

AMERICAN MUSEUM *Novitates*

PUBLISHED BY
THE AMERICAN MUSEUM
OF NATURAL HISTORY

CENTRAL PARK WEST AT 79TH STREET
NEW YORK, N.Y. 10024 U.S.A.

NUMBER 2542 JULY 26, 1974

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AMERICAN MUSEUM NOVITATES

NUMBER 2542, pp. 1-35, figs. 1-85

Issued July 26, 1974

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ISSN 0003-0082

Price. \$1.86

ABSTRACT

The 16 species of *Odontoderes* are reviewed. The genera *Notophus* and *Solenopus* are retained as synonyms of *Odontoderes*, and *Callinotus* is added to the synonymy. *Callinotus discoideus* Chevrolat is transferred provisionally to *Cholus*. Three species are synonymized: *Cholus quadripunctatus* Hustache, *Solenopus bondari* Hustache, and *Solenopus percheroni* Boheman. All species are found in South America, chiefly in French Guiana and Brazil; three species are recorded for the first time from Peru. Seven new species are described: *albior*, *brevis*, *capetos*, *costalis*, *insculptus*, *scolius*, and *tumoris*. Males of most species differ notably in their genitalia, which are illustrated for the first time.

INTRODUCTION AND ACKNOWLEDGMENTS

The present paper is a taxonomic revision of one of the few well-characterized genera of the subfamily Cholinae of weevils of the American tropics. Other genera revised recently are *Homalinitus* and *Rhinastus* by Costa Lima and Seabra (1955) and Vaurie (1973a, 1973b) and *Ozopheus* by Vaurie (1973b). For discussion of the subfamily Cholinae, see Vaurie (1973b).

Since the revision of the subfamily by Lacordaire (1866), approximately 230 species of Cholinae were described, the majority in *Cholus*, and about 25 new genera. Although many genera and species have been synonymized (chiefly by Heller, 1906, and Kuschel, 1955), a large number remains in need of further study. I hope to continue revisionary studies of the balance of the genera. New species or new synonymies in *Odontoderes* since 1866 were published by Pascoe (1872), Chevrolat (1878, 1880, 1881), Desbrochers des Loges (1906), Heller (1906, 1908), and Hustache (1939, 1940, 1941).

Pascoe (1881, p. 45) remarked that in the subfamily Cholinae "structural characters are not correlated with general appearance." *Odontoderes*, although possessing a number of good structural characters, resembles some other genera in pattern and color. Thus some species are mottled yellow (or white) and black as are *Amerhinus ynca* and *olivieri*, and some resemble *Cho-*

lus cinctus, *albicinctus*, *rana*, and other species in having longitudinal white scaly stripes; in some the white stripes are transverse as in *Cholus*, *Erethistes*, and other genera.

The 16 species of *Odontoderes* are medium to large weevils (8 to 30 mm.), with long, rather arcuate beaks, yellow or whitish scales on the body interspersed with black tubercles or granules, the scales in some species forming spots, stripes, or bands. Four or five sharp, robust spines project from the front of the pronotum of males of a few species; in some males there are very long, wispy hairs on the elytra and legs, or elevations or carinae on the elytra.

Little is recorded of the biology of the species except for *zetterstedti* and *ocelliger*, which were found breeding in the stems of *Saranthe* (Gramineae or Marantaceae), and *transversalis* in the petioles and leaves of the coconut palm.

I have examined approximately 600 specimens including the types of 15 of the 21 forms described. Types were not found or were never designated for *bilineatus* Lacordaire, *carinatus* Guérin-Méneville, *granicollis* Germar, *morbillosus* Drury, *ocelliger* Perty, and *coronatus* Olivier. Three species are placed in synonymy along with nine already synonymized by previous authors. Seven new species are described.

The work was done at the American Museum of Natural History, New York, the Muséum National d'Histoire Naturelle, Paris, the British Museum (Natural History), London, and the Naturhistoriska Riksmuseum, Stockholm. Specimens were borrowed from these museums as well as from the following: Entomology Division, Department of Scientific and Industrial Research, Auckland; the National Museum of Natural History, Smithsonian Institution, Washington, D.C.; Museum für Tierkunde, Dresden; Senckenbergische Naturforschende Gesellschaft, Frankfurt; Museu de Zoologia, São Paulo; Zoologisches Museum, Berlin; Zoologische Staatssammlung, Munich; and Faculdade de Agronomia, Universidad de la Republica, Montevideo. I thank the personnel in charge of these collections for the opportunity to examine their material and also Dr. Carlos A. Campos Seabra of Rio de Janeiro.

I am indebted to the Entomology Department of the American Museum of Natural History for many facilities. The line drawings were inked by the Graphic Arts Department of the museum and the photographs were taken by Mr. Robert E. Logan, also of the museum. Figures 1, 23, and 26 were drawn by an artist at the British Museum (Natural History) and were kindly donated by Dr. Guillermo Kuschel, Department of Industrial and Scientific Research, Auckland. I am grateful to Dr. Lee H. Herman, Jr., for reading the manuscript and offering helpful suggestions.

CHECKLIST OF SPECIES OF
ODONTODERES SAHLBERG
Species Group *morbillosus*

morbillosus (Drury)
 cacicus Sahlberg
 granicollis (Germar)
 percheroni (Boheman), new synonymy
spinicollis (Boheman)
sexmaculatus (Olivier)
 coronatus (Olivier)
 nitidicollis (Chevrolat)
 politicollis (Bovie)
bilineatus (Lacordaire)
capetos, new species
 Species Group *tumoris*
tumoris, new species
 Species Group *anormis*
anormis (Chevrolat)
carinatus (Guérin-Méneville)
 geminatus (Chevrolat)
 subincostatus (Desbrochers des Loges)
scolius, new species
ocelliger (Perty)
 sahlbergii (Boheman)
 quadripunctatus (Hustache), new synonymy
zetterstedti (Boheman)
 protensus (Chevrolat)
transversalis (Pascoe)
 bondari (Hustache), new synonymy
albior, new species
insculptus, new species
 Species Group *brevis*
brevis, new species
costalis, new species

GENUS *ODONTODERES* SAHLBERG

Odontoderes Sahlberg, 1823, p. 46 [type, by monotypy, *O. cacicus* Sahlberg, a synonym of *O. morbillosus* (Drury)].

Solenopus Schoenherr, 1826, p. 268 (type, by original designation, *O. cacicus* Sahlberg).

Callinotus Schoenherr, 1836, p. 577 [type, by original designation, *C. sahlbergii* Boheman, a synonym of *Odontoderes ocelliger* (Perty), new synonymy].¹

Notophus Desbrochers des Loges, 1906, p. 365 (type, by monotypy, *Cholus carinatus* Guérin-Méneville, 1844).²

Diagnosis. Genus unique in subfamily because of bicarinate, canaliculate outer edge of tibiae and strong bias of antennal club; club appearing to include seventh funicular segment which is tightly appressed to it. Only genus with segment 2 of funicle longer than segment 1 (but not invariably). Characterized further as having combination of base of prosternum behind coxae strongly bituberculate; front coxae subcontiguous; tibiae on outer edge ciliate in apical fourth or less, thus apical comb short; inner apical comb of same length as outer, forming distinct corbel; tibiae both mucronate and uncinata (with two distinct apical teeth); and hind femur shorter than elytra.

Description. Brown or black weevils with yellow or white scales in longitudinal or transverse stripes on elytra, or scales covering surface without distinct pattern. Pronotum tuberculate or not. Length 8 to 30 mm.

Mandibles pincer-like, laterally trilobed or tridentate, may be worn smooth. Eyes elongate, flat, narrowed at lower end (usually hidden), longer than width of base of beak (when seen in lateral view), widely separated dorsally by width of base of beak. Beak dorsally about same width throughout. Labium elongate; in males of some species postmentum tumid, much larger than prementum, and in profile angulate. Antenna inserted in front of middle of beak, that of male farther front than that of female; scrobe or antennal groove with lower edge faintly visible from above; scape reaching almost to eye; funicle with terminal segment 7 longer and wider than segment 6, pressed close to and appearing as part of club; segments 1 and 2 each longer than segments 3 to 6; 3 to 6 combined equal in length to

¹*Callinotus* Schoenherr, 1826, page 263 is invalid as it is based on an undescribed species.

²Desbrochers des Loges described *Notophus subincostatus* which is the female of *carinatus*.

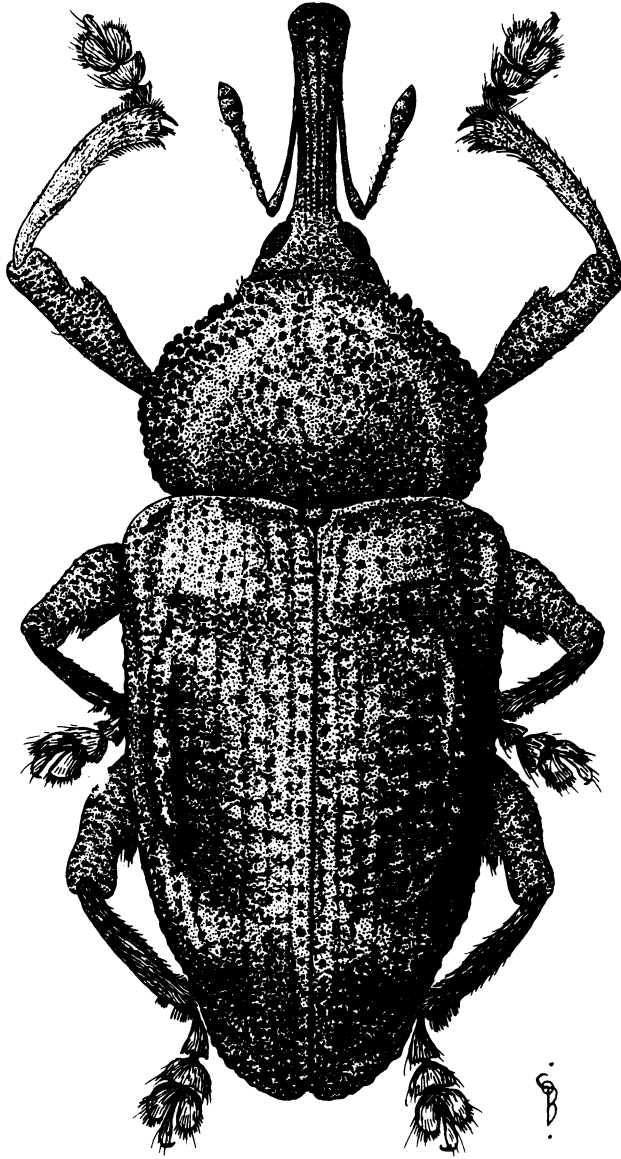
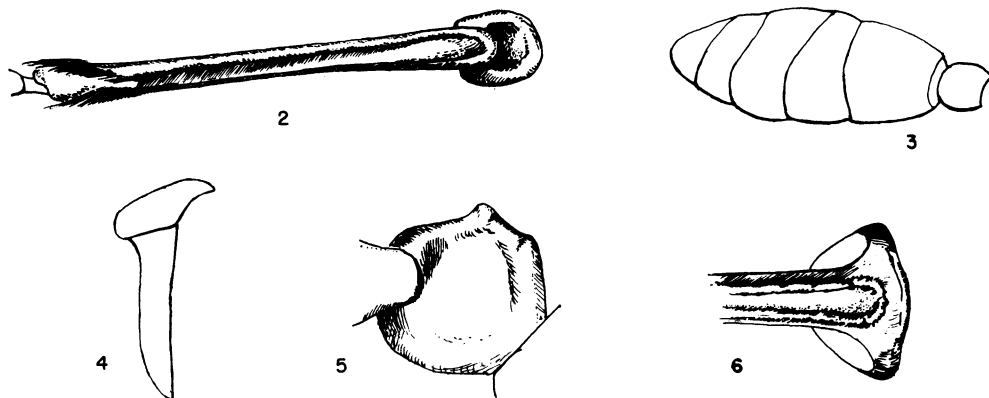


FIG. 1. *Odontoderes tumoris*, type, male, Iquitos, Peru (20 x 8.2 mm.).

segment 7 and club; club elongate, each segment sinuate apically, appearing on bias and contrasting with nonsinuate apex of segment 7 (fig. 3).

Pronotum wider than long, with strong post-ocular lobe and vibrissae. Scutellum visible. Prosternum with apical border emarginate; base be-

hind front coxa bituberculate, in some species markedly so. Front coxae either contiguous or separated by slightly more than width of antennal segments. Mesepimeron (fig. 4) with median posterior angle distinct. Mesosternum between middle coxae with ledge which, when denuded of



FIGS. 2-6. Generic and sexual characters of *Odontoderes*. 2. Canaliculate outer edge of tibiae with apical combs. 3. Antennal club with adpressed funicle segment 7 and small segment 6. 4. Mesepimeron with posterior angle distinct, and metepisternum. 5. Transversely laminate front coxa (coxa with tumid roll) of males of some species. 6. *O. capetos*, showing sulcate head and base of beak.

hairs, is usually bituberculate. Metasternum as long as at least diameter of coxa, in some species one and one-half times longer; sides longitudinally either tumid or distinctly carinate.

Abdomen with segment 2 at middle shorter than segment 1 and as long as or longer than segments 3 and 4 combined. Femora clavate; inner margin toothed; hind femur short, not reaching apex of elytra. Tibiae externally (distally) bicarinate and canaliculate, carinae of some species feeble, can be obscured by scales; inner margin not toothed; apex uncinat and mucronate; hind tibia with outer apical comb (or fringe of setae) short, rounded off, one-fourth or one-fifth or less length of tibia (but almost one-third in some *transversalis*), of same length as inner comb; middle tibia with inner comb shorter than outer. Tarsus with segment 1 narrower than segments 2 or 3; segment 2 about as wide as long, but appearing longer than wide in males of some species; segment 3 bilobed to near base. Claws divergent. Genitalia of male with parameres present or obsolete; basal sclerite or inner armature present or not, in some species very tiny or virtually transparent.

Sexual Dimorphism. In males the first and second segments of the abdomen and the metasternum are hairy and feebly or strongly concave, whereas in females the abdomen at least is con-

vex (in *ocelliger* this difference is not well marked). Five species are known from males only (*albior*, *capetos*, *costalis*, *insculptus*, and *scolius*); for these species the secondary sexual characters of the males are assumed to be the same as those occurring in other species.

In five species (*bilineatus*, *capetos*, *morbillosus*, *sexmaculatus*, and *spinicollis*) there are a number of ways in which males differ from females, as follows: in the *morbillosus* group the prosternum from the emarginate front border to the front coxae is longer than that of females, being longer than the diameter of the coxae; in the same group the pronotum at the sides in front is furnished with spines or acuminate tubercles that are blunt in females; the front coxae (fig. 5) are flattened mesially and are transversely laminate in front; the beak ventrally on each side is sulcate, and granulate or scalloped, in some specimens with hairs protruding; the postmentum of the labium is wider than the prementum and tumid or swollen, not flat as in females, and in profile is rather angulate. In fresh males of *morbillosus* and *spinicollis* long, wispy hairs emerge from the elytra, pronotum, femora, tibiae, tarsi, and venter; a few males of *sexmaculatus* show elytral hairs. In the *anormis* group, long, wispy hairs are found on the femora and venter of *albior* and *transversalis*. The middle

coxae are mesially flattened in males of all species except *brevis*, *carinatus*, *costalis*, *ocelliger*, *scolius*, and *tumoris*. The elytra of males of *anormis*, *carinatus*, and *tumoris* are carinate or abruptly elevated on or near the sides. The second tarsal segment is longer than wide and longer than the third segment in males of *morbillosus* and *spinicollis*. The pronotum of males of *sexmaculatus* is shining black and virtually impunctate, but punctate in females. The femora of males of *bilineatus*, *transversalis*, and *zetterstedti* and the pronotum of males of *bilineatus*, *morbillosus*, and *spinicollis* are more inflated and bulbous than are those of females. The beak of males dorsally is often more deeply punctate and/or more strongly carinate than that of females.

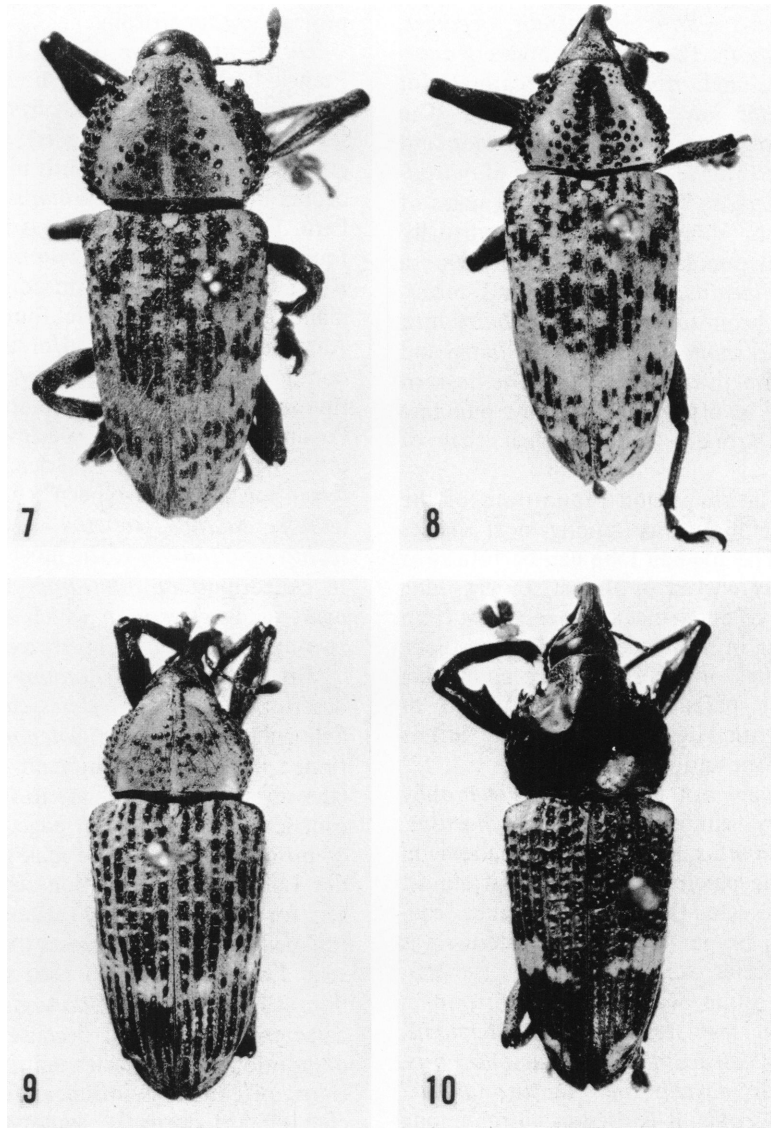
Genitalia. The shape and proportions of the genitalia of the male vary among most species (figs. 33-85). The median lobe can be robust or slender, strongly curved or almost straight, long or short; the two apodemes or appendages from its base are long in some species, short in others; the basal sclerites or inner armature copulating pieces and the parameres can be present or absent; the eighth (figs. 27-32) sternite differs somewhat in shape and vestiture.

Parameres were not found in *ocelliger*; they are rudimentary, almost obsolete in *bilineatus*, *capetos*, and *carinatus*, and present in the remaining species. The parameres are soft and almost transparent, and when they are short can be readily overlooked. Some sort of basal sclerite was found in all species except *scolius* and *tumoris*. This sclerite is quite distinct and sclerotized in *albior*, *capetos*, *transversalis*, and *zetterstedti*, very small and difficult to find in *bilineatus*, *brevis*, *carinatus*, *costalis*, *morbillosus*, *sexmaculatus*, and *spinicollis*; it is present within a long coil in *ocelliger*. A long coil was found also among disconnected sclerite pieces in *insculptus*; an unsclerotized, rather opaque piece was found in *anormis*. The two apodemes are shorter than the median lobe in *anormis* and *tumoris*, about equal in length in *brevis*, *costalis*, *morbillosus*, *sexmaculatus*, and *spinicollis*, and rather longer in the remaining species. In most species a short median projection, or "knob" is present at the apex of the median lobe, but in *anormis*, *ocelliger*, *tumoris*, and *zetterstedti* the apex is emargi-

nate, rounded, or truncate, and in *transversalis* it projects asymmetrically.

Distribution. Five of the 16 species occur in French Guiana as well as in the Amazon River basin of Brazil (*bilineatus*, *carinatus*, *morbillosus*, *sexmaculatus*, and *spinicollis*); the last three species occur also farther south in Brazil; *spinicollis* occurs in Bolivia, and *carinatus* is reported from Peru. One species (*tumoris*) is known only from Iquitos, Peru, and one (*anormis*) is known from Rio Tapiche, Peru, and Amazonas, Brazil. The remaining nine species are found in Brazil (the Amazon River region and/or the eastern coast), one (*brevis*) extending southward to Santa Catarina and one (*zetterstedti*) to northern Argentina. Possibly some of these species will be found in other parts of South America, as only three or fewer specimens have been seen of some species (*albior*, *anormis*, *capetos*, *costalis*, *insculptus*, *scolius*, and *tumoris*). The most numerous species in collections are *bilineatus*, *morbillosus*, *spinicollis*, and *zetterstedti* which account for about two-thirds of the specimens examined.

Discussion and Synonymy. Sahlberg in his description of *Odontoderes cacticus* (1823) and Schoenherr in his of *Solenopus* (1826) mentioned three of the significant generic characters (the seventh funicle adnate to the club, the tibiae canaliculate on the outer edge, and the presence of pronotal spines in the male), but Desbrochers des Loges did not mention any of these characters for *Notophus* (1906) although the species he assigned to the genus possess the first two characters. Lacordaire (1866) used the name *Solenopus*, as he considered *Odontoderes* a genus "non caractérisé," probably because Sahlberg gave a description of the species only, which, in modern times, of course, is sufficient for the genus. Kuschel (1955) correctly synonymized *Solenopus* with *Odontoderes*, and *Notophus* with *Callinotus*. The species formerly in *Callinotus* (*anormis*, *carinatus*, *ocelliger*, and *zetterstedti*) differ generically from *Odontoderes-Solenopus* only in the characters of the males, and I have therefore synonymized this genus also. Another species assigned to *Callinotus* (*microspilotus* Pascoe), and *Solenopus ochraceus* Hustache, both of which have connate tarsal claws, were transferred by Kuschel (1955) to *Acrotomopus*. I have examined the type of *Callinotus discoideus* Chev-



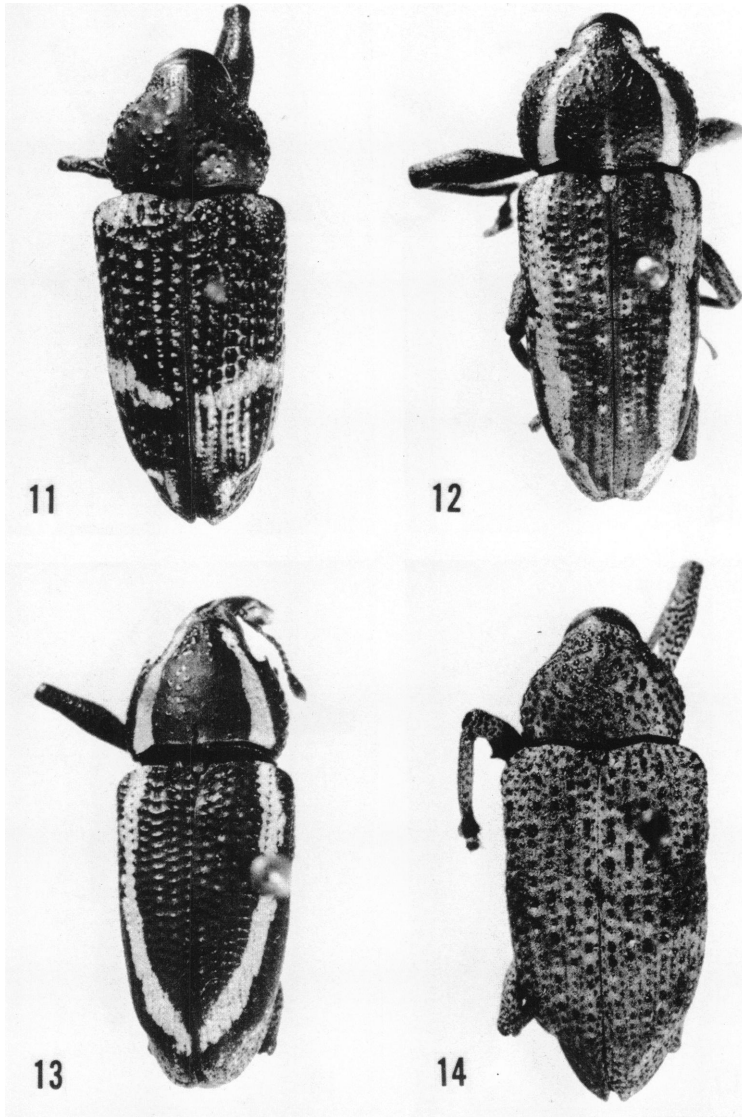
FIGS. 7-10. *Odontoderes*. 7, 8. *O. morbillosus*. 7. Male, and 8. female. 9. *O. spinicollis*, female. 10. *O. sexmaculatus*, male.

rolat and it does not belong in *Odontoderes*, but probably in *Cholus*. Many future changes in genera will probably be necessary.

I have omitted the various historical names of Dejean that appear in catalogues because they are *nomina nuda*.

In addition to the characters given in the Diag-

nosis, the 16 species are separable from many other genera in having the eyes elongate, rather flattened, and narrowed at the lower end as in the genera *Homalinotus* and *Ozopherus*; the post-ocular lobe strong; and the mesepimeron with its posterior margin distinctly angulate medially, not feebly angulate or angulate distally (fig. 4). The

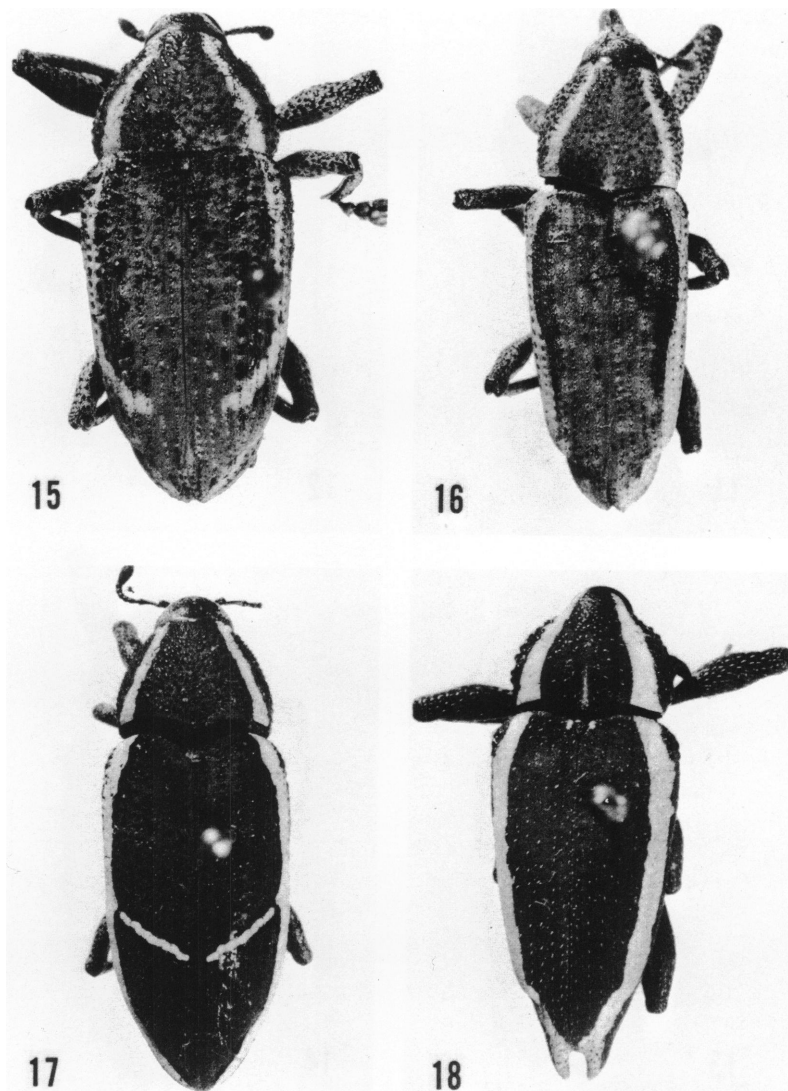


FIGS. 11-14. *Odontoderes*, not to scale. 11. *O. sexmaculatus*, female. 12. *O. bilineatus*, male. 13. *O. capetos*, male, type. 14. *O. tumoris*, female, paratype.

apical fringe of the hind tibia is distinctly shorter than that of species of *Homalinotus*, *Ozopherus*, and *Rhinastus*, about the same length as that of the type species of *Cholus* (*albicinctus* Germar), and of many other genera.

There are 10 other genera in which the front coxae are contiguous or subcontiguous, even

though the subfamily is said to be characterized by having well-separated coxae. The coxae are generally not actually touching as in the Hylobinae, however. The only genera with a combination of the first tarsal segment narrower than the second and the front coxae subcontiguous are *Odontodores*, *Ozopherus*, *Irenarchus*, some *Dio-*

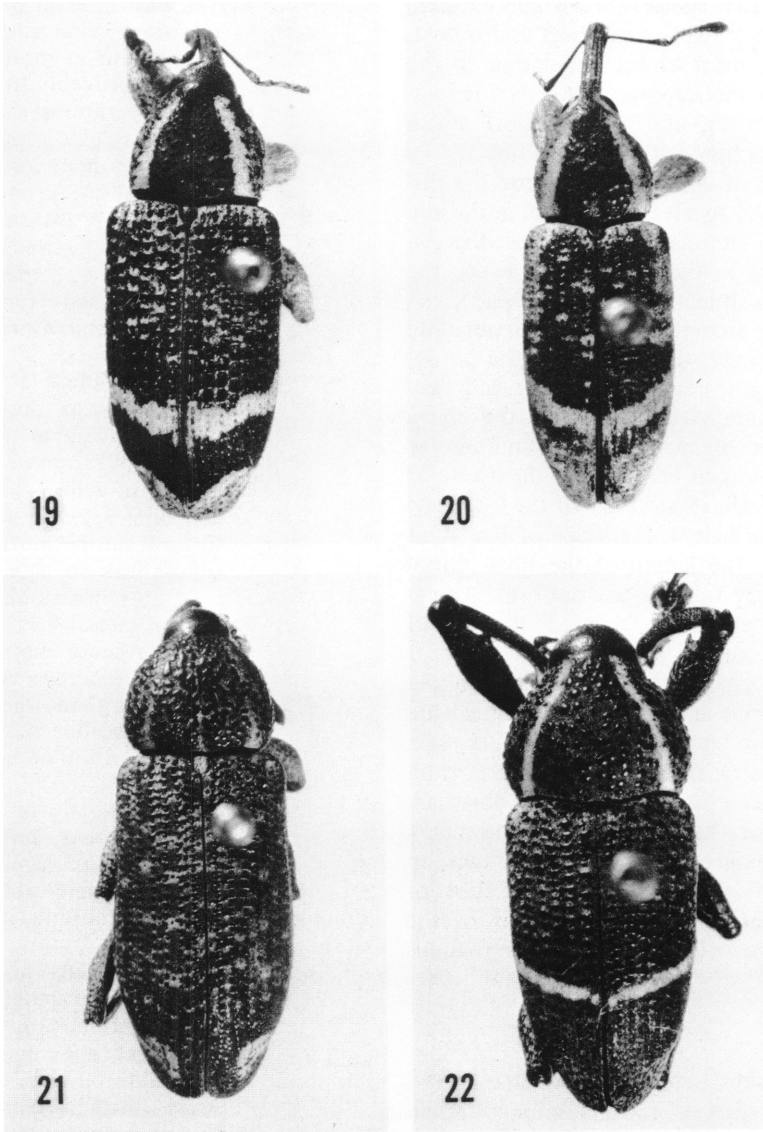


FIGS. 15-18. *Odontoderes*. 15. *O. anormis*, male. 16. *O. carinatus*, male. 17. *O. ocelliger*, male. 18. *O. zetterstedti*, male.

nychus, *Cholus*(?) *besckei*, and *Polydercicus luctuosus*. However, quite a few genera with broad first tarsal segments have also subcontiguous front coxae (*Acrotomopus*, *Desmocerus*, *Kangaropus*, *Lixodes*, *Peliobia*, and *Sclerosomus*).

Grouping of Species and Species Characters. The species are readily divisible into two or more

groups. A natural group is the *morbillosus* group (*morbillosus*, *spinicollis*, *sexmaculatus*, *bilineatus*, and *capetos*), characterized by hairy or setose, not scaly, legs, and pronotal spines and other sexual characters of males as given above (the spines are rather small in *bilineatus* and in small males of the other species). The next spe-



FIGS. 19-22. *Odontoderes*, not to scale. 19. *O. transversalis*, male. 20. *O. albior*, male, type. 21. *O. insculptus*, male, type. 22. *O. brevis*, male, type.

cies, *tumoris*, the only one with no colored patches, stripes, or bands and described from Peru, could stand by itself or be associated with the *anormis* group. In some species of the *anormis* group (*ocelliger*, *transversalis*, *albior*, and *insculptus*) the legs are hairy as in the *morbillosus* group; in the remaining species (the *tumoris*

group, and *anormis*, *carinatus*, *scolius*, and *zetterstedti*) they are scaly. Males of the *anormis* group lack the striking male characters of the *morbillosus* group. The *anormis* group can be divided further by kind of scaling of the elytra, the length of the elytra, or the shape of the scutellum, but these characters are not well correlated. There

remain the last two species (*brevis* and *costalis*) of the *brevis* group, which are short and robust, have hairy legs, short elytra in relation to the pronotum, short metasternum (shorter than abdominal segment 1), and a very short apical comb on the tibia (one-fifth length of tibia).

The majority of characters used for the differentiation of the species can be seen in the key that follows. To summarize them here: the eye (width compared to the base of the beak); the labium (with postmentum flat or tumid); the beak (straight or arcuate, long or short, punctate or carinate, ventrally sulcate or not); the pronotum (width, length, convexity; extent and density of scales, tubercles, or spines); the elytra (shape and shape of apexes; extent and density of scales; elevations or carinae; length; strong or feeble subapical callus); vestiture of the legs (long or short, scaly or hairy); the shape of the tibiae and femora; and the length of the tibial dorsal comb; the male genitalia (strong or obsolete parameres, length of apodemes, shape of the apex of the median lobe, kind of basal sclerite).

Several single characters are specific for a species. Thus the frons and the base of the beak are deeply sulcate in one species (*capetos*, known from a single male); the base of the elytra is bilobed or biangulate in *ocelliger*; the tibiae are arcuate in *scolius* (known from a single male); the elytral apexes are prolonged in two "tails" in *zetterstedti*; the apex of the median lobe of *transversalis* is asymmetrical; the sides of the median lobe of *insculptus* are almost contiguous dorsally.

KEY TO THE SPECIES OF *ODONTODERES*¹

1. Elytra with long, widely separated, acuminate, hooked apexes (fig. 18), at least as long as tarsal segment 3
 *zetterstedti* Boheman
- Elytra with apexes rounded or, if separately angulate, then angle much shorter than tarsal segment 3 2

¹The scales are stated as pale or yellow, but they may be white, depending on wear and discoloration. The spines and hairs of small males are often almost obsolete.

2. Elytra with interval 5 either from base to near subapical callus strongly carinate, or at middle third strongly carinate or feebly tumid 3
- Elytra with interval 5 not carinate or tumid 5
3. Interval 5 carinate or feebly tumid at middle third; pronotum and elytra uniformly brownish yellow, without yellow lateral stripes
 *tumoris*, new species
- Interval 5 carinate for most its length; pronotum and elytra with pale lateral stripes 4
4. Elytra with yellow lateral stripes reaching apex; beak dorsally punctate or feebly uncarinate
 male of *carinatus* Guérin-Ménéville
- Elytra with yellow lateral stripes not reaching apex, but turning inward toward suture in front of subapical callus; beak dorsally multicarinate
 male of *anormis* Chevrolat
- 5(2). Pronotum laterally in front either with three or more sharp spines (fig. 13) or with tubercles in that area more acuminate than other tubercles; front coxa mesially flattened, platelike, with tumid roll on upper edge (fig. 5); males 6
- Pronotum laterally in front with tubercles, if present, uniformly convex or flattened, not acuminate; front coxa without tumid roll, but may be mesially flattened; males and females 11
6. Pronotum laterally in front with three or more sharp spines 7
- Pronotum laterally in front with tubercles merely acuminate 8
7. Elytra bilineate with each lateral scaly stripe distinct; frons and fovea depressed deeply between lateral carinae of beak (fig. 6); 11 to 14 mm.
 male of *capetos*, new species
- Elytra mottled or with scales in spots or indistinct transverse bands; frons convex or flat; fovea scarcely depressed; generally larger, 18 to 30 mm. . . . 9
8. Elytra bilineate, yellow lateral scaly stripes contrasting with brownish surface. male of *bilineatus* Lacordaire
- Elytra not bilineate, but either mottled black and yellow or with indistinct postmedial pale band; 11 to 14 mm.

- small males of *morbillosus* and *spinicollis*¹
9. Front tibia and tarsus with hairs much shorter than length of tarsal segment; elytral striae also with short hairs (not always present); elytra of fresh specimens with four distinct scaly marks and two small, elongate, subapical marks (fig. 10); pronotal disc generally shiny black without tubercles or many scales, but with two depressions each side of middle male of *sexmaculatus* Olivier
- Front tibia, tarsus, and elytral striae with wispy hairs generally longer than a tarsal segment (hairs of elytra often worn off); elytra of fresh specimens entirely mottled black and yellow; pronotal disc with flattened or convex tubercles and lateral scaly stripes 10
10. Pronotum (dorsal view) uniformly bulbous and convex from side to side; elytra (viewed with naked eye) with postmedial yellow or white band generally evident against mottled black and yellow surface; base of elytra generally scalloped with prominent tubercles male of *spinicollis* Boheman
- Pronotum (dorsal view) in apical half depressed each side of broad median elevation, in basal half narrowly sulcate medially; elytra (viewed with naked eye) with postmedial band generally less distinct, spreading over apex or merging with yellow stripes of interval 5; base smooth male of *morbillosus* Drury
- 11(5). Femora with broad thick yellow scales (like those of elytra) among black tubercles 12
- Femora with hairlike setae covering most of nontuberculate surface .. 14
12. Beak uniformly feebly arcuate; elytra with yellow lateral stripes reaching apex female of *carinatus* Guérin-Méneville
- Beak straight or straight to antennal insertion; elytra without stripes or with stripes not reaching apex ... 13
13. Smaller (14 to 15 mm.); elytra with yellow lateral stripes turning inward at subapical callus; hind tibia straight; beak as long as pronotum female of *anormis* Chevrolat
- Larger (17 mm.); elytra without distinct stripes; hind tibia arcuate; beak shorter than pronotum (fig. 23) male of *scolius*, new species
- 14(11). Elytra with basal margin angularly emarginate (fig. 17); scutellum retracted behind margin of elytra; hind femur very short, generally not reaching beyond apex of abdominal segment 2 *ocelliger* Perty
- Elytra with basal margin virtually straight; scutellum level with margin of elytra; hind femur reaching slightly or distinctly beyond apex of abdominal segment 2 15
15. Each elytron with five distinct, clearly limited, white scaly stripes on alternate intervals (fig. 26); eye as wide as base of beak (in lateral view) *costalis*, new species
- Elytra without alternating longitudinal white stripes; eye wider than base of beak (in lateral view) 16
16. Front femur either with long wispy hairs in addition to dense, reclining hairs, or with inner tooth and inner apical edge (in lateral view), forming right angle (fig. 24) 17
- Front femur without additional long hairs and with inner tooth much shorter than inner apical edge which is emarginate (fig. 25) 19
17. Elytra with broad (covering four or five outer intervals), yellow lateral stripes meeting across apical third either as transverse band or as large white patch *albior*, new species
- Elytra without yellow lateral stripes, but some specimens with yellow transverse band behind middle, and apical patch 18
18. Pronotum distinctly narrower than elytra; disc flat or feebly concave, with tubercles, if present, small and well separated; front femur with long wispy hairs emerging from all sides *transversalis* Pascoe (part)
- Pronotum at widest part almost as wide as elytra; disc at least feebly convex and with mass of flattened, confluent

¹ See couplet 10.

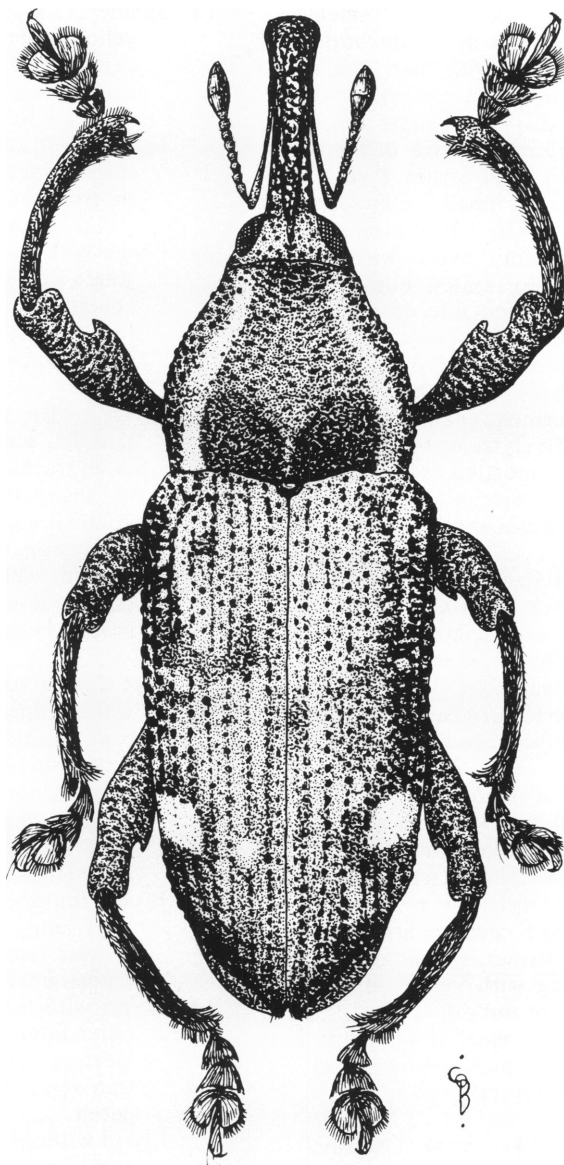
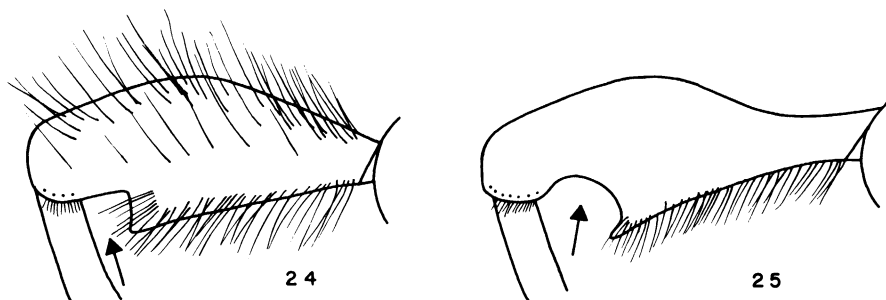


FIG. 23. *Odontoderes scolius*, type, male, São Paulo d'Oliveira, Amazonas, Brazil (16.7 x 6.1 mm.).

- | | |
|--|--|
| tubercles; front femur with long hairs
on inner edge only (fig. 21) | convex; front coxae separated by at
least width of basal half of segment 2
of antennal funicle. 20 |
| <i>insculptus</i> , new species | |
| 19(16). Pronotum with disc feebly concave;
front coxae virtually contiguous | 20. Prosternum from each side of apical
emargination carinate to near front
coxae; elytra with yellow lateral
stripes extending to apex; pronotum |
| <i>transversalis</i> Pascoe (part) | |
| Pronotum with disc feebly or strongly | |



FIGS. 24, 25. Front femora of males of *Odontoderes*, showing hairs and position of tooth. 24. *O. transversalis*. 25. *O. insculptus*.

- with postocular lobe strong, forming blunt right angle female of *bilineatus* Lacordaire
 Prosternum not carinate; elytra not strictly bilineate; pronotum with postocular lobe less well marked, forming blunt obtuse angle 21
21. Small (10-13 mm.); elytra not more than twice length of pronotum; metasternum at middle shorter than abdominal segment 1; elytra behind middle generally with yellow transverse band (fig. 22)
 *brevis*, new species
 Larger (15-26 mm.); elytra two and one-half times length of pronotum; metasternum at middle virtually as long as abdominal segment 1; elytra mottled with indistinct pale bands or stripes or with large yellow spots. . 22
22. Elytra with two yellow subapical marks extending beyond subapical calluses; remaining four marks (at humerus and postmedially) distinct, densely scaly, contrasting with black or blackish yellow surface
 female of *sexmaculatus* Olivier
 Elytra either lacking two yellow subapical marks or these marks confined to calluses, not extending beyond them; remaining scaly bands or stripes indistinct, blurred, merging with blackish yellow surface 23
23. Pronotum across middle and base strongly, bulbously, evenly convex; yellow lateral stripes on same level, not depressed; elytra with postmedial whitish band visible on mottled surface. . female of *spinicollis* Boheman

Pronotum across base feebly convex or flattish; yellow lateral stripes feebly depressed; elytra with postmedial yellow band, if visible, joining scaly longitudinal stripe of fifth interval female of *morbillosus* Drury

Species Group *morbillosus*
Odontoderes morbillosus (Drury)

Figures 7, 8, 33, 34, 43-45

- Curculio morbillosus* Drury, 1782, p. 74, pl. 49, fig. 5 (Cayenne; type not designated or found).
Curculio morbillator Herbst, 1795, p. 441, pl. 94, fig. 5 (new name given in error for *morbillosus* Drury).
Odontoderes cacicus Sahlberg, 1823, p. 46, pl. 2, fig. 3 (Brazil; type, male, in Naturhistoriska Riksmuseum, examined; synonymized by Kuschel, 1955).
Dionychus granicollis Germar, 1824, p. 315 (Brazil; type, probably female, in Halle, Germany; synonymized by Klima, 1936).
Solenopus percheroni Boheman, 1844, p. 25 (Brazil; type, male, in Naturhistoriska Riksmuseum, examined; new synonymy).

Diagnosis. Scarcely distinguishable from *spinicollis* Boheman, but pronotum less bulbously convex and with depressions in front and at middle of base; also yellow scaly stripes generally wider and denser, and pronotum proportionally slightly shorter and wider.

Range. Mostly Brazil, but a few specimens from Cayenne, French Guiana. (For 72 specimens examined, see Appendix.)

Description. Length 15 to 30 mm. Black with

yellow scales in lateral stripes on pronotum; elytra either entirely with yellow setae except for shiny black edges of foveae, or worn to pattern of yellow stripe on interval 5 merging with yellow postmedial and apical area.

Male. Beak slightly longer than pronotum, feebly arcuate, multicarinate except at apex where densely punctate; ventrally scalloped and granulate on median keel and in lateral depressions. Labium with postmentum tumid and angulate, much larger than prementum. Antennal funicle with segment 2 distinctly longer than segment 1.

Pronotum as wide as or wider than elytra; disc feebly convex, depressed laterally in front on each side of median group of tubercles; sides strongly arcuate to strong apical constriction; front with three or more large curving spines; laterally with convex, and medially with flattish, large, round, separate tubercles; some discal tubercles umbilicate; oblique lateral yellow stripes with dense, elongate, hairlike setae; base virtually straight. Scutellum setose, subtriangular. Elytra more than twice length of pronotum, with yellow appressed hairlike setae among black, denuded, transverse tubercles; striae with foveae large, deep, rather oblong; intervals much narrower than striae and with wispy hairs as long as hind tarsus (without claw segment); subapical callus prominent; sutural area between callosities feebly tumid; base straight, smooth; apices feebly separated, forming angle.

Prosternum broadly, shallowly concave, smooth; front coxae separated by more than width of antennal segment, mesially with elongate, tumid roll; middle coxae separated by about width of beak, flattened mesially; both coxae with long, wispy hairs; metasternum and abdominal segments 1 and 2 deeply concave and with long, wispy hairs. Front tibia with inner margin feebly sinuate; front tarsus longer and wider than other tarsi and with segment 2 appearing longer than wide; femora, tibiae, and tarsi with long, erect, wispy hairs in addition to appressed, short hairs of nontuberculate surface.

Aedeagus (figs. 33, 34, 43-45) with feeble apical projection; sides (when seen in dorsal view) parallel from behind apex to base; parameres and basal sclerite present; apodemes as long as median lobe.

Female. Beak as described for male, but with only median carina and in some specimens with slight depression between beak and head, ventrally smooth. Labium with postmentum flat and of same width as prementum. Antennal funicle with segment 1 equal to or slightly longer than segment 2. Pronotum, scutellum, elytra, ventral side, and legs as described for male, but pronotum narrower than elytra and lacking apical spines; elytra and other parts of body lacking long, erect hairs; front coxae without tumid roll; venter flat or feebly convex; front tarsus with segment 2 transverse, and legs lacking long, erect hairs.

Discussion. The pronotum, as described above, is the best character for the separation of *morbillosus* from *spinicollis*. The elytra can also be used in some cases. In fresh condition, however, the elytra of the two species are virtually identical, being covered with yellow vestiture except for the black elytral granules. The only difference is that the yellow of *morbillosus* in the apical third of the elytra is denser and covers more of the black foveae of the striae, and the yellow of intervals 3 and 5 forms wider, denser stripes. Worn specimens of *morbillosus* generally show the stripe of interval 5 and the yellower apex, whereas worn specimens of *spinicollis* show an irregular, postmedial yellow band. These differences are best seen with the naked eye, as the bands and stripes, which are composed of more concentrated, overlapping scales, tend to merge under a lighted microscope with the yellow foundation vestiture. There is also a slight difference in the shape of the median lobe of the genitalia of the male in which the sides are subparallel almost to the base in *morbillosus*, but in *spinicollis* are rather sinuate to the base and there much narrowed.

The differences enumerated above are not very clear-cut and it is even possible that *morbillosus* and *spinicollis* are conspecific, as a number of characters can be present in both forms. These characters include the thickening of the base of the beak of some males, the slight depression between the base of the beak and the head of some females, the tumidity of the elytral suture between the subapical callosities, and the absence of long body hairs in smaller males. Some characters are also subject to individual variation in

both species, such as the width of the prosternal process, the degree of tumidity of the mesosternal proprocess, the length of segment 2 of the antennal funicle, and the strength of the postocular lobe. The kind of problem encountered is as follows: A female from Santa Cruz, Bolivia, which has the distinctly bulbous, nondepressed, narrower pronotum of *spinicollis*, nonetheless has interval 5 of the elytra scaly white and joining the postmedial band as in most *morbillosus*. Another specimen a male from Bolivia presenting the same characters was dissected and the aedeagus was distinctly sinuated as in *spinicollis*. A male from Cayenne agreeing with *spinicollis* in the convex pronotum and sinuate aedeagus lacked the jagged, forward-projecting tubercles at the base of the elytra.

If these forms represented each other geographically, they could be considered subspecies, but both occur in French Guiana and have the same type locality, Cayenne. In Brazil, *morbillosus* occurs in Bahia and along the eastern coast south to Santa Catarina, and *spinicollis* mostly in the region of Amazonas, as well as in Bolivia. I have seen only four *morbillosus* from Cayenne, including a dissected male, but of *spinicollis* 26 from Cayenne and 84 from additional localities in French Guiana.

There are two additional large species from both French Guiana and Brazil (*sexmaculatus* and *bilineatus*), which differ chiefly from *morbillosus* and *spinicollis* in having the scaly elytral pattern distinct, not vague, and the legs of the males without long, wispy hairs.

Odontoderes morbillosus is superficially similar to *Amerhinus ynca* Sahlberg, a weevil of about the same size, shape, and mottled coloration, but which differs from *morbillosus* in the generic characters, as well as in having a short, straight compressed beak, more prominent eyes, and males lacking pronotal spines and wispy body hairs. However, in the catalogues of Klima (1936) and Blackwelder (1947) *morbillosus* was listed as a synonym of both *Amerhinus ynca* and "*Solenopus cacicus* Sahlberg" (synonym of *Odontoderes morbillosus*). If the specimen illustrated as *morbillosus* by Drury had been a male with pronotal spines, there would have been no such double synonymy or any doubt as to the identity of *morbillosus* with the genus *Odonto-*

deres (or *Solenopus*), but as it has no spines it could be either a male of *A. ynca* or a female of *O. morbillosus*. The elytra, which are depicted as orange with darker patches and many black spots in regular rows, could belong to either species, but the beak is long and arcuate as in *morbillosus* and the apexes of the elytra are separately angulate, not rounded off as in *ynca*. Therefore, as Drury's type is not available, the illustration serves as type and it represents a species of *Odontoderes*, not *Amerhinus*.

The illustration of *morbillator* Herbst, 1795, shows the same specimen as Drury's, but with its position reversed. Kuschel (1955) listed *sexmaculatus* Gyllenhal, not Olivier, as a synonym of *morbillosus*, but I do not understand why, as Gyllenhal's description and the figure (pl. 17, fig. 207) he refers to seem to be of a well-marked female of *sexmaculatus* Olivier. The type of *percheroni* Boheman is a female of 19 mm. with a few scattered white scales on the elytra.

Eight males were dissected.

Odontoderes spinicollis (Boheman)

Figures 9, 35, 36, 43-45

Solenopus spinicollis Boheman, 1836, p. 598 (Cayenne; type, female, in Naturhistoriska Riksmuseum, examined).

Diagnosis. Closely similar to *morbillosus*, and especially noticeable in males, differing only in having somewhat longer and narrower, distinctly more uniformly and bulbously convex pronotum without depressions; pattern of elytra and genitalia differ slightly.

Range. French Guiana, Amazon River basin, Brazil, and Bolivia east of the Andes. (For 181 specimens examined, see Appendix.)

Description. Length 15 to 24 mm. Black with yellow scales in lateral stripes on pronotum; elytra either entirely yellow except for shiny black edges of foveae, or worn to pattern of indistinct yellow transverse band in apical third.

Male. As described for male of *morbillosus* except as follows: pronotum dorsally and laterally more convex, dorsally uniformly convex from side to side with no depressions, base of elytra generally jagged and scalloped, and aedeagus (fig. 34) slightly constricted behind apex

with sides sinuate from there to base where narrower than in front.

Female. As described for female of *morbillosus*, but with more convex pronotum.

Discussion. Eighteen males were dissected. See under *morbillosus* for discussion.

Odontoderes sexmaculatus (Olivier)

Figures 10, 11, 35, 36, 43-45

Curculio sexmaculatus Olivier, 1790, p. 502 (Cayenne; type, female, in Muséum National d'Histoire Naturelle, labeled as *Rhynchaenus sex-maculatus*, examined).

Curculio coronatus Olivier, 1790, p. 500; 1808, pl. 6, fig. 70 (Cayenne; type, male, not found; synonymized by Kuschel, 1955).

Solenopus nitidicollis Chevrolat, 1878, p. cxli (Chile; type, male, in Naturhistoriska Riksmuseet, examined; synonymized by Kuschel, 1955).

Solenopus politicollis Bovie, 1907, p. 71 (Cayenne; type, male, in National Museum of Natural History, examined; synonymized by Heller, 1908).

Diagnosis. Differing from *morbillosus* and *spini-collis* in having more distinct elytral pattern consisting of two large, orange-yellow humeral spots, two postmedial angulate bands not crossing suture, and two elongate subapical spots; males differing further in lacking long hairs on tibiae and tarsi and having pronotal disc virtually glabrous and nontuberculate, but with two depressions in front of middle.

Range. French Guiana, Surinam, and Brazil. (For 58 specimens examined, see Appendix.)

Description. Length 14 to 27 mm. Color, see Diagnosis.

Male. Beak, labium, antennal funicle, and pronotum as described for *morbillosus*, but pronotum shining and black, without tubercles except at extreme sides and apex, and generally without yellow setae except in short lateral stripes; base slightly sinuate. Scutellum, elytra, venter, and legs as described for *morbillosus*, but elytra with distinct bands and spots, legs and elytra with only short hairs. Aedeagus (figs. 35, 36, 43-45) with apex turned feebly upward; sides (dorsal view) sinuate at base; basal sclerite and parameres present; apodemes about equal in length to median lobe.

Female. As described for female of *morbillo-*

sus, but segment 1 of antennal funicle in some specimens shorter than segment 2, as in male; pronotum without scales; base not depressed.

Discussion. In four or five specimens there are neither spots nor bands on the elytra, only a film of fine yellow setae on the black background of foveae, giving a salt and pepper effect when viewed with the naked eye. The figure of Olivier's *coronatus* shows such a specimen. Of the other synonyms, Bovie's *politicollis* is a large dissected male labeled "Guyane-type." The type locality of Chile for *nitidicollis* Chevrolat must be an error, as no other Cholinae come from there.

Females, unless well marked, are difficult to separate from those of the two preceding species, but all specimens with a pattern have the characteristic elongate subapical spot.

Three males and one female were dissected.

Odontoderes bilineatus (Lacordaire)

Figures 12, 37, 38, 43-45

Solenopus bilineatus Lacordaire, 1866, p. 45, note 1 (no type designated; based on "le *Solenopus bilineatus* de Dejean," [Cat. éd. 3] from Cayenne, French Guiana, here designated as type locality).

Diagnosis. Differing from *morbillosus*, *spini-collis*, and *sexmaculatus* in having distinct lateral white (or yellow) stripes on elytra; stronger post-ocular lobe; more bulbous front femur; and pronotum of male in front with tiny acuminate tubercles instead of large spines.

Range. French Guiana and Amazon River basin. Possibly Mexico. (For 110 specimens examined, see Appendix.)

Description. Brown or blackish with whitish scaly stripes on sides of pronotum and elytra, those of elytra extending to apex.

Male. Beak as described for *morbillosus*, but almost straight; antennal funicle with segment 2 in some specimens not longer than 1. Pronotum as described for *morbillosus*, but sides in front with tubercles more acuminate than other tubercles, but not actually spiny; medial tubercles rather small, transverse, and confluent, and base rather sinuate. Scutellum, elytra, underside, and legs as described for *morbillosus*, but without long, erect, wispy hairs, and elytra with lateral

white stripes; also middle coxae separated by slightly more than width of beak at apex.

Aedeagus (figs. 37, 38, 43-45) with apex medially projecting in small knob; sides (in dorsal view) parallel; apodemes longer than median lobe; parameres obsolete; basal sclerite present.

Female. Beak as described for male but dorsally with carinae feeble or obsolete, ventrally smooth; labium with postmentum flat and about same width as prementum; antennal funicle with segment 1 about equal in length to segment 2. Remainder as described for male but pronotum narrower than elytra; prosternum longitudinally sulcate and bicarinate from apex to near front coxae; front coxae without tumid roll; abdomen feebly convex.

Discussion. In addition to the characters given in the Diagnosis, females differ from females of the three preceding species in having two carinae at the front of the prosternum. Similar carinae are present, although in some cases feebly, in both sexes of *ocelliger*, *transversalis*, and *zetterstedti*. Males differ further in having smaller (normal) front tarsi than those of *morbillosus*, *spinicollis*, and *sexmaculatus*, in lacking long, wispy hairs on the elytra and legs, and in lacking the parameres on the tegmen ring. In *capetos*, which agrees with *bilineatus* in its bilineate pattern, the parameres are present, but scarcely visible.

The elytral stripes, although distinct, are not of the same width throughout, but are generally rather ragged and uneven on the sides. In a female from Manicore, Amazonas, the stripes are exceptionally broad and they meet in front, not at the apex, of the elytra.

A large female in the Pascoe collection of the British Museum is labeled "Mexico," and *bilineatus* appears in the Biologia Centrali-Americana. However, the locality is probably an error. In any case, as noted by Thompson (personal commun.), the Biologia figure is of a large male with much broader white stripes than the specimen from "Mexico" and said to be from Cayenne.

Five males were dissected.

Odontoderes capetos, new species

Figures 6, 13, 39-42

Type material. Type, male, Teffe, Brazil, March, 1925, H. Bassler, collector, in the Ameri-

can Museum of Natural History; and a male paratype, Lago Acara, Municipio Borba, Amazonas, Brazil, July 5 to 20, 1943, A. Parko, collector, in the collection of C. A. Campos Seabra, Rio de Janeiro.

Diagnosis. Differing from other species in having deep groove or sulcus on front of head between extended lateral carinae of beak and in having usual basisternal tubercles of prosternum very small. Agreeing with *morbillosus*, *spinicollis*, and *sexmaculatus* in male pronotal spines and with *bilineatus* in bilineate pattern. Female not known.

Range. Rio Madeira in Amazon River basin, Brazil.

Description of Type. Male; black with white scaly stripes laterally on pronotum and elytra, stripes of elytra joined at suture just behind subapical callus. Length 14 mm.

Beak slightly longer than pronotum, feebly arcuate, multicarinate; frons and fovea depressed between strongly elevated dorsolateral carinae of beak that reach to posterior edge of eye; median carina less elevated, beak ventrally and labium as described for *morbillosus*; funicular segment 2 longer than segment 1. Pronotum as wide as elytra; disc convex; sides arcuate to before apical constriction where furnished with two long, forward curving spines; laterally, and at apex medially with dense, elongate, flattish tubercles; disc with about 15 scattered tubercles of same type; laterally with two oblique stripes of dense white scales; base feebly sinuate. Scutellum setose, subquadrate. Elytra about twice length of pronotum with tiny yellowish and whitish scales among black, denuded, transverse tubercles of striae; striae uniformly punctate; subapical callus not prominent; apex very feebly angulate.

Prosternum and coxae as described for *morbillosus*; metasternum and abdominal segments 1 and 2 densely hairy; segments 1 and 2 concave. Legs with elongate, appressed hairs on smooth, nontuberculate surface.

Aedeagus (figs. 39-42) apically with small knob; apodemes twice length of median lobe; parameres rudimentary; basal sclerite present.

Variations from Type. The male paratype is slightly smaller (11 mm.), with the depression of the head somewhat shallower and the postmentum only feebly tumid.

Etymology. The Latin *capetos*, meaning ditch or trench, refers to the sulcate head.

Discussion. The elytral white stripes come together at the suture near the subapical callus, whereas in *anormis*, a wider and more robust species, the stripes do not extend so far as the suture, and in *bilineatus* the stripes reach the apex.

Both males were dissected.

Species Group *tumoris*
***Odontoderes tumoris*, new species**
Figures 1, 14, 27, 46, 47, 59

Type Material. Type, male, and paratype, female, Iquitos, Peru, in Kuschel collection, Entomology Division, Department of Scientific and Industrial Research, Auckland; and another female paratype, Iquitos, Peru, April 16, 1934, H. Bassler, collector, in the American Museum of Natural History.

Diagnosis. Males differing from males of *anormis* and *carinatus*, which have elytral interval 5 carinate as in *tumoris*, in having carina abruptly elevated in median third only, not throughout; both sexes differ from species mentioned, and from *capetos*, in absence of white lateral stripes.

Range. Known from type locality only.

Description of Type. Male; appearing brownish, covered, except for black tubercles, with tiny, roundish, dense, yellowish scales which are darker on and near elytral carinae. Length 20 mm.

Beak slightly longer than pronotum, straight to antennal insertion where bent feebly downward, multicarinate, ventrally uniformly punctate. Labium with postmentum almost as wide as long, feebly tumid. Antennal funicle with segment 2 slightly shorter than segment 1. Pronotum about as wide as elytra; disc strongly convex; sides strongly arcuate to apex; sides in front with seven or eight inconspicuous, stubby, upright tubercles; surface with elongate, round, or transverse granules larger laterally than medially, and uniformly separated among dense, round, yellowish scales; base straight. Scutellum setose, wider than long. Elytra more than twice length of pronotum, covered with tiny, dense, round, yellowish scales except for black tubercles of striae and for irregular row of dense, larger tubercles on crest of abruptly elevated, short carina;

area between carina and prominent subapical callus paler (white) in color, forming, when viewed with naked eye, faint transverse band; apexes rather rounded-truncate; punctures of striae each with whitish scale within.

Prosternum granulate; front coxae without tumid roll, separated by width of antennal segment; metasternum and abdominal segments 1 and 2 densely hairy; segments 1 and 2 deeply concave; middle coxae flattened mesially; legs with dense scales among tubercles.

Aedeagus (figs. 46, 47) with apex narrowed, turned upward (concave in front); in dorsal view wider in front; apodemes shorter than median lobe; parameres present; basal sclerite not found.

Variations from Type. The female paratypes are 16 and 17 mm. in length; they differ from the male by having the pronotum distinctly narrower than the elytra and lacking the upright tubercles laterally in front; on interval 5 of the elytra instead of an abrupt carina, females have a feeble but readily seen tumidity of the same length as the carina of the male, the tumidity topped by a single row of small tubercles. In one of the females an area of paler scales shows within the humerus. In females the scutellum is subquadrate; the elytral apexes are more widely separated; the metasternum and abdominal segments 1 and 2 are flat or convex, not concave or hairy; the middle coxae are not flattened.

Etymology. The Latin *tumoris* refers to the tumor or swelling of the elytra.

Discussion. This species shows some affinity to the *morbillosus* group of species and some to those of the *anormis* group. The male has acute, but not spiny pronotal tubercles as in *bilineatus* of the *morbillosus* group, but the wider scutellum, the scaly, not hairy, legs, and the aedeagus are similar to those in the majority of the *anormis* group.

Species Group *anormis*
***Odontoderes anormis* (Chevrolat)**
Figures 15, 48, 49, 58, 61

Callinotus anormis Chevrolat, 1881, p. xx (Brazil; type, female, in Naturhistoriska Riksmuseum, examined).

Diagnosis. Differing from *tumoris*, *carinatus*,

ocelliger, and *scolius*, in having white lateral stripe of elytra not reaching apex, but turning inward in front of subapical callosity toward suture. Male with carina of elytral interval 5 longer than that of *tumoris*, and less acute than that of *carinatus*.

Range. Amazonas, Brazil, and Rio Tapiche in Peru. (For three specimens examined, see Appendix.)

Description. Length 10 to 17 mm. Brownish, with tiny, round, dense yellow-orange scales among black tubercles; white scaly stripes laterally on pronotum and elytra.

Male. Beak about same length as pronotum, straight to antennal insertion where bent feebly downward, multicarinate, densely punctate, ventrally uniformly punctate. Labium with postmentum longer than wide, flat. Antennal funicle with segment 2 shorter than segment 1.

Pronotum almost as wide as elytra, laterally with two oblique, scaly white stripes; disc convex; sides strongly arcuate to apex; surface with elongate, round, or transverse tubercles, well separated among dense, yellow-orange scales; base straight. Scutellum apparently wider than long. Elytra more than twice length of pronotum, with tiny, dense, round, yellow-orange scales and with lateral white scaly stripes turning inward toward suture in about apical third, and with white border at apex; interval 5 carinate from in front of prominent subapical callus to near base of elytra; carina with single row of black tubercles; stria punctures with white scale within; apexes slightly angulate.

Prosternum granulate; front coxae without tumid roll, separated by width of antennal segment; middle coxae rather flattened mesially; metasternum and abdominal segments 1 and 2 densely hairy, slightly concave, legs with dense scales among tubercles.

Aedeagus (figs. 48, 49) with apex slightly emarginate, concave in front, dorsally about same width throughout; apodemes shorter than median lobe; basal sclerite rather opaque; parameres stout.

Female. As described for male, but interval 5 of elytra not carinate, beak with carinae almost obsolete, venter without long hairs.

Discussion. This species is more stocky and robust, less elongate and narrow than *carinatus*

and the other species that follow, but it has the same kind of uniform, dense scaling on the elytra. The aedeagus is more similar to that of *tumoris* although it is not known whether *tumoris* has any basal sclerite.

In the two males examined, the white lateral stripes of the elytra turn inward only to interval 4, whereas in the female type they almost reach the suture. Both males were dissected.

Odontoderes carinatus (Guérin-Méneville)

Figures 16, 31, 52-54, 60

Cholus carinatus Guérin-Méneville, 1844, p. 157 (Cayenne; type, male, not found).

Callinotus geminatus Chevrolat, 1878, p. cxl (Brazil; type, female, in Naturhistoriska Riksmuseum, examined; synonymized by Kuschel, 1955).

Notophus subincostatus Desbrochers des Loges, 1906, p. 365 (Cayenne; type, female, in Muséum National d'Histoire Naturelle, examined; synonymized by Kuschel, 1955).

Diagnosis. Narrow, elegant species with white lateral stripes extending unbroken from head to apex of elytra, passing over prominent subapical callosities of elytra. Male with interval 5 of elytra (adjacent to white stripe) abruptly, sharply carinate from base to near callus; female similar to female of *ocelliger*, but elytral callus larger, hind femur longer, and interval 5 of elytra tuberculate instead of smooth.

Range. French Guiana and Amazon River basin in Brazil; also "Peru." (For date on 24 specimens examined, see Appendix.)

Description. Length 11 to 16 mm.

Male. Color, beak, labium, antennal funicle, and pronotum as described for *anormis*, but beak seldom dorsally carinate and pronotum elongate, scarcely wider than long, with base feebly bisinuate. Scutellum distinctly wider than long, punctate. Elytra as described for *anormis*, but white lateral stripes continuous through subapical callus to apex, and carina of interval 5 higher and steeper, in some specimens sinuous. Underside and legs as described for *anormis*, but apex of abdomen very hairy and with tiny glabrous swelling.

Aedeagus (figs. 52-54, 60) with apex acuminate, turned slightly upward; apodemes scarcely

longer than median lobe; basal sclerite present; parameres rudimentary.

Female. As described for male except for following: beak feebly arcuate, finely punctate; carina of interval 5 absent, replaced by row of tubercles; venter not hairy; apex of abdomen flat.

Discussion. The male of *carinatus* was described as a *Cholus* and the female as a species (*geminatus*) of *Callinotus*. In 1906 Desbrochers des Loges described another female as *Notophus subincostatus*, at the same time transferring *carinatus* to his new genus. These specific and generic names were synonymized with *Callinotus carinatus* by Kuschel (1955) who at the present time (personal commun.) considers *Callinotus* a synonym of *Odontoderes*.

In the type of *subincostatus* and in several other specimens the canaliculation of the tibiae is not very noticeable, partly because of the scales, but it is nonetheless present. The elytral carinae are higher and more sinuous in some males than in others.

The front coxae and the two prosternal tubercles of *carinatus* and *ocelliger* are closer together than they are in *zetterstedti*. In *transversalis* the coxae are as approximate but the tubercles are widely separated. The inner armature of males is similar to that of *transversalis*, *zetterstedti*, *scolius*, and *albior*.

Six males were dissected.

***Odontoderes scolius*, new species**

Figures 23, 50, 51

Type. Male, São Paulo d'Oliveira, Amazonas, Brazil, in the Kuschel collection, Entomology Division, Department of Scientific and Industrial Research, Auckland, New Zealand.

Diagnosis. Differing from other species in having arcuate, not straight hind tibia (other tibiae also arcuate), and in combination of long pronotum, short, straight beak, no white stripes on elytra, and base of elytra jagged and overlapping pronotum. Pronotum elongate and convex as in male of *carinatus*.

Range. Known from type locality only.

Description of Type. Male; brownish with tiny, round, dense, yellow scales in punctate-

striate elytra, and pronotum with two whitish scaly stripes laterally. Length 16 mm.

Beak about same length as pronotum, straight, coarsely, tumidly punctate; base carinate in front of fovea between eyes, carina forking around punctate, elevated "platform"; ventrally smooth, finely punctate. Labium and antennal funicle as described for *anormis*. Pronotum scarcely wider than long, but almost as wide as elytra, strongly convex, laterally with two oblique whitish scaly stripes; sides arcuate to apex; surface with small, variously shaped black tubercles among dense, yellow-orange scales (scales mostly worn off disc); base hidden under base of elytra. Scutellum almost twice wider than long, punctate. Elytra not more than twice length of pronotum, with tiny, dense round yellow-orange scales, some patches of scales of paler hue; scales in feebly tumid area between prominent subapical callosities of deeper orange; basal half with minute black granules; punctures of striae with white scale within; apices feebly separate, not angulate; base with intervals 2 and 3 projecting slightly forward onto pronotum.

Prosternum in front slightly depressed behind marginal black band; front coxae without tumid roll, separated by slightly more than width of antennal segment; metasternum and abdominal segments 1 and 2 depressed and densely hairy; legs with dense scales among tubercles. All tibiae distinctly arcuate.

Aedeagus (figs. 50, 51) with apex rounded, with slight suggestion of median projection; apodemes longer than median lobe; median lobe proportionally short for size of weevil; basal sclerite not found; parameres present.

Etymology. The Greek name given to this weevil refers to the "curved" tibiae.

Discussion. The lobed basal corner, or angle, of the pronotum, when viewed laterally, projects angularly into the mesepimeron as it does also in *ocelliger* and *carinatus*, and the elongate-appearing pronotum is similar to that of males of *carinatus*. In those species, however, the middle and hind tibiae are straight, not arcuate, and *scolius* differs further in lacking white stripes on the elytra. Possibly the stripes are merely worn off as whitish scales are present at the apex of the elytra. The legs are scaly as are those of *anormis*, *carinatus*, and *zetterstedti*, not hairy as are those

of *ocelliger*. The basisternal tubercles are close together as in *ocelliger* and *carinatus*.

The unique specimen had already been dissected; if a basal sclerite had been present, it was not in evidence.

Odontoderes ocelliger (Perty)

Figures 17, 55-57, 62

Larinus ocelliger Perty, 1830, p. 79, pl. 16, no. 4 (Brazil; type probably in Munich although there is a "type" in Naturhistoriska Riksmuseum, examined.)

Callinotus sahlbergii Boheman, 1836, p. 577 (Brazil; type, sex not determined, in Naturhistoriska Riksmuseum, examined; synonymized by Klima, 1936).

Cholus quadripunctatus Hustache, 1940, p. 691 (Bahia, Brazil; type, sex not noted, in Muséum National d'Histoire Naturelle, examined; new synonymy).

Diagnosis. Dorsum with continuous white lateral stripes as in *zetterstedti* and *carinatus*, but differing from them in having base of elytra strongly lobed and projecting on each side forward onto pronotum; apices of elytra rounded, not separately angulate; hind femur very short; and subapical callosities of elytra obsolete.

Range. Eastern Brazil. (For data on 16 specimens examined, see Appendix.)

Description. Brown with dense orange-brown tiny scales among black tubercles and white lateral stripes on pronotum and elytra; some specimens may have oblique transverse white band or spots on elytra. Length 13 to 18 mm.

Male. Beak longer than pronotum, arcuate, from base to antennal insertion laterally sulcate and scaly, medially and apically finely, sparsely punctate; ventrally punctate. Labium and antennal funicle as described for *anormis*. Pronotum almost as wide as elytra, laterally with two oblique scaly white stripes; disc rather flat; sides feebly arcuate; surface with round or elongate tubercles well separated among dense orange-brown hair like scales; base feebly sinuate, in repose covered by base of elytra. Scutellum setose, wider than long, or roundish. Elytra almost three times length of pronotum with tiny, dense, round, orange-brown scales and clearly defined lateral scaly white stripes which reach apex by passing through obsolete subapical callosities; behind middle with interrupted oblique

white band or spots, outlined in black; basal half with intervals and striae tuberculate; base with intervals 4 and 5 tumid and projecting forward; punctures of striae, when visible, with white scale within; apices rounded.

Prosternum from apical margin to front coxae bicarinate and granulate; front coxae without tumid roll, separated by less than width of antennal segment; metasternum densely hairy; abdomen segments 1 and 2 with long, semi-erect hairs, rather narrowly concave; legs with dense hairs, femora in some specimens feebly tuberculate.

Aedeagus (figs. 55-57) very short, broad; apex slightly emarginate; apodemes longer than lobe; parameres not found, but long coil (possibly flagellum) present.

Female. As described for male, but segments 1 and 2 of abdomen not so deeply concave and lacking semi-erect hairs.

Discussion. Schoenherr (1836) listed "*Larinus? ocelliger* Perty, 1830," as a synonym of *sahlbergii* Boheman, 1836, which was corrected 100 years later by Klima (1936), who reinstated the earlier name. It is not a common species in collections. It has already appeared under three generic names (*Larinus*, *Callinotus*, and *Cholus*). The sexes are not readily determined, as the venter is excavated in both, but the cavity extends farther on to the second abdominal segment in the male.

The tubercles behind the front coxae are rather close together, not so prominent, resembling those of *carinatus*, rather than the widely spread tubercles of *zetterstedti*, *transversalis*, and *albior*. The pronotal disc is tuberculate as in *carinatus*, not merely setose as in *zetterstedti*. The aedeagus is very short and wide, with a long coil as in *insculptus*. In several specimens, including the type of *quadripunctatus* Hustache, the oblique white elytral band is broken into four, five, or six spots, not necessarily the same number on each side of the elytra.

Two males and one female were dissected.

Biology. According to Araujo e Silva (1968) *ocelliger* (as "*Cholus quadripunctatus*") and *zetterstedti* both breed in stems of *Saranthe* (Gramineae or Marantaceae). Some of the specimens collected by Bondar are labeled "Gramineas," "breeds in *Saranthe*," and "plaga" (pest) of Gramineae.

Odontoderes zetterstedti (Boheman)

Figures 18, 28, 63-66, 85

Callinotus zetterstedti Boheman, 1836, p. 579 (Brazil; type, male, in Naturhistoriska Riksmuseum, examined).

Callinotus protensus Chevrolat, 1880, p. cxlii (Brazil; type, sex not noted, in Naturhistoriska Riksmuseum, examined; synonymized by Kuschel, 1955).

Diagnosis. Similar in shape and in having continuous lateral white stripes to *ocelliger*, but differing from it and others of genus in having two long "tails" at apex of elytra and no tubercles or granules on elytra.

Range. Eastern and southern Brazil and northern Argentina. (For data on 90 specimens examined, see Appendix.)

Description. Length 14 to 21 mm. Pronotum black with white lateral stripes; elytra brownish with dense orange-brown scales and white lateral stripes continuous from pronotum to apex of elytral "tails."

Male. Beak longer than pronotum, straight to antennal insertion where bent feebly downward; multicarinate or feebly unicarinate, and densely, reticulately punctate; ventrally sparsely, finely punctate. Labium and antennal funicle as described for *anormis*. Pronotum almost as wide as elytra, laterally with two oblique scaly stripes; sides strongly arcuate to apex; disc rather flattened, without tubercles but with sparse, setose punctures; laterally with round, convex, sparse, black tubercles; base straight, medially from base to middle feebly impressed and with tiny brown scales. Scutellum longer than wide in most specimens, impunctate. Elytra (including apical projections) almost three times length of pronotum, with tiny, dense, round, orange-brown scales, no tubercles, laterally with white scaly stripes reaching apex through feeble subapical callus; punctures of striae with white scale within; apexes with separate, acuminate, slightly inward curving projections at least as long as claw segment.

Prosternum feebly bicarinate from apical margin to front coxae; front coxae without tumid roll, separated by slightly more than width of antennal segment; middle coxae rather flattened mesially; metasternum and abdominal segments 1

and 2 deeply concave, densely hairy; legs with dense scales, but no tubercles.

Aedeagus (figs. 63-66) with apex rounded; apodemes much longer than median lobe; basal sclerite and parameres present.

Female. As described for male, but metasternum and abdominal segment 1 only feebly sulcate medially; abdominal segment 2 convex; middle coxae not flattened.

Discussion. The white markings of *zetterstedti* are quite constant; I have seen only one specimen that differs in having white scales along the suture of the elytra and a broken transverse band behind the middle, but not reaching the suture. The elytra of both *zetterstedti* and *ocelliger* are smooth and covered with uniformly dense, "matted" scales that generally obscure the striae punctures, but there are no granules on *zetterstedti*, except on the humerus, whereas there are some basally in most specimens of *ocelliger*. The second segment of the abdomen is very long in *zetterstedti*, as well as in *transversalis*, *albior*, and *insculptus*; it appears to be more than twice the length of segments 3 and 4 combined. Three males were dissected.

The type of Chevrolat's *protensus* is very worn, but is unmistakably this species.

Biology. The species breeds in the stems of *Sarantia* in Bahia, a monocotyledon of the family Gramineae or Marantaceae (Araujo e Silva, 1968).

Odontoderes transversalis (Pascoe)

Figures 19, 24, 67-69

Solenopus transversalis Pascoe, 1872, p. 475, pl. 11, fig. 4 (Brazil; type, male, in British Museum [Natural History], examined).

Solenopus bondari Hustache, 1941, p. 133 (Bahia, Brazil; type, male, in Muséum National d'Histoire Naturelle, examined; new synonymy).

Diagnosis. Differing from all preceding species of group in having longer beak, pronotum more noticeably narrower than elytra, disc of pronotum flat or concave, not convex, and scarcely, if at all tuberculate, and apex of aedeagus asymmetrical. Very similar to *albior* but differing from it in lacking white stripes on elytra laterally and in aedeagus.

Range. Eastern Brazil. (For data on 32 specimens examined, see Appendix.)

Description. Length 13 to 17 mm. Dark brown with variable white scaly areas that are generally present on pronotum (as white lateral stripes), on base of elytra or on humerus, in transverse band behind middle and in large patch at apex of elytra.

Male. Beak, labium as described for *anormis*, but in some specimens beak longer (one and one-half times length of pronotum); antennal funicle with segments 1 and 2 about equal in length. Pronotum narrower than elytra, laterally with two oblique white stripes; sides at base subparallel, arcuate from middle to apex; disc flat or concave, sparingly or not at all tuberculate, in some specimens finely punctate; laterally tubercles may be hidden by pale hairs or by dark scales; base straight or feebly sinuate. Scutellum longer than wide, punctate. Elytra about three times longer than pronotum with minute, dense, dark scales as well as long whitish scales as described above; subapical callosities fairly prominent; striae with large (as wide as intervals), deep, uniform foveae, in many individuals separated longitudinally by transverse, linear tubercles; apices separately rounded.

Prosternum feebly bicarinate from apical margin to front coxae; front coxae without tumid roll, virtually contiguous (separated by less than width of antennal segment); middle coxae flattened mesially; metasternum and abdominal segments 1 and 2 deeply concave, densely hairy; legs with dense hair, no tubercles; in good condition femora, tibiae, sides of prosternum, and venter with additional long, wispy hairs.

Aedeagus (figs. 67-69) with apical projection asymmetrical, bent to one side; apodemes longer than median lobe; basal sclerite and parameres present.

Female. As described for male but venter without long, wispy hairs; metasternum flat, not concave; middle coxae not flattened; segment 1 of abdomen slightly depressed and segment 2 convex; femora less bulbous and with shorter tooth.

Discussion. The elytral pattern is quite variable. The white posterior band not only varies in length but it can be either straight or slightly sinuous, broken at the middle or not reaching the

sides of the elytra, or band lacking entirely, and in specimens described as *bondari* Hustache, the band is said to be situated farther back, more posteriorly. It is true that, of the 32 specimens I have examined (including the types of *bondari* and *transversalis*), there are seven or eight individuals in which the white band appears to be farther back because it begins (when seen in lateral view) from the apex instead of the middle of the first abdominal segment. Such individuals, however, do not necessarily agree with the other differences given by Hustache (1941), namely, that *bondari* is smaller, shorter, with more convex elytra, with the sides of the pronotum granulate, the beak of the male shorter, less arcuate, and the front tibia more strongly bisinuate within. Thus in a male (*transversalis*) with the band distinctly more anterior (beginning from the middle of the first segment of the abdomen), the front tibiae are more sinuate than those of two males (*bondari*) with the band more posterior. Furthermore, although the granules on the sides of the pronotum are more distinct in some *bondari*, in other individuals with the band more posterior they are as indistinct as those of specimens with the band more anterior. Actually, these granules are hidden in fresh specimens by hairs or scales and exposed when the vestiture is worn. Other characters being the same for individuals with both kinds of band, or varying in the same way, I consider *bondari* a synonym of *transversalis*.

The front femur is very large and bulbous as it is also in *albior* and *insculptus*; the femur of a male of *transversalis* which is 15 mm. long, is more bulbous than that of a specimen of a large *bilineatus* of 24 mm. In males of *transversalis* and *albior* the tooth of the front femur (fig. 24) is closer to the apex than that of other species, and is at right angles to the apex. The basal sclerite of the aedeagus is strongly sclerotized and is proportionally larger than that of *zetterstedti*. In some examples of *transversalis* the apical dorsal comb of the tibia appears to be longer than that of other species, namely, almost one-third, instead of one-fourth or one-fifth the length of the tibia.

Six males were dissected.

Biology. Four specimens of "*bondari*" (no. 2533, Santa Theresinha, Brazil) were collected in flowers of the palm, *Cocos coronata*, and a speci-

men from Santa Ignez, Bahia, in flowers of "licuri" (perhaps the same palm). Araujo e Silva (1968) wrote that "*bondari*" develops in the growing leaf stalks of the "licurizeiro" and *transversalis* "em coqueiro da Bahia."

Odontoderes albior, new species

Figures 20, 29, 70-72, 83

Type Material. Type, male, Rio [de] Janeiro, Brazil, in the Kuschel collection, Entomology Division, Department of Scientific and Industrial Research, Auckland; and male paratype, Espirito Santo, Brazil, to be deposited in the American Museum of Natural History.

Diagnosis. Similar to *transversalis*, differing only in having more white in elytral pattern and aedeagus symmetrical and shaped differently. Similar also to *insculptus*, but pronotum narrower, with smaller, sparser tubercles, elytra with many white scales, and tooth of front femur of male at right angles to inner apex (as in fig. 24). In these three species the front coxae are virtually contiguous.

Range. Eastern Brazil.

Description of Type. Male; length 11 mm. Pronotum with white lateral stripes; elytra dark brown with white scaly band at base continuing on to sides and epipleurae to apex; at apical third oblique white band, and white scales covering apex to subapical callus; also seven or eight scattered patches of white scales on striae of each elytron.

Beak longer than pronotum, straight to antennal insertion where bent feebly downward, multicarinate and punctate; ventrally coarsely punctate on sides, impunctate medially. Labium and antennal funicle as described for *anormis*. Pronotum as described for *transversalis*, but disc rather flat, not concave, with well-separated, transverse linear tubercles, some punctate; laterally with tiny, convex tubercles among dense white scales; base straight. Scutellum about as wide as long, punctate. Elytra as described for *transversalis*, but pattern as given above and striae with shallow punctures, not deep foveae, and tubercles denser. Ventral side and legs as described for *transversalis*, but long wispy hairs partially worn off and hairs of abdominal cavity sparse and short.

Aedeagus (figs. 70-72, 83) with median apical

projection turned slightly upward; apodemes longer than median lobe; basal sclerite and parameres present.

Variation from Type. The male paratype is longer (13 mm.), with more long wispy hairs ventrally and on the legs (even some on the tibiae), and with only three patches of white scales on the striae of each elytron. The tubercles of the sides of the prosternum are scarcely visible under the dense white hairs, and the pronotum is more convex.

Etymology. This species is "whiter" than *transversalis*, hence the Latin comparative.

Discussion. The two specimens are so similar in many details (including the tooth of the front femur) to *transversalis* that they might almost be considered color variants of that species. The aedeagus, however, is completely different (figs. 67-72). The aedeagus resembles that of *insculptus* in its general shape and strong curvature, but it differs in having less sculpturing and the sides separated, not meeting dorsally. If the elytral pattern of *albior* proves constant, it differs further from *transversalis* in having white stripes laterally on the elytra, as well as transversely. Both specimens were dissected.

Odontoderes insculptus, new species

Figures 21, 25, 30, 76, 77, 82

Type. Male, Porto Velho [possibly Amazonas], Brazil, in the Kuschel collection, Entomology Division, Department of Scientific and Industrial Research, Auckland.

Diagnosis. Differing from all species in beautifully shaped and sculptured, tubelike aedeagus in which rolled-over sides are almost contiguous dorsally. Otherwise most similar to *albior* and *transversalis*, but lacking elytral white stripes.

Range. Known from type locality only.

Description of Type. Male; length 16 mm. Brownish red, with tiny, dark scales interrupted by round patches of pale scales, four or five on each interval of elytra; white lateral stripes on pronotum.

Beak longer than pronotum, virtually straight; multicarinate, densely punctate; ventrally granulate on outer edge and longitudinally sulcate. Labium and antennal funicle as described for *anormis*, but funicle with segment 2 longer than seg-

ment 1. Pronotum almost as wide as elytra, laterally with two oblique, rather indistinct, scaly stripes; disc rather flat; sides arcuate; surface medially with confluent, flattened tubercles of various shapes, laterally with round, more separated tubercles; scales present laterally but worn on disc; base straight. Scutellum longer than wide, setose. Elytra almost three times length of pronotum, with tiny, dense, round dark scales and some widely separated pale scales in four or five round patches on alternate intervals; humerus and area behind subapical callus also with pale scales; intervals and striae densely tuberculate or granulate; punctures of striae with white scale within; apices separately rounded.

Prosternum granulate and from apical margin to front coxae bicarinate; front coxae virtually contiguous, with feeble tumid roll and flattened surface; middle coxae also mesially flattened; metasternum feebly, and abdominal segments 1, 2, and 5 deeply concave, and densely hairy; legs with dense hairs and feeble tubercles; femora strongly bulbous, with long hairs on inner margins.

Aedeagus (figs. 76, 77, 82) with median apical projection; dorsally longitudinally impressed on each side at about middle; apodemes longer than median lobe; basal sclerite pieces, parameres, and long coil present.

Etymology. The Latin *insculptus* refers to the "carved" or "etched" appearance of the aedeagus.

Discussion. The unique male of *insculptus* resembles males of the *morbillosus* species group in having a tumid roll (although small) on the front coxae, the coxae flattened behind, and the underside of the beak sulcate and granulate; it is similar to males of the *anormis* group in having the postmentum of the labium flat, not tumid, and the pronotum without spines. The pronotum is wider than that of *albior* and *transversalis*, the front femur is somewhat less bulbous, and its inner tooth is farther from the apex.

Species Group *brevis*

Odontoderes brevis, new species

Figures 22, 32, 73-75, 84

Type Material. Type, male, Corupa (Hansa Humbolt), Santa Catarina, Brazil, January, 1946,

A. Maller, collector; and two female paratypes, same data, but December, 1944, and February, 1945, in the American Museum of Natural History; 5 additional paratypes: with same data, but November, 1953, one male in collection of C. A. Campos Seabra; same data, but "1932.29," one male in Museum für Tierkunde, Dresden; Rio Vermelho, Santa Catarina, December, 1955, A. Maller, collector, one male, and Maromba, Itatiaia, east of Rio de Janeiro, December 26, 1953, Seabra and Alvarenga, collectors, one female, both in collection of Seabra; "Brazil," one male in Kuschel collection, Division of Entomology, Department of Scientific and Industrial Research, Auckland.

Diagnosis. Similar to *costalis* in short, stocky body and aedeagus, but differing in dorsal pattern and longer beak. Differing from *anormis* species group in combination of short elytra (only twice length of pronotum), very convex pronotum, and short metasternum.

Range. Southeastern and eastern Brazil.

Description of Type. Male; length 12 mm. Black with white scales among black tubercles, appearing gray to naked eye; pronotum with two oblique white stripes continuing on to humerus; elytra behind middle with obliquely transverse, distinct white band from side to side.

Beak one-fourth longer than pronotum, feebly arcuate, dorsally vaguely unicarinate in basal two-thirds, densely punctate toward apex; ventrally punctate on feeble median ridge and in feeble longitudinal depressions on each side. Labium with postmentum longer than prementum, slightly tumid. Antennal funicle with segments 1 and 2 about equal in length. Pronotum at widest part as wide as elytra; disc strongly convex, bulbous; sides strongly arcuate to apical constriction; surface with large, round, convex tubercles mostly separated by about their diameters, interspersed with elongate white hairs and with two oblique stripes of dense white scales; base bisinuate. Scutellum slightly wider than long, setose. Elytra about twice longer than pronotum, with white hairlike setae among transverse, black, linear tubercles of striae; pattern as given above; subapical callosities prominent; apices rounded, slightly separated.

Prosternum from apical margin to front coxae feebly bicarinate; front coxae without tumid roll,

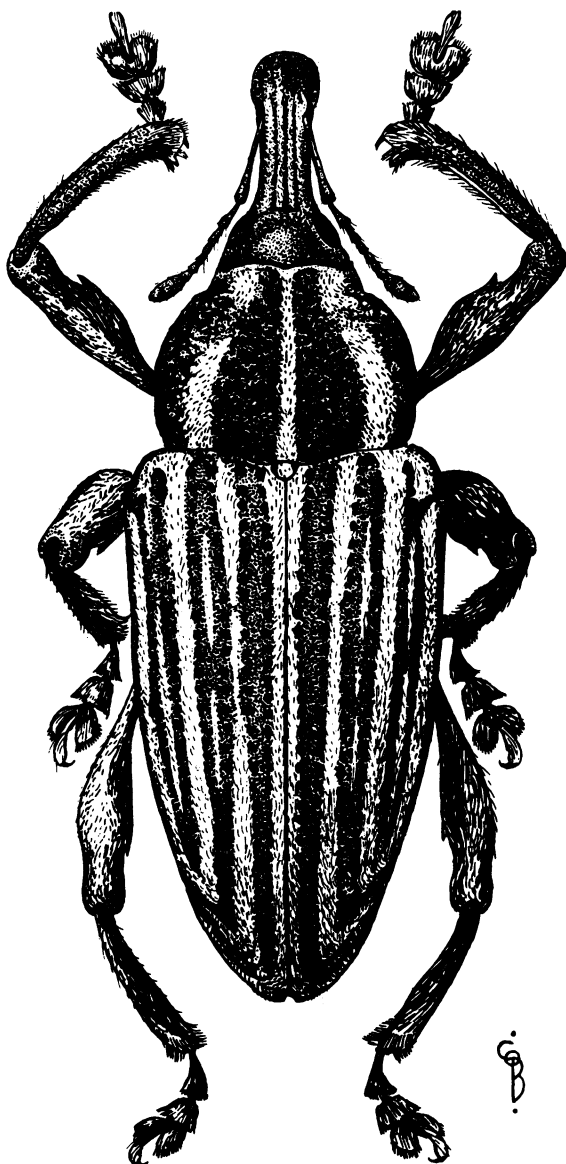


FIG. 26. *Odontoderes costalis*, type, male, Diamantina, Minas Gerais, Brazil (12 x 4.8 mm.).

separated by about width of antennal segment; metasternum and abdominal segments 1 and 2 concave and densely hairy; legs with elongate hairs, no tubercles.

Aedeagus (figs. 73-75, 84) with median apical projection; apodemes about same length as median lobe; basal sclerite and parameres present.

Variation from Type. The paratypes range in length from 10 to 14 mm. Dorsally the females resemble the males, but the pronotum is perhaps not quite so convex or so wide, the beak is slightly longer, the labium flat, and in one female the elytra are more than twice the length of the pronotum. The metasternum of females differs in being flat, and the first two abdominal segments

are strongly convex, not concave. In two of the paratypes (a male and female) the white dorsal markings are not noticeable because they are of the same yellow color as the other vestiture; perhaps they became greased. In several paratypes the apexes of the elytra are angulate. The scutellum of some individuals is about as wide as long, and the prosternal carinae are very short or scarcely visible.

Etymology. The Latin *brevis* means short, referring to the elytra, the tibial comb, and the metasternum.

Discussion. This species and *costalis*, which follows, are shorter and stockier, with shorter tibial comb and more convex pronotum and elytra than those of the species of the *anormis* group, although *anormis* itself is rather robust. Perhaps *brevis* and *costalis* are more closely allied to the *morbillosus* group, but the males lack the secondary sexual characters of that group, namely, the tumid coxal roll, the pronotal spines, and the enlarged postmentum and front tarsus. The awl-shaped, long basal sclerite is proportionally much larger than that of some of the larger species.

The type and another male were dissected.

***Odontoderes costalis*, new species**

Figures 26, 78-81

Type Material. Type, male, Campos de Dia-

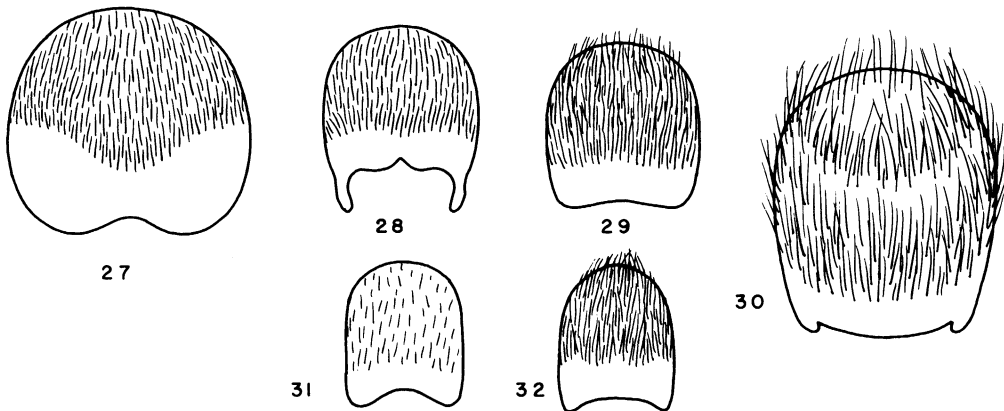
mantina, Fazenda do Riacho Fundo, Minas Gerais, Brazil, December, 1902, E. Gounelle, collector, in Kuschel collection, Entomology Division, Department of Scientific and Industrial Research, Auckland; and one male paratype, Brazil, in Zoologisches Museum, Berlin.

Diagnosis. Similar to *brevis* in robust shape and convex pronotum, but differing from all species in having pronotum at middle as well as laterally with white scaly stripe, and elytra with alternating distinct white or yellow stripes.

Range. Minas Gerais and probably other parts of Brazil.

Description of Type. Male; length 12 mm. Pronotum with three and elytra with 10 to 12 linear scaly white stripes.

Beak same length as pronotum, virtually straight, robust, multicarinate except toward apex where finely punctate; ventrally punctate and with longitudinal depression on each side of median ridge. Labium with postmentum as wide as long, scarcely longer than prementum, slightly tumid. Antennal funicle with segments 1 and 2 equal in length. Pronotum narrower than elytra; disc feebly convex; sides arcuate to apical constriction; surface with flattened, confluent, irregularly shaped tubercles and a few punctures; base straight. Scutellum slightly longer than wide, setose. Elytra slightly longer than twice pronotum, with dense yellow scales on alternate intervals, except where worn off; striae uni-



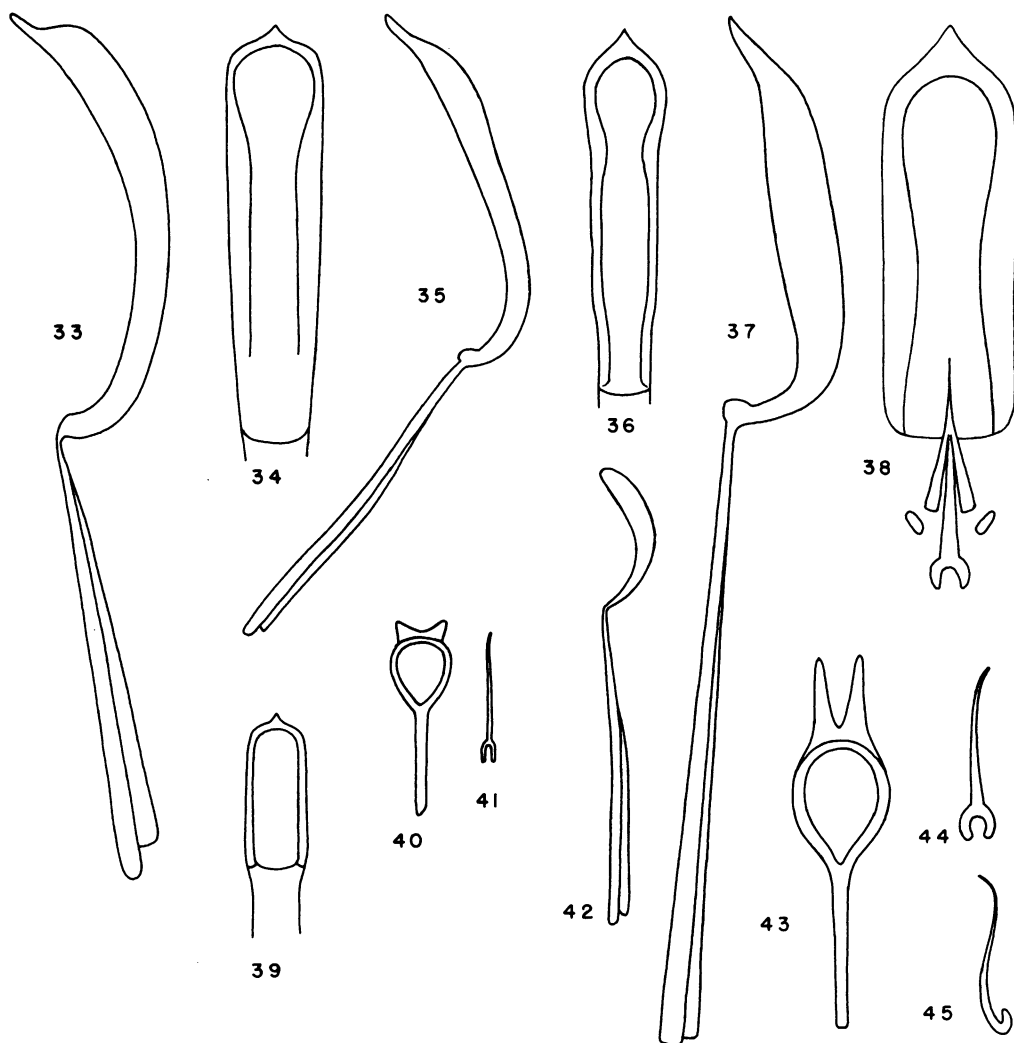
FIGS. 27-32. Sternite 8 of *Odontoderes*. 27. *O. tumoris*. 28. *O. zetterstedti*. 29. *O. albior.* 30. *O. insculptus*. 31. *O. carinatus*. 32. *O. brevis*.

formly deeply, densely punctate, each puncture with tiny seta within; subapical callus prominent; apexes feebly separated.

Prosternum in front not carinate; front coxae without tumid roll, separated by width of antennal segment; metasternum feebly, and abdominal segments 1 and 2 distinctly concave, hairy; legs with elongate hairs, no tubercles.

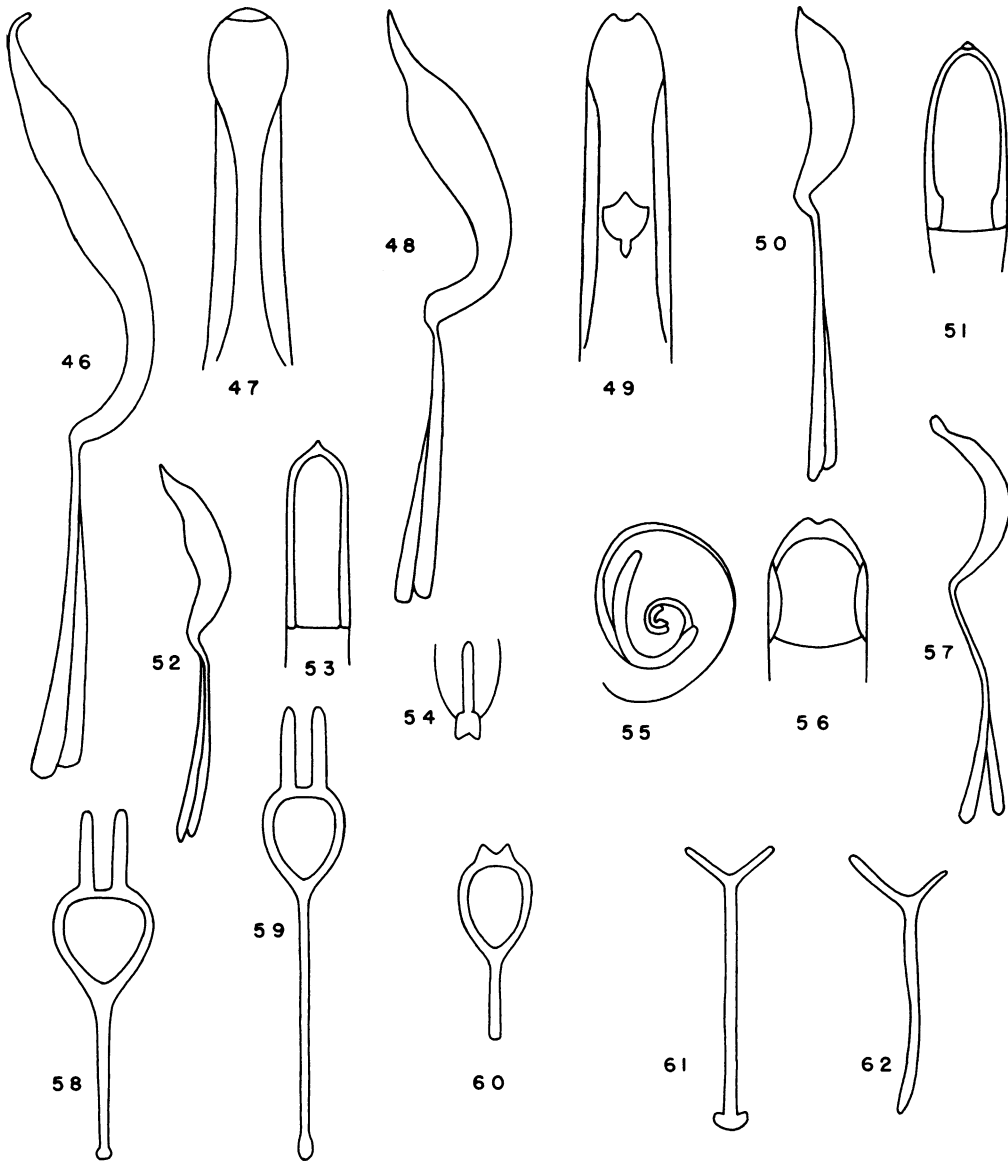
Aedeagus (figs. 78-81) with median apical projection; apodemes of same length as median lobe; basal sclerite and parameres present.

Variation from Type. Although the male paratype (11.5 mm.) has had the pronotum and elytra broken and glued together again, and although there is no exact locality data with it, it is in better condition than the type as far as the



FIGS. 33-42. Median lobe of aedeagus of *Odontoderes*. 33, 34. *O. morbillosus*. 33. Lateral view. 34. Dorsal view. 35, 36. *O. spinicollis*. 35. Lateral view. 36. Dorsal view; characteristic also of *O. sexmaculatus*. 37, 38. *O. bilineatus*. 37. Lateral view. 38. Dorsal view showing basal sclerite pieces protruding. 39-42. *O. capetos*. 39. Median lobe, dorsal view. 40. Tegmen with ring and rudimentary parameres. 41. Basal sclerite. 42. Median lobe, lateral view.

FIGS. 43-45. Parts of genitalia of *morbillosus spinicollis*, *sexmaculatus*, and *bilineatus*. 43. Tegmen ring and parameres. 44. Basal sclerite, dorsal view, and 45, lateral view.

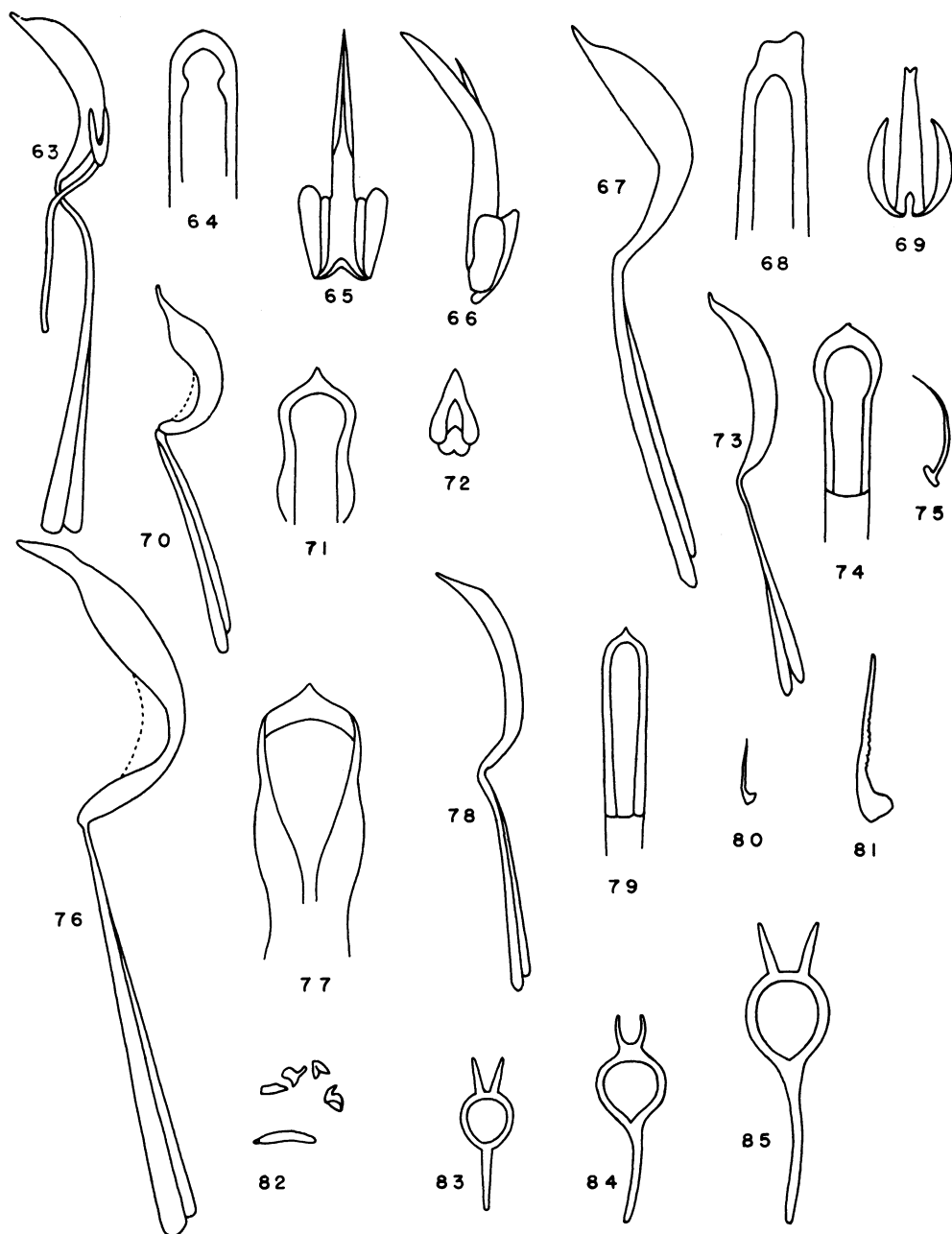


FIGS. 46-57. Median lobe of aedeagus of *Odontoderes*. 46, 47. *O. tumoris*. 46. Lateral view. 47. Dorsal view. 48, 49. *O. anormis*. 48. Lateral view. 49. Dorsal view, showing opaque, but not sclerotized basal sclerite within. 50, 51. *O. scolius*. 50. Lateral view. 51. Dorsal view. 52-54. *O. carinatus*. 52. Lateral view. 53. Dorsal view. 54. Basal sclerite, larger scale. 55-57. *O. ocelliger*. 55. Coil with basal sclerite within. 56. Median lobe, dorsal view, and 57, lateral view.

47, 49. Base not shown because of strong curvature.

FIGS. 58-60. Tegmen, ring, and parameres. 58. *O. anormis*. 59. *O. tumoris*. 60. *O. carinatus* with rudimentary parameres.

FIGS. 61, 62. Sternite 9 or spiculum gastrale. 61. *O. anormis*. 62. *O. ocelliger*.



FIGS. 63-82. Median lobe of aedeagus of *Odontoderes*. 63-66. *O. zetterstedti*. 63. Lateral view with tegmen *in situ*. 64. Dorsal view. 65. Basal sclerite, dorsal view, larger scale, and 66, lateral view. 67-69. *O. transversalis*. 67. Lateral view. 68. Dorsal view. 69. Basal sclerite, larger scale. 70-72. *O. albior*. 70. Lateral view. 71. Dorsal view. 72. Basal sclerite, larger scale. 73-75. *O. brevis*. 73. Lateral view. 74. Dorsal view. 75. Basal sclerite. 76, 77. *O. insculptus*. 76. Lateral view. 77. Dorsal view. 78-81. *O. costalis*. 78. Lateral view. 79. Dorsal view. 80. Basal sclerite, and 81, larger scale, showing dentations. 82. *O. insculptus*, basal sclerite pieces.

FIGS. 83-85. Tegmen ring and parameres. 83. *O. albior*. 84. *O. brevis*. 85. *O. zetterstedti*; characteristic also of *O. insculptus* and *transversalis*.

64, 68, 71, 77. Base not shown because of strong curvature.

coloration is concerned. The scales of the scutellum, suture, and alternate intervals of the elytra are almost white, contrasting with the scales of the other intervals which are brownish yellow with only tiny patches of white. The tubercles of the pronotal disc of the paratype are so flattened and merged that they appear as a black mass with large punctures.

Etymology. The Latin *costalis* is for the ribbed effect.

Discussion. In both specimens of *costalis* at the dorsal apex of the beak on each side are two sets of six or more golden hairs curling over the mandibles. Such hairs are present in other species of the subfamily, but doubtless are generally rubbed off. In one *brevis* and in *albior*, one or more of these hairs are visible.

APPENDIX: SPECIMENS EXAMINED

For convenience the countries under each species are arranged alphabetically. Sex is given where ascertained. Letter symbols for the institutions to which the specimens belong are as follows:

AM, the American Museum of Natural History, New York

BM, British Museum (Natural History), London
CS, C. A. Campos Seabra, Rio de Janeiro, private collection

KU, Kuschel collection, Entomology Division, Department of Scientific and Industrial Research, Auckland

MN, Muséum National d'Histoire Naturelle, Paris
NR, Naturhistoriska Riksmuseum, Stockholm

SM, Staatliches Museum für Tierkunde, Dresden
SN, Senckenbergische Naturforschende Gesellschaft, Frankfurt

SP, Museu de Zoologia, São Paulo

UR, Faculdade de Agronomia, Montevideo

US, National Museum of Natural History, Washington, D.C.

ZM, Zoologisches Museum, Berlin

ZS, Zoologische Staatssammlung, Munich

Odontoderes albior, new species

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

Odontoderes anormis (Chevrolat)

BRAZIL: 1♀ (type, NR), São Paulo d'Oliveira, 1♂ (KU).

PERU: Upper Rio Tapiche, 1♂ (AM).

Odontoderes bilineatus (Lacordaire)

BRAZIL: 1♂, 2♀ (KU, US); Amazonas: Mani-

core, 1♀ (KU). Para: Obidos, Sept., 1956, 1♀ (CS).

FRENCH GUIANA: 20♂, 5♀ (MN, US); Cayenne, 13♂, 12♀ (BM, CS, KU, MN, SM, SN); Maroni, 2♂ (BM, MN); Gourdonville, 3♂, 2♀ (KU, MN); following all MN: Nouveau Chantier, 1♂, 2♀; Pariacabo, Rivière de Kourou, 3♂, 4♀; Les Roches de Kourou, 3♂, 1♀; St. Jean du Maroni, 2♂, 1♀; St. Laurent du Maroni, 13♂, 13♀.

MEXICO: 1♀ (BM), probably error.

NO LOCALITY: 5 (BM, MN).

Odontoderes brevis, new species

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

Odontoderes capetos, new species

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

Odontoderes carinatus (Guérin-Ménéville)

BRAZIL: 1♂ (SM); Amazonas: Fazenda Tapirinha, near Santarem, 1♂, 3♀ (KU, SP); Santarem, 1♂ (US).

FRENCH GUIANA: 1♂, 1♀ (MN); Cayenne, 3♂, 1♀ (type of *subincostatus*, MN), 1♂, 1♀ (KU); following all MN: Nouveau Chantier, 1♂; Pariacabo, Rivière de Kourou, 1♂; Roches de Kourou, 1♂, 1♀; St. Jean du Maroni, 1♂; St. Laurent du Maroni, 3♂, also 1♂ (KU).

PERU: 1♂ (KU).

Odontoderes costalis, new species

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

Odontoderes insculptus, new species

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

Odontoderes morbillosus (Drury)

BRAZIL: 1♂ (type of *percheroni*, NR), 1♀ (type of *cacicus*, NR), 13♂, 13♀ (KU, MN). Bahia: 3♂, 4♀ (AM, MN, SM). Espírito Santo: 1♂, 1♀ (KU); Linhares, Parque Sooretama, 1♀ (CS). Rio de Janeiro: 7♂, 2♀ (AM, MN); Mendes, 4♂, 3♀ (KU, MN); Tijuca, 1♀ (MN); Floresta da Tijuca, 1♂ (CS); São Bento, D. Caxias, 1♂ (CS). Santa Catarina: 1♂ (MN). Parana: Matelandia, 1♀ (CS). State ?: Boa Sorte, 1♀ (SM).

FRENCH GUIANA: Cayenne, 3♂, 1♀ (MN).
NO LOCALITY: 3♀ (US, ZM).

Odontoderes ocelliger (Perty)

BRAZIL: 2 (including type of *sahlbergii*, NR); 5 (KU, MN); Bahia, 1♂ (type of *quadripunctatus*, MN), 2 (KU, AM, SM); Santa Theresa, Espírito Santo, Dec., 1964, 2♀ (SP).

NO LOCALITY: 3 (CS, AM, ZM).

Odontoderes scolius, new species

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

Odontoderes sexmaculatus (Olivier)

BRAZIL: 2♀ (MN, US); Amazonas, 1♀ (KU); Rio de Janeiro, 1♀ (MN).

CHILE: 1♂ (type of *nitidicollis*, NR), probably error.

FRENCH GUIANA: 1♀ (type of *sexmaculatus*, MN), 2♂ (MN), 1♂ (type of *politicollis*, US); Cayenne, 14♂, 4♀ (KU, MN, SM); following all MN: Charvin, tributary of Maroni, 1♀; Maroni, 1♂, 2♀; Nouveau Chantier, 2♂, 2♀; St. Jean du Maroni, 4♂, 3♀; St. Laurent du Maroni, 6♂, 5♀.

SURINAM: 1♂ (KU).

Odontoderes spinicollis (Boheman)

BOLIVIA: 1♂, 2♀, Guarayos, 3♂, 1♀, Santa Cruz de la Sierra, 1♂, 1♀ (KU, MN), Buenavista, 1♂ (KU).

BRAZIL: 5♂, 3♀ (KU, SM). Amazonas: 2 (MN); Massenary, 4♂, 7♀ (KU, MN); Manaus, 1♀ (MN); Santarem, 1♀ (US); Teffe, 1♀ (AM); Benjamin Constant, 1♀ (CS); Guajara, Rio Madeira, Borda, 1♂ (CS); Lago Acara, Rio Madeira, Borda, 2♂, 1♀ (CS); Porto Velho, Rio Madeira, 1♀ (KU). Mato Grosso: Corumba, 1♀ (MN). Goyaz: Jatahy, 1♀ (MN). Para: 1♀ (KU); Obidos, 3♂, 1♀ (CS); Mangabeira, Mocajuba, 3♀ (CS).

FRENCH GUIANA: 21♂, 10♀ (MN, US); 1♀ (type, NR); Cayenne, 15♂, 10♀ (KU, MN, SM); following all MN: Essequibo, 1♀; Gourdonville, 6♂, 6♀; Guatimala, Rivière de Kourou, 1♂, 1♀, near St. Georges Oyapock, 1♀; Maroni, 1♂, 2♀; St. Laurent du Maroni, 9♂, 8♀; Nouveau Chantier, 1♂, 1♀; Pariacabo, Rivière de Kourou, 2♂, 1♀; Roches de Kourou, 4♂, 3♀; Passoura, Rivière de Kourou, 8♂, 1♀.

NO LOCALITY: 14 (MN, US).

Odontoderes transversalis (Pascoe)

BRAZIL: 7♂ (including type of *bondari*, MN, and type of *transversalis*, BM), 5♀ (KU, MN, SM, ZS); Bahia: 1♂, 1♀ (KU), Santa Theresinha, 5♂, 1♀ (AM, MN, US); Santa Ignez, 1♂ (AM). Rio de Janeiro: 2♂, 1♀ (US), Floresta da Tijuca, 3♀ (CS), Mendes, 1♂ (MN); Petropolis, 1♀ (SM).

NO LOCALITY: 2♂ (MN, ZM).

Odontoderes tumoris, new species

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

Odontoderes zetterstedti (Boheman)

ARGENTINA: Misiones, 1 (KU).

BRAZIL: 2 (type of *protensus* and male type

of *zetterstedti*, NR), 17 (KU, MN, SP, US); Corcovado, Guanabara, 14♂, 12♀ (SP, UR); Espirito Santo, 4 (AM, SM); Linhares, Parque Sooretama, Espirito Santo, 1 (CS). São Paulo: 2 (MN, SP), Alto da Serra, 2♂ (SP); Boraceia, 1 (SP). Rio de Janeiro: 3 (MN), Petropolis, 2♂ (SM, SP), Floresta de Tijuca, 5 (CS), Maromba Itatiaia, 1♀ (CS), Paineiras, 1♂ (CS), Tijuca, Alto da Boa Vista, 1♀ (CS). Santa Catarina: Corupa, Hansa Humbolt, 12 (AM, CS, KU, MN, SM).

NO LOCALITY: 8 (CS, MN, ZM).

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