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## Revision of the Genera *Anchylorhynchus* and *Petalochilus* of the Petalochilinae (Coleoptera, Curculionidae)

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### INTRODUCTION AND ACKNOWLEDGMENTS

These interesting little South American palm weevils of the subfamily Petalochilinae are generally quite rare in collections, but the American Museum of Natural History is fortunate in having about 700 specimens, this wealth of material consisting principally of specimens from the Gregorio Bondar collection of South American Curculionidae, recently procured for the Museum by David Rockefeller. Two-thirds of the species of *Anchylorhynchus* and *Petalochilus* are represented in the Museum's collection, and specimens of the remaining species were examined through the courtesy of other institutions both here and in Europe.

The only revisions since Lacordaire's account in 1863 appeared in 1943, at which time both Bondar and Voss revised *Anchylorhynchus*. Unfortunately neither author includes the new species described by the other (four by Bondar, three by Voss), so that both revisions are in-

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complete. The present study brings together all the species of both genera, of which 16 are recognized in *Anchylorhynchus* and five in *Petalochilus*, and includes the description of a new species of the former.

The genera consist of small- to medium-sized, long-beaked, hairy or scaly weevils. Those of the genus *Petalochilus* are larger, have the elytra parallel sided, and are mostly dark in color except for narrow lines of yellow scales; those of *Anchylorhynchus* are smaller, ovate or elliptical in shape, the elytra widening behind much as in the Halticinae of the Chrysomelidae; they are either entirely yellow or buffy in color, or black, or yellow and black and prettily spotted or striped. Both genera have elbowed antennae inserted apically, the beak flattened at the tip and scarcely if at all curved; mandibles bidentate at apex; the front margin of the prothorax ciliate behind the eyes, but no true postocular lobe present; the pygidium covered; the first and second abdominal segments about equal in length and each one as long as the short third and fourth segments united; the femora noticeably toothed; the claws free; and the sexes dimorphic.

During the course of this study over 850 specimens were examined, 26 of the genus *Petalochilus* and 839 of *Anchylorhynchus*, about 500 of the latter specimens being divided between two species only (*aegrotus* and *variabilis*). This material represents all described forms except three color varieties (*A. mutabilis* var. *connata* Voss, *A. burmeisteri* var. *bimaculatus* Faust, and *P. lineolatus* var. *rufulus* Hustache), and *A. nigripennis* Voss. I have examined the types, lectotypes, or paratypes of all described forms with the exception of the four named above and of *P. expansirostris*, the type of which is probably lost. The lectotypes of nine of the Bondar species were designated previous to this study (Vaurie, 1953). Both sexes of all recognized species were examined with the exception of *A. amazonicus*, *burmeisteri*, *parvus*, and *pictipennis*, and of *P. expansirostris* and *faldermanni*, species in which only males were available.

I wish to thank the following persons and the institutions with which they are connected for their generous cooperation in lending specimens or paratypes: Dr. J. Balfour-Browne, British Museum (Natural History); Dr. A. Carpentries, Muséum National d'Histoire Naturelle; Dr. Guillermo Kuschel, Universidad de Chile; Dr. R. Malaise, Naturhistoriska Riksmuseum; Dr. H. Sachtleben, Deutsches Entomologisches Institut; Miss R. Warner, United States National Museum; and Dr. R. Wenzel, Chicago Natural History Museum. I am especially grateful to Drs. Malaise and Sachtleben who also made types available for study. Thanks are due to Miss Marjorie Statham for technical aid with the drawings.

Since the types, paratypes, or cotypes of this group are so widely scat-

tered, I have, under Specimens Examined appearing at the end of each species, designated the museums in which they are deposited, as follows:

A.M.N.H., the American Museum of Natural History, New York

C.N.H.M., Chicago Natural History Museum, Chicago

D.E.I., Deutsches Entomologisches Institut, Berlin

M.N.H.N., Muséum National d'Histoire Naturelle, Paris

N.R., Naturhistoriska Riksmuseum, Stockholm

U.S.N.M., the United States National Museum, Washington

### HISTORY OF THE GENERA

Lacordaire in 1863 brought three genera together as the tribe Petalochilides, these genera having appeared in Schoenherr (1836, 1843) as part of the tribe Erirhinides. Pascoe in 1870 called them the subfamily Petalochilinae which has been their status up to the present. Bondar (1941c, p. 443) gave a number of reasons, both morphological and biological, why he thought they would be better placed as a tribe, Petalochilini, of the subfamily Erirhininae, although he did not make the change. Voss (1943) considered them still a distinct subfamily, and they are so listed in Blackwelder's catalogue (1947). I intended to follow Bondar's recommendation in calling these genera a part of the Erirhininae, as there are many resemblances between them and some genera, at least, of that large subfamily, but Kuschel (1952, p. 269) has enlarged the concept of the subfamily Petalochilinae to include many of these Erirhininae. I have therefore decided to retain *Anchylorhynchus* and *Petalochilus* in the Petalochilinae.

*Anchylorhynchus* and *Petalochilus* were both erected by Schoenherr in 1836. The genus *Anchylorhynchus* had *variabilis* Gyllenhal, 1836, as the only species until Fahraeus, seven years later, added *aegrotus*, *parvus*, and *mutabilis*. Except for *burmeisteri* and its variety *bimaculatus*, both described by Faust in 1894, nearly 100 years passed before any additional species were named. Then, between 1937 and 1950, Hustache, Bondar, and Voss described 17 species (respectively, three, nine, and five), and I have added one in this paper.

In the genus *Petalochilus*, also erected by Schoenherr, *gemellus* Gyllenhal, 1836, was the only species until 1939 when Hustache described *lineolatus* and its variety *rufulus*, which he subsequently transferred to *Balanephagus*. *Balanephagus*, which Kuschel placed in synonymy with *Petalochilus* (for reasons, see under the genus), was erected by Schoenherr in 1843 with *faldermanni* Boheman as the only species. Lacordaire, 1863, added *expansirostris*, and no further species were described until Bondar described *gica* in 1940; Hustache, *attaleae* in 1940; and in 1941 Bondar added *fernando-costai*.

The genus *Anchylorhynchodes* proposed by Bondar (1941c, p. 468)

and which he suspected of not belonging in the *Petalochilini*, is here omitted. Bondar tells me (*in litt.*) that he has decided to remove this genus and its one species, *ruschianae* (type locality, Colatina, Espirito Santo) to the genus *Phelypera* in the subfamily Hyperinae.

### DISTRIBUTION

*Anchylorhynchus* and *Petalochilus* are strictly South American genera (table 1) inhabiting the coastal lowlands and hills or the drainages of the

TABLE 1

DISTRIBUTION OF THE GENERA IN SOUTH AMERICA, THE COUNTRIES  
AND STATES ARRANGED FROM NORTH TO SOUTH

	French Guiana	Colombia	Amazonas, Brazil	Para, Brazil	Bahia, Brazil	Goyaz, Brazil	Espirito Santo, Brazil	Rio de Janeiro, Brazil	São Paulo, Brazil	Parana, Brazil	Santa Catarina, Brazil	Paraguay	Uruguay	Argentina
<i>Anchylorhynchus</i>														
<i>aegrotus</i>	—	—	—	—	—	—	—	—	—	x <sup>a</sup>	—	—	—	x <sup>b</sup>
<i>albidus</i>	—	—	—	—	x	—	—	—	—	—	—	—	—	—
<i>amazonicus</i>	—	—	x	—	—	—	—	—	—	—	—	—	—	—
<i>bicolor</i>	—	—	—	—	—	—	—	—	x	—	—	x	—	—
<i>burmeisteri</i>	—	—	—	—	—	—	—	—	—	—	—	—	—	x
<i>camposi</i>	—	—	—	—	x	—	—	—	—	—	—	—	—	—
<i>eriospathae</i>	—	—	—	—	—	—	—	—	—	x	—	—	—	—
<i>hatschbachi</i>	—	—	—	—	—	—	—	—	—	x	x	—	—	—
<i>minimus</i>	—	—	—	—	—	—	—	—	—	—	x	—	—	—
<i>parcus</i> <sup>c</sup>	—	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>pictipennis</i>	—	—	—	—	—	—	—	—	—	—	—	—	x	—
<i>trapezicollis</i>	—	—	—	x	x	—	x	—	—	—	—	—	—	—
<i>tremolerasi</i>	—	—	—	—	—	—	—	—	—	—	—	—	x	x
<i>tricarinatus</i>	—	x	—	—	—	—	—	—	—	—	—	—	—	—
<i>variabilis</i>	—	—	—	—	—	—	—	x	—	x	x	x <sup>d</sup>	x	x
<i>vittipennis</i>	—	—	—	—	—	—	—	—	x	—	x	—	—	—
<i>Petalochilus</i>														
<i>expansirostris</i>	—	—	—	—	—	—	—	x	—	—	—	—	—	—
<i>faldermanni</i>	—	—	—	—	x	—	—	—	—	—	—	—	—	—
<i>fernando-costai</i>	—	—	—	—	x	—	—	—	—	—	—	—	—	—
<i>gemellus</i>	x	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>lineolatus</i>	—	—	—	—	x	x	—	—	—	—	—	—	—	—

<sup>a</sup> Recorded by Bondar (1943, p. 360).

<sup>b</sup> Recorded by Kuschel (*in litt.*).

<sup>c</sup> Brazil, but no specified locality.

<sup>d</sup> Recorded by Voss (1943, p. 62).

large rivers. The geographic range of many of the species probably includes the ranges of the palms in which they breed and is therefore more extensive than indicated from present material. These insects have not, however, been widely collected, and only expert, specialized collectors like Bondar, who knew where to locate the palms and when they were in bloom, have been able to find large numbers of specimens. The majority of species of *Anchylorhynchus* have been taken in the southeastern part of the continent, in southern Brazil, Paraguay, Uruguay, and the part of Argentina bordering on the Rio de la Plata and the Rio Uruguay. Four species occur in northern Brazil in the state of Bahia, and up the Amazon basin (Para; Amazonas), and one species is from the Rio Guayuriba in central Colombia, east of the mountains. In the genus *Petalochilus* four of the five species occur in eastern Brazil, and one is from the coast of French Guiana.

## BIOLOGY

Virtually nothing was known about the habits of these weevils before Bondar began their study, the only previous indication of their ecology being in connection with *A. burmeisteri* Faust, 1894, which was reported as developing in the fruits of some species of palm. Bondar has stated that all the species develop in palms and, with the exceptions of *P. expansirostris* and *P. gemellus*, and six species of *Anchylorhynchus* (*amazonicus*, *bicolor*, *burmeisteri*, *minimus*, *parcus*, and *tricarinatus*), he has verified the name or names of their host plants (1943, p. 358). All the species of *Anchylorhynchus* so verified breed in the flowers of palms of the genus *Cocos*, choosing those plants with voluminous flowers. The species of *Petalochilus* develop in the inner spathes of palms of the genera *Diplothemium*, *Attalea*, and *Cocos*, the larvae exploring the subcutaneous layer on the internal face of the spathes.

Adults of both genera feed on the pollen, and Bondar says that at times immense clouds of them, as well as small members of the Eirrhinae can be seen around the flowers, or flying from one palm to another, especially when the blooms have recently opened. When at rest their yellowish or buffy coloration blends in with the flowers, although some species are black, in whole or in part (Bondar, 1941a, p. 298; 1943, pp. 365, 366).

The host plant-species relationships are shown below by two listings, one by species and one by host. In addition Bondar found adults of *A. variabilis* on *Cocos capitata* Martius and adults of *A. trapezicollis* and *P. lineolatus* on the coconut, *Cocos nucifera* Linnaeus. (For further notes, see under each species.)

SPECIES	HOST PLANT
<i>Anchylorhynchus</i>	
<i>albidus</i>	<i>Cocos coronata</i>
<i>trapezicollis</i>	<i>Cocos coronata</i> , <i>C. botryophora</i> , <i>C. picrophylla</i>
<i>camposi</i>	<i>Cocos campestris</i>
<i>aegrotus</i>	<i>Cocos Romanzoffiana</i>
<i>bicolor</i>	<i>Cocos leiospatha</i> , <i>Butia</i> <sup>1</sup> <i>yatai</i>
<i>hatschbachi</i>	<i>Cocos eriospatha</i>
<i>eriospathae</i>	<i>Cocos eriospatha</i>
<i>tremolerasi</i>	<i>Cocos pulposa</i>
<i>pictipennis</i>	<i>Cocos pulposa</i>
<i>vittipennis</i>	<i>Cocos Romanzoffiana</i>
<i>variabilis</i>	<i>Cocos Romanzoffiana</i>
<i>Petalochilus</i>	
<i>faldermanni</i>	<i>Cocos coronata</i>
<i>lineolatus</i>	<i>Attalea funifera</i> , <i>A. piassabossu</i>
<i>fernando-costai</i>	<i>Diplothemium caudescens</i>

HOST PLANT	SPECIES
<i>Cocos</i>	
<i>botryophora</i> Martius	<i>A. trapezicollis</i>
<i>campestris</i> Martius	<i>A. camposi</i>
<i>coronata</i> Martius	<i>A. albidus</i> , <i>A. trapezicollis</i> , <i>P. faldermanni</i>
<i>eriospatha</i> Martius	<i>A. hatschbachi</i> , <i>A. eriospathae</i>
<i>leiospatha</i> Barbosa Rodriguez	<i>A. bicolor</i>
<i>picrophylla</i> Barbosa Rodriguez	<i>A. trapezicollis</i>
<i>pulposa</i> Barbosa Rodriguez	<i>A. tremolerasi</i> , <i>A. pictipennis</i>
<i>Romanzoffiana</i> Chamisso	<i>A. aegrotus</i> , <i>A. vittipennis</i> , <i>A. variabilis</i>
<i>Butia yatai</i> (Martius) Beccari	<i>A. bicolor</i>
<i>Attalea</i>	
<i>funifera</i> Martius	<i>P. lineolatus</i>
<i>piassabossu</i> Bondar	<i>P. lineolatus</i>
<i>Diplothemium caudescens</i> Martius	<i>P. fernando-costai</i>

### INTERSPECIFIC VARIATION

The characters that have formerly served to distinguish the species of *Anchylorhynchus* include the color of the pubescence and ground color of various parts, the proportions of the length of the beak to the length of the pronotum, and of the antennal club to the funicle, the relative lengths of the segments of the funicle, the shape of the pronotum and elytra and their relative widths, and the type and quantity of vestiture. Other specific characters not used by previous authors are the male genitalia and the direction of the scales on the pronotal disc.

In *Petalochilus* the species vary in the presence or absence of tubercles, the shape and pattern of the pronotum, the pattern of the elytral scales, the secondary sexual characters, and the male genitalia.

<sup>1</sup> This is one of the genera created by Beccari from the genus *Cocos*.

In neither genus is the punctuation of much practical use in diagnosis since the punctures are generally hidden by the overlying scales or hairs.

### SEXUAL DIMORPHISM

In both genera the males of most species have the first and second abdominal segments more or less concave in the center, this cavity often extending onto the metasternum; females have these parts flat or even convex. The ventral cavity is probably present in all males, but was found to be scarcely perceptible in male specimens available of *Anchylorhynchus albidus*, *bicolor*, *camposi*, and *minimus*, and it is not very evident in *Petalochilus faldermanni* or *fernando-costai*. There is a tendency throughout both genera for the males to have the pronotum proportionately wider than the females, this difference being especially marked in *A. aegrotus* and *P. fernando-costai*. Another trend present in both genera is that the front tarsi are more hairy in the males of some species (*A. trapezicollis*, *P. fernando-costai*, *P. gemellus*).

In the genus *Anchylorhynchus* there is an interesting dimorphism quite rare among weevils. The species *variabilis* has but one color phase in the male (yellow elytra), and five or six color phases in the female (yellow elytra with varying black spots or bands, or the elytra entirely black). Such color variations appear also in other species (*A. eriospathae*, *hatschbachi*, *vittipennis*), but in these they occur in either sex. The females of all species have the third and fourth abdominal segments noticeably shorter than do the males and also have these segments more or less retracted or telescoped so that the apical margins appear to be

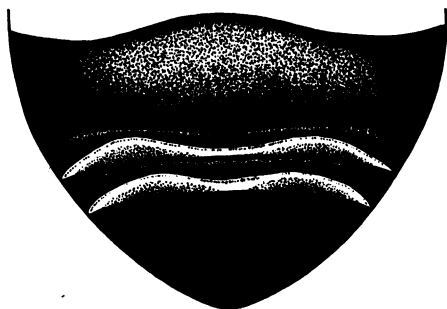


FIG. 1. Abdomen of *Anchylorhynchus variabilis*, female, showing sinuous retraction of third and fourth segments.

tipped or rolled backward in a feebly arcuate or sometimes in a sinuous line (fig. 1). In the male these segments are flat and about twice as long as in the female. The sexes in this genus are thus readily and unmis-

takably distinguished by a glance at the abdomen, although no previous authors have commented on this fact. There are two other sexual differences present in some species, namely, the males of *trapezicollis*, *hatschbachi*, and *vittipennis* have the abdominal vestiture finer, longer, more hairy, and less scaly than the females, and, as also in *A. aegrotus*, have a more pronounced metasternal ridge on each side of the ventral cavity. The ridge, however, is usually difficult to see since these weevils are almost always mounted on paper points which cover the metasternum.

In three species of *Petalochilus* the secondary sexual characters are even more striking than in *Anchylorhynchus*. Males have densely hairy beaks with a distinct median carina; females have the beak bare and glabrous except at the extreme base and the carina shorter and less pronounced (virtually lacking in *gemellus*). These characters of the beak were first noted by Bondar in 1941 in his description of *fernando-costai*. The antennal grooves in the males begin farther front on the beak, and their visible portion from above is longer than in the females. The apical third or half of the front tibiae in the males of *fernando-costai* and *gemellus* is furnished internally with long yellow hairs not present in the females. The beak and antennal groove characters are also present in males of *expansirostris* and *faldermanni*, but no females of these species were available for comparison.

## GEOGRAPHIC VARIATION

No evidence of geographic variation was found except possibly in *A. variabilis* where populations from Argentina and Uruguay differ somewhat, but not conclusively, from populations from Brazil. (See under the species.)

## SYSTEMATIC SECTION

### KEY TO THE GENERA

- Antennal funicle six-segmented; front coxae contiguous; beak with three or more carinae; tibiae with small inner apical claw (usually hidden by hairs) . . . . . *Anchylorhynchus*  
 Antennal funicle seven-segmented; front coxae narrowly separated but not contiguous; beak with median carina only (often lacking); tibiae with large outer apical claw curved inward . . . . . *Petalochilus*

### *Anchylorhynchus* Schoenherr

*Anchylorhynchus* SCHOENHERR, 1836, *Genera et species curculionidum*, vol. 3, p. 450; 1843, *op. cit.*, vol. 7, pt. 2, p. 333. LACORDAIRE, 1863, *Histoire naturelle des insectes*, vol. 6, p. 519. PASCOE, 1870, *Jour. Linnean Soc. London*, vol. 10, p. 436. Type, by original designation, *A. variabilis* Gyllenhal.

*Ancylorrhynchus*, GEMMINGER AND HAROLD, 1871, *Catalogus coleopterorum*, vol. 8, p. 2454 (*nomen emendum* for *Anchylorhynchus*). VOSS, 1943, *Ent. Blatter*, vol. 39, p. 60, 1 fig. BONDAR, 1943, *Rev. Ent.*, vol. 14, p. 357.

DIAGNOSIS: Members of this genus differ from other members of the subfamily and also from the Eirrhiniinae in the following respects: the beak is broad, straight, flattened, clearly carinate (three to seven carinae), and similar in both sexes; the antennae are inserted just behind the apex of the beak in both sexes; the antennal funicle is six-segmented; the pronotum is trapezoidal, the sides converging in front; femora dentate; front coxae contiguous; the female has the second and third abdominal segments retracted, not flat, their apical margins more or less rolled backward. (For direct comparison with *Petalochilus*, see that genus.)

Of the other related South American genera that I have examined, *Phytotribus*, *Spermologus*, *Derelomus*, and *Celestes* differ from *Anchylorhynchus* by having the antennal funicle seven-segmented, the antennae inserted submedially, at least in the female, and the abdominal segments in the female not retracted.

DESCRIPTION: Body and all or part of dorsal surface densely scaled or pubescent. Beak with from three to seven carinae, broad, robust, straight or very feebly curved, flat or cylindrical, scarcely dilated at apex when seen from above, finely hairy in both sexes; antennal grooves linear, descending obliquely to lower edge of eye; antennae inserted behind apex, the insertion visible from above, scape enlarged apically and reaching to or just before eye, funicle six-segmented, club elongate or globose, with four visible segments, first segment slightly longer. Head with puncture or depression between eyes; eyes finely faceted, oval, separated by less than the width of beak at base. Pronotum more or less trapezoidal, sides converging in front, straight or sinuate at base, either separated from proepisternum by an obtuse or sharp ridge, or sides of pronotum merely rounded. Scutellum oblong or square. Elytra with 10 punctate striae (the two outer ones reflexed and not visible from above), same width as, or wider than, pronotum at base, base straight or sinuate, sides either virtually parallel or widened at middle, broadly rounded to apex, elytra convex, feebly declivous to apex. Front coxae globose, contiguous, hind coxae transverse. Femora strongly clavate, with small inner tooth; tibiae straight or feebly curved, or slightly sinuate, somewhat compressed, armed with minute inner apical claw hidden in hairs; tarsi with spongy hairy pads below, the segments about equal in length, segments fringed with long hairs in males of some species; claws simple, divergent. Abdomen with first, second, and fifth (or last) segments about equal in length, the third and fourth very short and together not longer than any one of the others; suture between first and second segments feebly to strongly arched; female with third and fourth abdominal segments much shorter than in male and these segments feebly or strongly

retracted so that the apical margins of each of these segments is rolled backward, sometimes nearly to the base of the segment, this margin often markedly sinuous, male with third and fourth segments flat like the other segments; last abdominal segment broadly truncate rounded in male, narrower, more acuminate in female; male with scarcely perceptible, shallow, or distinct ventral cavity in center of first and second abdominal segments, female with these segments flat. Length, from 3 to 10 mm.

DISCUSSION: The species have been arranged with those with the scales entirely yellow first, followed by those with some or all scales black (some of these have also an all yellow phase). The first group is composed of nine species, the second of seven. The second group was found to have the ground color beneath the scales also black, in all or in part, and the beak (except in *burmeisteri*) somewhat longer in proportion to the pronotum than in all but two of the yellow-scaled species (*minimus*, *amazonicus*). Within each group the species that appear to be most similar are placed together. Otherwise it has been difficult to decide what are the proper relationships of the species, because one or sometimes two or three species differ from all the others in various characters which could not, therefore, be used for a grouping of species. Thus one species differs from all others in the number of carinae on the beak, one (*aegrotus*) in the shape of the pronotum, which is also sexually variable, one in the type of vestiture (*variabilis*), one in the length of the antennal shaft (*amazonicus*), one in the length of the antennal club (*bicolor*), and three in the direction of the pronotal scales (*amazonicus*, *camposi*, *burmeisteri*). The male genitalia appear to show correlation in the case of some of the species I have grouped together, but not in others. Although as many as 350 specimens have been examined of one species, *aegrotus*, and 163 of *variabilis*, I have seen only one specimen each of the species *parcus*, *amazonicus*, *burmeisteri*, and *pictipennis*, and only two of *minimus*.

Remarks on some of the characters follow.

COLOR: In the short general descriptions before each species the color given is the color of the overlying scales, since all the entirely yellow-scaled species have the ground color beneath the scales also yellow or reddish yellow. The ground color is thus mentioned only in those species in which the dorsal or ventral scales may be of two different colors (*burmeisteri*, *hatschbachii*, *eriospathae*, *tremolerasi*, *pictipennis*, *vittipennis*, and *variabilis*).

SCALES: In this genus all seemingly denuded areas actually possess scales (unless they have been worn off), but the scales may be dark on a

black background and therefore not visible to the unaided eye. Even the red pronotal disc in *vittipennis*, when viewed under the microscope, is seen to have small black scales or hairs in its punctures. Scales on the elytra are always directed backward towards the apex; scales on the pronotum are directed inward from each side towards the center where they usually turn forward along a median line to the apex, or sometimes merely meet in the center. There is quite a bit of individual variation in whether the scales are arranged transversely, sinuously, or obliquely, but they are never directed backward to the base except in three species (fig. 2C, D). In these (*amazonicus*, *burmeisteri*, *camposi*) the median

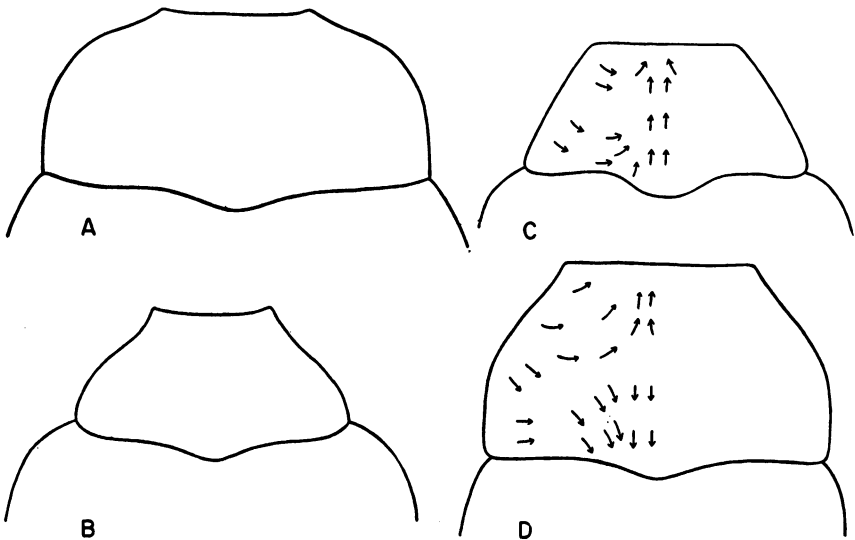


FIG. 2. Diagrams of pronotum in *Anchylorhynchus*. A. *A. aegrotus*, male. B. *A. aegrotus*, female. C. *A. tricarinatus*, male, showing directional trend of scales. D. *A. camposi*, female, same.

basal area has a block of backward-directed scales, and the median apical area has the scales turning forward as usual. In some species the direction of the scales in the black areas of the pronotum is difficult to see because the scales and ground color are both dark.

ANTENNAE: The relative lengths of the first three segments of the funicle differ among species, and, although these segments are often individually or sexually variable, their proportionate lengths have some taxonomic significance. Most species have the first and second segments approximately equal in length or with but slight differences, the third segment definitely shorter, and the remaining segments even shorter. In *minimus* and another species, however, the second segment is much

longer than the first (at least twice as long), in *bicolor* it is much shorter (one-half of the length), and in *trapezicollis* the first three segments are of about equal length.

The fourth segment of the antennal club is often virtually invisible, especially where the club is hairy. The proportions of the club to the funicle vary in length and width among species, the club usually being about equal in length to the last three or four segments of the funicle combined. In *bicolor*, on the other hand, the club is nearly the same length as the entire funicle.

**SCUTELLUM:** This has not been used in the classification or mentioned in the descriptions of the species because it is almost invariably clothed with abundant hairs or scales that obscure the shape. It appears, however, to be somewhat smaller, longer, and narrower in *aegrotus* and *tricarinatus* than in the other species.

**VENTRAL CAVITY:** As stated under Sexual Dimorphism above, the males usually have a ventral cavity, as is characteristic of many male weevils, but in these small species the depth of the cavity is difficult to assess owing to the manner in which the specimens are mounted on paper points. Also the abdomen, being soft, often appears concave in its entirety, so that the cavity in the center of the first two abdominal segments can scarcely be seen.

**GENITALIA:** The male genitalia are more or less tubular in shape, slightly arched, lightly sclerotized, and possess a large median orifice on the apex dorsally. Their representation in figure 3 is diagrammatic and shows only the outline and the orifice; the latter is usually somewhat cup shaped. The genitalia of *parvus*, *minimus*, and *amazonicus* were not dissected, and those of the following species are not figured: of *albidus* which are virtually the same as in *vittipennis*, and of *eriospathae*, *tremolerasi*, and *pictipennis* which are virtually the same as in *hatschbachi*.

#### KEY TO THE SPECIES OF *Anchylorhynchus*

1. Reflexed elytral sides, also prosternal and metasternal region, with fine hairs, not scales . . . . . *variabilis*  
   Reflexed elytral sides, also prosternal and metasternal region, with scales, not fine hairs . . . . . 2
2. Beak with three carinae only . . . . . *tricarinatus*  
   Beak with seven carinae, including the carinae on upper edges of antennal grooves . . . . . 3
3. Antennal club as long as, or longer than, the antennal funicle. . . *bicolor*  
   Antennal club not longer than the last four segments of the funicle united . . . . . 4
4. Pronotum with the scales in median area of basal half directed backward towards base . . . . . 5

- Pronotum with the scales in median area of basal half directed forward towards apex, or laterally, never backward . . . . . 7
5. Proepisterna, mesoepimera, and reflexed elytral sides in basal half clothed with dark brown scales; mesoepisterna and all of metasternal region with white scales so dense and overlapping as to obscure color beneath . . . . . *burmeisteri*
- Proepisterna, mesoepimera, and reflexed elytral sides in basal half clothed with yellow or whitish scales; mesoepisterna and all of metasternal region with white scales not or scarcely touching, allowing ground color to show through . . . . . 6
6. Beak from apex to front of eye almost twice as long as pronotum; antennal shaft not reaching eye; elytra with scales on disc very dense, overlapping one another, humeral angles broadly obtuse, sides widening at middle . . . . . *amazonicus*
- Beak from apex to front of eye same length as pronotum; antennal shaft reaching eye; elytra with scales on disc not overlapping, but individually visible, humeral angles virtually right angles; sides parallel . . . . . *camposi*
- 7(4). Ground color above and below entirely or in great part black . . . . . 8
- Ground color above and below entirely or in great part yellow or reddish . . . . . 12
8. Elytra mottled or speckled in appearance, clothed with random dark brown and white scales . . . . . *pictipennis*
- Elytra not mottled or speckled . . . . . 9
9. Elytral scales either entirely black (or dark brown) or both black and white (or yellowish) and arranged in longitudinal stripes . . . . . 10
- Elytral scales either entirely yellow or both yellow and black and arranged in transverse bands . . . . . 11
10. Elytral suture with white or pale scales; pronotum about same width as base of elytra, with two dark-scaled round spots mediolaterally, disc basally with yellow scales . . . . . *eriospathae*
- Elytral suture with dark scales; pronotum much narrower than base of elytra, without round black spots, disc basally without yellow scales . . . . . *vittipennis*
11. Pronotal disc entirely clothed with yellow scales, the punctures obscured; basal third of elytra entirely with yellow scales . . . . . *hatschbachi*
- Pronotal disc entirely devoid of yellow scales, the punctures visible and evident; base of elytra with two large oblique maculations of dark scales . . . . . *tremolerasi*
- 12(7). Beak jet black, its lateral carinae confused, indistinct, or incomplete . . . . . *albidus*
- Beak reddish to piceous, its lateral carinae distinct, complete. . . . . 13
13. Antennal funicle with first three segments about equal in length; male with front tarsi larger and with longer hairs than other tarsi . . . . . *trapezicollis*
- Antennal funicle with third segment shorter than second (from one-third to one-half of the length); male with all tarsi about equal in size and amount of hair . . . . . 14
14. Beak from apex to front of eye not longer than pronotum; pronotum in male twice as wide at base as long, in female narrower than elytra and

- with sharp angulation or tubercle on sides at middle; punctures on pronotal disc usually visible . . . . . *aegrotus*  
 Beak from apex to front of eye at least one-third longer than pronotum; pronotum in both sexes not more than one and one-third as wide at base as long, female without angulation at middle; punctures on pronotal disc, if present, obscured by scales . . . . . 15  
 15. Pronotum much narrower than elytra and proportionately shorter (one-fourth the length of elytra), its sides arcuate to middle; ground color yellow; antennal club elongate, narrow . . . . . *minimus*  
 Pronotum about same width as elytra and proportionately longer (about one-third of length of elytra), its sides parallel to middle; ground color dark red; antennal club shorter, stouter, bulbous . . . . . *parcus*

*Anchylorhynchus parcus* Fahraeus

*Anchylorhynchus parcus* FAHRÁEUS, 1843, in Schoenherr, Genera et species curculionidum, vol. 7, pt. 1, p. 335.

Uniformly yellowish white above and below, beak reddish; pronotum nearly as wide as elytra; second segment of antennal funicle slightly longer than first and twice as long as third. Form narrow, sides more or less parallel.

DESCRIPTION OF TYPE, MALE: Beak reddish, seven-carinate, including one carina on each side above antennal groove, about one-third longer than pronotum; antennal shaft reaching eye; funicle with first and second segments the longest, the first slightly thicker, the third only half the length of the second, fourth and fifth half the length of the third, sixth slightly longer than fifth; club a little longer than last three segments of funicle united, and three times wider; head with yellow scales mostly worn off. Pronotum about one and one-third times as wide at base as long, the sides nearly parallel to middle, thence arcuate convergent to apex where there is slight constriction, with dense but not overlapping yellow-white scales directed forward towards apex along median line. Elytra (only one elytron present) about three times as long as pronotum, at base seemingly scarcely wider than pronotum at base, elytron with side apparently nearly parallel, all with dense, not overlapping, yellow-white scales including reflexed side; striae punctures distinctly evident (scales worn off). Below, pronotal ridge obtuse to near apex, the whitish scales sparse on all areas below and on legs, with the reddish ground color showing through; ventral cavity distinct in male. Length, about 4 mm. (prothorax is bent).

TYPE LOCALITY: Brazil. Type in Naturhistoriska Riksmuseum, Stockholm, examined.

DISTRIBUTION: Brazil.

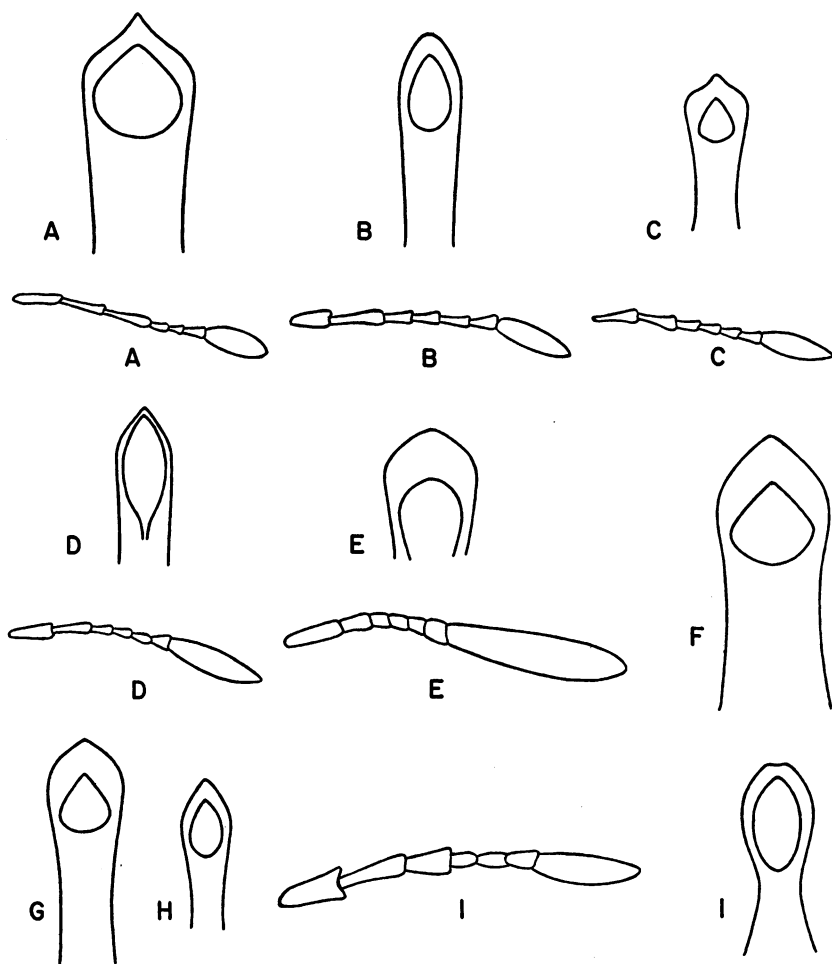


FIG. 3. Apices of male genitalia and some antennae of *Anchylorhynchus*. A. *A. trapezicollis*. B. *A. tricarinatus*. C. *A. camposi*. D. *A. aegrotus*. E. *A. bicolor*. F. *A. burmeisteri*. G. *A. hatschbachi*. H. *A. vittipennis*. I. *A. variabilis*.

COMPARISONS: This species is very similar in general appearance to a number of other yellow-scaled species which have the reflexed elytral and pronotal sides yellow, or at least not dark brown. In three of these (*trapezicollis*, *minimus*, and *tricarinatus*) the pronotum is definitely narrower than the elytra, not equal in width, the sides of the pronotum are not parallel in basal half, but arcuate from the base to the apex, and the third segment of the antennal funicle is longer. In *camposi* and *amazonicus*, species with the pronotum about similar in shape to that of *parvus*,

the pronotal scales at middle base are directed backward towards the base, not forward as in *parcus*. In males of *aegrotus* the shape of the insect is entirely different, being very convex, broad, and ovoid. The species most similar to *parcus* is *albidus* (Bahia) from which *parcus* differs by having the beak red, not jet black, the antennal club thicker and wider, more bulbous, the ground color reddish, not yellow, and the pronotum wider with differently shaped sides.

DISCUSSION: The type is the only specimen I have seen. It is in rather poor condition, lacking one elytron, and having the other elytron, the abdomen, and prothorax bent at an angle, and the elytral scales partly worn off. Bondar (1943) had not seen the species, and, although Voss (1943) includes a *parcus bicolor* in his key, I have examined the lectotype and a cotype of *bicolor* and it is an entirely different species (see discussion under *A. bicolor*). The male genitalia were not dissected.

HOST PLANT: None recorded, nor any biological notes.

SPECIMEN EXAMINED: Brazil. One male, the type of *parcus* (N.R.).

*Anchylorhynchus albidus* Bondar

*Ancylorrhynchus albidus* BONDAR, 1943, Rev. Ent., vol. 14, p. 362.

Beak jet black, the rest above and below uniformly yellow or buffy; pronotum narrower than elytra; third segment of antennal funicle somewhat shorter than second.

DESCRIPTION OF THE SPECIES: Beak black, seven-carinate, including one carina on each side above antennal groove, the lateral carinae somewhat confused, indistinct (virtually obsolete in lectotype), about one-quarter longer than pronotum in male, scarcely longer in female; antennal shaft reaching eye; funicle with first and second segments longest, the first slightly shorter and thicker, the third from one-half to about two-thirds of the length of second, fourth and fifth each about one-half of the length of third, sixth longer than fifth; club no longer than last three segments of funicle united and but little wider; head with dense, not overlapping yellow scales. Pronotum about one and one-quarter times as wide at base as long, the sides feebly arcuate convergent to apex where there is slight constriction, with dense, not overlapping yellow scales directed forward to apex along median line. Elytra from three to four times as long as pronotum, at base slightly wider than pronotum at base, gradually widening from humeral angle to middle, with dense, not overlapping yellow scales including reflexed sides; striae punctures evident, each with scale within. Below, pronotal ridge obtuse to near apex, the whitish scales somewhat sparser than they are dorsally, the

yellow ground color showing through; ventral cavity scarcely perceptible in male. Length, 3 to 4.5 mm.

TYPE LOCALITY: Campo Formoso, Bahia, Brazil. Lectotype in the American Museum of Natural History, examined.

DISTRIBUTION: Known only from Campo Formoso in the northern part of the state of Bahia, eastern Brazil, but probably occurs elsewhere in the state and in neighboring states.

COMPARISONS: Exceedingly similar to *A. trapezicollis* which breeds in the same palm, but *albidus* is generally smaller, has the beak broader, shorter, uniformly jet black, not reddish or piceous, and the third funicular segment of the antennae shorter, not equal in length to the second. Differs further by having the carinae on the beak, especially on the sides, not sharply defined as in *trapezicollis*, but indistinct, and almost evanescent behind. Differs from some of the other yellow species as follows: from *minimus* in the antennal segments; from *tricarinatus* in the seven-carinate beak, not three; from *aegrotus* in the shape of the pronotum; from *camposi* in much smaller size and in the fact that the pronotum is narrower than the elytra; from *parvus* as stated under that species.

DISCUSSION: None of the six specimens examined from the cotype series is in perfect condition, and details on the ventral side are visible in only three specimens. The male genitalia seem most similar to those of *vittipennis*, as shown in figure 3H.

HOST PLANT: *Cocos coronata* Martius, a palm in which *trapezicollis* also breeds, and from the flowers of which the eight specimens of the type series were taken. This palm has a wide distribution in the interior and on the coast of Bahia and the neighboring states of Pernambuco and Minas Gerais, flowering in the month of September (Bondar, 1938).

SPECIMENS EXAMINED: Brazil. *Bahia*: Campo Formoso, two males, the lectotype and a cotype of *albidus* (A.M.N.H.), three females, cotypes (A.M.N.H.), and one specimen, a cotype, with abdomen lacking (A.M.N.H.).

### *Ancylorhynchus trapezicollis* Hustache

#### Figure 3A

*Ancylorhynchus trapezicollis* HUSTACHE, 1940, Rev. Ent., vol. 11, p. 698.

*Ancylorhynchus botryophorae* BONDAR, 1941, Rev. Ent., vol. 12, p. 295, fig. 13. (New synonymy.)

*Ancylorhynchus bleyi* BONDAR, 1941, *ibid.*, vol. 12, p. 465, figs. 23-27. (New synonymy.)

Uniformly yellow or buffy above and below; beak reddish to piceous; pronotum much narrower than elytra; first three segments of antennal funicle about equal in length.

DESCRIPTION OF THE SPECIES: Beak reddish to piceous, seven-carinate, including one carina on each side above antennal groove, about one-third to one-half longer than pronotum; antennal shaft reaching eye; funicle with first three segments the longest and subequal in length, the first only slightly shorter, the remainder subequal, short, each about one-half of the length of the third; club slightly shorter than last three segments united and slightly wider; head with dense, overlapping yellow scales. Pronotum about one and one-third times as wide at base as long, sides feebly arcuate convergent to apex, with or without constriction, with dense, overlapping yellow scales directed forward to apex along median line. Elytra about four times as long as pronotum, at base wider than pronotum, and still wider at middle, with dense, scarcely overlapping yellow scales, including reflexed sides; stria punctures evident, each with scale within. Below, pronotal ridge obtuse to near apex, the whitish scales sparse or dense; abdomen, except sides at base, with fine thin yellow hairs, short in female, longer in male; ventral cavity distinct in male. Length, 4 to 9 mm.

TYPE LOCALITY: Bahia, Brazil. Type in Muséum National d'Histoire Naturelle, Paris.

DISTRIBUTION: The states of Para, Bahia, and Espirito Santo in eastern and southeastern Brazil.

COMPARISONS: None of the other entirely yellow species has the first three segments of the antennal funicle so nearly equal in length. In the tiny *albidus*, however, the third segment is often as much as two-thirds as long as the second, and this species is otherwise very similar to *trapezicollis*, but the latter differs by having the beak reddish or piceous, not jet black, its lateral carinae distinct, not confused, the beak longer and narrower, the male with a distinct ventral cavity, and the male genitalia different.

DISCUSSION: In spite of the differences given by Bondar among *trapezicollis* (Bahia), *botryophorae* (Bahia), and *bleyi* (Vitoria, Espirito Santo), I cannot separate these three forms, and I consider the latter two synonyms of *trapezicollis*. For comparison I examined three paratypes of *trapezicollis* and about 140 specimens from Bahia identified as this species by Bondar; the lectotype and a cotype of *bleyi* and 14 other specimens, all from Vitoria in Espirito Santo; and the lectotype and a cotype of *botryophorae* from Bahia. The only difference seems to be a general one of size, "*bleyi*" being much larger, yet the smallest individual of this form is not so large as the largest specimens of *trapezicollis*. The size range in the *trapezicollis* series mentioned above is from 4 to 7 mm., whereas in *bleyi* it is from 6 to 9 mm., and the two specimens of "*botryo-*

*phorae*" are 6 mm. In another species, *variabilis*, the size range is almost as great, from 5.5 to 10 mm. In view of this difference, however, attempts were made to distinguish the populations on the basis of some other differences mentioned by Bondar, but in each case the difference appears to be individual and not constant. Thus *botryophorae* was said to have the sternum dark, "which is never seen in *trapezicollis*," but the lectotype of *botryophorae* does not have the sternum dark, whereas seven of 51 specimens of *trapezicollis* do have it dark, or at least darkened. The beak of *bleyi* was said to differ from that of *botryophorae* by being red, but it is dark, almost black, in the lectotype. Other color differences, such as the darkening of the elytral striae, were also found to occur in any of the forms. Tarsal differences are also given and depicted by Bondar, i. e., the second segment shorter than the third in *botryophorae*, but longer than the third in *trapezicollis*, but these also appear to vary individually and could not be substantiated by my observations. The male genitalia of *trapezicollis* and *bleyi* (both specimens of the third form are females) appear to be identical. Proportions between the length and width of the pronotum in the three forms and between the length of the beak and the length of the pronotum showed no apparent differences.

Hustache was in error when he said that the female of this species had a long fringe of hairs on the tarsi; these hairs, as also the enlarged front tarsi, are present in the male.

The penis (fig. 3A) differs from that of most other species by having a sharp triangular point projecting from the apex. In *camposi* the projection is present, but it is shorter and more blunt.

HOST PLANT: The six specimens Hustache had for his description were taken in the flowers of *Cocos coronata* Martius and *C. nucifera* Linnaeus. Bondar (1941, p. 295) collected the species in abundance on the former, occasionally on the latter. He discovered (1940b, p. 211) that the adult "lives among the masculine flowers of *C. coronata*, eating the pollen and, in this way, is indirectly harmful to the palms." Later (1943, pp. 358, 362) he states that the insect develops in this palm. The nine original specimens of "*bleyi*" were collected by Bondar in the flowers of *Cocos picrophylla* Barbosa Rodriguez in which it was found to breed (1943), and the six original specimens of "*botryophorae*" in the flowers of *Cocos botryophorae* Martius in which it breeds.

SPECIMENS EXAMINED: Brazil. *Bahia*: Three, sex undetermined, paratypes of *trapezicollis* (M.N.H.N.), two females, the lectotype and cotype of *botryophorae* (A.M.N.H.), 112 males and females; Santa Ignez, March 5, 1930, 12 males, 12 females. *Espirito Santo*: Vitoria, June 26, 1941, one male, the lectotype of *bleyi* (A.M.N.H.), one female,

cotype of *bleyi* (C.N.H.M.), seven males, seven females. *Para*: One female, which bears the label "Typus" and was sent to me as one of the types of *amazonicus* Voss, which is an error; no specific name is on the specimen.

*Ancylorhynchus minimus* Bondar

*Ancylorhynchus minimus* BONDAR, 1950, Rev. Ent., vol. 21, p. 455, fig. 8.

Uniformly yellow or buffy above and below; beak reddish; pronotum much narrower than elytra; second segment of antennal funicle longer than two following segments united, constricted in middle, and at base only a third of the diameter of the large first segment; size very small (2.5 to 4 mm.).

DESCRIPTION OF THE SPECIES: Beak reddish, seven-carinate, including one carina on each side above antennal groove, nearly twice as long as pronotum; antennal shaft reaching eye; funicle with first and second segments the longest but the second only a third of the width of the first and one and one-third times longer, more or less constricted at the middle, third segment only a third of the length of the second, the remainder shorter than third; club a little longer than the last three segments united and at least twice as wide; head with dense, partly overlapping yellow scales, sparser towards the rear. Pronotum almost one and one-half times as wide at base as long, the sides parallel in less than basal third, thence arcuate convergent to apex where there is slight constriction, with dense, overlapping yellow scales directed forward to apex in median area. Elytra about four times as long as pronotum, at base wider than base of pronotum, widening to middle, with dense, overlapping yellow scales including reflexed sides; stria punctures not evident, but striae depressed. Below, pronotal ridge obtuse to near apex, the whitish scales sparse except on mesosternum and mesoepimeron where they are dense, the reddish ground color showing through; ventral cavity scarcely perceptible in male. Length, 2.5 to 4 mm.

TYPE LOCALITY: Corupa, Santa Catarina, Brazil. Lectotype in the American Museum of Natural History, examined.

DISTRIBUTION: Known only from Corupa in southern Brazil.

COMPARISONS: Isolated specimens of other yellow-scaled species may be as small as *minimus*, but none of them has the second segment of the funicle both subdivided and about three times longer than the third. In *albidus* the second segment is only one-half or one-third longer than the third, the beak is much shorter, black, and the pronotum less transverse; in *trapezicollis* the first three segments of the funicle are equally long; in *aegrotus* the beak is scarcely if at all longer than the pronotum,

whereas it is almost twice as long in *minimus*. Differs from *parcus* also in the longer beak and by having the pronotum narrower, shorter, and the antennal club narrower. In the relative length of the antennal segments, it is quite similar to *tricarinatus*, which also has a narrow, very short pronotum, but *minimus* differs notably by having the normal seven carinae on the beak, not three as in *tricarinatus*.

DISCUSSION: This species was described from three specimens only, two of which I have examined. The lectotype, which is a female and larger, has the dorsal scales everywhere dense and overlapping, but the cotype, a male, has them worn off in many places. The male genitalia were not dissected.

HOST PLANT: Bondar's specimens were taken from a small palm of the fields, not identified.

SPECIMENS EXAMINED: Brazil. *Santa Catarina*: Corupa, one male, cotype of *minimus* (C.N.H.M.), one female, lectotype (A.M.N.H.).

*Anchylorhynchus tricarinatus*, new species

Figures 2C, 3B

Uniformly yellow above and below; beak with only three carinae; pronotum narrower than elytra; second segment of antennal funicle very long, longer than first or third.

DESCRIPTION OF HOLOTYPE, MALE: Beak reddish, with three nearly parallel dorsal carinae extending from base to or near apex, the two lateral carinae approaching the median at base, no carina above antennal groove, beak nearly straight, about one and one-half times as long as pronotum; antennal shaft reaching eye; funicle with second segment longest, nearly twice as long as either first or third, the fourth, fifth, and sixth slightly shorter than third, but each longer than broad, first segment the thickest; club about as long as last three segments united and about twice as thick; head with dense, overlapping yellow scales. Pronotum nearly twice as wide at base as long, the sides arcuate convergent to apex without constriction, with dense, yellow scales that overlap one another along a median line where they are all directed forward to apex; base strongly trisinate. Elytra about four times as long as pronotum, at base wider than base of pronotum (about one and one-quarter times from humeral angle to humeral angle), widening only slightly to middle, with dense, overlapping yellow scales including reflexed sides; striae evident as depressed lines, their punctures each with a scale within. Below, pronotal ridge obtuse to near apex, the whitish scales broader and larger than the dorsal scales, dense and strongly overlapping (so as to obscure the ground color) everywhere except on

metasternum, on legs, and on parts of abdomen; on legs and center of abdomen, also on three apical abdominal segments the scales are finer, more elongate, rather hair-like, sparser, allowing the reddish yellow ground color to show through; ventral cavity shallow; fifth abdominal segment broadly rounded truncate. Length, 5 mm.

DESCRIPTION OF ALLOTYPE, FEMALE: Similar to male except beak feebly curved; the third and fourth abdominal segments narrower and retracted, with a transverse arcuate ridge on each; the fifth segment narrowly rounded and with a definite longitudinal depression subapically. Length, 6 mm.

TYPE MATERIAL: Holotype, male, Rio Guayuriba, Meta, Colombia, December, 1946 (L. Richter); allotype, female, and 23 paratypes (10 males, 13 females), same data. Holotype, allotype, and 16 paratypes in the collection of the American Museum of Natural History; one paratype each in the collections of Voss, Kuschel, the Chicago Natural History Museum, British Museum (Natural History), Deutsches Entomologisches Institut, Muséum National d'Histoire Naturelle, and Naturhistoriska Riksmuseet.

DISTRIBUTION: Guayuriba River, west of the Cordillera Oriental, in the state of Meta, central Colombia.

COMPARISONS: This species differs from all others in the genus by having three instead of seven carinae on the beak, there being none on the sides of the beak. It also has the pronotum proportionately shorter and the second segment of the antennal funicle longer than in most of the group of yellow-scaled species excepting *minimus*. Further, I have not seen any other species with the scales so densely overlapping on the propisternum, although in *burmeisteri* they are as dense on the metasternum and mesosternum. The depression on the last abdominal segment in the female is present also in females of *aegrotus*.

DISCUSSION: Although Schoenherr described *Anchylorhynchus* as having the beak multi-costate dorsally and laterally, the absence of the four lateral carinae in this species does not seem to me to be adequate basis for erecting a new genus. In all other characters *tricarinatus* agrees with other members of the genus, and even in this beak character, another species (*albidus*, at least in the six cotypes examined) appears to approach *tricarinatus* in that the four lateral carinae are rather indistinct and tend to become obsolete basally. In *Petalochilus*, the other genus of the tribe, one of the five species lacks the two carinae above the antennal grooves, whereas the other species possess them.

northern and western *Anchylorhynchus*, although *amazonicus* was taken. According to the known distribution of this species, it is the most

in near-by Amazonas, but from what part of that enormous state is not known.

The size in the 25 specimens ranges from 4 to 7 mm.; the color, from dull yellow to buffy gray. Many of the specimens are in poor condition, the head, prothorax, or an elytron being lacking, and quite a few have the scales rubbed off. Although the elytra across the base are definitely wider than the pronotum, the sides of the elytra from the humeral angle to near the apex are nearly parallel and are not strongly arcuate as in many species; they are almost as in *camposi*, but that species does not have the humeri obtuse. The scutellum appears rather longer than broad and proportionately small in size as in *aegrotus*, not large, square, or transverse as in *trapezicollis*, *camposi*, *burmeisteri*, and most other species; it is usually very thickly scaled and thus is raised higher than the surrounding surfaces. The sides of the beak, perhaps because the delimiting carinae are lacking, seem more convex than is usual in the genus. The dorsal carinae are not always approximate at the base of the beak as in the type. The arrangement of the scales on the pronotum is not so transverse as in many species, where the scales are directed inward horizontally from each side and occasionally turn forward only on a median line. In this species the scales come in obliquely and in sinuous lines from the sides and in the apical half of the pronotum are directed as in the other species, but in the basal half the entire center portion has the scales directed forward in about the median third. Even abraded individuals show this basal block of apically directed scales.

The male genitalia (fig. 3B) are rather flat and elongate as in *aegrotus* and *vittipennis*, not cup shaped, but the apex of the penis, though narrowed, is rounded, not acuminate as in the other two species.

HOST PLANT: None recorded.

*Anchylorhynchus amazonicus* Voss

*Ancylorrhynchus amazonicus* Voss, 1943, Ent. Blatter, vol. 39, p. 63.

Uniformly yellow above and below; pronotum at base almost twice as wide as long, about as wide as the elytra; third and following segments of antennal funicle short, each half of the length of the second. Form broadly oval. Beak to front of eye almost twice as long as pronotum.

DESCRIPTION OF LECTOTYPE, MALE: Beak reddish, seven-carinate, including one carina on each side above antennal groove, lateral carinae not reaching eye, nearly twice as long as pronotum; antennal shaft not reaching eye; funicle with first and second segments the longest, the first slightly shorter and thicker, third segment only half as long as second, the rest about equal in length and slightly shorter than third; club about

same length as last three funicular segments united and scarcely wider; head with dense, overlapping yellow scales, finer than those on pronotum. Pronotum more than one and one-third times as wide at base as long, the sides arcuate convergent to apex where there is a slight constriction, with dense overlapping yellow scales which in median area are directed forward to apex in apical half, backward to base in basal half. Elytra about three times as long as pronotum, scarcely wider at base than base of pronotum, but widening at once to middle, all with dense overlapping yellow scales including reflexed sides; striae punctures not evident. Below, pronotal ridge obtuse from base to near apex, the whitish scales everywhere sparse, allowing the reddish ground color to be seen; ventral cavity shallow. Length, 6 mm.

TYPE LOCALITY: "Amazonas," presumed to be the state of Amazonas, Brazil. Lectotype, male, collector Kraatz, here designated from two specimens marked "Typus" in collection of Deutsches Entomologisches Institut, Berlin, examined.

DISTRIBUTION: Known only from Amazonas in northern Brazil.

COMPARISONS: The combination in this species of the following characters distinguishes it from all others: body covered with light-colored scales only (no dark brown areas), beak to front of eye nearly twice as long as the pronotum, pronotum at base virtually as broad as base of elytra, pronotal scales at middle directed apically in apical half, but basally in basal half, scales on pronotum and elytra everywhere dense and overlapping, antennal shaft not reaching eye, third segment of antennal funicle only half the length of either first or second segment, the second the longest segment.

DISCUSSION: With the exceptions of *tricarinatus* and *trapezicollis*, this species is the most northern member of the genus yet found.

The pronotal scale arrangement in this species and in *camposi* and *burmeisteri* is very interesting. The scales are directed inward from the sides of the pronotum as usual, but, towards the center of the disc, the scales in the apical half of the pronotum turn vertically towards the apex whereas those in the basal half turn vertically towards the base, as shown in figure 2D. These three species are otherwise quite different.

Voss's specimen or specimens of this species were destroyed by war, but two specimens, both marked type, exist in the Deutsches Entomologisches Institut and were kindly sent to me by Dr. H. Sachtleben. The one from Amazonas has Voss's own label, with the species name, and this is the specimen chosen for the lectotype. The other "type," a female, from Para, Brazil, collected by Haag, is not *amazonicus*; it has the beak shorter, the antennae inserted nearer the apex, the third segment of the

antennal funicle virtually as long as the second, the pronotum definitely narrower than the elytra, none of the pronotal scales directed basally, and the elytral scales not overlapping. I believe this specimen to be the species *trapezicollis* Hustache.

The male genitalia were not dissected.

HOST PLANT: None recorded, nor any biological notes.

SPECIMEN EXAMINED: Brazil. *Amazonas*: One male, the lectotype of *amazonicus* (D.E.I.).

*Anchylorhynchus camposi* Bondar

Figures 2D, 3C

*Ancylorrhynchus camposi* BONDAR, 1941, Rev. Ent., vol. 12, p. 466, fig. 28.

Uniformly buffy above and below; pronotum at base about one-third wider than long, fully as wide as elytra; third and following segments of antennal funicle short, half the length of the second. Form narrowly oval, elytra virtually parallel. Beak to front of eye scarcely if at all longer than pronotum.

DESCRIPTION OF THE SPECIES: Beak reddish, seven-carinate, including one carina on each side above antennal groove, same length as pronotum; antennal shaft reaching eye; funicle with first and second segments longest, about equal in length, the first slightly thicker, the third and following segments each about one-half of the length of the second; club about as long as the last four segments of funicle united and about twice as wide; head with dense, not overlapping yellow scales. Pronotum about one and one-third times as wide at base as long, the sides parallel to before middle, thence arcuate convergent to apex where there is a slight constriction, with dense, only occasionally overlapping yellow scales which in median area are directed forward to apex in apical half, backward to base in basal half. Elytra about three times as long as pronotum, not wider at base than base of pronotum and only gradually widening to middle, humeri forming right angles, not obtuse, all with dense, not overlapping yellow scales including reflexed sides; strial punctures not evident. Below, pronotal ridge obtuse to middle, disappearing apically, the whitish scales everywhere sparse, allowing the reddish ground color to show through; ventral cavity in male scarcely perceptible. Length, 5.5 to 6 mm.

TYPE LOCALITY: Jiqui, Bahia, Brazil. Lectotype in the American Museum of Natural History, examined.

DISTRIBUTION: Known only from Jiqui in south central Bahia in eastern Brazil, but probably occurs also in neighboring states.

COMPARISONS: Differs from all species except *amazonicus* and *bur-*

*meisteri* by having the scales in the median area of the basal half of the pronotum directed backward towards the base, not forward (fig. 2D). Differs from *amazonicus* in the longer antennal shaft which in the latter does not reach the eye, from *burmeisteri* in the absence of dark brown scales ventrally, and from both in the shorter beak, the presence of a right-angled humeral angle on the elytra, and by having the pronotum as wide as the basal third of the elytra, the sides of which are virtually parallel.

DISCUSSION: The females do not have the apical margins of the third and fourth abdominal segments so noticeably retracted or rolled backward as in most species, nor are the margins sinuate, but they are not absolutely flat as in the males. The penis (fig. 3C) is somewhat like that of *trapezicollis*, but the triangular knob or projection is shorter and not so acuminate.

HOST PLANT: The type series of 15 specimens were taken by Bondar in the flowers of the palm *Cocos campestris* Martius, in which the species breeds (1943, pp. 358, 362). This palm occurs in high fields in the states of São Paulo, Minas Gerais, and Goyaz, and was discovered for the first time in the state of Bahia by Bondar in 1941 (1941b, p. 28).

SPECIMENS EXAMINED: Brazil. *Bahia*: Jiqui, Barra da Estiva, May, 1941, one male, cotype of *camposi* (C.N.H.M.), four females, the lectotype and cotypes (A.M.N.H.).

*Anchylorhynchus aegrotus* Fahraeus

Figures 2A, 2B, 3D

*Anchylorhynchus aegrotus* FAHRAEUS, 1843, in Schoenherr, *Genera et species curculionidum*, vol. 7, pt. 1, p. 335.

Yellow above and below, usually with an orange median area on pronotum and scutellum bare of scales; pronotum in male twice as wide as long, in female with tubercle or angulate swelling on sides at middle; third segment of antennal funicle only half the length of second. Form broadly oval. Beak to front of eye scarcely longer than pronotum.

DESCRIPTION OF THE SPECIES: Beak reddish, often piceous, seven-carinate including one carina on each side above antennal groove, about same length as pronotum; antennal shaft reaching eye; funicle with first and second segments longest, first slightly thicker, third half or less than half of the length of second, fourth to sixth scarcely shorter than third; club as long as last four segments of funicle united and about twice as thick; head densely punctate, with dense overlapping yellow scales between eyes, on sides, and at base, elsewhere seemingly without scales. Pronotum nearly twice as wide at base as long in male, somewhat less in female,

the sides nearly parallel in basal half, in male rounded abruptly thence to apex, in female angulate at middle, thence arcuate convergent to apex where there is a constriction, pronotum with dense, usually not overlapping yellow scales that are sparser in a rather broad median area where dense punctures are visible, sometimes an impunctate median line is present, the ground color of this median area usually orange or reddish, not yellow. Elytra nearly four times as long as pronotum, at base in male not or scarcely wider than pronotum at base, in female definitely wider, in both gradually widening to middle, humeri scarcely obtuse in male, broadly so in female, all with dense, not overlapping yellow scales including reflexed sides where scales are often overlapping, area around scutellum often orange; striae punctures evident, each with yellow scale within, striae often infusate. Below, pronotal ridge in male sharp to near apex, in female obtuse to middle where small tubercle is present, yellow scales dense on proepisternum, dense and overlapping in metasternal region, the yellow, sometimes infusate ground color showing through; abdomen (except sides at base) with fine thin yellow hairs; ventral cavity shallow in male; female with depression, often hairless, in center of last abdominal segment. Length, 3.5 to 5.5 mm.

TYPE LOCALITY: Brazil, here restricted to Florianopolis, state of Santa Catarina. Type in Naturhistoriska Riksmuseum, Stockholm, examined.

DISTRIBUTION: States of Santa Catarina and Parana in southern Brazil; Argentina (Kuschel, *in litt.*).

COMPARISONS: This small ovoid pale yellow species is the only one in the genus in which the prothorax is so different in both shape and relative width in the male and female that it might lead one to think that each sex represented a distinct species. Further, in no other species does the male have the pronotum so transverse or so rectangular in shape (fig. 2A), with the sides turning inward to the apex so abruptly; and in no other species does the female have a tubercle or definite angulation on the pronotal sides at middle (best seen from above and at an angle). This species also differs by having the median third of the pronotum, also an area around the scutellum, usually reddish orange in ground color or deeper than the surrounding color, and virtually denuded of scales, thus revealing the dense, rather rugose, shining punctures. In *bicolor* the pronotum also has orange, but the color is in the scales. Seems closest to *camposi* which also has a short beak not longer than the pronotum, the same antennal structure, and the pronotum in the male as wide as the elytra at base, its sides parallel in basal half, but differs further from *camposi* by not having any pronotal scales directed backward, by having

the pronotum in the female narrower than the elytra, and the elytra broader, more ovate, not parallel as in *camposi*.

DISCUSSION: This appears to be the most abundant species in the genus. The median orange area of the pronotum is not invariably that color nor is it always denuded of scales; in the type, a male, it is only faintly orange, and scales, although sparser than on the sides of the pronotum, are definitely present. However, either the scales are very thin and pale, or this area becomes readily rubbed of scales because scales are certainly not evident in the great majority of specimens.

Males of *aegrotus* have the lateral ridge or crest of the pronotum, when seen from the side, quite sharp, and extending from base virtually to the apex, much as in *Celetes planithorax* Bondar. The proepisternum is thus noticeably hollowed out or excavate. In the female, as in most other species, the ridge is more obtuse, less pronounced, and extends only half-way to the apex. The elytral scales are usually rather thinly spread and allow the punctate striae to show through from below. The male genitalia (fig. 3D) are flatter, less tubular, than in the other species examined, but resemble somewhat those of *tricarinatus* and *vittipennis*.

COLOR VARIATION: The only color differences occur in the presence or absence of the orange area mentioned above, and in the beak and head which, though usually also orange or orange-red, may at times be pale yellow. The sides of the beak sometimes are considerably darkened.

HOST PLANT: According to Bondar (1941a, p. 295; 1943, p. 360) this species develops in *Cocos Romanzoffiana* Chamisso, the "geriva," the host plant also for *A. vittipennis* and *A. variabilis*. Bondar took over 250 specimens from one flower in Florianapolis (1941a).

SPECIMENS EXAMINED: Brazil. One male, the type of *aegrotus* (N.R.). *Santa Catarina*: Eighty males and females; Nova Teutonia, 120 males and females; Florianapolis, September 10, 1940, 134 males and females; Delta Parana River, February 23, 1919, one female; Cauna, December, 1945, February, 1946, two males, seven females; Rio Vermelho, January, 1945, February, 1949, three males, four females; Rio Natal, March, 1945, one male.

*Ancylorrhynchus bicolor* Voss

Figure 3E

*Ancylorrhynchus parvus bicolor* VOSS, 1943, Ent. Blatter, vol. 39, p. 64.

*Ancylorrhynchus leiospathae* BONDAR, 1950, Rev. Ent., vol. 21, p. 454, fig. 7. (New synonymy.)

Pronotum either entirely orange or orange in median third; elytra yellow except reflexed sides which are dark brown in basal two-thirds. Antennal club as long as, or longer than, the funicle.

DESCRIPTION OF THE SPECIES: Beak reddish, seven-carinate including one carina on each side above antennal groove, nearly a third longer than pronotum; antennal shaft reaching eye; funicle with first segment the longest and widest, the second a little more than half as long as the first, the rest shorter than the second, transverse; club as long as, or longer than, the entire funicle; head with dense, but not overlapping, orange scales, some finer than those on pronotum. Pronotum from one and one-third times to twice as wide at base as long, the sides virtually parallel to basal third or about middle, thence arcuate convergent to apex without constriction, with dense, occasionally overlapping orange scales directed forward towards apex in median area. Elytra about three times as long as pronotum, in male scarcely wider at base than base of pronotum, in female somewhat wider, in both slightly widening thereafter to middle, all with dense, whitish, not overlapping scales except on reflexed sides in basal two-thirds where the scales and ground color are brown; striae punctures not evident. Below, pronotal ridge obtuse to near apex, the whitish scales sparse on the proepisternum, denser on the mesosternum and metaepimeron, especially dense on the latter, sparse on the legs and abdomen where the reddish ground color shows through; ventral cavity scarcely perceptible in male. Length, 5.5 to 8 mm.

TYPE LOCALITY: Paraguay, here restricted to San Estanislao, Paraguay. Lectotype, male, collector Kraatz, here designated from two specimens marked "Typus" in the collection of the Deutsches Entomologisches Institut, Berlin, examined.

DISTRIBUTION: Paraguay and the state of São Paulo in southeastern Brazil.

COMPARISONS: This is the only species with such a long antennal club (fig. 3E) and with contrasting orange scales on the pronotum. In other species the club is about a third as long as the funicle. In some respects *bicolor* resembles *burmeisteri*, but that species has the median basal scales of the pronotum directed backward towards the base, and has dark brown areas ventrally.

DISCUSSION: Voss in his description of "*parcus* subsp. *bicolor*" credits this form to "*Hustache, i. l.*," but since no description was ever written or published by Hustache, Voss becomes the author. The present species, however, is not related to the *parcus* of Fahraeus. I have examined the type of the latter from the collection in Stockholm, as well as the two "types" of *parcus bicolor* Voss, and they are two distinct species. Voss probably had a specimen or specimens misidentified as *parcus* Fahraeus for his 1943 paper, because his redescription of *parcus* (followed by a short description of the "subspecies *bicolor*") shows that he did not have the true *parcus*. The type of *parcus* has no dark brown on the reflexed

elytral sides and has the antennal club only a little longer than the last three funicular segments, not "longer than the funicle," as stated by Voss.

Of the 12 specimens examined of this species, four have the pronotum entirely orange (two males and two females), and the other males and females have it orange down the middle. Both kinds of pronotum occur in the specimens from Paraguay, but Voss's original two specimens have the pronotum entirely orange.

The lectotype and cotype of Bondar's *leiospathae* (type locality, Pirassununga, São Paulo, Brazil), are both large specimens (7 to 8 mm.) and have only the median third of the pronotum orange. They are similar in the male genitalia and other characters to *bicolor* and are therefore considered as synonyms.

The male genitalia (fig. 3E) seem most similar to those of *hatschbachi*, *eriospathae*, and *tremolerasi*.

HOST PLANT: The two specimens from São Paulo were collected in the flowers of *Cocos leiospatha* Barbosa Rodriguez, and eight of the Paraguay specimens in the palm *Butia yatay* (Martius) Beccari.

SPECIMENS EXAMINED: Brazil. São Paulo: Pirassununga, October, 1949, one male, the lectotype of *leiospathae* (C.N.H.M.), one female, cotype of *leiospathae* (A.M.N.H.). Paraguay. One male, the lectotype of *bicolor* (D.E.I.), one female, cotype of *bicolor* (D.E.I.); San Estanislao, January 21, 1945, three males, five females.

### *Anchylorhynchus burmeisteri* Faust

#### Figure 3F

*Anchylorhynchus burmeisteri* FAUST, 1894, Stettiner Ent. Zeitg., vol. 55, p. 152.

*Anchylorhynchus burmeisteri* var. *bimaculatus* FAUST, 1894, *ibid.*, vol. 55, p. 152.

Either entirely yellow above, or yellow with a large black basal spot on the elytra; yellow below except for the proepisternum (in a broad longitudinal band), the mesoepimeron, and reflexed elytral sides in basal half which are dark brown. Vestiture of body below scaly. Ground color under dark scales also brown.

DESCRIPTION OF COTYPE, MALE: Beak brown, seven-carinate including one carina on each side above antennal groove, about one-third longer than pronotum; antennal shaft reaching eye; funicle with first and second segments the longest and about equally thick, the first slightly longer, third segment shorter than second, fourth and fifth shorter than third, sixth longer than fifth; club about equal in length to last three funicular

segments united and somewhat wider; head with dense overlapping yellow scales of same type as on pronotum. Pronotum about one and one-third times as wide at base as long, the sides arcuate convergent to apex without constriction, with dense overlapping scales which are dark brown in a small area laterally at apex, and yellow elsewhere, scales in median area directed forward to apex in apical half, backward to base in basal half. Elytra about three times as long as pronotum, scarcely wider at base than base of pronotum, but widening to beyond middle, all with dense overlapping yellow scales except reflexed sides in basal half which have dark brown scales; stria punctures each with scale within. Below, pronotal ridge obtuse from base to middle, disappearing apically, propisternum with broad longitudinal band of dark brown scales, also the mesoepimeron dark brown, rest of prosternal, mesosternal, and metasternal region with dense, overlapping, yellow-white scales, especially concentrated on metaepimeron; legs and abdomen with sparser yellow scales through which reddish ground color shows; ventral cavity shallow. Length, 8 mm.

TYPE LOCALITY: Entre Rios, Argentina, on Rio Uruguay. Type probably in Dresden Museum.

DISTRIBUTION: East central Argentina on the coast.

COMPARISONS: This large species is similar in size and general appearance to some specimens of *bicolor*, *trapezicollis*, and *variabilis*, but differs from them all and from other species by having both the proepisternum (in a wide longitudinal band) and the mesoepimeron dark brown in color in contrast to the yellow on the rest of the under side. Differs further from all species except *amazonicus* and *camposi* in the scale arrangement on the pronotum in which the median basal scales are directed basally instead of towards the apex or horizontally, as shown in figure 2D.

DISCUSSION: I have seen but one specimen of this species, a male cotype. Faust had at least two specimens, perhaps more, Bondar had not seen the species at all, but Voss (*in litt.*) has seen at least eight. Three of the specimens examined by Voss were the color variety *bimaculatus*, described by Faust from the same locality as *burmeisteri* and evidently a synonym of it. It differs from *burmeisteri* only by having the black (or dark brown) of the reflexed elytral sides spreading onto the elytra in a large spot. Faust gives the size of the species as 6.5 to 9 mm.

The male genitalia of *burmeisteri* (fig. 3F) are more narrowed in front than those of *hatschbachi* or *bicolor*.

HOST PLANT: Faust reports that the larvae live in the fruit of a species of palm, but Bondar (1943, p. 365) believes this statement vague and in need of proof.

SPECIMEN EXAMINED: Argentina. *Entre Rios*: One male, cotype of *burmeisteri* (U.S.N.M.).

*Anchylorhynchus hatschbachi* Bondar

Figure 3G

*Ancylorrhynchus hatschbachi* BONDAR, 1943, Rev. Ent., vol. 14, p. 363.

Either entirely yellow above except for the beak, head, and variable median and lateral areas of the pronotum which are black; or yellow but with a median black transverse band on the elytra; or yellow but with the apical half of the elytra black, the black transected by a narrow lunate yellow band prolonged on the suture to the apex. Pronotum mostly clothed with yellow scales. Ground color below black, above black or dark red.

DESCRIPTION OF THE SPECIES: Beak black, seven-carinate, including one carina on each side above antennal groove, from one and one-half times to twice as long as pronotum; antennal shaft reaching eye; funicle with first and second segments longest, third about one-half of the length of second, the rest shorter, transverse; club about as long as last four segments of funicle united and twice as thick; head with dense punctures filled with dark scales, and a few yellow scales on sides. Pronotum nearly twice as wide at base as long, the sides arcuate convergent to apex without constriction, or with but a slight one, with dense overlapping yellow scales directed forward to apex along middle, the sides at apex or from apex nearly to base with dark scales, often also a variable area at middle apex with dark scales, the dense punctures of the discal area visible. Elytra almost four times as long as pronotum, at base wider than base of pronotum, but less wide in male than in female, widening to beyond middle, with dense overlapping yellow scales arranged in three different patterns as described below under Color Variation; striae punctures either not evident or clearly marked and each with a dark scale within. Below, pronotal ridge obtuse to near apex, the white scales sparser on proepisternum where they are also mixed with dark scales, white scales dense and overlapping in metasternal region, narrower and finer, almost hair-like, on legs and abdomen where black ground color shows through; ventral cavity shallow in male. Length, 4 to 7 mm.

TYPE LOCALITY: Curitiba, Parana, Brazil. Lectotype in the American Museum of Natural History, examined.

DISTRIBUTION: The states of Parana and Santa Catarina in southern Brazil.

COMPARISONS: Differs from *eriospathae*, *tremolerasi*, *pictipennis*, and

*vittipennis* in the elytral pattern and by having the pronotum almost entirely covered with yellow scales, only invaded by black scales on the extreme sides or center front; *eriospathae* perhaps has more yellow than black scales on the pronotum, but the latter form two large round black spots that are lacking in *hatschbachi*. Differs from *variabilis*, which also has an entirely yellow phase, by having scales on the proepisternum and metasternal region, not long fine hairs. All the strictly yellow species have the lateral crest or margin of the pronotum clothed with yellow scales, but this area is mostly black in *hatschbachi* and in the black or variegated species.

DISCUSSION: The all-yellow forms in this species are not confined to the male sex as they are in *variabilis*, and all color phases occur in the same populations. The male genitalia (fig. 3G) appear about the same as those of *eriospathae*, *tremolerasi*, and *pictipennis*.

COLOR VARIATION: The ground color in 63 specimens is black ventrally, and dark red or black, or a combination of both, dorsally. The color of the scales, however, is variable, and Bondar in his description mentions three varieties: (1) the elytra entirely yellow except for a narrow marginal black band on middle third, this black being an extension onto the elytra of the black scales of the reflexed elytral sides; this phase is represented in our material by 10 specimens, including two of the cotypes; (2) the elytra yellow in basal half, black in apical half, the latter with a narrow lunate yellow band in the center, a phase represented by 51 specimens in the material at hand, including the lectotype and 24 cotypes; (3) the elytra yellow except for a broad median black band (two cotypes). In all specimens the scutellum may have either yellow or dark scales.

HOST PLANT: *Cocos eriospathae* Martius, the same palm in which *A. eriospathae* also breeds.

SPECIMENS EXAMINED: Brazil. *Parana*: Curitiba, 21 males, lectotype and cotypes of *hatschbachi* (A.M.N.H.), eight females, cotypes (A.M.N.H.). *Santa Catarina*: Six males, four females; Cauna, February, 1946, eight males, six females; Corupa (Hansa Humboldt), October, November, 1945, 1946, four males, six females.

*Anchylorhynchus eriospathae* Bondar

*Ancylorrhynchus eriospathae* BONDAR, 1943, Rev. Ent., vol. 14, p. 364.

Elytra either black with two sutural and two submarginal whitish stripes, or with eight alternating whitish stripes on the sutural and other odd intervals. Pronotum mostly yellow but with two large black spots

medio-laterally, and with black variable areas apically in center and on sides. Ground color below mostly black, above black or dark red.

DESCRIPTION OF THE SPECIES: Beak black, seven-carinate, including one carina on each side above antennal groove; from one and one-half times to nearly twice as long as pronotum; antennal shaft reaching eye; funicle with first and second segments longest, third about one-half of the length of second, the rest shorter than third, transverse; club as long as last four segments of funicle united, and more than twice as thick; head rugosely densely punctate and with dark, scarcely visible scales in center, a few sparse yellow scales on sides. Pronotum nearly twice as wide at base as long, the sides arcuate convergent to before apex where there is a slight constriction, with dense overlapping scales, sometimes directed forward to apex at middle, scales colored as stated above, the black areas having dense punctures, each with a dark scale within. Elytra a little more than three times as long as pronotum, at base scarcely wider than pronotum at base (a little wider in female than in male), but widening to beyond middle, with dense overlapping white scales on sutural and seventh intervals, occasionally also on third and fifth intervals also, the other intervals with dark scales, less dense, including reflexed sides; striae punctures evident, each with dark scale within. Below, pronotal ridge obtuse to near apex; white scales sparser on proepisternum where mixed also with dark scales, white scales dense and overlapping in metasternal region, narrower and finer on legs and abdomen, the black ground color showing through; ventral cavity shallow in male. Length, 4 to 6 mm.

TYPE LOCALITY: Curitiba, Parana, Brazil. Lectotype in the American Museum of Natural History, examined.

DISTRIBUTION: State of Parana in southern Brazil.

COMPARISONS: Differs from *hatschbachi*, *tremolerasi*, *pictipennis*, and *vittipennis* in the black spots on the pronotum and the different elytral pattern, and is the only species except *vittipennis* with the elytra longitudinally striped. Differs further from *vittipennis* by having the pale elytral stripes fewer in number (usually only two) and occurring on the odd intervals (the suture, third, fifth, etc.), not on the even ones as in *vittipennis*.

DISCUSSION: The "i" of *eriospathae* was omitted in the description of the species which appears also as *erospathae* in Blackwelder's catalogue (1947), but this is certainly a typographical error, as the name of the palm is *eriospathae*.

Bondar thought that *eriospathae* might prove to be the same species as *hatschbachi*, from which it seems to differ only in scale pattern and color, the two species occurring on the same plant and in some of the same

localities. The longitudinal elytral pattern of *eriospathae*, however, is very different from the transverse pattern of *hatschbachi*, and the black-spotted pronotum of *eriospathae* is constant in the 14 specimens examined.

The male genitalia appear to be like those of *hatschbachi* (fig. 3G), *pictipennis*, and *tremolerasi*; they are broader and less acuminate than those of *vittipennis*.

**COLOR VARIATION:** The body ventrally is black in ground color, but in three of 14 specimens part of the abdomen is red or reddish. The ground color under the pronotal scales is red basally in most of these specimens, black in a few, and in one of the cotypes is red also on the sides of the apex. Our 14 specimens have white stripes on the sutural and submarginal intervals of the elytra, but five of Bondar's original 31 cotypes had white scales also on the third and fifth elytral intervals.

**HOST PLANT:** The type series was collected in the flowers of the palm *Cocos eriospatha* Martius, in which *hatschbachi* also breeds.

**SPECIMENS EXAMINED:** Brazil. *Parana*: Curitiba, five males, the lectotype and cotypes of *eriospathae* (A.M.N.H.), five females, cotypes (A.M.N.H.); Caviuna, January, 1946, two males, two females.

#### *Anchylorhynchus tremolerasi* Hustache

*Ancylorrhynchus tremolerasi* HUSTACHE, 1937, Rev. Soc. Ent. Argentina, vol. 9, p. 9.

Elytra yellow with three black bands, the median and apical transverse, the latter not reaching the suture, the basal band oblique from the humeri. Pronotum dark with yellow scales at base and sides of apex. Ground color below black, above black or dark red.

**DESCRIPTION OF THE SPECIES:** Beak black, seven-carinate, including one carina on each side above antennal groove, from one and one-half times to nearly twice as long as pronotum; antennal shaft reaching eye; funicle with first and second segments the longest, about equal in length and width, third shorter, one-half of the length of second, fourth and fifth much shorter than third, sixth slightly longer than fifth; club a little longer than last three segments of funicle united; head rugosely punctured with traces of pale scales. Pronotum from one and one-half times to twice as wide at base as long, the sides arcuate convergent to before apex where there is slight constriction, densely punctured except for an impunctate median line (not always present), the base, basal sides, and variable submarginal area at apex with dense overlapping yellow scales, the exposed punctures of the rest of the pronotum each with a brownish scale visible only under high magnification. Elytra about three and one-half times as long as pronotum, at base scarcely wider than

pronotum at base (a little wider in female than in male), widening to beyond middle, scales dense, some overlapping, scales yellow around scutellum, on all of suture except at middle, at extreme apex, and on the basal and subapical transverse bands, scales black on other areas; stria punctures well marked, each with yellow or black scale within. Below, pronotal ridge obtuse from base to near apex, metasternal region with dense white scales, scales sparser on proepisternum, narrower and finer on legs and abdomen; ventral cavity shallow in male. Length, 5 to 8 mm.

TYPE LOCALITY: Montevideo, Uruguay. Type in Muséum National d'Histoire Naturelle, Paris.

DISTRIBUTION: The coasts of southern Uruguay and of central Argentina.

COMPARISONS: This is the only species except some *variabilis* (females) and some *burmeisteri* (color variety) that has black maculations at the base of the elytra, but these species do not have three black bands on the elytra as in *tremolerasi*. It seems closest to the sympatric *pictipennis*, differing from it only in the yellow and black-banded elytra, in the yellow scales on the pronotum, and in the slightly more tapering pronotal sides. Differs further from *eriospathae* and *hatschbachi* from Parana by having the pronotal disc bare of scales, the yellow scales occurring only on a narrow basal band and at the base and apex laterally.

DISCUSSION: This species, *variabilis*, and *pictipennis* are the most southern ones yet found in the genus. A male paratype of *tremolerasi* from Montevideo is smaller than another male and a female from Buenos Aires; the female has most of the yellow elytral scales lacking or worn off, but such scales as are present indicate the characteristic pattern of the species. The male genitalia are similar to those of *eriospathae*, *hatschbachi* (fig. 3G), and *pictipennis*.

HOST PLANT: *Cocos pulposa* Barbosa Rodriguez, the same palm in the flowers of which *pictipennis* was also taken.

SPECIMENS EXAMINED: Uruguay. Montevideo (Prado), December 31, 1908, one male, paratype of *tremolerasi* (A.M.N.H.). Argentina. Buenos Aires, December, 1942, one male, one female.

### *Ancylorrhynchus pictipennis* Hustache

*Ancylorrhynchus pictipennis* HUSTACHE, 1937, Rev. Soc. Ent. Argentina, vol. 9, p. 10.

Elytra dark, mottled, the scattered white scales forming no regular pattern. Pronotum dark without evident scales. Ground color below mostly black, above black.

DESCRIPTION OF PARATYPE, MALE: Beak black, seven-carinate, includ-

ing one carina on each side above antennal groove, almost twice as long as pronotum; antennal shaft reaching eye; funicle with first and second segments the longest, about equal in length and width, third shorter, half of the length of the second, fourth and fifth much shorter than third, sixth longer than fifth; club about equal in length to last three segments of funicle united; head rugosely punctate with traces of pale scales. Pronotum almost twice as wide at base as long, the sides arcuate convergent to apex where there is a slight constriction, densely punctured except for an impunctate median line in basal half, the lateral and basal punctures covered densely with brown scales. Elytra about three and one-half times as long as pronotum, at base scarcely wider than pronotum at base, but widening at once to beyond middle; elytra densely scaled, including reflexed sides, mostly with light brown scales but also with scattered white scales; striae evidently depressed, their punctures scarcely visible. Below, pronotal ridge obtuse from base to beyond middle, disappearing apically; ground color mostly black, covered with dense white scales in metasternal region, scales sparser on proepisternum, legs, and abdomen; last two abdominal segments somewhat reddish; ventral cavity in male shallow. Length, 7 mm.

TYPE LOCALITY: Montevideo, Uruguay. Type in Muséum National d'Histoire Naturelle, Paris.

DISTRIBUTION: Coast of southern Uruguay.

COMPARISONS: Differs from all other species by its white speckled elytra, but is in other characters similar to *tremolerasi* which was taken in the same locality at the same time and in the same species of palm. Differs further from *hatschbachii* and *eriospathae*, more northern species, by having no yellow scales on the pronotum.

DISCUSSION: Bondar (1943, p. 361) had not seen either *tremolerasi* or *pictipennis*, but suspected from their descriptions that they might be sexual forms of the same species. This I find cannot be so, because I have seen a male paratype of each species, also a female specimen of *tremolerasi*. They are, however, exceedingly similar, and with more specimens available for comparison and with genitalic dissections of *pictipennis*, one might find that they are variants of the same species. Hustache did not state how many specimens of *pictipennis* he had for his description, but his observation that the pronotum is less strongly narrowed in front in this species than in *tremolerasi* holds true for the few specimens I have examined of the two species. The male genitalia, which are extruded in the paratype, appear to be like those of *tremolerasi*, *hatschbachii* (fig. 3G), and *eriospathae*.

HOST PLANT: *Cocos pulposa* Barbosa Rodriguez, a palm from the flowers of which the type series was taken.

SPECIMEN EXAMINED: Uruguay. Montevideo (Prado), December 31, 1908, one male, paratype of *pictipennis* (M.N.H.N.).

*Ancylorrhynchus vittipennis* Voss

Figure 3H

*Ancylorrhynchus vittipennis* Voss, 1943 (September), Ent. Blatter, vol. 39, p. 64, 1 fig.

*Ancylorrhynchus nigripennis* Voss, 1943 (September), *ibid.*, vol. 39, p. 62. (New synonymy.)

*Ancylorrhynchus lineatus* BONDAR, 1943 (December), Rev. Ent., vol. 14, p. 363. (New synonymy.)

Elytra either entirely black, or black with eight or 10 alternating longitudinal whitish stripes on the even intervals (none on the suture). Pronotum mostly red with a submarginal band of yellow scales. Ground color below variable, above red on head and pronotum, black on elytra.

DESCRIPTION OF THE SPECIES: Beak black, seven-carinate, including one carina on each side above antennal groove, not quite one and one-half times as long as pronotum; antennal shaft reaching eye; funicle with first and second segments longest, third from one-half to two-thirds of the length of second, the rest shorter; club about as long as last three segments of funicle united and at least twice as thick; head rugosely punctate, with dense yellow scales around eye, but otherwise seemingly without scales. Pronotum nearly twice as wide at base as long, the sides arcuate convergent to before apex where there is slight constriction, with dense, not overlapping yellow scales in a submarginal longitudinal band reaching the margins at base and apex only, disc and sides of pronotum at middle densely punctate, their punctures with very fine, scarcely visible, black hairs or scales. Elytra at least four times as long as pronotum, much wider at base than base of pronotum, especially in female; widening to beyond middle, with dense, not overlapping scales that are usually dark brown on suture and odd intervals, and whitish on even intervals, including the basal third of the reflexed sides, scales sometimes entirely dark brown including reflexed sides; striae punctures clearly marked. Below, pronotal ridge obtuse to near apex, proepisternum with sparse white scales, metasternal region with dense white scales, abdomen, except sides at base which have scales, with fine yellowish hairs, especially dense and long in the male; abdomen with ground color yellow, prosternum usually with it red, metasternal region usually black; ventral cavity in male shallow. Length, 5 to 6 mm.

TYPE LOCALITY: São Paulo, Brazil. Type in Deutsches Entomologisches Institut, Berlin, examined.

DISTRIBUTION: From the state of São Paulo south to the state of Santa Catarina in southern Brazil.

COMPARISONS: Differs from all species by having the disc of the pronotum red or reddish orange in ground color and bordered by a contrasting submarginal longitudinal band of yellow scales, the band widening basally. Aside from the pronotum, black and white-striped individuals can be distinguished at once from all other species except some *eriospathae* (see below). Those specimens that have the elytra entirely black (11 of the 30 examined) differ further from black females of the larger *variabilis* by having the metasternal region and the proepisternum clothed with scales, not fine hairs.

Differs from *eriospathae*, which usually has four instead of eight or 10 white stripes on the elytra, by having a narrower, longer pronotum, always definitely narrower than the elytra, a different arrangement of the pale scales on both pronotum and elytra, and different male genitalia. According to Bondar, a few individuals of *eriospathae* have eight white stripes on the elytra as in some *vittipennis*, but in the latter the stripes are on the even intervals (2-4-6-8), not on the suture and odd intervals. The marginal or tenth white stripe, when present in *vittipennis*, appears at base and apex only and very narrowly at the apex.

DISCUSSION: Voss (*in litt.*) no longer has the type, a male, of his *nigripennis* from Nova Teutonia, Santa Catarina, Brazil, since all his material was destroyed by war, nor is the type in the collection of the Deutsches Entomologisches Institut, which fortunately has some of Voss's types. From its description *nigripennis* appears to be the black phase of *vittipennis* and therefore a synonym of that species.

Bondar's *lineatus*, described three months after Voss's *vittipennis*, was based on a series of 12 specimens from Santa Catarina and Parana, taken in the flowers of the palm *Cocos Romanzoffiana*. The lectotype and four cotypes have been examined, one of the latter being the variant without white elytral stripes. The lectotype agrees with the type of *vittipennis*, which I have also examined, except that the tibiae are entirely black, not paler in the center, and I consider *lineatus* a synonym. The type of *vittipennis* is rather faded, and the parts that are black in fresh specimens are brownish (beak, tibiae, metasternum).

It should be noted in this species that the broad red discal area of the pronotum, as well as the lateral red areas, while seemingly composed merely of large punctures, actually have black scales in each puncture, these scales being much narrower, finer, and smaller than the yellow pronotal scales.

The male genitalia (fig. 3H) are more pointed and elongate than those of *hatschbachi* and *eriospathae*, but of the same general type.

COLOR VARIATION: VOSS does not mention any color differences and no doubt had but one specimen. In the present series of 30 specimens, in addition to the dorsal variation described above under Comparisons, the color ventrally varies also. The majority of specimens, including all those that have no white stripes on the elytra, are yellow or red yellow in ground color below except for the sides of the mesosternal and metasternal regions, the tarsi, tibiae, and the apices of the femora, all of which are black or dark brown. Three individuals are entirely yellow below, part of the tarsi and the femoral apices being infusate; one specimen is black except for the abdomen and proepisternum, which are yellowish. Two specimens have the center portion of the tibiae red, as in the type. The color variations are not correlated with the sex of the individual, or with the locality. One specimen without pale elytral stripes nevertheless has, on one elytron only, a tiny patch of 25 or 30 yellow scales on the sixth interval.

HOST PLANT: Bondar's specimens of "*lineatus*" were taken in the flowers of a palm which he says is "evidently" *Cocos Romanzoffiana* Chamisso, a palm described from the coast of Santa Catarina and widely dispersed throughout southern Brazil as far north as southern Bahia (Bondar, 1939b, p. 5). Two other species also breed in this palm, *A. aegrotus* and *A. variabilis*.

SPECIMENS EXAMINED: Brazil. *São Paulo*: 1911, one male, the type of *vittipennis* (D.E.I.). *Santa Catarina*: Two males, the lectotype and cotype of *lineatus* (A.M.N.H.); three females, cotypes of *lineatus* (A.M.N.H.), three males, three females; Cauna, December, February, 1945, 1946, one male, eight females; Rio Vermelho, January, 1945, four males, six females.

### *Anchylorhynchus variabilis* Gyllenhal

Figures 1, 3I

*Anchylorhynchus variabilis* GYLLENHAL, 1836, in Schoenherr, *Genera et species curculionidum*, vol. 3, p. 451.

*Anchylorhynchus mutabilis* FAHRAEUS, 1843, in Schoenherr, *op. cit.*, vol. 7, pt. 1, p. 333.

*Ancylorrhynchus mutabilis connata* VOSS, 1943, *Ent. Blatter*, vol. 39, p. 62.

Either entirely lemon yellow above except for the beak, head, elytral margins, and variable median and lateral areas of the pronotum which are black (males), or entirely black above except sides of pronotum which are yellow (females), or except sides of pronotum and narrow elytral cross band which are yellow (females), or pronotum black with sides yellow, but elytra yellow with two large black spots or black apical band

(females). Vestiture of body below, including reflexed elytral sides, finely hairy, not scaly. Ground color below variable.

DESCRIPTION OF THE SPECIES: Beak black, seven-carinate, including one carina on each side above antennal groove, about one-third longer than pronotum; antennal shaft reaching eye; funicle with first and second segments the longest, the second slightly longer and narrower, the third from one-half (usually female) to about two-thirds (usually male) of the length of the second, the rest shorter than third; club as long as last four segments of funicle united and about twice as thick; head densely punctured, with a few fine yellow scales at sides, elsewhere apparently without scales. Pronotum about one and one-half times as wide (sometimes more) at base as long, the sides arcuate convergent to apex without constriction, with dense, strongly overlapping, very elongate yellow scales except on middle of sides and in variable median area, these parts either seemingly without scales or with dark scales that do not conceal the rather dense punctures, ground color reddish or black or both. Elytra from three and one-half to four times as long as pronotum, wider at base than base of pronotum (more so in female than in male), widening considerably to beyond middle, with, in male, dense, strongly overlapping yellow scales over pale or dark ground color except on reflexed sides where ground color is black and scales are absent but there are long, fine, dark hairs until near apex; in female the scales are either entirely dark or both yellow and dark in varying patterns (see under Color Variation below), rarely entirely yellow, reflexed sides hairy as in male; striae punctures not evident under yellow scales, often evident under dark ones. Below, pronotal ridge obtuse to near apex, prosternum, abdomen, and legs with fine short sparse white hairs, hairs denser in metasternal region, in male all hairs except on prosternum and legs much longer and denser, especially on abdomen and towards center of metasternum, the black ground color (abdomen occasionally yellowish) showing through; ventral cavity in male shallow. Length, 5.5 to 10 mm.

TYPE LOCALITY: Brazil, here restricted to Rio Vermelho, state of Santa Catarina. Type in Naturhistoriska Riksmuseum, Stockholm, examined.

DISTRIBUTION: From Rio de Janeiro south to Santa Catarina, Brazil; Paraguay (Voss); Argentina and Uruguay.

COMPARISONS: This species despite all its various color patterns is distinguishable from all others in the genus by having the entire under side and reflexed elytral sides clothed with fine, long, silky pubescence, not short scales. The vestiture of the dorsal surface is also more hair-like, less scale-like, than in other species, the hairs being more elongate and

narrower, often forming a feathery pattern. The dorsally yellow males differ further from all other yellow species except the yellow form of *hatschbachi* by having the under side entirely black in ground color (the legs sometimes excepted). The yellow form of *hatschbachi*, which is not sexual, has an additional black submarginal maculation on the elytra, which is not found in *variabilis* males. The females with black elytra are somewhat similar to the black forms of *vittipennis*, but differ by having a much wider area of yellow scales on the pronotum.

DISCUSSION: All the males of this species have yellow elytra (yellow scales), whereas the females have the elytra varying from all black to half black and half yellow, either with or without a large scutellar black spot (of 122 females, two have been seen with the elytra all yellow; see below). The credit for the discovery of this sexual dimorphism goes to Bondar (1943) who synonymized *mutabilis* because it represented the female only. His conclusion was based on specimens of both forms taken in copulation and also by analogy with other species where males have the pronotum wider at the base than do the females. The sexes of all species, however, are readily differentiated by the difference in the third and fourth abdominal segments which in the female are very short and have the apical margin retracted, but which are longer, and flat like the other segments of the abdomen in the male. I have examined 163 specimens, including the type and paratypes of both forms, and all the yellow ones are males (with the two exceptions noted above), the variegated or black ones females. Gyllenhal, when he described *variabilis*, the type of which is a male, listed also five color varieties, and for these black or black and yellow forms Fahraeus later proposed the name *mutabilis*. Fahraeus thought the reflexed elytral sides were not ciliate in *mutabilis*, but actually they are ciliate although less so than in the males. Voss (1943) considered *mutabilis* distinct from *variabilis* principally on the relative lengths of the first two segments of the antennal funicle, but this character, like the coloration, has proved to be sexual in this species.

Voss's *mutabilis* "f. n. *connata*" from Nova Teutonia in inland Santa Catarina is said to have the subapical black spots on the elytra fused into a broad transverse band reaching to the sides of the elytra. This form is represented in my material by 18 or 20 specimens, all females, from Rio Vermelho and Cauna on the coast of Santa Catarina. From these localities, however, I have also all the intermediate forms in the females, and I therefore consider *connata* a color variant and a synonym of *variabilis*.

The series in which the male and female color dimorphism breaks

down consists of four specimens from Argentina and four from Uruguay. Kuschel, who kindly lent me these specimens, has suggested (*in litt.*) that they might be considered a subspecies of *variabilis*, but I cannot agree with him. It is true that they are generally, though not uniformly, smaller than the majority of specimens of *variabilis* from Brazil, but they definitely fall within the size range of Brazilian specimens. They are also paler in color, the normally black parts (beak, head, center of pronotum, under side) being mostly brown, light brown, or reddish. Similar pale specimens, however, occur in Brazil, and I do not know whether this is caused by bleaching or fading, or whether these are young individuals in which the darker pigment has not yet formed. The only other difference between these specimens and those from Brazil is that two of the females have no black or dark scales on the elytra, which are entirely yellow as in males, and three females have only very small areas of black around the scutellum. On two of the latter, however, the areas where the usual large black spot occurs can be seen plainly because all the scales are darker than the rest of the elytra, although the scales are orange, not brown or black. It is this which makes me think that perhaps these specimens are not yet fully developed. The sixth female resembles the type of "*mutabilis*" with a large dark scutellar spot and two large spots subapically. If further collecting from Uruguay and Argentina shows that the majority of specimens from that area are indeed very pale and that females possess the yellow elytra of the males, then perhaps these populations can be considered to represent a subspecies of *variabilis*. In genitalic and all other characters except the color of the parts mentioned, they agree with *variabilis*.

The mandibles, which are usually widely spread, seem unidentate in the majority of specimens, but this may be due to wear, as bidentate mandibles are visible in about 10 specimens, sometimes on one side only. The male genitalia (fig. 3I) are different from those of the other species examined, being oval elongate in shape and having the apex rounded truncate and with a slight sinuation.

The abdomen in the females, as shown in figure 1, has the apical margins of the third and fourth segments more sinuous than in the other species. The retracted parts of the segments, which are reddish yellow, are especially evident on females that have the remainder of the abdomen black.

COLOR VARIATION: Comparison of 105 specimens from Brazil, 39 males and 66 females, shows the color to vary as is shown in the tabulation on page 44.

	NO. OF MALES	NO. OF FEMALES
Elytra		
All yellow except reflexed sides which are black	39 <sup>1</sup>	—
All black except scutellum which is yellow	—	20 <sup>2</sup>
All black except for narrow yellow cross band and scutellum	—	4 <sup>2</sup>
Yellow with large black spot around scutellum reaching to fourth interval, and two large black spots at or before apex, or these spots fused into a cross band	—	37 <sup>3</sup>
Yellow in basal half, black in apical half	—	5
Abdomen		
All black	38 <sup>4</sup>	49
All black except last segment which is yellow	—	3 <sup>2</sup>
All yellow or mostly yellow	1 <sup>5</sup>	14 <sup>6</sup>
Legs		
Femora and tibiae black	8	39 <sup>2</sup>
Femora black, tibiae yellow but extreme apex black	21 <sup>4</sup>	—
Femora black, tibiae yellow but base black	—	5 <sup>2</sup>
Femora yellow but extreme apex black, tibiae yellow	9 <sup>5</sup>	22 <sup>3</sup>
Femora black, tibiae black, but hind tibiae yellow in center	1	—

It can be seen from the above that the males in Brazil do not vary in the color of the abdomen or elytra, but do vary considerably in the color of the legs, whereas the females vary in all three categories. Both sexes vary a great deal in size and also in the shape and extent of the black, median, V-shaped area on the pronotum. This mark is sometimes truncate, not acuminate at its base, and it may occur apically or reach all the way to the base of the pronotum. All the parts said to be "black" are not necessarily jet black, but may be piceous, dark brown, or reddish; in any case they present a contrast with the "yellow."

HOST PLANT: Bondar (1941a, p. 295) received specimens of this species collected in the palm *Cocos capitata* Martius, and reported others (1943, p. 359) taken from another palm, "presumably" *Cocos Romanzoffiana* Chamisso, in which he says it breeds. The latter is also the host for *A. aegrotus* and *A. vittipennis*.

SPECIMENS EXAMINED: Brazil. Two males, the type and paratype of *variabilis* (N.R.), three females, the type and paratypes of *mutabilis* (N.R.). Santa Catarina: Eleven males, 30 females; Cauna, December,

<sup>1</sup> Includes the type and paratype of *variabilis*.

<sup>2</sup> Includes a paratype of *mutabilis*.

<sup>3</sup> Includes the type of *mutabilis*.

<sup>4</sup> Includes the paratype of *variabilis*.

<sup>5</sup> Includes the type of *variabilis*, faded.

<sup>6</sup> Includes the type and a paratype of *mutabilis*.

1945, January, February, 1946, seven males, 24 females; Rio Vermelho, January, 1945, February, 1949, six males, 39 females; Rio Natal, February, 1949, one female; Delta Parana, February 28, 1919, one female; Corupa (Hansa Humboldt), or Nova Teutonia, four males, three females. *Rio de Janeiro*: Itatiaya, March 6, 1944, one female. *Parana*: Curitiba, four males, four females. Either Rio de Janeiro or Corupa: Seven males, eight females.

Argentina. *Buenos Aires*: Buenos Aires, December, 1926, January, 1928, 1930, one male, three females.

Uruguay. Sayago, February, 1943, one male, three females.

### *Petalochilus* Schoenherr

*Petalochilus* SCHOENHERR, 1836, *Genera et species curculionidum*, vol. 3, p. 591. LACORDAIRE, 1863, *Histoire naturelle des insectes*, vol. 6, p. 517. Type, by original designation, *P. gemellus* Gyllenhal.

*Balanephagus* SCHOENHERR, 1843, *Genera et species curculionidum*, vol. 7, pt. 1, p. 341. LACORDAIRE, 1863, *Histoire naturelle des insectes*, vol. 6, p. 518. Type, by original designation, *B. faldermanni* Boheman.

*Balanoecus*, MARSHALL, 1939, *Ann. Mag. Nat. Hist.*, ser. 11, vol. 3, p. 582. New name for *Balanephagus* Schoenherr, 1843, *nec* Morris, 1837 (Aves).

DIAGNOSIS: The combination of a seven-segmented antennal funicle, a flattened straight beak, widely and triangularly dilated at the apex, apically inserted antennae, a transverse subquadrate pronotum with crested sides, dentate femora, visibly unguiculate tibiae, non-contiguous front coxae, and lineolate, scaly elytral pattern distinguish this genus from related genera.

DESCRIPTION: Body and all or part of dorsal surface sparsely or densely pubescent with scales or scale-like hairs. Beak with median carina (sometimes lacking) broad, robust, straight or very feebly curved, flat or feebly cylindrical, widely dilated when seen from above, hairy in the male, bare in the female; antennal grooves linear, not descending, wide open in front to near apex in male, closed before apex in female, reaching behind to about middle of eye; antennae inserted behind apex, insertion visible from above, scape enlarged apically and reaching to eye, funicle seven-segmented, seventh segment scarcely distinct from club, club elongate oval with three visible segments (fourth very small), its first segment much the longest. Head with puncture or depression between eyes; eyes coarsely faceted, oblong, separated by about width of beak at base. Pronotum transverse, sinuate at base, separated from proepisternum by an obtuse or sharp ridge. Scutellum more or less oblong. Elytra with 10 punctate striae (the two outer ones reflexed and not visible from above), somewhat to scarcely wider at base than pronotum at base, base trisinu-

ate, sides virtually parallel, broadly rounded at apex, elytra flat on disc, strongly declivous before apex, sometimes with small tubercles on dorsum and/or margins. Front coxae globose, narrowly separated, more narrowly than middle coxae, hind coxae transverse. Femora strongly clavate, armed with small or large triangular tooth on inner side; tibiae straight or feebly sinuate, somewhat compressed, armed with stout, curved, outer apical claw, tibiae fringed apically in males of some species; tarsi with spongy hairy pads below, first segment the longest, segments fringed with long hairs in males of some species; claws simple, divergent. Abdomen with first segment the longest, second nearly as long, third and fourth very short and together not longer than the second, fifth shorter than second; suture between first and second segments feebly arched, male with first and second segments feebly or strongly concave at center, female with them more or less flat. Length, from 5 to 13 mm.

Differs from *Anchylorhynchus* by having the antennal funicle seven-segmented, not six-segmented; the front coxae close, but not touching; the tibiae with an outer apical claw; the tarsi with the second segment much shorter than the first; the beak with but one carina on top instead of three or more; the eyes more coarsely granulated, narrower and more elongate, less rounded; the pronotum more parallel sided, not converging in front; the femora more strongly clavate, the tooth larger; the last abdominal segment shorter than the second, not the same length; the male genitalia more strongly sclerotized; and different secondary sexual characters (for the latter, see under Sexual Dimorphism, p. 7).

DISCUSSION: The characters of *Petalochilus* and *Balanephagus*, as given by Schoenherr in 1836 and 1843, respectively, are virtually identical. As restated by Lacordaire in 1863 the distinguishing characters were to be found in the shape of the beak and the contiguity of the front coxae, differences that prove, now that more species are available, to be sexual or specific, not generic. Hustache, in a footnote to his description of *Balanephagus attaleae*, 1940, said that the characters distinguishing the genera were the seven funicular segments and differently dilated beak of *Petalochilus*. Bondar (1941c, p. 443) suggested that the two genera be synonymized, and Kuschel (1952) did synonymize them.

After examination of all the species (including the types of all but *expansirostris*), I agree that they are best placed in the same genus, *Petalochilus*. I find that all the species have seven funicular segments in the antennae, although *gemellus* has the seventh segment proportionately longer than in the other species. All have the front coxae slightly separated, not contiguous, although in *fernando-costai* these coxae are distinctly more widely separated. All have the apex of the beak flattened

and widened in the same manner, and the beak presents the same sexual differences in the insertion of the antennae and in the position of the antennal grooves. All have lineolate elytral patterns composed of longitudinal or oblique bands of yellow and black hairs or scales, these being denser and more evident in some species.

RELATIONSHIPS OF THE SPECIES: Within the genus the species fall into two groups on the basis of the male genitalia, dorsal sculpture, a secondary sexual character, and size. One group is composed of *expansirostris*, *faldermanni*, and *lineolatus*, which have a median chitinized carina through the orifice of the penis, no dorsal tubercles, no tibial or tarsal fringe in the male, and are smaller (5 to 7 mm.). The other group is composed of *fernando-costai* and *gemellus*, in which the genitalia have no carina, the surface and margins of the body have small tubercles, the males have long hairs on the front tibiae and tarsi, and the size is larger (from 8 to 12 or 13 mm.).

KEY TO THE SPECIES OF *Petalochilus*

- 1. Side margins of elytra, also front and side margins of pronotum, with a series of small tubercles; males with inner apex of front tibiae fringed with long yellow hairs, as long as tibiae are wide; size larger (8 to 12.5 mm.) . . . . . 2  
Side margins of elytra and pronotum without tubercles; males with inner apex of front tibiae with hairs normal; size smaller (5 to 7 mm.) . . . . . 3
- 2. Pronotum only about one-third to one-fourth wider than long, median line with dense yellow scales from base to apex; elytra with zig-zag lines of yellow scales in basal third; front coxae separated by less than one-half of the distance that separates the middle coxae . . . . . *gemellus*  
Pronotum more transverse, often twice as wide as long, median line with sparse yellow hairs at base only; elytra without zig-zag yellow lines; front coxae separated by at least half of the distance that separates middle coxae . . . . . *fernando-costai*
- 3. Pronotum with alternating longitudinal bands of dark and pale hairs, the bands about equal in width; second segment of antennal funicle nearly as wide as first, its base not constricted, entirely hairy; elytra more elongate . . . . . *expansirostris*  
Pronotum either mostly denuded of hair or with the longitudinal bands of pale hairs much narrower than dark areas; second segment of antennal funicle much narrower than first, its base strongly constricted and bare of hairs; elytra less elongate . . . . . 4
- 4. Elytra dark red or piceous in ground color, the intervals without black hairs or with but a few scattered ones visible at high magnification only . . . . . *lineolatus*  
Elytra buffy or yellowish in ground color, the intervals across the disc and on subapical declivity clothed with thick, semi-erect, overlapping, black hairs, the hairs especially prominent on third and fifth intervals, the discal black lines of hair twice the length of the subapical lines . . . *faldermanni*

*Petalochilus expansirostris* (Lacordaire)

## Figure 4A

*Balanephagus expansirostris* LACORDAIRE, 1863, Histoire naturelle des insectes, Atlas, pl. 72, figs. 1a-c.

Light red-brown or dark brown with dense coarse yellow hairs in longitudinal stripes on elytra, interrupted irregularly by longitudinal stripes of dense coarse black hairs; pronotum densely hairy with alternating longitudinal bands of yellow and black appressed hairs; surface without tubercles.

DESCRIPTION OF MALE: Beak straight, flat dorsally, same length as pronotum when measured from apex of beak to end of antennal groove; upper edge of groove carinate; beak densely clothed with elongate, appressed, backward-directed hairs except along bare narrow median line; widening of beak (seen from above) beginning about midway, the grooves wide open almost to apex. Antennae with first segment of funicle slightly longer than second, second twice as long as third to sixth segments, seventh segment slightly longer and wider than sixth. Pronotum one and one-quarter times broader than long, densely clothed with appressed hairs directed horizontally inward in basal half of pronotum, and obliquely backward from front angles in apical half, forming a black and yellow longitudinal pattern. Elytra about one and two-thirds times longer than broad at base, the intervals densely clothed with appressed hairs interspersed with semi-erect, longer hairs, the hairs yellow except subbasally on the third and fifth intervals, medially on the fourth, and in front of the elytral declivity on the third to the sixth intervals, where they are black; the seventh interval darkened medially; reflexed elytral sides virtually bare of hairs except near apex; striae punctures deep, distinct, each puncture with a hair on front border; discal striae one-half or one-third of the width of the intervals. Front coxae separated by a very narrow process. Abdominal cavity in center of first segment in male distinct, less hairy than rest of abdomen. Length, 6 mm.

TYPE LOCALITY: Brazil, here restricted to the state of Rio de Janeiro. Location of type unknown.

DISTRIBUTION: Southeastern Brazil.

DISCUSSION: The elytra are more elongate in this species than in its close relatives, *lineolatus* and *faldermanni*, and the pronotum has alternating pale and dark subequal longitudinal bands of hairs not present in the other two species. The dorsal vestiture is both abundant and appressed, not scarce as in *lineolatus*, nor semi-erect as in *faldermanni*. In addition, the lateral pronotal bands are broader (as broad as the fourth elytral

interval) in *expansirostris*, and longer (reaching from base to apex). In color and striped elytral pattern, this species is most similar to *faldermanni*, but differs further from that species by having the dark stripes on the elytra irregularly placed, not forming two distinct transverse bands, the hairs finer, appressed, and covering the striae in great part, not so coarse, nor semi-erect, nor leaving the striae mostly exposed and bare. The striae are narrower than the intervals in *expansirostris*, scarcely narrower in *faldermanni*; the pronotum is rather flat in the former, convex in the latter.

The type of *expansirostris* is probably lost. Dr. André Janssens of the Institut Royal des Sciences Naturelles de Belgique tells me (*in litt.*) that the other curculionid types of Lacordaire are in his institution, but not the type of *expansirostris*. The specimen described above, which was kindly lent to me by the British Museum, is an old one collected by Fry, and seems to agree with Lacordaire's illustration of the species with only a few exceptions. It has the innermost dark stripes on the pronotum darkened at the base only and not so clearly marked as in Lacordaire's figure, and is generally lighter, more reddish in color, not deep chocolate brown. The other differences between the illustration and my specimen are probably due to the artist; the teeth on the femora are not shown, and the apices of the elytra are depicted as pointed instead of conjointly rounded.

The male genitalia are similar to those of both *lineolatus* and *faldermanni*, but they are much narrower in front, more narrowly acuminate, and have a narrower keel (fig. 4A).

HOST PLANT: None recorded, nor any biological notes.

SPECIMEN EXAMINED: Brazil. Rio de Janeiro, one male.

### *Petalochilus faldermanni* (Boheman)

#### Figure 4B

*Balanephagus faldermanni* BOHEMAN, 1843, in Schoenherr, *Genera et species curculionidum*, vol. 7, pt. 2, p. 343.

*Balanephagus gica* BONDAR, 1940, *Rev. Ent.*, vol. 11, p. 852. (New synonymy.)

Light red-brown with dense, coarse, yellow hairs in longitudinal stripes on elytra, interrupted regularly by longitudinal stripes of dense, coarse, black hairs which are disposed in two transverse series, a broad series on disc and a narrow one at top of apical declivity; pronotum densely hairy, most of the hairs being black, semi-erect; surface without tubercles.

DESCRIPTION OF MALE: Beak straight, flat dorsally, only slightly

shorter than pronotum when measured from apex of beak to end of antennal groove; upper edge of groove carinate; beak densely clothed with elongate, appressed, backward-directed hairs except along bare median carina; widening of beak (seen from above) beginning at apical third, the grooves wide open to slightly behind apex. Antennae as in *expansirostris*. Pronotum one and one-third times broader than long, the disc densely clothed with semi-erect black hairs emanating from each puncture and directed obliquely backward or horizontally inward, the base at sides and medially with appressed yellow hairs, median carina

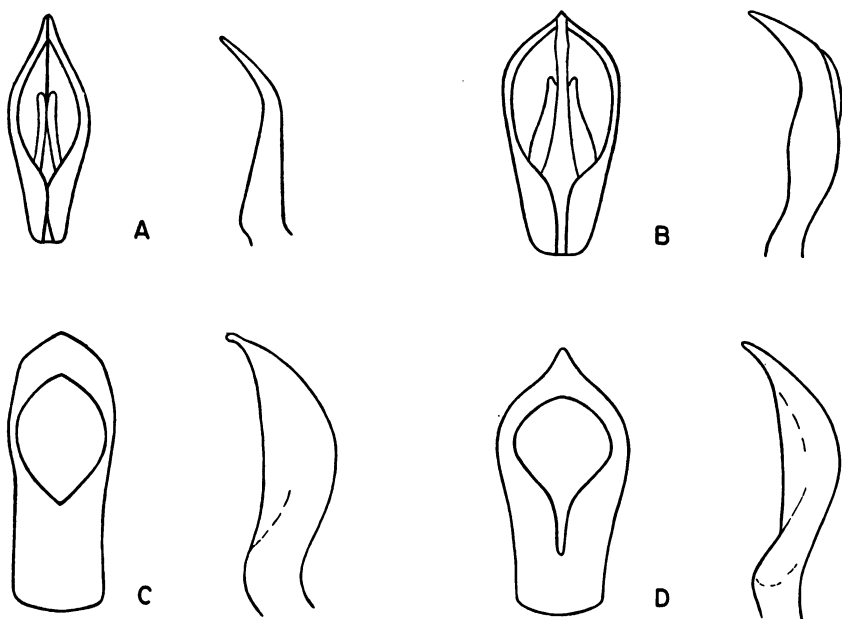


FIG. 4. Apices of male genitalia of *Petalochilus*, showing dorsal and lateral views. A. *P. expansirostris*. B. *P. faldermanni*. C. *P. fernando-costai*. D. *P. gemellus*.

usually hidden by hairs. Elytra about one and one-third times longer than broad at base, the intervals densely clothed with semi-erect, longer hairs, the pattern composed of yellow hairs at the base and apex and before the elytral declivity on all intervals except on the seventh where the hairs are black before the declivity, and black hairs on the remaining part of the intervals; reflexed elytral sides virtually bare of hairs except near apex; stria punctures deep, distinct, each puncture with a hair on front border; discal striae almost as wide as intervals. Front coxae

separated by very narrow process. Abdominal cavity in male scarcely depressed. Length, 5 to 7 mm.

TYPE LOCALITY: Brazil, here restricted to Bomfim, state of Bahia. Type in Naturhistoriska Riksmuseum, Stockholm, examined.

DISTRIBUTION: Eastern Brazil.

DISCUSSION: This species is similar in its robust and compact shape to *P. lineolatus* and in its general russet coloration to *expansirostris*. It differs from both species by having the dorsal hairs much coarser and also semi-erect, those on the elytra being so thickly pubescent as to give the impression of raised intervals. Differs further by having the black pubescence on the elytral intervals arranged in two well-marked transverse bands, not irregularly interrupted by yellow as in *expansirostris*, or virtually lacking as in *lineolatus*. The yellow pubescence, however, forms the same pattern on both pronotum and elytra in *faldermanni* as in *lineolatus*, although the hairs are finer and sparser in the latter species. The discal striae are wider in *faldermanni*, and their bare glazed surface on the disc contrasts strongly, in fresh specimens, with the black coarse hair on the intervals.

I have compared the type and a "cotype" of Bondar's *gica* from Bomfim, Bahia, with the type of *faldermanni*, and I consider *gica* a synonym of *faldermanni*. Both types are rather worn and faded, but they show the salient characters as represented in the "*gica*" cotype mentioned, which is in good condition.

The male genitalia are of the same type as those of two specimens of *lineolatus*, the only difference being that the chitinized margins at the apex are slightly narrower in *faldermanni* (fig. 4B).

HOST PLANT: According to Bondar (for "*gica*"), this species develops in the internal spathes of the palm *Cocos coronata* Martius, the "licuriseiro" or "licuri," a palm of wide distribution on the coast and in the interior of eastern Brazil, in the states of Bahia, Pernambuco, and Minas Gerais, where it prefers dry areas.

SPECIMENS EXAMINED: Brazil. One male, the type of *faldermanni* (N.R.). Bahia: Bomfim, two males, the type (A.M.N.H.) and cotype (C.N.H.M.) of *gica*.

### *Petalochilus lineolatus* Hustache

*Petalochilus lineolatus* HUSTACHE, 1939, Arb. Morphol. Taxon. Ent. Berlin-Dahlem, vol. 6, p. 62.

*Petalochilus lineolatus* var. *rufulus*, HUSTACHE, 1939, *ibid.*, vol. 6, p. 63.

*Balanophagus attaleae* HUSTACHE, 1940, Rev. Ent., vol. 11, p. 699. (New synonymy.)

Dark red to black, occasionally lighter red, with sparse, scattered yellow hairs in interrupted longitudinal stripes on elytra; pronotum mostly bare with narrow line of yellow hairs on sides basally, sometimes in center; surface without tubercles.

DESCRIPTION: Beak straight in male, feebly arched in female, dorsally flat in male, feebly convex in female, about the same length as pronotum when measured from apex of beak to end of antennal groove; upper edge of groove carinate; beak in male densely clothed with elongate, appressed, backward-directed hairs except along bare median carina, hairy at base only in female, in which sex the median carina often disappears in apical half; widening of beak (seen from above) beginning a little beyond middle in male, the grooves wide open to slightly behind apex, in female beak widens at apical third, grooves open only half of the distance as compared with male. Antennae as in *expansirostris*. Pronotum one and one-half times (sometimes more) broader than long, the punctures usually bare of hairs except for lateral yellow band of scale-like hairs, and for cluster of hairs at base of median line, but occasionally hairs cover the median line and scattered black hairs are present in pronotal punctures. Elytra about one and one-third times longer than broad at base, the intervals sparsely and discontinuously clothed with appressed yellow hairs at base of the third to seventh intervals, those on the fourth interval usually reaching farther back, and at the middle of these intervals, and at the apex of all intervals; scattered yellow and black hairs, the latter usually not visible, also present on elytra; reflexed elytral sides virtually bare of hairs except near apex; stria punctures deep, distinct, each puncture with a hair on front border; discal striae about half as broad as intervals, declivous apical part of elytra with the yellow hairs denser, coarser. Front coxae separated by very narrow process. Abdominal cavity in male shallow, first segment of abdomen in female with slight swelling in center. Length, 6 to 7 mm.

TYPE LOCALITY: Jatahy in the state of Goyaz, Brazil. Type in Deutsches Entomologisches Institut, Berlin, examined.

DISTRIBUTION: Eastern Brazil.

DISCUSSION: Although similar to both *expansirostris* and *faldermanni* in the beak, antennae, male genitalia, and general elytral pattern, this species differs from them as follows: from *expansirostris* by having a more compact, less elongate shape, darker color, sparser pubescence, larger elytral punctures, broader, more transverse pronotum, and different pronotal pattern; from *faldermanni* by having the elytra virtually bare of hairs across the center (the few dark hairs are sparse and scarcely visible), the scattered yellow patches of hairs fine and appressed,

not thick and semi-erect, the elytral striae narrower, and the pronotal disc usually denuded (in eight of 12 specimens), or with but sparse hairs.

The ground color in *lineolatus* is reddish in the type and in one other individual, but much darker, almost black, in the 12 other specimens examined; the latter, however, appear to be greased. The male genitalia agree with the other morphological characters in showing how closely related this species is to *faldermanni*. The only observable differences in the penis are the somewhat wider chitinous side borders near the apex in *lineolatus*.

I have examined two male paratypes of *Balanephagus attaleae* Hustache, from Bahia, Brazil, and can find nothing, aside from sexual differences, to distinguish them from the type of *lineolatus*, a female. Hustache's *lineolatus* variety *rufulus* from Misiones, Argentina, I have not seen, but judging from its description it is no doubt a color phase based on an abraded specimen. Both these forms are therefore considered synonyms of *lineolatus*.

HOST PLANT: Bondar collected the specimens from which Hustache described "*attaleae*" in the flowers of *Attalea funifera* Martius. He also reported (1940a, 1940c) the species as developing in the spathes of this palm as well as in those of *Attalea piassabossu* Bondar, the adults feeding on the flowers. Adults feed also on the pollen of the coconut palm, *Cocos nucifera* Linnaeus (1940a, p. 80).

SPECIMENS EXAMINED: Brazil. *Bahia*: Four males, including two paratypes of *attaleae* (M.N.H.H.), nine females. *Goyaz*: Jatahy, one female, the type of *lineolatus* (D.E.I.).

*Petalochilus fernando-costai* (Bondar)

Figure 4C

*Balanephagus fernando-costai* BONDAR, 1941, Rev. Ent., vol. 12, p. 297, fig. 18.

Black with scattered yellow hairs on pronotum and elytra, the hairs mainly concentrated at base and apex of elytra; surface with small shiny black tubercles, also scattered black hairs.

DESCRIPTION OF THE SPECIES: Beak straight in male, feebly arched in female, dorsally flat in male, feebly convex in female, same length as, or slightly shorter than, pronotum when measured from apex of beak to end of antennal groove; upper edge of groove carinate; beak in male densely clothed with elongate, appressed, backward-directed hairs except along median carina, hairy at base only in female, in which sex carina disappears in apical two-thirds; widening of beak (seen from above) beginning beyond middle in male, the grooves wide open nearly to apex, in female beak widens at apical third, grooves open only half of the distance

as compared with male. Antennae with first segment of funicle same length as second, second twice as long as third to sixth segments, seventh about one and one-half times longer than sixth, and broader. Pronotum twice as wide as long, or nearly so, the side and front margins with small tubercles, also a few scattered on dorsum; covered with appressed dark and yellow scale-like hairs directed horizontally inward in basal half of pronotum, obliquely backward from front angles in apical half; surface under hairs tomentose, opaque, most of the hairs dark, the yellow hairs scattered irregularly on disc and arranged more or less in longitudinal bands at side margins and at base of median line. Elytra about one and one-fourth times longer than broad at base, the intervals with many small black tubercles, and a series of tubercles on the lateral margins; base, apex, and four outer intervals of elytra with yellow appressed hairs interspersed with short black hairs; reflexed elytral sides virtually bare except for hairs near apex; stria punctures shallow, indistinct, each puncture with a hair and often a tubercle on its front border; discal striae five or six times narrower than intervals. Front coxae separated by half of the distance that separates the middle coxae. Abdominal cavity in male very shallow. Male with apical half of front tibiae fringed with long yellow hairs internally; front tarsi also with same hairs. Length, 8 to 10 mm.

TYPE LOCALITY: Fazenda Copioba, Nazare, Bahia, Brazil. Type in the American Museum of Natural History, examined.

DISTRIBUTION: Eastern Brazil.

DISCUSSION: This species differs from all the others in the genus in two characters: the pronotum is more transverse and the front coxae are farther apart, being separated by half the distance that separates the middle coxae. It differs further from the three preceding species (*expansirostris*, *faldermanni*, and *lineolatus*) in larger size, in the presence of tubercles on the side margins and dorsum of the elytra and on the front and side margins of the pronotum, in the greater length of the seventh segment of the antennal funicle, and in the fringed front tibiae and tarsi in the male. In these characters it resembles *gemellus*, a species to which it appears to be closely related. The seventh segment of the funicle in *gemellus*, however, is more than twice as long as the preceding segment and fully as long as the club, whereas in *fernando-costai* it is scarcely one and one-half times longer and is shorter than the club. (For further differences, see *gemellus*, below.)

Bondar described this species from three males and seven females, but I have seen only two specimens, the type and a "cotype." Neither of these is in very good condition, and the pronotum does not show the three yellow bands very clearly marked, as intimated by Bondar. Bondar states

that the antennal funicle has six segments and that the antennal club is double, but the basal segment of his double club is what I consider the seventh segment of the funicle. I cannot see the "small teeth on the internal margin of the apical half" of the front tibiae of the male, but this area does have long yellow hairs which Bondar does not mention and which he may have mistaken for dentations.

The male genitalia are of a different shape from those of the other species (fig. 4C), but seem closest to those of *gemellus* because the penis lacks the median carina.

HOST PLANT: Bondar's specimens were collected by him in the flowers of *Diplothemium caudescens* Martius, popularly called "buri," a palm common in the hills and woods along the coast of the states of Bahia and Rio de Janeiro (Bondar, 1939b, p. 11). The larvae develop within the inner spathe of the palm, "the life cycle lasting about six months, corresponding to the time of the maturation of the fruits" (Bondar, 1941a, p. 298).

SPECIMENS EXAMINED: Brazil. *Bahia*: Nazare, Fazenda Copioba, November 20, 1940, one male, the type of *fernando-costai* (A.M.N.H.), one female, cotype (C.N.H.M.).

*Petalochilus gemellus* Gyllenhal

Figure 4D

*Petalochilus gemellus* GYLLENHAL, 1836, in Schoenherr, *Genera et species curculionidum*, vol. 3, p. 592.

Black or dark brown with dense yellow scales in zig-zag lines at base of elytra, the basal half of fifth interval and all intervals towards the apex also with yellow scales; pronotum with dense yellow scales in longitudinal stripes medially and laterally, and obliquely from apex to hind angles; surface with small black tubercles and matted dark hairs.

DESCRIPTION OF THE SPECIES: Beak feebly arched in both sexes, feebly convex dorsally, slightly longer than pronotum when measured from apex of beak to end of antennal groove; upper edge of groove not carinate, groove evanescent towards eye in female; beak in male densely clothed with semi-erect scales and scattered long hairs except along median carina, scaled at base only in female, in which sex there is no median carina; widening of beak (seen from above) beginning at apical fourth in male, the grooves wide open nearly to apex, in female beak widens at apical third, grooves open only half of the distance as compared with male. Antennae with first segment of funicle same length as second, second twice as long as third to sixth segments, seventh at least twice as long as sixth, goblet shaped. Pronotum about one and one-

quarter times broader than long, the front and side margins with small tubercles; densely covered with erect, dark, scale-like hairs, some much longer than others, except on sides and in center where there are longitudinal bands of dense, appressed, yellow scales, also two oblique bands of scales (sometimes lacking or faint) reaching from collar to hind angles of pronotum; surface tomentose, opaque. Elytra about one and one-third times longer than broad at base, the striae and elytral margins with small black tubercles, the intervals densely clothed with dark matted hair interspersed with longer hairs, and with yellow scales arranged as follows: on basal half of fifth and seventh intervals (counting from suture); obliquely from the scutellum to the middle of the fourth interval, thence obliquely to the elytral margin below the humerus; apically on all intervals (often worn), those of the fifth the longest; on the ninth interval in interrupted patches; reflexed elytral sides with yellow scales at base and apex; striae punctures indistinct when matted hairs present, each puncture with a small black tubercle on its front border; discal striae five or six times narrower than intervals. Front coxae separated by very narrow process. Abdominal cavity in male distinct; in female first and second abdominal segments are also concave, but base of first segment has a broad swelling not present in male. Male with apical half of front tibiae fringed with long yellow hairs internally, front tarsi also with same hairs. Length, 10 to 12.5 mm.

TYPE LOCALITY: Cayenne, French Guiana. Type in Naturhistoriska Riksmuseet, Stockholm, examined.

DISTRIBUTION: Known only from Cayenne.

DISCUSSION: This species in fresh condition and with all the yellow dorsal markings present could not be confused with any others in the genus. It is the only one with oblique, zig-zag, and longitudinal pale lines across the base of the elytra, these lines being composed of scales rather than scale-like hairs as in the other species. It is also the largest member of the genus, being at least twice the size of all except large individuals of *fernando-costai*; it has the seventh segment of the antennal funicle longer than in other species, also the beak longer, and feebly arched. No other species has as yet been reported from so far north in South America.

Even in poor condition, with the characteristic yellow markings not visible, *gemellus* can readily be distinguished from *expansirostris*, *faldermanni*, and *lineolatus* by its far greater size, the presence of dorsal tubercles, and the hairy male tibiae and tarsi. From *fernando-costai*, which it resembles in these characters, it differs by having the pronotum less transverse, appearing nearly square, and not so wide in relation to the elytra, the elytral striae (in denuded specimens) deeply punctured and

clearly marked, the elytral tubercles set in front of the punctures but not scattered irregularly over the intervals as well. When the tomentose brownish pubescence is present, of course, as in fully clothed specimens, these details are not so easily discernible. The front coxae in *gemellus* are separated by about the width of the funicular segments of the antennae or less, whereas in *fernando-costai* the distance between the front coxae is nearly as wide as the antennal club. The male genitalia (fig. 4D) are strongly sclerotized and are more similar to those of *fernando-costai* than to those of *lineolatus* or the other two small species.

Lacordaire (1863) noticed the fringe of long hairs on the tibiae, a character not mentioned by Schoenherr in his description of the genus, nor by Gyllenhal in his description of the species. Lacordaire, however, attributed this character to the female, probably because he assumed that the larger of the two original specimens, the one with the tibial hairs, was a female, whereas it is a male (paratype). He noticed also that the antennal grooves are open farther front in one sex, but again he mixed the male and female.

HOST PLANT: None recorded, nor any biological notes.

SPECIMENS EXAMINED: French Guiana. Cayenne, one male, paratype (N.R.), three males, one female, the type of *gemellus* (N.R.), one female.

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