flared slightly outward; inner margin straight. Tarsi dorsally glabrous except for sparse, semierect hairs.

Aedeagus with apex rounded (fig. 62); sclerite elongate with very short projection (fig. 89); tegmen (fig. 127).

MALE: Segments 1 and 2 of front tarsus longer than wide and longer than segment 3; all segments of front tarsus with long lateral hairs spreading outward, hairs as long as segments wide; front femur proportionally longer than that of female; pronotum strongly transverse, sides of front parallel with base. (fig. 50).

DISCUSSION: Only two species (*lherminieri* Chevrolat, 1878, and *umbilicatus* Desbrochers des Loges, 1906) are found in the Lesser Antilles. Both are reported from the island of Guadeloupe and *lherminieri* also from neighboring Dominica; *umbilicatus* occurs again at the southern end of

the Antillean chain of islands, on St. Vincent and Grenada. One wonders which species inhabits the intervening islands of St. Lucia and Martinique and other smaller islands to the north or south. These two species, especially the females, are extremely similar in most characters, but the difference in the shape of the pronotum of males (notably wide and transverse in *lherminieri*, narrow and subquadrate in *umbilicatus*) is striking. Nonetheless, most authors have followed Hustache (1930) in synonymizing *umbilicatus*. Hustache expressed surprise that Chevrolat did not mention the remarkably long hairs of the front tarsus of the male. I am surprised that Hustache, if he knew the males of both species, could have synonymized them. However, it is possible that Hustache did not recognize the *umbilicatus* specimens as males, and that he considered all specimens with narrower pronotum as females. The type specimen of *umbilicatus* is a female and as such could be synonymized, but Desbrochers des Loges also had a male, which I have examined. Both specimens are labeled "Guadel" and are in the Fleutiaux collection. The type of *lherminieri* is a male and the allotype a female; no locality data is appended to them, but a green label in Chevrolat's box reads "Insel Guadulp." Probably Chevrolat made his actual description of *lherminieri* from his female because he described the pronotum as "subconico, lateribus rotundato," not mentioning the long tarsal hairs or transverse pronotum of his male. Desbrochers des Loges mentioned the hairy male tarsus, but made no distinction between the sexes for the pronotum. Identification of females may be difficult as their diagnostic characters are variable and not too reliable.

The basal sclerite of the aedeagus of the two species is virtually the same and about the same as that of *inermis*, being rather elongate and with a short projection. The apex apparently differs slightly, that of *lherminieri* (fig. 62) having the apical border only a little wider than the lateral borders, and *umbilicatus* (fig. 64) having it much wider. Two males of *lherminieri* and three of *umbilicatus* were dissected.

In a number of species (*coriaceus*, *fasciatus*, *histrix*, etc.) only a minority of individuals retain their scales. This is true also of the two Antillean species, only two or three of the 22 specimens examined showing dorsal scales. The allotype of *lherminieri* has a few scales at the base of the metasternum. Desbrochers des Loges wrote that his *umbilicatus* could be recognized by its shining, glabrous, black surface.

ECOLOGY: Two males and a female of *lherminieri* were taken "at *Euterpe dominica*," a palm, by Henry A. Hespenheide in August, 1964, near Castle Bruce on the eastern coast of Dominica.

### *Homalinotus umbilicatus* (Desbrochers des Loges)

Figures 7, 51, 64, 90, 118, 132

*Anotiscus umbilicatus* DESBROCHERS DES LOGES, 1906, p. 370 (La Guadeloupe, [Lesser Antilles]; type, female, in Muséum National d'Histoire Naturelle, Paris, examined).

DIAGNOSIS: Very similar to *lherminieri*, but differing in subquadrate, not transverse, pronotum of male, and in nonemarginate apex of mesosternum, more clavate front femora not longer than hind femora, more distinct subapical callus of elytra, and generally slightly expanded inner edge of front and middle tibiae.

RANGE: Lesser Antilles, on northern island of Guadeloupe and on southernmost islands of St. Vincent and Grenada. (For data on the 12 specimens examined, see Appendix.)

DESCRIPTION: Length 16 to 19 mm. Black, usually shining, but fresh specimens scaly as described for *lherminieri*. Eyes, beak, and antenna as described for *lherminieri*, but club perhaps shorter.

Pronotum with dense, flat, umbilicate tubercles; slightly narrower than elytra, that of male scarcely wider than long, appearing subquadrate, with sides subparallel, converging slightly toward apex where front corners subrectangular; that of female as described for *lherminieri*. Postocular lobe feeble. Scutellum, elytra, prosternum, coxae, metasternum, and abdomen as described for *lherminieri*, but subapical callus of elytra in one male readily visible and humerus of many specimens somewhat obliquely flattened laterally. Mesosternum between coxae with apex truncate. Front femur feebly clavate where tooth emerges, scarcely longer than hind femur; hind femur reaching apex of elytra. Tibiae and tarsi as described for *lherminieri* but front and middle tibiae of some specimens with inner margins slightly expanded or angulate near middle.

Aedeagus with apex rounded (fig. 64); basal sclerite elongate, with very short median projection (fig. 90); tegmen (fig. 132).

MALE: Pronotum subquadrate with distinct

front angles; front tarsus as described for *lherminieri*.

DISCUSSION: See *lherminieri* for discussion and comparison of the species.

### *INCERTAE SEDIS*

*Curculio cyanicollis* OLIVIER, 1790, p. 499 (no locality; no type found).

The type of this species was said to be in the Hunter collection in Glasgow, but Dr. R. A. Crowson has informed me that it is no longer there, although it is listed on the card index for the collection. It was illustrated by Olivier in 1807 (pl. 10, fig. 121) and by Herbst (1795, pl. 72, fig. 6), under the generic name *Rhynchaenus*. In 1807, Olivier gave the locality as "Amérique méridionale." Except for the distinctly blue color, expressed in the name, in the illustrations, and in the text, this specimen resembles closely the common *Homalinotus coriaceus*. Neither Schoenherr (1836) nor subsequent authors, including Kuschel, had seen this species. It is possible that the blue or bluish head and thorax is due to artificial coloring, or that the shiny black of the surface turned bluish.

## GENUS *OZOPHERUS* PASCOE

*Ozopherus* PASCOE, "1873" [1872], p. 473 (type species, by monotypy, *Ozopherus muricatus* Pascoe).

### DIAGNOSIS

Differing from other genera in having conical and spiniform tubercles or robust spikes on elytra, very large hind coxae, short second abdominal segment, which is scarcely longer than third, not so long as third and fourth segments combined, and brush of long golden hairs at inner apexes of middle and hind femora. Sexes externally alike.

### DESCRIPTION

Black weevils with very fine yellow scales covering surface except where tubercles and spines emerge.

Length 17 to 27 mm. Mandibles with inner margins smooth, not dentate. Eye elongate, flat, narrowed at lower end, twice as long as base of beak (in lateral view). Beak virtually straight, longer than pronotum. Labium flat, narrow. Antenna inserted at middle of beak; scape reaching almost to eye; funicle with segment 1 distinctly longer than following segments; segment 7 narrower than club, but pressed close to and seeming part of it.

Pronotum with postocular lobe; vibrissae short. Scutellum elongate, shield-shaped, punctate densely. Elytra with round as well as conical tubercles and spines; subapical spines in some specimens as long as tarsal segments 1 to 3 and curved strongly backward; some spines split apically. Prosternum in front deeply emarginate and at middle slightly depressed. Front coxae almost contiguous; intercoxal space about width of antennal segments. Mesepimeron as in figure 6 of *Homalinotus*. Mesosternum and front of metasternum at middle tumid; metasternum at least as long as diameter of coxa, with round depression at center. Abdomen with segment 2 about same length throughout, at middle shorter than segment 1 and scarcely longer than segment 3; segment 5 transversely depressed; segment 1 behind coxae reduced to short strip because of large size of coxae.

Femora toothed on inner margin about one-third from apex, but tooth of middle and hind femora usually hidden by tufts of long, dense, yellow hairs; hind femur with apex reaching well beyond apex of elytra. Tibiae not toothed, but front tibia angulate or sinuate on inner margin near base, opposite femoral tooth; tibiae bent strongly inward toward apex where uncinate and mucronate (with two pincer-like spurs or hooks); front and hind tibiae on inner margin fringed with dense yellow hairs more than twice as long as width of tibiae; middle tibia with somewhat shorter hairs at base and apex only; hind tibia on outer margin with apical comb (or fringe of setae) in about apical third, longer than inner comb; middle tibia with inner comb apparently absent. Tarsi with segment 1 elongate (triangular at apex, narrower at base), narrower than segments 2 or 3; segment 2 wider than long; segment 3 bilobed to near base. Claws free. Genitalia of male with parameres and basal sclerite present.

### DISCUSSION

The species of this monotypic genus resembles, in its bulky body and spiny elytra some of the species of the genus *Cratosomus* of the Zygopinae, but differs in important characters (eyes, beak, prosternum, abdomen, and mesepimeron). In the Cholinae it is probably most closely related to *Homalinotus*, agreeing with it in having elongate eyes narrowed at the lower end; a post-

ocular lobe; narrow first tarsal segments; two apical spurs on the tibiae; and both parameres and a basal sclerite present in the genitalia. From other Cholinae, *Ozopherus* differs, in addition to the spines of the elytra and the short second abdominal segment, in a combination of traits, as follows: narrowly separated front coxae; narrow, rather closely set elongate eyes; large tufts of hairs at the apexes of the middle and hind femora; the inner margin of the front tibia sinuate nearer the base than the middle; and the long, abundantly hairy, curved hind tibia. In other genera the hind coxa extends about halfway into the first segment of the abdomen, but in *Ozopherus* it fills the entire side of the segment, leaving only a short strip behind the coxa.

Unfortunately, there are no indications in the literature as to the mode of life of this spinulose insect, but a specimen from Para, Brazil, was collected by Schulz S. on September 19, 1892, as it was eating the fruits of *Oenocarpus baccaba*, the baccaba palm, in company with two specimens of *Homalinotus* (*depressus* and *histrix*).

### *Ozopherus muricatus* Pascoe

Figures 53, 133–138

*Ozopherus muricatus* Pascoe, "1873" [1872], p. 474, pl. 11, fig. 9 ("Amazons [Para]; Cayenne"; lectotype, "Amazon," with pink label, here designated from five of the original specimens in the British Museum, examined).

Diagnosis: Same as for the genus.

Range: Amazon Basin from Belem and Obidos, Brazil, west to northern Peru and the Rio Napo, Ecuador; also French Guiana and one specimen from "Colombia." (For data on the 32 specimens examined, see Appendix.)

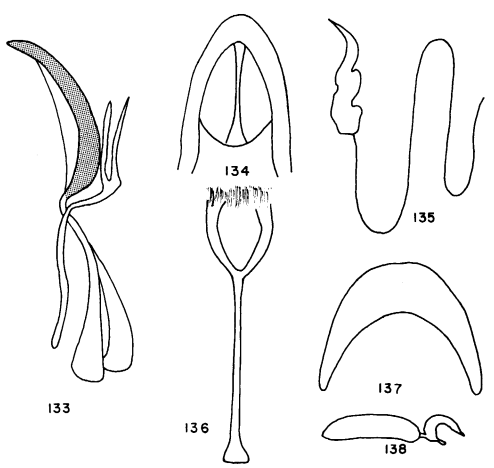
Description: Same as for the genus with the additions that follow: Beak subcylindrical; basal half usually medially unicarinate and more densely punctate and rugose than apical half. Antenna with club elongate, slightly longer than last three segments of funicle. Pronotum almost as wide as elytra, convex, with strongly arcuate, bulging sides and distinct apical constriction; laterally and medially with rows of large, shining, black tubercles. Elytra about twice length of pronotum; sutural interval with small, sparse tubercles; interval 2 at base with three or four larger tubercles; interval 3 with four to six tubercles, those toward apex becoming longer, more conical and/or distinctly spiniform; interval 4 not tuberculate; interval 5 with two basal and one apical conical tubercle; humerus with cluster of tubercles and outer intervals with scattered small tubercles.

Aedeagus with apex rounded (fig. 134); basal sclerite elongate, with very short median projection (fig. 135).

Discussion: The specimen chosen for the lectotype is the first in the series; the others are from Cayenne and the "city of Para."

The basal sclerite of the aedeagus is very similar to that of *inermis*, *lherminieri* and *umbilicatus* of *Homalinotus*. The only genitalic differences I see between the genera are that the apodemes of *Ozopherus* males (fig. 133) are apically greatly widened, and in females, tergite 8 (fig. 137) of *Ozopherus* is not apically finely dentate as are these tergites of *Homalinotus*.

Specimens with the subapical spines of the elytra longer, sharper, and more curved were thought at first to be males, and some indeed are, but in two dissected males, the spines are only one-half the length of other males. Two dissected females had short spines. No doubt the spines become worn. In many weevils an abundance of hairs on the legs or venter denotes males, but in this species (as well as in *Homalinotus validus*), both sexes have equally hairy legs which are readily visible without magnification.




Figs. 133–138. *Ozopherus muricatus*. 133. Aedeagus, lateral view, showing broad apodemes and tegmen *in situ*. 134. Apex of aedeagus (median lobe). 135. Basal sclerite, enlarged, with ejaculatory duct. 136. Sternite 8 of female. 137. Tergite 8 of female. 138. Spermatheca.

The number of spines or tubercles varies individually, and the number of spines is not necessarily symmetrical on each elytron. In some individuals one or two of the spines are split apically. The punctation of the beak varies also and does not, as is true in some weevils, give any clue to the sex.

Four males and two females were dissected.

# APPENDIX

## SPECIMENS EXAMINED

FOR CONVENIENCE, the species and the countries under each species are listed alphabetically.

### GENUS *HOMALINOTUS* SAHLBERG

#### ***Homalinotus alloides,*** new species

BRAZIL: (see under the species in the text).

*Homalinotus coriaceus* Gyllenhal

ARGENTINA: *Misiones:* San Jose, 1; Corrientes, 2; Chaco de Santiago del Estero, Rio Salado, 2; Villa Lutecia near San Ignacio, 1.

BRAZIL: 49 (including type); *Rio Grande do Norte*: Pedro Velho, 1. *Paraiba*: João Pessoa, 2; Iguarassu, 1; Mamanguape, 1. *Pernambuco*: Recife, 2; Gloria Goita, 1. *Alagoas*: São Miguel, 1. *Sergipe*: Aracaju, 1. *Bahia*: 17; Lacerda, 6; near Queimados, 1. *Amazonas*: 1: Manaus, 1. *Amapa*: 1. *Minas Gerais*: 1; Marianna, 1; Lavras, 1; Bello Horizonte, 1; Lambary, 1; Lassance, 1; Sabara-Bello Horizonte, Rio das Velhas, 1. *Espirito Santo*: 10; Guarapari, 1. *Rio de Janeiro*: 20; São João da Barra, 5; São Bento, 2; Mendes, 6; Petropolis, 1. *Guanabara*: Corcovado, 6; Galeão, 1; Meier, 1; Penha, 1; Botafogo, 1; Sernambetiba, 2. *São Paulo*: 105 from 24 localities. *Parana*: Curitiba, 18; Cachoeira, 1; Paqueta, 2. *Santa Catarina*: 8; Rio Vermelho, 6; Rio Natal, 2; Cauna, 4; Corupa (Hansa Humboldt), 10; Joinville, 3; Theresopolis, 3; Blumenau, 1; Pinhal, 1; Badenfurt, 2. *Rio Grande do Sul*: 7; Sapyranga, 4; Hamburgo Velho, 3; Itaquy, 3; São Leopoldo, 1. *State?*: Itaipavazinha, 1; Porto Alegre, 2; Alto, 1. *Various Localities*: 69.

ECUADOR: 1.

FRENCH GUIANA: Cayenne, 5.

PARAGUAY: 1.

PERU: Payta, 1.

VENEZUELA: 3.

NO LOCALITY: 27.

*Homalinotus cristatus* (Kirsch)

BRAZIL: 1; *Amazonas*: Benjamin Constant, Rio Javary, 1.

PERU: 4; Chanchamayo, 8 (including type); Iquitos, 3; Middle Rio Ucayali, 2; Satipo, 5; Upper Rio Marañon, 2; Puerto Inca, Rio Pachitea, 2; Pozuzo, 2; Rio Oxabamba, 3; Rio Toro, 1; *Peru-Brazil frontier*, 2.

*Homalinotus deplanatus* Sahlberg

ARGENTINA *Misiones*: 2; Corrientes, 1; Villa Lutecia near San Ignacio, 1.

BRAZIL: 97 (including type of *deplanatus*); *Espirito Santo*: 4. *Minas Gerais*: Lambary, 1. *Rio de Janeiro*: 5; Nictheroy, 3. *Guanabara*: Santa Cruz, 2; Corcovado, 4; Floresta da Tijuca, 1. *São Paulo*: 37 from 15 localities. *Parana*: Matelandia, 1; Arapongas, 2; Rondon "24° 38′ × 54° 07′," 3. *Santa Catarina*: Theresopolis, 5; Badenfurt, 2; Nova Teutonia, 16; Pinhal, 2; Rio Vermelho, 11; Rio Natal, 1; Lanca, 1; Hansa Humboldt, 1. *Rio Grande do Sul*: 2; Cruz Alta, 3; São Leopoldo, 1. *State?*: Porto Alegre, 2; Rio Grande, 6.

PARAGUAY: Hohenau, 3.

VENEZUELA: 4.

NO LOCALITY: 8.

*Homalinotus depressus* (Linnaeus)

ANTILLES: Trinidad, 2; Arima, 1; St. Augustine, 1.

BOLIVIA: 2; Ichilo, Santa Cruz, Buena Vista, 4; Santa Cruz, 1; Santa Cruz de la Sierra, 2; Santa Cruz, Nueva Moca, 1; Guarayos, 2; Province of Sara, 1; Nuflo de Chavez, Ascencion, 1.

BRAZIL: 10; *Amazonas*: 2; Santarem, 6; Taperinha-Santarem, 6; Manaus, 2; Maues, 11; São Paulo de Olivença, 3; Tapajos, 1; Uypiranga, Rio Negro, 4; Rio Solimões, 2; Ega [=Teffe], 1; Rio Madeira, 1. *Para*: 3; Obidos, 3; Mangabeira, Mocajuba, 13; Itaituba, 3. *Rondonia*: Villa Rondonia, 378 km. south of Porto Velho, 1. *Mato Grosso*: 5; Fazenda Angelo Severo, 1. *Goiaz*: Rio Verde, 1; Jatahy, 1. *Rio de Janeiro*: 1.

COLOMBIA: 2; Bogota, 1.

FRENCH GUIANA: 19; Cayenne, 19 (including type of *complanatus*); Pariacaba, Rivière de Kourou, 1; Nouveau Chantier, 1; St. Jean du Maroni, 1; St. Laurent du Maroni, 6.

GUYANA: Demerara, 1; Essequibo, 1; Wismar, 1.

SURINAM: 2; Kabel, 1; Maroni River, 1.

NO LOCALITY: 12.

*Homalinotus dorsalis* (Kirsch)

COLOMBIA: Darien, Laguna Pita [not located], 1; Bogota, 1 (type of *dorsalis*).

PANAMA: La Campana, 27; Arraijan, 2; Margarita, 1; Barro Colorado Island, 16.

*Homalinotus fasciatus* Desbrochers des Loges

ARGENTINA: Misiones, 1.

BOLIVIA: 2; Guarayos, 1; from Chiquitos to Mojos, 2; Buena Vista, Ichilo, 2; Rosario, Laguna Rogagua, 1; Rio Yacuma, Espiritu, 1.

BRAZIL: 3 (including type of *fasciatus*); *Amazonas*: Manaus, 2. *Para*: Caninde, Rio Gurupi, 1. *Goiaz*:

Goiana, 1; Anapolis, 1. *Mato Grosso*: 1 (type of *matogrossensis*); Barra do Tapirape, 1; Xingu, 1; Alto Xingu, 1; Corumba, 2; Campo Grande, 1; Chapada, 1; *Minas Gerais*: Campos de Diamantina, Fazenda do Riacho Fundo, 2.

PARAGUAY: 5; Hohenau, 1; San Bernardino, 1; San Estanislao, 1; San Luis, 1; Uboraya, 1.

NO LOCALITY: 1.

*Homalinotus histrix* (Olivier)

BRAZIL: 7. *Amazonas*: 2; Manaus, 1; Tarapate, 1; Iquitos, 1; Teffe, 1; Massanary, 1; Santarem, 1; Uypiranga, Rio Negro, 1; João Pessoa, Rio Jurua, 1. *Para*: 2; Obidos, 3; Mangabeira, Mocajuba, 1.

ECUADOR: Valle Santiago, 1.

FRENCH GUIANA: 5; Cayenne, 23; Guatimala, Rivière de Kourou, 1; St. Laurent du Maroni, 4; Roches de Kourou, 1; St. Jean du Maroni, 2; Passoura, 3; Chantier Forestier de Charvin, affluent Maroni, 1.

GUYANA: 2; Essequibo, 1.

PERU: Moyobamba, 1.

NO LOCALITY: 9.

*Homalinotus humeralis* Gyllenhal

BOLIVIA: 1; Buena Vista, Ichilo, 2; Santa Cruz, 3; Rio Mamore, 1; Province of Sara, 2; Loma Alta [on Beni River], 1.

BRAZIL: 5. *Amazonas*: 1; São Paulo de Olivença, 4; Massanary, 1; Manaus, 1. *Para*: Obidos, 3; Obidos, Rio Branco, 9. *Mato Grosso*: "General Dutra," Cuiaba, 1. *Peru-Brazil frontier*: 1.

FRENCH GUIANA: 3; Cayenne, 19 (including type); Roches de Kourou, 2; St. Jean du Maroni, 1; St. Laurent du Maroni, 4.

GUYANA: Essequibo, Moraballi Creek, 1; Bartica, Demerara, 1.

VENEZUELA: Rio Curucuruma, 1.

NO LOCALITY: 3.

*Homalinotus inermis* (Desbrochers des Loges)

BRAZIL: 3 (including type).

VENEZUELA: 6; Caracas, 2; Borburata, 2; Rancho Grande, Aragua, 1.

NO LOCALITY: 1.

***Homalinotus inopinatus,*** new species

ECUADOR: (see under the species in the text).

***Homalinotus kuscheli,*** new species

BRAZIL: (see under the species in the text).

*Homalinotus lherminieri* Chevrolat

DOMINICA: 3♂, 1♀; 2 miles east of intersection of Castle Bruce Road and Rosalie Road, 2♂, 1♀.

GUADELOUPE: 1♂, 2♀ (including type and allotype).

*Homalinotus nodipennis* Chevrolat

BRAZIL: 5. *Amazonas*: 4; São Paulo de Olivença, 2; São Paulo de Olivença, Rio Solimões, 16; Teffe, 8; Manaus, 7; Benjamin Constant, Rio Javary, 7; Rio Jurua, 1; Ipiranga, 1; Uypiranga, Rio Negro, 1; Santarem, 1; Pebas, 2; Manicore, 3; Faro, 1; Porto Velho, Rio Madeira, 1; Uaupes, Tapuruquara, 1; Tacana, 1; Rio Purus, 1. *Para*: 2; Obidos, 19. *São Paulo*: Avare, 2.

COLOMBIA: Umbria, Guines Fluss [=Puerto Umbria, Rio Guineo], 10; Villavicencia, 4; Bogota, 1; Rio Putumayo, 2; Rio Cesar, Magdalena, 1; Santa Marta, 1; Rio Opon, 1; Lake Sapatoza Region [or Zapatoza], Chiriguana District, Magdalena, 2.

ECUADOR: 2; Chimborazo–Pichincha, 1; Napo, Limon Cocha, 0° 24′ S, 76° 36′ W, 1; Pampas del Sacramento, 1; Loja, 1; Rio Pindo Yacu, 1; Upper Rio Napo Basin, 1; Coca, 1.

FRENCH GUIANA: Cayenne, 1.

PERU: 5; Moyobamba, 1 (type of *nodipennis*); Iquitos, 9; Chambireyacu, near Yurimaguas, 9; Mishuyacu, near Iquitos, 46; Pucallpa, Rio Ucayali, 1; Upper Rio Tapiche, 2; Upper Rio Huallaga, 1; Middle Rio Ucayali, 1; Sarayacu, 2.

NO LOCALITY: 3.

***Homalinotus pectinis,*** new species

COSTA RICA, PANAMA, COLOMBIA, ECUADOR: (see under the species in the text).

*Homalinotus platynotus* (Germar)

BRAZIL: 23; *Espirito Santo*: 4; Izabel, 2; Santa Teresa, 1. *Rio de Janeiro*: 15; Floresta da Tijuca, 1. *Guanabara*: Corcovado, 2. *São Paulo*: Sebastianopolis, 1 (type of *colosseus*); Serra da Carioca, 1. *Parana*: 1. *Santa Catarina*: Hamonia, 1. *State?*: Rio Sumare, 1.

NO LOCALITY: 9.

*Homalinotus porosus* Gyllenhal

ARGENTINA: *Misiones*: Rio Parana, 1. *Chaco*: Santa Fesino, 1.

BOLIVIA: Santa Cruz, 1.

BRAZIL: 53. *Bahia*: 8; Viçosa, 2. *Minas Gerais*: Pouso Alegre, 1; Sabara-Belo Horizonte, Rio das Velhãs, 1. *Espirito Santo*: 5. *Rio de Janeiro*: 17; São Bento, Duque de Caxias, 1; Fazenda do Sacco, 1; Pq.[?] Agulhas Negras, Itatiaia, 1; Organ Mountains, 1. *Guanabara*: Corcovado, 5; Ilha do Governador, 3; Santa Cruz, 1. *São Paulo*: Salesopolis, Estaçao Biologico Boraceia, 2. *Parana*: Caviuna, 2; Porto de Cima, 1. *Santa Catarina*: 5, Joinville, 5; Corupa (Hansa Humboldt), 25, São Francisco, 1; Blumenau, 1; Badenfurt, 7. *State?*: Guapi, 1; Itaipavazinha, 4.

PERU: Tarapoto, 1.

NO LOCALITY: 3.

***Homalinotus praelongus,*** new species

BOLIVIA, BRAZIL, ECUADOR, PERU: (see under the species in the text).

*Homalinotus squamulosus* Gyllenhal

BOLIVIA: 1; Santa Cruz, 5; Santa Cruz, Buenavista, 2; Guarayos, 1.
PARAGUAY: 1; Sapucay, 1.
NO LOCALITY: 1.

*Homalinotus umbilicatus* (Desbrochers des Loges)

GRENADA: 1♂; Balthazar, 1♀.
GUADELOUPE: 2♂, 1♀ (type), 1 ? (pronotum missing).
ST. VINCENT: 1♂, 5♀.

*Homalinotus validus* (Olivier)

BOLIVIA: Santa Cruz de la Sierra, 3.
BRAZIL: 9. *Piaui*: 4. *Amazonas*: Tapajos, 4; Santarem, 1; Monte Alegre, 2. *Para*: Obidos, 3; Mangabeira, Mocajuba, 4. *Espirito Santo*: 1. *State?*: Chapada, 1.
COLOMBIA: 1.
COSTA RICA: *Limon:* La Lola, 1.
FRENCH GUIANA: 7; Cayenne, 23 (including types of *distinctus* and *perplexus*); St. Laurent du Maroni, 16; St. Jean du Maroni, 1; Pariacabo, Rivière de Kourou, 5; Roches de Kourou, 3; Gourdonville, 1.
GUYANA: Kartabo, Bartica District, 1; Georgetown, Demerara, 2.
PERU: 1; Pucallpa, 1; Rio Huallaga, 1.
SURINAM: Marowijne River, 1.
COUNTRY ?: Paco, 1.
NO LOCALITY: 7.

## GENUS *OZOPHERUS* PASCOE

*Ozopherus muricatus* Pascoe

BOLIVIA: Province of Sara, 1.
BRAZIL: 1; *Amazonas*: 2 (including lectotype); Teffe, 1; Manaus, 4; Manacapuru, 1; Rio Madeira, Lago Acara, 1. *Para*: Para, 3; Obidos, 6. *Acre*: Tarauaca, 2. *Guapore*: Cachoeiro do Rio Javary, near Porto Velho, 1.
COLOMBIA: 1.
ECUADOR: Jatun Yacu, Rio Napo watershed, 1; Rio Pindo Yacu, 1.
FRENCH GUIANA: Cayenne, 3.
PERU: Iquitos, 1; Mishuyacu, Iquitos, 1.
NO LOCALITY: 1.

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