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THE WEEVIL GENUS PANTORHYTES (Coleoptera), INVOLVING CACAO PESTS AND EPIZOIC SYMBIOSIS WITH CRYPTOGAMIC PLANTS AND MICROFAUNA[1]

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Abstract: *Pantorhytes* includes very serious pests of cacao. The larvae bore in the trunks of living trees, often causing the main branches to collapse. At least 13 species of the genus are now known to be pests of cacao. The genus is also important in epizoic symbiosis, involving the growth of algae, fungi and lichens on the living weevils, with minute invertebrate animals living in the plants. Ten species have been found supporting this ecological association. Sixty species of *Pantorhytes* are keyed and discussed, of which 31 are described as new.

The genus *Pantorhytes* belongs to the weevil tribe Pachyrhynchini of the subfamily Brachyderinae. The tribe is primarily Philippine and Papuan in distribution, extending from the southern Ryukyu Is. to the Solomon Is., but not occurring in Taiwan, and being barely represented in Borneo, Sulawesi or other islands of central Indonesia. *Pantorhytes* is almost entirely limited to New Guinea, the Bismarcks and Solomon Is., with one species extending onto the Cape York Peninsula.

Economic importance: This genus includes several of the most important pests of agriculture in the Papuan area. At least 11 species are recognized as primary pests of cacao. A number of other species are potential pests in areas where cacao is being newly established. The weevils do damage to the trees by adult feeding on leaves, but particularly by the larvae boring in the trunk of the tree, near the main fork, frequently causing almost the whole tree, or at least the main branches, to collapse. The weevils normally feed on jungle trees, including some which occur widespread in second growth. Among known

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hosts are *Pipturus, Schuurmansia, Hibiscus* and *Macaranga.* Adult weevils have been found on rubber seedlings (*Hevea brasiliensis*), but damage has not been reported. One specimen was collected on maize. The cacao pests belong mainly to the first division, of the following classification, and a few to the second division. The first division occurs primarily at low altitudes, and perhaps this is why it is so extensively involved with cacao pest-species. The second division occurs from low to moderate altitudes (up to 2000 meters). Rather little is known of the biology of this group. The third division occurs higher in the mountains and has special ecological significance.

The following species of *Pantorhytes* have been implicated as cacao pests, or are probably involved (question marks). In some cases the original pest records were based on mis-identifications, or the data are incomplete, or specimens not preserved. A number of additional species may prove to be involved. Pests earlier identified as *P. quadripustulatus* may partly be *P. torricellianus, P. verrucatus,* or other species.

1.	*Pantorhytes albopunctulatus* Heller	Northern District, Papua
3.	*P. szentivanyi* Marshall	〃 〃 〃
4.	*P. healyi* Gressitt n. sp.	〃 〃 〃
6.	*P. biplagiatus* (Guerin)	Bougainville; British Solomon Islands Prot.
8.	*P. stanleyanus* (White) ?	Papua
9.	*P. chrysomelas* (Montrouzier) ?	Papua
12.	*P. batesi* Faust	Markham Valley area, Morobe District, NE New Guinea
13.	*P. proximus* Faust	Central District, Papua
14.	*P. plutus* (Oberthür)	New Britain, New Ireland
15.	*P. quadripustulatus* (Gestro) ?	Sepik District, NE New Guinea
16.	*P. verrucatus* Bates	New Britain, Duke of York Is., New Ireland, Manus
20.	*P. torricellianus* Heller	Sepik District, NE New Guinea
45.	*P. rubroverrucatus* Tryon	Kairuku, Central District, Papua

Symbiosis: This genus is of special interest because of its involvement in epizoic symbiosis, whereby cryptogamic plants (at least algae, fungi and lichens) grow on the surfaces of elytra or pronotum, and provide protective resemblance. Also, some animals live in the plants growing on the weevils. These have not yet been fully investigated because of scarcity of specimens with extensive plant growth. They include rotifers and probably include nematodes, if not also mites (see previous papers)[2]. This phenomenon occurs at relatively high altitudes, mostly from 1600-3000 meters. It is characteristic of moss-forest areas, mostly on summits of low mountains and ridges of appropriate altitude with native forest vegetation. This ecological association can only occur where relative humidity is constantly high, and where fog is fairly common. The groups of plants involved probably include most of those listed in the *Gymnopholus* paper (Gressitt, 1966, *Pac. Ins.* **8**: 279).

Species involved with the epizoic symbiosis include the following, but also undoubtedly additional ones:

2. J. L. Gressitt, J. Sedlacek & J. J. H. Szent-Ivany, 1965, *Science* **150**: 1833-35; Gressitt, 1966, *Pacific Insects* **8** (1): 221-80; Aoki, *Ibid.*, 281-89; Samuelson, *Ibid.*, 290-93; Gressitt, *Ibid.*, 294-97, illus.

49.	*Pantorhytes lichenifer* Gressitt, n. sp.	Mt Kaindi, Morobe District, NE New Guinea
50.	*P. maai* Gressitt, n. sp.	Aiyura-Okapa area, E. Highlands 〃 〃
51.	*P. algifer* Gressitt, n. sp.	Western and Southern Highlands, NE & SE New Guinea
52.	*P. varinodis* Gressitt, n. sp.	Mt Wilhelm area, Chimbu District, NE New Guinea
53.	*P. pilosus* Heller	Edie Ck—Mt Kaindi area, Morobe District NE New Guinea
55.	*P. rugosus* Gressitt, n. sp.	Mt Giluwe, Southern Highlands, Papua
56.	*P. chimbuensis* Gressitt, n. sp.	Mt Wilhelm area, Chimbu District, NE New Guinea
58.	*P. hornabrooki* Gressitt, n. sp.	Okapa area, Eastern Highlands, 〃 〃 〃
59.	*P. truncatus* Gressitt, n. sp.	〃 〃 〃 〃 〃 〃 〃
60.	*P. hagenensis* Gressitt, n. sp.	Mt Hagen area, Western Highlands, 〃 〃 〃

History: This genus has received considerable notice because of its importance to cacao. The weevils also attract attention because of the striking appearance of the adults, some of them being as pretty as members of the primarily Philippine genus ***Pachyrhynchus***, their close relatives. The first species described was *biplagiatus* by Guerin in 1841, the second *stanleyanus* by White in 1852, the third *chrysomelas* by Montrouzier in 1855. Boheman in 1859 described *australasiae*, a synonym of *chrysomelas*. Gestro named a species in 1875, and another in 1879; Bates one in 1877; Tryon one in 1891; Faust one in 1892 (when he named the genus), and another in 1899; Heller named five in 1903, two in 1905, one in 1912, one in 1914, one in 1926, and six in 1935; and Gestro one in 1923. One was named by Voss in 1956, one by Marshall in 1957, and one by Janczyk in 1959. Some of these workers, particularly Heller, presented partial keys to the then known species. Unfortunately, there has been considerable misidentification of some of the common species in the past, both in publications and in collections. I have been fortunate in seeing nearly all the types other than some of the oldest, which have been destroyed or lost. In most cases I saw them without sufficient material to compare with them, so there is still the possibility of some errors. However, the key was largely based directly on the type specimens. Since a number of additional species were later inserted in the key, it was very difficult to augment it adequately, so it has several weak points. In addition, intra-specific variation is so extreme in many species that it is difficult to make a precise key. This must be considered a preliminary draft of a key.

Materials: In this preliminary study, 1500 specimens have been examined. Some of these have been insufficiently studied and others have been set aside for later study. The material reported here has been collected by E. Allan, L. Anderson, J. H. Ardley, W. Banning, J. H. Barrett, H. K. Bartlett, T. V. Bourke, W. W. Brandt, J. G. Brookes, A. Catley, Evelyn Cheesman, R. Cheetham, H. W. Clissold, K. S. Cole, F. P. Dodd, G. S. Dun, P. G. Fenemore, E. J. Ford, Jr., G. F. Gee, J. S. Grant, P. Greenslade, J. L. Gressitt, Ellyn E. Gressitt, E. Carolyn Gressitt, Rebecca L. Gressitt, Margaret K. Gressitt, D. E. Hardy, M. Harris, T. van Haaren, C. Harslett, C. E. Hart, J. Healy, K. Hill, R. Hornabrook, R. Humes, L. Jones, E. Kanjiri, J. A. Kusche, A. M. Lea, W. N. Lock, T. C. Maa, R. Mackay, Sir Alan H. Mann, R. Marsland, R. McKillop, J. McFarlane, C. T. McNamara, M. McQuillan, C. D. Michener, H. E. Milliron, C. W. O'Brien, B. A. O'Connor, R. V. Oldham, J. Olthof, C. E. Pemberton, E. O. Pockly, R. Rodzyner, G. A. Samuelson, Joseph Sedlacek,

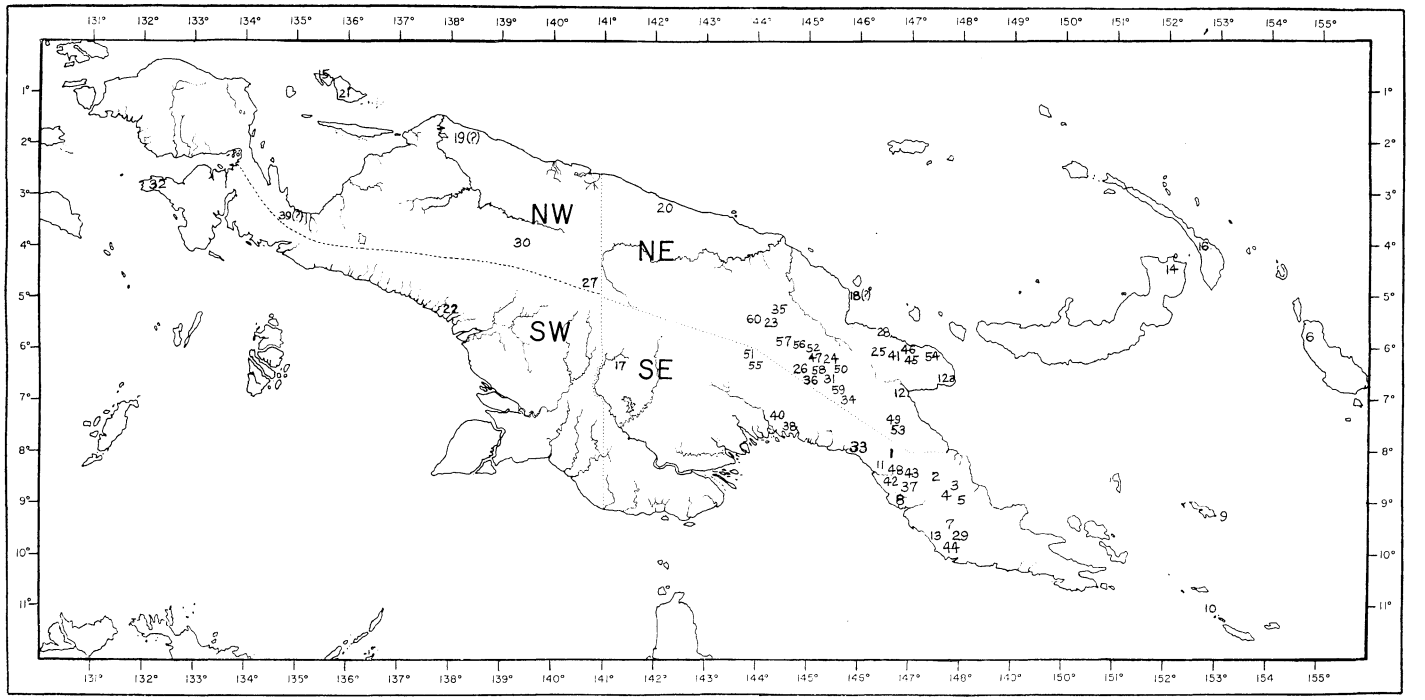

Fig. 1. Map of New Guinea showing locations of type localities of *Pantorhytes*.

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The following symbols are used for the four quadrants of New Guinea: NE NG—Northeast New Guinea; SE NG—Southeast New Guinea (Papua); SW NG—Southwest New Guinea; NW NG—Northwest New Guinea (see map, fig. 1). A brief discussion of zoogeography and altitudinal distribution is presented at the end of this paper.

In measurements of the weevils, length given is from front of head in vertical position, excluding rostrum beyond eyes.

At the end of each citation to original description the type locality and museum housing the type is included in parentheses. References of an economic nature are intentionally incomplete because of possible misidentifications. Not all taxonomic references are included for the same reasons. Material is in Bishop Museum (often with duplicates in Port Moresby) unless otherwise indicated. Illustrations are of holotypes unless otherwise indicated.

Genus **Pantorhytes** Faust

Pantorhytes Faust, 1892, Stett. Ent. Ztg **53**: 193 (type: *Pachyrrhynchus chrysomelas* Montrouzier; Papua).—Heller, 1903, Abh. Ber. Zool. Mus. Dresden **10**(2): 14; 1905, Wien. Ent. Ztg **24**: 305; 1908, Stett. Ent. Ztg **69**: 128; 1912, Phil. J. Sci. D **7**: 301.—Gestro, 1923, Boll. Soc. Ent. Ital. **55**: 61.—Schultze, 1922, Phil. J. Sci. **21**: 591; 1923, *Ibid* **23**: 614 (biology), 621, 630.—Heller, 1935, Nova Guinea Zool. **17**: 157.

This genus is closely related to the beautiful *Pachyrhynchus* weevils of the Philippines, and the early-named species were placed in that genus. *Pantorhytes* is limited to the Papuan area, including New Guinea, the Bismarcks, Solomons and Cape York Peninsula. One species was recorded from Fiji, but this is an error.

Pantorhytes divides rather easily into three groups, which might be later called subgenera, or even genera, although the characters separating them are largely superficial as far as noticed to date. The first two groups are closer together, their species having similar stout body and stout legs, whereas the third group includes species which are largely more slender and longer- and more slender-legged. The first group lacks the usually coral-red round nodes or raised elytral strips characteristic of the second group, and the third group has smaller and less well-defined raised spots on the elytra. The species are tentatively arranged in the following order, in the above-mentioned three major groups, which are again subdivided into seven species-groups.

Division A

I. 1. albopunctulatus Hllr—2. sedlaceki*—3. szentivanyi Mshll—4. healyi*—5. lamingtona*—6. biplagiatus (Guer)—7. opacus Fst—8. stanleyanus (Wh.)—9. chrysomelas

(Montr.)—10. subcostatus Hllr—11. fraudus Jan.—12. batesi batesi Fst—12a. batesi melanoticus Hllr—13. proximus Fst—14. plutus (Ober.)

Division B

II. 15. quadripustulatus (Gestro)—16. verrucatus (B.)—17. brandti*—18. biroi Voss—19. carbonarius Hllr—20. torricellianus Hllr—21. biakensis*—22. gravis Hllr—23. rufescens*—24. montanus*—25. sexpustulatus Hllr—26. minor*—27. pallidus*—28. octopustulatus Hllr—29. decempustulatus (Gestro)—30. gracilis*

III. 31. araneus*

IV. 32. irregularis*—33. manni*—34. arcuatus*—35. jimmiensis*—36. obliquus*—37. vibicifer Hllr—38. rarus Hllr—39. decemverrucosus Hllr—40. papuanus Gestro—41. interruptus*—42. corallifer Hllr—43. goilalae*—44. rubroverrucatus (Tryon)—45. polynodus*—46. multipustulosus Hllr

V. 47. squamistriatus*

Division C

VI. 48. papillosus Hllr—49. lichenifer*—50. maai*—51. algifer*—52. varinodis*

VII. 53. pilosus Hllr—54. samuelsoni*—55. rugosus*—56. chimbuensis*—57. waghianus*—58. hornabrooki*—59. truncatus*—60. hagenensis*

KEY TO SPECIES OF PANTORHYTES

1. Elytron without distinct or large raised nodes or ridges; antenna with funicle segment 7 conical, merging with club 2
Elytron with distinct large red nodes or long raised red strips, or ridges, or with small to weak nodes and clothed above with gray-green to golden green scales or hairs; antenna with funicle segment 7 sometimes transverse 17

2 (1). Elytron with numerous minute low nodes, but no distinct punctures on central portion 3
Elytron with more or less distinct punctures or merging punctures, sometimes with rows of small nodes and feeble punctures 6

3 (2). Pronotum fairly smooth with only weak punctures or a few small callosities; elytron with fairly dense hairs 4
Pronotum uneven, with punctures or rugosites; elytron sparsely pubescent, with or without isolated scales 5

4 (3). Pronotum rather smooth, with numerous very narrow buff scales and some pale greenish hairs; elytron with small nodes and dense tawny buff narrow hair-scales and some whitish hairs (Owen Stanley Mts) ..... 2. **sedlaceki***
Pronotum with a few small callosities, with moderately dense buff hairs; elytron with some rows of minute nodes and with dense buff hairs except at middle of suture ..... 5. **lamingtona***

5 (3). Pronotum with distinct spaced punctures, each with a pale hair, as well as a few round golden or green scales, partly in an incomplete median line;

* New species

elytron with weak nodes and sparse pale hairs and rows of isolated pale scales or patches of scales (Aroa; Kokoda; cacao) ..... 1. **albopunctulatus**

Pronotum with irregular rugosities and moderately dense hair-scales; elytron with many fine yellowish hair-scales, partly concentrated in many subregular vague patches (low altitudes near Kokoda; cacao?) ..... 4. **healyi***

6 (2). Elytron with vague shallow punctures, weak rugosities and/or low nodes; or deep punctures and metallic scale spots.....7

Elytron with distinct punctures.....9

7 (6). Elytron more or less rugose, with patches of scales, largely in 2 or 3 longitudinal rows.....8

Elytron with vague shallow punctures and a few minute flattish nodes on central portion; pronotum somewhat feebly punctured, black; elytron red; both with very few hairs or scales (SE NG: Astrolabe Mts: Haveri)...7. **opacus**

8 (7). Frontal depression fairly large; elytron with vague rows of punctures, sometimes with small nodes or other irregularities; aedeagus fairly broad, less than 2.5× as long as broad (E. Papua to Queensland; ?cacao)...8. **stanleyanus**

Frontal depression small; elytron with rows of nodes; aedeagus slender, subparallel, 3× as long as broad (Papua; ? cacao).....9. **chrysomelas**

9 (6). Elytral punctures at least partly irregular; interstices 1 and 3 not raised posteriorly.....10

Elytral punctures regular; interstices 1 and 3 raised posteriorly; rest of interstices smooth; length 12 mm (Sudest I.)..... 10. **subcostatus**

10 (9). Elytron lacking rows of conspicuous spots of golden pubescence.....11

Elytron with rows of spots of golden yellow pubescence and irregular rows of large punctures; anterior 2/3 of elytral disc somewhat brownish; length 15 mm (SE NG: Yule I.) ..... 11. **fraudis**

11 (10). Elytron with punctures in fairly distinct rows basally and more or less irregular rows on central portion..... 12

Elytron with punctures very confused with slight rugosities (weak irregular swellings), numerous small patches of scales and hairs; scales pale ochraceous and hairs white; pronotum irregularly punctured; head deeply grooved; legs with pale scales and hairs (N. Papua: Sangara; cacao) ..... 3. **szentivanyi**

12 (11). Elytral punctures more or less completely confused on central part, with rows rarely distinguishable 13

Elytral punctures in more or less recognizable rows on central portion, though rows often with punctures confused and irregular.....14

13 (12). Occipital groove as long as an eye; head anterior to eyes broader than long; pronotal punctures partly as large as interspaces; elytral punctures mostly distinct; elytron largely red (C. Papua; cacao) ..... 13. **proximus**

Occipital groove shorter than eye; head anterior to eyes about as broad as long; pronotal punctures smaller than interspaces; elytral punctures on central portion partly merging through weak rugosity; elytron black with large red spot (Markham Valley; cacao) ..... 12. **batesi batesi**

14 (12). Head with a distinct subvertical groove at side above and behind antennal insertion and anterior to eye 15

Head without a distinct strong groove at side above and behind antennal in-

sertion; elytron with deep distinct punctures in irregular rows on central portion, black with vaguely defined red central area; Bougainville population with many patches of green and pale scales in subregular rows; Guadalcanal population with elytron red and largely glabrous except near apex (Solomons Is.; cacao).. .. .. 6. **biplagiatus**

15 (14). Prothorax rounded at side; head with feeble median trough; pronotal and elytral punctures fairly distinct 16

Prothorax weakly subobtuse at side; head with long median trough; elytral punctures rather weak and partly vague; not very numerous; pronotum indistinctly or at least shallowly punctured; aedeagus more slender distally than in New Britain form (New Ireland; cacao) ..... 14. **plutus**

16 (15). Pronotum and elytron almost without patches of scales; elytral punctures in irregular rows on center; elytron with smallish dull red spot; femora with hairs (Huon Pen.)..... 12a. **batesi melanoticus**

Pronotum and elytron with distinct green and blue-green patches, and a band on anterior margin and a median longitudinal stripe with many scales and hairs (New Britain; cacao).....14. **plutus**

17 (1). Elytron with large glabrous swollen nodes which are generally red and round, but sometimes fused, or with long or broad raised strips instead; pronotum usually smooth; antenna with funicular segment 7 conical, tapering from club..... 18

Elytron with small or vague nodes, tubercles or ridges, generally with dense green hairs or small scales, or with spots or stripes of scales on dorsum as well as side; pronotum rarely smooth; antenna with funicular segment 7 transverse, not conical 54

18 (17). Elytron with a few (1–5) conspicuous round reddish nodes..... 19

Elytron with red nodes at least partly elongate, or with stripes, or both nodes and strips, or merging nodes, or many nodes (more than 5 per elytron) 37

19 (18). Elytron with 2 red nodes..... 20

Elytron with 3–5 red nodes..... 31

20 (19). Elytral nodes about as large as space between them, longitudinally 21

Elytral nodes considerably smaller than space between them, longitudinally ... 25

21 (19). Elytron long (3× as long as broad) or at least gradually tapered caudally.....22

Elytron short (2.6–2.7× as long as broad); prothorax and elytron black; elytral nodes red, not entirely bounded by distinct punctured grooves 24

22 (21). Prothorax subglobose, impunctate or very weakly punctured.....23

Prothorax slender, very heavily punctured and nodose; head with frontoclypeus emarginate apically, concave toward apex, hardly concave in center, but slightly sculptured (grooves and punctures), and with arcuate groove bounding it, between eyes; elytron with 2, 1 puncture-rows between suture and nodes (instead of 3, 2); elytron dull red; length 8.4–10 mm (SE NG: Moroka: "*quadripustulatus*, type", PARIS) ..... sp. (fig. 7b)

23 (22). Elytral nodes orange, bounded by punctured groove; nodes much larger than space between them; narrow stripes of green scales near side and apex; elytral punctures 1/2 as wide as interspaces (New Britain)..... 16. **verrucatus**

Elytral nodes red, about as large as space between them bounded by larger

depression, not small punctures; main elytral punctures about as large as interspaces; scales forming broad spots (N NG) ..... 15. **quadripustulatus**

24 (21). Frontal depression flat and triangular on bottom; hairs pale, elytral scales coppery red; pronotum in part subcoarsely punctured; length 10.5 mm (SE NG: Kiunga) ..... 17. **brandti***

Frontal depression a straight deep groove; hairs geen; elytral scales green; pronotum nearly impunctate on disc; length 11–12.5 mm (NE NG) ... 18. **biroi**

25 (20). Elytron fairly stout and short (*ca* 2.7× as long as broad) 26

Elytron long (3× as long as broad) with conspicuous stripes of green scales at side; a band on anterior margin of pronotum, plus a narrow median stripe behind middle; pronotum minutely punctured; length 12.8 mm (New Britain) ..... 16 **verrucatus**

26 (25). Elytron subcoarsely punctured or grooved; head concave on frons 27

Elytron very smooth; minutely punctured, mat; nodes separated by nearly 3× diameter of one; body black with fine sparse hairs (NW NG)...19. **carbonarius**

27 (26). Pronotum smooth, weakly or minutely punctured; dorsum black.....28

Pronotum wrinkled or distinctly punctured; pronotum or elytron largely red...30

28 (27). Head not grooved to posterior margin of eye; elytron strongly ridged (ridges uneven) 29

Head grooved to posterior margin of eye; prothorax with distinct groove parallel to base; elytron weakly ridged (NE NG: Sepik).....20. **torricellianus**

29 (28). Elytron with interstices raised and almost transversely corrugated as well; pronotum with very small weak punctures; length 13 mm (Biak I.)..21. **biakensis***

Elytron with faily smooth raised interstices; pronotum with numerous punctures and small nodes..... 15. "quadripustulatus"

30 (27). Head weakly grooved, red; pronotum slightly wrinkled, red; elytron suboveate-punctate, with weak ridges, reddish pitchy (NE NG: Jimmi Valley) .....23. **rufescens***

Head strongly grooved, black; pronotum distinctly punctured, black; elytron deeply punctured with strong ridges, red on anterior 2/3; pronotum slightly rugose; nodes dark or red (NE NG).....22. **gravis**

31 (19). Elytron with 3 nodes..... 32

Elytron with 4 or 5 nodes 35

32 (31). Prothorax slightly or barely longer than broad..... 33

Prothorax broader than long 34

33 (32). Anterior portion of head considerably longer than broad; elytron gradually tapered to apex; lateral nodes as far apart as posterior nodes of 2 sides; length 10–12 mm (NE NG: Kani Mts) ..... 25. **sexpustulatus**

Anterior portion of head slightly broader than long; prothorax slender; elytron constricted and produced apically, with inner node behind second outer node; elytral disc reddish in center; length 10.5 mm (Karimui) ..... 26. **minor***

34 (32). Body black; pronotum smooth and glabrous; elytron with nodes large, 2 in front and 1 behind; length 10.8 mm (NE NG: E. Highlands).....24. **montanus***

Body pale; pronotum punctured and setose; elytron with nodes small, 1 in front and 2 behind; length 9.5 mm (Star Mts) ..... 27. **pallidus***

35 (31). Elytron with 5 nodes..... 36

Elytron with 4 nodes, some of nodes sometimes elongated, area near them red; length 9.5–11.4 mm (Huon Peninsula)..... 28. **octopustulatus**

36 (35). Elytron 7/16 as broad as long, largely black; nodes generally larger than spaces between adjacent nodes; length 8–12 mm (NE NG)...29. **decempustulatus**

Elytron less than 1/3 as broad as long, largely red; nodes generally much smaller than interspaces; length 9–10 mm (NW NG: Baliem) ..... 30. **gracilis***

37 (18). Elytron with raised strips or numerous nodes.....38

Elytron with 6–8 nodes, some of which are sometimes elongated or partly fused, but not forming long straight strips; length 10.5–12.5 mm (NE NG: Okapa)..... 31. **araneus***

38 (37). Elytron with 2 or 3 raised red strips only, rarely with 1 or 2 small nodes.....39

Elytron with 5 or more raised areas, or with many nodes or small tubercles...45

39 (38). Elytron with 2 raised red strips, joined; or 3 strips, of which 2 are joined.....40

Elytron with 2 or 3 separate, straight strips (sometimes 1 is a node) 41

40 (39). Elytron with 2 raised strips, joined anteriorly by a transverse connective; dorsum reddish brown, strips orange; side of elytron with green scales; length 11.4 mm (NE NG: Jimmi Valley).....35. **jimmiensis***

Elytron with 3 raised strips, outer one irregular, oblique, and joined to anterior end of 2nd strip; also a minute node between strips 1 and 2; length 10 mm (SW Vogelkop)..... 32. **irregularis***

41 (39). Elytron with 3 strips (sometimes 1 reduced to a node).....42

Elytron with 2 strips..... 43

42 (41). Elytron with 2 long strips (outer 1 strongly oblique), and a short strip or node between apices of the 2 long ones; pronotum smooth; length 11 mm (SE NG).....38. **rarus**

Elytron with 3 moderate strips, middle one longer, 1st and 3rd short, outer one strongly oblique; length 10–11 mm (SE NG) ..... 37. **vibicifer**

43 (41). Elytron with 2 long raised red strips almost forming an ellipse, with fore and hind ends close 44

Elytron with 2 oblique red strips, each about 1/3 as long as elytron, with inner (hind) one starting opposite about middle of outer one; length 9–10 mm (NE NG: E. Highlands) ..... 36. **obliquus***

44 (43). Elytron of ♂ with 2 subregular rows of punctures in central area between red strips; strips about 1/3 as wide as space between strips, and 1/2 as wide as space between inner strip and suture; pronotum slightly nodose at side; aedeagus gradually narrowed apically; length 10.5–12.4 mm (NE NG: S. Morobe).....34. **arcuatus***

Elytron of ♂ with irregular punctures in equivalent of about 4 rows in central areas between red strips; strips nearly 1/2 as wide as space between them and 2/3 as wide as space between inner strip and suture; pronotum smooth and sparsely punctured at side; aedeagus suddenly narrowed apically; length 11 mm (SE NG: Gulf Coast)..... 33. **manni***

45 (38). Elytron with raised glabrous strips and nodes 46

Elytron with strips in 2 rows weakly raised but densely covered with golden red scales; other interstices with numerous small tubercles; pronotum with many small nodes; length 10.8 mm (NE NG: E. Highlands) ... 47. **squamistriatus***

46 (45). Elytron with numerous nodes of different sizes, distinct or partly fused 47
Elytron with nodes and raised strips, or elongated nodes 49
47 (46). Elytron with nodes distinct; pronotum quite smooth 48
Elytron with nodes in part fused; pronotum partly punctured or wrinkled; elytron with about 5 largish nodes with areas between raised and merging —all cencentrated in inner (common) area in center just anterior to middle (southern NW NG) ..... 39. **decemverrucosus**
48 (47). Elytron with about 30 round nodes of various sizes, irregularly arranged, some strongly convex (NE NG: Finisterres) ..... 46. **multipustulosus**
Elytron with about 14–18 nodes, partly oval or oblong, and largely in 3 longitudinal rows (NE NG: Finisterres: Kiambavi) ..... 45. **polynodus***
49 (46). Head with short, broad depression 50
Head with long deep groove; elytron with 5 distinct strongly raised red areas...52
50 (49). Elytron with nodes joined by weakly raised strips, or some long interrupted strips 51
Elytron with 1 long strip and 4 large and 1 small round or round-oval raised red areas; pronotum shallowly punctured and slightly wrinkled; elytron with large shallow punctures (SE NG) ..... 40. **papuanus**
51 (50). Elytron with 4 nodes with 2 weak ridges between them dull red; head wrinkled between eyes; pronotum partly wrinked (NE NG: Finisterres) .....
..... 28. **octopustulatus**
Elytron with 3 parallel moderately raised red ridges, partly interrupted, with a large node beside anterior end of outermost and before apex of middle ridge; head smooth between eyes; pronotum smooth (NE NG: Finisterres) ..... 41. **interruptus***
52 (49). Elytron with 3 subrounded nodes and 1 or 2 more or less long stripes (posterolateral) 53
Elytron with 5 subsimilar elliptical nodes, 2–4× as long as broad; pronotum finely punctured and slightly wrinkled; length 10.7 mm (Papua: Aroa R) ..... 42. **corallifer**
53 (52). Prothorax subobtuse well anterior to middle of side; elytron with long postmedian strip not reaching near anterior 2 nodes; postmedian subsutural node round; pronotum subrugose; elytron strongly tapered posteriorly (Owen Stanley Mts) ..... 43. **goilalae***
Prothorax subglobose, elongated basally; elytron with long postmedian strip reaching to between anterior 2 nodes; postmedian subsutural node elliptical; pronotum not rugose; elytron moderately tapering posteriorly (C. Papua lowlands; cacao) ..... 45. **rubroverrucatus**
54 (17). Elytron with scales and few or no hairs; scales short, often rounded, but sometimes narrow 55
Elytron with hairs instead of scales, or with very narrow scales 59
55 (54). Head more or less flat or weakly depressed on front.. 56
Head with distinct groove along median line; pronotum with wide hairs or narrow scales; elytron with numerous nodes of different sizes, with minute scales of moderate density; femora largely red with few hairs (SE NG: "Aroa") .....49. **papillosus**

56 (55). Elytron with 2 obviously contrasting sizes of nodes, some nearly as large as interspaces; elytra 1.5× as broad as prothorax in ♂, 1.8× as broad in ♀...57
Elytron with largely small nodes, some of them like small tubercles; elytra 1.25–1.4× as broad as prothorax in ♂, 1.6–1.7× as broad in ♀ 58

57 (56). Pronotum fairly smooth, with scales narrow, and some longer hair-scales; elytra stout, briefly and obtusely emarginate apically; length 12–14 mm (Kaindi-Bulldog).. .. .. 50. **lichenifer***
Pronotum slightly uneven and weakly nodose, with scales about 3× as long as broad; elytra fairly narrow-elliptical in ♂, apical emargination rather strongly obtuse; length 11–13 mm (Okapa area, E. Highlands) ..... 51. **maai***

58 (56). Pronotum slightly uneven, with scales about 3× as long as broad; elytra with similar narrow scales, and apex somewhat narrowly and subacutely emarginate; length 9–10 mm (Mt Giluwe) ..... 52. **algifer***
Pronotum somewhat nodose, with subrounded green to golden scales and a few hairs; elytra with subrounded scales, rarely narrow, plus some sparse subrecumbent green hairs; length 10–11 mm (Mt Wilhelm area)...53. **varinodis***

59 (54). All hairs slender; no distinct scales; elytron with 4–10 moderate tubercles plus minute nodes 60
Some of hair-scales as much as 1/4 or 1/6 as wide as long; femora red basally..... 61

60 (59). Pronotum fairly smooth; elytron generally with 4–6 or more tubercles; head fairly smooth and red in front; femora dark, rarely red basally; length 11–17 mm (Wau area) ..... 54. **pilosus**
Pronotum subrugose; elytron with about 10 tubercles; frons closely punctured, red; femora largely red; length 14 mm (NE NG: Huon Peninsula) .... 55. **samuelsoni***

61 (59). Elytron with uneven surface, and some high or irregular nodes..... 62
Elytron with small or low and subregular nodes..... 63

62 (61). Hair-scales rather dense, golden green, mostly 5–10× as long as broad; pronotum strongly widened anterior to middle, smooth to tuberculate; elytra rather uneven, with tubercles of irregular size; elytral apex weakly notched; length 9.5–11.5 mm (SE NG: Mt Giluwe).....56. **rugosus***
Hair-scales sparser, duller green, mostly 8–10× as long as broad; pronotum slightly widened anterior to middle, fairly smooth; elytra with several prominent tubercles of differing size and irregular placement, broadly emarginate-truncate apically; length 12–16 mm (NE NG: Okapa area)... 60. **truncatus***

63 (61). Elytra with small tubercles—numerous or scarce; prothorax subevenly convex at side; length usually less than 11 mm 64
Elytra with some largish low callosities or low nodes; prothorax widened anterior to middle; length usually over 11 mm..... 65

64 (63). Elytra ovate, with numerous tubercles, pitchy; pronotum in part distinctly punctured; elytral width 4.5 mm in ♂ for body length of 10.8 mm (NE NG: Waghi Valley)..... 58. **waghianus***
Elytra slender, with few tubercles, partly reddish; pronotum in part finely rugose; elytral width 3.5 mm for body length of 9.8 mm (NE NG: Mt Michael) ..... 59. **hornabrooki***

65 (63). Elytron with nodes rather weak or low; pronotum partly punctured; aedeagus broadly ovate apically (NE NG: Wilhelm area)..... 56. **chimbuensis***
Elytron with nodes partly rather prominent, though low; pronotum weakly rugose; aedeagus narrowed and subtruncate apically (NE NG: Mt Hagen—Sirunki) ..... 60. **hagenensis***

Division A

Species often smooth above; lacking prominent nodes or ridges, but sometimes with minute granules, rugulosities or coarse punctures; often with sparse hairs above and scale-patches at side.

Albopunctulatus-group

Only a single species—group is proposed in this division.

1. **Pantorhytes albopunctulatus** Heller Figs. 2a, 5a.

Pantorhytes albopunctulatus Hllr, 1902, Abh. Ber. Zool. Mus. Dresden **10**(2): 13 (Aroa River, Papua; Dresden); 1905, Wien. Ent. Ztg **24**: 307 (key).

SE NEW GUINEA: Tapini, 975 m, Goilala Subdistr., XI.1957, Brandt; Loloipa, Goilala, XI.1957–II.1958, Brandt; Bome, 1950 m, Goilala, IV. 1958, Brandt; Tapini, 1100 m, 18. V. 1961, L. & M. Gressitt; Pitoki, 450 m, nr Kokoda, Northern Distr., 24.III.1956, Gressitt; nr Kokoda, 400 m, 19.XI.1965, Sedlacek. BMNH: Orrori, Papua, 900 m, Cheesman; Boneno, 1200 m, 50 km NW of Mt Simpson, XI.1940, Shaw Meyer; Tapu, 1800 m, SE Bismarck Range, V.1940, Shaw Meyer (latter to be questioned: perhaps *sedlaceki*).

2. **Pantorhytes sedlaceki** Gressitt, new species Figs. 2b, 7a.

♂. Broad-bodied; black with upper portion of elytron pale brick-red; legs with central portions of tibiae orange and central portions of femora partly pitchy-red; body somewhat

Fig. 2. *Pantorhytes* aedeagi, side view at left, dorsal view at right. a, *albopunctulatus* Hllr, Owen Stanley Mts; b, *sedlaceki* n. sp.; c, *szentivanyi* Mshll. Sangara.

regularly clothed with pale tawny hairs on pronotum and much sparser similar hairs on elytron which are irregularly arranged and partly forming vague spots and short stripes arranged partly in longitudinal rows; ventral surfaces and legs very sparsely clothed with pale hairs.

Head with portion anterior to eyes (excluding mandibles) slightly broader than long; occiput feebly punctured; interocular area and front weakly punctured to slightly rugose; front with a broad fairly shallow depression in middle. *Antenna* with club broadly oval, less than 2× as long as broad. *Prothorax* 1/7 longer than broad, weakly swollen at side, widest well anterior to middle and subparallel-sided posteriorly; disc feebly convex, rugulose-punctate. *Elytron* 2.5× as long as broad, subovate, widest near middle, narrowed to apex; disc strongly and subevenly convex, with weak punctures and irregular rugosities and a few granules or small nodes; punctures present only near suture, in part arranged longitudinally. *Ventral surfaces* rather smooth. *Legs* fairly long and slender; hind femur somewhat wrinkled distally; hind tibia weakly sinuate. Length 13 mm; breadth 6.4.

♀. Elytron slightly narrowed and produced apically; reddish area of elytron a little more extensive and somewhat paler than in ♂.

Holotype ♂ (BISHOP 7023), Iongai, near Mt Albert Edward, 1700–1900 m, Owen Stanley Mts, SE NG, 8.XII.1965, J. & M. Sedlacek; allotype ♀ (BISHOP) same data; many paratypes, same data.

Differs from *albopunctulatus* Hllr in having the pronotum much smoother, less convex, and with numerous narrow buff scale-hairs, and in having the elytron paler and without very distinct rows of pale spots.

3. **Pantorhytes szentivanyi** Marshall Fig. 2c.

Pantorphytes szentivanyi Mshll, 1957, Bull. Ent. Res. **48**: 6, fig. 4 (Popondetta, Papua; BMNH).

SE NG: Mt Lamington, V.1927, I–II.1929, McNamara; Sangara Estate, nr Popondetta, 21.III.1956, Szent-Ivany; Awala Estate, 29.IV.1960, Szent-Ivany; Azerita Plantation, 30.V. 1961, Cheetham; Opi station, VII.1962, Catley; Elengora, 19.X.1921, Pockly; Popondetta Mission, 60 m, 18.X.1963, Shanahan; Popondetta, 25 m, V.1966, Shanahan; Havgola, 30.XI. 1956, Ardley; Kokoda, 31.VIII.1965, Bourke. Most of the above represent long series from cacao. Size, color and scale pattern are extremely variable. Larvae have been collected.

4. **Pantorhytes healyi** Gressitt, new species Fig. 3a.

♂. Body pitchy to reddish and orange: Head pitchy black; antenna pitchy black with middle segments reddish pitchy; prothorax dark reddish, somewhat pitchy at side and on basal margin and black on anterior margin; elytron dull reddish brown, a little brighter reddish on side and pitchy at extreme apex and pitchy reddish on extreme basal and humeral margins; ventral surfaces pitchy black; legs pitchy black with central portions of femora bright orange and central portions of tibiae dark red. Body clothed above with irregular tawny pubescence, somewhat denser on pronotum and sparser on elytron, in part forming some very irregular small patches; nearly lacking on head and rather sparse on ventral surfaces and legs.

Head with portion anterior to eyes slightly broader than long, narrowed from eyes to behind middle of side and subparallel anteriorly; upper surface of head uneven, with a

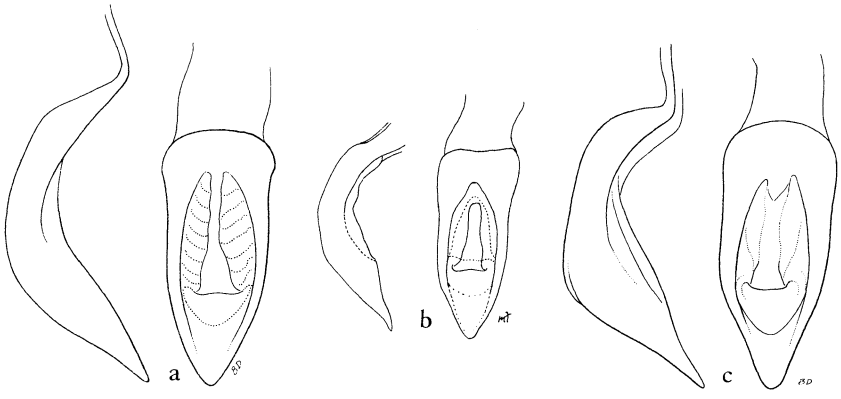


Fig. 3. *Pantorhytes* aedeagi, as in figure 2: a, *healyi* n. sp.; b, *lamingtona* n. sp.; c, *biplagiatus* (Chev.), Vella Lavella.

small deep fovea between eyes and a larger one at center of frons, with a narrow fairly deep one on side above and behind antennal insertion; eyes slightly longer than wide, not very prominent. *Antenna* fairly short; scape not reaching hind margin of eye; funicular segments except 1st 2 broader than long; club elliptical, broadest near middle. *Prothorax* 1/6 wider than long, subevenly rounded at side, widest near middle; surfaces uneven, somewhat flattened above with center slightly raised and postmedian portion more depressed, and side somewhat protuberant; surface irregularly vermiculate to granulose-punctate. *Elytron* 2.6× as long as broad, broadly rounded at side and widest near middle, with apex narrowed and briefly rounded-truncate. *Ventral surfaces* moderately smooth, with only a few punctures at posterior portion of last abdominal sternite. *Legs* fairly stout with femora thickest not far from middle; hind tibia somewhat flattened and slightly arcuate; hind tarsal segment 1 longer than 2, subequal to 3 and much shorter than last. Length 14 mm; breadth 6.2.

Holotype ♀ (BISHOP 7024), Biagi Valley, *ca* 500 m, nr Kokoda, N. Distr., Papua (SE NG), 26.V.1959, Jerome Healy; paratype (DASF), same data. Szent-Ivany's record (1960, *Pac. Ins.* **1**: 429) from cacao at Dintatandi, N. Distr., 9.IV.1956, Healy, undoubtedly belongs here.

Differs from *albopunctatus* Hllr in having pronotum with rugosities and hair-scales instead of spaced punctures with pale hairs, and in having elytron with many minute nodes and hair-scales instead of pale hairs and spaced broad pale scales.

5. **Pantorhytes lamingtona** Gressitt, new species Fig. 3b.

♂. Fairly broad. Body black, elytra largely red; pronotum with moderately dense tawny-buff hairs and elytron with rather uniform dense tawny hairs except for a large spot at center of suture; legs with central portions of femora reddish; venter and legs very sparsely clothed with pale hairs.

Head with portion anterior to eyes broader than long; occiput with some punctures and oblique grooves; frons with a fairly deep groove. *Antenna* with club ovate, nearly 2× as long as broad. *Prothorax* 1/5 longer than broad, evenly convex at side, widest at

middle; disc weakly convex above, depressed in middle of base, with a weak callosity on side near basal margin and a less distinct one at side farther from anterior margin. *Elytron* less than 2.5× as long as broad, globose, evenly rounded and slightly produced apically; disc strongly and evenly convex, with minute granules and irregularities and some small nodes in partial longitudinal rows. *Ventral surfaces* smooth. *Legs* with femora weakly swollen, hind tibia somewhat sinuate. Length 12.5 mm; breadth 5.5.

Holotype ♂ (BISHOP 7025), in crater of Mt Lamington, 1500 m, N. Distr., Papua, 21.IV. 1965, J. S. Grant; paratopotype (DASF), same data.

Differs from *albopunctulatus* in having pronotum much flatter, smoother and hardly rugose, and with elytron more finely granulose and in large part uniformly pubescent. Differs from *sedlaceki* in having a few callosities on pronotum and in having elytron much more densely and uniformly pubescent except for glabrous spot at middle of suture.

6. **Pantorhytes biplagiatus** (Guerin) Figs. 3c, 7b.

Pachyrrhynchus biplagiatus Guerin., 1841, Revue Zool. **1841**: 216 (Solomon Is.; type lost?); 1842, Mag. Zool. **1842**: 95.—Blanchard, 1853, Voy. Pole Sud, Zool. **4**: 201, pl. 13, fig. 8.—Oberthur, 1883, Bull. Soc. Ent. France ser. 6, **3**: XXV.

Pantorhytes salomonis Heller, 1903, Abh. Ber. Zool. Mus. Dresden **10**(2): 13 (Bougainville; DRESDEN).

Pantorhytes biplagiatus: Hllr, 1905, Wien. Ent. Ztg **24**: 306.

SOLOMON IS.: BOUGAINVILLE: Arawa Plantation, X.1956, Szent-Ivany; Aropa, Kieta, 28.I.1963, Tevlin; Arawa, X.1956, McKillop; Kokure, 900 m, 10.VI.1956, Ford; Guaba, 750 m, 19.VI.1956, Ford; Buin, III.1964, Tiortiouf; Kukugai, 150 m, XI.1960, Brandt. VELLA LAVELLA: 29.VIII.1964, McQuillan; Pusisana, 14.XI.1963, Gressitt. NEW GEORGIA: Munda, 20.VIII.1963, McQuillan; Munda, V.1944, Tindale. CHOISEUL: Malangono, 25. VIII. 1963, McQuillan. KOLOMBANGARA: 20. VIII. 1963, McQuillan. YSABEL: Kolotuve, 16. VI. 1960, O'Brien; Molao, 29.VI.1960, O'Brien. SAVO: IV. 1962, Greenslade. Guadalcanal, XI.1920, Kusche; Wright's Creek, 10.VIII.1944, Milliron; Lavoro Plantation, 11.IV.1925, Hart; Tenaru R., VIII. 1944, Milliron; Kiwi Creek, VIII. 1944, Milliron; Suta-Jonapau, nr Gold Ridge, 1000 m, 29.VI.1956, Gressitt; Gold Ridge, 500 m, 24.VI.1956, Gressitt; Tethimani, V.1960, O'Brien; Kukum, 9.V.1962, Greenslade. MALAITA: Auki, 18.IX.1957, Gressitt; Auki, VII. 1957, Fenemore; Auki, VIII. 1965, Cheetham; Auki, XI. 1963, Greenslade & McQuillan; Tangtalau, 26.IX.1957, Gressitt; Tangtalau-Kwalo, 24.IX.1957, Gressitt. FLORIDA: Nggela I., Haleta, 14.X.1964, Straatman; Small Nggela, Dende, 17.IX.1960, O'Brien. SAN CRISTOBAL: Ahi Ahi (Rave R.), 4.VIII.1960, O'Brien.

This important cacao pest is highly variable in size, color and scale-pattern.

7. **Pantorhytes opacus** Faust

Pantorhytes opacus Fst, 1899, Ann. Mus. Civ. Genova **41**: 29 (Haveri, Astrolabe Mts, Papua; DRESDEN; cotype GENOVA).—Heller, 1902, Abh. Ber. Zool. Mus. Dresden **10**(2): 13; 1905, Wien. Ent. Ztg **24**: 306 (key).

SE NG: 5, Musgrave Range, 550 m, 17.VII.1966, on *Schuurmansia*, Fenner & Mackay; 1, Musgrave River Valley, 275 m, 53 km NNE of Port Moresby, 16. XII. 1963, rainforest, Kanjiri.

8. **Pantorhytes stanleyanus** (White) Figs. 4a, 5b.

Pachyrrhynchus Stanleyanus Wh., 1852, *In* MacGillivray, Narr. Exped. Rattlesnake **2**: 388, pl. 4, figs. 1, 2 (Pariwara I., nr Yule I., Papua; BMNH).

Pantorhytes stanleyanus: Heller, 1912, Ent. Mitt. **1**: 364.

?Pantorhytes granulatus Hllr, 1905, Wien. Ent. Ztg **24**: 305, 307 (Woodlark; DRESDEN). Provisional **New Synonymy.**

SE NG: Many, Woodlark (Murua) I., Kulumadau Hill, II-III.1957, Brandt; Normanby I., Wakaiuna, Sewa Bay, XII. 1956, Brandt; Esa'ala, Normanby I., II. 1960, IV.1965, Sir Alan Mann; SE Cape, Macfarlane (AM); "New Guinea K39620" (AM); Misima I., Bartlett (SAM); Kaibola, Kiriwina, Trobriand Is, 7. XI. 1965, secondary forest, Hill.

QUEENSLAND: Cairns, X.1896, Banning (SAM); Cairns distr., Dodd (SAM); Cairns, Lea; Cairns, Allen (SAM); Hambleton, XI.1921, Pemberton.

Heller (1912 and 1931) synonymized *proximus* Faust with this species, but I do not agree.

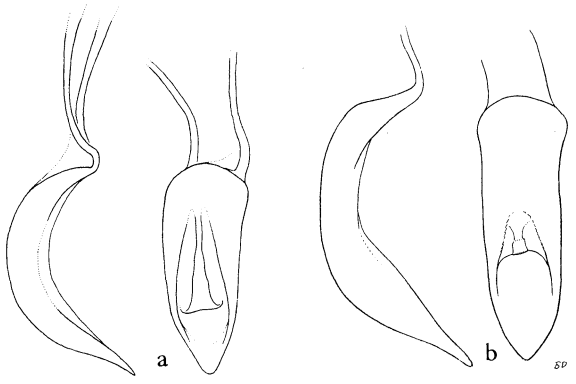


Fig. 4. *Pantorhytes* aedeagi, as in figure 2: a, *stanleyanus* (Wh.), Normanby I; b, *chrysomelas* (Montr.), Fly River.

9. **Pantorhytes chrysomelas** (Montrouzier) Fig. 4b.

Pachyrrhynchus chrysomelas Montr., 1855, Ann. Soc. Agric. Lyon (n. s.) **7**: 46 (Woodlark; type lost?).

Pachyrrhynchus australasiae Boheman, 1859, Eugenies Resa, Ent., 119.

Pantorhytes chrysomelas: Faust, 1892, Stett. Ent. Ztg **53**: 193.—Heller, 1903, Abh. Ber. Zool. Mus. Dresden **10**(2): 14.

SE NG: Kiunga, upper Fly River, 10-17.IX.1957, Brandt. Questionable specimens from Woodlark I., 1957, Brandt.

I believe that Heller misidentified *stanleyanus* as this species. I am not positive that the two are different.

10. **Pantorhytes subcostatus** Heller

Pantorhytes subcostatus Hllr, 1905, Wien. Ent. Ztg **24**: 306, 308 (Sudest I.; Oberthur coll., PARIS).

There is a possibility that this might be the same as *stanleyanus.*

11. **Pantorhytes fraudus** Janczyk

Pantorhytes fraudus Jan., 1959, Ann. Naturh. Mus. Wien **63**: 434 (Yule I., Papua; WIEN).

I have not seen this species. It might be the same as *stanleyanus.*

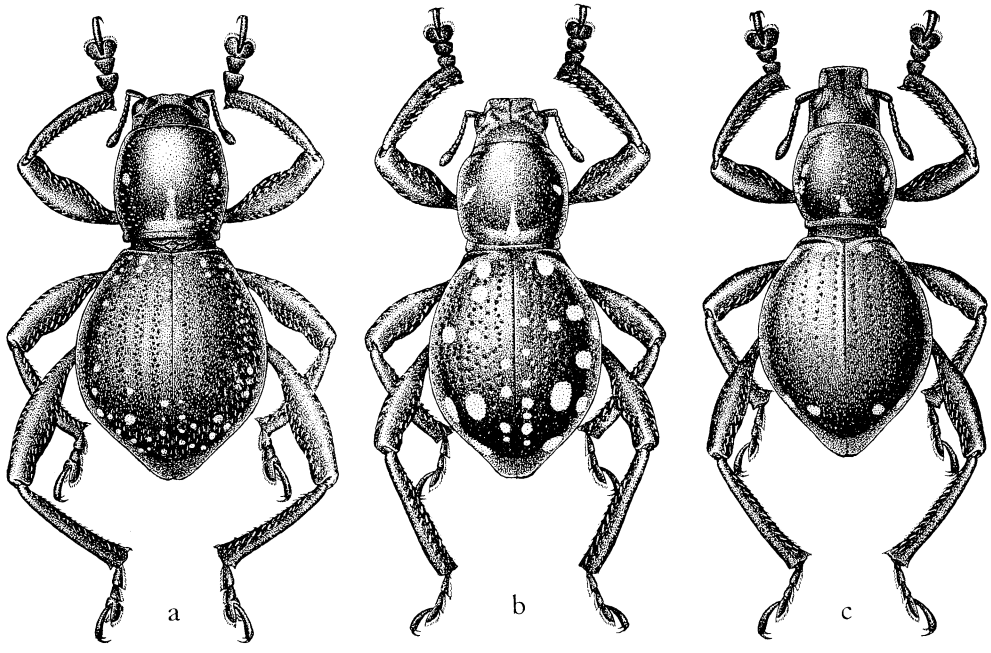


Fig. 5. Dorsal view drawings of *Pantorhytes*: a, *albopunctulatus* Hllr Owen Stanley Mts; b, *stanleyanus* (Wh.), Normanby I; c, *proximus* Faust, C. Distr., Papua.

12. **Pantorhytes batesi batesi** Faust Figs. 6a, 7c.

Pantorhytes batesi Fst, 1892, Stett. Ent. Ztg **53**: 194 (Huon Gulf, NE NG; DRESDEN).—

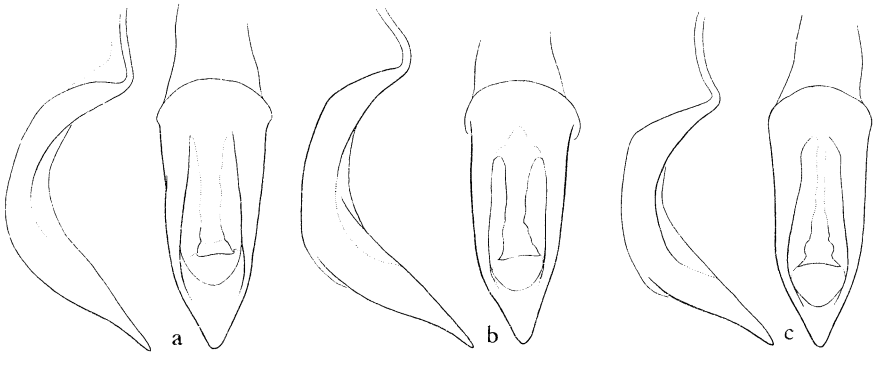
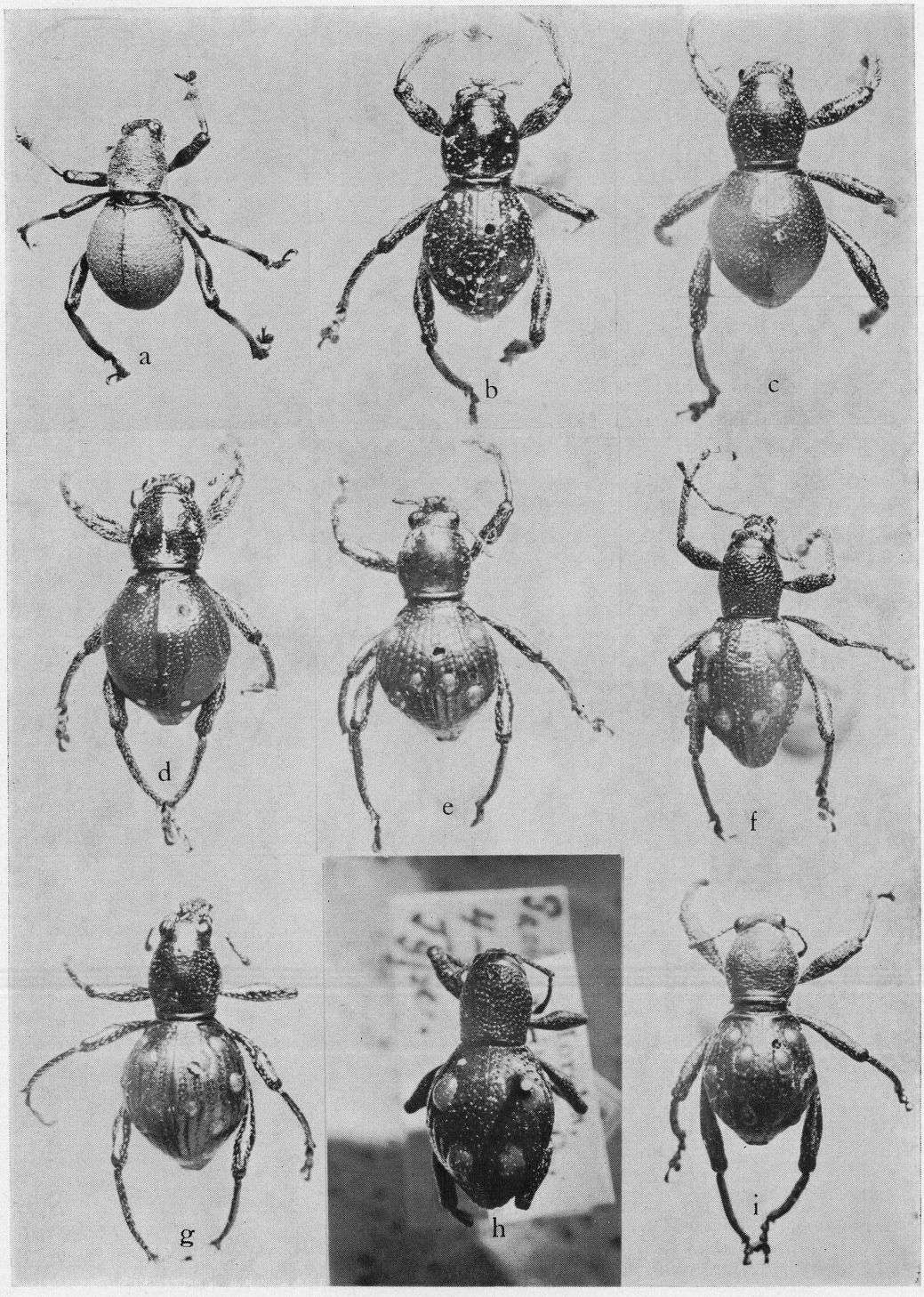


Fig. 6. *Pantorhytes* aedeagi, as in figure 2: a, *b. batesi* Faust, Markham Valley; b, *proximus* Faust Papua; c, *plutus* (Ober.). New Britain.

Fig. 7. Photographs of dorsal aspects of *Pantorhytes*: a, *sedlaceki* n. sp., paratype; b, *biplagiatus* (Guer.), Bougainville; c, *b. batesi* Faust, Bubia; d, *proximus* Faust, C. Papua; e, *montanus* n. sp.; f, *minor* n. sp.; g, *gracilis* n. sp.; h, *"quadripustulatus,* type", Paris Museum (this is probably not the type); i, *?decempustulatus* (Gestro), Tapini.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Heller, 1902, Abh. Ber. Zool. Mus. Dresden **10**(2) : 14 ; 1905, Wien Ent. Ztg **24** : 306 (key).

NE NG : Bubia, Markham Valley, 13.VII.1960, Catley ; Gabensis, 4.V.1958, on *Schuurmansia*, Ardley ; Lae, II.1945, Troughton (AM) ; Finschhafen, IV.1944, Skinner (Purdue) ; Avalunga Plantation, 8.IX.1955, Szent-Ivany ; Bubia, IX.1955, Gressitt ; Busu River, IX.1955, Gressitt ; Lae, V.1956, Ford ; Busu River, IX.1956, Ford ; Lae, VII.1957, Hardy ; Pindiu, 800 m, IV. 1963, Sedlacek ; Bulem River, 64 km N of Lae, 30 m, IV.1963, Sedlacek ; Wau, 1200 m, IV. 1963, Sedlacek.

This species is an important cacao pest.

12a. **Pantorhytes batesi melanoticus** Heller

Pantorhytes batesi melanoticus Hllr, 1935, Nova Guinea Zool. **17** : 157 (Sattelberg ; DRESDEN).

Some of the above Pindiu specimens, from between the coastal environment of typical *batesi*, and Sattelberg, the type locality of this subspecies, have elytra partly black, so may be an intergrading form. More material is needed to verify the status of *melanoticus*.

13. **Pantorhytes proximus** Faust Figs. 5c, 6b, 7d.

Pantorhytes proximus Fst, 1899, Ann. Mus. Civ. Genova **40** : 29 (Moroka, Paumomu River ; DRESDEN ; cotype GENOVA).—Heller, 1903, Abh. Ber. Zool. Mus. Dresden **10** (2) : 14 ; 1905, Wien, Ent. Ztg **24** : 306 (key) ; 1912, Ent. Mitt. **1** : 364 (syn. of *stanleyanus*) ; 1912, Phil. J. Sci. D **7** : 301.

SE NG : Many, Mamai Estate, Central Distr., 20.XI.1963, on cacao, Szent-Ivany ; Port Moresby, X-XII.1946, Jones ; Bisiatabu, nr Port Moresby, Lock (SAM) ; Kagi to Naora, 17. VI. 1921, Pockley ; Bushmekeo, Kairuku Subdistr., cacao, X. 1963, Anderson ; Inauwauni, Kairuku Subdistr., X.1962, Anderson ; Bisianumu, 9.VII.1959, on rubber tree, Haaken ; Rouna Falls, 20.X.1957, Sedlacek.

Most of the preceding were taken on cacao. Rarely this species has median elytral spots.

14. **Pantorhytes plutus** (Oberthür) Fig. 6c.

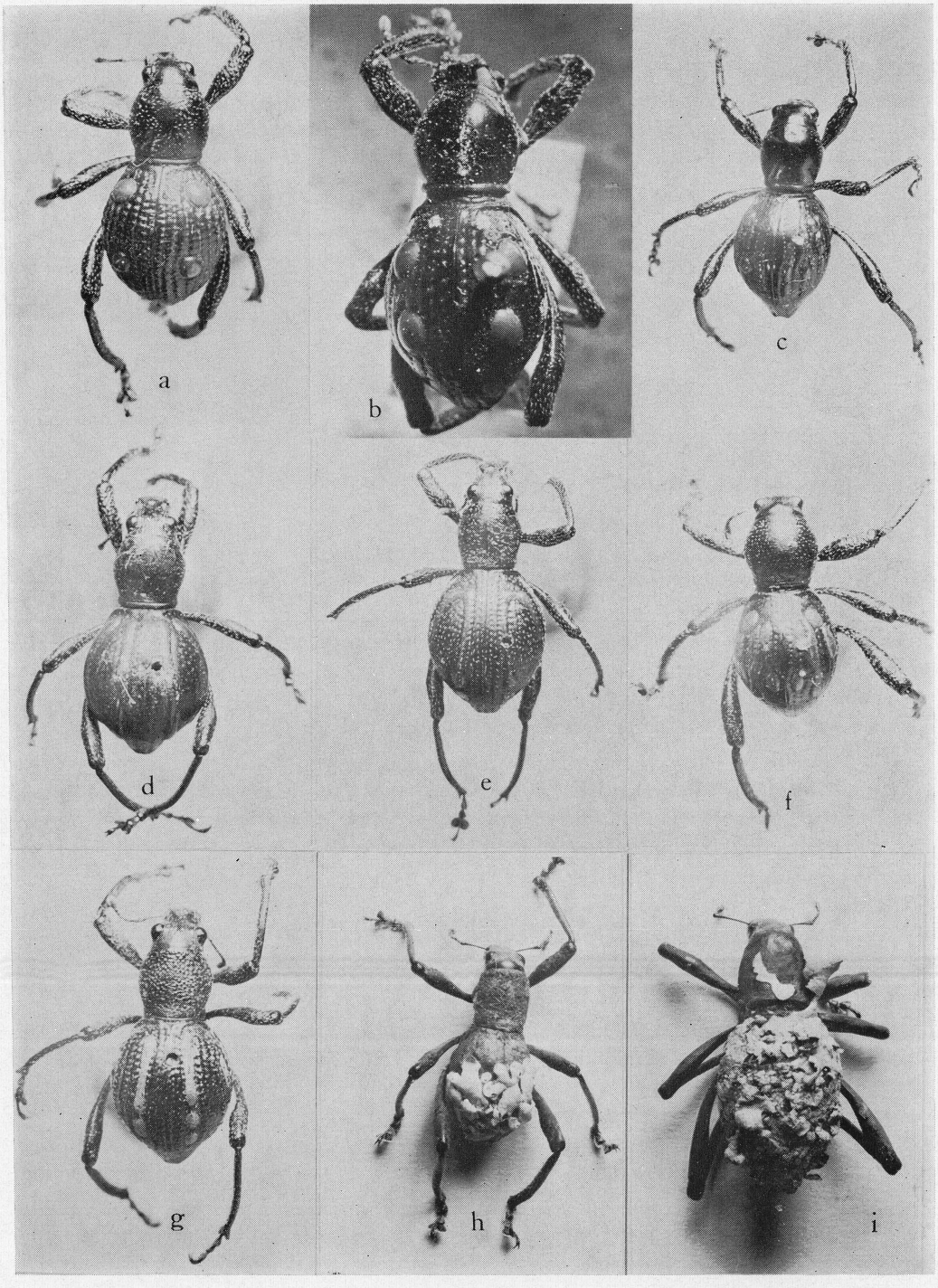
Pachyrrhynchus plutus Ober., 1883, Ann. Soc. Ent. France ser. 6, **3** : Bull. XXV (New Britain ; ?PARIS).—Fairmaire, 1883, Ann. Soc. Ent. Belg. **27** : 33.

Pantorhytes plutus : Faust, 1892, Stett. Ent. Ztg **53** : 193.—Heller, 1905, Wien. Ent. Ztg **24** : 306, 308.—Schultze, 1922, Phil. J. Sci. **21** : pl. 4, fig. 11.

Pachyrrhynchus biplagiatus : Bates, 1877, Proc. Zool. Soc. Lond. **1877** : 154, pl. 24, fig. 3.

NEW BRITAIN : Herbertshöhe, 1912, Humes ; Keravat, 1946, O'Connor ; Mulutu & Iboki, XII.1929, Harslett ; Vunapau, 8.III.1956, Dun ; Asalingi, 29.V.1955, Szent-Ivany ; Avalunga, 8.IX.1955, Szent-Ivany ; Varzin, 17.V.1956, Gressitt ; Keravat, 3.IV.1956, Gressitt ; Sio, 24. VII.1956, Ford ; Gaulim, 19.XI.1962, Sedlacek ; Riat, upper Warongoi, 1.XI.1962, Sedlacek ;

Fig. 8. Photographs of dorsal aspects of *Pantorhytes* : a, *biakensis* n. sp. ; b, *verrucatus* (Bates), type, Paris Museum, New Ireland ; c, *interruptus* n. sp. ; d, *arcuatus* n. sp. ; e, *jimmiensis* n. sp. ; f, *rubroverrucatus* (Tryon), C. Distr., Papua ; g, *squamistriatus* n. sp. ; h, *pilosus* Hllr, Mt Kaindi ; i, *?lichenifer* n. sp., Mt Kaindi. Latter 2 with advanced lichen growth.


a
b
c
d
e
f
g
h
i

Illugi, XII.1962, Sedlacek; Lagenda, Talasea, 18.IV.1962, Marsland; Tokaya, 22.IV.1962, Smee.

NEW IRELAND: Lower Kait River, "Camp Bishop", VII. 1956, Gressitt & Ford; Gilingil Plantation, VII.1956, Gressitt & Ford; Kandan, XII.1959, Brandt; Lelet Plateau, Schleinitz Mts, X. 1959, Brandt; Namatanai, X. 1959, Gee; New Ireland, K39698 (AM). Lihir Island: Lagakot Plantation, 15.VII.1955, Szent-Ivany. Anir Island: VI.1962, Dun.

Nearly all of the above were collected on cacao. The specimens from the islands north of New Ireland are particularly dark and have the elytra somewhat carinate.

Division B

Elytron with conspicuous raised areas, generally of coral red, and usually consisting of several round nodes or straight ridges, or a combination of nodes and ridges.

Quadripustulatus-group

Elytron with raised round red or orange nodes, 1–5 in number.

15. **Pantorhytes quadripustulatus** (Gestro)

Pachyrrhynchus quadripustulatus Gestro, 1875, Ann. Mus. Civ. Genova **7**: 1008 (Korido on Misori I., Geelvink Bay; GENOVA); 1879, *Ibid.* **14**: 562.

Pantorhytes IV-pustulatus: Hllr, 1905, Wien. Ent. Ztg **24**: 307, 310 (part); 1926, Nova Guinea Zool. **15**: 276 (comparisons).

This species has been recorded in error as *IV-punctatus* by Behrens and as *IV-plagiatus* by Faust and Heller, but these probably also represented misidentifications of this species. A number of records have been published which probably do not apply to this species. Further study is necessary in order to properly define the distribution of *quadripustulatus.*

NW NG: Above Bernhard Camp, 750 m, III.1939, Toxopeus; Bernhard Camp, 50 m, VII–XI.1938, Olthof; Hollandia, IX.1933, Stüber; Hollandia, VII.1938, Toxopeus; Bewani River terr. 1200 m, 1939, Stüber; Nabire, S. Geelvink Bay, 5.VII.1962, Gressitt.

16. **Pantorhytes verrucatus** (Bates) Figs. 8b, 9a, 10a.

Pachyrrhynchus verrucatus B., 1877, Proc. Zool. Soc. Lond. **1877**: 154, pl. 25, fig. 3 (New Ireland; PARIS).—Fairmaire, 1883, Ann. Soc. Ent. Belg. **27**: 33.—Behrens, 1887, Stett. Ent. Ztg **48**: 218.

Pantorhytes quadripustulatus verrucatus: Heller, 1905, Wien. Ent. Ztg **24**: 310.—Gestro, 1923, Boll. Soc. Ent. Ital. **55**: 64.

This species has been reduced to a subspecies or race of *quadripustulatus,* but I believe it is distinct. Heller mistakenly indicated the type locality as the Duke of York Is. It does occur there, and in New Britain.

NEW BRITAIN: Silanga, Nakanai, 31.VII.1956, Ford; Keravat, 1.IX.1955, Gressitt; Ti, Nakanai, 28.VII.1956, Ford; Talalo, Nakanai, 27.VII.1956, Ford; Lagenda, Talasea, 6.II.1961, Dun; Lagenda, IV.1962, Marsland; Mt Sinewit, 900 m, 5–14.XI.1962, Sedlacek; Gaulim, 130 m, X.1962, Sedlacek; Upper Warongoi, 250–600 m, XI.1962, Sedlacek. Partly on cacao.

NEW IRELAND: "Camp Bishop", 125 m, nr Gilingil, on *Pipturus,* VII.1956, Gressitt &

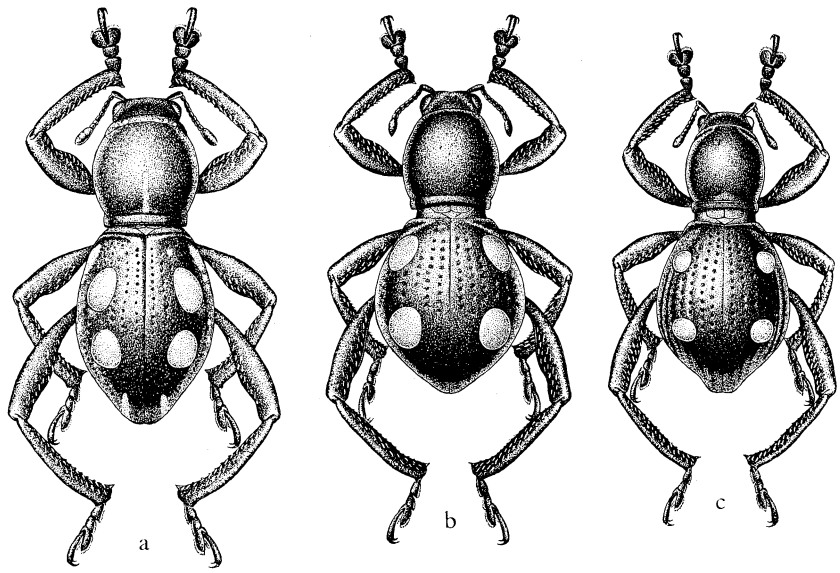


Fig. 9. Dorsal view drawings of *Pantorhytes*: a, *verrucatus* (Bates), new Britain; b, *brandti* n. sp.; c, *torricellianus* Hllr, Torricelli Mts.

Ford; Lelet Plateau, Schleinitz Mts, X.1959, Brandt; Kandan, 1.I.1960, Brandt.

MANUS: Rossum, 35-125 m, 30.VI.1959, Gressitt.

17. **Pantorhytes brandti** Gressitt, new species Figs. 9b, 10b.

♀. Fairly short and stout, shiny black, elytron with two large red nodes on central portion, one anterior to the other and separated by a space less than the diameter of one node; dorsum largely glabrous but with a few pale hairs on sides of head and prothorax; elytron with rather widely spaced spots of coppery red-gold scales in two rows parallel to external margin. Ventral surfaces with a few similar spots at side and with remainder and legs sparsely clothed with pale subadpressed hairs.

Head with anterior portion slightly longer than broad, strongly narrowed anterior to eyes and parallel-sided anterior to antennal insertions; occiput finely punctured; frons deeply and broadly grooved in center, and strongly punctured. *Antenna* with club subovate, thickest beyond middle. *Prothorax* 1/7 longer than broad, subglobose, widest just anterior to middle; disc subevenly convex, finely punctured on most of surface. *Elytron* less than 3× as long as broad, ovate, widest just anterior to middle and subevenly narrowed to apex; disc with 9 longitudinal rows of punctures in grooves, fairly regular except where disturbed by large nodes described above; punctures mostly larger than interspaces longitudinally and not quite as large transversely. *Ventral surfaces* rather smooth. *Legs* with hind femur and hind tibia fairly slender and somewhat sinuate. Length 10.5 mm; breadth 5.

Holotype ♀ (Bishop 7026), Kiunga, Fly R., W. Distr., Papua, 21-24.X.1957, W. W. Brandt; paratypes, same data.

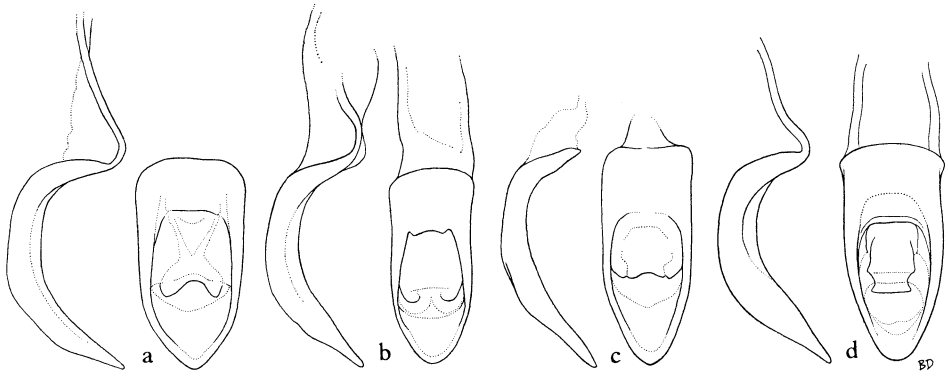


Fig. 10. *Pantorhytes* aedeagi, as in figure 1: a, *verrucatus* (Bates), New Britain; b, *brandti* n. sp.; c, *torricellianus* Hllr, Torricelli Mts; d, *sexpustulatus* Hllr, Finisterre Mts.

Differs from *quadripustulatus* Gestro in being slightly larger with larger nodes, with reddish coppery scaly spots and with pronotum less strongly punctured.

18. **Pantorhytes biroi** Voss

Pantorhytes biroi Voss, 1956, Ann. Hist.-Nat. Mus. Hung. n. s. **7**: 125 (NE New Guinea; BUDAPEST).

The status of this species needs clarification. It is very close to *verrucatus*. I have seen the holotype and a paratype. The labels state only "N. Guinea Fenichel."

NE NG: Manumbo, Madang (SAM, BISHOP). The 6 specimens agree reasonably with the type.

19. **Pantorhytes carbonarius** Heller

Pantorhytes carbonarius Hllr, 1926, Nova Guinea Zool. **15**: 276 (NW New Guinea; DRESDEN), 1935, *Ibid.* **17**: 160 (key).

I am not certain of the status of this species. I have seen the type, but had with me no specimens which agreed. Some from Wanuma, 800 m, Adelbert Mts, NE NG, X.1958, Gressitt appear to be close.

20. **Pantorhytes torricellianus** Heller Figs. 9c, 10c.

Pantorhytes torricellianus Hllr, 1935, Nova Guinea Zool. **17**: 159, 161 (Torricelli Mts, NE NG; DRESDEN).

NE NG: Sugoitei, 900 m, Torricelli Mts, 5.II.1959, Brandt; Mobitei, 750 m, Torricelli Mts, 16.IV.1959, Brandt; Finschhafen dist., Wagner; Torricelli Mts, 60 m, I.1939, Cheesman; Bainyik, 150 m, nr Maprik, 20.VI.1961, L. & M. Gressitt; Maprik, XI.1953 Ardley (identified by Marshall as *quadripustulatus*); Kusaun village, Sepik Distr., 12.VI.1957, White, on cacao. This species is close to *quadripustulatus*.

21. **Pantorhytes biakensis** Gressitt, new species Fig. 8a.

♀. Black; antenna slightly reddish pitchy; elytron with 2 large rounded reddish orange

nodes, 1st in middle of basal 1/3, 2nd slightly closer to suture and just behind middle. Dorsum sparsely clothed with subrecumbant whitish green to bluish green hair-scales and a few finer pale hairs; ventral surfaces similarly clothed, with some slightly denser areas of bluish hair-scales on mesepisternum and side of metasternum.

Head with portion anterior to eyes somewhat longer than broad, narrowed from eyes to slightly behind middle and then very slightly broadened to near anterior end; occiput very feebly punctured; frontal area weakly to moderately punctured, with a median groove from between anterior portions of eyes to just behind antennal insertions, the depressed area broadening anteriorly; eye distinctly longer than deep, not very prominent. *Antenna* short; scape not quite reaching to middle of eye, moderately stout in distal 1/3; funicle with segments 1 and 2 each about 2× as long as 3; club elliptical, about 2× as long as broad. *Prothorax* somewhat broader than long, subevenly convex at side, widest just anterior to middle, grooved close to base; subevenly convex, depressed near middle of base, with scattered fine punctures. *Elytron* not quite 3× as long as broad, subevenly convex at side, widest somewhat anterior to middle, slightly produced and separately rounded at extreme apex, forming a slight obtuse emargination; surface with 9 distinct rows of punctures, the punctures fairly weak but in moderately deep grooves; interstices all distinctly raised, in part slightly nodose or transversely corrugated. *Ventral surfaces* moderately smooth, with scattered weak punctures. *Legs* moderately stout and short; hind femur slightly exceeding elytral apex, slightly swollen preapically; hind tibia moderately stout, distinctly arched; hind tarsus with segment 1 longer than 2, barely longer than 3 and shorter than last. Length 12.6 mm; breadth 6.2.

Holotype ♀ (BISHOP 7027), Mangrowawa, 50–100 m, Biak I., NW New Guinea, 30. V.

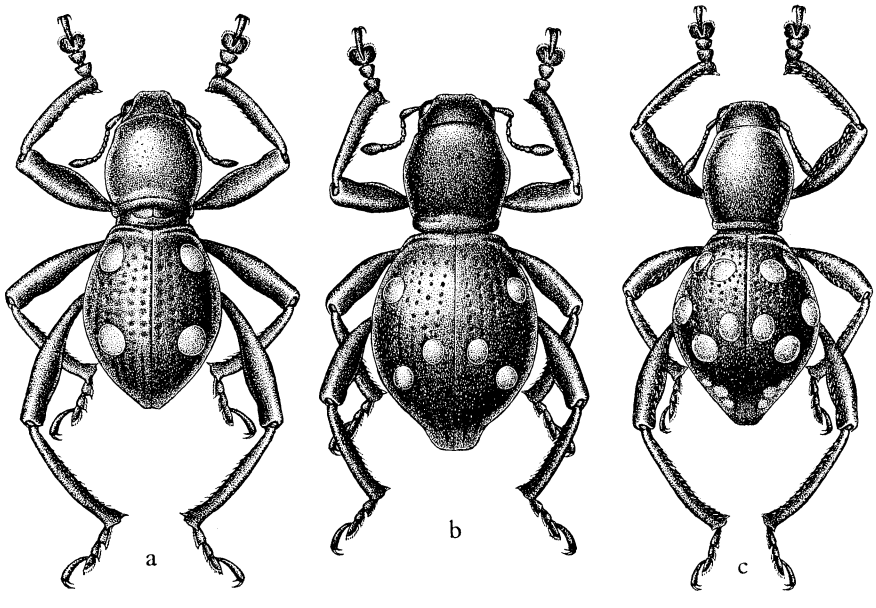


Fig. 11. Dorsal view drawings of *Pantorhytes*: a, *rufescens* n. sp.; b, *sexpustulatus* Hllr, Salawaket Mts; c, *decempustulatus* (Gestro), Kiunga, Fly River.

1959, Gressitt; paratype (LEIDEN), P. Biak, 50-300 m, 12.VII.1946, R. Straatman.

Differs from *torricellianus* Hllr and *quadripustulatus* Gestro in having elytron strongly ribbed with the ribs transversely subcorrugated or subnodose, and further from *quadripustulatus* in having elytral nodes smaller and more globose.

22. **Pantorhytes gravis** Heller Fig. 12b.

Pantorhytes gravis Hllr, 1914, Nova Guinea Zool. **9**: 647 (Alkmar & Lorenz River, SW NG; DRESDEN); 1935, *Ibid.* **17**: 161 (key and identification as this species of record in Trans. Zool. Soc. Lond. **20**: 511, pl. 16, 1915, Mimika & Utakwa Rivers, SW NG).

NW NG: Specimens from Karubaka, 1500 m, Swart Valley, 20.XI.1958, Gressitt seemed to agree with type, but need restudy. Also, Araucaria Camp, 800 m, III. 1939, Toxopeus; Bernhard Camp, 50 m, VII-XI.1938, Olthof (Neth. Ind-Amer. Exped.).

23. **Pantorhytes rufescens** Gressitt, new species Figs. 11a, 12a.

♂. Fairly slender, dorsum dark castaneous red with elytral nodes orange red; sides of body with irregular spots and posterior sutural stripe of golden-green scales; head, pronotum, side of elytron, ventral surfaces and legs with sparse subrecumbent whitish hairs.

Head with portion anterior to eyes slightly longer than broad, narrowed from eyes to antennal insertions and slightly broadened anterior to antennal insertions; front moderately punctured, with a short median groove between anterior portions of eyes and a wide shallow depression between antennal insertions. *Antenna* with club fairly stout and blunt, thickest beyond middle. *Prothorax* 1/5 longer than broad, subglobose, widest well anterior to middle; disc subevenly convex, depressed near middle of base, irregularly punctured, in part weakly rugose at side. *Elytron* 2.5× as long as broad, subelliptical, widest just anterior to middle; disc strongly convex, with 2 prominent nodes, one anterior to the other and the 2 separated by a space slightly larger than a single node; remainder of surface with about 9 subregular rows of strong punctures, the punctures mostly larger

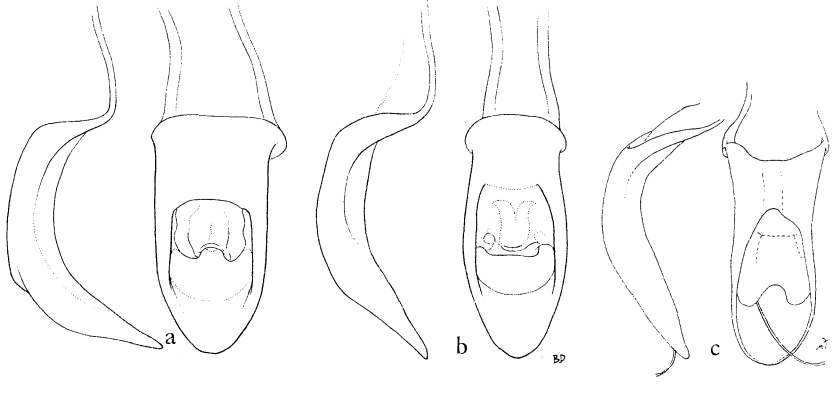


Fig. 12. *Pantorhytes* aedeagi, as in figure 2: a, *rufescens* n. sp.; b, ?*gravis* Hllr, Swart Valley; c, *decempustulatus* (Gestro), Musgrave Range, Papua.

than interspaces longitudinally and in part larger than interspaces transversely, with rows somewhat confused between and around nodes; lateral interstices rather strongly costate. *Ventral surfaces* finely punctured. *Legs* rather slender with hind femur and hind tibia fairly straight. Length 9 mm; breadth 3.5.

Holotype ♂ (BISHOP 7028), Tsenga, 1200 m, Upper Jimmi Valley, NE New Guinea, 15. VII.1955, Gressitt; paratypes, same data, 14-15.VII.

Differs from *gravis* in having front of head weakly grooved, dorsal surfaces almost entirely dark castaneous to pitchy red, and elytron with somewhat irregular to weak ridges.

24. **Pantorhytes montanus** Gressitt, new species Fig. 7e.

♀. Black to dark pitchy red with bright red elytral nodes: head and pronotum black; antenna black with 1st funicle segment reddish apically; elytron reddish brown with outer borders and apex black; disc with 3 conspicuous nodes bright orange red; ventral surfaces and legs black. Dorsum with very sparse greenish hairs, more numerous along side of head, prothorax and elytron, as well as on apical portion of elytron; similar hairs scattered on ventral surfaces and legs.

Head with portion anterior to eyes about as broad as long, narrowed from eyes to somewhat behind middle and then subparallel-sided anteriorly; front of head weakly depressed along median line between eyes and with a moderate flat-bottomed depression on center of snout; surface feebly and somewhat sparsely punctured. *Antenna* fairly short and slender with club nearly 1/2 as broad as long and somewhat evenly oval-elliptical. *Prothorax* about 1/8 broader than long, subevenly rounded at sides, widest just anterior to middle; disc subevenly convex, very weakly depressed postmedially, with surface minutely and sparsely punctured, the punctures a little larger but very sparse at side; a moderate groove parallel to basal margin. *Elytron* 2.3× as long as broad, strongly and subevenly rounded at side, with apex slightly projecting and narrowly rounded-truncate; disc with 3 large prominent rounded nodes, 2 outer ones larger and inner one smaller and near to posterior outer one; remainder of surface with 9 sublongitudinal grooves, in part sinuate because of discal tubercles, the grooves with somewhat widely spaced moderate to weak punctures. *Ventral surfaces* fairly smooth, with only a few punctures on apex of last abdominal sternite. *Legs* moderately thick; hind femur exceeding elytral apex by about 1/8 its length, not very strongly swollen; hind tibia sinuate preapically; hind tarsal segment 1 considerably longer than 2, slightly longer than 3 and much shorter than last. Length 11 mm; breadth 5.5.

Holotype ♀ (BISHOP 7029), Karanka, 1380 m, E. Highlands, NE New Guinea, 17.III. 1959, J. H. Barrett.

Differs from *sexpustulatus* Hllr in being more abbreviated, with head and elytron shorter and prothorax as broad as long.

25. **Pantorhytes sexpustulatus** Heller Figs. 10d, 11b, 15a.

Pantorhytes VI-pustulatus Hllr, 1912, Ent. Mitt. **1**: 309 (Kani Mts, NE NG; DRESDEN).
Pantorhytes sexpustulatus: Hllr, 1935, Nova Guinea Zool. **17**: 161 (key).

NE NG: Zitare vill., 1800 m, 25.XII.1956, Ardley; Funyende, 1200 m, Finisterre Mts,

24.IX.1958, Brandt; Akivitana, 2000 m, nr Kainantu, on *Glochidion*, 10.I.1965, Gressitt. The following are more questionably this species: Kassem Pass, 20. XI. 1964, Sedlacek; Samazing, 2200 m, Melambi River, 21.XII.1956, Ardley; Tuwop, 1350 m, Salawaket Range, 9.IX.1956, Ford; Komba, Wagner (SAM); Sepalakembang, 1920 m, Salawaket, 11.IX.1956, Ford; Matoko, Saidor, Finisterres, 5.IX.1958, Brandt; Baindep, 1260 m, Salawaket, 16.IX. 1956, Ford; Kassam, 1350 m, 28.X.1959, Maa.

26. **Pantorhytes minor** Gressitt, new species Fig. 7f.

♀. Black, slightly tinged with pitchy reddish on antenna and parts of tarsi; elytron reddish brown towards suture from bright orange raised nodes on central portion. Dorsum sparsely clothed with stout oblique pale green to amber-colored setae, and with some scattered metallic pale green scales along side of elytron; ventral surfaces with oblique pale setae and a very few narrow green scales, mostly on hind margin of metasternum adjacent to anterior margin of hind coxa; legs similarly clothed, with bluish green scales becoming more numerous on tibiae and tarsi.

Head about as long as broad anterior to eyes, narrowed from eyes to somewhat behind middle and then distinctly broadened and convex at side of anterior portion of snout; occiput very feebly punctured; interocular area sparsely punctured and with a deep arcuate groove with each end directed towards anterior border of eye; upper surface of snout deeply indented at middle of each side by antennal insertion and with surface moderately punctured, and distinctly concave in anterior 1/2. *Antenna* fairly long and slender; scape hardly thickened apically, extending beyond eye by nearly 1/3 its length; funicle with segment 2 longer than 1, and 3 longer than broad; club subelliptical, slightly constricted at end of 1st segment. *Prothorax* as broad as long, somewhat unevenly convex at side, widest near middle but slightly swollen again between middle and apex; surface with numerous close, low rounded nodes on much of central portion and peripheral areas with shallow punctures. *Elytron* about 2.9× as long as broad, subevenly convex at side in basal 4/5, widest near end of basal 1/3, somewhat projecting and rounded at apex; surface with 10 subregular rows of moderate to weak punctures in slightly depressed grooves and with partial rows of weak to moderate tubercles in interspaces, except for 3 strongly raised rounded-oval nodes, 1st two centered in 3rd interstice, located at about ends of 1st and 2nd fifths and weakly connected by raised interstice, 3rd tubercle separate or barely connected with 2nd and located in 1st interstice just behind 2nd tubercle; minor tubercles strongest near center, just external to connection between 1st and 2nd major tubercles. *Ventral surfaces* fairly smooth, with widely scattered punctures which are lacking on most of last abdominal sternite. *Legs* moderately slender; hind femur slightly swollen beyond middle; hind tibia nearly straight and subcylindrical; hind tarsal segment 1 longer than 2 or 3 and shorter than last. Length 10.8 mm; breadth 4.6.

Holotype ♀ (BISHOP 7030), Karimui, 1000 m, S of Goroka and near NE NG-Papuan border, E. Highlands NE New Guinea, 3.VI.1961, J. L. and M. K. Gressitt.

Differs from *sexpustulatus* Hllr in being smaller, with head constricted and grooved, pronotum distinctly nodose and elytron with both large and small nodes. It is possible that this species may later have to be separated generically or subgenerically because of the strongly constricted head. However, the snout is otherwise as broad as in most spe-

cies of the genus, and not slender as in other forms confused with *Pantorhytes.*

27. **Pantorhytes pallidus** Gressitt, new species Fig. 15b.

♂. Body reddish ochraceous with pronotum and elytral disc yellow-orange; antenna reddish brown, pitchy apically; legs reddish brown, somewhat pitchy on tarsi; elytron with 3 raised smooth nodes, which are not conspicuous because of being approximately same color as rest of disc. Body sparsely clothed above with pale blue hair-scales, denser at side of body and moderately dense on thoracic sterna and last abdominal sternite; side of elytron with several patches of narrow blue scales, somewhat wider than the hair-scales.

Head with portion anterior to eyes slightly longer than broad, narrowed from eyes to 1/3 distance from eyes to end of snout; occiput finely punctured; interocular area strongly swollen, moderately punctured; frontal area moderately depressed in center and with a short median groove between anterior portions of eyes, groove above antennal insertion rather weak, surface finely punctured. *Antenna* slender; scape not quite reaching to hind margin of eye, fairly thick apically; funicle with segments 1 and 2 each about 2× as long as 3; club not quite 2× as long as broad, thickest just beyond middle. *Prothorax* slightly broader than long, evenly convex at side, widest just anterior to middle, moderately grooved parallel to basal margin; disc subevenly convex, weakly depressed near middle of base, rather sparsely punctured. *Elytron* 28× as long as broad, subevenly convex at side, widest just anterior to middle, slightly produced and rounded apically, forming a weak emargination at sutural angle; disc strongly convex, with 9 or 10 partly irregular puncture-rows at middle, punctures fairly small, mostly smaller than interspaces longitudinally; 3 fairly large smooth nodes along median portion, 1st and 3rd larger than 2nd, which is fairly close behind and obliquely external to 1st, with 3rd considerably behind 1st & 2nd, just behind middle. *Ventral surfaces* smooth, moderately punctured at side and on last abdominal sternite. *Legs* fairly slender; hind femur exceeding elytral apex by nearly 1/4 its length, weakly swollen between middle and apex; hind tibia fairly slender, slightly arched; hind tarsus with segment 1 distinctly longer than 2 or 3 and shorter than last. Length 10.5 mm; breadth 4.4.

♀. Dorsum slightly more reddish, with nodes orange-red; a few small patches of blue scales on upper portion of elytral disc. Length 11.3 mm; breadth 5.3.

Paratype. Dorsum paler testaceous than in holotype and allotype. Length 9.6 mm; breadth 4.3.

Holotype ♂ (LEIDEN), Tenma Sigin, Star Range (Sterren Geb.), 1800 m, center of New Guinea, 21.V.1959, Neth. New Guinea Exped.; allotype ♀ (BISHOP 7031), same data but Ok Tenma, 1500 m, 19.V.1959; paratype ♂ (AMNH) Bivak 39A, 2.VII.1959.

Differs from *sexpustulatus* Hllr in having prothorax broader than long, body pale instead of black, and with elytral nodes less convex and less even in size and spacing.

28. **Pantorhytes octopustulatus** Heller

Pantorhytes octopustulatus Hllr, 1935, Nova Guinea Zool. **17**: 158, 161 (Finisterre Mts; DRESDEN).

NE NG: Finschhafen Distr., Wagner (SAM); Cromwell Range, Wagner (SAM).

29. **Pantorhytes decempustulatus** (Gestro) Figs. 7i, 11c, 12c.

Pachyrrhynchus X-pustulatus Gestro, 1879, Ann. Mus. Civ. Genova **14**: 562 (Moroka, Astrolabe Range, Papua; GENOVA).—Behrens, 1887, Stett. Ent. Ztg. **48**: 217.
Pantorhytes X-punctulatus: Heller, 1903, Abh. Ber. Zool. Mus. Dresden **10** (2): 14; 1905, Wien. Ent. Ztg **24**: 307 (key).
Pantorhytes X-pustulatus: Hllr, 1935, Nova Guina Zool. **17**: 161 (key).
Pantorhytes decempustulatus: Hllr, 1931, Col. Cat. **119**: 24.

SE NG: Urikituru to Sogeri, 22.VI.1921, Pockley (AM); Subitana, 600 m, V.1957, Barrett; Bisianumu, 550 m, 24.IX.1955, Gressitt, 11.V.1959, Michener; Kiunga, Fly R., 11.VIII. 1957, Brandt; Musgrave Range, 550 m, 17.VII.1966, Fenner & Mackay (DASF).

Questionable specimens from NW NG: Araucaria Camp, 800 m, III. 1939, Toxopeus; Rattan Camp, 1100 m, II-III.1939, Toxopeus; Lower Mist Camp, 1600 m, 28.I.1939, Toxopeus (LEIDEN).

30. **Pantorhytes gracilis** Gressitt, new species Fig. 7g.

♂. Slender; black; common central portions of elytra, bordered by outer tubercles, reddish orange; nodes slightly brighter reddish orange. Body sparsely clothed with very slender greenish scales or hairs: sparse and scattered on head and pronotum, largely limited to lateral and apical borders on elytron, mostly on sides of ventral surfaces and quite sparse on legs.

Head hardly wider than anterior end of prothorax; portion anterior to eyes about as wide as long, broader basally than apically, surface largely punctured and front bearing a fairly strong subtriangular median depression. *Antenna* rather short and slender; club at least 2× as long as broad. *Prothorax* subglobose, widest slightly anterior to middle; disc subevenly convex, subrugose-punctate, with punctures deeper at sides and in part larger than interspaces. *Elytron* more than 3× as long as broad, subevenly rounded externally, widest anterior to middle, apical portion slightly projecting, disc with 9 rows of fairly regular punctures which are mostly larger than interspaces longitudinally and smaller than interspaces transversely; 5 small prominent round nodes on central portion arranged in a fairly narrow oblique pentagon pointing towards humerus. *Ventral surfaces* fairly smooth. *Legs* not very stout; hind tibia fairly slender and straight except near apex; last hind tarsal segment about as long as 1+2. Length 9 mm; breadth 3.6.

Holotype ♂ (BISHOP 7032), Wamena, 1700 m, Baliem Valley, NW NG, 10-25.II.1960, T. C. Maa; allotype ♀ (LEIDEN), Baliem Camp, 1700 m, 16-27.XI.1938, L. J. Toxopeus; paratypes (LEIDEN, BISHOP), same data as allotype.

Differs from *decempustulatus* in having elytron much narrower, largely red above, with nodes much smaller than interspaces.

Araneus-group

Body rather slender; legs long; elytron with more than 5 raised red nodes, some of them oval or partly merged longitudinally. Only one species at hand.

31. **Pantorhytes araneus** Gressitt, new species Figs. 13, 14a.

♂. Bright shiny brownish red, duller reddish on elytron, pitchy on antennal club and

mandible, black on eye; elytron with 6–8 slightly irregular raised nodes which are reddish orange. Dorsum largely glabrous, with scattered single hair-scales or small groups of narrow whitish blue scales at side and apex; ventral surfaces very sparingly clothed with similar pale bluish hairs or extremely narrow scales; legs with very sparse bluish hair-scales on femora and only a few pale oblique hairs on tibiae and upper portions of tarsi.

Head with portion anterior to eyes slightly longer than broad, distinctly narrowed from eyes to somewhat behind middle and then very gradually widened to near apex; occiput very weakly punctured; interocular area weakly punctured and with some irregular longitudinal creases or ridges; frontal area raised on each side of middle, depressed medially and somewhat flat on apical portion with a slight raised area along middle; eye somewhat longer than deep, moderately convex. *Antenna* fairly small; scape not reaching to hind margin of eye, gradually swollen to apex, funicle with segments 1 and 2 nearly 2× as long as 3; club about 2× as long as broad, widest just before apex. *Prothorax* barely broader than long, weakly convex at side, widest well anterior to middle, moderately grooved near basal margin except at middle; disc rather weakly convex above, depressed near middle of base; surface very sparsely and weakly punctured, slightly wrinkled at sides of disc. *Elytron* not quite 3× as long as broad, moderately rounded in central portion, widest somewhat anterior to middle, produced apically with a very slight emargination at sutural angle; disc rather strongly convex, with a number of irregular rows of punctures and 6 or 7 subrounded nodes of somewhat unequal size, in 2 sublongitudinal rows, left elytron with 3 nodes in each row and right elytron with 4 nodes in inner row, the nodes subequally spaced and all near central portion. *Ventral surfaces* fairly smooth and shiny with sparse weak punctures. *Legs* long and slender; femur extending beyond elytral apex by at least 1/4 its length; hind tibia slender, somewhat arched; hind tarsus with segment 1 longer than 2 or 3 and somewhat shorter than last. Length 11 mm; breadth 4.6.

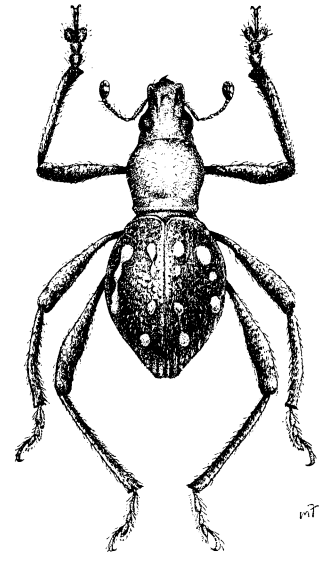


Fig. 13. Dorsal view drawing of *Pantorhytes araneus* n. sp.

♀. Elytron with 1 greenish hair-scale arising from each puncture; elytral nodes partly subelongated and partly fused, about 8 on each elytron. Length 12.5 mm; breadth 5.6.

Holotype ♂ (BISHOP 7033), Oriesa, S. Fore, nr Okapa, E. Highlands, NE New Guinea, I.1964, R. Hornabrook; allotype ♀ (BISHOP), Simi, Tunukau, nr Okapa, IX.1964, Hornabrook; 5 paratypes, Agakamatasa, 27.II.1964, Awanke, II.1964, Okapa 25.III, 10.IV.1964, all Hornabrook.

Differs from *decempustulatus* Gestro in being more elongate, with longer and more slender legs, in being reddish brown instead of black above, and in having elytral nodes smaller, more numerous and in 2 subparallel rows. Differs from *decemverrucosus* Hllr in the same characters and in not having the nodes in 2 oblique rows in an area differently pigmented from rest of surface.

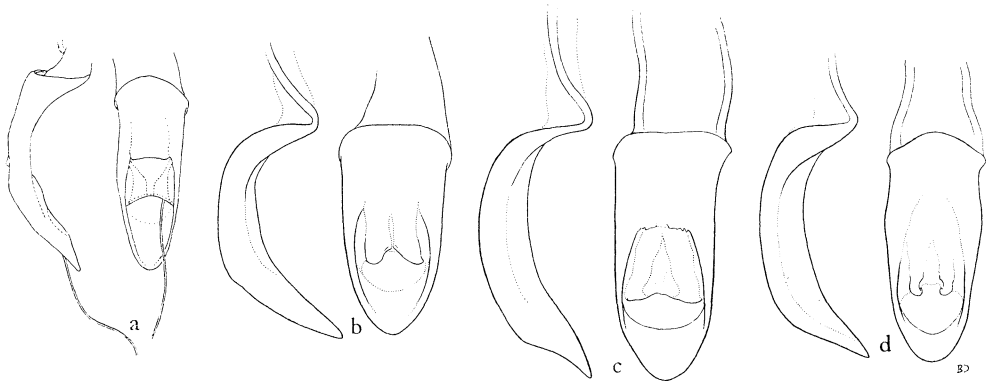


Fig. 14. *Pantorhytes* aedeagi, as in figure 2: a, ***araneus*** n. sp.; b, ***irregularis*** n. sp.; c, ***manni*** n. sp.; d, ***obliquus*** n. sp.

Vibicifer-group

Elytron with raised red strips, or numerous red nodes, or with combinations of nodes and strips.

32. **Pantorhytes irregularis** Gressitt, new species Figs. 14b, 15c.

♂. Fairly short; black, somewhat pitchy black and shiny on elytron with 3 raised strips, 1st in 2nd interstice commencing close to base and extending to not far from apex, in part slightly wider or slightly thinner; 2nd in 5th interstice, slightly shorter than first ridge, fairly slender anteriorly and joined to 3rd ridge which is much stouter and shorter, largely in 7th interstice and forming a strongly swollen node anteriorly and largely obsolete behind middle. Body with very few hairs on upper portions, with sparse bluish green hair-like scales on sides, venter, and legs.

Head slightly wider than anterior end of prothorax; occiput feebly punctured; anterior portion about as wide as long, gradually narrowed anteriorly to eyes; front with a strong median groove, almost ridged at sides. *Antenna* fairly short and stout; scape not reach-

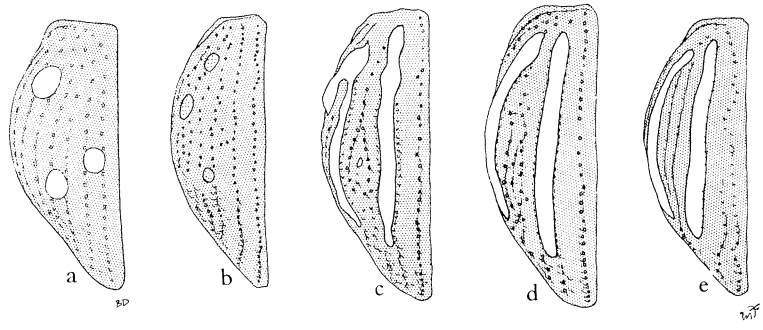


Fig. 15. *Pantorhytes* elytral diagrams: a, ***sexpustulatus*** Hllr, Finisterre Mts; b, ***pallidus*** n. sp.; c, ***irregularis*** n. sp,; d, ***manni*** n. sp.; e, ***arcuatus*** n. sp.

ing middle of eye, fairly stout apically; club more than 2× as long as broad, cylindrical in middle. *Prothorax* about 1/6 longer than broad, subglobose, widest slightly anterior to middle; disc moderately convex, somewhat irregular and largely subrugose-punctate. *Elytron* not quite 3× as long as broad, rounded at side with 3rd discal ridge making lateral outline appear irregular, and apical portion slightly produced; elytral puncture-rows and interstices somewhat irregular, in part confused by raised ridges; punctures in part about as large as interspaces longitudinally, smaller transversely. *Ventral surfaces* finely punctured. *Legs* fairly slender; hind tibia slightly sinuate; hind tarsus with last segment barely longer than 1+2. Length 9.8 mm; breadth 4.3.

Holotype ♂ (BISHOP 7034), Bomberi, 700–900 m, near Fak Fak, SW Vogelkop, W. NG, 5.VI.1959, Gressitt.

Differs from *rarus* in having 3 ridges which are rather irregular, instead of 2 regular strips and a raised node; also differs from *rarus* and from *manni* and *obliquus* in having the interstices and puncture-rows rather irregular.

33. **Pantorhytes manni** Gressitt, new species Figs. 14c, 15d.

♂. Moderately short; black with a slight bluish tinge, elytron with a prominent pair of raised coral red parenthesis-shaped strips, closer anteriorly than posteriorly, the first in second interstice and extending fairly close to base and not far from apex; 2nd in approximately 6th interstice, bending inwards anteriorly and slightly broader there. Dorsum nearly glabrous, a few pale hairs at side of head and lower part of thorax; venter and legs very sparingly clothed with pale hairs.

Head barely broader at eyes than anterior end of prothorax; portion of head anterior to eyes about as broad as long, excluding mandibles, narrowed at antennal insertions; occiput nearly impunctate; frons with a distinct depression in middle just above antennal insertions and somewhat ridged at each side between antennal insertions and eyes. Antennal club elliptical, about 2× as long as broad. *Prothorax* about 1/6 longer than broad, distinctly collared anteriorly and posteriorly, subglobose, widest anterior to middle; disc moderately convex, irregularly and not very strongly punctured, punctures vague on central portion and on side in part nearly as large as interspaces, but shallow. *Elytron* about 2.4× as long as broad, broadly rounded at sides, broadest just anterior to middle, slightly projecting apically; disc strongly convex, 2 regular rows of punctures parallel to suture and 3 parallel to external margin, besides a row on outer side of first ridge and inner side of second; area between ridges otherwise irregularly punctured; punctures in this area in part as large as or larger than interspaces; those in regular rows smaller. *Ventral surfaces* rather smooth. *Legs* rather slender. Length 11 mm; breadth 5.

Holotype ♂ (BISHOP 7035), Murua, 25 m, near Kerema, Gulf Distr., Papua, 20.XII.1964, Sedlacek; paratype, same data, Gressitt, taken on a very large-leaved herb about 3 m in height.

Named for Sir Alan H. Mann, Chief Justice of the Territory of Papua and New Guinea and President of the Trustees, Papua and New Guinea Museum and Art Gallery, who has built up the nucleus of the Papua and New Guinea Museum insect collection.

Differs from *rarus* in having the 2 longitudinal strips very similar, in lacking an isolated round node, in lacking green scales and in having elytral puncturation less regular.

34. **Pantorhytes arcuatus** Gressitt, new species Figs. 8d, 15e.

♂. Black; elytron with 2 long raised red strips: inner one in second punctural interstice, extending from just behind base to beyond 3rd quarter, outer strip in 6th interstice (at middle), extending from near base to almost as far as inner strip; the 2 strips both arcuate, coming fairly close at each end and widely separated in middle, thus forming an ellipse; right elytron with 2 very small red nodes inside the ellipse, near end of basal 1/4. Body largely glabrous above, a few scattered green hair-scales or small scales at side of prothorax and elytron and a few at sides of hind thorax and coxae; legs nearly glabrous.

Head with portion anterior to eyes nearly as broad as long, slightly narrowed from eyes to middle and then very slightly broadened anterior to middle; occiput and interocular area weakly convex and fairly smooth; frontal area with a subtriangular depression, broader anteriorly and fairly flat at bottom; a groove on each side above and behind antennal insertion, and apical portion fairly flat and finely punctured; eye slightly longer than deep, not very prominent. *Antenna* short; scape barely reaching to middle of eye, moderately thickened apically; funicle with segment 1 and 2 each less than 2× as long as 3; club less than 2× as long as broad, broadest beyond middle. *Prothorax* nearly as long as broad, somewhat strongly rounded at side and widest just anterior to middle, distinctly grooved parallel to basal margins; disc moderately convex, slightly depressed near middle and base, somewhat irregular, with vague punctures or weak nodes. *Elytron* 2.6× as long as broad, subevenly rounded at side, widest just anterior to middle, slightly produced and rounded at apex with sutural angle barely emarginate; disc strongly convex, with 10 somewhat depressed rows of moderate punctures at middle; interstices all somewhat raised but 2 red strips more strongly raised. *Ventral surfaces* fairly smooth and weakly punctured. *Legs* moderately slender; hind femur extending beyond elytral apex by about 1/4 its length, moderately swollen and slightly tuberculate or wrinkled before apex; hind tibia somewhat wrinkled and grooved, arched preapically; hind tarsus with segment 1 slightly longer than 2 or 3 and shorter than last. Length 9.5 mm; breadth 4.4.

♀. Elytron with area between raised red strips irregularly punctured, and without any small nodes; sides, ventral surfaces and legs with more numerous greenish hairs or hair-scales. Length 12.3 mm; breadth 6.2.

Holotype ♂ (BISHOP 7036), Werr Valley, nr Menyamya, Morobe Distr., NE New Guinea, 6.IX.1961, L. Hastings; allotype ♀ (DASF), Liyi Valley, nr Menyamya, 1.X.1961, Hastings.

Differs from *rarus* Hllr in having raised elytral strips more nearly parallel and more equal in length and in having pronotal surface less smooth.

35. **Pantorhytes jimmiensis** Gressitt, new species Fig. 8e.

♀. Body bright orange red to blackish: head red, pitchy anteriorly; antenna dark reddish brown, blackish on club; prothorax red with anterior and basal margins pitchy black; elytron dark reddish brown with 2 raised orange red strips joined anteriorly; ventral surfaces reddish pitchy; legs reddish brown, largely pitchy on femora. Body sparse-

ly clothed above with pale greenish blue arcuate hairs and with numerous golden to greenish scales along side of body with a few scattered on pronotum, scales largely in dense patches or strips along side of elytron, on apical declivity behind ends of red strips, and on metepisternum and side of metasternum; rest of ventral surfaces with scattered bluish hairs; legs with slightly denser arcuate pale bluish to bluish white hairs.

Head with portion anterior to eyes as broad as long, narrowed from eyes to just behind middle and subparallel anteriorly; occiput fairly smooth; interocular area fairly flat, with weak punctures and a slightly larger puncture on midline between anterior borders of eyes; frontal area with a shallow median depression at center, slightly broader anteriorly, and apical portion fairly flat and more strongly punctured than remainder, an oblique groove above and behind antennal insertion; eye slightly longer than deep, fairly prominent. *Antenna* short; scape not quite reaching to hind margin of eye, gradually thickened to apex; funicle with segments 1 and 2 almost 2× as long as broad; club less than 2× as long as broad, thickest near middle. *Prothorax* as long as broad, weakly convex at side, broadest well anterior to middle, weakly grooved parallel to basal margins; disc rather weakly convex, depressed near middle of base; surface weakly and irregularly punctured, slightly striate or subcorrugate vertically at side. *Elytron* 2.7× as long as broad, subevenly convex at side to near apex, widest somewhat anterior to middle, slightly produced apically with a weakly emarginate truncation at extreme apex; disc strongly convex, central portion with 2 sublongitudinal raised red stripes which are joined subtransversely at anterior ends at end of basal 1/6, inner strip extending to end of 2nd 1/3 and outer strip extending to just behind middle; punctures in fairly regular depressed rows toward suture from inner strip (2 puncture-rows) and towards outer margin from outer strip (6 subregular puncture-rows) and punctures between raised strips irregular. *Ventral surfaces* fairly smooth, with last abdominal sternite somewhat wrinkled. *Legs* moderately stout; hind femur extending slightly beyond elytral apex, moderately swollen and wrinkled preapically; hind tibia fairly straight in basal 2/3, arched preapically, hind tarsus with segment 1 distinctly longer than 2 or 3, shorter than last. Length 10.6 mm; breadth 5.3.

Holotype ♀ (BISHOP 7037), Tsenga, 1200 m, upper Jimmi Valley, NE New Guinea, 16. VII.1955, Gressitt.

Differs from *rarus* Hllr in being red instead of black above and in having numerous green setae on dorsum; also in having raised elytral stripes more nearly parallel and joined anteriorly. Differs from *manni* n. sp. in most of the same points except elytral strips more similar but more slender, and joined in *jimmiensis*.

36. **Pantorhytes obliquus** Gressitt, new species Figs. 14d, 17a.

♂. Moderately narrow; black; elytron with 2 raised strips, both somewhat oblique, 1st in 3rd interstice and the other in 5th interstice, the 1st narrower anteriorly and on central portion, 2nd broader anteriorly, more oblique posteriorly and starting rather close to base and terminating near middle. Dorsum largely glabrous, but with a few sparse pale hairs on pronotum and some sparse patches of metallic blue-green scales or scattered scales on lower sides of elytron, most of these scales fairly short; ventral surfaces with some scales and some hairs; legs with sparse pale hairs.

Head with eyes not very prominent; portion of head anterior to eyes as broad as long, narrowed anterior to eyes and then subparallel; occiput feebly punctured; frons with a fairly broad median depression with a raised line along middle anteriorly; side more heavily punctured. *Antenna* with club elliptical, nearly 2× as long as broad. *Prothorax* very slightly longer than broad, subglobose, widest very slightly anterior to middle; disc strongly convex, feebly irregularly punctured. *Elytron* slightly more than 3× as long as broad, subevenly rounded at side and slightly produced apically; disc strongly convex, with 9 subregular puncture-rows in grooves, the punctures moderately strong along suture and weaker externally, groove 5 irregular and partly obsolete. *Ventral surfaces* largely smooth. *Legs* fairly slender; hind tibia sinuate; hind tarsus with last segment as long as 1+2. Length 9.5 mm; breadth 4.4.

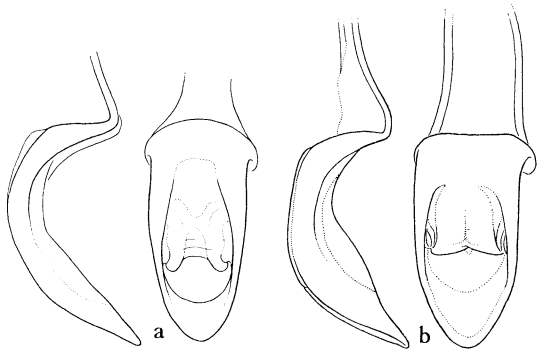


Fig. 16. *Pantorhytes* aedeagi, as in figure 2: a, *vibicifer* Hllr, Goilala; b, *polynodus* n. sp.

Holotype ♂ (BISHOP 7038), Karimui, 1080 m, S of Goroka, NE NG, 9–13. VII.1963, J. Sedlacek; 3 paratopotypes, same data, 3 paratopotypes, 6.VI.1961, L. & M. Gressitt. Questionable specimens Oria, Oriesa, nr Okapa, I.1964, Hornabrook.

Differs from *rarus* in being slightly smaller, in having elytral strips closer, shorter, less parallel-sided and more oblique; also in lacking an isolated node, and in having 2 long strips with fewer punctures between and with longitudinal grooves more regular but with largely weaker punctures.

37. **Pantorhytes vibicifer** Heller Figs. 16a, 17b.

Pantorhytes vibicifer Hllr, 1903, Abh. Ber. Zool. Mus. Dresden **10** (2): 13, 15 (Aroa River, Papua; DRESDEN); 1935, Nova Guinea Zool. **17**: 160 (key).

SE NG: Loloipa 1400 m, Goilala Subdistr., Owen Stanley Mts, 16.I.1958, Brandt; Tapi-

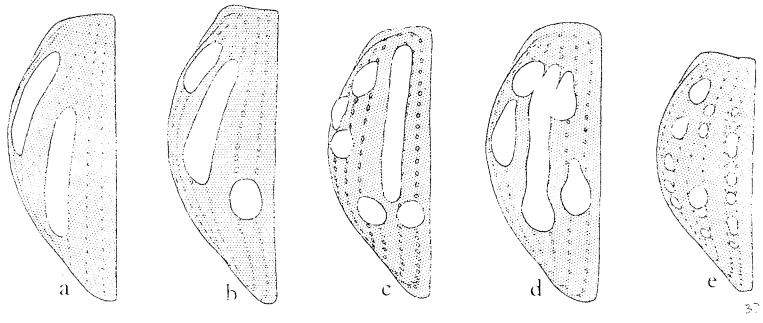


Fig. 17. *Pantorhytes* elytral diagrams: a, *obliquus* n. sp.; b, *vibicifer* Hllr, Goilala; c, *?papuanus* Gestro, Karimui, NE NG; d, *rubroverrucatus* (Tryon), Inauwauni; e, *polynodus* n. sp.

ni, 975 m, Goilala, 16.XI.1957, Brandt.

38. **Pantorhytes rarus** Heller

Pantorhytes rarus Hllr, 1903, Abh. Ber. Zool. Mus. Dresden **10** (2): 12, 15 (Papua Gulf; DRESDEN), 1935, Nova Guinea Zool. **17**: 160 (key).

NE NG: Questionably this species: Karimui, 1080 m, 8.VII.1963, Sedlacek; Orie, nr Okapa, I.1964, Hornabrook; Asakamotaka, nr Okapa, 2.III.1964, Hornabrook.

39. **Pantorhytes decemverrucosus** Heller

Pantorhytes decemverrucosus Hllr, 1935, Nova Guinea Zool. **17**: 159, 161 (S. NW New Guinea; DRESDEN).

No additional material seen.

40. **Pantorhytes papuanus** Gestro Figs. 17c, 18a.

Pantorhytes papuanus Gestro, 1923, Boll. Soc. Ent. Ital. **55**: 63 (Purari River, Papua; GENOVA).

NE NG: The following are questionably this species: Koibuga, 6.VII.1963, Clissold; Karimui, 1080 m, 11.VII.1963, Sedlacek; Bemai area, E. Highlands, 1300 m, Cole.

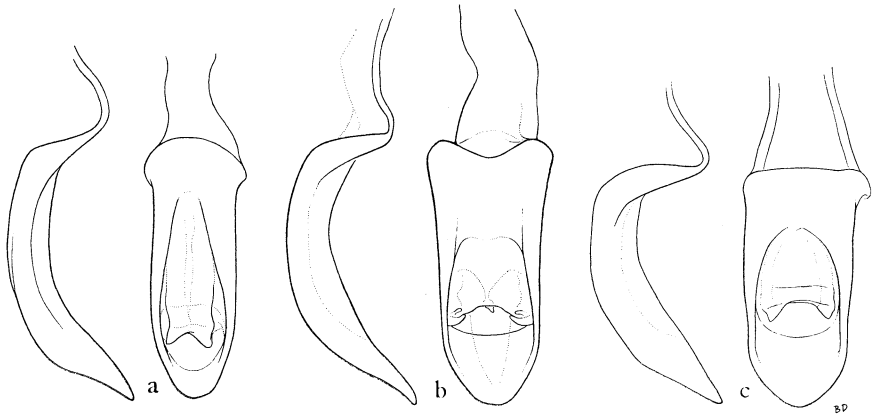


Fig. 18. *Pantorhytes* aedeagi, as in figure 2: a, *papuanus* Gestro, Karimui, NE NG; b, *goilalae* n. sp.; c, *rubroverrucatus* (Tryon), Inauwauni.

41. **Pantorhytes interruptus** Gressitt, new species Fig. 8c.

♀. Body black with several raised orange red areas on central portion of elytron, consisting partly of isolated nodes and partly of raised strips or partially fused nodes. Dorsum very sparsely clothed with oblique greenish to whitish hairs, a little more numerous on sides of body and partly consisting of very narrow adpressed scales; ventral surfaces similarly clothed but with very few hairs on abdomen; legs moderately clothed with stout greenish hairs.

Head anterior to eyes about as long as broad, narrowed from eyes to just behind middle and subparallel-sided anteriorly; occiput minutely and sparsely punctured; interocular

area with punctures a little more numerous and with a small fovea on median line just anterior to central portions of eyes; upper surface of snout with a moderately large fairly shallow depression at center and with a narrow depression on each side, with most of surface minutely punctured and with a few scattered moderate punctures. *Antenna* short; scape barely reaching to middle of eye, somewhat gradually widened to near apex; funicle with segments 1 and 2 subequal, each 2× as long as 3; club broadly elliptical, not quite 2× as long as broad. *Prothorax* as broad as long, subevenly rounded at side, widest somewhat anterior to middle; surface subevenly convex except for slight depression near middle of basal margin, very sparsely and minutely punctured, with only a few vague larger punctures at side. *Elytron* not quite 3× as long as broad, subevenly convex at side in basal 4/5, widest near end of basal 2/5, somewhat protruding and obtusely rounded apically, forming a shallow common emargination at sutural angle; surface subevenly convex, with 9 subregular rows of fairly weak punctures in shallow grooves, partly interrupted by large assemblage of raised nodes and strips on central portion as follows: interstice between puncture rows 1 and 2 with a more or less continuous raised strip in central 1/3, consisting of more or less fused nodes; a series of 4 or 5 raised areas in 3rd interstice, including a larger strongly raised node just behind middle; next a large rounded node at end of basal 1/5 overlapping 4th and 5th interstices, followed on left elyron by a small node slightly detached; 5th interstice with a more or less continuous strip from end of basal 1/5 to end of basal 3/5 with 1 or 2 slightly detached and slightly displaced nodes at anterior end beside large node of proceeding row. *Ventral surfaces* fairly smooth, with scattered fine punctures on all of abdominal segments. *Legs* moderately stout; hind femur hardly exceeding elytral apex, moderately swollen preapically; hind tibia fairly stout, slightly flattened and bent before apex. Length 13.5 mm; breadth 5.8.

Holotype ♀ (BISHOP 7039), Sibog, 1800? m, Saidor Subdistr., Finisterre Range, Huon Peninsula, NE New Guinea, 27.V–5.VI.1958, W. W. Brandt.

Differs from *octopustulatus* Hllr in having head and pronotum smooth instead of wrinkled above and elytron with 3 series of more or less connected nodes and ridges, plus 2 larger more isolated nodes.

42. **Pantorhytes corallifer** Heller

Pantorhytes corallifer Hllr, 1903, Abh. Ber. Zool. Mus. Dresden **10** (2): 12, 15 (Aroa River, Papua; DRESDEN); 1905, Wien. Ent. Ztg **24**: 307 (key); 1935, Nova Guinea Zool. **17**: 160 (key).

No additional material seen.

43. **Pantorhytes goilalae** Gressitt, new species Fig. 18b.

♀. Black, elytron with 5 strongly raised shiny red areas: a round node largely in first interstice just behind middle; a round node largely in 2nd interstice somewhat anterior to middle; a round node in 3rd interstice well behind middle and continuing forward as a long raised strip to just anterior to middle; a round node on 4th interstice and parts of 3rd and 5th about 1/6 elytral length from base; and a round node on 5th interstice near middle. Body rather sparingly clothed with narrow greenish scales, large-

ly widely scattered but forming a few weak spots on elytra: rather scarce on head, mostly located at sides; rather evenly and sparsely scattered on prothorax; rather limited on elytra except on sides and apical portions where there are about 10 small irregular spots, mostly near outer margin and posterior portion of sutural margin, with 2 located in 6th interstice behind middle; ventral surfaces with rather sparse scattered scales, slightly denser on mesopleuron and fore coxa; legs sparsely clothed with greenish scale-hairs; scales on head and pronotum largely extremely narrow, those on elytra and ventral surfaces partly fairly broad and short, partly very narrow.

Head barely broader than anterior end of prothorax; portion anterior to eyes slightly longer than broad; occiput rather even, feebly punctured; frons with a deep impression behind antennal insertions, continuing as a narrow groove to between eyes; rest of surface moderately punctured. *Antenna* not reaching to base of prothorax; scape weakly sinuate, nearly as long as funicle; club oval, nearly 2× as long as broad. *Prothorax* 1/6 longer than broad, rounded-convex at side with broadest point slightly anterior to middle; base collared a little more distinctly than apex; disc subevenly convex, with scattered punctures, in part moderately distinct and in part somewhat vague, those at middle of side mostly about as large as interspaces. *Elytron* nearly 3× as long as broad, subevenly convex at side and briefly rounded at apex with sutural indentation rather weak; disc very strongly convex, with 9 rows of punctures in deep grooves at middle, the rows modified by the borders of the 5 large nodes described under color; punctures in part as long as, or larger than, interspaces longitudinally but smaller transversely; external margin slightly concave in lateral view at middle. *Ventral surfaces* rather feebly punctured. *Legs* only moderately stout; hind tibia somewhat sinuate and subrugose; hind tarsus with last segment longer than 1+2. Length (rostrum directed downward) 10.8 mm; breadth 4.4.

Holotype ♂ (BISHOP 7040), Tapini, 975 m, Goilala Subdistr., Owen Stanley Mts., Papua, 16-25.XI.1957, W. W. Brandt; paratype, Tororo, 1500 m, Goilala, 21-24.II.1958, Brandt.

Differs from *rubroverrucatus* Tryon in being slightly smaller, in having the prothorax more widened at side, and elytron with only one instead of two elongate raised strips and with nodes a little differently arranged.

44. **Pantorhytes rubroverrucatus** (Tryon) Figs. 8f, 17d, 18c.

Pachyrhynchus rubro-verrucatus Tryon, 1891, Colonial Rep. British New Guinea, Ann. Rep. 1889-1890, Lond. **6**: 72 (Paumomu River, nr Port Moresby; BMNH).—Faust, 1899, Ann. Mus. Civ. Genova **40**: 28.—Heller, 1903, Abh. Ber. Zool. Mus. Dresden **10** (2): 12, 15 (key; reproduction of original description); 1905, Wien. Ent. Ztg **24**: 107 (key); 1935, Nova Guinea Zool. **17**: 160 (key).

SE NG: Yule I, 16.XI.1933, Oldham (AM); Bushmekeo, Kairuku Subdistr., X.1962, II. 1963, Anderson; Inauwauni vill, 32 km from Beipa'a Agr. Stn, Kairuku Subdistr., 6.X. 1962, Anderson.

45. **Pantorhytes polynodus** Gressitt, new species Figs. 16c, 17e.

♂. Fairly slender. Shiny black; elytron with about 15 round or oval nodes of different sizes arranged in 3 subregular rows, 1st row in 1st interspace after sutural strip

and including about 8 nodes; 2nd row with 1 large and 3 small nodes in 3rd interspace, and 4th row of 2 moderate and 2 small nodes in 5th interspace, the 1st node largest and overlapping on 4th interspace. Body largely glabrous above, a few sparse greenish hair-scales on sides of head and prothorax, postmedian pronotal depression and lower side and ventral surfaces and legs sparsely clothed with green scale-hairs.

Head slightly wider than anterior end of prothorax; preocular portion slightly longer than broad; occiput with rather sparse fine punctures; front with a fairly deep subelongate depression. *Antenna* with club fully 2× as long as broad. *Prothorax* nearly 1/4 longer than broad, subglobose, distinctly collared anteriorly and posteriorly and widest somewhat anterior to middle; disc strongly convex, fairly smooth and largely minutely punctured except on lower sides and on postmedian depression. *Elytron* not quite 3× as long as broad, subevenly rounded at side, widest just anterior to middle, and produced apically; disc strongly convex, with 9 punctured grooves which are fairly regular except as modified by larger nodes (described in previous paragraph); punctures mostly about as large as interspaces longitudinally and smaller transversely. *Ventral surfaces* weakly punctured. *Legs* fairly slender with femora weakly swollen; hind tibia nearly straight; hind tarsus with last segment about as long as 1+2. Length 9.6 mm; breadth 4.6.

♀. Elytra broader; nodes a little more numerous, averaging smaller and partly elongate-oval in 1st row, and averaging slightly larger and more uniform in size in 2nd and 3rd rows.

Holotype ♂ (BISHOP 7041), Kiambavi, 1500 m (?), Saidor Subdistr., Finisterre Mts., Huon Pen., NE NG, 1-28.VIII.1958, W. W. Brandt; allotype (BISHOP), same data: 9 paratopotypes, same data; 1 paratype, Matoko, Saidor Subdistr., 28.VIII.1958, Brandt.

Differs from *multipustulosus* in having far fewer nodes and in having them concentrated in 3 long rows.

46. **Pantorhytes multipustulosus** Heller

Pantorhytes multipustulosus Hllr, 1935, Nova Guinea Zool. **17**: 157, 161 (Bolan & Komba Distr., Finisterres; DRESDEN).

NE NG: Zitara vill, 1800 m, Melambi River, Morobe Distr., 25.XII.1956, Ardley.

Squamistriatus-group

Elytron with somewhat raised interstices, but with conspicuous stripe, and lesser lateral one, formed of dense coppery gold scales on wide, more weakly raised interstice. Only one species at hand.

47. **Pantorhytes squamistriatus** Gressitt, new species Fig. 8g.

♀. Body brownish red to pitchy, in part clothed with dense golden scales or sparser green scales: head red, pitchy anteriorly; antenna pitchy red; prothorax red with anterior margin and sternum pitchy; elytron dark reddish brown with conspicuous scale markings; ventral surfaces pitchy brown; legs reddish brown. Dorsum in large part sparsely clothed with oblique bluish hairs or narrow hair-scales; 2nd elytral interstice with a long stripe formed of brilliant reddish golden scales on slightly raised area and interrupted twice behind mid-

dle, the entire stripe occupying about 3/4 length of elytron; another incomplete stripe in 6th interstice just anterior to middle; side of elytron with both bluish green hair-scales and small golden green scales; ventral surfaces largely glabrous but with moderately dense pale bluish white to greenish hair-scales and scales at side of hind thorax and 1st abdominal sternite; legs moderately clothed with whitish hairs or hair-scales.

Head with portion anterior to eyes about as broad as long, narrowed from eyes to just behind middle and subparallel anteriorly; occiput hardly punctured; interocular area weakly punctured and with some longitudinal wrinkles or creases; frontal area with a depressed triangular area at center, a slightly oblique depression above and behind antennal insertion and apical portion slightly depressed and distinctly punctured at each side; eye barely longer than deep, strongly convex. *Antenna* fairly slender; scape reaching to about middle of eye, moderately thickened near apex; funicle with segment 2 fully 2× as long as 3; club just over 2× as long as broad, widest just beyond middle. *Prothorax* slightly broader than long, moderately convex at side, widest somewhat anterior to middle, slightly grooved parallel to basal margin; disc moderately convex, largely covered with small nodes which are more or less touching on central portion and become more widely spaced and weaker towards side. *Elytron* nearly 3× as long as broad, subevenly convex on central portion of side, widest somewhat anterior to middle, more or less projecting apically and very briefly subtruncate at extreme apex; disc strongly convex, with 9 puncture rows which are distinctly depressed but with weak or indistinct punctures, the interspaces all more or less raised, largely bearing small nodes which in part run together, portions bearing dense golden scales are less strongly raised, and more even. *Ventral surfaces* rather smooth, finely punctured at side and on last abdominal sternite. *Legs* fairly slender; hind femur extending somewhat beyond elytral apex, weakly swollen preapically; hind tibia fairly slender, moderately sinuate; hind tarsal segment 1 distinctly longer than 2, slightly longer than 3 and shorter that last. Length 11.5 mm; breadth 4.9.

Holotype ♀ (BISHOP 7042), Hegeturu, 2050 m, Lufa area, E. Highlands, NE New Guinea, 1962, Leonard B. Glick (DASF H/1035).

Differs from other species in having elytral raised strips densely covered with rounded metallic red-gold scales.

DIVISION C

Body relatively slender and legs fairly long and slender; elytron with numerous small or minute nodes or irregularities, generally black; dorsum generally clothed with hairs or scales.

Papillosus-group

Dorsum largely clothed with metallic greenish scales above with somewhat mottled patterns of scales and nodes.

48. **Pantorhytes papillosus** Heller

Pantorhytes papillosus Hllr, 1903, Abh. Ber. Zool. Mus. Dresden **10** (2): 11, 15 (Aroa River, Papua; DRESDEN); 1905, Wien. Ent. Ztg **24**: 307 (key); 1935, Nova Guinea Zool. **17**: 160 (comparisons).

No additional material seen.

49. **Pantorhytes lichenifer** Gressitt, new species Figs. 8i, 19a.

♂. Moderately stout; black; femora and tibiae pitchy reddish black; pronotum and elytron rather densely clothed, except on higher nodes, with short metallic green to silvery scales; also a few scattered whitish hairs on pronotum; head, ventral surfaces and legs very sparsely clothed, a few greenish scale hairs on sides of ventral surfaces and sparse whitish hairs on legs.

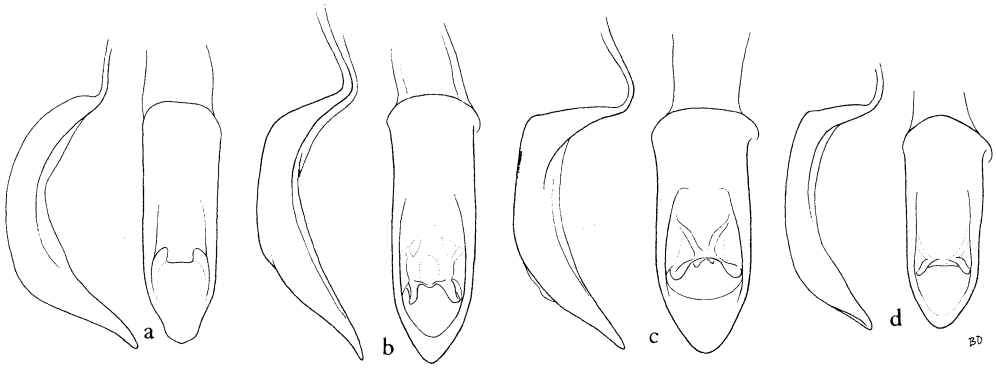


Fig. 19. *Pantorhytes* aedeagi, as in figure 2: a, *lichenifer* n. sp.; b, *maai* n. sp.; c, *algifer* n. sp.; d. *varinodis* n. sp.

Head no broader than anterior end of prothorax; portion anterior to eyes barely longer than broad; occiput feebly punctured; front shallowly grooved medially, raised on each side, moderately punctured. Antennal club just over 2× as long as broad. *Prothorax* slightly longer than broad, weakly convex at side, broadest between middle anterior end; disc with a few slightly raised irregular areas near side; otherwise rather finely punctured. *Elytron* 2.7 × as long as broad, subevenly rounded at side, slightly projecting at apex; disc strongly convex with many small nodes and some fairly large nodes, both sizes partly in longitudinal rows. *Ventral surfaces* fairly smooth, finely punctured. *Legs* fairly long and slender; hind femur and hind tibia somewhat sinuate. Length 12 mm; breadth 5.3.

Holotype ♂ (BISHOP 7043), Mt. Kaindi, 2300 m, 16 km. SW of Wau, Morobe Distr., NE New Guinea, 8-9.VI.1962, J. Sedlacek; allotopotype ♀, (BISHOP), 29.III.1966, E.E. & J.L. Gressitt; paratopotypes, various months, Sedlacek & Gressitt families; paratypes, Nami Creek, Sedlacek; Edie Creek, 2100 m, 2.X.1964, Sedlacek; Bulldog Rd., 32 km S of Wau, 2800-2900 m, 30.V.1962, J. Sedlacek.

Differs from *papillosus* Hllr in having front of head flat and elytron with two distinct sizes of nodes, some fairly large.

50. **Pantorhytes maai** Gressitt, new species Fig. 19b.

Pantorhytes sp., Gressitt, 1966, Pac. Ins. **8** (1): 295, fig. 1f (lichen growth).

♂. Moderately stout, somewhat produced posteriorly; black; front of head nearly glabrous;

pronotum with only a few narrow greenish scales, mostly on basal portion at side; elytron with numerous metallic green scales, mostly about 2× as long as broad and rather sparse on basal portion; ventral surfaces with a very few narrow green hair-scales; legs with a very few pale hairs.

Head narrower than anterior end of prothorax; portion anterior to eyes about as broad as long; occiput smooth, slightly wrinkled just behind eyes; frons moderately convex and finely punctured, a very small depression between eyes. Antennal club ovate, over 2× as long as broad. *Prothorax* about as broad as long, feebly convex at side, widest somewhat anterior to middle; disc depressed behind center, most of surface weakly rugose, with some small low nodes. *Elytron* just over 3× as long as broad, moderately rounded at side, narrowed and produced apically with apex forming an obtuse angle at suture; disc strongly convex, noticeably raised along suture; surface with small and minute nodes, largely in longitudinal rows but unequally spaced with some wide gaps; without distinct punctures except for a few along central portion of external margin. *Ventral surfaces* fairly smooth. *Legs* fairly long and smooth; hind femur weakly thickened beyond middle; hind tibia slightly sinuate. Length 11.4 mm; breadth 4.6.

♀. Similar to ♂ but somewhat stouter. Length 12.5 mm; breadth 5.6.

Holotype ♂ (BISHOP 7044), Moife, 2100 m, 15 km NW of Okapa, Eastern Highlands, NE New Guinea, 7-14.X.1959, T. C. Maa; allotopotype ♀ (BISHOP) same data; paratopotypes, same data, and Purosa, 1700 m, 17-25.V.1966, Tawi (Gressitt); Aiyura, XI.1958, *Pipturus*, IV.1959, Barrett; Ilafo, nr Okapa, 7.I.1965, Szent-Ivany; Okapa, 24.VIII.1964, Sedlacek; Okapa, I-III.1964, Hornabrook.

Differs from *papillosus* Hllr in having front of head without median groove and with dorsal body scales shorter and sparser at pronotum; differs from *lichenifer* n. sp. in having pronotum somewhat granulose and nodose and with scales somewhat narrower and elytral apex much more strongly emarginate.

51. **Pantorhytes algifer** Gressitt, new species Figs. 19c, 21a.

♂. Small, rather narrow, attenuated posteriorly; black, in part tinged with pitchy red; femora and tibiae with basal and median portions largely reddish. Dorsum moderately clothed with golden green scales, mostly 2-3× as long as broad; front of head and legs also with sparse whitish subrecumbent hairs.

Head distinctly narrower than prothorax, portion anterior to eyes slightly broader than long and subparallel-sided; occiput rather smooth; front rather convex, finely punctured. Antennal club nearly 3× as long as broad. *Prothorax* nearly 1/4 longer than broad, weakly swollen at side, widest well anterior to middle and weakly narrowed posteriorly; disc weakly convex, depressed behind center; surface only slightly irregular and finely punctured. *Elytron* 3× as long as broad, moderately rounded at side, narrowed and produced apically, widest somewhat anterior to middle; disc strongly convex, suture somewhat prominently raised just behind center; surface with some incomplete rows of very fine nodes, mostly on central portion, but also along suture and more minute ones on other portions. *Ventral surfaces* rather smooth and feebly punctured. *Legs* quite slender; hind femur slightly thickened beyond middle; hind tibia distinctly sinuate. Length 8.4 mm; breadth 3.7.

Holotype ♂ (BISHOP 7045), Mt. Giluwe, 2500-2600 m, 31.V.1963, J. Sedlacek; allotopo-

type ♀, 2550 m, 27.V.1963, J. Sedlacek; paratypes, Tomba, Mt Hagen, 2500 m, 24.V.1963, Sedlacek; Kepilam, 2450–2600 m, 22.VI.1963, J. Sedlacek; paratypes, Lake Sirunki (Iviva), 2800–2900 m, 15.VI.1963, J. Sedlacek; more same data as preceding but 5.VI.1966, J. L. Gressitt; W of Wabag, 2020 m, 13.VI.1963, Sedlacek.

Differs from *papillosus* Heller in being much smaller, more slender, with elytron having smaller nodes and with scales on dorsum narrower.

52. **Pantorhytes varinodis** Gressitt, new species Figs. 19d, 21b.

♂. Small and slender, narrowed posteriorly. Shiny black; antenna reddish except for club; legs largely reddish with distal portions of femora somewhat pitchy. Pronotum with scattered golden green scales which are partly 2 or 3× as long as broad; elytron moderately clothed with golden green scales, partly nearly as broad as long; head and legs very sparsely clothed with pale hairs; ventral surfaces with a few narrow green scales and few pale hairs.

Head narrower than apex of prothorax; portion anterior to eyes barely longer than broad; occiput largely smooth, a few punctures anteriorly; front moderately convex and punctured, shallowly depressed in center near antennal insertions. *Antennal club* narrowly ovate, 2× as long as broad. *Prothorax* as broad as long, moderately convex at side, widest at middle; disc feebly raised, depressed behind center; surface rather closely rugose to nodose. *Elytron* fully 3× as long as broad, unevenly convex at side, widest well anterior to middle and narrowly produced posteriorly; suture rather strongly raised and basal margin raised; disc moderately convex, with partly subregular rows of small tubercles and nodes. *Ventral surfaces* smooth. *Legs* long and slender with apical portions on femora moderately thickened; hind tibia slightly sinuate. Length 9.6 mm; breadth 3.6.

Holotype ♂ (BISHOP 7046) Miramar, 1800 m, Asaro Valley, Eastern Highlands, NE New Guinea, 27.VI.1955, J. L. Gressitt; allotopotype ♀ (BISHOP), same data; paratopotypes, same data; paratypes, Keglsugl, 2500–2700 m, Mt Wilhelm, 1.VII.1963, J. Sedlacek; Daulo Pass, 2400 m, 7.VII.1963, Sedlacek; Mt Wilhelm, 2800–2900 m, 6.VII.1963, Sedlacek.

Differs from *papillosus* Heller in being smaller, narrower, with front of head shallowly depressed apically instead of grooved medially, and with elytron distinctly raised on suture and having only quite small tubercles.

Pilosus-group

Dorsum largely clothed with hairs or narrow hair-scales, generally green in color.

53. **Pantorhytes pilosus** Heller Figs. 8h, 20a.

Pantorhytes pilosus Hllr, 1935, Nova Guinea Zool. **17**: 159 (Edie Creek, NE NG; DRESDEN).

NE NG: Many, Mt Kaindi, 2350 m, 24.III.1966, Gressitt, III–VI.1966, Gressitt & family; Edie Creek, 2100 m, X.1964, Sedlacek; Mt Kaindi, IV.1965, Szent-Ivany; Bulldog Road, 2200–2500 m, V.1962, Sedlacek.

54. **Pantorhytes samuelsoni** Gressitt, new species

♀. Body largely reddish brown, somewhat paler on top of head on basal halves or

more of femora and basal 5/6 or so of tibiae, darker pitchy brown on borders of pronotum and elytra, and on ventral surfaces. Dorsu n with fairly numerous subadpressed golden green to whitish green hairs on pronotum and elytron, except anterior portion of pronotum largely glabrous; dorsal surface of head largely glabrous; ventral surfaces with very few hairs except for some patches of bluish green to whitish hairs along side; legs with rather sparse suberect pale to bluish hairs.

Head anterior to eyes slightly longer than broad, narrowed from eyes to 1/3 distance to apex and then subparallel anteriorly; eye slightly longer than deep, not very prominent. *Antenna* slender; scape reaching to hind margin of eye, moderately swollen apically; funicle with segments 1 and 2 subequal, each 2× as long as 3 or any of following: club evenly elliptical, widest just beyond middle. *Prothorax* nearly as long as broad, weakly convex at side, widest well anterior to middle; surface somewhat uneven, with some irregular raised areas and weak nodes or reticulations, transversely depressed 1/4 length from base. *Elytron* just over 3× as long as broad, subevenly convex at side, widest at end of basal 1/3, moderately projecting and subrounded-truncate apically; surface moderately convex, slightly uneven, with very indistinct rows of punctures, and with 3 partial rows of moderate sized nodes, 1st with about 6 nodes, 2nd with about 4 and 3rd with 2 smaller nodes; in addition, a number of minute tubercles rather vaguely arranged in irregular rows alternating with the major nodes. *Ventral surfaces* largely smooth, with scattered weak punctures. *Legs* rather slender; hind femur slightly exceeding elytral apex, weakly swollen preapically; hind tibia slender, sinuate; hind tarsal segment 1 longer than 2 or 3, but distinctly shorter than last. Length 14 mm; breadth 5.7.

Holotype ♀ (BISHOP 7047), 20 km SSW of Kabwum, 2700–2800 m, Saruwaged Range, Huon Peninsula, NE New Guinea, 11.VIII.1966, G. A. Samuelson; 3 paratopotypes, same data.

Differs from *pilosus* Hllr in being larger, more greenish, with pronotum subrugose instead of smooth, front of head closely punctured, and elytron with about 10 moderate tubercles instead of 4–6.

55. **Pantorhytes rugosus** Gressitt, new species Fig. 20b.

♂. Body moderately slender, blunt apically. Black, surfaces somewhat tinged with red, particularly on head, base and side of elytron, ventral surfaces and legs; slender portions of femora more distinctly red. Pronotum and elytron densely clothed with metallic golden green scale hairs, mostly extremely narrow and hair-like, but a few normal subrounded

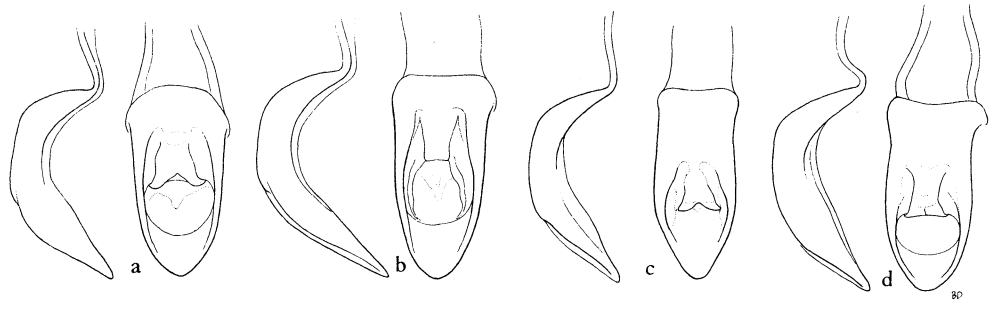


Fig. 20. *Pantorhytes* aedeagi, as in figure 2: a, *pilosus* Hllr, Mt Kaindi; b, *rugosus* n. sp.; c, *chimbuensis* n. sp.; d, *waghianus* n. sp.

scales present; head with only a very few pale hairs; ventral surfaces and legs likewise with very thinly scattered pale hairs.

Head barely broader than anterior end of prothorax; portion anterior to eyes slightly broader than long; occiput finely punctured; frons with a distinct median groove, raised on each side and moderately punctured. *Antennal club* elliptical, nearly 2× as long as broad. *Prothorax* as broad as long, widest anterior to middle and narrowed to base; disc weakly convex, depressed posteriorly; surface uneven, with some granules anteriorly and some wrinkles or incomplete ridges and nodes on outer portions. *Elytron* nearly 3.5 × as long as broad, subevenly convex at side, widest just anterior to middle, slightly produced apically with sutural angle slightly arched; suture distinctly raised with some weak nodes posteriorly; disc unevenly convex, with irregular tubercles, particularly concentrated along central portion but also parallel to suture and a few irregularities on side near external margin. *Ventral surfaces* smooth and weakly punctured. *Legs* slender; hind femur weakly swollen apically; hind tibia nearly straight. Length 10 mm; breadth 4.

♀. Length 11.5 mm, breadth 5.2.

Holotype ♂ (BISHOP 7048), Mt Giluwe, 2500-3300 m, 2.VI.1963, M. Sedlacek; allotopotype ♀ (BISHOP), same data but 2-4.VI.1963, J. Sedlacek; paratopotypes, same data as holotype and allotype.

Differs from *pilosus* Heller in being smaller, narrower and more rugose and tuberculate, hair-scales partly broader.

56. **Pantorhytes chimbuensis** Gressitt, new species Fig. 20c.

♂. Body slender, obtusely truncate apically. Largely dark pitchy reddish, much paler reddish brown on slender portions of femora and darker reddish brown on tibiae. Dorsum with narrow hair-scales, those on head more slender, sparser and paler, those on pronotum and elytron partly dull greenish, and partly paler at side, mostly 5 or 6× as long as broad or much more slender; ventral surfaces and legs with only a very few pale hairs.

Head barely broader than anterior end of prothorax; portion anterior to eyes about as long as broad; occiput feebly punctured and with a few wrinkles behind eyes; frons largely convex, but with a weak median depression which broadens near anterior end. *Antennal club* elliptical, about 2× as long as broad. *Prothorax* slightly longer than broad, weakly convex at side, widest somewhat anterior to middle; disc weakly convex, depressed behind, weakly and sparsely granulose to rugose, with a few punctures. *Elytron* 3× as long as broad, widest well anterior to middle, gradually narrowed posteriorly with sutural angle obtusely emarginate; suture raised and somewhat uneven; disc rather weakly convex, with widely scattered weak nodes in partial longitudinal lines and some weak depressed lines. *Ventral surfaces* largely punctured. *Legs* slender; hind femur very weakly swollen preapically; hind tibia weakly sinuate. Length 10.8 mm; breadth 4.

Holotype ♂ (BISHOP 7049), Mt. Wilhelm, 2800-2900 m, Chimbu Distr., NE New Guinea, 6.VII.1963, J. Sedlacek; 2 paratypes, Daulo Pass, 2400 m, 7.VII.1963, J. Sedlacek: 2 paratypes, Chimbu Valley 1800 m, 16.V.1963, Sedlacek; 2, 16 km NW of Banz, Waghi Valley, 1700-2100 m, 28-29.VI.1963, Sedlacek.

Differs from *pilosus* Heller in being smaller and more slender, with partly broader hairs on dorsal surfaces and with fewer and weaker elytral tubercles.

57. **Pantorhytes waghianus** Gressitt, new species Fig. 20d.

♂. Moderately narrow. Body largely dull reddish brown to somewhat pitchy: elytron slightly pitchy along suture; legs pale reddish brown on slender portions of femora and pitchy on swollen portions; tibiae fairly pale reddish brown. Body moderately clothed above with buffy brown pubescence, sparser on head; slender hairs on ventral surfaces and legs very sparse.

Head not quite as broad as anterior end of prothorax; portion anterior to eyes barely longer than broad, narrowed at antennal insertions; occiput almost impunctate; frons and interocular area moderately punctured, former with a shallow median depression. *Antennal club* elliptical, fully 2× as long as broad. *Prothorax* slightly longer than broad, feebly convex at side and widest near middle; disc weakly convex above, depressed near base; surface moderately rugose-punctate. *Elytron* 3× as long as broad, subevenly rounded at side, widest near middle, slightly produced apically and weakly notched at sutural angle; suture slightly raised, somewhat rough posteriorly; disc subevenly convex, with numerous small nodes, in large part irregularly arranged, a few vague punctures near suture. *Ventral surfaces* largely smooth. *Legs* slender with hind femur weakly swollen preapically and hind tibia weakly sinuate. Length 10.5 mm; breadth 4.

Holotype ♂ (BISHOP 7050), 16 km NW of Banz, 1700–2100 m, Waghi Valley, NE New Guinea, 28–29.VI.1963, J. Sedlacek; 3 paratypes. Nondugl, 1600 m, Waghi Valley, 5.VII. 1955, Gressitt; 2 paratypes, Mt Otto, 2200 m, 22.VI.1955, Gressitt.

Differs from *pilosus* Heller in being smaller and narrower, with dorsal hairs shorter and sparser, and elytron with smaller and more numerous tubercles.

58. **Pantorhytes hornabrooki** Gressitt, new species Fig. 22a,

♂. Body slender, subacute posteriorly. Largely reddish brown, brighter reddish brown on front of head, and tibiae and most of femora; somewhat duller on much of pronotum and elytron and pitchy along suture; darker on ventral surfaces and coxae. Body moderately clothed with pale tawny hair-scales, moderately dense on much of pronotum, and slightly denser on elytron, mostly about 4× as long as broad; ventral surfaces and legs very sparsely clothed with a few pale hairs.

Head slightly narrower than anterior end of prothorax; portion anterior to eyes slightly broader than long, parallel-sided except close to eyes where it is broader; occiput feebly punctured; frons more distinctly punctured, somewhat convex and irregular, with a very weak terminal depression. *Antennal club* elliptical, about 2× as long as broad. *Prothorax* about as long as broad, feebly and unevenly convex at side, widest well anterior to middle, somewhat suddenly narrowed to apex and more gradually narrowed to base; disc weakly convex above, depressed postmedially; sur-

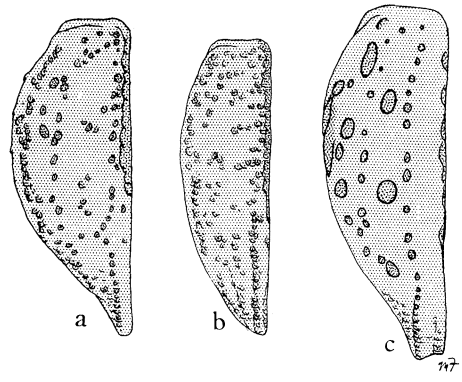


Fig. 21. *Pantorhytes* elytral diagrams: a, *algifer* n. sp., allotype; b, *varinodis* n. sp., paratype ♂; c, *truncatus* n. sp.

face finely rugose to granulose. *Elytron* about 3× as long as broad, widest anterior to middle, gradually narrowed to subacute apex with a slight notch at sutural angle; suture distinctly raised and with some weak nodes; disc moderately convex, with fine to minute tubercles or granulose scattered over much of surface but larger ones more or less along median line. *Ventral surfaces* smooth. *Legs* slender; hind tibia distinctly sinuate. Length 9 mm; breadth 3.5.

Holotype ♂ (BISHOP 7051), Mt. Michael, 3150 m, E. Highlands, NE New Guinea, 23. XII.1964, R. Hornabrook; paratype ♂, same data.

Differs from *pilosus* Heller in being smaller and more slender, with dorsal pubescence of broader hair-scales, and with elytral tubercles much smaller and more numerous.

59. **Pantorhytes truncatus** Gressitt, n. sp. Figs. 21c, 22b.

♂. Body pitchy black to reddish: head dark reddish brown, somewhat pitchy anteriorly and just behind eyes; antenna reddish brown, pitchy basally and distally; prothorax pitchy, slightly reddish just behind anterior margin; elytron pitchy, somewhat reddish along outer margins and on apical portion; ventral surfaces pitchy reddish, darker at side; legs brighter reddish brown, somewhat darker on swollen portions of femora.

Head with portion anterior to eyes slightly longer than broad, somewhat narrowed from eyes to just behind middle and subparallel anteriorly; upper surface of head rather smooth, slightly convex, rather finely and sparsely punctured, more closely so anteriorly and very sparsely so behind anterior portions of eyes. *Antenna* fairly slender; scape reaching to posterior border of eye, quite slender and feebly swollen apically; funicle with segments 1 and 2 subequal, each considerably shorter than each of following segments; club elongate-ovate, widest slightly beyond middle and slightly compressed. *Prothorax* slightly longer than broad, moderately convex at side, widest slightly anterior to middle; surface slightly uneven, with numerous rather ill-defined punctures of moderate to small size; a distinct depression between middle and base. *Elytron* 2.8× as long as broad, widest at end of basal 1/3, strongly narrowed and with apex somewhat protruding and truncate, with outer angle slightly projecting, but rounded so as to form a common shallow emarginate apex; disc with at least 2 sizes of punctures, the larger ones somewhat rounded or oval and sparsely arranged in 2 or 3 longitudinal rows, the smaller ones more numerous and

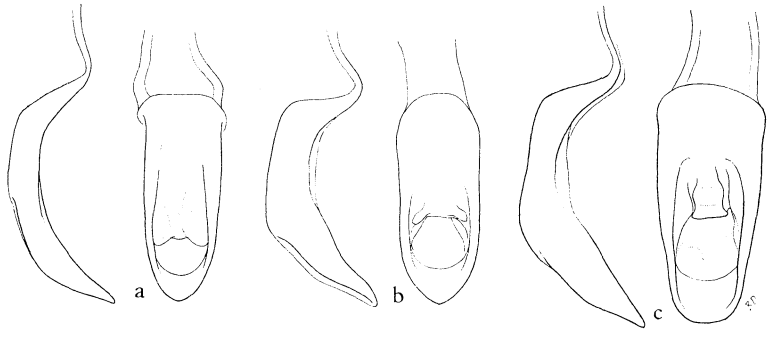


Fig. 22. *Pantorhytes* aedeagi, as in figure 2: a, *hornabrooki* n. s.; b, *truncatus* n. sp.; c, *hagenensis* n. sp.

mostly in rows alternating with the large ones, and lateral portion with some weakly raised lines in part bearing rather weak swellings; depressions between raised lines or rows of tubercles with fairly widely spaced weak punctures. *Ventral surfaces* rather smooth, with weak scattered punctures, more numerous on posterior 2/3 of last abdominal sternite. *Legs* fairly long and moderately slender; hind femur extending beyond elytral apex by nearly 1/3 its length, only moderately thickened preapically; hind tibia somewhat flattened and broadened as well as sinuate and slightly tuberculate on inner margin; hind tarsus with segment 1 barely longer than 2 or 3 but distinctly shorter than last. Length 12.5 mm; breadth 5.2.

♀. Elytron partly with alternating dark spots (major tubercles) and greenish spots (hair-scales); latter in part 1/5 as broad as long. Elytral tubercles with large ones strong and smaller ones very weak. Length 13.8 mm; breadth 5.8.

Paratypes. Length 12–16 mm; breadth 4.5–7.

Holotype ♂ (BISHOP 7052), Purosa, 1800–2200 m, 20 km SE of Okapa, E. Highlands, NE New Guinea, 28.VIII.1964, J. & M. Sedlacek; allotype ♀ (BISHOP), Asakamatosa, nr Okapa, 27.XI.1965, R. Hornabrook; 11 paratypes, Okapa, IV, XI, XII.1964, V. 1965, Hornabrook,; Amaira, Auyana, 11.I.1966, Hornabrook; nr Purosa, 1800–1900 m, 25.VIII.1964, J. & M. Sedlacek; Ilafo, 2200 m, 15 km N of Okapa, 7.I.1965, Szent-Ivany & Gressitt.

Differs from *pilosus* Hllr in being larger, with more tubercles on elytron and with hair-scales partly 1/5 as broad as long, and with elytral apex emarginate-truncate.

60. **Pantorhytes hagenensis** Gressitt, new species Fig. 22c.

♂. Body reddish brown, pitchy on madibles, antennal scape, anterior and basal margins of prothorax, elytral suture, distal portions of femora and metapleuron. Front of head with sparse fine pale hairs and a very few shorter greenish hairs, mostly between eyes; scattered slender white hairs and numerous very narrow metallic golden green scales, the latter mostly at least 6× as long as broad; ventral surfaces with sparser, somewhat bluish green hairs; central portion of abdomen nearly glabrous; legs rather sparsely clothed with somewhat arched whitish to pale bluish hairs.

Head anterior to eyes slightly longer than broad, narrowed to middle and then subparallel anteriorly: frons rather sparsely punctured, somewhat flat and slightly depressed in center; more finely and more rugulosely punctured between eyes; eye slightly longer than wide; antennal scape reaching nearly to middle of eye; gradually thickened to near apex; funicle segments gradually decreasing in length and about equal in breadth; club elongate-oval, thickest slightly beyond middle. *Prothorax* as long as broad, moderately rounded at side, widest slightly anterior to middle, somewhat gradually and subevenly narrowed to apex, somewhat irregularly narrowed to a short distance from base and then subcylindrical basally; disc rather strongly rugose-punctate to subvermiculate, depressed on central portion between middle and base; a few granules on side. *Elytron* 2.6× as long as broad, widest just beyond end of basal 1/4, somewhat gradually narrowed to apex; apex slightly rounded, forming a very weak emargination at sutural apex; disc strongly convex, highest just anterior to middle; surface with punctures of different sizes, larger ones somewhat widely spaced and in 4 rows including submarginal row where the tubercles are weaker but recognizable by being glabrous; smaller tubercles less regular, but partly in some partial

sublongitudinal rows more or less alternating with rows of major tubercles. *Ventral surfaces* rather flat and smooth; last abdominal sternite with numerous weak punctures. *Legs* fairly slender; hind femur with its apical 1/3 extending beyond ventral apex, and rather swollen beyond middle; hind tibia slender, somewhat arched; hind tarsal segment 1 somewhat longer than 2 or 3, distinctly shorter than last. Length 11.7 mm; breadth 4.4.

♀. Body stouter and less narrowed posteriorly; pronotum with an irregular somewhat raised area on center, and less regularly rugose-punctate; elytral surface with less regular rows of larger nodes, and with size differentiation of nodes less distinct; hind femur barely exceeding elytral apex. Length 12.1 mm; breadth 5.6 mm.

Holotype ♂ (BISHOP 7053), Tomba, 2450 m, W of Mt Hagen, W. Highlands, NE New Guinea, 21-24.V.1963, J. Sedlacek; allotopotype ♀ (BISHOP), 23.V: paratopotype ♂, 23.V. 1963, Sedlacek. Paratypes Tambul, 2200 m, 26.V.1963, Sedlacek; Kepilam, 2450 m, 22.VI. 1963; Lake Sirunki 2600 m, 15.VI.1963; Yaibos, 2650 m, 10.VI.1963, Sedlacek. Two questionable, Dimifa, 2200 m, SE of Mt Giluwe, 10.X.1958, Gressitt.

Differs from *pilosus* Hllr in having dorsal pubescence largely golden green and with scales about 6× as long as broad, and in having elytral nodes weaker, more numerous, and of 2 more or less distinct sizes.

Zoogeography: *Pantorhytes* is almost limited to New Guinea, and its close relatives are mostly in the Philippines. The close ties are rather striking because of the virtual lack of representation of the tribe Pachyrrhynchini in areas other than the Philippines and New Guinea. A few isolated species occur on some of the islands in between, or just outside the areas, as the Ryukyu Is., Borneo or Sulawesi. Some other groups have essentially this same distribution (Gressitt, 1961, *Pac. Ins. Mon.* 2). This might suggest that there were long periods when there were closer stepping stones between the Philippines and New Guinea than at present, with comparative isolation from islands to the west, towards the southeast Asian mainland. It also might suggest greater evolutionary success under more isolated conditions, and perhaps extinction through competition in the neighboring more continental areas. It is a little difficult to think of this group as being unsuccessful in competition, since these weevils are so robust, so heavily sclerotized and so polyphagous. However, their ecology is insufficiently understood to justify many assumptions in this area. The fact that there are 60 species (actually there are many more) of *Pantorhytes* in New Guinea and only one in Australia is striking evidence of the distinctness of the Papuan and Australian faunas. Thus, as far as this group is concerned, the Papuan Subregion is part of the Oriental Region, but could be classed as constituting, with the Philippines, a Philippine-Papuan Subregion.

The distribution of known species within New Guinea is in part indicated in the map (fig. 1), although this indicates only the type localities of the species. Records are as yet insufficient to properly map out the occurrence of the various species. Some indication of altitudinal zonation is given in Table 1. Thus it is seen that division A is largely restricted to lower altitudes, and that species of division C occur largely at high altitudes, with those of division B at low and medium altitudes. In most cases, a species is known from only a restricted range of altitude, though some range for more than 1000 meters up and down.

Table 1. Altitudinal range of known *Pantorhytes* species

Altitude range in meters	Divisions: A	B				C	
	Species-groups: I	II	III	IV	V	VI	VII
1–500	szentivanyi healyi biplagiatus opacus stanleyanus chrysomelas subcostatus fraudus b. batesi proximus plutus	quadripustulatus verrucatus brandti biroi carbonarius torricellianus biakensis decempustulatus		manni rarus (decemverrucosus) (papuanus) rubroverrucatus			
500–1000	albopunctulatus biplagiatus b. batesi	torricellianus (octopustulatus) ?gravis decempustulatus		irregularis (corallifer)			
1000–1500	albopunctulatus batesi melanticus	?gravis rufescens montanus minor pallidus gracilis		arcuatus jimmiensis obliquus vibicifer ?papuanus goilalae polynodus		(papillosus)	
1500–2000	albopunctulatus sedlaceki lamingtona	sexpustulatus	araneus	interruptus multipustulosus			waghianus truncatus
2000–2500		sexpustulatus			squamistriatus	lichenifer maai varinodis	pilosus truncatus hagenensis
2500–3000						algifer varinodis	samuelsoni rugosus chimbuensis
3000–3300							rugosus hornabrooki

Note: Species in parentheses are of questionable altitudinal origin; question marks mean uncertain identification.

CORRECTION

In the paper "A new Taiwan species of *Symmerus* with pectinate antennae (Diptera: Mycetophilidae)" by Toyohei Saigusa, vol. 8 (3), p. 801, the specific name *pectinataus* on line 3 and on line 1 of the explanation of fig. 1 should read as *pectinatus.*