THE CARABID BEETLES OF NEW GUINEA PART III. HARPALINAE (CONTINUED): PERIGONINI TO PSEUDOMORPHINI

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INTRODUCTION TO PART III

Purpose; other parts; acknowledgments. This is the third part of a taxonomic survey of the beetles of the family Carabidae (predaceous ground beetles) of the island of New Guinea.[2] The present part covers the tribes of the subfamily Harpalinae from Perigonini through Pseudomorphini, and thus completes coverage of the family Carabidae in the approximate order of the Junk-Schenkling Catalogue (Csiki 1932–1933). Part IV, which is now being prepared, will be primarily a summary, analysis, and discussion of the New Guinean carabid fauna as a whole. Among subjects to be considered are the general nature of the fauna, its geographic relationships and origins, its ecologic composition, and its evolution including specific evolutionary trends (toward wing atrophy, etc.) and evolutionary radiations on New Guinea. However, Part IV will include also a taxonomic supplement to list important new records of previously recorded species and to describe a number of additional species received recently, especially new Agonini from high altitudes.

I have already acknowledged, in Parts I and II, aid received from the Guggenheim Foundation. I have now to acknowledge also aid received from the National Science Foundation (Grant GB-93), which has supported my work on Carabidae of New Guinea in many ways, including publication of the results.

For meticulous editing and typing of the manuscript of Part III, I am indebted to Mrs. Judith Koivumaki, and for the accurate outline drawings and realistic watercolors, to Mrs. Mary Catron.

Sources and disposition of material. Principal initial sources of material used in my work on New Guinean Carabidae have been acknowledged in Part I, page 323, and Part II, pages 90–91. However, notable additional material has been received recently. Most important are thousands of specimens collected for the Bishop Museum by several entomologists under the direction of Dr. J. L. Gressitt; Mr. Josef Sedlacek and his wife and son have obtained an especially large number of Carabidae for the Bishop Museum. An important collection has been submitted for study also by the Department of Agriculture, Port Moresby, through the kindness of Mr. J. J. H. Szent-Ivany; this collection includes much material from the Port Moresby area, and also specimens from other localities including some from high altitudes. Sent with this collection, but belonging to him personally, is a fine lot of Carabidae collected by Dr. R. W.

[2] Part I, covering the Cicindelinae, Carabinae, and Harpalinae through Pterostichini (in the order of the Junk-Schenkling Catalogue) and Part II, covering the Agonini, are in the Bulletin of the Museum of Comparative Zoology: Part I, in Vol. 126, No. 3, 1962, pp. 321–564, 4 plates; and Part II, in Vol. 107, No. 3, 1952, pp. 87–252, 4 plates. (Because of my special interest in the Agonini, Part II was written and published before Part I.)

Hornabrook; this too includes material from high altitudes. A collection submitted by the Australian Commonwealth Scientific and Industrial Research Organization, at Canberra, includes specimens from the Morehead River, on the south coast of Papua almost opposite the tip of Cape York; several Australian species not known elsewhere in New Guinea were found at this locality. And an interesting collection has been submitted by the South Australian Museum, including much material from Mt. Lamington, Papua.

Because different collections have been received at different times, and because different portions of my manuscript have been finished at different times, I have not set a single deadline for material included in the present part of my work. I have simply used in each case the specimens available when a given group was studied, with only a few especially important additional records interpolated later. Additional noteworthy records will be included in the supplement in Part IV, referred to above.

Several of the most productive New Guinean carabid collectors, whose names appear many times in the following pages, are associated with single museums. In order to save space, I shall cite these collectors without repeating the names of their museums. The persons in question, and the museums with which they are associated and to which their specimens belong, are:

(Ludwig) Biró: Hungarian National Museum, Budapest

(Miss L. Evelyn) Cheesman: British Museum

(P. J.) Darlington (Jr.): Museum of Comparative Zoology, Cambridge, Massachusetts, abbreviated M.C.Z.

(J. L.) Gressitt: Bishop Museum, Honolulu

Sedlacek(s): Bishop Museum, Honolulu (Citation of this name in the singular indicates Mr. Josef Sedlacek; in the plural, additional or different members of the Sedlacek family: Marie and/or J. H. Sedlacek)

(L. J.) Toxopeus: Leiden Museum

Other museums and collections of which the names are abbreviated are:

American Museum of Natural History (New York): A.M.N.H.

California Academy of Sciences, San Francisco: Cal. Acad.

Commonwealth Scientific and Industrial Research Organization, Canberra, Australia: C.S.I.R.O.

United States National Museum, Washington, D. C.: U.S.N.M.

Policies and methods; type examinations; measurements; drawings. My work is second-stage taxonomy (see Part I, pp. 328–330). My methods have been described in Part I, page 330, and Part II, pages 91ff. However, I should repeat and stress certain things. I have tried to be reasonably consistent in preparing descriptions but have not followed a single model exactly. I have treated some tribes and some genera in much more detail than others, the rule being to give the information that has seemed worth giving in each case. My descriptions do follow a basic form but are flexible in detail. I do not like check-list taxonomy, in which descriptions are (in effect) drawn by inserting adjectives in blank spaces in a standard form. This kind of taxonomy is easy, but it is likely to be poor taxonomy. I think it is better to describe each species individually, following of course some sort of basic pattern, and if I state under one species that a character is striking, I see no reason to state (say) twenty times under other species that it is not striking.

Although the present part is consistent with Parts I and II in general, I have made a few slight changes of usage to conform to two publications that have appeared recently. One is the "Style Manual for Biological Journals," published in 1960 by the American Institute of Biological Sciences, 2000 P St., NW, Washington, D. C., 20016. The other is the revised edition (1964) of the International Code of Zoological Nomenclature. I have in general adopted

the details of style suggested by the former, and have tried to follow the rules and most recommendations of the latter. However, although I have followed the Style Manual in most ways including most abbreviations, I have occasionally preferred to follow Webster's Collegiate Dictionary on points of general style where I see no reason why biologists should be different.

References listed under tribes, genera, and species are limited to items directly concerned with New Guinea plus selected items likely to be specially useful to workers on New Guinean Carabidae.

Type examinations. In the present part of my work I have indicated what types of previously described species have been seen and not seen. I have borrowed for study a few types in especially difficult genera in which my work has been in effect revisionary (in *Perigona*, for example), but I have not attempted to see or to borrow types in most cases. There are two reasons for this. First, I do not think types should be loaned merely to confirm identifications in faunal work, especially when the types come from outside the area under study, in the present case often from other islands or from Australia rather than from New Guinea. And second, H. E. Andrewes saw many of the types in question and made comparisons with them (see my Part I, p. 325), and my study of the Andrewes Collection has enabled me to place not only his own but also most of the older Oriental species with reasonable confidence. I do, however, plan to see many of the older types, including those in Paris, before completing Part IV, so that I should be able to correct errors of identification then.

Measurements. Statements of proportions have been calculated (with a slide rule) from actual measurements made with a ruled disc in the ocular of a stereoscopic microscope. Proportions *cannot* be estimated satisfactorily by eye. When possible, the proportions are based on measurements of an average-looking ♂ ♀. The specimens thus measured are usually specified in a paragraph headed *Measured specimens*, but this paragraph is omitted under species of which only one or two individuals are known. Measurements of length and width are extremes of all available specimens.

Drawings. My drawings are designed primarily to show gross form, which is very difficult to describe in words. Mouthparts, antennae, and legs are sketched in semi-diagrammatically. The drawings have been outlined by Mrs. Mary Catron (usually with use of a crosslined disc in the ocular of a stereoscopic microscope), checked by me (the checking including measuring and calculating of proportions), and then inked by Mrs. Catron. I have not tried to figure all species or even all new ones, but have tried to show unusual ones and also new species that are based on only one or two specimens. I expect to deposit representative sets of specimens in museums in London, Honolulu, Canberra, and elsewhere, as well as in the continental United States, and persons working on New Guinean Carabidae in the future should use my specimens rather than figures of them which (like all figures) are sure to be inadequate. I have usually not used and therefore not illustrated genitallic characters. I expect to discuss this matter—when and how to use genitallic characters in carabid taxonomy—in Part IV.

Localities. I plan to include in Part IV a map showing, as far as possible, all localities at which Carabidae have been obtained in New Guinea. In the meantime the preliminary map published in Part II, page 93, shows my own localities, most of Miss Cheesman's, and some others, and the sketch map in Part I, page 326 shows the route of my collecting on the Bismarck Range. Also, the Bishop Museum has issued a 19-page "List of New Guinea Localities" (to 1966) which gives approximate latitudes, longitudes, and altitudes of the localities of Bishop Museum collectors and of some other persons. This list is, I suppose, available on request. I have used it as a standard for spelling of place names.

Certain localities have become especially important in the course of my work. Dobodura, Papua, where I collected from March to July 1944 (see Part I, pp. 325–326), is by far the best known *lowland* locality in New Guinea, for Carabidae. Wau, in the Morobe District, N-E. N. G., is by far the best known *middle-altitude* locality, thanks principally to the efforts of the Sedlaceks. And Mt. Wilhelm on the Bismarck Range, N-E. N. G. (where I collected), and the Snow Mts., West N. G. (where Toxopeus collected during the Netherlands Indian-American (Third Archbold) Expedition of 1938–1939), are the only *very-high-altitude* localities well known for Carabidae. Comprehensive collections from other localities, especially at high altitudes, are much needed to show at what intervals localized species replace each other on New Guinea. Until this is known, the total number of species of Carabidae on the island cannot even be guessed at closely.

Additional evidence that the label "Dor(e)y" has been wrongly placed on many of Wallace's Carabidae that probably really came from Celebes or the Moluccas is given in the present part of my work: see, for example, under *Amblystomus* (p. 20). For general discussion of this locality see Part I, pages 330–331. Although many specimens so labeled evidently did not come from Dorey, Wallace did go there. Some of his field notes from there are quoted under *Catascopus* in the present part of my work (p. 102).

Findings. Although analysis and discussion of the New Guinean carabid fauna as a whole will be postponed to Part IV, a few special points are worth noting now.

Several genera that are chiefly Australian have been found at high altitudes on New Guinea, Java, and sometimes other islands in the Malay Archipelago. These genera include *Mecyclothorax* (Part I, pp. 498, 505); *Microferonia* (present part, p. 18); and *Scopodes* (present part, p. 197). One genus, *Chydaeus* (p. 47), has been found with an opposite pattern of occurrence, on the mainland of Asia and at high altitudes on mountains in the Malay Archipelago east to New Guinea. However, *Bembidion* and *Trechus* have *not* been found on mountains in New Guinea, although Asiatic stocks of these genera have reached high mountains farther west in the Malay Archipelago (Darlington, 1959, *Pacific Insects*, Vol. 1, pp. 331–345).

Important evolutionary patterns, of notable radiations of Carabidae on New Guinea, have been found in the Agonini (Part I) and are described and discussed for several genera treated in the following pages. The most striking, in fact exciting, case is in the lebiine genus *Demetrida*, which seems to be in the midst of an evolutionary explosion. The situation among these diversely colored carabid beetles in the mountain rain forests of New Guinea parallels in some ways the situation among the birds of paradise in the same forests. I have seen about 1250 specimens of *Demetrida* from New Guinea, representing apparently 56 species, all new! See discussion under the genus (pp. 142–143) for further details. Less striking, but nevertheless important, radiations of species chiefly within the confines of New Guinea are described in *Trichotichnus* (pp. 48–59), *Catascopus* (pp. 101–110), *Dolichoctis* (pp. 124–132), *Anomotarus* (pp. 186–191), *Scopodes* (pp. 197–202), *Dicraspeda* (pp. 210–214), and *Helluonidius* (pp. 229–232).

TAXONOMIC SECTION

Tribe PERIGONINI

Platynini group *Perigonae* G. H. Horn 1881, Trans. American Ent. Soc. 9, p. 143.

Perigonini Csiki 1931, Coleop. Cat., Carabidae, Harpalinae 5, p. 894 (see for synonymy and additional references).

Jedlicka 1964, Reichenbachia 2, No. 61, pp. 267–274 (Oriental forms).

Perigonitae Jeannel 1941, Rev. française d'Ent. 8, p. 137.

Perigonidae Jeannel 1948, Coléop. Carabiques de la Région Malgache, Part 2, p. 733.

The taxonomic limits of this tribe and its

relation to other tribes of Carabidae are doubtful but need not be discussed here. The only genus of the tribe in New Guinea is *Perigona* itself (*sensu lato*).

Genus *PERIGONA* Castelnau

Castelnau 1835, Étude Ent., p. 151.
Sloane 1903, Proc. Linn. Soc. New South Wales 28, p. 635.
Andrewes 1929, Tijdschrift voor Ent. 72, p. 326 (Sumatran species).
Csiki 1931, Coleop. Cat., Carabidae, Harpalinae 5, p. 895 (see for synonymy and additional references).
Jedlicka 1935, Neue Carabiden aus Ostasien, Part 10, pp. 17–19 (Philippine species).
——— 1964, Reichenbachia 2, No. 61, pp. 267–274 (Oriental species).
Jeannel, see references under tribe, above.
Euryperigona Jeannel 1941, Rev. française d'Ent. 8, pp. 138, 149 (new synonymy).
Subgenus *Trechicus* Leconte 1853, Trans. American Philosophical Soc. 10, p. 386.

Diagnosis. Small *Tachys*- or *Trechus*-like Carabidae; with usually 2 setae over each eye; apical segments of palpi rather long, usually subconical; other technical characters given by Jeannel.

Description. None needed here, except note that all known New Guinean species are fully winged.

Type species. Of *Perigona*, *P. pallida* Castelnau of Africa; of *Euryperigona*, *P. procera* Fauvel of Java; of *Trechicus*, *T. umbripennis* Leconte (= *Perigona nigriceps*, below).

Generic distribution. **World-wide** in tropical and warm temperate regions. See also 4th paragraph of following *Notes.*

Notes. Euryperigona Jeannel is based on *Perigona procera* Fauvel, a very large species with maxillary palpi long, slender, with penultimate segments relatively long. *Perigona rex* (below) would go in *Euryperigona*, if this genus were recognized. However, "*Euryperigona*" *nitida* Jeannel 1941 (= *Perigona grandis* Jedlicka 1935) of the Philippines has maxillary palpi relatively shorter and with penultimate segments shorter than in *procera*, and tends to connect the latter with more typical *Perigona*, and I do not think generic separation is advisable.

Jeannel divides *Perigona* into 2 subgenera which seem natural and useful. They differ in arrangement of submarginal elytral punctures and they differ also in habits: *Perigona sensu stricto* occurs (in my experience) only or mostly on or in logs or rotting wood; subgenus *Trechicus*, among dead leaves or debris on the ground, usually in forest. *Perigona (Trechicus) nigriceps* (Dejean) has extended its ecological range to include fermenting vegetation and various plant materials carried by man, and has been spread over all the warmer parts of the world.

Variation of supraocular and lateral prothoracic setae in this genus is noteworthy. In *rex* (below) all these setae are absent. In *P. lata* Andrewes of Sumatra the anterior supraocular and median-lateral prothoracic setae are absent in both type and "cotype" in the British Museum. And in *P. astrolabica* Csiki the posterior-lateral prothoracic setae are present or absent, as described under this species below.

Species of *Perigona* are numerous in tropical Asia and the Malay Archipelago. Fourteen occur in New Guinea. However, only 5 (*nigriceps* and 4 endemic species) occur in Australia (Darlington, 1964, Psyche 71, pp. 125–129). The New Guinean *Perigona* fauna is therefore Oriental in general nature and diversity, and it is Oriental also in relationships of most species, so far as relationships can be determined.

Earlier keys to species of *Perigona* of the Malay Archipelago (Andrewes 1929; Jedlicka 1935, 1964) and Australia (Sloane 1903) have been based principally on size and color, but most of the 14 New Guinean species have diagnostic structural characters, as the following *Key* shows. I am indebted to Dr. Z. Kaszab for an opportunity to examine the types of Csiki's New Guinean species.

The following species recorded from New Guinea are still unknown to me, and are not included in the *Key*.

SPECIES OF *PERIGONA* PREVIOUSLY RECORDED FROM NEW GUINEA BUT NOT RECOGNIZED FROM DESCRIPTION

Perigona litura (Perroud & Montrousier)

Perroud & Montrousier 1864, Ann. Soc. Linnéenne Lyon 11, p. 72 (*Trechus*).
Andrewes 1929, Tijdschrift voor Ent. 72, p. 372 (in key).
——— 1933, Tijdschrift voor Ent. 76, p. 363.
Csiki 1931, Coleop. Cat., Carabidae, Harpalinae 5, p. 897 (see for additional references).

This species was described from **New Caledonia**. It is listed by Csiki from several islands in the Malay Archipelago, including **New Guinea**, but I cannot find the source of the New Guinean record. Andrewes did not know the species. Details given in the original description, and the fact that the type(s) occurred in detritus, suggest that it may be a color form of *nigriceps*.

Perigona subcordata Putzeys

Putzeys 1875, Ann. Mus. Civ. Genoa 7, p. 730.

This species was described from the **Kei Islands** and is likely to occur in New Guinea. The size and other details suggest that it may be an earlier name for *astrolabica* Csiki.

Perigona suturalis Putzeys

Putzeys 1875, Ann. Mus. Civ. Genoa 7, p. 728.

The type was collected at Sorong, **West New Guinea**, by Beccari and D'Albertis, and is now in the Genoa Museum. Putzeys' description does not permit an exact determination but suggests a small specimen of *astrolabica* Csiki or a large one of *subcyanescens* Putzeys.

KEY TO SPECIES OF *PERIGONA* OF NEW GUINEA

1. Group of 3 punctures in outer submarginal channel of elytron (at 3/5 or 2/3 of elytral length) forming a straight line (*Perigona sensu stricto*) 2
– These 3 punctures forming a triangle (subgenus *Trechicus*) 9
2. Supraocular and lateral prothoracic setae absent; very large (9.4–12.4 mm) (p. 8) ..... *rex*
– Two pairs supraocular and usually 2 pairs lateral prothoracic setae present; size smaller 3
3. Frontal foveae weak, subobsolete; elytra each with 2 dorsal punctures, no subapical puncture above marginal channel; length *c.* 2.0–2.5 mm (p. 8) ..... *pygmaea*
– Frontal foveae short but distinct, margined externally by weak elevations; elytra with 3 punctures, the 3rd either posteriorly on disc or subapically above marginal channel; usually larger 4
4. Elytra with 3rd (posterior) dorsal puncture on disc, separated from marginal channel by more than width of latter; *if* in doubt, refer here specimens over 4 mm long 5
– Elytra with 3rd puncture farther back, just above edge of marginal channel 7
5. Posterior dorsal elytral punctures less than 1/10 of elytral length from apex; length *c.* 4–6 mm (p. 9) ..... *astrolabica*
– Posterior dorsal elytral punctures more than 1/10 of elytral length from apex; usually smaller 6
6. Form normal, moderately broad and depressed; length *c.* 3.3–4.0 mm (p. 9) ..... *subcyanescens*
– Form narrower, subcylindrical; length 2.6–3.7 mm (p. 10) ..... *papuana*
7. Larger, *c.* 4.5 mm; dark castaneous with reddish suture and appendages (p. 10) ..... *rossi*
– Smaller; *if* approaching *rossi* in size, form more depressed and color testaceous 8
8. Depressed; nearly uniform testaceous with head browner but elytra not plagiate; length slightly over 3 mm (p. 10) ..... *livens*
– Less depressed; partly testaceous but with head and much of elytral discs darker; length under 3 mm (p. 11) ..... *plagiata*
9. Submarginal channel of elytra behind puncture-triangle (at 2/3 or 3/5 of elytral length) wide, with bottom flat or convex 10
– Submarginal channel behind puncture-triangle very narrow 12
10. Color *either* testaceous with dark head and elytral apices *or* brownish castaneous with head slightly darker and suture paler; eyes large, forming *c.* right angles with neck; front and neck with distinct *c. isodiametric* reticulation (p. 11) ..... *nigriceps*
– Color dark castaneous with suture not or not much paler; eyes variable; microreticulation of head often less distinct, often (not always) transverse posteriorly 11
11. Eyes larger; microsculpture of posterior part of head (if visible) not obviously transverse; length usually *c.* 3.2–3.6 mm (rarely smaller) (p. 12) ..... *erimae*
– Eyes smaller and less prominent; microsculpture of posterior part of head (if

visible) more transverse; length *c.* 2.7–3.3 mm (rarely larger) (p. 12) ..... *ludovici*

12. Prothorax with sides not strongly sinuate and posterior angles not denticulate; length *c.* 2.8–3.3 mm (p. 13) ..... *lebioides*
– Sides of prothorax strongly sinuate *or* posterior angles denticulate 13

13. Sides of prothorax strongly sinuate about ⅛ of length before base; (fine) microsculpture present; length *c.* 3.4 mm (p. 13) ..... *cordens*
– Sides of prothorax nearly straight and converging posteriorly, but posterior angles abruptly prominently denticulate; microsculpture absent or nearly so; length *c.* 3.2–3.4 mm (p. 14) ..... *dentifer*

Perigona (*s.s.*) *rex* n. sp.

Description. With characters of genus; form as in Figure 1; very large, broad, depressed; brownish castaneous, lower surface and legs more reddish; rather shining, reticulate microsculpture fine, lightly impressed, *c.* isodiametric on head, slightly transverse on pronotum and elytra. *Head* 0.58 and 0.60 width prothorax; mandibles shorter and more curved than usual in genus; eyes rather small but prominent, enclosed behind by genae; antennae with middle segments *c.* 1½ × long as wide; maxillary palpi slightly shorter than in *P. procera* Fauvel, with apical segments slightly more conical, and with subapical segments *c.* equal length of apical ones; frontal impressions vague; supraocular setae absent; mentum with a long, triangular tooth. *Prothorax*: width/length 1.64 and 1.56; base/apex *c.* 1.33 and 1.22 (exact measurements impossible because basal angles broadly rounded); lateral setae absent; disc with fine middle line, other impressions vague. *Elytra*: width elytra/prothorax 1.20 and 1.24; striae absent or faintly indicated; each elytron with 2 to 4 dorsal punctures (variation individual, sometimes unsymmetric), anterior puncture farther than others from suture. *Secondary sexual characters*: ♂ front tarsi scarcely dilated but usually with inconspicuous 2-seriate squamae on first 3 segments below (only near apex of 1st segment, and sometimes missing, perhaps broken off); ♂ with posterior femora dentate on upper posterior side near apex; ♂ with usually 3, ♀ 4 or 5 seta-bearing punctures each side last ventral segment. *Measurements*: length 9.4–12.4; width 3.8–5.0 mm.

Types. Holotype ♂ (Bishop Mus.) and 1 ♀ paratype (M.C.Z., Type No. 31,344) from Sepalakembang, Salawaket Rge., **N-E. N. G.,** 1920 m, holotype Sept. 11–14 and paratype Sept. 15, 1956 (E. J. Ford, Jr.); and the following additional paratypes. **N-E. N. G.**: 2, Wau, Morobe Dist., 1400 m, Mar. 29, 1963 (Sedlaceks); 1, same locality, 1650 m, Feb. 23, 1962 (Sedlaceks); 1 ♂, Feramin, 1200–1500 m, May 23–31, 1959 (W. W. Brandt, Bishop Mus.). 1 ♂, Okapa (Busa), [1650–1800 m], Oct. 17, 1964 (Hornabrook); 1 ♂, Morae, Kukukuku [Rge.], E. Highlands, 6000 ft. (*c.* 1850 m), Mar. 1, 1964 (Hornabrook). **West N. G.**: 1 ♂, Mt. Cyclops, 3500 ft. (1067 m), Mar. 1936 (Cheesman).

Measured specimens. The ♂ holotype and ♀ paratype from Sepalakembang.

Notes. This remarkable species would go in *Euryperigona* if the latter were recognized (see discussion under genus). So far as I know it is unique in *Perigona* in loss of all supraocular and lateral prothoracic setae and in the toothed posterior ♂ femora. It is comparable to *P. procera* Fauvel of Java in size but is broader, and *procera* has the above-mentioned setae and does not have toothed ♂ femora.

Perigona (*s.s.*) *pygmaea* Andrewes

Andrewes 1930, Treubia, Supplement 7, pp. 334, 345.

Description (for recognition only). A very small *Perigona* characterized by weak frontal sulci and absence of 3rd (subapical) elytral punctures; length *c.* 2.0–2.5 mm.

Type. From **Buru**, collected by Toxopeus; now in British Mus. (seen).

Occurrence in New Guinea. **Papua**: 4, Dobodura, Mar.–July 1944 (Darlington). **N-E. N. G.**: 2, lower Busu R., Huon Pen., May 12 and 17, 1955 (E. O. Wilson, M.C.Z.,

1 specimen numbered 1056); 20, Sattelberg, 1899 (Biró); 3, Stephansort, Astrolabe Bay, 1898, 1900 (Biró); 5, Aitape, Aug. 1944 (Darlington). **West N. G.**: 12, Maffin Bay, Aug. 1944 (Darlington).

Notes. I have this species also from Leyte and Luzon in the **Philippines**, and have examined Andrewes' type from **Buru**. My Dobodura specimens were taken under bark of rotting logs in rain forest.

Of all New Guinean *Perigona*, this seemed most likely to include short-winged individuals, but I have examined all specimens listed above, and all are in fact long-winged.

Perigona (*s.s.*) *astrolabica* Csiki

Csiki 1924, Ann. Mus. National Hungary 21, p. 172.

Description. None required here; size, and number and position of dorsal elytral punctures are diagnostic, in New Guinea; length 4.3–6.0 mm except only 3.8 mm in an apparent dwarf of this species from Dobodura.

Type(s). From Stephansort, Astrolabe Bay, **N-E. N. G.,** collected by Biró in 1898; in Hungarian National Mus. (seen).

Occurrence in New Guinea. **Papua**: 13, Dobodura, Mar.–July 1944 (Darlington); 1, Kokoda, 1200 ft. (366 m), June 1933 (Cheesman). **N-E. N. G.**: holotype + 2, Stephansort, Astrolabe Bay, 1897 (Biró); 1, Sattelberg, 1899 (Biró); 1, Finschhafen, Huon Pen., 150 m, Apr. 14, 1964 (Sedlacek); 6, Saidor, Gabumi Village, Finisterre Rge., June 24–30, July 1–21, 1958 (W. W. Brandt, Bishop Mus.); 1, Wum, Upper Jimmi Vy., 840 m, July 18, 1955 (Gressitt); 1, Wau, Morobe Dist., 1150 m, Nov. 7, 1961 (Sedlaceks); 1, same locality, 1450 m, Feb. 5, 1963 (Sedlacek); 1, same locality, 1700 m, Feb. 19, 1963 (Sedlacek); 1, Bulolo, "G. Pines," 600 m, Feb. 19, 1962 (Sedlacek). **West N. G.**: 1, Hollandia, July–Sept. 1944 (Darlington); 1, same locality, May 1945 (B. Malkin, U.S.N.M.); 1, Ifar, Cyclops Mts., 450–500 m, Sept. 9, 1962 (Sedlacek); 1, Maffin Bay, July 8, 1944 (E. S. Ross, California Acad.); 4, Rattan Camp, 1150 m, Feb.–Mar. 1939 (Toxopeus).

Notes. P. astrolabica seems close to but probably distinct from *jacobsoni* Andrewes of Sumatra, in which the suture is red (usually not red in *astrolabica*) and the microreticulation of pronotum and elytra more transverse. Two more, perhaps related, apparently undescribed species occur in Luzon.

All specimens seen from New Guinea have all usual supraocular and prothoracic setae (or punctures marking positions of setae) except that the 4 from Rattan Camp and the 1 from 1700 m at Wau lack posterior-lateral prothoracic setae. However, presence or absence of these setae is apparently simple dimorphism, for of 6 specimens from Cape Gloucester, New Britain (Darlington), 5 lack and 1 has posterior-lateral setae. Because the distribution of individuals with and without posterior-lateral prothoracic setae may be of interest in the future, I have listed (above) all New Guinean specimens of the species in detail rather than summarizing the species' occurrence.

Perigona (*s.s.*) *subcyanescens* Putzeys

Putzeys 1875, Ann. Mus. Civ. Genoa 7, p. 732.
Csiki 1924, Ann. Mus. National Hungary 21, p. 172.
Andrewes 1930, Treubia, Supplement 7, p. 334.
Louwerens 1953, Verhandlungen Naturforschenden Gesellschaft Basel 64, p. 305.
horni Jedlicka 1935, Neue Carabiden aus Ostasien, Part 10, pp. 18–19 (new synonymy).

Description. None required here. See preceding *Key to Species* for identification; length (in New Guinea) *c.* 3.3–4.0 mm.

Types. Of *subcyanescens*, from Andai, near Dorey, **West N. G.,** collected by Beccari and D'Albertis, in Genoa Museum. Of *horni*, from Imungan, **Luzon**, in Jedlicka's collection. (See 2nd paragraph of following *Notes.*)

Occurrence in New Guinea. Widely distributed and common on the island: 48 specimens from 13 localities scattered from Milne Bay to Sansapor, and including Dobodura and Wau (to 1100 m).

Notes. Outside **New Guinea**, this species is recorded from West **Sumba** (Louwerens); **Borneo**; Mindanao, Samar, and Luzon in the **Philippines**; and doubtfully from **Buru** (Andrewes); and I have seen specimens from **New Britain** and the **Solomons**.

My identification of *subcyanescens* is based on specimens borrowed from the Genoa Museum, one marked as compared with Putzeys' type presumably by Csiki, and my identification of *horni* is based on comparison with Philippine "cotypes" in the British Museum.

Perigona (*s.s.*) *papuana* Csiki

Csiki 1924, Ann. Mus. National Hungary 21, p. 173.

Description. None required here. See *Key to Species*, and note subparallel cylindrical form; length 2.6–3.7 mm.

Types. Lectotype (by present designation) and paratype from Stephansort, Astrolabe Bay, **N-E. N. G.,** 1898 (Biró); in Hungarian National Mus. The specimen (sex not determined) now designated lectotype bears the original "Holotypus" label, although no holotype was specified.

Occurrence in New Guinea. **N-E. N. G.**: 4 (in addition to the types), Stephansort, 1898 (Biró); 1, lower Busu R., Huon Pen. May 17, 1955 (E. O. Wilson #1066, M.C.Z.), in lowland rain forest; 1, Wau, 1300 m, July 27 (year and collector not given).

Notes. This distinct species seems to be confined to a limited area on the north side of N-E. New Guinea.

Perigona (*s.s.*) *rossi* n. sp.

Description. With characters of genus; form as in Figure 2, *c.* as in *astrolabica* but slightly more slender and convex; dark castaneous, suture reddish, appendages reddish testaceous; rather shining, reticulate microsculpture isodiametric on head, in part transverse on pronotum, more transverse on elytra. *Head* 0.70 width prothorax; mandibles pointed and slightly curved but not notably elongate; eyes moderate, narrowly enclosed behind by genae; antennae moniliform; palpi with apical segment much longer than subapical, narrowed and almost pointed apically; frontal impressions short, shallow, diverging posteriorly; 2 setae over each eye. *Prothorax*: width/length 1.43; base/apex 0.90; apex broadly emarginate, with angles well defined but not advanced beyond arc of emargination; base emarginate-truncate, with basal angles distinct but obtuse, slightly blunted; sides broadly rounded, each with usual 2 setae; disc with middle line distinct, baso-lateral impressions weak. *Elytra*: width elytra/prothorax 1.25; humeri rounded-prominent; apices broadly but irregularly rounded to obtuse but well defined sutural angles; striae vaguely indicated; intervals punctulate, 3rd with punctures at *c.* ⅓ and ⅔ of length and at apex just above submarginal channel. *Secondary sexual characters*: ♂ unknown; ♀ with several setae each side apex last ventral segment. *Measurements*: length *c.* 4.5; width 1.7 mm.

Type. Holotype ♀ (California Acad.) from Maffin Bay, **West N. G.,** June 1944 (E. S. Ross); the type is unique.

Notes. This species resembles *astrolabica* but differs in details of shape especially of prothorax, and in position (nearer apex) of posterior elytral punctures.

Perigona (*s.s.*) *livens* Putzeys

Putzeys 1873, Ann. Mus. Civ. Genoa 4, p. 225.
Andrewes 1926, Cat. Philippine Carabidae, p. 354.
——— 1930, Cat. Indian Insects, Part 18, Carabidae, p. 265.
Jedlicka 1964, Reichenbachia 2, No. 61, pp. 268, 270.

Description (for recognition only). A depressed, pale *Perigona s.s.* with technical characters indicated in the preceding *Key to Species*; length (in New Guinea) *c.* 3.3 mm.

Type. Doubtfully from Coromandel, **India**; via Chaudoir and then Oberthür Colls. to Paris Mus. (not seen).

Occurrence in New Guinea. **Papua**: 2, Dobodura, Mar.–July 1944 (Darlington).

Notes. P. livens is listed by Andrewes

(1926) from Luzon and Mindanao in the **Philippines**, and Andrewes (1930) indicates that he saw Putzeys' type. I have a Philippine (SE. Bataan) specimen identified as *livens* by comparison with Andrewes' collection. The New Guinean specimens do not match Philippine ones exactly, but my material is too limited to justify separating the New Guinean form even as a subspecies.

Perigona (*s.s.*) *plagiata* Putzeys

Putzeys 1875, Ann. Mus. Civ. Genoa 7, p. 734.
Andrewes 1930, Cat. Indian Insects, Part 18, Carabidae, p. 266.
Csiki 1924, Ann. Mus. National Hungary 21, p. 172.
——— 1931, Coleop. Cat., Carabidae, Harpalinae 5, p. 898 (see for additional synonymy and references).
Jedlicka 1935, Neue Carabiden aus Ostasien, Part 10, p. 18 (in key).
——— 1964, Reichenbachia 2, No. 61, pp. 268, 271.
Van Emden 1937, Stettiner Ent. Zeitung 98, p. 35.
annamita Fauvel 1907, Revue d'Ent. 26, p. 104.
Andrewes 1933, Ann. Mag. Nat. Hist. (10) 11, p. 110.

Description. A small, brownish testaceous *Perigona s.s.* with head and much of elytral discs darker brown, and with technical characters as indicated in preceding *Key to Species*; length *c.* 2.2–2.8 mm.

Types. Of *plagiata*, from **Aru** and **Kei Islands**, collected by Beccari, and from Andai, **West N. G.,** collected by Beccari and D'Albertis; in Genoa Mus. Of *annamita*, from **Ceylon**, **Annam**, **Singapore**, and Andai, **West N. G.,** the specimen(s) from New Guinea collected by Raffray; Andrewes (1933) found a "type" in the Maindron Collection, Paris Mus. Lectotypes for both *plagiata* and *annamita* should be fixed by the next reviser, after examination of all the original type material. (Types not seen.)

Occurrence in New Guinea. Common and widely distributed. I have seen 145 specimens from localities scattered over most of the length of the island, from Dobodura to Sansapor; most at low altitudes but single specimens found at 1100 and 1200 m at Wau.

Notes. Andrewes (1930) records *plagiata* from a wide range, from **SE. Asia** and **Japan** across the **Malay Archipelago** to the **Philippines** and **New Guinea**, and Van Emden lists it from the **New Hebrides**. Csiki (1924) records it from Australia on the basis of specimens (which I have seen) in the Hungarian National Mus., but I think this is an error (see Darlington 1964, Psyche 71, p. 125). *Perigona rufilabris* (Macleay) of eastern Australia is a similar but larger species.

Perigona (*Trechicus*) *nigriceps* (Dejean)

Dejean 1831, Species Général Coléop. 5, p. 44 (*Bembidium*).
Csiki 1931, Coleop. Cat., Carabidae, Harpalinae 5, p. 897 (see for synonymy and additional references).
Jedlicka 1935, Neue Carabiden aus Ostasien, Part 10, p. 18 (in key).
——— 1964, Reichenbachia 2, No. 61, pp. 268, 270, fig. 2.
Jeannel 1941, Rev. française d'Ent. 8, p. 141.
litura Perroud and Montrousier 1864, Ann. Soc. Linnéenne Lyon 11, p. 72 (*Trechus*) (new synonymy).
beccarii Putzeys 1875, Ann. Mus. Civ. Genoa 7, p. 732 (new synonymy).
biroi Csiki 1924, Ann. Mus. National Hungary 21, p. 173 (new synonymy).
klickai Jedlicka 1935, Neue Carabiden aus Ostasien, Part 10, pp. 18, 19 (new synonymy).

Description (for recognition only). See preceding *Key to Species of Perigona of New Guinea*; color *either* testaceous with head and apices of elytra darker, *or* brownish castaneous with suture (and of course appendages) pale, *or* intermediate with elytral disc partly but not entirely clouded; technical characters include eyes relatively large and prominent, front isodiametrically microreticulate, and elytra more conspicuously 3-punctate than usual in the genus, with posterior puncture usually almost in line with the others; length *c.* 2.5–3.0 mm.

Types. Of *nigriceps*, from **North America**, sent to Dejean by Leconte; now in Oberthür Coll., Paris Mus. Of *litura*, from Kanala, **New Caledonia**; location of type(s)

unknown. Of *beccarii*, from Sarawak, **Borneo**, collected by Doria and Beccari; now in the Genoa Mus. (a lectotype should be designated by next reviser). Of *biroi*, I now designate as lectotype a ♀ from Madang (Friedrich-Wilh.-hafen), **N-E. N. G.,** 1896 (Biró, Hungarian National Mus.); this specimen is from Csiki's original series and is labeled "Holotypus," but the designation has not been published until now. Of *klickai*, from Mt. Makiling, **Luzon**; in Andrewes Coll., British Mus. (Types of *biroi* and *klickai* only seen.)

Occurrence in New Guinea. Common and widely distributed at low altitudes: more than 160 specimens from many localities, from Milne Bay to "Dorey" and Biak Is., and including Dobodura and Wau (to 1300 m).

Notes. P. nigriceps is **cosmopolitan**, carried by man to all tropical and warm temperate regions.

P. litura, described from New Caledonia but supposedly widely distributed in the Malay Archipelago, was unknown to Andrewes. The description fits the dark form of *nigriceps*, and the fact that the type(s) occurred under vegetable detritus also fits *nigriceps*. (The habitat of *nigriceps* is noted under the genus.) *P. beccarii* is another name for the dark form of this species (I do not consider the dark form worth distinguishing by name), and *biroi* and *klickai*, of which I have seen the types, are also based on dark examples of *nigriceps*.

Perigona (*Trechicus*) *erimae* Csiki

Csiki 1924, Ann. Mus. National Hungary 21, p. 173.

Description (for recognition only). With characters of *Perigona*, subgenus *Trechicus*; broad, moderately convex; black or castaneous with suture usually not paler; eyes forming *c.* right angles with neck, but somewhat variable; front with or without (lightly impressed) isodiametric reticulations; prothorax with sides not or slightly sinuate posteriorly, with angles well defined but obtuse; elytra not or faintly striate, with little or no punctulation, with submarginal channel moderately broad behind puncture-triangle; length *c.* 3.2–3.6 mm.

Type. From Erima, Astrolabe Bay, **N-E. N. G.,** 1896 (Biró); in Hungarian National Mus. (seen).

Occurrence in New Guinea. Thirty-four specimens from numerous localities in **eastern and central New Guinea**, from Milne Bay and Dobodura to Hollandia and Cyclops Mts.; not yet found farther west in New Guinea; most from low altitudes but reaching 1200 m at Wau.

Notes. Specimens of this species vary considerably. The eyes vary in size and in development of genae but usually form nearly right angles with the neck. Reticulate microsculpture of the head may be distinct (but light), or partly obliterated, or *c.* absent. And there is some variation of other characters. However, the variation is not primarily geographic, but occurs at single localities. I think, but cannot be quite sure, that only one variable species is involved.

Csiki's type of *erimae* is large, with eyes large and genae slight, and with the front distinctly reticulate. Proportions of the type are head 0.83 width prothorax; prothoracic width/length 1.50, base/apex 1.03; width elytra/prothorax 1.53.

Although *erimae* is known only from New Guinea, somewhat similar but apparently distinct species (*andrewesi* Jedlicka, *arrowi* Jedlicka) occur in the Philippines.

Perigona (*Trechicus*) *ludovici* Csiki

Csiki 1924, Ann. Mus. National Hungary 21, p. 174.

Description (for recognition only). Form of *Perigona*, subgenus *Trechicus*; small; dark, like dark *nigriceps* but suture not or not conspicuously reddish; head with eyes smaller than in *nigriceps*, front less distinctly reticulate and with reticulations more transverse especially posteriorly; elytra with 3rd (posterior) punctures nearer suture; length *c.* 2.7–3.3 mm.

Types. Lectotype (present designation) from Mt. Hansemann, Astrolabe Bay, **N-E. N. G.,** 1901 (Biró, Hungarian National

Mus.), and 8 additional original (co)types, 2 with same data as lectotype and 6 from Madang (Friedrich-Wilh.-hafen), 1900 and 1901 (Biró) (seen).

Occurrence in New Guinea. Seventy-five specimens from numerous localities over almost the whole length of **New Guinea** (Milne Bay and Dobodura to the Vogelkop); at low altitudes, none above 550 m.

Notes. *P. ludovici* is compared with *nigriceps* in the preceding *Description*. *P. ludovici* is in fact closer to *erimae* but has the head narrower, eyes relatively smaller, and microreticulation of *posterior* part of head usually more transverse. Also, *ludovici* averages smaller than *erimae*, although measurements of length overlap: *ludovici*, *c.* 2.7–3.3; *erimae*, *c.* 3.2–3.7 mm. (Csiki gives 2.5–2.8 mm for *ludovici* and 3.5 mm for *erimae*.) Nevertheless, these species are very similar and some individuals are difficult to place. Proportions of the lectotype of *ludovici* are head 0.76 width prothorax; prothoracic width/length 1.49, base/apex 1.08; width elytra/prothorax 1.59.

Both *erimae* and *ludovici* live among dead leaves on the ground in rain forest.

Perigona (*Trechicus*) *lebioides* Csiki

Csiki 1924, Ann. Mus. National Hungary 21, p. 174.

Description (for recognition only). Form of small, very broad, moderately convex *Perigona*, subgenus *Trechicus*; castaneous with suture not or only faintly reddish; prothorax with sides not strongly sinuate and not denticulate posteriorly; elytra with submarginal depressed space very narrow behind puncture-triangle; elytra faintly or irregularly striate, not or not much punctulate; length 2.8–3.3 mm.

Types. I now designate as lectotype the specimen marked "Holotypus" by Csiki. It is from Erima, Astrolabe Bay, **N-E. N. G.,** 1896 (Biró) in Hungarian National Mus. (seen). Seven paratypes are from Sattelberg, N-E. N. G., 1899 (Biró). (Two additional specimens labeled as paratypes of *lebioides*, from Simbang, Huon Gulf, Biró, in Hungarian National Museum, are not *lebioides* but *erimae*.)

Occurrence in New Guinea. Sixty-one specimens (including 44 from Dobodura) from localities in all 3 political divisions of **New Guinea**; most at low altitudes but 1 from Sibil, Star Rge., at 1260 m (Leiden Mus.).

Notes. This, like the other small *Perigona* of subgenus *Trechicus* that occur in New Guinea, lives among dead leaves on the floor of rain forest. Biró presumably collected the types by sifting. I took mine by throwing raked-up leaves and leaf mold into still water, and picking up the beetles as they came to the surface.

Perigona (*Trechicus*) *cordens* n. sp.

Description. With characters of *Perigona*, subgenus *Trechicus*; form broad, rather convex; black or castaneous, suture not or not much paler, elytra subiridescent, appendages reddish testaceous; reticulate microsculpture faint, not clearly visible at *c.* 100 × but apparently isodiametric on front, somewhat transverse posteriorly on head, fine and strongly transverse on pronotum and elytra. Head 0.80 and 0.79 width prothorax; eyes rather large, forming *c.* right angles with neck, mandibles average for genus; antennae with middle segments *c.* 1½ × long as wide; front with impressions irregular but distinct, margined externally by short elevations. *Prothorax* cordate; width/length 1.47 and 1.47; base/apex 0.98 and 0.97; sides strongly sinuate about ⅛ from base; posterior angles nearly right but blunted; disc with fine middle line, shallow poorly defined baso-lateral impressions. *Elytra* short, wide; width elytra/prothorax 1.64 and 1.66; submarginal impressed space very narrow behind puncture-triangle; each elytron with parts of at least 6 striae, inner ones moderately impressed and irregular or vaguely punctate; intervals not distinctly punctulate, 3rd 3-punctate. *Secondary sexual characters* normal: ♂ front tarsi with 3 segments (only apex of 1st) narrowly 2-seriately squamulose; ♂ with 2, ♀ *c.* 4

setae at apex last ventral segment. *Measurements*: length *c.* 3.4; width 1.5–1.6 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,345) and 3 paratypes (broken ♂, ♀ ♀) all from Dobodura, **Papua**, Mar.–July 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. This species occurred in leaf litter in rain forest, with *erimae*, *ludovici*, and *lebioides*, from all of which *cordens* is immediately distinguishable by its strongly cordate prothorax.

Perigona (*Trechicus*) *dentifer* n. sp.

Description. With characters of *Perigona*, subgenus *Trechicus*; form as in Figure 3; broad, moderately convex; reddish castaneous with suture slightly paler, appendages reddish testaceous; shining, not iridescent, microsculpture absent or nearly so. *Head* 0.78 and 0.78 width prothorax; mandibles slender, pointed, weakly arcuate near apex; eyes moderately large but less prominent than usual, forming obtuse angles with neck; antennae with middle segments *c.* 1½ × long as wide; front with slight median puncture and distinct short anterior frontal impressions. *Prothorax* broadly subcordate, very wide anteriorly; width/length 1.40 and 1.45; base/apex 0.95 and 0.88; sides weakly rounded, strongly converging posteriorly almost to base, then abruptly sinuate with basal angles right-denticulate; disc with usual middle line and transverse impressions, basal transverse impression subfoveate at middle and running into slightly deeper but poorly defined baso-lateral impressions. *Elytra* wide; width elytra/prothorax *c.* 1.61 and 1.60 (exact measurement impossible because elytra spread in both specimens); submarginal impressed space very narrow behind puncture-triangle; 6 abbreviated striae on each elytron, inner ones impressed, all plainly punctate; intervals not punctulate, 3rd 3-punctate. *Secondary sexual characters* as in preceding species (*cordens*). *Measurements*: length *c.* 3.2–3.4; width *c.* 1.4–1.5 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,346) and 1 ♀ paratype both from Milne Bay, **Papua**, Dec. 1943 (Darlington).

Notes. The form of prothorax, absence of microsculpture, and impressed punctate elytral striae are diagnostic of this species.

Tribe LICININI

Sloane 1898, Proc. Linnean Soc. New South Wales 23, pp. 487 ff. (Australian genera).
Csiki 1931, Coleop. Cat., Carabidae, Harpalinae 5, p. 899.
Ball 1959, Mem. American Ent. Soc., No. 19, p. 5 (see for synonymy and additional references).

Most Licinini, including all those known from New Guinea, have the labrum and usually also the clypeus deeply emarginate, the labrum often so deeply so as to appear 2-lobed. This alone is almost a sufficient recognition character of the tribe, in New Guinea. Other diagnostic characters are discussed by Ball (1959, pp. 5–8).

Licinines are nearly world-wide in distribution but are relatively few in Central and South America and relatively numerous in Australia: about 10 genera, including some that are probably primitive or relict, occur in Australia. Five genera occur in New Guinea: *Badister*, which is widely distributed in other parts of the world; *Omestes*, a monotypic genus confined to the eastern part of the Malay Archipelago; and *Physolaesthus*, *Dicrochile*, and *Microferonia*, which are primarily Australian. Three species of *Dicrochile* and one of each of the other genera are known in New Guinea. All the New Guinean species are winged, except *Microferonia baro*.

The following *Key* is based on Ball's (1959, p. 11) key to Oriental licinine genera.

KEY TO GENERA OF LICININI OF NEW GUINEA

1. One mandible deeply notched above, with a prominent boss behind the notch 2
– Neither mandible notched as described 4
2. Left mandible notched; only basal segment of antenna glabrous (p. 15) ..... *Badister*
– Right mandible notched; each antenna with 3 segments glabrous 3
3. Smaller (*c.* 5 mm); elytra not spined (p. 15) ..... *Physolaesthus*

- Larger (*c.* 11–15 mm); elytra with short apical spines (p. 16) ..... *Omestes*

4. Form *Agonum*-like; mandibles blunt at apex (p. 16) ..... *Dicrochile*
- Form elongate-oval with very small head; mandibles (at least the right one) conspicuously 2-dentate at apex, with upper tooth large, acute (p. 18) ..... *Microferonia*

Genus *BADISTER* Clairville

Anonymous [Clairville] 1806, Entomologie Helvetique 2, p. 90.
Csiki 1931, Coleop. Cat., Carabidae, Harpalinae 5, p. 901 (see for synonymy and additional references).
Jeannel 1942, Faune de France, Coléop. Carabiques, Part 2, p. 1000.
Louwerens 1956, Treubia 23, p. 236 (key to Indonesian species).
Ball 1959, Mem. American Ent. Soc., No. 16, pp. 189–191.

Diagnosis. See preceding *Key.*

Description. None required here.

Type species. Carabus bipustulatus Fabricius, of Europe, etc.

Generic distribution. Temperate and tropical **Eurasia**, the **Malay Archipelago**, and eastern **Australia**; **Africa** and **Madagascar**; **North America** and some **West Indies**, but not South America.

Notes. See Jeannel (1942) and Ball (1959) for further information on this widely distributed genus.

Badister (*Baudia*) *sundaicus* Andrewes

Andrewes 1926, Ann. Mag. Nat. Hist. (9) 18, p. 275.
Louwerens 1956, Treubia 23, p. 236.

Description. See Andrewes (1926); length *c.* 4.0–4.5 mm.

Type. From Soekaboemi, **Java**; in Andrewes Coll., British Mus. (seen).

Occurrence in New Guinea. **Papua**: 4, Dobodura, Mar.–July 1944 (Darlington). **N-E. N. G.**: 1, Maprik, Sepik Dist., 150 m, Dec. 29, 1959–Jan. 17, 1960 (T. C. Maa, Bishop Mus.). **West N. G.**: 2, Hollandia, July–Sept. 1944 (Darlington).

Notes. I tentatively identify as *sundaicus* specimens from **Siam** and the **Malay Pen.** (British Mus.); **Sumatra**; **Java**; Luzon and Leyte in the **Philippines**; Morotai Is. in the **Moluccas**; **New Guinea** (listed above); **New Britain**; and widely scattered localities in eastern **Australia**. Specimens from all these places have the mandibular and antennal characters indicated in the preceding *Key to Genera.* However, variation is obvious, and further study may show that more than one species is involved.

Specimens of this and related species that I have collected were usually among dead leaves and vegetation on the ground in very wet places by standing (not running) water.

Genus *PHYSOLAESTHUS* Chaudoir

Chaudoir 1850, Bull. Soc. Nat. Moscow 23, Part 1, No. 2, p. 411.

Diagnosis. See preceding *Key to Genera.*

Description. See Chaudoir (1850), and following *Notes.*

Type species. P. australis Chaudoir, of Australia.

Generic distribution. Primarily **Australia**; one species described from **New Zealand**; and the following species (if correctly assigned) on **New Guinea**, **Java**, and the **Philippines**.

Notes. I have not been able to identify *australis* in the Australian material before me. Chaudoir does not describe its antennal pubescence but states that the right mandible is tuberculate, and this character is always associated with 3 antennal segments glabrous, among Australian licinines known to me. Whether the following species is really a *Physolaesthus* and how this genus is related to *Badister* will have to be decided by future revisers.

Physolaesthus caviceps (Andrewes)

Badister caviceps Andrewes 1936, Ann. Mag. Nat. Hist. (10) 17, p. 312
Louwerens 1956, Treubia 23, p. 236.

Description. See Andrewes, and my Figure 4; length *c.* 5 mm.

Type. A ♀ from Toeloengagoeng, **Java**; in Andrewes Coll., British Mus. (seen).

Occurrence in New Guinea. **West N. G.**: 4, all from Wissel Lakes area, as follows:

1, Itouda, Kamo Vy., 1500 m, Aug. 12, 1955 (Gressitt), in light trap; 1, Lake Paniai, 1570 m, Aug. 28, 1939 (H. Boschma, Leiden Mus.); 2, Enarotadi, 1800 m, Aug. 1, 1962 (Sedlacek).

Notes. I have seen specimens with the characters of *caviceps* from Java and Luzon as well as New Guinea but am not sure whether they represent one species or two or more related species. Except for the different mandibles and antennae, this species is remarkably similar to *Badister sundaicus* (above), and I think the habitats of the two species are similar, judging from what I have seen of them in the Philippines.

Genus *OMESTES* Andrewes

Andrewes 1933, Treubia 14, p. 276.

Diagnosis. See preceding *Key to Genera.*

Description. See Andrewes.

Type species. Omestes torta Andrewes, below.

Generic distribution. Same as that of *O. torta*, below.

Notes. I suspect that *Omestes torta* may prove to be only a large, specialized (spined) *Physolaesthus*, but I shall leave a decision about this to future revisers.

Omestes torta Andrewes

Andrewes 1933, Treubia 14, p. 277.
Louwerens 1956, Treubia 23, p. 224.

Description. See Andrewes, and my Figure 5; length 11–14 mm.

Type. A ♂ from **Sangi Is.**; in Andrewes Coll., British Mus. (seen).

Occurrence in New Guinea. **Papua**: 1, Dobodura, Mar.–July 1944 (Darlington); 1, Milne Bay, Dec. 1943 (Darlington); 2, Kiunga, Fly R., Aug. 14–17, 1957 (W. W. Brandt, Bishop Mus.); 1, Daru Is., Mar. 16–31, 1936 (Archbold Expedition, A.M.N.H.); 1, Woodlark Is. (Murua), Kulumadau Hill, Apr. 16–22, 1957 (W. W. Brandt, Bishop Mus.). **West N. G.**: 19, Hollandia, July–Sept. 1944 (Darlington); 1, Maffen, Tor R. (mouth), 4 km E. of Hollandia, July 2, 1959 (T. C. Maa, Bishop Mus.), at light; 1, Bernhard Camp, 50 m, Apr. 12, 1939 (Toxopeus).

Notes. Omestes torta is now known from **New Guinea**, the **Moluccas** (Halmahera and Morotai), **Celebes**, the **Sangi** and **Talaud Islands**, and the **Philippines** (Leyte). My material is not sufficient to show details of geographic variation. The insect lives among dead leaves and vegetation on the ground in deep swamps.

Genus *DICROCHILE* Guérin

Guérin 1846, Ann. Soc. Ent. France (2) 4, Bull. p. CIII.
Sloane 1923, Proc. Linnean Soc. New South Wales 48, pp. 35–36 (key to Australian species).
Csiki 1931, Coleop. Cat., Carabidae, Harpalinae 5, p. 921 (see for synonymy and additional references).

Diagnosis. See preceding *Key to Genera.*

Description. None required here.

Type species. Presumably *Dicrochile fabrii* Guérin, of New Zealand. (I do *not* wish to designate a type species. If no formal designation has been made, it should be left to the next reviser.)

Generic distribution. **New Zealand**, **Australia**, **New Guinea**, **Moluccas** (Obi Is.), **Solomons** (a probably undescribed species near *alternans* from Bougainville), **New Caledonia**.

Notes. All species of this genus that I know, in Australia as well as New Guinea, are winged. Most of them live in swamps or other wet places, but *alternans* (described below) is a mesophile.

KEY TO SPECIES OF *DICROCHILE* OF NEW GUINEA

1. Elytra with acute teeth or short spines at sutural and outer-apical angles; dorsal elytral intervals equal or nearly so (p. 16) ..... *acuta*
– Elytra not toothed or spined; dorsal elytral intervals unequal 2
2. Front of head normally convex; smaller, length 11.5–12.5 mm (p. 17) ..... *alternans*
– Front of head slightly depressed; larger, length 13.5–14.5 mm (p. 18) ..... *tiro*

Dicrochile acuta n. sp.

Description. Form (Fig. 6) of *Agonum*-like *Dicrochile*; piceous black, lateral margins of pronotum and elytra slightly trans-

lucent, elytra iridescent; microsculpture fine and isodiametric on front, indistinct (at 100×) but probably strongly transverse on pronotum and elytra. *Head* 0.74 and 0.72 width prothorax; eyes large; front slightly convex, weakly impressed at sides anteriorly. *Prothorax* quadrate-subcordate; width/length 1.35 and 1.39; base/apex 1.13 and 1.09 (base measured across posterior-lateral setae); base slightly emarginate, not margined; apex broadly emarginate, with impressed marginal line; sides rounded except *c.* straight toward base; margins rather broad, moderately explanate, each with usual 2 setae (at base and before middle); basal angles very obtuse, almost rounded; pronotum with usual impressions, impunctate at middle, closely punctate at base and sides. *Elytra* subparallel, slightly narrowed toward base; width elytra/prothorax 1.46 and 1.40; outer-apical and sutural angles each with an acute tooth or very short spine; striae shallow, faintly punctulate; intervals *c.* flat, subequal on disc, 3rd with 2 punctures attached to 2nd stria. *Legs*: middle and hind tarsi broadly grooved each side above; 5th segment hind tarsi with *c.* 6 strong setae each side below. *Secondary sexual characters*: ♂ front tarsi somewhat obliquely dilated, with 3 segments squamulose below; ♂ with 1, ♀ with 2 setae before apex each side last ventral segment. *Measurements*: length *c.* 12.5–15.5; width *c.* 5.0–6.4 mm.

Types. Holotype ♂ (A.M.N.H.) and 1 ♀ paratype (M.C.Z., Type No. 31,347) from Lake Daviumbu, Fly R., **Papua**, Sept. 1–10 (holotype) and Aug. 19–30 (paratype), 1936 (Archbold Exp.), evidently taken in a light trap; 1 ♀ paratype (Bishop Mus.), Oriomo R., **Papua**, 6 m, Feb. 13, 1964, "H. C.", in light trap; 1 ♀ paratype, "Highl. Agr. Exp. Sta./Aiyura, E. Highl./D", **N-E. N. G.,** 5600 ft. (*c.* 1700 m), May 26, 1960 (J. J. H. Szent-Ivany, Dept. Agr. Port Moresby), at light; 1 ♂ paratype (Bishop Mus.), Nabire, S. Geelvink Bay, **West N. G.,** 10–40 m, Oct. 7, 1962 (H. Holtmann), in light trap in jungle.

Measured specimens. The ♂ holotype and ♀ paratype from Lake Daviumbu.

Notes. This species is closely comparable only with *D. gigas* Castelnau, of Australia. It resembles *gigas* in most technical characters including the denticulate-spinose elytra, but differs from *gigas* in being much smaller (Australian *gigas* measure 20 mm and over) and in having a relatively narrower prothorax and less impressed front.

Louwerens (Treubia 24, 1958, p. 250) records *D. gigas* from Obi Is. in the Moluccas, on the basis of 2 specimens 18 mm long, which differ in some details from the single Australian specimen of *gigas* with which they were compared. Whether the Obi Is. specimens are *gigas* or a related species remains to be decided, as Louwerens hints.

Dicrochile alternans n. sp.

Description. Form (Fig. 7) of rather broad Australian *Dicrochile* (e.g., *goryi* Boisduval); black, appendages blackish except outer segments of antennae brown; both sexes moderately shining but not iridescent, with reticulate microsculpture faint and *c.* isodiametric (where detectable) on front, vague or irregular but apparently transverse on pronotum and elytra. *Head* 0.74 and 0.73 width prothorax; eyes moderate; front convex at middle, irregularly longitudinally impressed each side anteriorly. *Prothorax* slightly transverse, width/length 1.36 and 1.38; base/apex 1.15 and 1.15; base and apex broadly emarginate, apex strongly and base less strongly or indistinctly margined; sides broadly rounded; margins broadly flattened and moderately reflexed posteriorly, each with usual 2 setae, at base and before middle; basal angles broadly rounded; disc convex, with usual impressions, punctate at base, sides, and apex, impunctate at middle. *Elytra* elongate-subquadrate; width elytra/prothorax 1.48 and 1.54; apices sinuate but not denticulate; striae deep, punctulate; intervals convex, unequal on disc (3rd, 5th, 7th nearly 2× as wide as others at ⅔ of elytral length), 3rd usually 2-punctate with

punctures near or behind ⅓ and ⅔ of elytral length, but anterior puncture sometimes duplicated on one or both elytra. *Legs*: middle and hind tarsi sulcate each side above; 5th segments hind tarsi with *c.* 6 strong setae each side below. *Secondary sexual characters*: ♂ front tarsi dilated and squamulose as usual in genus; ♂ with 1, ♀ 2 setae each side last ventral segment. *Measurements*: length *c.* 11.5–12.5; width 4.5–5.0 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,348) and 12 paratypes from Chimbu Vy., Bismarck Rge., **N-E. N. G.,** 5000–7500 ft. (*c.* 1500–2300 m), Oct. 1944 (Darlington); 1 paratype, Feramin, **N-E. N. G.,** 1200–1500 m, June 15–18, 1959 (W. W. Brandt, Bishop Mus.); 1 paratype, Minj, W. Highlands, **N-E. N. G.,** 5200 ft. (*c.* 1600 m), May 20, 1960 (J. H. Barrett, Dept. Agr. Port Moresby), by mercury vapor lamp.

Additional material. **Papua**: 1 ♂, S. Highlands, Aiyuro nr. Mendi, 1530 m, Oct. 7, 1958 (Gressitt), in light trap. **West N. G.**: 1 ♂, Wissel Lakes, Urapura-Itouda, Kamo Vy., 1500 m, Aug. 12, 1955 (Gressitt).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Chimbu Vy.

Notes. The usually 2-punctate 3rd elytral intervals and the deep, punctulate striae suggest that this new species is allied to the common Australian *Dicrochile goryi* Boisduval, but the elytral intervals of *goryi* do not alternate in width, and there are other smaller differences.

I found the Chimbu specimens under cover on the ground in fairly open places.

Dicrochile tiro n. sp.

Description. Similar to the preceding (*alternans*) but larger, with flatter front and relatively wider prothorax. *Head* 0.71 and 0.69 width prothorax, formed as in *alternans* except flatter anteriorly. *Prothorax*: width/length 1.39 and 1.45; base/apex 1.16 and 1.16; otherwise as in *alternans*. *Elytra*: width elytra/prothorax 1.47 and 1.40; most details including alternation of elytral intervals *c.* as in *alternans*; 3rd interval 2- to 4-punctate, the number of punctures often different on the 2 elytra of 1 individual (actual punctures on the left and right elytra of 6 individuals are 2–3, 2–2, 4–2, 2–2, 2–2, 2–3). *Measurements*: length 13.5–14.5; width 5.5–6.1 mm.

Types. Holotype ♀ (Leiden Mus.) and 7 paratypes (some in M.C.Z., Type No. 31,349) all from Wissel Lakes, **West N. G.,** as follows: holotype and 4 paratypes, Lake Paniai, 1750 m, and 1 paratype, Arabu Camp, 1800 m, various dates in Sept., Oct., Nov. 1939 (H. Boschma, Leiden Mus.); 2 paratypes, Enarotadi, 1800–1900 m, July 31, Aug. 9, 1962 (Sedlacek).

Measured specimens. One ♂ paratype from Lake Paniai and the ♀ holotype, in this order.

Notes. Sufficiently compared with *alternans* in the preceding *Description* and in the *Key to Species of Dicrochile of New Guinea.* Whether *tiro* is a separate species or a local form of *alternans* is uncertain. The matter is complicated by the occurrence of a specimen of *alternans* in the Wissel Lakes area.

Genus *MICROFERONIA* Blackburn

Blackburn 1890, Proc. Linnean Soc. New South Wales (2) 4, p. 738.
Sloane 1898, Proc. Linnean Soc. New South Wales 23, pp. 490–491 (Australian species).
Csiki 1931, Coleop. Cat., Carabidae, Harpalinae 5, p. 920 (see for additional references).
Genycerus Andrewes 1933, Treubia 14, p. 277 (new synonymy).

Diagnosis. See *Key to Genera of Licinini.*

Description. None required here; see *Notes*, below.

Type species. Of *Microferonia, M. adelaidae* Blackburn, Australia; of *Genycerus, G. lucanoides* Andrewes, of Java.

Generic distribution. **Australia**, **New Guinea**, **Java**, and presumably intervening islands.

Notes. When Andrewes described *Genycerus*, he thought the mandibles unique among Licinini, but he was not familiar with the Australian members of the tribe. I have seen the type of *Genycerus lucanoides*

and have a photograph of it, and it seems to me that the mandibles are comparable to those of *Microferonia*. The discovery of another comparable species in New Guinea links the Australian and Javan forms geographically. I therefore tentatively suggest the synonymy cited above.

Microferonia baro n. sp.

Description. Form as in Figure 8, elongate-oval with very small head; brownish piceous, legs and antennae slightly reddish; moderately shining, reticulate microsculpture *c.* isodiametric on front, transverse on pronotum, more transverse on elytra. *Head* 0.51 width prothorax; eyes large, genae short; 2 setae over each eye; antennae with 3 basal segments glabrous; right mandible 2-dentate, with inner tooth strong and acute (left mandible probably *c.* similar but partly hidden); front almost evenly convex except with slight frontal impressions anteriorly; clypeus subtruncate, with narrow transverse membrane; labrum emarginate to *c.* middle of length, with lobes equal; mentum without tooth; ligula and paraglossae apparently subequal, ligula apparently 2-setose; palpi slender except apical segments of both pairs slightly thickened. *Prothorax*: width/length 1.40; base/apex 1.70; base truncate-emarginate, vaguely margined at middle; apex broadly emarginate, with marginal line entire; sides rounded anteriorly, nearly straight toward base, narrowly margined, each with 2 setae, at base and before middle; disc broadly convex except depressed baso-laterally, impunctate, with middle line distinct but transverse impressions *c.* obsolete. *Elytra* long-oval; width elytra/prothorax *c.* 1.30; margins entire at base, bluntly (almost rectangularly) angulate at humeri, not distinctly sinuate toward apex; sutural angles narrowly rounded; striae fine, irregular but scarcely punctulate; intervals nearly flat, somewhat irregular but scarcely alternating; each 3rd interval with a conspicuous seta-bearing puncture about ⅓ from base, a less conspicuous puncture without seta near or behind middle, apparently no more-posterior puncture. *Inner wings* evidently atrophied. *Lower surface* almost impunctate but extensively alutaceous, not pubescent; metepisterna less than ½ longer than wide. *Legs*: tarsi slender, not sulcate above; 5th segments hind tarsi with 5 long setae each side below. *Secondary sexual characters*: ♂ with 3 segments each front tarsus moderately dilated, squamulose below; ♂ with 1 seta each side last ventral segment; ♂ copulatory organs as in Figure 170; ♀ unknown. *Measurements*: length *c.* 8; width 3.4 mm.

Type. Holotype ♂ (M.C.Z., Type No. 31,350) from Mt. Wilhelm, Bismarck Rge., **N-E. N. G.,** 7000–10,000 ft. (2135–3050 m), Oct. 1944 (Darlington); the type is unique. It was taken on the ground under cover in mountain rain forest.

Notes. Microferonia baro is more oval and smaller-headed than *M.* (*Genycerus*) *lucanoides* (Andrewes) of Java. I do not have a specimen of *lucanoides*, and I do not want to dissect the mouth parts of the single type of *baro* (which should be reserved for specialists in Licinini), but so far as I can determine the two species are similar in generic characters although different in detail. *M. baro* is larger, more oval, and smaller-headed than any Australian *Microferonia* known to me.

(Tribe AMBLYSTOMINI)

(Genus *AMBLYSTOMUS* Erichson)

Erichson 1837, Käfer Mark Brandenburg 1, 1, p. 59.

Csiki 1931, Coleop. Cat., Carabidae, Harpalinae 5, p. 922 (see for synonymy and additional references).

Andrewes 1939, Ann. Mag. Nat. Hist. (11) 3, p. 130.

Diagnosis. Small Carabidae with most technical characters of large-headed Harpalini but with labrum usually unsymmetrically emarginate and scutellar striae in first (not second) intervals; length usually less than 5 mm.

Description. None required here.

Type species. Acupalpus mauritanicus Dejean, of the Mediterranean region (Andrewes 1939).

Generic distribution. Most of the warmer parts of the **Old World**, including **Australia** but perhaps not New Guinea.

Notes. In the British Museum are 14 specimens labeled as from Dor(e)y, New Guinea, some marked as collected by Wallace and all probably from his material. They include 4-maculate, 2-maculate and immaculate individuals, probably representing different species. However, these specimens may be mislabeled and may really be from Celebes or the Moluccas (see Part I of my "Carabid Beetles of New Guinea," p. 331). I have received no other specimens from New Guinea and found none there myself, although I collected series of the genus in the Philippines, so that my collecting methods are evidently adequate to obtain it, and *Amblystomus* is usually common where it occurs at all. I therefore doubt its occurrence in New Guinea. I list the genus here, in parentheses, but see no reason to name or discuss the "Dor(e)y" species individually.

Tribe CHLAENIINI

Csiki 1931, Coleop. Cat., Carabidae, Harpalinae 5, p. 927 (see for earlier references and synonymy).

Callistitae Jeannel 1942, Faune de France, Coléop. Carabiques, Part 2, p. 961.

Jeannel 1949, Coléop. Carabiques de la Région Malgache, Part 3, p. 776.

Callistinae Basilewsky 1953, Exploration Parc National l'Upemba, Fasc. 10, Carabidae, p. 119.

A single, well known genus of this tribe is represented in New Guinea.

Genus *CHLAENIUS* Bonelli

Bonelli 1810, Observations Ent. 1, Tab. Synopt., Mem. Acad. Sci. Turin 18, pp. 21–78.

Chaudoir 1876, Ann. Mus. Civ. Genoa 8, p. 10 (in monograph of "Chleniens").

Sloane 1910, Proc. Linnean Soc. New South Wales 35, p. 437 (Australian species).

Csiki 1931, Coleop. Cat., Carabidae, Harpalinae 5, p. 934 (see for additional references).

Andrewes 1941, Ann. Mag. Nat. Hist. (11) 7, p. 307 (with key to Javan species).

Jeannel 1942; 1949 (see works cited under tribe).

Bell 1960, Misc. Pub. Ent. Soc. America 1, pp. 98, 108 (North American species).

Diagnosis. See works cited. I use *Chlaenius* in a very broad sense, as noted below. In this sense it is the only genus of the tribe in New Guinea and Australia.

Description. None required here. For discussion of some characters of the New Guinean species, see *Notes* below.

Type species. Chlaenius marginatus Rossi (= *velutinus* Duftschmidt), of Europe.

Generic distribution. Nearly **world-wide**. The genus is most diverse in structure and most numerous in species in Africa and the Oriental Region, less diverse and less numerous in Eurasia and America north of the tropics, and still less in South America and the Australian Region. This suggests that the genus has evolved primarily in the Old World tropics and spread from there.

In the Asiatic-Australian area, scores of species of *Chlaenius* are known in tropical Asia, about 30 in Java (Andrewes 1941), but only 12 in New Guinea, and only 10 (including *Hololeius*) in Australia. Some of the species in New Guinea and Australia are undifferentiated Asiatic forms. Others are endemic to New Guinea or Australia. And the endemics differ in degree of distinctness. This suggests continual trickling of species from Asia toward New Guinea and Australia rather than concerted movements. The fact that all *Chlaenius* in New Guinea and Australia are still winged suggests that their dispersals have been relatively recent.

Notes. For discussion of the author, date of publication, and type species of *Chlaenius* see Jeannel 1942, page 963, footnote.

Chlaenius is a huge genus of 700 or 800 or more known species, and the species are diverse and can be divided into many well characterized groups. Nevertheless, the genus as a whole seems natural, not polyphyletic. Under these circumstances, although the genus can and should be subdivided, the taxonomic level of the subdivisions should be determined by utility and intelligibility. *Chlaenius* is known to

many entomologists who are not specialists in Carabidae, and there seems much to lose and little to gain by splitting it into small genera with new and unfamiliar generic names, many of them unfamiliar even to me, a specialist in Carabidae! I shall therefore use *Chlaenius* in a very broad sense, as a matter of considered policy. I expect to discuss this policy in more detail in Part IV of my "Carabid Beetles of New Guinea." The *Chlaenius* of New Guinea are few and some of them do not fit well in recognized subgenera, and no one is likely to be misled if I treat them simply as species of the great genus *Chlaenius sensu lato*.

Almost every author who has worked extensively on *Chlaenius* has used new characters to group the species, but the works of different authors have not been well correlated. Chaudoir used a variety of obvious characters, beginning with extent of abdominal punctation. Sloane noted that presence or absence of a basal pronotal hair fringe and presence or absence of interruptions of the outer elytral margins are promising taxonomic characters within the genus. Jeannel and Basilewsky derived new group characters from the male genitalia. And Bell found additional characters in the labial pit organs of both sexes and in the chaetotaxy of the valvulae of the female.

The following notes on certain characters apply *only* to the New Guinean species of *Chlaenius*, unless otherwise indicated.

The mandibles are short in all *Chlaenius* in New Guinea, and are exceptionally strongly semicircularly arcuate in *maculiger*.

The clypeus and labrum are truncate or weakly emarginate except in *amplipennis*, in which the labrum is deeply emarginate.

The antennae have segment 3 much (*c.* ½) longer than segment 4 in *Chlaenius pan* and *daer*, slightly longer in *guttula* and *amplipennis*, and subequal in the other species. Segment 3 is pubescent in *guttula* (although the pubescence differs in quality from that on the outer segments), more sparsely pubescent or setulose in *pan* and *daer*, and still more sparsely so in the other species. Segment 3 is not strictly glabrous in any species; a few minute setules are always visible in fresh, clean specimens at 50× or 100× magnification.

The palpi (both pairs, in both sexes) are usually slender with apices narrowly truncate, but are almost acuminate in *guttula*, and more broadly truncate in *flaviguttatus* (terminal segments with apical edges ⅓ or ½ segments' length).

The mentum is toothed, and the tooth is usually variably emarginate.

The pronotum has a basal hair fringe in all species except *daer*, *ceylanicus*, and *guttula*, which lack it. These 3 species are apparently not related to each other.

The pronotum always has a pair of posterior-lateral and in some cases also median-lateral seta-bearing punctures, but they are often hard to distinguish in the general punctation. The posterior-lateral punctures are ⅕ or ⅙ of the prothoracic length before the base in *Chlaenius pan*, *daer*, and *guttula*, but closer to or at the posterior angles in the other species. Median-lateral punctures (just before middle of prothoracic length) are present in some (all?) individuals of *occultus* and *siccus*, but apparently absent in the other species.

The elytra have the basal margin entire except in *Chlaenius pan*. The margin is obtusely angulate at humeri in *daer*, rounded or at most vaguely subangulate in the other species.

The outer elytral margins are interrupted before apex *except* in *Chlaenius pan* and *daer*, in which the interruption is obsolete.

The punctation of the elytral intervals is 2-seriate in *Chlaenius pan* and *daer*, but irregular in the other species, in which it varies from sparse (*ceylanicus* only) to dense.

The inner wings are full and probably fit for flight in all *Chlaenius* in New Guinea and also in Australia, although wing atrophy has occurred in various African, Asiatic, and North American stocks of the genus.

The punctation of the lower surface of the body is more diverse than some authors

have realized. Almost the whole lower surface including the abdomen is punctate or punctulate and setulose in *Chlaenius guttula* and *amplipennis* and also in *daer*, although the latter belongs to the *circumdatus* group in which Andrewes (1941) considered the middle of the abdomen glabrous. *C. pan, ceylanicus*, and *maculiger* are more or less intermediate in this character. The other species have the middle of the abdomen widely glabrous.

The metepisterna are differently margined in different *Chlaenius* in New Guinea, but I doubt if this character deserves the importance Andrewes (1941) gives it.

The tarsi are obviously setulose above in *Chlaenius guttula*, glabrous or nearly so in the other species, but minute setules are usually visible on the upper surface of the tarsi at 50× or 100× magnification, even in the "glabrous" species.

The hind tarsi have the 5th segments always with 2 rows of strong setae below. The number of setae in each row varies from about 4 to about 8 in different species.

Males of all New Guinean species of *Chlaenius* have each front tarsus with 3 segments dilated (least so in *ceylanicus*, see following *Key*) and densely squamulose below. And ♂ ♂ have 1, ♀ ♀ 2 setae each side before apex of last ventral segment, with extra adventitious setae sometimes present.

The aedeagus is open above for much of its length in most species (especially widely open in *guttula*) but relatively long and closed for almost half its length in *pan*.

I have not studied the chaetotaxy of the ♀ valvulae.

Six unrelated species of *Chlaenius*, derived from groups that normally have pale markings on the elytra, are losing or have lost the markings in New Guinea (see *Notes* under *daer, guttula, flaviguttatus, bimaculatus pongraczi, maculiger*, and *hamifer malcheri*). This suggests a local climatic or other selective factor favoring dark color and loss of markings in New Guinea.

In habits, all New Guinean *Chlaenius* are ground-living. *C. daer, ceylanicus, bimaculatus pongraczi*, and *occultus* are found on river banks; *occultus* especially may occur only beside rivers. *C. hamifer malcheri* and *siccus* are commonly found under cover in comparatively dry places. *C. maculiger* is, I think, a rain forest species. The other species live in more or less damp places, but I cannot give their habitats exactly. I took specimens of several species at light or in floods.

Key to Species of *Chlaenius* of New Guinea

1. Elytra with outer margins not interrupted; elytral intervals each with 1 regular row of punctures on each side; antennae with 3rd segments *c.* ½ longer than 4th 2
– Elytra with outer margins interrupted before apex; elytral intervals irregularly punctate; antennae with 3rd segments not or not much longer than 4th 3
2. Very large (*c.* 25 mm); pronotum with basal hair fringe (p. 23) ..... *pan*
– Smaller (*c.* 12–15 mm); pronotum without basal hair fringe (p. 24) ..... *daer*
3. Elytral intervals very sparsely punctulate; ♂ front tarsi narrower, with 2nd segments ¼ or ⅓ longer than wide (p. 24) ..... *ceylanicus*
– Elytral intervals more closely punctulate; ♂ front tarsi wider, 2nd segment *c.* wide as long 4
4. Mandibles very short, semicircularly arcuate (p. 25) ..... *maculiger*
– Mandibles normal, moderately arcuate 5
5. Abdomen plainly punctulate and pubescent or setulose at middle as well as at sides 6
– Abdomen broadly smooth and glabrous (or nearly so) at middle 7
6. Labrum subtruncate or weakly emarginate; pronotum without basal hair fringe; posterior-lateral setae *c.* ⅙ of prothoracic length before base; size very small (*c.* 8 mm) (p. 25) ..... *guttula*
– Labrum deeply emarginate; pronotum with basal hair fringe; posterior-lateral setae near (slightly rounded) posterior angles; larger (*c.* 12 mm) (p. 26) ..... *amplipennis*
7. Male front femora each with a small tooth-like tubercle below, near base; 5th segments hind tarsi with *c.* 7 or 8 setae each side below 8
– Male front femora without tubercles; 5th segments hind tarsi with *c.* 5 setae each side below 10

8. Pronotum closely and coarsely punctate *and* head including front punctulate (this combination of characters separates both sexes of this species from all following ones, the closest approach being *siccus*, see couplet 10) (p. 26) ..... *flaviguttatus*
– Pronotum with only base coarsely punctate; head not or only sparsely irregularly punctulate 9
9. Pronotum with anterior margin entire or only narrowly interrupted at middle; sides of prothorax usually sinuate; elytra usually 2-maculate (p. 27) ... *bimaculatus pongraczi*
– Pronotum with anterior margin obsolete, indicated only toward sides; sides of prothorax not sinuate; elytra not maculate (p. 27) ..... *olthofi*
10. Pronotum punctate at base and in narrow zone along midline but much of disc impunctate; posterior-lateral pronotal setae often *c.* 1/10 of pronotal length before angles (but variable) (p. 28) ..... *occultus*
– Pronotum more extensively (but not always evenly) punctate; posterior-lateral pronotal setae almost at basal angles 11
11. Pronotum more sparsely punctate near middle, with punctures tending to form irregular longitudinal rows; front extensively but irregularly punctate (p. 28) ... *hamifer malcheri*
– Pronotum coarsely punctate, with punctures somewhat irregular but less so than in preceding species; front shining, widely impunctate (a few punctures posteriorly and laterally); (this species characterized also by coarse punctation of proepisterna and of elytral striae) (p. 29) ..... *siccus*

Chlaenius pan n. sp.

Description. Form as in Figure 9, large, rather slender; black, appendages brownish piceous except *c.* outer halves of femora reddish testaceous; rather shining; reticulate microsculpture fine, faint on front, slightly more distinct on pronotum and elytra, *c.* isodiametric except slightly transverse on part of pronotum. *Head* 0.81 and 0.84 width prothorax; eyes rather abruptly prominent; antennae with 3rd segments about ½ longer than 4th segments and plainly but sparsely setulose; mandibles short, moderately arcuate; mentum with deeply emarginate tooth; clypeus subtruncate; labrum slightly emarginate; palpi narrowly truncate at apex in both sexes. *Prothorax* quadrate; width/length 1.11 and 1.09; base/apex 1.16 and 1.11; sides weakly arcuate anteriorly, slightly converging and very broadly weakly sinuate posteriorly, each with seta *c.* ⅕ of length before base, without median-lateral seta; disc with impressed middle line and rounded basal impressions, wrinkled-punctate at base, nearly smooth (sparsely punctulate) elsewhere; posterior pronotal hair fringe present. *Elytra* long, narrowed toward base; width elytra/prothorax 1.67 and 1.75; margins *c.* obliterated at base (inside bases of 4th striae), rounded at humeri, not interrupted posteriorly; intervals rounded-subcostate, each with an irregular row of punctures on each side. *Lower surface* partly irregularly punctulate, but much of abdomen smooth at middle; metepisterna long, with outer edges raised but not channeled. *Inner wings* full. *Legs* slender; tarsi not pubescent above; 5th segments hind tarsi with 4 or 5 strong setae each side below. *Secondary sexual characters* normal; 2nd segments ♂ front tarsi *c.* wide as long (by measurement); ♂ front femur not dentate; aedeagus long, slender, closed above for nearly half its length (Fig. 171). *Measurements*: length *c.* 25–26; width *c.* 9.1 mm.

Types. Holotype ♂ (Bishop Mus.) from Torricelli Mts., Mokai Village, **N-E. N. G.,** 750 m, Jan. 1–23, 1959 (W. W. Brandt); and paratypes as follows. **N-E. N. G.**: 1 ♂, Maprik, Sepik Dist., 1965 (Dept. Agr. Port Moresby). **West N. G.**: 1 ♀ (M.C.Z., Type No. 31,351), Kota Nika, Res. Hollandia, Jan. 9, 1958 (R. T. Simon Thomas); 1 ♀ , Tanahmerah, Res. Boven Digoel, Feb. 1958 (R. T. Simon Thomas).

Measured specimens. The ♂ holotype and ♀ paratype from Kota Nika.

Notes. This new species probably represents *Chlaenius femoratus* Dejean of Java, Sumatra, etc. but is narrower (especially the prothorax) and duller than *femoratus* and lacks subapical interruptions of the elytral margins, which are present though weak in my 5 specimens of *femoratus* from Java. I have 1 ♀ of a related undescribed species from Celebes, which partly fills the

geographic gap between *femoratus* and *pan*.

Chlaenius daer n. sp.

Description. Form of *Chlaenius* of *circumdatus* group; slender; greenish black, head green, elytra sometimes with vestige of very narrow yellowish margin at apex, appendages testaceous brown; reticulate microsculpture absent or faint on head and pronotum, deep, fine, isodiametric on elytra. *Head* 0.82 and 0.82 width prothorax; eyes large, prominent; antennae with 3rd segments *c.* ½ longer than 4th, setulose; mandibles moderate; clypeus and labrum subtruncate; surface of head irregularly, not densely punctate; mentum with ± emarginate tooth. *Prothorax* narrow, quadrate-subcordate; width/length 1.11 and 1.16; base/apex 1.04 and 1.09; sides arcuate except broadly usually strongly sinuate posteriorly; margins narrow, each with seta *c.* ⅕ of length before base, without median-lateral seta; disc irregularly punctate, with fine middle line, linear baso-lateral impressions nearer sides than middle but shallower than usual in the group; posterior pronotal hair fringe absent. *Elytra* slightly narrowed anteriorly; width elytra/prothorax 1.63 and 1.66; margins entire at base, obtusely angulate at humeri, not interrupted posteriorly; intervals weakly convex, each with a row of punctures on each side. *Lower surface* including middle of abdomen extensively punctulate and pubescent; metepisterna long, weakly margined externally. *Inner wings* full. *Legs*: tarsi nearly glabrous above; 5th segments hind tarsi with *c.* 4 short setae each side below. *Secondary sexual characters* normal: 2nd segment male front tarsi *c.* ⅒ longer than wide; male femora not dentate; aedeagus open above for much of length. *Measurements*: length *c.* 12–15.5; width 4.4–6.0 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,352) and 2 paratypes from Nadzab, **N-E. N. G.,** July 1944 (Darlington); and additional paratypes as follows. **Papua**: 18, Kiunga, Fly R., dates in July, Aug. 1957 (W. W. Brandt, Bishop Mus.); 1, Lake Daviumbu, Fly R., Aug. 19–30, 1936 (Archbold Exp., A.M.N.H.); 1, Palmer R. at Black R., July 22–31, 1936 (Archbold Exp., A.M.N.H.); 1, Kokoda, 1200 ft. (366 m), Aug. 1933 (Cheesman). **N-E. N. G.**: 2, Aitape, Aug. 1944 (Darlington); 1, Main R., Sepik, Feb. 1965 (R. Hornabrook). **West N. G.**: 1, Hollandia, July–Sept. 1944 (Darlington); 1, Tanahmerah, Boven Digoel Res., 17 m, April 15, 1955 (L. D. Brongersma, Leiden Mus.); 1, Idenburg R., 400 m, July 15–Sept. 15, 1938 (J. Olthof, Leiden Mus.); 1, Iebele Camp, Snow Mts., 2250 m, Sept. 1938 (Toxopeus).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Kiunga.

Notes. C. daer is the only species of the *Chlaenius circumdatus* group in New Guinea. This group is widely distributed and common in the warmer part of the Old World including Australia. The present new species seems nearest *acroxanthus* Chaudoir (which ranges from the southeastern corner of Asia to the Moluccas—Louwerens 1956, Treubia 23, p. 223) but has baso-lateral pronotal impressions shallower and punctation less coarse. I have used for comparison a series of *acroxanthus* from Java, collected by Thomas Barbour.

Chlaenius ceylanicus Nietner

Nietner 1856, J. Asiatic Soc. Bengal 25, p. 385.
Csiki 1931, Coleop. Cat., Carabidae, Harpalinae 5, p. 932 (*Hololius*) (see for additional references).
nitidulus Dejean (not Schrank) 1826, Species Général Coléop. 2, p. 341.
ornatus Tryon 1890, Second Annual Report Administrator British New Guinea, Appendix 5, p. 109 (*Poecilus*).
Csiki 1931, Coleop. Cat., Carabidae, Harpalinae 5, p. 563 (?*Poeciloidea*).

Description. None required here; see preceding *Key to Species* for recognition characters. Note 2nd segments ♂ front tarsi ¼ (Javan specimen) or ⅓ (Australian specimen) longer than wide (by measurement); length *c.* 11–12.5 mm.

Types. Of *ceylanicus*, from western and southern **Ceylon**; now in Berlin U. Zool.

Mus. and Stettin Town Mus. (*t.* Andrewes). Of *nitidulus*, from "**Indes orientales**"; in Oberthür Coll., Paris Mus. Of *ornatus*, a ♂ from St. Joseph (Angabunga) R. District, **Papua**, collected by A. C. English; present location of type unknown (not seen).

Occurrence in New Guinea. **Papua**: the type of *ornatus*; 1, Rouku, Morehead R., Apr. 1962 (W. W. Brandt, C.S.I.R.O.). **N-E. N. G.**: 5, Kamindibit, Main R., Sepik, Feb. 1965 (R. Hornabrook), on water weeds in swamp. **West N. G.**: 1 ♀, Garian, Lake Jamoer, Dec. 8, 1954 (L. D. Brongersma, Leiden Mus.).

Notes. "*Hololius*" *ceylanicus* ranges from southern **Asia** to eastern **Australia**, and will probably be found on all the intervening islands, although records are still incomplete. I have found it in Australia under cover by backwaters of rivers and in river floods. Nietner says it flies to light in Ceylon.

Chlaenius maculiger Castelnau

Castelnau 1867, Notes on Australian Coleop., p. 62.
Chaudoir 1876, Ann. Mus. Civ. Genoa 8, p. 67.
Sloane 1910, Proc. Linnean Soc. New South Wales 35, pp. 438, 440.
Csiki 1931, Coleop. Cat., Carabidae, Harpalinae 5, p. 961.
nigripes Macleay (not Dejean, not Faldermann) 1886, Proc. Linnean Soc. New South Wales (2) 1, p. 140.
biroi Csiki 1931, Coleop. Cat., Carabidae, Harpalinae 5, p. 948.

Description (for recognition only). Medium sized, depressed; dark, dark-legged, typically 2-maculate but spots sometimes lost; unique in genus in New Guinea in mandibles very short, semicircular; length *c.* 12–14 mm.

Types. Of *maculiger*, from Rockhampton, **Australia**; probably in Genoa Mus. (I did not find it at Melbourne in 1957). Of *nigripes*, from Fly R., **Papua** (implied); may now be in Macleay Mus., Sydney (not seen). Of *biroi*, as for *nigripes* (the name *biroi* was proposed to replace *nigripes* Macleay, which is preoccupied).

Occurrence in New Guinea. Widely distributed and common: 127 specimens from localities including Dobodura and Wau in all 3 political divisions of **New Guinea**; most at low altitudes but reaching at least 1300 and 1500 m at Wau and on the Bismarck Rge.

Notes. Sloane (1910) has established the identity of *nigripes* Macleay (*biroi* Csiki) with *maculiger* Castelnau.

Outside New Guinea, this species is known from **Australia** and **New Britain** (Cape Gloucester, Jan.–Feb. 1944, Darlington). It is apparently related to and probably derived from the same Oriental stock as *Chlaenius tetragonoderus* Chaudoir, which is widely distributed farther west in the Malay Archipelago, to the mainland of Asia. *C. tetragonoderus batjanicus* Louwerens (1956, Treubia 23, p. 234) of the northern Moluccas, which varies in color of legs, may be a transitional form. An apparently undescribed species of the group occurs in the Solomons.

The yellow subapical elytral spots are individually variable in specimens from New Guinea and are absent or nearly absent in some individuals. The variation in spotting apparently occurs throughout New Guinea.

This is, I think, a rain forest species that may occur in ordinary leaf litter rather than in specially wet places, but I have taken too few specimens to be sure.

Chlaenius guttula Chaudoir

Chaudoir 1856, Bull. Soc. Nat. Moscow 29, Part 2, p. 216.
Csiki 1931, Coleop. Cat., Carabidae, Harpalinae 5, p. 957 (see for additional references).
Andrewes 1941, Ann. Mag. Nat. Hist. (11) 7, p. 310 (in key).
Louwerens 1953, Verhandlungen Naturforschenden Gesellschaft Basel 64, p. 313.
csikii Jedlicka 1951, Ann. Mus. National Hungary 1, p. 136 (new synonymy).
astrolabensis Jedlicka 1951, Ann. Mus. National Hungary 1, p. 136 (new synonymy).
immaculata Louwerens 1962, Tijdschrift voor Ent. 105, p. 145 (new synonymy).

Description (for recognition only). Very small; dull dark bluish, with or without a small pale spot on suture near apex (see

following *Notes*); see also preceding *Key to Species*; length *c.* 8 mm.

Types. Of *guttula*, from **Hongkong**; in Oberthür Coll., Paris Mus. Of *csikii* and *astrolabensis*, both from Stephansort, Astrolabe Bay, **N-E. N. G.**; in Hungarian National Mus. Of *immaculata*, from **Amboina**; in Louwerens Coll. (Types not seen.)

Occurrence in New Guinea. **Papua**: 7, Dobodura, Mar.–July 1944 (Darlington); 1, Bisianumu, near Sogeri, 500 m, Mar. 15–20, 1955 (E. O. Wilson, M.C.Z.), in rain forest; 1, Brown R., May 23, 1956 (E. J. Ford, Jr., Bishop Mus.). **N-E. N. G.**: 1, Bulolo, 731 m, Aug. 26, 1956 (E. J. Ford, Jr., Bishop Mus.); 1, Finschhafen (L. Wagner, M.C.Z.). **West N. G.**: 3, Hollandia, Jan., Apr., May 1945 (B. Malkin, U.S.N.M.); 1, Kota Nika, Res. Hollandia, Nov. 29, 1957 (R. T. Simon Thomas, Louwerens Coll.); 1, Maffin Bay, Jan. 1, 1945 (E. S. Ross, California Acad.).

Notes. This species is known from southern **Asia**, **Sumatra**, **Java**, **Bali**, **Celebes**, **Timor** (Louwerens 1953), the **Philippines**, **New Guinea**, and **New Britain** (Cape Gloucester, Darlington, M.C.Z.). It often flies to light.

Although most specimens from New Guinea have a variable (sometimes minute) vestige of a subapical sutural pale spot, several (not all) of those from Dobodura are unspotted.

The characters given by Jedlicka to distinguish *csikii* from *guttula* seem to me to be individual rather than specific, and "aberration" *astrolabensis* Jedlicka and "var." *immaculata* Louwerens are (I think) unnecessary names for unspotted individuals.

Chlaenius amplipennis Chaudoir

Chaudoir 1876, Ann. Mus. Civ. Genoa 8, p. 252.
Csiki 1931, Coleop. Cat., Carabidae, Harpalinae 5, p. 946.
Andrewes 1941, Ann. Mag. Nat. Hist. (11) 7, p. 310.

Description (for recognition only). Medium small; dark, dull; unique among *Chlaenius* of New Guinea in labrum deeply emarginate; length *c.* 12 mm.

Type. A ♂ from **Java**; in Brussels Mus. (not seen).

Occurrence in New Guinea. **N-E. N. G.**: 1 ♂, Bulolo, 2000 ft. (610 m), Mar.–July 1937 (George Rio, Chicago Mus.); 1 ♀, Main R., Sepik, Feb. 1965 (R. Hornabrook).

Notes. Chlaenius amplipennis apparently ranges from **Sumatra** and **Java** to the **Philippines**, **New Guinea**, and the **Solomons** (Guadalcanal Is., 1944, L. N. Jarcho, M.C.Z.). It varies geographically and some of the geographic forms may be recognizable subspecies, but I do not have enough material to decide about this.

Chlaenius flaviguttatus Macleay

Macleay 1825, Annulosa Javanica, p. 14.
Chaudoir 1876, Ann. Mus. Civ. Genoa 8, p. 52.
Csiki 1931, Coleop. Cat., Carabidae, Harpalinae 5, p. 955 (see for synonymy and additional references).
Andrewes 1941, Ann. Mag. Nat. Hist. (11) 7, p. 307 (in key).
Louwerens 1953, Verhandlungen Naturforschenden Gesellschaft Basel 64, p. 311.
guttatus Eschscholtz 1833, Zoologischen Atlas 5, p. 26, pl. 25, fig. 8.
immaculipennis Jedlicka 1951, Ann. Mus. National Hungary 1, p. 134 (new synonymy).

Description (for recognition only). Medium sized, rather slender; dull, dark, elytra 2-maculate or immaculate, legs pale usually with dark knees; most of upper surface closely conspicuously punctate; palpi with apical segments truncate, apices ⅓ or ½ wide as length of segment; see also *Key to Species*; length *c.* 11–14.5 mm.

Types. Of *flaviguttatus*, from **Java**; in British Mus. (seen). Of *guttatus*, **Manil(l)a**; Moscow U. Zool. Mus. (not seen). Of *immaculipennis*, **New Guinea**; in Jedlicka Coll. (not seen).

Occurrence in New Guinea. Widely distributed on New Guinea (including Dobodura and Wau), and reaching Biak and (in the Admiralties) Manus Is.: 283 specimens, most at low altitudes but reaching at least 1300 and 1500 m in places in the mountains.

Notes. This common *Chlaenius* is known from **Sumatra**, **Java**, etc. to **New Guinea** and **Australia**, east to the **Philippines**, **New Britain**, **New Ireland**, **Solomons**, **New Hebrides**, **Fiji**, **Samoa**, and **New Caledonia**.

Markings vary *individually* in the series from New Guinea. Each elytron may have a conspicuous irregular subapical pale mark, or fragments of such a mark, or no mark at all, and the variation occurs in all parts of New Guinea from which series have been seen. Unmarked individuals are "aberration" *immaculipennis* Jedlicka, which I think is not worth distinguishing.

This species occurs in a variety of wet places, often in more or less open country.

Chlaenius bimaculatus pongraczi Jedlicka

Jedlicka 1951, Ann. Mus. National Hungary 1, p. 136.

Description. Generally similar to typical *bimaculatus* Dejean in technical characters (see preceding *Key* and also Andrewes' key to Javan *Chlaenius*, 1941, Ann. Mag. Nat. Hist. (11) 7, p. 307), but differing somewhat in color and especially in punctation. Color bluish black, legs testaceous (not bicolored), antennae and mouthparts reddish brown. Punctation of head and pronotum reduced but variable: head with or almost without punctulation (most distinct posteriorly); pronotum coarsely punctate only basally, extensively smooth or in part finely punctulate elsewhere; length *c.* 12–14 mm.

Type. From **New Guinea**; in Hungarian National Mus. (not seen).

Occurrence in New Guinea. **Papua**: 9, Dobodura, Mar.–July 1944 (Darlington); 7, Mt. Lamington, 1300–1500 ft. (*c.* 400–450 m), (C. T. McNamara, S. Australian Mus.); 2, Kokoda, 1200 ft. (366 m), May & Aug. 1933 (Cheesman); 1, Daradae, near Javarere, Musgrove R., Oct. 4, 1958 (Gressitt). **N-E. N. G.**: 3, Sattelberg (British Mus.); 1, Wareo, Finschhafen (Rev. L. Wagner, S. Australian Mus.); 1, Gewak, Salawaket Rge., 1530 m, Sept. 7, 1956 (E. J. Ford, Jr., Bishop Mus.); 1, Sepik, Maprik area, 160 m, Aug. 26, 1957 (D. Elmo Hardy, Bishop Mus.). **West N. G.**: 1, Hollandia, Jan. 1933 (A.M.N.H.); 1, Waris S. of Hollandia, 450–500 m, July 24–31, 1959 (T. C. Maa, Bishop Mus.); 2, Ifar, Cyclops Mts., 300–500 m, June 23–25, Sept. 9, 1962 (Sedlacek); 1, Guega, W. of Swart Vy., 1200 m, Nov. 14, 1958 (Gressitt); 1, Bodem, 11 km SE. of Oerbefareh, 100 m, July 7–17, 1959 (T. C. Maa, Bishop Mus.).

Notes. Chlaenius bimaculatus Dejean (or the group of closely related species that goes under this name) ranges from **SE. Asia** to the **Philippines** and **New Guinea** (not Australia). I have ample comparative material from a number of localities from SE. Asia to Amboina. Geographic variation is obvious. The New Guinean form varies also *individually* in marking: most individuals have a conspicuous pale spot before apex of each elytron, but the spot varies in size and is almost absent in 2 of the Sattelberg specimens.

My Dobodura specimens were taken in a grassy bank beside a small river.

Chlaenius olthofi n. sp.

Description. Form (Fig. 10) of *Chlaenius bimaculatus* Dejean, slender; head and pronotum shining green or greenish black; elytra duller, purplish black, with very fine *c.* isodiametric microsculpture; appendages rufous. *Head* 0.72 and 0.76 width prothorax; eyes large, genae short; antennae with 3rd segments *c.* equal to 4th and sparsely setulose; mandibles average; clypeus and labrum subtruncate or weakly emarginate; front with *c.* punctiform anterior impressions, otherwise almost impunctate (a few punctules posteriorly); mentum with *c.* entire tooth; palpi narrowly truncate at apex. *Prothorax* subquadrate, widest at or slightly behind middle; width/length 1.16 and 1.13; base/apex 1.17 and 1.10; apex not margined except vaguely at sides; sides broadly rounded, not or at most faintly sinuate before obtuse but well defined, slightly blunted posterior angles; posterior-

lateral setae *c.* 1/10 of prothoracic length before base, median-lateral setae absent; disc with impressed middle line, sublinear baso-lateral impressions; surface extensively smooth but with a few punctures mostly near base, sides, and along middle; posterior pronotal hair fringe present. *Elytra*: width elytra/prothorax 1.44 and 1.45; margins entire at base, rounded at humeri, with subapical interruptions; striae moderately impressed, vaguely punctulate; intervals slightly convex, moderately closely punctate. *Lower surface* shining; proepisterna almost impunctate; some punctures on metepisterna including epimera and on base of abdomen at sides, but much of abdomen smooth or nearly so; metepisterna long, margined externally, margin obsolete anteriorly. *Inner wings* full. *Legs*: tarsi *c.* glabrous above; 5th segments hind tarsi with *c.* 7 setae each side below. *Secondary sexual characters*: ♂ front tarsi with 2nd segments *c.* wide as long; ♂ front tibiae with small tooth below near base; ♂ with usually 1, ♀ 2 or 3 (unsymmetric in the single ♀) setae each side last ventral segment. Aedeagus slender, open above for much of length. *Measurements*: length *c.* 13–14; width *c.* 4.5–5.0 mm.

Types. Holotype ♂ (Leiden Mus.) and 1 ♂ paratype (M.C.Z., Type No. 31,353) from Bernhard Camp, **West N. G.,** 50 m, July–Sept. 1938 (J. Olthof); 1 ♀ paratype, same locality, Apr. 12, 1939 (Toxopeus); 1 ♂ paratype, Oro Bay, **Papua**, July 12, 1944 (A. H. Mallery, Bishop Mus.).

Measured specimens. The ♂ holotype and ♀ paratype.

Notes. This seems to be a distinct species of the *bimaculatus* group, occurring within the geographic range of *bimaculatus* subspecies *pongraczi*. *C. olthofi* may be a product of an early invasion of a *bimaculatus*-like stock, *pongraczi* of a later one.

Chlaenius occultus Sloane

Sloane 1907, Deutsche Ent. Zeitschrift for 1907, p. 467.

Description (for recognition only). A medium-sized *Chlaenius* with subcordate prothorax; blue-black, sometimes in part greenish, legs reddish testaceous, antennae and mouthparts reddish brown; rather shining, reticulate microsculpture absent or nearly so on head and pronotum, visible on elytra especially of female, fine, irregularly isodiametric; see also *Key to Species of Chlaenius of New Guinea*; length *c.* 14–17 mm.

Type. From Herbertshöhe, **New Britain**, "returned to Dr. Horn for Bennigsen's collection" (not seen).

Occurrence in New Guinea. **Papua**: 7, Dobodura, Mar.–July 1944 (Darlington); 4, Kokoda, 1200 ft. (366 m), May, Aug. 1933 (Cheesman); 1, Laloki, 1909 (F. Muir, Hawaiian Sugar Planters Association); 5, Mt. Lamington, 1300–1500 ft. (*c.* 400–450 m) (C. T. McNamara, S. Australian Mus.); 1, Peria Ck., Kwagira R., 50 m, "No. 7," Aug. 14–Sept. 6, 1953 (Geoffrey M. Tate, A.M.N.H.). **N-E. N. G.**: 30, vic. Nadzab, July 1944 (Darlington); 1, Busu R., E. of Lae, 100 m, Sept. 14, 1955 (Gressitt); 2, Wau, 1100, 1200 m, Oct. 30, 1961, July 28–29, 1963 (Sedlacek). **West N. G.**: 5, Hollandia, Jan., Apr., May 1945 (B. Malkin, U.S.N.M.); 1, Humboldt Bay Dist., 1937 (W. Stüber, British Mus.); 1, Tanahmerah, Res. Boven Digoel, Apr. 24, 1957 (R. T. Simon Thomas, Leiden Mus.).

Notes. I have identified this species from Sloane's description: the size, cordate prothorax, and rounded humeral margins are (together) diagnostic in the region in question; other details agree well enough; and I have seen a specimen from New Britain (near Rabaul, Feb. 1929, Pemberton collector, in Coll. Hawaiian Sugar Planters Association).

This species occurs in **New Britain** (the type, and the specimen from near Rabaul referred to above) and the **Solomons** (Guadalcanal; Bougainville) as well as **eastern and central New Guinea**. I have been unable to determine its relationship to other species of *Chlaenius*. It is found under stones on the banks of rivers.

Chlaenius hamifer malcheri Van Emden

Van Emden 1937, Stettiner Ent. Zeitung 98, pp. 35, 37.

Description (for recognition only). Medium small, moderately broad; usually very dark with or without slight metallic tinge, usually without spots but latter sometimes partly developed (see *Notes* below); see also *Key to Species*; length *c.* 11–12 mm.

Type. From Pauru, New Georgia, **Solomon Islands** (Fr. Malcher); in Van Emden Coll., British Mus. (seen).

Occurrence in New Guinea. **Papua**: 13, Dobodura, Mar.–July 1944 (Darlington); 1, Oro Bay, July 12, 1944 (A. H. Mallery, Bishop Mus.); 1, Kokoda, 1200 ft. (366 m), Aug. 1933 (Cheesman); 1, Port Moresby, Konedobu, Apr. 20, 1958 (J. J. H. Szent-Ivany, Dept. Agr. Port Moresby), at light; 1, Popondetta, Aug. 11, 1962 (A. Catley, Dept. Agr. Port Moresby), at light; 1, Mt. Lamington, 1300–1500 ft. (*c.* 400–450 m) (C. T. McNamara, S. Australian Mus.); 2, Rouku, Morehead R., Apr. 1962 (W. W. Brandt, C.S.I.R.O.); 1, Rossel Is. (S.E. Papua), Oct. 1963 (W. W. Brandt, C.S.I.R.O.). **N-E. N. G.**: 2, "No. 2, Oomsis," 22 mi. W. of Lae on Lae-Bulolo Road, 100 m, Apr. 26, 1959 (L. J. Brass, A.M.N.H.); 2, Wau, Morobe Dist., 1200 m, Dec. 6, 1961, Sept. 15–30, 1962 (Sedlacek); 1, Bulolo "G. T.," (Sedlaceks); 1, 16 km W. of Mumeng, 3000–5000 m, May 1962 (Sedlacek); 1, Okapa, July 12, 1964 (R. Hornabrook); 1, lower Busu R., Huon Pen., May 12, 1955 (E. O. Wilson, M.C.Z.). **West N. G.**: 1, Hollandia, May 1945 (B. Malkin, U.S. N.M.); 1, Maffin Bay, June 1944 (E. S. Ross, California Acad.); 1, Wissel Lakes, Tage Lake, 1760 m, Aug. 4, 1955 (Gressitt); 1, Wissel Lakes, Enarotadi, 1900–2000 m, July 2–11, 1962 (N. Wilson, Bishop Mus.).

Notes. This species belongs to a difficult group of *Chlaenius* that extends from S. Asia to NE. Australia. The group includes *hamatus* Dejean as well as *hamifer* Chaudoir. I am not sure whether these two species really are different, or with which of them *malcheri* should go. My treatment of it as a geographic form of *hamifer* is tentative. The range of *hamifer* is from S. Asia to Australia.

Apparently only one form of the *hamifer-hamatus* group occurs in New Guinea. It is very dark and usually unmarked, but 2 examples from Dobodura show the posterior part of a pale "comma" on the apex of each elytron, and the 1 specimen from Port Moresby, the 2 from Rouku, and the 1 from Hollandia have the "commas" complete but narrow. *Chlaenius insulanus* Louwerens (1956, Treubia, 23, p. 234) of the northern Moluccas is another dark, unmarked form of the *hamifer-hamatus* group, but is smaller and narrower than *malcheri.*

C. h. malcheri occurs under cover often in somewhat drier places than most other *Chlaenius* except the following (*siccus*).

Chlaenius siccus n. sp.

Description. Form *c.* average in genus; rather shining black, sometimes with slight greenish or bluish reflections, appendages rufous; reticulate microsculpture absent on head and pronotum, fine and *c.* isodiametric on elytra. *Head* 0.68 and 0.67 width prothorax; eyes large, genae short; antennae with 3rd segments *c.* equal 4th and scarcely setulose; mandibles average, rather short, moderately arcuate; labrum and clypeus subtruncate; front almost smooth at middle, punctate at sides and posteriorly, with slight frontal impressions; mentum with blunt usually vaguely emarginate tooth; palpi slender, narrowly subtruncate at apex. *Prothorax* subquadrate but rather strongly narrowed anteriorly; width/length 1.28 and 1.28; base/apex 1.33 and 1.31; sides weakly arcuate for most of length, *c.* straight and somewhat converging posteriorly; posterior angles obtuse, narrowly rounded; margins narrow anteriorly, wider posteriorly, each with posterior-lateral setae just before base and (at least in some individuals) median-lateral setae just before middle; disc irregularly longitudinally impressed each side

c. midway between middle and side, with whole surface rather closely but somewhat irregularly, coarsely punctate; posterior pronotal hair fringe present. *Elytra* not narrowed anteriorly; width elytra/prothorax 1.29 and 1.36; margins entire at base, arcuate at humeri, interrupted subapically; striae rather coarsely punctate, intervals slightly convex, irregularly punctulate. *Lower surface*: proepisterna coarsely punctate at least in part, mesepisterna partly punctate or almost impunctate, sides of metasterna punctate, abdomen punctulate at sides and across base but extensively smooth or nearly so at middle; metepisterna long, strongly margined (grooved) externally. *Inner wings* full. *Legs* without obvious unusual characters; tarsi *c.* glabrous above; 5th segments hind tarsi with *c.* 4 setae each side below. *Secondary sexual characters* normal; ♂ front tarsi dilated, 2nd segment at least as wide as long; ♂ front tibiae not toothed; ♂ with 1, ♀ 2 setae each side last ventral segment. *Measurements*: length *c.* 11.5–13.5; width 4.1–4.8 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,354) and 14 paratypes from Dobodura, **Papua**, Mar.–July 1944 (Darlington); and additional paratypes as follows. **Papua**: 2, Mt. Lamington, 1300–1500 ft. (*c.* 400–450 m) (C. T. McNamara, S. Australian Mus.). **N-E. N. G.**: 1, Aitape, Aug.–Sept. 1936 (Cheesman); 4, Swart Vy., Karubaka, 1450, 1500, 1550 m, Sept. 8, 16, 22, 1958 (Gressitt), some taken in light trap; 8, Wau, Morobe Dist., 1200 m, dates in Jan., Feb., Mar., Aug., 1962–1963 (Sedlacek); 1, Sum-Sum, near Bulolo, Morobe Dist., Feb. 7–11, 1966 (Rhonda M. Stevens, Dept. Agr. Port Moresby); 7, Minj, W. Highlands, 5200 ft. (*c.* 1600 m), Mar. 25, May 20, 1960 (J. H. Barrett, Dept. Agr. Port Moresby). **West N. G.**: 1, Hollandia, May 1945 (B. Malkin, U.S.N.M.); 1, Kota Nika, Res. Hollandia, Feb. 23, 1956 (R. T. Simon Thomas, Louwerens Coll.); 4, Ifar, Cyclops Mts., 300–500 m, June 23–25, 1962 (Sedlacek); 1, same locality, 400–800 m, Sept. 9, 1962 (Sedlacek); 2, "G. den Hoed, Ifar," Dec. 1957 (Louwerens Coll.); 1, Kebar Vy., W. of Manokwari, Vogelkop, 550 m, Jan. 4–31, 1962 (S. & L. Quate, Bishop Mus.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. In Andrewes' (1941, see reference under genus) key to the *Chlaenius* of Java, this runs to *leucops* Wiedemann, of which I have specimens from India, Java, and Luzon, but the present new species is narrower, paler-legged, and more shining than *leucops*, with somewhat different sculpture: e.g., the punctation of the pronotum is coarser and more irregular than in *leucops*. *C. siccus* is closer to, and may prove to be a geographic representative of, *ophonoides* Fairmaire of Australia (recorded also from New Caledonia and New Hebrides). However, *siccus* is slightly smaller and much darker than *ophonoides*, being black without or with only faint metallic tinge while *ophonoides* is always plainly greenish black.

In habits, this species resembles the preceding one (*hamifer malcheri*) and often occurs with it, under cover on comparatively dry ground in more or less open places.

Tribe OODINI

Csiki 1931, Coleop. Cat., Carabidae, Harpalinae 5, p. 1000 (see for synonymy and additional references).

Ooditae Auct. including Jeannel 1949, Coléop. Carabiques de la Région Malgache, Part 3, p. 828.

The members of this tribe are oval, *Amara*- or even dytiscid-like, and are black or metallic, usually unmarked. Their generic classification is unsatisfactory (see below, and see *Notes* under *Anatrichis* and *Oodes laevissimus*). However, the 13 species of the tribe known from New Guinea obviously include no striking endemic genera and, although diverse, they are less so than the oodines of the Oriental Region or Australia. The Oriental *Systolocranius*, *Holcocoleus*, *Simous* (see under *Oodes laevissimus*), etc., and the Australian *Coptocarpus* do not reach New Guinea.

The presence or absence of a basal elytral margin is a useful key character in this tribe but must be determined with care. The basal margin is a fine, sharply marked line, impressed or formed by a slight elevation of the elytral surface in front of the margin, and usually ending inwardly opposite the bases of the 3rd striae or 3rd intervals. It is distinct from the basal depression of the elytra that fits under the base of the pronotum. It is best examined under diffused light, for a sharply focused spotlight makes reflections that simulate a margin where none is present.

Presence or absence of a small seta-bearing puncture on the posterior edge of the pronotum on each side near the basal angle is another useful key character that must be determined with care. The setae are sometimes very small and weak and easily broken off. The punctures may then be hard to detect even in clean specimens and undetectable in dirty ones. Sometimes these setae and punctures vary within single species (see *Oodes siamensis*).

Clean specimens of *Anatrichis pusilla*, *Oodes exiguus*, and *O. piceus* can be seen to have a small anterior puncture over each eye, with or without a small, weak seta. These punctures are lacking in all other New Guinean Oodini. This suggests an actual relationship among the 3 species named, which is supported by the arrangement of labral setae and by a similarity of body form, and this in turn suggests that the conventional distinction between *Anatrichis* and *Oodes* is unnatural. However, I cannot recharacterize these 2 widely distributed genera on the basis of the few species that occur in New Guinea.

Most oodines are aquatic or subaquatic, living in vegetation or among dead leaves in or close to standing water, but *O. laevissimus* Chaudoir and probably also the 2 related species described below (i.e., the *laevissimus* group) live in leaf litter on the floor of rain forest. This is the habitat of some *Coptocarpus* in Australia and of certain other oodines elsewhere. State of wings is correlated with habitat. The wings are fully developed in all known New Guinean Oodini except the *Oodes laevissimus* group, in which the wings are apparently atrophying as the group leaves subaquatic habitats and invades terrestrial leaf litter. At the same time the group is apparently beginning to evolve local flightless species in different places in New Guinea.

KEY TO GENERA OF OODINI OF NEW GUINEA

1. Size small (*c.* 5 mm); clypeus without seta-bearing punctures; ♂ front tarsi only slightly dilated (p. 31) ..... *Anatrichis*
– Size usually larger; *if* size small, clypeus with seta-bearing puncture on each side and ♂ front tarsi wider (p. 32) ..... *Oodes*

Genus *ANATRICHIS* Leconte

Leconte 1853, Trans. American Philosophical Soc. 10, p. 391.
Chaudoir 1882, Ann. Soc. Ent. France (6) 2, p. 318.
Sloane 1910, Proc. Linnean Soc. New South Wales 35, pp. 442, 443 (the Australian species).
Csiki 1931, Coleop. Cat., Carabidae, Harpalinae 5, p. 1003 (see for synonymy and additional references).

Diagnosis. Very small Oodini; clypeus and posterior margin of pronotum without seta-bearing punctures; labrum with clump of 4 setae at middle and 1 separate seta each side; ♂ front tarsi typically only slightly dilated, but variable (see *Notes* below).

Description. None required here.

Type species. Oodes minutus Dejean, of North America.

Generic distribution. **India** and **Burma** to **Australia**; tropical and warm temperate **America**.

Notes. The characters and limits of this genus are doubtful, as suggested in discussion under the tribe (above).

Authorities disagree about the ♂ front tarsi of *Anatrichis*. Leconte says 4 segments are slightly dilated and spongiose (with dense squamae) below. Chaudoir says 3 segments are thus modified. And Sloane says only 2 segments have squamae. In fact, different species differ in this respect, and minor variations of ♂ tarsi may even occur

within single species (see *Notes* under *A. pusilla*, below).

Anatrichis pusilla Sloane

Sloane 1910, Proc. Linnean Soc. New South Wales 35, p. 443.

Description (diagnostic characters only). Small, narrow; pronotum usually with an almost punctiform impression each side near base, but these impressions variable and sometimes almost absent; elytra 7-striate, striae punctulate; ♂ tarsi slightly dilated, with 2 or 3 segments squamulose below (see following *Notes*); other characters given in preceding *Key to Genera*; length *c.* 5 mm.

Types. Described from 2 specimens taken by Sloane near Kuranda, North Queensland, **Australia**, June 1906. I here designate as lectotype the single specimen now in the Sloane Collection at Canberra. It is labeled "Kuranda, Q., T.G.S., 6.06" and "Anatrichis pusilla Sl., Id. by T. G. Sloane" (seen).

Occurrence in New Guinea. **Papua**: 5, Dobodura, Mar.–July 1944 (Darlington); 9, Oro Bay, Dec. 1943–Jan. 1944 (Darlington); 3, Lake Daviumbu, Fly R., Sept. 11–20 and 21–30, 1936 (Archbold Exp., A.M.N.H.); 1, Modewa, Modewa Bay, 0–50 m, "No. 17," Dec. 14, 1956 (L. J. Brass, Fifth Archbold Exp., A.M.N.H.). **N-E. N. G.**: 1, Aitape, Aug. 1944 (Darlington). **West N. G.**: 24, Hollandia, July–Sept. 1944 (Darlington); 2, Sarmi, W. of Hollandia, July 20–23, 1959 (T. C. Maa, Bishop Mus.); 3, Maffin Bay, Aug. 1944 (Darlington).

Notes. I have a series of *pusilla* from North Queensland, Australia: from Cairns (near the type locality), south to Cardwell, and north to Silver Plains halfway up the Cape York peninsula. Specimens from New Guinea match Australian ones well.

A. pusilla is similar to and may represent *Anatrichis indica* Chaudoir of India, and I have a related species from Leyte in the Philippines.

The narrowly dilated ♂ front tarsi seem to have either 2 or 3 segments squamulose. I cannot determine whether this is primarily individual variation, or whether the squamae are worn off the 3rd segments in some individuals, or whether the squamae are sometimes pressed against the soles of the 3rd segments and therefore almost undetectable.

Genus *OODES* Bonelli

Bonelli 1810, Observations Ent. 1, table synoptique, Mem. Acad. Sci. Turin 18, pp. 21–78.
Sloane 1910, Proc. Linnean Soc. New South Wales 35, p. 442 (Australian species).
Csiki 1931, Coleop. Cat., Carabidae, Harpalinae 5, p. 1006 (see for synonymy and additional references).
Andrewes 1940, Proc. R. Ent. Soc. London (B) 9, pp. 203 ff. (key to species of India, Burma, etc.).
Jeannel 1942, Faune de France, Coléop. Carabiques, Part 2, p. 980.

Diagnosis. No satisfactory one available. For practical purposes all New Guinean members of the tribe except *Anatrichis pusilla* are assigned to *Oodes*.

Description. None required here.

Type species. Carabus helopioides Fabricius, of Europe.

Generic distribution. Most of the warmer parts of the **world**, but few or none in South America.

Notes. For comments on classification, habitats, and state of wings see tribe Oodini, above.

KEY TO SPECIES OF *OODES* OF NEW GUINEA

1. Labrum with compact clump of 4 (or fewer) setae at middle and 1 separate seta each side 2
– Labrum with 6 or 4 separate setae (if 4, 2 additional minute setae usually present close together near middle) 3
2. Elytra with 7th striae almost obliterated; length *c.* 8 mm (p. 33) ..... *piceus*
– Elytra with 7th striae well impressed; length *c.* 5 mm (p. 33) ..... *exiguus*
3. Clypeus without seta-bearing punctures 4
– Clypeus with seta-bearing puncture each side 7
4. Prothorax without basal setae or punctures (p. 33) ..... *nil*
– Prothorax with seta or small puncture on or near posterior edge each side (*laevissimus* group) 5

5. Elytra with basal margin sharply defined (see under tribe Oodini); inner wings full or nearly so (p. 34) ..... *laevissimus*
– Elytra with basal margin obsolete; inner wings vestigial 6
6. Elytral striae distinctly impressed; posterior pronotal punctures on dorsal surface at base (West N. G.) (p. 34) ..... *rossi*
– Elytral striae reduced to fine superficial lines; posterior pronotal punctures on basal edge of pronotum (N-E. N. G.) (p. 35) ..... *wilsoni*
7. Clypeus margined anteriorly, with setae almost in the angles (p. 36) ..... *siamensis vulsus*
– Clypeus not margined, with setae behind the angles 8
8. Prothorax with seta or small puncture each side on posterior edge 9
– Prothorax without such setae or punctures; (form stout, convex; ♂ middle tibiae bent near base; length *c.* 13.5–15.0 mm) (p. 36) ..... *denisonensis*
9. Elytra with basal margin sharply defined (see under tribe Oodini) (p. 36) ..... *siccus*
– Elytra with basal margin obsolete 10
10. Metepisterna sparsely, vaguely, or not punctate (p. 37) ..... *par*
– Metepisterna closely punctate 11
11. Form average, prothoracic width/length *c.* 1.65 (p. 37) ..... *cribristernis*
– Form slender, prothoracic width/length 1.44–1.49 (p. 38) ..... *longior*

Oodes piceus Nietner

Nietner 1856, J. Asiatic Soc. Bengal 25, p. 526.
Andrewes 1930, Cat. Indian Insects, Part 18, Carabidae, p. 238.
——— 1940, Proc. R. Ent. Soc. London (B) 9, p. 205 (in key).
Csiki 1931, Coleop. Cat., Carabidae, Harpalinae 5, p. 1010.

Description (for recognition only). A narrowly oval, convex *Oodes* with elytra 6-striate (7th striae absent or faint) and other technical characters given by Andrewes (1940); length *c.* 8 mm. See also preceding *Key* and following *Notes.*

Type. From Colombo, **Ceylon**; in Stettin Mus. (not seen).

Occurrence in New Guinea. **Papua**: 1, Oro Bay, Dec. 1943–Jan. 1944 (Darlington). **West N. G.**: 1, Hollandia, 250 ft., May 1945 (H. Hoogstraal, Chicago Mus.), in rain forest.

Notes. At the British Museum in 1947–1948, I compared *Oodes piceus* with *westermanni* Laferte as identified by Andrewes, and could find no significant external differences except in form of ♂ front tarsi, which are wider in *westermanni.* The New Guinean specimens are ♀ ♀, so their assignment to *piceus* is tentative. *Oodes piceus* has been recorded from **SE. Asia**, **Sumatra**, **Java**, the **Philippines**, and **Celebes**. *O. westermanni* occurs in the same general area.

Oodes exiguus Andrewes

Andrewes 1933, Ent. Monthly Mag. 69, p. 56.
pygmaeus Andrewes 1936, Treubia 15, p. 218 (name used in error for *exiguus*).

Description (for recognition only). Very small, size of *Anatrichis pusilla* but differing as noted below; see also preceding *Key to Species*; length *c.* 5 mm.

Types. A ♂ from **Sumatra**, in Deutsches Entomologisches Mus. (not seen); a ♀ "cotype" in Andrewes Coll., British Mus. (seen).

Occurrence in New Guinea. **Papua**: 71, Dobodura, Mar.–July 1944 (Darlington); 12, Oro Bay, Dec. 1943–Jan. 1944 (Darlington). **West N. G.**: 23, Hollandia, July–Sept. 1944 (Darlington); 6, Maffin Bay, Aug. 1944 (Darlington).

Notes. The known range of this species is now **Sumatra** (the types), Leyte Is. in the **Philippines** (Darlington, M.C.Z.), Morotai Is. in the **Moluccas** (Darlington, M.C.Z.), and **New Guinea**. It is not known in Australia.

This small oodine differs from *Anatrichis pusilla* as follows: form wider; only 1 seta over each eye (2 in *pusilla*); mandibles longer, straighter; clypeus with seta-bearing punctures; elytra with striae not punctulate; ♂ front tarsi wider (2nd segments *c.* long as wide), with 3 segments squamulose below. Both *A. pusilla* and *O. exiguus* have elytra with humeri dentate and 3rd intervals 2-punctate.

Oodes nil n. sp.

Description. Form (Fig. 11) average, moderately convex; black, appendages slightly

rufescent; moderately shining, whole upper surface with microsculpture of fine *c.* isodiametric meshes and also fine punctulation. *Head* 0.50 and 0.51 width prothorax; labrum 6-setose, the 2 middle setae small and close together; clypeus not margined, without setae; only 1 (posterior) seta over each eye; front irregular but scarcely impressed; mentum tooth triangular, not distinctly emarginate. *Prothorax*: width/length 1.67 and 1.62; base/apex 1.75 and 1.80; disc with fine middle line but transverse and basolateral impressions slight and poorly defined; posterior edge without setae. *Elytra*: width elytra/prothorax 1.05 and 1.06; basal margin present; humeri not dentate; striae lightly impressed, finely punctate; intervals nearly flat, 8th wide at base, 3rd 2-punctate. *Inner wings* full. *Lower surface*: prosternal process weakly or not margined between coxae; sides of body including metepisterna extensively and closely punctate. *Secondary sexual characters*: ♀ with 1 seta each side last ventral segment; ♂ unknown. *Measurements* (types); length 10.5–11; width 3.3–3.4 mm.

Types. Holotype ♀ (M.C.Z., Type No. 31,555) from Dobodura, **Papua**, Mar.–July 1944 (Darlington); 1 ♀ paratype from Oro Bay (near Dobodura), Dec. 1943–Jan. 1944 (Darlington).

Additional material. One ♀, Maffin Bay, **West N. G.,** June 1944 (E. S. Ross, California Acad.).

Measured specimens. The holotype and paratype.

Notes. For distinguishing characters of this species see preceding *Key to Species*, and *Notes* under *Oodes siccus* (p. 37). The specimen from Maffin Bay is larger than the types (length *c.* 12.5 mm) but has the same technical characters.

Oodes laevissimus Chaudoir

Chaudoir 1882, Ann. Soc. Ent. France (6) 2, p. 361.

Andrewes 1924, Ann. Mag. Nat. Hist. (9) 14, p. 588 (*Simous*).

Description (for recognition only). Form parallel, depressed; strongly shining; elytra lightly striate; for technical characters see preceding *Key to Species*; length *c.* 11.5–12.5 mm.

Types. From Fly R., presumably **Papua**, collected by D'Albertis; the actual type (*t.* Andrewes) in Oberthür Coll., Paris Mus. (not seen).

Occurrence in New Guinea. **Papua**: Fly R. (the types); 22, Dobodura, Mar.–July 1944 (Darlington); 1, Kokoda, 1200 ft. (366 m), Aug. 1933 (Cheesman). **N-E. N. G.**: 19, Aitape, Aug. 1944 (Darlington); 7, lower Busu R., Huon Pen., Apr. 4, May 13, 1955 (E. O. Wilson, M.C.Z.); 2, Erima, Astrolabe Bay, 1897 (Biró); 1, Sattelberg (British Mus.); 2, Wareo, Finschhafen (Rev. L. Wagner, S. Australian Mus.).

Notes. This distinct species is probably confined to New Guinea, perhaps to the eastern and central part of the island. Andrewes referred it to the genus or subgenus *Simous*, but I think this was a mistake. *Simous* seems to be a natural group of about 9 known species confined to the Oriental Region including Sumatra, Java, and Borneo, and characterized by a very short, broad labrum and a broad, emarginate mentum tooth. *Oodes laevissimus* has the labrum narrower, the mentum tooth narrower and scarcely emarginate.

The wings in some individuals of this species look fully developed and fit for flight but in others they appear slightly reduced (but still nearly full) and unfit for flight. It is doubtful if any individuals really fly. I have seen none from light traps.

Although all other New Guinean Oodini that I have collected are aquatic or semi-aquatic, this one is not associated with open water but lives among dead leaves on the floor of rain forest. This is probably also the habitat of the two related forms described below.

Oodes rossi n. sp.

Description. Form as in Figure 12, *c.* as *laevissimus*, subparallel, rather depressed;

black; tarsi, antennae, and mouthparts more brownish; moderately shining, entire upper surface with very fine *c.* isodiametric microsculpture but without or with only indistinct punctulation. *Head* 0.52 width prothorax; labrum 6-setose; clypeus not margined, without setae; 1 (posterior) seta over each eye; frontal impressions distinct but poorly defined; mentum with moderately broad *c.* truncate tooth. *Prothorax*: width/length 1.66; base/apex 1.69; disc flattened especially posteriorly, with middle line (and superficial irregularities) but no other distinct impressions; 1 well impressed seta-bearing puncture on each side on dorsal surface just before basal edge. *Elytra*: width elytra/prothorax 1.09; basal margin obsolete; humeri not dentate; striae slightly impressed, faintly punctulate; intervals nearly flat, 8th wide at base, 3rd with 2 inconspicuous dorsal punctures. *Inner wings* atrophied, reduced to narrow strips *c.* ⅓ long as elytra. *Lower surface*: prosternal process not margined between coxae; metepisterna (and rest of lower surface) virtually impunctate. *Secondary sexual characters*: ♂ front tarsi moderately dilated (2nd segments slightly wider than long), 3 segments densely squamulose below; ♂ with 1 seta each side last ventral segment; ♀ unknown. *Measurements*: length 14; width 5.9 mm.

Type. Holotype ♂ (California Acad.) from Maffin Bay, **West N. G.,** June 14, 1944 (E. S. Ross); the type is unique.

Notes. This species has probably differentiated locally, from *laevissimus*-like stock, by atrophy of the wings, obliteration of the basal elytral margin, and other small changes.

Oodes *wilsoni* n. sp.

Description. Form (Fig. 13) and characters of the preceding species (*rossi*) except as follows. *Head* 0.51 width prothorax. *Prothorax*: width/length 1.72; base/apex 1.78; basal seta-bearing punctures on (not before) basal edge of pronotum. *Elytra*: width elytra/prothorax 1.06; striae very fine, superficial. *Inner wings* reduced to vestiges *c.* ¼ long as elytra. *Secondary sexual characters*: ♂ unknown; ♀ with 1 seta each side last ventral segment. *Measurements*: length 14; width 5.9 mm.

Type. Holotype ♀ (M.C.Z., Type No. 31,556) from Ebabaang, Mongi watershed, Huon Pen., **N-E. N. G.,** 1300–1400 m, Apr. 16–18, 1955 (E. O. Wilson); the type is unique.

Notes. This is apparently another localized flightless species derived from *laevissimus*-like stock.

(Oodes *siamensis* Chaudoir)

Chaudoir 1882, Ann. Soc. Ent. France (6) 2, p. 358.
Csiki 1931, Coleop. Cat., Carabidae, Harpalinae 5, p. 1011.
issus Andrewes 1931, J. Federated Malay Mus. 16, pp. 434, 444, fig. 4 (new synonymy).
alesi Jedlicka 1936, Acta Soc. Ent. Czechoslovakia 33, p. 66 (new synonymy).

Description (for recognition only). Form average, depressed; black; clypeus margined, with setae in angles; see *siamensis vulsus* in preceding *Key to Species of Oodes*, but note basal seta-bearing punctures of pronotum usually present in typical *siamensis* (see *Notes* below); length *c.* 8–9 mm.

Types. Of *siamensis*, from Bangkok, **Thailand**; in Oberthür Coll., Paris Mus. (not seen). Of *issus*, from Brunei, **Borneo**; in Andrewes Coll., British Mus. (seen). Of *alesi*, from Mt. Makiling, **Luzon**; in British Mus. (seen).

Occurrence in New Guinea. Represented only by the following subspecies.

Notes. The synonymy suggested above is based on examination of the types of *issus* and *alesi* at the British Museum, and comparison with many specimens from other localities. They seem to represent one variable species which is widely distributed in **SE. Asia**, **Sumatra**, **Borneo**, the **Philippines**, **New Guinea**, and **New Britain**, and presumably intervening islands too.

My single specimen of *siamensis* (*issus*) from Borneo has distinct basal pronotal

setae on both sides, but they rise from scarcely detectable punctures that could hardly be seen if the setae were missing. Some, but perhaps not all, of my specimens of this species (*alesi*) from Leyte have these setae present too. However, I have carefully examined both sides of all 36 specimens of the species from New Guinea and 16 from New Britain, and can find no trace of basal pronotal setae or punctures in any of them. This gives a basis for separating the New Guinea-New Britain population as a geographical subspecies (below). First, however, I have had to discuss *siamensis* as a whole, in order to establish the synonymy and distribution of the species.

Oodes siamensis vulsus n. subsp.

Description. Similar to *siamensis sensu stricto* (above) but without seta-bearing punctures on basal edge of pronotum. *Head* 0.51 and 0.51 width prothorax. *Prothorax*: width/length 1.57 and 1.63; base/apex 1.81 and 1.84. *Elytra*: width elytra/prothorax 1.08 and 1.07. *Measurements*: length *c.* 8–9; width 3.3–3.7 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,357) and 13 paratypes from Dobodura, **Papua**, Mar.–July 1944 (Darlington). Additional paratypes from **West N. G.**: 20, Hollandia, July–Sept. 1944 (Darlington); 1, Maffin Bay, Aug. 1944 (Darlington); 1, "Neth. New Guinea," Oct. 20, 1944 (T. Aarons, California Acad.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. This subspecies occurs also in **New Britain** (16, Cape Gloucester, Darlington, M.C.Z.).

Oodes denisonensis Castelnau

Castelnau 1867, Notes on Australian Coleoptera, p. 64.

Sloane 1910, Proc. Linnean Soc. New South Wales 35, pp. 445, 447.

Csiki 1931, Coleop. Cat., Carabidae, Harpalinae 5, p. 1007.

Description (for recognition only). Form broad, convex; for technical characters see Sloane's (1910) key, and preceding *Key to Species of Oodes of New Guinea*; length *c.* 13.5–15 mm.

Type. From Port Denison (probably near Bowen, Queensland), **Australia**; present location of type unknown (not seen).

Occurrence in New Guinea. **Papua**: 1 ♀, Rouku, Morehead R., Apr. 1962 (W. W. Brandt, C.S.I.R.O.). **West N. G.**: 1 ♀, Merauke (south coast), sea level, Mar. 28, 1955 (L. D. Brongersma, Leiden Mus.).

Notes. The distinctive characters of *denisonensis* are based on the ♂. The two ♀ ♀ from New Guinea agree well in non-sexual details with specimens from Queensland, Australia (from Gayndah, Rockhampton, Townsville, and Kuranda).

Oodes siccus n. sp.

Description. Form and convexity average; black, basal angles of prothorax and appendages slightly more reddish; moderately shining, whole upper surface finely *c.* isodiametrically microreticulate and punctulate. *Head* 0.52 and 0.51 width prothorax; labrum 6-setose; clypeus not margined, with 1 seta-bearing puncture each side well behind angle; 1 (posterior) seta-bearing puncture over each eye; front weakly convex, scarcely impressed anteriorly; mentum with rounded-triangular tooth. *Prothorax*: width/length 1.59 and 1.68; base/apex 1.82 and 1.83; disc with fine middle line, vague wide baso-lateral impressions, and seta-bearing puncture each side on basal edge inside angle. *Elytra*: width elytra/prothorax 1.08 and 1.09; base margined; humeri not dentate; striae moderately impressed, faintly punctulate; intervals slightly convex, 8th wide at base, 3rd 2-punctate. *Inner wings* full. *Lower surface*: prosternal process not margined between coxae; sides of body including metepisterna closely punctate. *Secondary sexual characters*: ♂ with front tarsi slightly narrower than usual (2nd segments slightly longer than wide), with usual 3 segments densely squamulose; ♂ with 1, ♀ 2 setae each side last ventral segment. *Measure-*

ments: length *c.* 10–11; width 4.0–4.5 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,358) and 12 paratypes from Dobodura, **Papua**, Mar.–July 1944 (Darlington); and additional paratypes as follows. **Papua**: 6, Lake Daviumbu, Fly R., Aug. 19–30, Sept. 1–10, 11–20, 1936 (Archbold Exp., A.M. N.H.). **West N. G.**: 8, Hollandia, July–Sept. 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. This is similar to *Oodes cribristernis* and its allies, but differs in having a distinct basal elytral margin. It is similar also to *O. nil* (described above) but clypeal and basal pronotal setae are present (absent in *nil*), the elytral striae are less obviously punctate, and the punctures of the 3rd intervals are less impressed.

O. siccus occurs also on Morotai Is. in the **Moluccas** (Darlington, M.C.Z.).

Oodes par n. sp.

Description. Form (Fig. 14) more quadrate than usual, depressed; black, appendages in part more rufous; dorsal microsculpture of fine *c.* isodiametric meshes with very little additional punctulation. *Head* 0.57 and 0.59 width prothorax; labrum 6-setose; clypeus not margined, with seta-bearing puncture each side behind angle; 1 (posterior) seta over each eye; mentum tooth entire, bluntly triangular. *Prothorax*: width/length 1.57 and 1.61; base/apex 1.62 and 1.51; disc depressed, with moderate middle line, vague transverse impressions, distinct but poorly defined rounded baso-lateral impressions (sublinear in some lights), and strong seta on basal edge each side inside angle. *Elytra* subquadrate; width elytra/prothorax 1.11 and 1.13; basal margin obsolete; humeri not dentate; striae impressed, punctulate; intervals slightly convex, 8th wide to base, 3rd 2-punctate. *Inner wings* full. *Lower surface*: prosternal process not distinctly margined between coxae; sides of body including metepisterna vaguely or not punctate. *Secondary sexual characters*: ♂ front tarsi moderately dilated (2nd segments barely wider than long), 3 segments densely squamulose; ♂ with 1, ♀ 2 seta-bearing punctures each side last ventral segment. *Measurements*: length *c.* 11–12; width *c.* 4.6 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,359) from Aitape, **N-E. N. G.,** Aug. 1944 (Darlington); and 1 ♀ paratype, Hollandia, **West N. G.,** July–Sept. 1944 (Darlington).

Notes. The technical characters, especially the positions of setae and loss of the basal elytral margin, suggest that this new species may be allied to *O. cribristernis* and *longior*, but *par* differs from both in being more quadrate and in having the lower surface including the metepisterna relatively smooth.

Oodes cribristernis Bates

Bates 1892, Ann. Mus. Civ. Genoa 32, p. 323.
Csiki 1931, Coleop. Cat., Carabidae, Harpalinae 5, p. 1007.
Andrewes 1940, Proc. R. Ent. Soc. London (B) 9, p. 204 (in key).

Description (for recognition only). Form moderately slender, depressed; distinguishing characters indicated in preceding *Key to Species of Oodes of New Guinea* and in Andrewes' (1940) key. *Prothorax*: width/length 1.67 and 1.63; base/apex 1.63 and 1.58. *Elytra*: width elytra/prothorax 1.10 and 1.13. *Measurements* (of New Guinean specimens): length 10.5–13.5; width 4.2–5.5 mm.

Type. From **Burma**, in Genoa Mus. (not seen).

Occurrence in New Guinea. **Papua**: 27, Milne Bay, Dec. 1943 (Darlington); 14, Dobodura, Mar.–July 1944 (Darlington); 1, Mt. Lamington, 1300–1500 ft. (*c.* 400–450 m) (C. T. McNamara, S. Australian Mus.). **N-E. N. G.**: 1, Lae, Oct. 1944 (Darlington); 2, Aitape, Aug. 1944 (Darlington); 4, Finschhafen, Huon Pen., 10 m, Apr. 9–16, 1963 (Sedlacek); 1, Wau, Mt. Missim, Morobe Dist., 880–1050 m, Feb. 8–9, 1963 (Sedlacek). **West N. G.**: 1, Maffin Bay, Aug. 1944 (Darlington); 7, Sansapor, Aug. 1944 (Darlington); 1, "Neth.

New Guinea" without further locality, Oct. 20, 1944 (T. Aarons, California Acad.).

Measured specimens. A pair (♂ ♀) from Dobodura.

Notes. The specimens from New Guinea here recorded as *cribristernis* possess all significant characters given in Bates' brief description and Andrewes' key (1940), but direct comparison will be necessary to confirm the identification. The species (if it is one species) is now known from **Burma**, **Sumatra**, and **New Guinea**. *O. oblongus* Castelnau of Australia seems to be allied but is larger, duller, with finer elytral striae.

Oodes longior n. sp.

Description. Form as in Figure 15, slender, depressed; black, posterior angles of prothorax and parts of appendages (especially tarsi, palpi, antennae) ± reddish; moderately shining, entire upper surface with fine *c.* isodiametric microsculpture and very fine inconspicuous punctulation. *Head* 0.56, 0.58, and 0.59 width prothorax; labrum 6-setose; clypeus not margined, with a seta each side behind angle; 1 (posterior) seta-bearing puncture over each eye; mentum tooth moderate, impressed or slightly emarginate. *Prothorax*: width/length 1.46, 1.44, and 1.49; base/apex 1.70, 1.66, and 1.69; disc with light middle line, no distinct subbasal impressions but faintly impressed each side at extreme base; 1 seta-bearing puncture on basal edge each side near narrowly rounded basal angles. *Elytra*: width elytra/prothorax 1.07, 1.09, and 1.09; basal margin obsolete; humeri not dentate; apices subangulate near suture (opposite 1st intervals); striae lightly impressed, faintly punctulate; intervals slightly convex, 8th slightly narrower than 7th at base, 3rd 2-punctate. *Inner wings* full. *Lower surface*: prosternal process not distinctly margined between coxae; sides of body below including metepisterna rather finely, closely punctate. *Secondary sexual characters*: ♂ front tarsi moderately dilated (2nd segment *c.* wide as long), 3 segments densely squamulose below; ♂ with 1, ♀ 2 seta-bearing punctures each side last ventral segment. *Measurements*: length *c.* 14–15; width 5.2–5.4 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,360) and 1 ♀ paratype from Hollandia, **West N. G.,** July–Sept. 1944 (Darlington); and 1 ♂ paratype from Ambunti, Sepik R., **N-E. N. G.,** May 16, 1929 (Crane-Field Mus. Pacific Exp., Chicago Mus.).

Measured specimens. The ♂ holotype, ♀ paratype from Hollandia, and ♂ paratype from Ambunti, in this order.

Notes. This new species has the technical characters (setae, etc.) of *cribristernis* (above) but is larger and more slender (*cf.* proportions of *cribristernis*), with elytra subangulate at apex.

Although *cribristernis*, like most Oodini, lives in very wet places, *longior* may be even more aquatic. My 2 specimens were taken in comparatively deep water in floating debris and vegetation.

Tribe HARPALINI

Sloane 1898, Proc. Linnean Soc. New South Wales 23, pp. 455, 456 (key to Australian genera).

Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 6, pp. 1023–1268.

Van Emden 1953, Ann. Mag. Nat. Hist. (12) 6, pp. 513 ff. (discussion in text).

Harpalidae Jeannel 1942, Faune de France, Coléop. Carabiques, Part 2, pp. 575–584.

Harpalinae Basilewsky 1951–1952, Ann. Mus. Congo Belge (8), Zool., Vols. 6 and 9 (revision of African and Madagascan forms).

The tribe Harpalini contains a large proportion of the common, medium-sized Carabidae that live on the ground in all climates in all parts of the world. They are very numerous in open country, fewer in rain forest. Those that do live in rain forest include many *Lecanomerus* in eastern Australia and most *Trichotichnus* in New Guinea. The tribe also contains many smaller species that live in wet places or beside quiet (usually not rapidly running) water.

Classification of genera within the Harpalini is exceptionally difficult, perhaps (I suspect) because the tribe is relatively re-

cent in evolution and dispersal. Generic classifications proposed for members of the tribe in any one region fail in other regions, and no usable classification exists for the genera of the Oriental Region and Malay Archipelago. The arrangement of genera in the Junk Catalogue (Csiki, 1932) is said to follow Schauberger, but he died without explaining it. The classification that I am using for the New Guinean forms (see *Key*, below) is based partly on well known characters that are probably phylogenetic, but nevertheless the key is partly superficial and is intended primarily as an aid in identification, not as a contribution to harpaline classification.

Characters drawn from the soles of the male tarsi are fundamental in harpaline taxonomy but are, of course, useless in the case of unassociated females. (The single possible *Trichotichnus* that I have from Australia is a female and therefore not identifiable!) And characters of the mouthparts, including the setae of the penultimate segments of the labial palpi, are fundamental too, but are difficult to see and understand. Even experienced carabid specialists make mistakes in placing harpaline genera. Bates' original placing of *Lamprophonus* and Andrewes' of *Carbanus* are examples. Both genera were originally wrongly characterized and put in the wrong subtribes. Many of the harpalines that I have for study from New Guinea were taken in light traps, and this increases the difficulty. Light-trap specimens often have moth scales adhering to and concealing their mouthparts and tarsal soles, and scales stuck to the tarsal soles may even counterfeit sexual squamae.

The distribution of Harpalini over the world has been misunderstood until recently because of lack of adequate subtribal and generic classifications, and because of incorrect assignments of many Australian and South American species to northern genera, especially to *Harpalus* and *Anisodactylus*. Van Emden (1953), however, has suggested what I think are natural and useful subtribes and has indicated their distributions. His arrangement, slightly modified, is summarized in Table 1.

TABLE 1. DISTRIBUTION OF PRINCIPAL SUBTRIBES OF HARPALINI (AFTER VAN EMDEN 1953)

1. Anisodactylina: worldwide, but irregularly distributed; genera in Australia and South America are probably not directly related.

2. Harpalina, Harpali (*Harpalus* and its immediate allies): throughout Eurasia, Africa (and Madagascar), and North America; absent in Australia and South America.

3. Harpalina, Selenophori: most of the world including South America, but absent in most of Australia (one or two Oriental genera reach just the northern edge of Australia).

4. Pelmatellina: chiefly Australia and South (and Central) America. The genus *Nemaglossa* may occur in both Australia and South America but has not been adequately studied.

5. Acupalpina: nearly worldwide, with some genera very widely distributed. The members of this subtribe are mostly small, water-loving forms which do not compete with most members of the other subtribes, except perhaps with small Pelmatellina in Australia.

This outline of harpaline distribution (Table 1) is, of course, an oversimplification. A more detailed study of the distribution of subtribes of Harpalini would be an important contribution to insect zoogeography.

Within the limits of New Guinea and Australia, harpaline faunae overlap complexly. Among larger, terrestrial Harpalini at low altitudes, several primarily Australian genera of subtribe Anisodactylina (*Gnathaphanus*, *Diaphoromerus*, *Hypharpax*) extend to New Guinea and westward into or across the Malay Archipelago. These genera live chiefly in relatively open country, including open *Eucalyptus* woodland, although some of them enter rain forest too. On the other hand, several primarily Oriental genera of subtribe Harpalina, especially *Trichotichnus* and other Selenophori (but not *Harpalus*), reach New Guinea and are dominant there, outnumbering the Australian Anisodactylina especially in rain forest. These genera either

do not extend to Australia or are represented there by single species on the extreme northern edge of the continent (e.g., a *Coleolissus* on Cape York). The Australian genera, chiefly in more open country, and the Oriental ones, chiefly in rain forest, are in part ecologically as well as geographically complementary. This pattern suggests recent multiple invasions of the rain-forested areas of New Guinea by Oriental stocks and of the more open areas by Australian stocks, but over a long period some replacement of Australian by incoming, competing Oriental groups may have occurred.

At much higher altitudes on New Guinea is one additional genus of Anisodactylina, *Chydaeus*, which is primarily Asiatic and has apparently "mountain hopped" across the Malay Archipelago. This genus does not reach Australia.

Among smaller, water-loving Harpalini, primarily Oriental Acupalpina are dominant in New Guinea and several genera reach the northern half of Australia, but they decrease or disappear in southern Australia. Their place there is taken by small Pelmatellina (*Lecanomerus*), which are numerous throughout Australia and a few of which occur in New Guinea (described in the following pages) but which are unknown farther west in the Malay Archipelago. The distributions of Oriental Acupalpina and of small Australian Pelmatellina are therefore broadly complementary too in the Australian Region, but with wide and complex overlapping.

Key to Genera of Harpalini of New Guinea

1. Male front and middle tarsi with sponge-like soles of many densely packed, narrow adhesive hairs 2
– Male front and usually (not always) middle tarsi 2-seriately squamulose below, or rarely (*Lyter* only) with more than 2 rows of long, narrow scales loosely arranged 6
2. Size larger (6–16 mm); scutellar striae present (short in *Hypharpax*); penultimate segments labial palpi plurisetose (Anisodactylina) 3
– Size smaller (less than 5 mm in New Guinea); scutellar striae absent; penultimate segments labial palpi 2-setose (Pelmatellina) (p. 45) ..... *Lecanomerus*
3. Elytra without dorsal punctures; wings atrophied; (found only on high mts.) (p. 47) ..... *Chydaeus*
– Elytra each with 1 or more dorsal punctures; wings usually full 4
4. Elytra with several or many conspicuous dorsal punctures (p. 41) ..... *Gnathaphanus*
– Elytra each with 1 dorsal puncture 5
5. Posterior tarsi long, basal segment much more than 2× long as wide; hind femora not strongly curved (p. 42) ..... *Diaphoromerus*
– Posterior tarsi shorter, basal segment 2× or less long as wide; hind femora of ♂ strongly curved, of ♀ less so (p. 44) ..... *Hypharpax*
6. Penultimate segment labial palpi with more than 2 setae anteriorly; often larger (5–11 mm) (Harpalina) 7
– Penultimate segment labial palpi 2-setose anteriorly; often smaller (2.7–8.0 mm) (Acupalpina) 12
7. Front tibiae broader, apex ¼ or ⅓ wide as tibial length (by measurement) (p. 59) ..... *Harpaloxenus*
– Front tibiae narrower 8
8. Entire upper surface pubescent (p. 48) ..... *Platymetopus*
– Upper surface not pubescent 9
9. Elytra with 3rd intervals 1-punctate or impunctate 10
– Elytra with 3rd intervals with several (very small) punctures 11
10. Male front and middle tarsi with soles of long, slender, loose (not 2-seriate) scales; base of prosternum and base of abdomen not pubescent (p. 63) ..... *Lyter*
– Male front and (usually) middle tarsi 2-seriately squamulose; base of pronotum and base of abdomen usually short-pubescent (but see *Notes* under *T. medius*) (p. 48) ..... *Trichotichnus*
11. Last ventral segment with 2 setae each side in both sexes; elytra with sutural angles denticulate (in New Guinean species) (p. 64) ..... *Coleolissus*
– Last ventral segment with 1 seta each side in both sexes; sutural angles not denticulate (p. 66) ..... *Hyphaerion*
12. Scutellar striae absent; anterior marginal line of pronotum deep and entire; length *c.* 7–8 mm (p. 68) ..... *Anoplogenius*
– Scutellar striae present; anterior marginal line of pronotum fine or interrupted at middle; usually smaller 13
13. Abdomen not pubescent (except for fixed setae) (p. 69) ..... *Egadroma*

– Abdomen pubescent at least near apex ... 14
14. Prosternum without long setae anteriorly (p. 71) ... *Stenolophus*
– Prosternum with several long setae anteriorly (p. 72) ... *Acupalpus*

Genus *GNATHAPHANUS* Macleay

Macleay 1825, Annulosa Javanica 1, p. 20.
Chaudoir 1878, Ann. Mus. Civ. Genoa 12, pp. 476, 503.
Sloane 1900, Proc. Linnean Soc. New South Wales 24, p. 553 (key to some Australian species).
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 6, p. 1041 (see for synonymy and additional references).

Diagnosis. See preceding *Key to Genera of Harpalini of New Guinea.*

Description. None required here.

Type species. G. vulneripennis Macleay, of Java, etc.

Generic distribution. Many species in **Australia**, fewer in the **Malay Archipelago** and adjacent corner of **Asia**, with one or two widely distributed species reaching **India**, the **Philippines**, and islands east to **Samoa** and **New Caledonia**.

Notes. Some species of this genus have very wide ranges, within the limits given above. Of the 5 species known in New Guinea, all are shared with Australia and several are widespread also on the Malay Archipelago or islands of the western Pacific. These insects are often common in open country including grassland and open woodland, but are not often found in rain forest. All species of the genus that I know are fully winged and probably fly.

KEY TO SPECIES OF *GNATHAPHANUS* OF NEW GUINEA

1. Elytra with intervals 3, 5, and usually 7 (at least posteriorly) with dorsal punctures *conspicuously* impressed; (black, legs black; elytra deeply sinuate and acuminate at apex) (p. 41) ... *licinoides*
– Elytra with fewer, less impressed dorsal punctures ... 2
2. Elytra with series of dorsal punctures on outer edges of intervals 3 and (at least posteriorly) 5; (legs yellow) (p. 41) ... *upolensis*
– Elytra with series of dorsal punctures only on 3rd intervals (single punctures sometimes present on other intervals) ... 3
3. Smaller (*c.* 9–10 mm); more shining (especially the ♂); piceous, legs brownish yellow (p. 42) ... *picipes*
– Larger (*c.* 12–13 mm); dull black or metallic, legs black ... 4
4. Head and prothorax green, elytra cupreous (except in discolored individuals); posterior angles of prothorax distinct, bluntly obtuse or very narrowly rounded (p. 42) ... *pulcher*
– Dull black; posterior angles of prothorax broadly rounded (p. 42) ... *philippensis*

Gnathaphanus licinoides Hope

Hope 1842, Ann. Mag. Nat. Hist. 9, p. 427.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 6, p. 1042 (see for synonymy and additional references).

Description. None required here; see *Key*, above; length *c.* 10 mm.

Type(s). From Port Essington, northern **Australia**; presumably in Hope Mus., Oxford (not seen).

Occurrence in New Guinea. **Papua**: 24, Dobodura, Mar.–July 1944 (Darlington); 1, Kokoda, 1200 ft. (366 m), Sept. 1933 (Cheesman); 1, Wakaiuna, Sewa Bay, Normanby Is., Jan. 1–8, 1957 (W. W. Brandt, Bishop Mus.). **N-E. N. G.**: 18, Wau, 1200 m, dates in Jan., Mar., Apr., June, July, Sept., Nov., Dec. 1961–1963 (Sedlaceks); 1, Stephansort, Astrolabe Bay, 1899 (Biró); 1, Aitape, Aug. 1944 (Darlington). **West N. G.**: 1, Hollandia, May 1945 (B. Malkin, U.S.N.M.); 1, same area, Cyclops Mts., 50–100 m, June 22–24, 1959 (Gressitt, T. C. Maa, Bishop Mus.), in light trap.

Notes. The known range of *licinoides* includes northern **Australia**, **New Britain**, the **Solomons**, **New Hebrides**, and **New Caledonia**, as well as **New Guinea**.

Gnathaphanus upolensis (Csiki)

Csiki 1915, Denkschriften Akad. Wiss. Wien, Math-Nat. 91, p. 163 (*Dioryche*).
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 6, p. 1044 (see for synonymy and additional references).
impressipennis Castelnau 1867, Notes on Australian Coleop., p. 100 (in *Harpalus*, but not *Harpalus impressipennis* Motschulsky 1844).
Chaudoir 1878, Ann. Mus. Civ. Genoa 12, p. 510.

Description. None required here; length *c.* 8–9 mm.

Types. Of *impressipennis*, from Rockhampton, **Australia**; in Genoa Mus. Of *upolensis*, from Upolu, **Samoa**; in Vienna Mus. (not seen).

Occurrence in New Guinea. Common (175 specimens seen) probably throughout **New Guinea** at low altitudes including Dobodura, up to 1200 m at Wau and to 2300 m on Mt. Kaindi (near Wau). Specimens taken in every month.

Notes. This very common carabid occurs usually in relatively open country, including grassland and open *Eucalyptus* woodland, from the **Malay Peninsula** across the **Malay Archipelago** to **New Guinea** and **Australia**, east at least to the **Philippines** and **Samoa**, and **New Caledonia**.

Gnathaphanus picipes (Macleay)

Macleay 1864, Trans. Ent. Soc. New South Wales 1, p. 117 (*Harpalus*).
Chaudoir 1878, Ann. Mus. Civ. Genoa 12, p. 509.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 6, p. 1043 (see for synonymy and additional references).

Description. None required here; length *c.* 9–10 mm.

Types. From Port Denison (Bowen), Queensland, **Australia**; probably in Macleay Mus., Sydney (not seen).

Occurrence in New Guinea. **Papua**: 12, Port Moresby, Jan., Feb., Mar., May, Aug., Oct., Dec. (various collectors; M.C.Z., British Mus., Bishop Mus., U.S.N.M., Dept. Agr. Port Moresby), some under logs in *Eucalyptus* country, some at light; 2, Brown R., May 22, 25, 1956 (E. J. Ford, Jr., Bishop Mus.).

Notes. This northeastern Australian species apparently extends only to the southern edge of New Guinea.

Gnathaphanus pulcher (Dejean)

Dejean 1829, Species Général Coléop. 4, p. 282 (*Harpalus*).
Chaudoir 1878, Ann. Mus. Civ. Genoa 12, p. 505.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 6, p. 1043 (see for synonymy and additional references).

Description. None required here; length *c.* 13–16 mm.

Types. From "Nouvelle-Hollande" (= **Australia**); presumably in Oberthür Coll., Paris Mus. (not seen).

Occurrence in New Guinea. **Papua**: 13, Port Moresby area, various dates in Jan., Feb., Mar., May (various collectors; Dept. Agr. Port Moresby); 3, Bisianumu, 1600 ft. (485 m), Feb. 12, 1966 (J. H. Barrett, Dept. Agr. Port Moresby).

Notes. This Australian species apparently reaches only the southern part of New Guinea, perhaps only the open-wooded *Eucalyptus* areas where many other Australian insects occur. It is represented on the Lesser Sunda Islands, west to Bali, by subspecies *extrarius* Schauberger.

Gnathaphanus philippensis (Chevrolat)

Chevrolat 1841, Revue Zool., p. 221 (*Amblygnathus*).
Chaudoir 1878, Ann. Mus. Civ. Genoa 12, p. 511 (as *laeviceps* Macleay).
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 6, p. 1043 (see for synonymy and additional references).

Description. None required here; length *c.* 12–16 mm.

Type(s). From "Manille" (**Manila**); in Hope Mus., Oxford (not seen).

Occurrence in New Guinea. **Papua**: 1, Kokoda, 1200 ft. (366 m), May 1933 (Cheesman); 3, Rouku, Morehead R., West Papua, Apr. 1962 (W. W. Brandt, C.S.I.R.O.).

Notes. This species ranges from SE. **Asia** to **Australia**, east to **Philippines**, but is surprisingly scarce and perhaps localized in **New Guinea**.

Genus *DIAPHOROMERUS* Chaudoir

Chaudoir 1843, Bull. Soc. Nat. Moscow 16, Part 2, p. 402.
——— 1878, Ann. Mus. Civ. Genoa 12, p. 476.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 6, p. 1044 (see for additional references).

Diagnosis. See *Key to Genera of Harpalini of New Guinea.*

Description. None required here.

Type species. D. iridipennis Chaudoir, of Australia including Cape York (Chaudoir 1878).

Generic distribution. Primarily **Australia**, with species also on **New Zealand**, **New Caledonia**, **New Guinea**, the **Moluccas** (Amboina), and **Timor**, and with 2 New Guinean species extending to **New Britain**.

Notes. Many species of this genus in Australia inhabit open *Eucalyptus* woodland or grassland. The two species in New Guinea occur in rain-forested parts of the island, but I do not know their exact habitats. The New Guinean species of *Diaphoromerus*, like most Australian ones, are winged.

KEY TO SPECIES OF *DIAPHOROMERUS* OF NEW GUINEA

1. Larger (8.5–10.5 mm); posterior angles of prothorax (narrowly) rounded (p. 43) ..... *papuensis*
– Smaller (6.0–7.5 mm); posterior angles of prothorax obtusely angulate, scarcely blunted (p. 43) ..... *papuellus*

Diaphoromerus papuensis (Macleay)

Macleay 1876, Proc. Linnean Soc. New South Wales 1, p. 168 (*Harpalus*).
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 6, p. 1043 (*Gnathaphanus*).
basilewskyi Louwerens 1962, Tijdschrift voor Ent. 105, p. 139 (*Gnathaphanus*) (new synonymy).

Description. None required here; length *c.* 9–10 mm.

Types. Of *papuensis*, from Hall Sound, Papua; presumably in Macleay Mus., Sydney (not seen). Of *basilewskyi*, from Amboina Is., **Moluccas**, 70 m altitude (A. M. R. Wegner), at light; holotype in Louwerens Coll. (not seen), 2 paratypes now in M.C.Z.

Occurrence in New Guinea. Common probably throughout **New Guinea**: 119, from widely scattered lowland localities, from Port Moresby and Dobodura to Manokwari, up to 1300 m at Wau, and 800 m at Araucaria Camp, West N. G. Specimens collected in every month except August.

Notes. Macleay's statement that the third elytral interval is punctate on inner side before apex places this species in *Diaphoromerus* rather than *Gnathaphanus*, and the length (4½ lines = 9 mm) is diagnostic of this species in New Guinea. Closely related species in Australia probably include *melanarius* Dejean and *iridipennis* Chaudoir. *D. papuensis* occurs also in **New Britain** (Cape Gloucester, Darlington) and the **Moluccas** (types of *basilewskyi*).

Diaphoromerus papuellus n. sp.

Description. Form as in Figure 16, rather small, convex; brownish piceous, appendages testaceous or brownish testaceous; moderately shining, ♀ scarcely duller, both sexes with reticulate microsculpture isodiametric or slightly transverse on head, more transverse on pronotum and elytra. *Head* 0.69 and 0.69 width prothorax; eyes prominent; front weakly impressed; mentum toothed; ligula slightly shorter than paraglossae, latter separate at apex. *Prothorax* transverse-subquadrate; width/length 1.43 and 1.44; base/apex 1.41 and 1.39; sides rounded anteriorly, nearly straight, converging, sometimes slightly sinuate before slightly obtuse but distinct and scarcely blunted basal angles; disc formed as usual, basal impressions sublinear, weak, margined at base but not or indistinctly punctate. *Elytra*: width elytra/prothorax 1.20 and 1.19; sides slightly sinuate before apex; striae impressed; intervals slightly convex, subequal, 3rd 1-punctate on inner side near apex. *Inner wings* full. *Legs*: 1st segment hind tarsi elongate. *Secondary sexual characters*: ♂ front and middle tarsi dilated (2nd and 3rd segments of front tarsi slightly wider than long, of middle tarsi narrower), with densely pubescent soles. *Measurements*: length 6.0–7.5; width 2.0–2.8 mm.

Types. Holotype ♂ (British Mus.) and 6 paratypes (some in M.C.Z., Type No. 31,361) from Kokoda, **Papua**, 1200 ft. (366 m), Aug. (except one specimen May) 1933 (Cheesman); and additional paratypes as follows. **Papua**: 1, Kerema, May 3–9, 1959 (C. D. Michener, Bishop Mus.); 2, Kiunga, Fly R., July 4–8, Aug. 8–10, 1957 (W. W. Brandt, Bishop Mus.); 1, Rouku, Morehead

R., West Papua, Apr. 1962 (W. W. Brandt, C.S.I.R.O.); 3, Yule Is. (Hungarian National Mus.); 39, "Papua" without further locality (Hungarian National Mus.). **West N. G.**: 2, Merauke, Apr. 6, 1952 (L. D. Brongersma, Leiden Mus.); 1, same locality, Jan. 26–Feb. 10, 1960 (T. C. Maa, Bishop Mus.); 1, Kepi, Res. Mappi, Oct. 15, 1957 (R. T. Simon Thomas, Louwerens Coll.); 4, Wasian, Sept. 27, 1939 (R. G. Wind, California Acad.). Also 1 paratype, Koitaki, 1500 ft. (455 m), New Guinea (division unknown), Oct.–Nov. 1928 (Pemberton, H.S.P.A.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Kokoda.

Notes. I have seen a specimen of this species from Keravat, **New Britain** (E. J. Ford, Jr., Bishop Mus.).

This is evidently a member of the *Diaphoromerus australis* group. As compared with *australis* itself, the present new species has better defined posterior prothoracic angles. In this character it agrees with *D. aereus* Dejean, of SW. Australia, but *papuellus* lacks the obvious punctation of the base of the pronotum of *aereus*. As compared with *queenslandicus* Csiki (*mandibularis* Castelnau), *papuellus* is larger, with more obtuse posterior prothoracic angles.

Genus *HYPHARPAX* Macleay

Macleay 1825, Annulosa Javanica 1, p. 22.
Chaudoir 1878, Ann. Mus. Civ. Genoa 12, p. 496.
Sloane 1898, Proc. Linnean Soc. New South Wales 23, pp. 458–459.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 6, p. 1051 (see for synonymy and additional references).

Diagnosis. See preceding *Key to Genera of Harpalini of New Guinea.*

Description. None required here.

Type species. H. lateralis Macleay (= *dentipes* Wiedemann), of Java.

Generic distribution. Chiefly **Australia**, extending to **New Zealand**, and west in the **Malay Archipelago** to **Java** and **Sumatra**.

Notes. See *Notes* under following species.

Hypharpax dentipes (Wiedemann)

Wiedemann 1823, Zool. Magazin 2, p. 54 (*Harpalus*).
Chaudoir 1878, Ann. Mus. Civ. Genoa 12, p. 500.
Andrewes 1919, Trans. Ent. Soc. London for 1919, p. 158.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 6, p. 1052 (see for synonymy and additional references).

Description. None required here. This is the only species of the genus known from New Guinea. Length c. 7–10 mm.

Type. From **Java**; in Copenhagen Zool. Mus. (not seen).

Occurrence in New Guinea. **Papua**: 39, Port Moresby and vic., May, Sept., Oct., Dec. (various collectors; M.C.Z., British Mus., Bishop Mus., Dept. Agr. Pt. Moresby), some under logs in *Eucalyptus* country, some at light; 6, Yule Is., Nov. 7 and 16, 1933 (R. V. Oldham, British Mus.); 2, same locality (Fry Coll., British Mus.); 1, Lake Daviumbu, Fly R., Sept. 11–20, 1936 (Archbold Exp., A.M.N.H.); 1, Rouku, Morehead R., West Papua, Mar. 1962 (W. W. Brandt, C.S.I.R.O.). **N-E. N. G.**: 3, Lae and vic., Mar. 1963, Aug. 1964 (Sedlacek); 18, Sum-Sum, 64 km N. of Wau, 580 m, Feb. 15, 1963 (H. W. Clissold, Bishop Mus.); 4, Bulolo, 720 m, Aug. 13, 19, 24, 27, 1956 (E. J. Ford, Jr., Bishop Mus.), 2 of these taken in light trap; 1, Wau, 1200 m, May 1–15, 1962 (Sedlacek) in light trap. Also 7 specimens from Papua, "British N. Guinea," and New Guinea without exact localities.

Notes. The sexes of *dentipes* differ considerably: males not only have the front and middle tarsi dilated, with spongy soles, but also have the hind femora more or less dentate and the hind tibiae more or less curved. The development of the femoral tooth and the degree of curvature of the tibiae vary individually in males from single localities and also vary geographically, and the size of the insect varies geographically. The species therefore has received several names. The synonymy has not been fully worked out, but my impression is that a single variable species of *Hypharpax*,

for which *dentipes* is the oldest name, occurs in **Sumatra**, **Java**, **Celebes**, and **New Guinea**, and that it occurs also in **NE. Australia** under the name *krefti* Castelnau. This tentative conclusion should be tested by more rigorous study, for which I now have neither the material nor the time.

In New Guinea this species has been found only in the eastern half of the island, especially but not exclusively in the more open *Eucalyptus* country of southern Papua.

Genus *LECANOMERUS* Chaudoir

Chaudoir 1850, Bull. Soc. Nat. Moscow 23, Part 1, p. 446.
Sloane 1920, Proc. Linnean Soc. New South Wales 45, pp. 132, 137 (as synonym of *Nemaglossa*).
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 6, p. 1058 (as synonym of *Nemaglossa*) (see for additional references).
Thenarotes Bates 1878, Cistula Ent. 2, p. 319.

Diagnosis. Small Harpalini (length under 5 mm in New Guinea); elytra without scutellar striae (in New Guinean species); penultimate segments labial palpi conspicuously 2-setose; ♂ front and middle tarsi with densely pubescent soles.

Description (characters common to New Guinean species). Form *c.* as in Figures 17, 18; more compact and convex than in most Acupalpina, with margins of prothorax and elytra relatively narrow. *Head*: mandibles moderately long, straight posteriorly, curved apically; eyes not very large but almost contiguous with sides of mouth below; frontal impressions deep, curved, sharply defined; mentum with triangular tooth; ligula 2-setose, with paraglossae attached, longer than ligula; palpi short, apical segments subconical, penultimate segments of labial palpi 2-setose. *Prothorax* subquadrate or subcordate; disc convex, median longitudinal line impressed, baso-lateral impressions shallow and poorly defined, surface of disc punctate across base, almost impunctate elsewhere. *Elytra*: humeri prominent; basal margin entire, rounded or obtusely subangulate at humeri; striae impressed, entire, not distinctly punctate; scutellar striae lacking; 3rd intervals 1-punctate on inner edge behind middle. *Inner wings* full. *Lower surface* including abdomen virtually glabrous except for "fixed" setae. *Secondary sexual characters*: ♂ front and middle tarsi moderately dilated, with densely pubescent soles; 2 setae each side apex last ventral segment in both sexes.

Type species. Of *Lecanomerus*, *L. insidiosus* Chaudoir, of SW. Australia; of *Thenarotes*, *T. tasmanicus* Bates, of Tasmania.

Generic distribution. Species of *Lecanomerus* (*sensu lato*) are diverse in **Australia**, less so in **New Zealand**, **New Caledonia**, and **New Guinea**. For further details see *Notes*, below.

Notes. The supposed identity of *Lecanomerus* (including *Thenarotes*) of Australia and *Nemaglossa* of Chile is doubtful. Sloane (1920), who suggested it, did so without what would now be considered critical study, and I have not been able to make the comparisons necessary to confirm it. I shall therefore tentatively treat *Lecanomerus* as distinct from *Nemaglossa* and confined to the Australian Region. The genus does *not* have an "Antarctic" distribution pattern. Species are numerous and diverse along the whole eastern edge of Australia north to Cape York. Five species are reported from Tasmania (Sloane), but 4 of them occur on the Australian mainland too, and the 1 species endemic to Tasmania is not much differentiated.

The 3 small, compact *Lecanomerus* found in New Guinea resemble, but are specifically distinct from, certain unidentified species that I found common on the Cape York Peninsula of Australia in 1958. The New Guinean forms occur in rain-forest areas, not in *Eucalyptus* country. They probably live among dead leaves and under vegetation on the ground near standing water or perhaps sometimes in leaf litter on the floor of rain forest. However, I did not distinguish them in the field and cannot be sure of their habitats.

KEY TO SPECIES OF *LECANOMERUS* OF NEW GUINEA

1. Prothorax narrowly subcordate (width/length 1.22 and 1.18); (Hollandia, West N. G.) (p. 46) ..... *angustior*
– Prothorax wider; (Papua) 2
2. Brown; slightly narrower (*cf.* proportions in *Descriptions*); punctation of base of pronotum discontinuous, with middle of base virtually impunctate (p. 46) ..... *medius*
– Black; relatively slightly wider; punctation somewhat irregular but *c.* continuous across base of pronotum (p. 46) ..... *latior*

Lecanomerus angustior n. sp.

Description. With characters of genus; form (Fig. 17) narrowly compact; color brownish piceous, prothoracic and elytral margins and suture usually slightly rufescent, appendages testaceous; moderately shining, reticulate microsculpture faint, slightly transverse on front and on pronotal disc, more transverse on elytra. *Head* 0.69 and 0.69 width prothorax; eyes smaller than average, genae slightly rounded-oblique. *Prothorax*: width/length 1.22 and 1.18; base/apex 1.13 and 1.15; sides weakly rounded anteriorly, converging and usually sinuate posteriorly before *c.* right posterior angles; base and apex unmargined at least at middle; base of pronotum punctate at sides, scarcely so at middle. *Elytra*: width elytra/prothorax 1.47 and 1.45. *Measurements*: length 3.6–4.0; width 1.6–1.7 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,362) and 6 paratypes all from Hollandia, **West N. G.,** July–Sept. 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. See preceding *Key to Species* for differential characters. This is the westernmost known species of the genus. It probably represents *medius* (below) of eastern New Guinea. Perhaps additional related forms are still to be found in western West N. G.

Lecanomerus medius n. sp.

Description. With characters of genus; form average; color brownish piceous, margins of prothorax and elytra slightly or not rufescent, appendages testaceous, antennae slightly browner except at base; shining, reticulate microsculpture faintly indicated, meshes scarcely distinct at 50×. *Head* 0.64 and 0.65 width prothorax; eyes moderate, genae short, rounded. *Prothorax*: width/length 1.34 and 1.34; base/apex 1.26 and 1.27; sides broadly rounded except nearly straight and converging posteriorly to obtuse but finely denticulate posterior angles; base and apex unmargined at least at middle; base punctate at sides, not at middle. *Elytra*: width elytra/prothorax 1.36 and 1.34; humeri broadly rounded. *Secondary sexual characters* as for genus. *Measurements*: length 3.5–4.3; width 1.6–1.8 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,363) and 20 paratypes from Dobodura, **Papua**, Mar.–July 1944 (Darlington), and 9 paratypes, Oro Bay, near Dobodura, Dec. 1943–Jan. 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. See *Notes* under preceding and following species.

Lecanomerus latior n. sp.

Description. With characters of genus; form (Fig. 18) compact, relatively broad; black, appendages brownish testaceous; shining, *c.* without reticulate microsculpture. *Head* 0.68 and 0.67 width prothorax; eyes slightly larger than in *medius* (above), genae short, forming *c.* right angles with neck. *Prothorax*: width/length 1.36 and 1.39; base/apex 1.24 and 1.16; sides broadly rounded except *c.* straight and converging posteriorly to obtuse but minutely denticulate posterior angles; apex margined but marginal line sometimes faint at middle; base not margined; entire base of pronotum punctate, but punctures sparser at middle of base. *Elytra*: width elytra/prothorax 1.44 and 1.38; humeri obtusely sometimes vaguely subangulate. *Measurements*: length 3.6–3.7; width 1.6–1.7 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,364) and 1 ♀ paratype from Dobodura,

Papua, Mar.–July 1944 (Darlington); and additional paratypes from **Papua** as follows: 1, Bisianumu, near Sogeri, 500 m, Mar. 15–20, 1955 (E. O. Wilson, M.C.Z.), taken in rain forest; 1, Kokoda, 1200 ft. (366 m), Aug. 1933 (Cheesman).

Measured specimens. The ♂ holotype and ♀ paratype from Dobodura.

Notes. Distinguished from the 2 preceding species by broader form, black color, and pronotum with entire apical marginal line and more extensive basal punctation.

Genus *CHYDAEUS* Chaudoir

Chaudoir 1854, Bull. Soc. Nat. Moscow 27, Part 1, p. 343.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 6, p. 1080.

Diagnosis. See *Key to Genera of Harpalini of New Guinea.*

Description. None required here.

Type species. C. obscurus Chaudoir, of India.

Generic distribution. The **Himalayas** (Sikkim, etc.), **Formosa**, **Sumatra**, **Java**, the **Philippines**, and **New Guinea**; usually at high altitudes.

Notes. This is the clearest case I know of an Asiatic stock of Carabidae that has "mountain hopped" to New Guinea. All species of the genus are generally similar and probably closely allied. The wings of some species have atrophied, but those of others are still fully developed, and *C. bakeri* Andrewes is dimorphically winged at Baguio on Luzon. Flying individuals may therefore have dispersed from mountaintop to mountaintop and from island to island across the Malay Archipelago rather recently, in terms of evolutionary time.

Chydaeus papua n. sp.

Description. Form as in Figure 19, stout, convex; black, legs brownish, antennae and mouthparts irregularly brownish testaceous; both sexes moderately shining, upper surface irregularly punctulate but reticulate microsculpture faint or absent. *Head* 0.76 and 0.74 width prothorax, *c.* as in *Chydaeus obscurus* Chaudoir; mentum toothed; ligula free at apex, truncate; paraglossae arcuate, narrow, *c.* long as ligula but widely separated from it. *Prothorax* broadly subcordate; width/length 1.48 and 1.49; base/apex 1.12 and 1.09; sides broadly rounded through much of length, sinuate before well defined *c.* right posterior angles; pronotum strongly convex (more so than in *obscurus*), base margined, basal impressions poorly defined, surface of disc more closely and coarsely punctate at sides and especially base than at middle. *Elytra*: width elytra/prothorax 1.21 and 1.25; humeri subdentate; apices weakly sinuate; striae entire, rather lightly impressed; 3rd intervals without dorsal punctures. *Inner wings* vestigial. *Lower surface* and *legs* without obvious special characters. *Secondary sexual characters*: ♂ front tarsi moderately and middle tarsi narrowly dilated, densely squamulose below; ♂ with 1, ♀ 2 setae each side last ventral segment. Measurements: length 9.2–10.6; width 3.6–4.4 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,365) and 6 paratypes from Mt. Wilhelm, Bismarck Rge., **N-E. N. G.,** above 10,000 ft. (above 3000 m), Oct. 1944 (Darlington), in open country above timberline; and additional paratypes as follows, all from the Bismarck Rge.: 2, Mt. Wilhelm, 2800–2900 m, July 6, 1963 (Sedlacek); 1, "No. 5," Piunde-Aude Camp, east slopes Mt. Wilhelm, June 13, 1959 (L. J. Brass, Sixth Archbold Exp. to Papua, A.M.N.H.); 1, Lake Aunde, 3400–3500 m, July 4, 1963 (Sedlacek); 1, Lake Sirunki, 2800–2900 m, June 15, 1963 (Sedlacek); 6, Mt. Otto Summit, Nov. 1965 (Dept. Agr. Port Moresby).

Additional material. One, Murray Pass, **Papua**, 2400–2800 m, Nov. 6, 1965 (Sedlaceks); 1 ♂, Camp E. of Mt. Wilhelmina, Snow Mts., **West N. G.,** 3600 m, Sept. 1938 (Toxopeus).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Mt. Wilhelm.

Notes. This geographically isolated *Chydaeus* is similar to *obscurus* Chaudoir (of Sikkim, etc.) but has a slightly wider head and differs in other details.

The Snow Mts. specimen may represent an independent population, distinguished by wider prothorax and perhaps by other characters, but more material is necessary to decide this.

Genus *PLATYMETOPUS* Dejean

Dejean 1929, Species Général Coléop. 4, p. 68.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 6, p. 1205 (see for synonymy and additional references).
Schauberger 1938, Arbeiten morphologische und taxonomische Ent. 5, p. 41 (see for comments on some species of the Malay Archipelago).
Basilewsky 1950, Ann. Mus. Congo Belge (8), Zool., 6, p. 141.

Diagnosis. Medium-sized, dull black Harpalini distinguished from all other members of the tribe in New Guinea by dorsal surface entirely coarsely punctate and pubescent.

Description. None required here.

Type species. P. vestitus Dejean, of Africa.

Generic distribution. **Africa**, the **Cape Verde Islands**, and **Madagascar**; **SE. Asia**, **Japan**, and the **Malay Archipelago** to the **Philippines** and **New Guinea** (not Australia).

Notes. A single widely distributed species of this genus reaches New Guinea.

Platymetopus laticeps Dejean

Dejean 1829, Species Général Coléop. 4, p. 76.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 6, p. 1206 (see for additional references and for "varieties").

Description. None required here. See *Diagnosis* of genus. Length *c.* 8 mm.

Type(s). From the **Philippines**; in Oberthür Coll., Paris Mus. (not seen).

Occurrence in New Guinea. Collected only in the western part of **West N. G.**: 4, Biak Is., dates in Jan., Feb., Mar., Apr. 1952 (L. D. Brongersma, Leiden Mus.), at light; 2, Wong R., Feb. 9, 1957 (R. T. Simon Thomas, Louwerens Coll.), at light; 1, Sorong-Doom, Feb. 9, 1957 (R. T. Simon Thomas, Louwerens Coll.), at light.

Notes. Closely related forms of this genus, some treated as varieties of *Platymetopus flavilabris* (Fabricius) by Csiki, are widely distributed in SE. Asia and the Malay Archipelago. Their taxonomy is a problem. The problem, however, lies mainly in the Oriental Region rather than New Guinea, and I cannot undertake to solve it now.

Whatever the final taxonomic arrangement, it seems clear that one, dark-legged form of *Platymetopus* (all surely New Guinean individuals are dark-legged) has reached New Guinea recently from the west and may perhaps still be confined to the western end of the island. Its absence elsewhere in New Guinea is suggested by the facts that members of this genus are usually common where they occur at all and that they fly to light, but that none has been found in light trap material from central and eastern New Guinea. *P. laticeps* has been previously known from **Buru** (specimen in Andrewes Coll.) and the **Philippines.**

Besides the dark-legged individuals recorded above, I have seen two yellow-legged ones labeled "Dory" and "Dorey." They were probably collected by Wallace and are presumably really from Celebes (see Part I of the present work, pp. 330–331). They are probably referable to *P. subrugosus* Schauberger (see reference cited under genus, above) of Celebes. This species should *not* be listed from New Guinea.

Genus *TRICHOTICHNUS* Morawitz

Morawitz 1863, Mem. Acad. Sci. St. Petersburg (7) 6, No. 3, p. 63.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 6, pp. 1210, 1217 (see for additional references, subgenera, and synonymy).
Basilewsky 1950, Ann. Mus. Congo Belge, Zool. 6, p. 87.

Diagnosis. See *Key to Genera of Harpalini of New Guinea.*

Description (important characters shared by New Guinean species). Form of ordinary, medium-sized Harpalini; upper surface not pubescent. *Head* smooth except for deep, oblique, usually linear frontal impressions; 1 seta over each eye; mentum toothed; labial palpi with penultimate segments with more than 2 setae. *Prothorax* subcordate or transverse; side margins each with 1 seta-bearing puncture, before middle; disc usually extensively punctate especially across base, with punctation finer and usually sparser across middle. *Elytra* with striae entire, impressed, impunctate; 3rd intervals 1-punctate near inner edge at or slightly behind middle (punctures sometimes obscured or absent on one or both elytra). *Inner wings* usually full, rarely dimorphic (some populations of *nigricans* and *altus*). *Lower surface*: prosternum anteriorly with short pubescence (reduced in *medius*). *Legs*: front tibiae with apex less than ¼ wide as tibial length; hind tarsi moderate or long. *Secondary sexual characters*: ♂ front and usually middle tarsi 2-seriately squamulose; 2 setae each side last ventral segment in both sexes. See also *Notes*, below.

Type species. *T. longitarsis* Morawitz, of Japan.

Generic distribution. Temperate and tropical **Eurasia** and the **Malay Archipelago** to **New Guinea**, etc. (probably not Australia); **eastern North America**. The genus in a broad sense, including *Hyparpalus*, occurs also in Africa (Csiki, probably following Schauberger), but Basilewsky considers *Hyparpalus* a separate genus and does not recognize *Trichotichnus* in Africa south of the Sahara.

Notes. I have had difficulty with both the generic and the specific classifications of the 15 New Guinean species that I now assign to this genus. Several of the species might go in *Lampetes* (*Lamprophonus*) or *Carbanus*, but I have not found satisfactory characters to distinguish these genera from *Trichotichnus*. However, I do *not* intend to reduce them to synonymy now. They need further study based on Oriental as well as New Guinean forms. This study will require more time and material than I now have.

The descriptions of species in the following pages are brief, and allowance must be made for individual variation, which is surprisingly great in some characters. For example, the punctation of the outer elytral intervals is variable in some cases (e.g., in *mixtus*). The form of the elytral apices is sometimes variable (e.g., in *denarius* and *altus*). And the form of the apex of the aedeagus is surprisingly variable in some species. I have figured it in some cases but have usually not used it as a diagnostic character. But see under *altus* and *dux* (Figs. 172, 173).

All New Guinean species of *Trichotichnus* are fully winged and probably capable of flight (some of them have been taken in light traps), with 2 exceptions. *T. nigricans*, although apparently always fully winged at low altitudes, is dimorphically winged on the Bismarck Range. And some populations of *T. altus* include individuals with slightly shortened and weakened wings, although other individuals of this species fly. Some *Trichotichnus* in other parts of the world have atrophied or dimorphic wings.

Most or all of the common, unspotted *Trichotichnus* in New Guinea probably live on the ground in rain forest, but I did not distinguish the different species in the field and cannot be sure of their exact habitats.

The following *Key to Species of Trichotichnus of New Guinea* works reasonably well for series of clean specimens, but it is not perfect. I myself have had trouble placing some single specimens. In order to simplify identifications and reduce need for using the key, I give the following notes for recognizing several of the commoner, *dark* (unmarked) species.

If large (7.3–8.3 mm), rufo-piceous, shining, and *without pubescence at front of prosternum* (but some setae at apex of

prosternal process): see *Lyter*, second genus after *Trichotichnus*.

If large (8–9 mm), broad, and *with partial raised 10th intervals in elytral margins: denarius.*

If large (*c.* 8–10 mm), less broad, without raised 10th intervals, and *found at considerable elevations in mountains* (usually over 1200 m): probably *altus.*

If small (6.5–7.5 mm), dark, and without reticulate microsculpture on elytral intervals: probably *nigricans.*

If small (6.3–7.0 mm), dark, and *with reticulate microsculpture on elytral intervals*: probably *semimas* (which lacks squamules on ♂ middle tarsi).

Key to Species of *Trichotichnus* of New Guinea

1. Head *c.* ⅔ width prothorax (H/P 0.66 and 0.68); prothorax transverse with broadly rounded sides; length 5.0–6.3 mm (p. 50) ..... *straneoi*
– Head *c.* ¾ or more width prothorax (by measurement); prothorax more subcordate; usually larger 2
2. Elytra with partial raised 10th intervals in marginal channels; (no dorsal markings; length 8–9 mm) (p. 51) ..... *denarius*
– Elytra without partial raised 10th intervals 3
3. Male with only anterior (not middle) tarsi squamulose; elytral intervals microreticulate; (no dorsal markings; length 6.3–7.0 mm) (p. 52) ..... *semimas*
– Male with middle as well as anterior tarsi with squamules; elytra often (not always) without microreticulation 4
4. Elytra without subapical sutural spot or sutural intervals pale 5
– Elytra with common subapical sutural spot pale, or sutural intervals pale near apex 11
5. Prothorax and elytra without pale margins; abdomen usually without *conspicuous* pale spots or margins; femora not *conspicuously* paler than abdomen 6
– Prothorax and elytra usually with narrow pale margins; abdomen usually with conspicuous pale lateral spots or margins; femora *conspicuously* pale 10
6. Length 6.5–7.5 mm; pronotum not much depressed at sides toward base; (basal margin of pronotum usually incomplete) (p. 52) ..... *nigricans*
– Larger, *or* sides of pronotum more depressed toward base 7
7. Eyes slightly larger, separated from mouth below by *c.* ⅛ diameter of an eye; apex of aedeagus short; (length *c.* 8–10 mm) (p. 53) ..... *modus*
– Eyes slightly smaller, more distant from mouth below; apex of aedeagus longer, slender 8
8. Length 11.5–13.0 mm (p. 53) ..... *dux*
– Length 7.2–10.0 mm 9
9. Prosternal pubescence more abundant; size usually larger (*c.* 8–10 mm); pronotum more punctate, less shining (p. 54) ..... *altus*
– Prosternal pubescence usually scanty, but variable; size usually smaller (7.2–8.5 mm); pronotum less punctate, more shining; (direct comparison necessary to determine some specimens) (p. 55) ..... *medius*
10. Elytral intervals not obviously microreticulate; abdomen with pale spots usually largest and most conspicuous at sides of subapical segment; (length 8.3–9.3 mm) (p. 56) ..... *brandti*
– Elytral intervals microreticulate; abdomen usually more extensively pale margined; (length 8.5–9.4 mm) (p. 56) ..... *obscurus*
11. Length usually 7.6–8.5 mm (rarely slightly smaller); subapical sutural pale spot distinct, reaching 3rd intervals (p. 57) ..... *guttula*
– Smaller; sutural pale spot variable, sometimes smaller or less distinct 12
12. Prothorax wide at base (base/apex 1.34); (length 7.5 mm) (p. 57) ..... *mongi*
– Prothorax narrower at base 13
13. Sides of elytra (intervals 8, 9) rugose-punctate; (length 5.3–6.8 mm) (p. 58) ..... *semirugosus*
– Sides of elytra not rugose, although sometimes punctulate 14
14. Length 5.8–7.5 mm; pronotum depressed at sides toward base; (and see *Notes* under this species) (p. 58) ..... *mixtus*
– Length 5.3–5.8 mm; sides of pronotum scarcely depressed (p. 59) ..... *delicatus*

Trichotichnus straneoi (Louwerens)

Louwerens 1962, Tijdschrift voor Ent. 105, p. 142, fig. 7 (*Carbanus*).

Description. With characters of genus; small, form (Fig. 20) broad; brownish black, sides of pronotum and elytra vaguely translucent, lower surface and appendages more rufous; elytra faintly iridescent but not distinctly microreticulate (at 50×). *Head* small, 0.66 and 0.68 width prothorax; eyes large, separated from mouth below by

c. 1/12 or less width of an eye. *Prothorax* transverse with broadly rounded sides; width/length 1.59 and 1.59; base/apex 1.41 and 1.39. *Elytra*: width elytra/prothorax—and 1.30. *Secondary sexual characters* normal for *Trichotichnus*. *Measurements* (in New Guinea): length *c.* 5.0–6.3; width *c.* 2.3–2.7 mm.

Types. Holotype ♂ (Louwerens Coll.), allotype, 6 paratypes all from Amboina Island, **Moluccas**, 70 m (A. M. R. Wegner), at light; a paratype now in M.C.Z. (Type No. 31,149) (holotype not seen).

Occurrence in New Guinea. **Papua**: 3, Brown R., May 21, 23, 24, 1956 (E. J. Ford, Jr., Bishop Mus.); 1, Mts. between Agamoia and Ailuluai, Ferguson Is., 900 m, "No. 4," June 5–17, 1956 (L. J. Brass, U.S.N.M.). **N-E. N. G.**: 13, Wau, Morobe Dist., 1200, 1300 m, various dates (Sedlacek); 1, Wantoat, Finisterre Mts., 4000 ft. (1220 m), Sept. 9, 1957 (Monroe and Holland, Canadian Nat. Coll.); 1, Eliptamin Vy., 1350–1665 m, June 23–30, 1959 (W. W. Brandt, Bishop Mus.). **West N. G.**: 1, Hollandia, July–Sept. 1944 (Darlington); 1, Cyclops Mts., Sabron, 2000 ft. (610 m), June 1936 (Cheesman); 1, Hollandia area, W. Sentani, Cyclops Mts., 50–100 m, June 22–24, 1959 (Gressitt & T. C. Maa, Bishop Mus.), in light trap; 2, Star Rge., Sibil, 1260 m, May 16, June 16, 1959 (Leiden Mus.), at light.

Measured specimens. A pair (♂ ♀) from Brown R.

Notes. Andrewes placed *Carbanus* in the wrong subtribe of Harpalini, erroneously considering it a member of the Acupalpina. The arrangement of setae on the labial palpi seems to me to place it with the Harpalina, and I can find no positive character to distinguish it from *Trichotichnus*. However, I do not intend to synonymize *Carbanus* now. It requires further study. The name can be used for a group of small, mutually similar species (*lautus* Andrewes of Burma, *flavipes* Andrewes of Java, *philippinus* Jedlicka of the Philippines, and *straneoi* Louwerens of the Moluccas, New Guinea, etc.) that may eventually be separated from *Trichotichnus*.

T. straneoi extends to **New Britain** and **New Ireland** (specimens in Bishop Mus.). Nothing is recorded of its habitat or habits except that it flies to light.

Trichotichnus denarius n. sp.

Description. With characters of genus; form slightly broader than usual; black or piceous, appendages browner, sides of abdomen with small pale marks (variable); rather shining, most of upper surface without visible microreticulation (at 50×) but elytra silky in some lights. *Head* 0.77 and 0.77 width prothorax; eyes large, separated from mouth below by *c.* 1/6 diameter of an eye. *Prothorax* transverse-subcordate; width/length 1.59 and 1.63; base/apex 1.14 and 1.10; sides converging and usually broadly and slightly sinuate before distinct but obtuse posterior angles; basal marginal line fine or interrupted at middle; disc weakly convex, moderately depressed at sides especially posteriorly, extensively punctate but with punctation finer and slightly sparser at middle. *Elytra* broad; width elytra/prothorax 1.36 and 1.36; marginal gutters wider than usual, with irregular raised 10th intervals in *c.* middle 1/3 of length; apices usually slightly dehiscent and *c.* pointed, but variable; outer intervals (8, 9, and 10) usually slightly, finely punctulate. *Secondary sexual characters* as for genus. *Measurements*: length *c.* 8.0–9.0; width 3.3–3.8 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,366) and 111 paratypes from Dobodura, **Papua**, Mar.–July 1944 (Darlington); and additional paratypes as follows. **Papua**: 20, Kokoda, 1200 ft. (366 m), June, July, Aug., Sept., Oct. 1933 (Cheesman); 1, same locality, Mar. 28–29, 1956 (Gressitt); 2, Biniguni, Gwariu R., 150 m, "No. 3," July 27–Aug. 14, 1953 (Geoffrey M. Tate, A.M.N.H.); 5, Peria Ck., Kwagira R., 50 m, "No. 7," Aug. 14–Sept. 6, 1953 (Geoffrey M. Tate, A.M.N.H.); 1, Kokoda-Pitoki, 400 m, Mar. 23, 1956 (Gressitt). **N-E. N. G.**:

3, lower Busu R., Huon Pen., May 4, 1955 (E. O. Wilson, M.C.Z.), in lowland rain forest; 1, Simbang, Huon Gulf, 1899 (Biró). **West N. G.**: 1, Wamoro (ex Coll. G. Hauser, British Mus.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. The partial 10th intervals in the elytral margins immediately distinguish *denarius*. The species is very common in eastern New Guinea (apparently much less so in the west), presumably in rain forest. One of Miss Cheesman's specimens was taken at light and so apparently were the Peria Creek individuals, which have scales and wing fragments of other insects on them.

Trichotichnus semimas n. sp.

Description. With characters of genus; form rather slender; black or piceous, appendages brown, abdomen with some (variable) small pale marks at sides; moderately shining but elytra with transverse microreticulation distinct at 50×. *Head* 0.79 and 0.79 width prothorax; eyes moderate, separated from mouth below by nearly ¼ diameter of an eye. *Prothorax* subcordate; width/length 1.48 and 1.48; base/apex 1.18 and 1.16; sides rounded anteriorly, converging and sinuate before distinct *c.* right (slightly obtuse) posterior angles; basal marginal line faint or interrupted at middle; disc very little depressed at sides toward base, extensively punctate except almost impunctate at middle. *Elytra* normal; width elytra/prothorax 1.23 and 1.26; outer intervals not distinctly punctulate. *Secondary sexual characters* normal except only front (not middle) tarsi of ♂ squamulose. *Measurements*: length 6.3–7.0; width 2.5–2.8 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,367) and 19 paratypes from Dobodura, **Papua**, Mar.–July 1944 (Darlington); 4 paratypes, Kokoda, **Papua**, 1200 ft. (366 m), Oct., Sept. 1933 (Cheesman); 3 paratypes, same locality, Mar. 20, 28–29, 1956 (Gressitt), in light trap; 2, Normanby Is., Wakaiuna, Sewa Bay, Nov. 1–10, 1956 and Jan. 1–8, 1957 (W. W. Brandt, Bishop Mus.). **N-E. N. G.**: 1, Erima, Astrolabe Bay, 1896 (Biró); 2, Madang ("Friedrich-Wilh.-hafen"), 1901 (Biró); 1, Bulolo, 730 m, Aug. 27, 1956 (E. J. Ford, Jr., Bishop Mus.), in light trap; 1, Sum-Sum, 64 km N. of Wau, 580 m, Feb. 15, 1963 (Sedlacek). **West N. G.**: 4, Hollandia area, W. Sentani, Cyclops Mts., 50–100, 100, 150–250 m, June (various dates) 1959 (Gressitt and T. C. Maa, Bishop Mus.); 2, Ifar, Cyclops Mts., 450–500, 400–800 m, Sept. 7, 7–9, 1962 (Sedlacek); 3, Dojo, Res. Hollandia, Apr. 1957, 1958 (R. T. Simon Thomas, in Louwerens Coll.); 1, Maffin Bay, Aug. 1944 (E. S. Ross, California Acad.); 1, Wasian, Vogelkop, Sept. 1939 (Wind, M.C.Z.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. Males of *semimas* are unique among New Guinean *Trichotichnus* in lacking the usual sexual squamules of the middle tarsi. Females resemble *nigricans* (below) but differ by presence of reticulate microsculpture on the elytra. *T. semimas* probably lives in rain forest, and has been taken at light near Hollandia as well as at Kokoda.

Trichotichnus nigricans Schauberger

Schauberger 1935, Ent. Anzeiger 15, p. 34.

Description. With characters of genus; form rather small and slender; black, appendages brownish, sides of abdomen with or without small, often vague pale marks; upper surface including elytra without distinct reticulate microsculpture. *Head* 0.76 and 0.75 width prothorax; eyes usually moderate and separated from mouth below by *c.* ⅓ diameter of an eye, but eyes smaller and more distant from mouth in short-winged individuals from Bismarck Range. *Prothorax* subcordate, with sides slightly or not sinuate before usually well defined but obtuse basal angles; width/length 1.43 and 1.49; base/apex 1.21 and 1.18; basal marginal line usually incomplete at middle;

disc only slightly depressed at sides basally, extensively punctate, punctation finer and sparser at middle. *Elytra* normal; width elytra/prothorax 1.27 and 1.25; outer intervals not distinctly punctulate. *Wings* full in lowland populations, dimorphic on Bismarck Range (see *Notes*, below). *Secondary sexual characters* normal. *Measurements*: length *c.* 6.5–7.5; width *c.* 2.5–2.8 mm.

Types. (Holo)type (Andrewes Coll., British Mus.) and 2 "cotypes" all from Sattelberg, **N-E. N. G.** (G. Hauser). I saw the type in London in 1948 and made a satisfactory comparison with it.

Occurrence in New Guinea. Common and widely distributed: 180 specimens from localities well distributed over **New Guinea** and on Woodlark and Normanby Is.; most from low altitudes, but series from Chimbu Vy., Bismarck Rge., between 5000 and 7000 ft. (*c.* 1500–2100 m), and from Wau, 1200 m. Specimens taken in every month.

Measured specimens. A pair (♂ ♀) from Dobodura, Papua.

Notes. T. nigricans occurs also on ***New* Britain**, and related forms, compared by Schauberger (1935, p. 36), are known from Java, Sumatra, and Celebes.

This species probably occurs in rain forest, although the Chimbu specimens were taken in open country.

I have not examined the wings of every specimen, but all or most of those from low altitudes are winged, and they often fly. They have been taken in light traps at several localities. However, of my Chimbu series, only 3 specimens (both sexes) have full wings, and 11 (both sexes) have the wings reduced to thin strips *c.* ½ as long as the elytra. I have not examined the wings of the 41 specimens from Wau because some or all were collected in light traps, which would select only winged individuals.

Besides the 180 specimens that I assign to this species without much doubt, 7 specimens from various localities in New Guinea are assigned doubtfully, because of slight differences in various characters.

Trichotichnus modus n. sp.

Description. With characters of genus; form (Fig. 21) average, somewhat variable (see proportions); black, legs brownish, abdomen ± brownish (apical segment darker) with lateral pale areas absent or not sharply defined; shining, elytra subiridescent but without visible reticulate microsculpture. *Head* 0.72 and 0.76 width prothorax; eyes slightly larger than usual, separated from mouth below by *c.* ⅛ diameter of an eye. *Prothorax* transverse-subcordate; width/length 1.43 and 1.53; base/apex 1.30 and 1.20; sides rounded anteriorly, converging and usually slightly sinuate before well defined but obtuse posterior angles; basal marginal line faint or incomplete at middle; disc moderately depressed at sides, extensively punctate except *c.* impunctate at middle. *Elytra*: width elytra/prothorax 1.32 and 1.36; marginal channels narrow, without 10th intervals; outer intervals not distinctly punctulate. *Secondary sexual characters* normal; apex aedeagus short, ± hooked dorsally. *Measurements*: length 8.0–10.0; width 3.4–3.9 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,368) and 6 paratypes all from Dobodura, **Papua**, Mar.–July 1944 (Darlington).

Additional material. **Papua**: 1, Normanby Is., Wakaiuna, Sewa Bay, Jan. 1–8, 1957 (W. W. Brandt, Bishop Mus.). **West N. G.**: 1, Wissel Lakes, Tage L., 1760 m, Aug. 4, 1955 (Gressitt). These specimens are assigned to *modus* doubtfully.

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. This species resembles *denarius* in size and color, but differs by lack of partial 10th elytral intervals.

Trichotichnus dux n. sp.

Description. With characters of genus; form *c.* average, very large; black, appendages dark brown, abdomen without distinct pale areas; upper surface finely microreticulate, meshes *c.* isodiametric on head,

increasingly transverse on pronotum and elytra. *Head* 0.76 and 0.77 width prothorax; eyes separated from mouth below by *c.* ¼ width of an eye (but eyes more deeply covered than usual with transparent window-like material so edges not precisely defined). *Prothorax* subcordate; width/length 1.41 and 1.46; base/apex 1.19 and 1.23; sides rounded anteriorly, converging and straight or slightly sinuate before well defined but obtuse posterior angles; basal and apical marginal lines usually faint or interrupted at middle; disc moderately depressed at sides posteriorly, finely but extensively punctate or punctulate, the punctation strongest basally. *Elytra*: width elytra/prothorax 1.39 and 1.30; margins narrow; outer intervals not distinctly punctulate. *Inner wings* full (see following *Notes*). *Secondary sexual characters* normal; apex aedeagus as in Figure 173. *Measurements*: length 11.5–13.0; width 4.4–5.1 mm.

Types. Holotype ♂ (Bishop Mus.) and 4 paratypes (2 in M.C.Z., Type No. 31,369), from Edie Creek, 14 km SW. of Wau, **N-E. N. G.,** 1900 and 2000 m, Oct. 4–10, 1961, and Feb. 13, 1962 (Sedlacek). Additional paratypes from **N-E. N. G.**: 3, Wau, 1700, 2400 m, Jan. 9–12, Oct. 6, 1962 (Sedlacek); 6, Kepilam, 2400 and 2500 m, June 21, 20–22, 21–23, 1963 (Sedlacek); 1, Tambul, 2200 m, May 27–June 7, 1963 (Sedlacek); 1, Laiagam, W. Highlands, Mar. 23, 1960 (J. H. Barrett, Dept. Agr. Port Moresby), at light; 1, Moke, Okapa Subd(istrict), E. Highlands, 6400 ft. (1950 m), Apr. 17, 1962 (J. H. Barrett, Dept. Agr. Port Moresby). 2, Okapa, June 12, 1964, Jan. 10, 1965 (Hornabrook).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Edie Creek.

Notes. The large size distinguishes this species from all others of the genus in New Guinea. All specimens of the type series are fully winged, but most were taken in light traps which, of course, select winged individuals.

Trichotichnus altus n. sp.

Description. With characters of genus; form of *c.* average large New Guinean *Trichotichnus*; black or piceous, appendages dark brownish, sides of abdomen with indistinct or poorly defined (variable) pale areas; moderately shining, elytra with transverse microreticulation faintly or not visible at 50×. *Head* 0.76 and 0.75 width prothorax; eyes separated from sides of mouth below by *c.* ¼ width of an eye. *Prothorax* subcordate; width/length 1.40 and 1.50; base/apex 1.15 and 1.18; sides converging and straight or slightly sinuate before well defined but obtuse posterior angles; disc moderately depressed at sides posteriorly, variably but often extensively punctate, most conspicuously so across base and least so across middle; basal marginal line entire, faint, or interrupted at middle (variable). *Elytra*: width elytra/prothorax 1.25 and 1.31; margins narrow, without 10th intervals; apices pointed or blunted (variable); outer intervals not distinctly punctulate. *Inner wings* dimorphic on the Bismarck Range (type series), full and strong in some individuals, slightly shortened (but still folded at apex) and with slightly weakened venation in other individuals. *Secondary sexual characters* normal; ♂ copulatory organs as in Figure 172. *Measurements*: length 8.0–10.3; width 3.3–3.9 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,370) and 42 paratypes from Chimbu Vy., Bismarck Rge., **N-E. N. G.,** 5000–7500 ft. (*c.* 1500–2300 m), Oct. 1944 (Darlington); and 16 paratypes, Tomba, S. slope of Mt. Hagen (Bismarck Rge.), 2450 m, May 22–24, 1963 (Sedlacek).

Additional material. See *Notes*, below.

Measured specimens. The ♂ holotype and 1 ♀ paratype from Chimbu Vy.

Notes. T. altus and its allies (*dux*, above, and *medius*, below) are the common mountain-living *Trichotichnus* of New Guinea. These 3 species seem clearly distinct and have different, but in part overlapping, ranges; *dux*, on the mountains of the

Morobe area; typical *altus*, on the Bismarck Range; and typical *medius*, on the Torricelli Mts. However, I have seen many additional specimens of *altus* or closely related forms from other localities, as follows. **Papua**: 9, Mt. Giluwe, 2500 m, May 1 and 27, June 6, 1963 (Sedlacek); 1, Dimifa, SE. of Mt. Giluwe, 2200 m, Oct. 11, 1958 (Gressitt); 1, Owen Stanley Rge., Goilala, Bome, 1950 m, Mar. 8–15, 1958 (W. W. Brandt, Bishop Mus.); 1, Mafulu, 4000 ft. (1220 m), Jan. 1934 (Cheesman). **N-E. N. G.**: 270 specimens (in addition to the type series) from localities including Morobe Dist.; Kratke Mts.; W. Highlands; and (S. of the Markham-Ramu Vy.) Salawaket Rge; Mongi Watershed; and Huon Pen. **West N. G.**: 35 specimens, from localities including the Star Rge.; Wissel Lakes; and Snow Mts. (Top Camp; Iebele Camp; Mist Camp; Baliem Camp). Most specimens are from altitudes of 1200 to 2700 m, but a few, from within 200 m of sea level. Individuals have been taken in every month. Most specimens are in the British Mus., Bishop Mus., A.M.N.H., Leiden Mus., C.S.I.R.O. Coll., and M.C.Z.

I have restricted the type series of *altus* and its close relatives to specimens from single localities or restricted areas because the species of this group obviously vary geographically as well as individually. In general, specimens from north of the Markham-Ramu Valley average larger, those from south of the valley smaller, except that some specimens from Wau are as small as some of the types of *medius*. Two distinct forms, a very large one (*dux*) and a smaller one (tentatively referred to *altus*), occur at Edie Creek, showing that the species of this group are not entirely allopatric. The characters, variation, and distribution of these species need more study than I can give them now.

T. altus is known to have dimorphic wings (see *Description*) only on the Bismarck Range. The specimens in question were not collected at light. Much of the other material listed above was taken in light traps, and such material usually includes only fully winged individuals and is not satisfactory for study of wing dimorphism. This is another reason for not attempting a more detailed study of *altus* and related species with the material available now.

Trichotichnus medius n. sp.

Description. With characters of genus; form average; black, appendages brownish testaceous, abdomen with or without poorly defined pale lateral areas (variable), hind femora not *strikingly* paler than abdomen, tibiae paler than femora; shining, elytra not visibly microreticulate at 50×. *Head* 0.78 and 0.79 width prothorax; eyes separated from mouth below by ¼ or ⅕ diameter of an eye. *Prothorax* subcordate; width/length 1.49 and 1.52; base/apex 1.18 and 1.14; sides converging and straight or slightly sinuate before well defined but obtuse basal angles; fine basal marginal line usually complete; disc moderately depressed at sides basally, extensively punctate across base, punctation much finer and somewhat sparser across middle and anteriorly. *Elytra*: width elytra/prothorax 1.31 and 1.26; margins without 10th intervals; outer intervals not distinctly punctulate. *Inner wings* full. *Lower surface*: *anterior* part of prosternum with pubescence usually sparse (but variable). *Secondary sexual characters* normal. *Measurements*: length *c.* 7.5–8.5; width 3.1–3.3 mm.

Types. Holotype ♂ (Bishop Mus.) and 22 paratypes (some in M.C.Z., Type No. 31,371) from Mokai Village, Torricelli Mts., **N-E. N. G.,** 750 m, various dates in Dec. 1958 and Jan. 1959 (holotype, Jan. 1–23, 1959) (W. W. Brandt); and additional paratypes, all from Torricelli Mts., as follows: 19, Mobitei, 750 m, dates in Feb., Mar., Apr. 1959 (W. W. Brandt, Bishop Mus.); 3, Wantipi, Nov. 30–Dec. 8, 1958 (W. W. Brandt, Bishop Mus.).

Additional material. Some specimens among those summarized under *Trichotichnus altus* may prove referable to *medius*,

especially the smaller ones from south of the Markham-Ramu Valley and from Wau.

Measured specimens. The ♂ holotype and 1 ♀ paratype from Mokai.

Notes. This species is difficult to define exactly. It is larger than *nigricans*, with basal marginal line of pronotum usually entire (usually interrupted in *nigricans*). It is smaller than *modus* and *altus*, with eyes intermediate in size. The sparseness of pubescence on the anterior part of the prosternum is an aid in identification, but it is not infallible. This species is more shining than most *Trichotichnus*, and approaches *Lyter* (p. 63) in appearance, but the clothing of the male front and middle tarsi of *medius* consists of 2 rows of broad scales as usual in *Trichotichnus*. Nevertheless, a *Trichotichnus* like the present one may have been ancestral to *Lyter*.

Trichotichnus brandti n. sp.

Description. With characters of genus; form average; black or piceous, not marked above except lateral margins of elytra and sometimes of prothorax narrowly inconspicuously rufescent or translucent; reddish piceous below with epipleurae and narrow margin of abdomen paler, the pale marks usually widest and most conspicuous at sides of subapical ventral segment; appendages brownish testaceous, femora conspicuously paler than abdomen; shining, elytra without distinct reticulate microsculpture. *Head* 0.75 and 0.76 width prothorax; eyes separated from mouth below by about ⅙ diameter of an eye. *Prothorax* transverse-subcordate; width/length 1.43 and 1.45; base/apex 1.20 and 1.21; sides converging and straight or slightly sinuate before obtuse but well formed (sometimes slightly blunted) basal angles; disc depressed at sides near base, extensively punctate, least so near middle; basal marginal line faint or interrupted at middle. *Elytra*: width elytra/prothorax 1.36 and 1.38; 8th and 9th intervals usually with a little sparse, fine punctulation. *Secondary sexual characters* normal. *Measurements*: length 8.3–9.3; width 3.4–3.8 mm.

Types. Holotype ♂ (Bishop Mus.) and 3 paratypes (2 in M.C.Z., Type No. 31,372) from Feramin, **N-E. N. G.,** 1200–1500 m, May 11–22 (holotype), 23–31, 1959 (W. W. Brandt); and additional paratypes as follows, all from **N-E. N. G.**: 3, Torricelli Mts., Mobitei, 750 m, Mar. 16–31, Apr. 1–15, 16–22, 1959 (W. W. Brandt, Bishop Mus.); 2, Eliptamin Vy., 1665–2530 m, June 23–30, and 2, same locality, 1200–1350 m, Aug. 16–30 and Sept. 1–15, 1959 (W. W. Brandt, Bishop Mus.); 15, Wau, Morobe Dist., 1100, 1200 (most), 1300, and 1700–1800 m, Mar., Apr., and all months from June to Dec., 1961–1963 (Sedlacek).

Additional material. The following additional specimens are tentatively assigned to this species. **Papua**: 1, Dogon, Amazon Bay Dist., 2400 ft. (*c.* 730 m), Sept. 1962 (W. W. Brandt, C.S.I.R.O.); 1, Kokoda, 1200 ft. (366 m), July 1933 (Cheesman), at light. **N-E. N. G.**: 1, Tuwep, Salawaket Rge., 1350 m, Sept. 9, 1956 (E. J. Ford, Jr., Bishop Mus.), in light trap. **West N. G.**: 1, Cyclops Mts., Sabron Camp 2, 2000 ft., June 1936 (Cheesman); 1, "Neth. New Guinea" without further locality, Oct. 20, 1944 (T. Aarons, California Acad.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Feramin.

Notes. See under following species (*obscurus*).

Trichotichnus obscurus n. sp.

Description. With characters of genus; form broad-average; brownish piceous, lateral margins of prothorax and elytra vaguely paler or translucent; abdomen broadly margined with yellow, the yellow margins widest anteriorly; appendages testaceous, hind femora strikingly pale; moderately shining, elytra with transverse reticulate microsculpture visible in both sexes (at 50×). *Head* 0.77 and 0.76 width prothorax; eyes separated from mouth below by ¼ or less width of an eye. *Prothorax* trans-

verse-subcordate; width/length 1.40 and 1.44; base/apex 1.21 and 1.20; sides converging, slightly, broadly sinuate before distinct but obtuse posterior angles; disc moderately depressed at sides basally, extensively but rather finely punctate except almost impunctate at middle. *Elytra*: width elytra/prothorax 1.34 and 1.27; 8th and 9th intervals usually not distinctly punctulate. *Secondary sexual characters* normal. *Measurements*: length 8.5–9.4; width 3.3–3.7 mm.

Types. Holotype ♂ (Bishop Mus.) and 2 paratypes (1 in M.C.Z., Type No. 31,373) from Saidor, Matoko, Finisterre Rge., **N-E. N. G.,** Aug. 29–Sept. 5 and Sept. 6–24, 1958 (W. W. Brandt); and additional paratypes as follows: **Papua**: 1, S. Highlands, Dimifa, SE. of Mt. Giluwe, 2200 m, Oct. 11, 1958 (Gressitt). **N-E. N. G.**: 2, Wau, Morobe Dist., 1200 m, Nov. 1–20 and Dec. 1961 (Sedlacek); 7, Edie Creek, 14 km SW. of Wau, 2000 m, Feb. 13, 1962 (Sedlacek); 1, Eliptamin Vy., 1200–1350 m, Aug. 1–15, 1959 (W. W. Brandt, Bishop Mus.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Saidor.

Notes. Although this species is superficially similar to the preceding one (*brandti*), I think it is distinct, differing most obviously by presence of elytral microsculpture. The 8th and 9th elytral intervals are usually less punctulate in *obscurus* than in *brandti*.

Trichotichnus guttula n. sp.

Description. With characters of genus; form average; brownish black above, sides of elytra (and to some extent of prothorax) testaceous, elytra with a conspicuous common testaceous subapical sutural spot (reaching 3rd intervals), abdomen either with irregular broad testaceous margins or wholly rufescent, appendages brownish testaceous; moderately shining, elytra usually with distinct transverse microreticulation. *Head* 0.78 and 0.79 width prothorax; eyes large, separated from mouth below by *c.* ⅛ width of an eye. *Prothorax* subtransverse; width/length 1.48 and 1.43; base/apex 1.19 and 1.21; sides rounded anteriorly, converging and nearly straight or slightly sinuate before obtuse but well defined basal angles; disc depressed at sides basally; basal marginal line usually indistinct at middle; surface of disc extensively punctate, the punctation finer and less dense at middle. *Elytra*: width elytra/prothorax 1.32 and 1.33; 8th and 9th intervals not or not much punctulate. *Secondary sexual characters* normal. *Measurements*: length 7.6–8.7; width 3.1–3.6 mm.

Types. Holotype ♂ (Bishop Mus.) and 31 paratypes (some in M.C.Z., Type No. 31,374) from Wau, Morobe Dist., **N-E. N. G.,** 1200 m, Feb., Mar., June, Aug., Sept., Oct., Nov., Dec. 1961–1963 (Sedlaceks); 1 paratype, same locality, 1700–1800 m, Nov. 17, 1961 (Sedlacek).

Additional material. Twenty-four specimens from 13 widely scattered localities including Dobodura, in all 3 political divisions of **New Guinea**; altitudes, near sea level to *c.* 2000 m. Specimens taken in every month except May and June.

Measured specimens. The ♂ holotype and 1 ♀ paratype from Wau.

Notes. This species is characterized by its size plus presence of a conspicuous pale subapical sutural spot. It is apparently widely distributed especially in the foothills and lower mountains of New Guinea. Specimens of this or a closely related species have been seen also from **New Britain** and **New Ireland** (Bishop Mus.).

Trichotichnus mongi n. sp.

Description. With characters of genus; form as in Figure 22, differing from other *Trichotichnus* by subquadrate prothorax, strongly narrowed anteriorly; piceous, lateral margins of prothorax and elytra narrowly translucent or pale, sutural intervals reddish toward apex; shining, elytra subiridescent, without distinct reticulate microsculpture. *Head* 0.72 width prothorax; eyes rather small, separated from mouth below by more than ¼ width of an eye.

Prothorax subquadrate except strongly narrowed at extreme front; width/length 1.40; base/apex 1.35; sides rounded anteriorly, broadly sinuate before *c.* right (slightly obtuse) basal angles; basal marginal line fine but entire; disc scarcely depressed at sides, extensively punctate, the punctures finer and less dense across middle. *Elytra* convex (more so than usual); width elytra/prothorax 1.46; outer intervals with a little sparse punctulation. *Secondary sexual characters* of ♀ normal; ♂ unknown. *Measurements*: length *c.* 7.5; width 3.3 mm.

Type. Holotype ♀ (M.C.Z., Type No. 31,375) from Tumnang, Mongi Watershed, Huon Pen., **N-E. N. G.,** 1400–1600 m, Apr. 14–15, 1955 (E. O. Wilson); the type is unique.

Notes. The unique form of this species makes it worth describing, even though I have only one specimen of it and do not know the male.

Trichotichnus semirugosus n. sp.

Description. With characters of genus; form *c.* average, small; brownish piceous, margins of prothorax and elytra narrowly testaceous, elytra with common subapical sutural pale spot usually reaching 3rd intervals; lower surface in part dark but with extensive, irregular testaceous areas; antennae brownish, legs brownish testaceous; rather shining, elytra usually with faint transverse microreticulation. *Head* 0.81 and 0.84 width prothorax; eyes rather large, separated from mouth below by *c.* ⅛ width of an eye. *Prothorax* subcordate; width/length 1.51 and 1.48; base/apex 1.12 and 1.16; sides broadly rounded anteriorly, converging and straight or nearly so posteriorly; posterior angles distinct but obtuse, sometimes minutely denticulate; base more oblique at sides than usual, not or indistinctly margined; disc weakly depressed at sides, extensively punctate, the punctation finer and less dense across middle. *Elytra*: width elytra/prothorax 1.39 and 1.44; 8th and 9th intervals rugosely punctate, punctation present but less dense at bases of 6th and 7th intervals. *Secondary sexual characters* normal. *Measurements*: length 5.3–6.8; width 2.3–2.8 mm.

Types. Holotype ♀ (M.C.Z., Type No. 31,376) and 2 (♀ ♀) paratypes from Dobodura, **Papua**, Mar.–July 1944 (Darlington); and additional paratypes as follows: **N-E. N. G.**: 1, Wau, 1200 m, Nov. 21, 1961 (Sedlaceks); 7, Finschhafen, Huon Pen., 10 m, Apr. 9–16, 1963 (Sedlacek), in mercury vapor light trap; 3, Torricelli Mts., Mobitei, 750 m, Feb. 28–Mar. 4, Mar. 16–31, 1959 (W. W. Brandt, Bishop Mus.). **West N. G.**: 1, Cyclops Mts. (no further details) (Cheesman); 2, Hollandia area, W. Sentani, Cyclops Mts., 50–100 m, June 22–24, 1959 (Gressitt), in light trap; 2, Ifar, Cyclops Mts., 450–500 m, Sept. 7 and 9, 1962 (Sedlacek).

Measured specimens. One ♂ paratype from Mobitei and the ♀ holotype, in this order.

Notes. The coloration and the dense punctation of the elytral margins would place this species in *Lampetes*, if *Lampetes* were distinguished from *Trichotichnus*. The new species is in fact close to *Lampetes isabellinus* Louwerens of Amboina (Tijdschrift voor Ent. 105, 1962, p. 140). However, comparison with paratypes of *isabellinus* shows that *semirugosus* has the outer elytral intervals more completely and more densely rugose, although the difference is not great.

Trichotichnus mixtus n. sp.

Description. With characters of genus; form average, rather small; brownish piceous, lateral margins of prothorax and elytra translucent or pale, and sutural and sometimes 2nd intervals of elytra paler before apex (variable), abdomen broadly but irregularly pale-margined, legs and antennae irregularly brownish testaceous; shining, elytra with or without light transverse microreticulation. *Head* 0.79 and 0.79 width prothorax; eyes rather large, separated from mouth below by *c.* ⅙ diameter of an eye. *Prothorax* transverse-subcordate; width/length

1.54 and 1.54; base/apex 1.15 and 1.13; sides broadly rounded anteriorly, nearly straight and converging posteriorly to obtuse, sometimes slightly blunted posterior angles; basal marginal line usually interrupted at middle; disc depressed at sides basally, extensively punctate, the punctation finer and sparser across middle. *Elytra*: width elytra/prothorax 1.36 and 1.36; 7th and 8th intervals variably punctate (8th varying from almost impunctate to almost rugose); other intervals sparsely or not punctulate. *Secondary sexual characters* normal. *Measurements*: length 5.8–7.5; width 2.8–3.2 mm.

Types. Holotype ♂ (Bishop Mus.) and 4 paratypes (2 in M.C.Z., Type No. 31,377) from Torricelli Mts., Mobitei, **N-E. N. G.,** 750 m, Mar. 5–15, Apr. 16–22 (holotype with latter date), 1959 (W. W. Brandt).

Additional material. Twenty-one specimens from 11 localities (including Wau) in all 3 political divisions of New Guinea are assigned to *mixtus* but not as types. They vary considerably in several characters.

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. Because of the variation of this species (if it is all one species) I have confined the type series to specimens from one locality. In general, the species should be recognizable by size; sutural intervals pale before apex; prothorax usually relatively wide (wider and a little more depressed at sides toward base than in *semirugosus*); and outer elytral intervals usually punctulate but not rugose, although this last character is surprisingly variable even in the type series.

Trichotichnus delicatus n .sp.

Description. With characters of genus; form (Fig. 23) slender-average, very small; brownish piceous, prothorax with margins narrowly pale or translucent, elytra with margins and common subapical sutural spot (including small parts of 2nd intervals) testaceous or rufescent; abdomen with or without well defined pale margins; appendages testaceous; shining, elytra without reticulate microsculpture. *Head* 0.74 and 0.77 width prothorax; eyes moderate, separated from mouth below by *c.* ⅙ or ⅛ width of an eye. *Prothorax* subcordate; width/length 1.50 and 1.44; base/apex 1.11 and 1.21; sides broadly slightly sinuate before obtuse, usually slightly blunted posterior angles; basal marginal line vague or incomplete at middle; disc scarcely depressed at sides even basally, less densely punctate than usual, with middle of disc least punctate. *Elytra*: width elytra/prothorax 1.30 and 1.31; outer intervals without or with only sparse punctulation, *Secondary sexual characters* normal. *Measurements*: length 5.3–5.8; width 2.2–2.4 mm.

Types. Holotype ♀ (Hungarian Nat. Mus.) and 1 ♀ paratype (M.C.Z., Type No. 31,378) from I. Deslacs (Garove Is.), **N-E. N. G.,** 1901 (Biró); and additional paratypes as follows: **Papua**: 1, Woodlark Is. (Murua), Kulumadau Hill, Mar. 9–12, 1957 (W. W. Brandt, Bishop Mus.). **West N. G.**: 1, Hollandia, Dec. 1944 (W. T. Nailon, Fenton Coll.); 1, Res. Hollandia, Dojo, 2nd Strip, July 12, 1957 (R. T. Simon Thomas, Louwerens Coll.).

Measured specimens. A ♂ paratype from Woodlark Is. (the only ♂ of the species seen) and the ♀ holotype, in this order.

Notes. T. delicatus is characterized by small size, markings, and scarcely depressed sides of pronotum.

Genus *HARPALOXENUS* Schauberger

Schauberger 1933, Ent. Anzeiger 13, p. 154.

Diagnosis. Characters as for *Trichotichnus* (preceding genus) except anterior tibiae wider; form characteristic (Fig. 24); upper surface without distinct reticulate microsculpture, but 8th and 9th elytral intervals closely punctulate (except in *fortis*), other intervals sparsely or not punctulate; wings full.

Description. None required here.

Type species. *H. javanus* Schauberger, of Java.

Generic distribution. **Java** and **Andonare Is., Celebes, Philippines, Moluccas** (Halmahera), **New Guinea**, and (unpublished) **Solomon Islands** and **New Hebrides**.

Notes. The species assigned to this genus seem to form a natural group. However, the group is apparently closely allied to *Trichotichnus* and further study may show that it is not worth generic separation.

KEY TO SPECIES OF *HARPALOXENUS* OF NEW GUINEA

1. Anterior tibiae with apex *c.* ⅓ wide as tibial length; head relatively wider (more than 0.80 width prothorax) 2
– Anterior tibiae with apex *c.* ¼ wide as tibial length; head relatively smaller (usually less than 0.80 width prothorax) 3
2. Male with front but not middle tarsi squamulose (p. 60) ..... *fortis*
– Male with front and middle tarsi squamulose (p. 61) ..... *mas*
3. Larger (length *c.* 11 mm) (p. 62) ..... *wau*
– Smaller (length *c.* 10 mm or less) 4
4. Pronotum with sides usually slightly depressed toward base, base usually more coarsely and extensively punctate, posterior angles usually better defined, and median-lateral setae usually *c.* ¼ of prothoracic length before apex (p. 61) ..... *celebensis*
– Pronotum with sides not depressed, base usually more finely punctate especially at middle of base, posterior angles usually more obtuse, and median-lateral setae usually *c.* ⅓ of prothoracic length before apex (p. 62) ..... *sedlaceki*

Harpaloxenus fortis n. sp.

Description. With characters of genus; form as in Figure 24, heavily built; brownish piceous, lateral margins of pronotum and elytra including 9th intervals ± yellowish, lower surface with extensive yellowish areas especially laterally, appendages brownish testaceous. *Head* wide, 0.88 and 0.85 width prothorax; antennae stout, middle segments scarcely longer than wide. *Prothorax* broadly cordate; width/length 1.57 and 1.58; base/apex 0.93 and 0.99; sides converging and usually broadly but not strongly sinuate before obtuse but distinct basal angles; disc slightly depressed at sides posteriorly, basal impressions weak and irregular, base punctate chiefly toward sides. *Elytra* elongate-quadrate; width elytra/prothorax 1.14 and 1.14; outer intervals (8, 9) less punctulate than usual in genus; 3rd intervals either with or (usually) without minute puncture on inner edge behind middle. *Legs*: front tibiae very wide in both sexes, apex *c.* ⅓ wide as tibial length, and apex usually sinuate-emarginate with outer angle slightly produced; middle tibiae slightly wider and more arcuate than in most other species of genus. *Secondary sexual characters*: ♂ front tarsi slightly dilated, with segments 1 (apex only) to 4 2-seriately squamulose below; middle tarsi not perceptibly dilated and not squamulose. *Measurements*: length 8.5–10.3; width 3.1–3.7 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,379) and 17 paratypes from Dobodura, **Papua**, Mar.–July 1944 (Darlington); and additional paratypes from **Papua** as follows: 8, Kokoda, 1200 ft. (366 m), May, July, Aug. 1933 (Cheesman); 1, same locality, Mar. 20, 1956 (Gressitt), in light trap; 2, Saputa, near Buna, 1943–44 (R. B. Speiry, Chicago Mus.); 1, Deria, Amazon Bay Dist., Dec. 1962 (W. W. Brandt, C.S.I.R.O.); 1, Mt. Lamington, 1300–1500 ft. (*c.* 400–450 m) (C. T. McNamara, S. Australian Mus.).

Additional material. **West N. G.**: 2, (♀ ♀), Hollandia, Apr. 1945 (B. Malkin, U.S.N.M.); 3 (♀ ♀), Hollandia area, W. Sentani, Cyclops Mts., 50–100, 150–250 m, June 17, 22–24, 1959 (Gressitt and T. C. Maa, Bishop Mus.), 2 of these specimens teneral and taken in light trap; 1 ♀, Kota Nika, Res. Hollandia, Jan. 25, 1956 (R. T. Simon Thomas, Louwerens Coll.); 1 ♀, Wasian, Vogelkop, Sept. 1939 (Wind, M.C.Z.). These specimens unfortunately are all ♀♀. They are referred to the present species rather than the following one (*mas*) because the 8th and 9th elytral intervals are almost impunctate.

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. The present species differs from all others known in the genus by absence of squamules on the male middle tarsi. However, I do not think that this justifies making a separate genus or subgenus. This species seems otherwise to be a well characterized *Harpaloxenus*, and it apparently is closely related to the following (*mas*), which has the male middle tarsi normally squamulose.

Harpaloxenus mas n. sp.

Description. With characters of genus; form *c.* as in preceding species (*fortis*) but slightly less heavily built; characters as in preceding species except as follows. *Head* relatively slightly smaller, 0.81 and 0.82 width prothorax. *Prothorax* with sides converging but not or scarcely sinuate posteriorly, and with posterior angles slightly more obtuse; width/length 1.52 and 1.45; base/apex 1.00 and 0.98. *Elytra*: width elytra/prothorax 1.24 and 1.29; outer intervals (8, 9) closely punctulate at least anteriorly, sometimes in part rugose. *Secondary sexual characters*: ♂ front and middle tarsi slightly dilated, 2-seriately squamulose. *Measurements*: length *c.* 9.5–10.5; width 3.5–3.7 mm.

Types. Holotype ♂ (Bishop Mus.) and 3 (♂ ♀ ♀) paratypes (pair in M.C.Z., Type No. 31,380) from Finschhafen, Huon Pen., **N-E. N. G.,** 10 m, Apr. 9–16, 1963 (Sedlacek), in mercury vapor light trap; 1 ♂ paratype, Wau, 1050 m, Nov. 4, 1961 (Sedlacek); 1 ♂ paratype, Hol Maffin, near Sarmi, **West N. G.,** July 18, 1959 (T. C. Maa, Bishop Mus.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Finschhafen.

Notes. This species resembles the preceding one in width of front tibiae but differs in details of form (slightly narrower head, slightly differently shaped prothorax) and in extensive punctulation of outer elytral intervals. The paratype from Hol Maffin has these intervals less punctulate than in the Finschhafen specimens but still more punctulate than in any *fortis* that I have seen.

Harpaloxenus celebensis Schauberger

Schauberger 1933, Ent. Anzeiger 13, pp. 155, 157.
Louwerens 1953, Verhandlungen Naturforschenden Gesellschaft Basel 64, p. 306.
——— 1956, Treubia 23, p. 222.

Description (for recognition only). Form average, rather variable; prothorax and elytra usually narrowly yellow-margined. *Head* 0.75 and 0.81 width prothorax. *Prothorax* transverse-subcordate; width/length 1.50 and 1.52; base/apex 1.20 and 1.06 (exceptionally variable); sides rather weakly converging, not or only slightly sinuate before distinct but slightly obtuse or blunted posterior angles, with anterior-lateral setae usually *c.* ¼ of prothoracic length from apex. *Elytra*: width elytra/prothorax 1.24 and 1.21; dorsal punctures usually present, on inner edge 3rd intervals against 2nd striae (sometimes absent on one or both elytra). *Legs*: front tibiae with apex *c.* ¼ wide as tibial length. *Secondary sexual characters*: ♂ front and middle tarsi squamulose. *Measurements*: length 8.5–10; width 3.2–3.8 mm.

Type. From **South Celebes**; probably in Schauberger Coll. (not seen).

Occurrence in New Guinea. **Papua**: 7, Dobodura, Mar.–July 1944 (Darlington); 2, Dogon, Amazon Bay Dist., 2400 ft. (c. 740 m), Oct.–Nov. 1962 (W. W. Brandt, C.S.I.R.O.) **N-E. N. G.**: 3, Wau, Morobe Dist, 1200 m, Dec. 18, 1961 (Sedlacek); 1, Finschhafen, 10 m, Apr. 9–16, 1963 (Sedlacek), in light trap; 2, Torricelli Mts., Mobitei, 750 m, Mar. 5–15, 16–31, 1959 (W. W. Brandt, Bishop Mus.). **West N. G.**: 6, Hollandia and vicinity including Cyclops Mts. (various dates and collectors); and 5, doubtfully identified, from localities farther west in West N. G., including Biak Is.

Measured specimens. A pair (♂ ♀) from Dobodura.

Notes. Louwerens records *celebensis* from **Java**, **Sumba**, and **Halmahera**, as

well as **Celebes**, and the present records extend its range to **New Guinea**. However, variation is considerable and I am not sure of my identifications in some cases. Small specimens of this species can be confused with certain *Trichotichnus*, especially with discolored individuals of *guttula*, but the particular *Trichotichnus* in question do not have the 8th and 9th elytral intervals closely punctulate and have, of course, slightly narrower front tibiae. See under the following species (*sedlaceki*) for further comparisons.

Harpaloxenus sedlaceki n. sp.

Description. With characters of genus; form average; black or piceous, sides of pronotum not or vaguely pale, elytra narrowly pale-margined, abdomen pale-spotted at sides, appendages brownish testaceous. *Head* 0.75 and 0.75 width prothorax. *Prothorax* transverse-subquadrate; width/length 1.50 and 1.49; base/apex 1.19 and 1.21; sides moderately converging and nearly straight posteriorly but usually not sinuate, with median-lateral setae usually *c.* ⅓ of prothoracic length before apex; posterior angles obtuse, ± blunted; disc rather strongly almost evenly convex, not depressed at sides posteriorly, baso-lateral impressions slight and poorly defined; base (rather finely) punctate especially at sides. *Elytra*: width elytra/prothorax 1.22 and 1.20; outer intervals (8, 9) extensively closely punctulate; dorsal punctures of 3rd intervals usually *c.* midway between 2nd and 3rd striae (see *Notes*, below). *Legs*: front tibiae with apex *c.* ¼ wide as tibial length. *Secondary sexual characters*: ♂ front and middle tarsi slightly dilated, 2-seriately squamulose. *Measurements*: length 8.0–9.0; width 3.1–3.5 mm.

Types. Holotype ♂ (Bishop Mus.) and 20 paratypes (some in M.C.Z., Type No. 31,381) from Wau, Morobe Dist., 1200 m, **N-E. N. G.,** dates in Apr., Aug., Oct., Nov., Dec. 1961–1963 (Sedlacek).

Additional material. Twenty-two specimens from numerous localities, from Modewa and Dobodura in **Papua** to Hollandia in **West N. G.** Some of these specimens are identified only doubtfully.

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. This species is similar to *celebensis* (above) but differs in having the pronotum slightly more convex with sides usually not at all depressed toward base, and in other ways indicated in the preceding *Key to Species of Harpaloxenus of New Guinea.*

In the types of *sedlaceki* the dorsal puncture of the 3rd interval is usually midway between the 2nd and 3rd striae, not close to the 2nd stria. Of the 21 specimens from Wau, only 1 has the puncture close to the 2nd stria (on the inner edge of the 3rd interval) on both elytra. Two have the puncture close to the 2nd stria on one elytron but near the middle of the 3rd interval on the other. One has the puncture close to the *3rd* stria on one elytron. And 17 have the puncture near the middle of the 3rd interval (but somewhat variable in position) on both elytra. However, this unusual position of dorsal punctures may be characteristic of the local population at Wau rather than of the species as a whole.

Harpaloxenus wau n. sp.

Description. With characters of genus; form nearly as in *celebensis* and *sedlaceki*, but larger; pronotum and elytra not or narrowly and faintly pale-margined, abdomen with irregular testaceous marks at sides, appendages brownish testaceous. *Head* 0.73 and 0.75 width prothorax. *Prothorax* transverse-subquadrate; width/length 1.48 and 1.51; base/apex 1.17 and 1.24; sides slightly converging posteriorly, nearly straight but not sinuate before slightly obtuse-blunted posterior angles; disc usually slightly depressed at sides posteriorly, baso-lateral impressions vague, base finely punctate especially toward sides. *Elytra*: width elytra/prothorax 1.30 and 1.28; outer intervals (8, 9) extensively punctulate; 3rd intervals with dorsal puncture usually by 2nd stria behind middle. *Legs*: front tibiae with apex *c.* ¼ wide as tibial length. *Secondary sexual*

characters: ♂ front and middle tarsi slightly dilated, 2-seriately squamulose. *Measurements*: length *c.* 11; width *c.* 4.2 mm.

Types. Holotype ♂ (Bishop Mus.) and 29 paratypes (some in M.C.Z., Type No. 31,382) from Wau and vicinity, Morobe Dist., **N-E. N. G.,** 1100, 1200 (most), 1700–1800 m, dates in every month, 1961–1964 (Sedlacek).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. The large size distinguishes this species from other similar ones. As compared with *sedlaceki*, with which it occurs, *wau* is not only larger but has the sides of the pronotum usually slightly depressed toward base and the dorsal puncture of the 3rd intervals usually adjacent to the 2nd stria. Of the 8 types, only 1 has this puncture distant from the 2nd stria on both elytra. Two have the puncture against the 2nd stria on one elytron but distant from it on the other elytron. And 5 have the puncture against or very near the 2nd stria on both elytra.

LYTER n. gen.

Diagnosis. Form and characters of medium-sized *Trichotichnus*, but ♂ front and middle tarsi below with more than 2 rows of long, slender scales forming a loose vestiture (not a dense sole); prosternum glabrous anteriorly; 3rd elytral intervals without or with only faint traces of dorsal punctures.

Description. Head: eyes separated from mouth below by *c.* ⅓ diameter of an eye; antennae rather short, middle segments *c.* 1½× long as wide; front smoothly convex except frontal suture sharply impressed, with impressed lines extending diagonally back to above eyes; mentum with triangular tooth; labial palpi with penultimate segments plurisetose; ligula long, emarginate, 2-setose outside middle of length; paraglossae shorter than ligula. *Prothorax* with 1 lateral seta each side about ¼ prothoracic length from apex. *Elytra*: margins entire at base, obtusely subangulate at humeri, sinuate before apex; marginal channels narrow, without partial 10th intervals; striae entire; scutellar striae long, at base 2nd intervals; 3rd intervals impunctate or with vestige of puncture by 2nd striae behind middle (position as in *Trichotichnus*). *Lower surface*: prosternum glabrous anteriorly but with several setae at apex prosternal process. *Inner wings* full. *Legs*: front tibiae irregularly truncate, apex *c.* ⅕ wide as tibial length, with principal (inner apical) spur not much expanded; hind tarsi with 1st segment 2× or more as long as wide at apex, 5th segment with 2 accessory setae each side. *Secondary sexual characters*: ♂ front tarsi slightly dilated, 4 segments loosely clothed below with slender long scales; middle tarsi scarcely dilated, with some (fewer) similar scales; 2 setae each side last ventral segment in both sexes; ♂ copulatory organs as in Figure 174, with apex of middle lobe not produced beyond orifice.

Type species. Lyter glaber n. sp. (below).

Generic distribution. The single species is confined to **New Guinea**, so far as known.

Notes. The relationships of this new genus are doubtful. It may be derived from an ancestor like *Trichotichnus medius* (p. 55), from which it differs most obviously in the clothing of the ♂ tarsi (2-seriately squamulose in *Trichotichnus*). The new genus is notable also for its relatively long ligula, for absence of pubescence on *anterior* part of prosternum, and for virtual suppression of dorsal elytral punctures.

The name *Lyter*, from the Greek, signifies one who loosens (the squamae of the ♂ front tarsi).

Lyter glaber n. sp.

Description. With characters of genus; form as in Figure 25; reddish piceous, appendages redder; shining, reticulate microsculpture absent on front of head and disc of pronotum, faint and somewhat transverse on elytral intervals. *Head* 0.75 and 0.77 width prothorax. *Prothorax*: width/length

1.45 and 1.49; base/apex 1.12 and 1.16; sides rounded anteriorly, *c.* straight and converging in posterior half, narrowly margined; posterior angles slightly obtuse, blunted; base and apex with or without faint marginal lines; disc slightly depressed at sides basally, the depressed areas finely but not closely punctate. *Elytra*: width elytra/prothorax 1.21 and 1.22. *Measurements*: length 7.3–8.3; width 2.9–3.3 mm.

Types. Holotype ♂ (California Acad.) and 32 paratypes (some in M.C.Z., Type No. 31,383) from Finschhafen, **N-E. N. G.,** various dates in April and May (holotype, May 1) (E. S. Ross); and additional paratypes as follows. **Papua**: 21, Kokoda, 1200 ft. (366 m), Apr., Aug., Sept. 1933 (Cheesman); 1, Owen Stanley Rge., Goilala, Tapini, 975 m, Nov. 16–25, 1957 (W. W. Brandt, Bishop Mus.); 1, Dogon, Amazon Bay Dist., 2400 ft. (730 m), Oct.–Nov. 1962 (W. W. Brandt, C.S.I.R.O.); 1, Mt. Lamington, 1300–1500 ft. (*c.* 400–450 m) (C. T. McNamara, S. Australian Mus.). **N-E. N. G.**: 5, "No. 14," Umi R., Markham Vy., 480 m, dates in Nov. 1959 (Sixth Archbold Exp., A.M.N.H.); 1, Lae, July 1924 (F. E. Skinner, Bishop Mus.); 3, Bulolo, 730, 1170 m, Aug. 15, 19, 21, 1956 (E. J. Ford, Jr., Bishop Mus.); 58, Wau, Morobe Dist., 1200 m, dates in every month except June, 1961–1963 (Sedlacek); 2, same locality, 1700–1800 m, Nov. 17, 1961 (Sedlacek); 4, Sum-Sum, 64 km N. of Wau, 580 m, Feb. 15, 1963 (Sedlacek); 1, Karimui, S. of Goroka, 1000 m, June 3, 1961 (Gressitt), in light trap. **West N. G.**: 3, Hollandia area, W. Sentani, Cyclops Mts., 50–100, 150–250 m, June 17, 22–24, 1959 (Gressitt); 1, Kota Nika, Res. Hollandia, Feb. 14, 1956 (R. T. Simon Thomas, Louwerens Coll.), in light trap.

Measured specimens. The ♂ holotype and 1 ♀ paratype from Finschhafen.

Notes. Although this carabid is apparently common in some places, I failed to find it and do not know its habitat. The localities suggest that it lives in rain forest. Specimens from Bulolo and Hollandia were taken in light traps, which implies that the insect flies.

Genus *COLEOLISSUS* Bates

Bates 1892, Ann. Mus. Civ. Genoa 32, p. 338.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 6, p. 1217 (as subgenus of *Trichotichnus*).
Andrewes 1939, Ann. Mag. Nat. Hist. (11) 3, p. 132.

Diagnosis. See *Key to Genera of Harpalini of New Guinea.*

Description (for recognition only). Form of broad medium-sized Harpalini; upper surface (in New Guinean species) very shining, without reticulate microsculpture. *Head*: eyes relatively large (compared with most *Trichotichnus*), almost contiguous with sides of mouth below; frontal impressions deep, subpunctiform or curving toward eyes posteriorly; mentum toothed; ligula rounded, 2-setose; paraglossae attached to ligula but longer, with narrowly rounded apices; penultimate segments labial palpi with more than 2 setae anteriorly. *Prothorax* as in *Trichotichnus*. *Elytra*: sutural angles denticulate (in New Guinean species); striae entire; sutural striae long; 3rd intervals seriate-punctate. *Inner wings* full. *Legs*: tarsi slender. *Secondary sexual characters*: see *Descriptions* of species.

Type species. Hypolithus perlucens Bates, of Kashmir, etc. (fixed by Andrewes, 1939).

Generic distribution. **India** and **Ceylon**, **Sikkim**, **Burma**, etc., to **Java**, **Borneo**, **Philippines** (Negros), **Celebes**, **Buru**, **Moluccas** (Amboina), **New Guinea**, **Solomons**, **New Hebrides**, and the Cape York Pen. of **Australia** (occurrence in Philippines, New Hebrides, and Australia based on unpublished records).

Notes. Members of this genus seem to be rare insects, usually taken only one or two individuals at a time, although they are winged and fly to light. I do not know their habitat.

Key to Species of *Coleolissus* of New Guinea

1. Outer angles of elytra not defined, broadly rounded (p. 65) ..... *papua*

– Outer angles of elytra (before subapical sinuations) well defined, right or obtuse (p. 65) ..... *angulatus*

Coleolissus papua n. sp.

Description. With characters of genus; form as in Figure 26, large, broad; black, appendages irregularly reddish piceous; very shining, elytra iridescent. *Head* 0.73 and 0.72 width prothorax; front faintly punctulate. *Prothorax* transverse; width/length 1.54 and 1.56; base/apex *c.* 1.11 and 1.11; sides broadly rounded to rounded posterior angles; lateral margins broader and more depressed posteriorly; apex margined, base indistinctly so; disc depressed; baso-lateral impressions broad but poorly defined, closely punctate; other parts of disc sparsely or not punctulate. *Elytra* wide; width elytra/prothorax 1.30 and 1.39; base margined; humeri rounded; outer subapical angles rounded; apices slightly sinuate before denticulate sutural angles; striae impunctate; intervals slightly convex, finely sparsely (scarcely detectably) punctulate, 3rd with *c.* 7 small punctures irregularly spaced along most of length of inner edge. *Lower surface*: prosternum and abdomen with a little fine, short, sparse pubescence (scarcely detectable); prosternal process setose. *Secondary sexual characters*: ♂ unknown; ♀ with 2 setae each side last ventral segment. *Measurements*: length 12.5–13.5; width 4.8–5.3 mm.

Types. Holotype ♀ (Bishop Mus.) from Kiunga, Fly R., **Papua** (W. W. Brandt); and 1 ♀ paratype (M.C.Z., Type No. 31,384) from Hollandia area, W. Sentani, Cyclops Mts., **West N. G.,** 150–250 m, June 23, 1959 (T. C. Maa).

Notes. This species is close to *Coleolissus leveri* Van Emden of the Solomons (I have a specimen compared with the type) and even closer to *C. kalisi* Louwerens of Celebes (I have 2 paratypes received by courtesy of Mr. Louwerens). The New Guinean insect is slightly larger and broader than *kalisi*, with broader baso-lateral prothoracic impressions. I collected a single specimen of a *Coleolissus* very similar to *papua* on the Cape York Pen., Australia, in 1958.

Coleolissus angulatus n. sp.

Description. With characters of genus; form as in Figure 27; black, elytra subiridescent, appendages reddish brown. *Head* 0.72 and 0.72 width prothorax; front virtually impunctate. *Prothorax* transverse-subcordate; width/length 1.51 and 1.56; base/apex 1.12 and 1.09; sides converging but usually not sinuate (sometimes slightly so) before ± rounded posterior angles; lateral margins moderately broad and reflexed; apex margined, base not; disc weakly convex, baso-lateral impressions not sharply defined, rather closely but irregularly punctate; disc otherwise less closely but extensively punctate especially across base and at sides, scarcely punctate at middle. *Elytra*: width elytra/prothorax 1.30 and 1.32; basal margin entire, vaguely obtusely angulate at humeri; outer apical angles well defined, usually right, sometimes obtuse; sutural angles denticulate; striae deep, impunctate; intervals slightly irregular but not distinctly punctate, 3rd with *c.* 7 very small punctures irregularly spaced on inner edge along most of length of intervals. *Lower surface*: prosternum not pubescent except for setae at apex of prosternal process; abdomen not pubescent except for usual "fixed" setae. *Secondary sexual characters*: ♂ front tarsi moderately dilated, middle tarsi scarcely so, both pairs 2-seriately squamulose; 2 setae each side last ventral segment in both sexes. *Measurements*: length *c.* 7.5–8.5; width 3.1–3.3 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,385) and 2 paratypes from Dobodura, **Papua**, Mar.–July 1944 (Darlington); and additional paratypes as follows. **N-E. N. G.**: 3, Finschhafen, 10 and 180 m, Apr. 9–16, 1963 (Sedlacek); 1, Aitape, Aug. 1944 (Darlington). **West N. G.**: 2, Hollandia area, W. Sentani, Cyclops Mts., 150–250 m, June 25, 1959 (Gressitt and T. C. Maa, Bishop Mus.); 1, Ifar, Cyclops Mts., 150–

500 m, Sept. 6–9, 1962 (Sedlacek); 1, "Neth. New Guinea" without further locality, Dec. 10, 1944 (T. Aarons, California Acad.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. The deep elytral striation and sharply defined outer elytral angles well characterize this *Coleolissus.* The Dobodura specimens were, I think, taken at light, and some specimens from other localities are evidently from light trap material.

Genus *HYPHAEREON* Macleay

Macleay 1825, Annulosa Javanica, p. 22.
Andrewes 1919, Trans. Ent. Soc. London for 1919, p. 156.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 6, p. 1221 (see for additional references).

Diagnosis. Among New Guinean Harpalina this genus is recognizable by: form rather *Nebria*-like; elytra with series of (small) punctures on inner edge 3rd intervals; only 1 seta each side last ventral segment in both sexes.

Description (for recognition only). Form *c. Nebria*-like, convex; reticulate microsculpture faint or absent on head and pronotum, fine and transverse (± visible at 50×) on elytra; elytra subiridescent. *Head*: eyes moderate, narrowly separated from mouth below; mentum toothed; ligula subtruncate, 2-setose; paraglossae rounded, attached to but longer than ligula. *Prothorax* subcordate; anterior marginal line fine but usually entire. *Elytra* with margins sinuate before apex; striae entire; 3rd intervals seriate-punctate. *Inner wings*: see under species. *Secondary sexual characters*: ♂ front and middle tarsi slightly dilated, 2-seriately squamulose; 1 seta each side apex last ventral segment in both sexes.

Type species. H. reflexus Macleay, of Java.

Generic distribution. Known from **Sumatra**, **Java**, **Flores**, **Celebes**, and **New Guinea** (not Australia).

Notes. Of the 3 New Guinean species of *Hyphaereon, timidus* is most like the type species, with which I shall compare it (in *Notes* under *timidus*). *Calathomimus*, which resembles *Hyphaereon* in form and in having only 1 pair of setae on the last ventral segment in both sexes, and which also occurs in the Malay Archipelago (but not New Guinea), is probably closely related to *Hyphaereon* but differs in having strongly angulate humeri.

Key to Species of *Hyphaereon* of New Guinea

1. Humeral margins broadly evenly rounded; elytral striae shallow, intervals flat; setae of apical ventral segment distant from margin by more than 1/10 length of segment (p. 66) ..... *levis*
– Humeral margins obtusely subangulate; elytral striae deeper; setae of last ventral segment less than 1/10 length of segment from margin .. 2
2. Prothorax less cordate, with slightly broader base (width of base/width of head 1.20 and 1.17); wings dimorphic, often much reduced; lowland-living (p. 67) ..... *timidus*
– Prothorax more cordate, with narrower base (width of base of prothorax/width of head 1.14 and 1.12); wings large, folded; mountain-living (p. 68) ..... *cordens*

Hyphaereon levis n. sp.

Description. With characters of genus; form (Fig. 28) average; black, legs testaceous, antennae and mouthparts brown. *Head* 0.67 and 0.66 width prothorax. *Prothorax* subcordate-subquadrate; width/length 1.38 and 1.38; base/apex 1.19 and 1.16; base/head 1.10 and 1.07; sides converging and very slightly sinuate before obtuse, blunted posterior angles; baso-lateral impressions poorly defined; disc extensively punctate especially across base and at apex, almost impunctate across middle. *Elytra*: width elytra/prothorax 1.26 and 1.26; details as usual in genus except humeral margins broadly evenly rounded; striae entire but less deep than usual. *Inner wings* full in both specimens. *Measurements*: length *c.* 9.0; width 3.3–3.4 mm.

Types. Holotype ♂ (Leiden Mus.) and 1 ♂ paratype (M.C.Z., Type No. 31,386) both from Sibil, Star Rge., **West N. G.,** 1260 m, June 1959 (Neth. New Guinea Exp.).

Notes. For comparisons, see preceding *Key*.

Hyphaereon timidus n. sp.

Description. With characters of genus; form (Fig. 29) of small, rather broad *Nebria*; black or piceous, appendages testaceous, antennae in part brown. *Head* 0.64 and 0.65 width prothorax. *Prothorax* subcordate-subquadrate; width/length 1.42 and 1.39; base/apex 1.20 and 1.17; base/head 1.20 and 1.17; sides converging and usually slightly, broadly sinuate before obtuse, slightly blunted posterior angles; anterior marginal line entire or not (variation individual); baso-lateral impressions poorly defined; disc finely irregularly punctate basally, *c.* impunctate elsewhere. *Elytra*: width elytra/prothorax 1.19 and 1.23; humeri obtusely but usually distinctly angulate; striae deep, intervals convex. *Wings* dimorphic or polymorphic (see *Notes*, below). *Secondary sexual characters* as for genus. *Measurements*: length *c.* 6–7; width 2.6–2.9 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,387) and 55 paratypes from Dobodura, **Papua**, Mar.–July 1944 (Darlington); 20 paratypes from Oro Bay (near Dobodura), Dec. 1943–Jan. 1944 (Darlington).

Additional material. **N-E. N. G.**: 17, Nadzab, July 1944 (Darlington); 1, same locality, June 1944 (Krombein, U.S.N.M.); 1, Erima, Astrolabe Bay, 1896 (Biró); 1, Busu R., "12 km," Sept. 21, 1956 (E. J. Ford, Jr., Bishop Mus.). **West N. G.**: 34, Hollandia, July–Sept. 1944 (Darlington); 6, same locality, May 1945 (B. Malkin, U.S.N.M.); 5, Sabron, Cyclops Mts., 930 ft. (*c.* 280 m), Apr. 1936 (Cheesman).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. This new species is similar to *Hyphaereon reflexus* Macleay (the type species of the genus) of Java, but *timidus* differs slightly in proportions (e.g., the base of the prothorax is relatively narrower than in *reflexus*) and the pronotum of *timidus* is less extensively punctate.

The wings of this species vary (Figs. 29, A, B), and the variation is complex, being partly individual, partly geographic, and partly correlated with body size. Of the specimens from Dobodura, 5 have wings large and folded at apex; 51, strongly reduced. However, both the long- and the short-winged forms are variable in the Dobodura series. Among the long-winged individuals, some have wings about 10% shorter than others and with slightly weakened venation, and among the short-winged ones, the wing vestiges vary from about ¾ to about ½ the length of an elytron. In the series from Oro Bay (only a few miles from Dobodura) the proportion of long- and short-winged individuals is different: 10 are long-winged, 9 short-winged. Seventeen specimens from Nadzab and 3 from other localities in N-E. N. G. are all fully winged or at least have wings long and folded at apex. But my series from Hollandia is again dimorphic: 7 specimens are long-winged, 27 short-winged. All the long-winged specimens from Dobodura, Oro Bay, and Hollandia are large. Some short-winged individuals are equally large, but there is much more variation in size among the short-winged ones. I do not remember noting this correlation in any other Carabidae. I have not studied state of wings in specimens not collected by myself because I do not know how they were taken, and method of collecting may have favored getting one wing class more than another.

It is doubtful if even the long-winged form of this species flies. Individuals are common at some localities where much collecting has been done, but few have been obtained except by myself (on the ground), and no specimen is labeled as taken at light. The variation and use of wings in this species would be an interesting subject for study in the field.

Although my field notes are scanty, I think my series of this species were taken among dead leaves and vegetation on the ground near water.

Hyphaereon cordens n. sp.

Description. With characters of genus; form *Nebria*-like; black or piceous, appendages irregularly brown, darker than in other species. *Head* 0.67 and 0.67 width prothorax. *Prothorax* cordate; width/length 1.35 and 1.43; base/apex 1.23 and 1.18; base/head 1.14 and 1.12; sides converging and broadly sinuate before slightly obtuse (almost right), slightly blunted posterior angles. *Elytra c.* 3/10 or more wider than prothorax (elytra/prothorax 1.32 and 1.32); humeri ± subangulate; striae deep, intervals convex. *Wings* fully developed, or at least long and folded at apex, in all specimens. *Secondary sexual characters* as for genus. *Measurements*: length *c.* 7–8.5; width 2.7–3.4 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,388) and 77 paratypes all from Chimbu Vy., Bismarck Rge., **N-E. N. G.,** 5000–7500 ft. (*c.* 1500–2300 m), Oct. 1944 (Darlington).

Additional material. **N-E. N. G.**: 1, Kainantu, 1650 m, Oct. 20–26, 1959 (T. C. Maa, Bishop Mus.); 1, Wau, Morobe Dist., 1200 m, Dec. 4–5, 1961 (Sedlacek), in mercury vapor light trap.

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. Although this species is evidently sometimes common, and although all specimens are fully winged, they are rarely taken in light traps, which suggests that even this winged species rarely flies. Whether it is a real species or a local form of *timidus* is not possible to say from museum specimens. In any case it is clearly distinguishable as indicated in the preceding *Key*.

Genus *ANOPLOGENIUS* Chaudoir

Chaudoir 1852, Bull. Soc. Nat. Moscow 25, 1, p. 88.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 6, p. 1236.
Schauberger 1937, Ent. Rundschau 54, p. 272.
Basilewsky 1951, Ann. Mus. Congo Belge (8), Zool., 9, p. 122 (see for synonymy and additional references).

Diagnosis. Relatively large Acupalpina; anterior marginal line of pronotum entire and deeply impressed; scutellar striae absent.

Description. None required here.

Type species. Stenolophus alacer Dejean, of Africa.

Generic distribution. The warmer parts of the **Old World**; in the **Oriental-Australian area**, from **China** and **Japan** to northern **Australia**.

Notes. The species of this genus are among the most aquatic of Carabidae, occurring as a rule in vegetation that is floating in water. They are active and winged and are common in some places, including the Philippines, although unaccountably rare or local in New Guinea.

Anoplogenius marginatus (Macleay)

Macleay 1888, Proc. Linnean Soc. New South Wales (2) 3, p. 472 (*Harplaner*).
?*incisus* Andrewes 1926, Ann. Mag. Nat. Hist. (9) 18, p. 279.
?*politus* Schauberger 1937, Ent. Rundschau 54, p. 273.

Description. None needed here. See *Notes* below; length *c.* 6.5–8.0 mm.

Types. Of *marginatus*, from King's Sound, **Australia**; probably in Macleay Mus., Sydney (not seen). Of *incisus*, from Fort de Kock, **Sumatra**; in British Mus. (seen). Of *politus*, from "Tigerinsel (New Guinea)" (? = Matjan, Pulau-Pulau, which is really not off New Guinea but south of **Celebes**); in Stockholm Mus. (not seen).

Occurrence in New Guinea. The only (supposedly) New Guinean specimens of *Anoplogenius* known to me are: 1 labeled simply "**Papua**," presumably collected by Biró, now in Hungarian National Mus.; several from "Dorey, New Guinea," presumably collected by Wallace and perhaps actually from Celebes (see Part I of the present work, pp. 330–331); and the types of *politus* from "Tigerinsel," probably off Celebes rather than New Guinea.

Notes. The Oriental-Australian species of *Anoplogenius* are taxonomically difficult at best, and in the case of this New Guinean

species the difficulty is increased by lack of adequate material and by doubt about localities, as indicated above. The three authors concerned published their descriptions without reference to each other, but Andrewes and Schauberger both compared their species with *A. cyanescens* Hope, and Macleay's *Harplaner marginatus* is apparently an *Anoplogenius* near *cyanescens* (B. P. Moore, personal communication, 1965). I therefore tentatively conclude that *incisus*, *politus*, and *marginatus* are probably all one species which ranges at least from **Sumatra** to **New Guinea** and northern **Australia**. This species is narrowly or indistinctly pale-margined, with relatively distinct (narrowly rounded) posterior prothoracic angles, and with baso-lateral impressions of pronotum extensively punctate. I have specimens with these characters from Morotai Island in the **Moluccas**, and from Townsville and Rockhampton, **Australia**.

Genus *EGADROMA* Motschulsky

Motschulsky 1855, Étude Ent. 4, p. 43.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 6, p. 1239 (as subgenus of *Acupalpus*) (see for additional references).
Jeannel 1942, Faune de France, Coléop. Carabiques, Part 2, p. 699.
Basilewsky 1951, Ann. Mus. Congo Belge (8), Zool., 9, p. 144.

Diagnosis. See *Key to Genera of Harpalini of New Guinea.*

Description. None required here.

Type species. Carabus smaragdulus Fabricius, below.

Generic distribution. The warmer parts of the **Old World**: **Africa** and **Madagascar** (1 species reaching the Mediterranean part of **Europe**); southern **Asia** north to **Japan**, and across the **Malay Archipelago** to the **Philippines** and **Australia**.

Notes. The Oriental-Australian species of *Egadroma* are exceptionally difficult. They are closely related or at least very similar among themselves; they vary geographically and individually; and some species are widely distributed and very common, so that many specimens fell into the hands of early taxonomists who described them inadequately and failed to understand their interrelationships. I do not pretend fully to understand them now, but can make the following comments on the species that occur in New Guinea. Three common species occur there, distinguishable by both external and genitallic characters. (A fourth, endemic species is known from a single ♀.) All three are widely distributed outside New Guinea and at least two of them have received different names in different places. To fix the synonymy of these species outside New Guinea would be a major, time-consuming undertaking, and is beyond my power now. I shall therefore simply use for each species the name that I think applies in New Guinea, with tentative notes on synonymies.

Although I did not always distinguish the species in the field, my notes suggest that *quinquepustulata* and *smaragdula* occur in wet places usually by standing water, but that *robusta* occurs principally in drier habitats, especially under cover in open grassland. All these species are winged, and all fly to light.

KEY TO SPECIES OF *EGADROMA* OF NEW GUINEA

1. Size larger (*c.* 6–7 mm); elytra conspicuously 3- or 5-maculate, and very shining; apex of aedeagus long (p. 70) ..... *quinquepustulata*
– Usually smaller (less than 6 mm, except in *cyclops*); usually with reduced or no markings, and often (not always) less shining; apex of aedeagus shorter (except unknown in *cyclops*) 2
2. Large (7.4 mm) (p. 70) ..... *cyclops*
– Smaller (less than 6 mm) 3
3. Form relatively narrower, with relatively wider head (head usually more than 0.74 width prothorax, prothoracic width/length usually less than 1.45); elytra rather strongly iridescent; aedeagus finely notched at sides (p. 70) ..... *smaragdula*
– Broader, with relatively narrower head (head usually less than 0.74 width prothorax, prothoracic width/length usually more than 1.45); elytra less iridescent, usually with distinct microreticulation; aedeagus not notched at sides (p. 71) ..... *robusta*

Egadroma quinquepustulata (Wiedemann)

5pustulatus Wiedemann 1823, Zoologisches Magazin (2) 1, p. 58 (*Badister*).
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 6, p. 1240 (see for additional references).
Habu 1961, *in* Kira and Umesao, Nature and Life in Southeast Asia (Kyoto) 1, p. 276, fig. 4 (♂ genitalia).

Description. None needed here; see preceding *Key to Species* and following *Notes*; length *c.* 6–7 mm.

Type(s). From Bengal, **India**; in Copenhagen U. Mus. (not seen).

Occurrence in New Guinea. Widely distributed at low altitudes, fairly common: 41 specimens from localities over most of the length of **New Guinea** (Papua to the Vogelkop); most at low altitudes, but 1, Chimbu Vy., Bismarck Rge., 5000–7500 ft. (*c.* 1500–2300 m), and 1, Wau, 1200 m.

Notes. This relatively large, clearly marked, and therefore comparatively easily recognized *Egadroma* ranges from SE. **Asia** including **Japan** and **Formosa** across the **Malay Archipelago** to North Queensland, **Australia**. In the past, the species has often been treated as a variety of *smaragdula* but it is unquestionably distinct by genitallic as well as external characters.

Specimens from New Guinea vary in elytral markings, the variation being individual, not geographic. Conspicuous posthumeral pale spots are always present, and a variable (sometimes faint) subapical sutural mark is always present too, but anteapical spots on the 7th and 8th intervals are variably developed and often absent.

Egadroma cyclops n. sp.

Description. Form as in Figure 30, large, broad; side margins of prothorax testaceous-translucent, of elytra scarcely so; appendages reddish testaceous, antennae darker from 3rd segment; shining, front with isodiametric reticulate microsculpture, discs of pronotum and elytra not visibly microreticulate (at 50×) but moderately iridescent. *Head* 0.68 width prothorax; formed as usual in genus. *Prothorax* transverse; width/length 1.45; base/apex 1.22; sides rounded, with moderate reflexed margins; basal angles rounded; base not margined, apical marginal line interrupted at middle; baso-lateral impressions broad, shallow, *c.* rugose-punctate, with punctation finer and sparser at middle of base. *Elytra*: width elytra/prothorax 1.33; humeri prominent but rounded; striae deep, impunctate; scutellar striae long; intervals finely sparsely punctulate, 3rd with 1 puncture on inner edge less than ¼ from apex. *Wings* full. *Lower surface*: prosternum with some short pubescence; abdomen not pubescent at apex. *Secondary sexual characters*: ♂ unknown, ♀ normal. *Measurements*: length 7.4; width 3.3 mm.

Type. Holotype ♀ (Bishop Mus.) from Hollandia area, W. Sentani, Cyclops Mts., **West N. G.,** 50–100 m (Gressitt and T. C. Maa), in light trap.

Notes. This new species resembles *smaragdula* but is larger (a large *smaragdula* is less than 6 mm long), with relatively narrower head. I feel sure it is a distinct species although represented by only a single ♀ specimen.

Egadroma smaragdula (Fabricius)

Fabricius 1798, Supplementum Ent. Systematicae, p. 60 (*Carabus*).
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 6, p. 1241 (see for additional references).
Jedlicka 1935, Acta Soc. Ent. Czechoslovakia 32, p. 113 (in key).
Habu 1961, *in* Kira and Umesao, Nature and Life in Southeast Asia (Kyoto) 1, p. 275, fig. 3 (♂ genitalia).

Description. None required here; see preceding *Key to Species*; length ± 5 mm.

Type(s). From "**India orientali**"; in Copenhagen Univ. Mus. (not seen).

Occurrence in New Guinea. Common at low altitudes probably throughout **New Guinea**: 121 specimens from Milne Bay and Port Moresby to the Vogelkop; most at low altitudes but 2 from Wau and 1 from Rattan Camp at 1200 m.

Notes. This is the common, unmarked (at most with a faint rufescent area along

suture posteriorly) *Egadroma* of the Oriental-Australian area. It apparently extends from **Asia** to northern **Australia** but, because of difficulty in distinguishing it from similar forms, I have not tried to fix the exact limits of its range.

Egadroma robusta Sloane

Sloane 1907, Deutsche Ent. Zeitschrift for 1907, p. 469.
Andrewes 1927, Ann. Mag. Nat. Hist. (9) 19, p. 110 (as synonym of *dingo* Castelnau).
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 6, p. 1242 (as synonym of *vestigialis*).

Description. None required here. See preceding *Key to Species* and *Notes*, below; length ± 5 mm.

Types. From Gazelle Pen., **New Britain**; should now be in Deutsches Ent. Mus., Berlin-Dahlem (not seen).

Occurrence in New Guinea. Very common throughout **New Guinea** at low altitudes: 368 specimens from many localities from Milne Bay and Normanby, Ferguson, Rossel, and Sudest Islands, Papua, to western part of West N. G. Although this species does not commonly occur at altitudes of more than a few hundred meters, I have seen 4 from Wau, 1200 m, and 1, Chimbu Vy., 5000–7500 ft. (*c.* 1500–2300 m). Specimens have been collected in every month.

Notes. Most individuals of this species from New Guinea have the elytra unmarked or with only small posthumeral pale marks on the 6th intervals, rarely extending to the 5th and 7th intervals. Similar unmarked individuals occur in **New Britain** (types of *robusta*) and Cape York, **Australia** (collected by me in 1958). However, a few specimens from New Guinea, mostly from the far west including Biak Island, have also pale subapical sutural dashes and variable subapical pale spots, best developed on the 7th intervals. These specimens *may* be referable to *Egadroma quadrimaculata* (Macleay), which was described from Australia, but which *may* extend across the Malay Archipelago at least to Java. In other words, *robusta* may be an unspotted form (occurring principally but not exclusively on New Guinea) of a more widely distributed maculate species, tentatively identified as *quadrimaculata* Macleay. This case requires further study.

Most individuals of *robusta* are easily separable from *smaragdula* by proportions (indicated in the preceding *Key*) and duller surface. Apparent intermediates do, rarely, occur. I do not know whether they are hybrids or individual variants. These two species probably occupy different habitats: *smaragdula*, wet places; *robusta*, relatively dry ones.

Genus *STENOLOPHUS* Stephens

Stephens 1828, Illustrations British Ent., Mandibulata 1, pp. 67, 165.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 6, p. 1259 (see for synonymy and additional references)
Jeannel 1942, Faune de France, Coléop. Carabiques, Part 2, p. 693.
Basilewsky 1951, Ann. Mus. Congo Belge (8), Zool., 9, pp. 118, 213 (in text).

Diagnosis. See *Key to Genera of Harpalini of New Guinea.*

Description. None required here.

Type species. Carabus teutonus Schrank, of Europe, etc. (see Jeannel, 1942).

Generic distribution. **Eurasia** and **North America**, and probably the **Oriental Region** and **Malay Archipelago** to **Australia**; (probably not Africa below the Sahara, although closely related genera occur there). See *Notes*, below.

Notes. Jeannel and Basilewsky have divided *Stenolophus*, and Basilewsky suggests that the genus in a strict sense may be confined to the Holarctic Regions. However, the following two New Guinean species seem to fit reasonably well in *Stenolophus* according to characters given by Basilewsky (1951, p. 213). Moreover, one of these two species (*gonidius*) has the first segment of the posterior tarsi plainly carinate while the other (*volucer*) has not, which suggests that this character, which has been used in dividing *Stenolo-*

phus, is less important than has been thought. I shall therefore leave both New Guinean species in *Stenolophus*, where in fact earlier authors put them.

Both the following two species are apparently widely distributed in the Malay Archipelago, and I have specimens probably representing both from North Queensland, Australia, but because of doubt about identifications I prefer not to state their distributions in detail.

KEY TO SPECIES OF *STENOLOPHUS* OF NEW GUINEA

1. Sides of prothorax sinuate before base, with basal angles nearly right and scarcely blunted (p. 72) ..... *volucer*
– Sides of prothorax *c.* straight, converging but not or scarcely sinuate posteriorly, with basal angles obtuse, narrowly rounded (p. 72) ..... *gonidius*

Stenolophus volucer Andrewes

Andrewes 1930, Arkiv för Zoologi 21A, No. 29, p. 5.

Description. None required here; length *c.* 5.5–6.0 mm.

Types. Five, from **Sumatra**; actual "type" in Stockholm Mus. (not seen).

Occurrence in New Guinea. **Papua**: 52 specimens from various localities, including a series from Dobodura. **N-E. N. G.**: 1, Nadzab, July 1944 (Darlington). **West N. G.**: 1, River Tor (mouth) 4 km E. Hol Maffen, July 19, 1959 (T. C. Maa, Bishop Mus.).

Notes. See *Notes* under the genus. I have identified this species from description, and am not quite sure of it. It is, as Andrewes says, about the size and color of *gonidius* (below) but with lateral borders of elytra darker and with differently formed prothorax.

Stenolophus gonidius Bates

Bates 1890, Ann. Mus. Civ. Genoa 27, p. 104.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 6, p. 1262 (see for additional references).
Andrewes 1933, Cat. Carabidae Sumatra, p. 317.

Description. None required here; length *c.* 5.5–6.5 mm.

Types. From **Burma**; in Genoa Mus. (not seen).

Occurrence in New Guinea. **Papua**: 31 specimens from Dobodura, Oro Bay, Port Moresby, Fly R., and Ferguson Is. **N-E. N. G.**: 1, Finschhafen, Huon Pen., 80 m, Apr. 16, 1963 (Sedlacek), in Malaise trap. (No specimens from West N.G.)

Notes. See *Notes* under the genus. Although I have seen a cotype of *gonidius* in the British Museum and have made comparisons with it, I am not quite sure of the identity of the New Guinean specimens.

Genus *ACUPALPUS* Latreille

Latreille 1829, *in* Cuvier, Règne Animal, ed. 2, 4, p. 391.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 6, pp. 1238, 1242.
Jeannel 1942, Faune de France, Coléop. Carabiques, Part 2, p. 712.
Basilewsky 1951, Ann. Mus. Congo Belge (8), Zool., 9, pp. 232, 233.

Diagnosis. See preceding *Key to Genera of Harpalini of New Guinea* and following *Notes.* I have tentatively assigned to this genus all the small Harpalini of New Guinea (6 species) that possess *long*, sparse prosternal setae. All are winged. The front tarsi of the ♂ are not or at most (in *furvinus*) slightly dilated, with squamae thin, transparent, difficult to detect, and perhaps absent in some cases.

Description. None required here.

Type species. Carabus meridianus Linnaeus, of Europe.

Generic distribution. Now considered to include all principal regions of the **world**, but the generic classification of these small Harpalini is not fully worked out. At least 3 stocks of this genus reach northern tropical Australia, but they apparently do not extend far into southern temperate Australia, where their place is taken by small species of *Lecanomerus* (see discussion under Tribe Harpalini).

Notes. Several species of this genus either range widely in the Oriental-Australian area or belong to wide-ranging groups of closely interrelated species. Their nomenclature is

difficult, and synonymies outside New Guinea remain to be determined.

KEY TO SPECIES OF *ACUPALPUS* OF NEW GUINEA

1. Anterior margin of clypeus not notched or impressed at sides (at most slightly sinuate); base of prothorax *c.* squarely truncate, with posterior angles *c.* rectangular 2
– Anterior margin of clypeus notched or impressed at sides; posterior angles of prothorax usually more obtuse or rounded 3
2. Larger (*c.* 3.7 mm); elytral margins behind humeri faintly serrate at 50× (p. 73) .. *exactus*
– Smaller (*c.* 2.7 mm); elytral margins not visibly serrate at 50× (p. 73) .... *exactellus*
3. Prothorax with baso-lateral impressions not punctate; posterior angles (narrowly) rounded (p. 74) ..... *furvinus*
– Prothorax with baso-lateral impressions punctate; posterior angles usually more distinct .. 4
4. Color brown with darker head; prothorax with base more oblique at sides and posterior angles more obtuse (p. 74) ..... *brunnicolor*
– Color darker, more uniform; prothorax with base less oblique at sides and basal angles more nearly right 5
5. Smaller (3.0–3.3 mm) (p. 75) ..... *ustus*
– Larger (3.5–4.2 mm) (p. 75) ..... *papua*

Acupalpus exactus n. sp.

Description. With characters of genus; form (Fig. 31) relatively slender, elytra subparallel; piceous, clypeus etc. reddish, margins of prothorax rather broadly and indefinitely reddish, suture and margins of elytra narrowly but conspicuously reddish, appendages testaceous; shining, dorsal microsculpture faint or absent. *Head* 0.84 and 0.85 width prothorax; eyes large, prominent; frontal impressions deep, converging anteriorly, ending at deep clypeal suture; anterior margin of clypeus slightly sinuate but not distinctly notched at sides; mandibles long; mentum not toothed; ligula slender, free at apex, 2-setose; paraglossae slightly longer than ligula, narrowly rounded; palpi with apical segments subconical. *Prothorax* broadly subcordate; width/length 1.34 and 1.30; base/apex 1.10 and 1.07; sides broadly rounded anteriorly, slightly converging and broadly sinuate to *c.* right, sharply defined posterior angles; base and apex not margined; lateral margins moderate, not crenulate; baso-lateral impressions large, deep, irregular but not distinctly punctate; disc normal, impressed median line groove-like at base. *Elytra* long; width elytra/prothorax 1.47 and 1.52; humeri prominent but rounded; margins behind humeri visibly serrate (at 50×); striae deep, entire; intervals convex, 3rd with puncture on inner edge well behind middle. *Measurements*: length *c.* 3.7; width 1.4–1.5 mm.

Types. Holotype ♀ (M.C.Z., Type No. 31,389) from Hollandia, **West N. G.,** July–Sept. 1944 (Darlington); and 1 ♀ paratype (Bishop Mus.) from Kiunga, Fly R., **Papua**, July 15–21, 1957 (W. W. Brandt); 1 paratype, Popondetta, **Papua**, 25 m, May 1966 (Shanahan-Lippert, Bishop Mus.), light trap.

Notes. This New Guinean species resembles and is probably related to *Acupalpus horni* Andrewes of SE. Asia but is darker, with lateral margins of prothorax not crenulate (faintly crenulate in *horni*), and with baso-lateral impressions of pronotum less linear. Other apparently related forms occur in the Philippines, Moluccas (Morotai Is.), and North Queensland in Australia.

Acupalpus exactellus n. sp.

Description. With characters of genus; smaller and relatively shorter than *exactus* (above); piceous, margins of prothorax and elytra not or not conspicuously paler, appendages testaceous; moderately shining, reticulate microsculpture (slightly transverse) visible on front anteriorly but absent on discs of prothorax and elytra. *Head* 0.75 and 0.76 width prothorax; eyes relatively much smaller than in *exactus*, with genae more oblique; front similarly impressed; clypeus without distinct notches at sides anteriorly; mouthparts as in *exactus*. *Prothorax* broadly subcordate with wide base; width/length 1.40 and 1.42; base/apex 1.24 and 1.16; sides broadly arcuate, slightly converging and broadly sinuate to *c.* rectangular posterior angles; base and apex not margined; lateral margins narrow an-

teriorly, broader posteriorly, not crenulate; baso-lateral impressions broad, deep, irregular, but not distinctly punctate; disc normal, with middle line deeply impressed basally. *Elytra*: width elytra/prothorax 1.41 and 1.45; humeri broad but rounded; margin behind humeri not visibly serrate (at 50×); striae and dorsal punctures as in *exactus*. *Secondary sexual characters*: ♂ front tarsi not dilated and apparently without squamae (see *Notes*, below). *Measurements*: length *c.* 2.7; width 1.3 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,390) and 1 ♀ paratype from Hollandia, **West N. G.,** July–Sept. 1944 (Darlington).

Notes. So far as I know, the only species with which the present one need be compared is *exactus* (above), with which comparison is made in the *Key* and preceding *Description*.

Although the type is a ♂ (dissected), the anterior tarsi are slender and without the expected squamae, so far as I can determine under highest power of my stereoscopic microscope.

Acupalpus furvinus n. sp.

Description. With characters of genus; form rather elongate; reddish piceous, sides of prothorax and suture and sides of elytra more reddish, appendages irregularly testaceous, antennae brownish except at base; shining, but front with light isodiametric microsculpture, pronotum with more transverse microreticulations at most faintly indicated, elytra with distinct transverse meshes (at 50×) but slightly iridescent. *Head* 0.71 and 0.73 width prothorax; eyes moderate; front impressed as usual; clypeus with anterior margin notched or impressed at sides; mouthparts as in *exactus*. *Prothorax* subquadrate; width/length 1.31 and 1.31; base/apex 1.10 and 1.11; sides broadly rounded anteriorly, nearly straight (or slightly rounded) and converging posteriorly to narrowly rounded posterior angles; base and apex not margined; margins moderate, broader posteriorly and running into irregular, rounded, not distinctly punctate baso-lateral impressions; disc as usual. *Elytra*: width elytra/prothorax 1.38 and 1.39; striae entire, well impressed; 3rd intervals 1-punctate on inner edge behind middle. *Secondary sexual characters*: ♂ front tarsi slightly dilated, 4th segments deeply emarginate, 4 segments 2-seriately squamulose. *Measurements*: length 3.5–4.7; width 1.5–1.8 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,391) and 6 paratypes from Dobodura, **Papua**, Mar.–July 1944 (Darlington); and additional paratypes as follows. **Papua**: 1, Lake Daviumbu, Fly R., Sept. 21–30, 1936 (Archbold Exp., A.M.N.H.). **N-E. N. G.**: 1, Aitape, Aug. 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. According to my notes made at the British Museum in 1948, this species represents a widely distributed Oriental-Australian group of *Acupalpus* which includes *annamensis* Bates and *furvus* Andrewes of SE. Asia, as well as various named forms from the Malay Archipelago. Most of them are testaceous with dark elytral clouds, but *furvus* is more uniformly colored, as is *furvinus*. However, the latter differs from *furvus* in having more prominent eyes and less rounded posterior prothoracic angles. A representative of this species group occurs in North Queensland, Australia.

Acupalpus brunnicolor (Sloane)

Sloane 1898, Proc. Linnean Soc. New South Wales 23, p. 466 (*Thenarotes*).
Andrewes 1930, Cat. Indian Insects, Part 18, Carabidae, p. 10.

Description (for recognition only). A brown *Acupalpus* characterized in preceding *Key to Species*; head 0.82 and 0.82 width prothorax; prothoracic width/length 1.44 and 1.42, base/apex 1.13 and 1.16; width elytra/prothorax *c.* 1.43 and 1.38; length *c.* 3.8, width 1.5–1.6 mm.

Types. From Behn River, **Western Australia**, collected by Helms; type returned to Lea, should be in South Australian Mus. (not seen).

Occurrence in New Guinea. **Papua**: 3, Port Moresby, Oct. 1944 (Darlington); 1, Oriomo River, Feb. 17, 1967 ("H. C.," Bishop Mus.), light trap.

Measured specimens. A pair (♂ ♀) from Port Moresby.

Notes. According to notes that I made at the British Museum in 1947–1948, *brunnicolor* of Australia may be a form of a widely distributed species that has received the name *sinuellus* Bates in SE. Asia and *punctatus* Jedlicka in the Philippines. However, the classification of these small harpalines is still so doubtful that I do not wish to declare synonymies, but shall say only that *brunnicolor* probably represents a widely distributed species group that may have reached Australia recently (perhaps by way of the Lesser Sunda Islands) and that may then have spread from Australia to the *Eucalyptus* country of southern New Guinea.

Acupalpus ustus Andrewes

Andrewes 1930, Zool. Mededelingen 13, p. 195.

Description (for recognition only). With characters of genus; form rather stout; piceous, moderately shining. *Head* 0.76 and 0.77 width prothorax; eyes average. *Prothorax* subcordate; width/length 1.38 and 1.37; base/apex 1.12 and 1.10; sides variably sinuate before obtuse (almost right) posterior angles; disc normal, baso-lateral impressions punctate, punctation absent or sparse across middle of base. *Elytra*: width elytra/prothorax 1.43 and 1.44. *Measurements* (in New Guinea): length 3.0–3.3; width 1.3–1.4 mm.

Types. From **Sumatra** and **Borneo**; the (holo)type, from Borneo, in Andrewes Coll., British Mus. (seen).

Occurrence in New Guinea. **Papua**: 29, Dobodura, Mar.–July 1944 (Darlington). **West N. G.**: 1, Hollandia, July–Sept. 1944 (Darlington).

Measured specimens. A pair (♂ ♀) from Dobodura.

Notes. My identification is tentative, although based on comparison of specimens with the type. As in other species of this genus, I am not absolutely sure of synonymies and make none, but only state that this species appears to be widely distributed in the Malay Archipelago.

Acupalpus papua n. sp.

Description. With characters of genus; form (Fig. 32) rather broad, with sides of elytra slightly arcuate; piceous, apices of elytra sometimes rufescent, appendages testaceous, antennae browner from 3rd segments; moderately shining, reticulate microsculpture distinct and *c.* isodiametric on front, faint (and more transverse) or absent on disc of pronotum, not visible (at 50×) on slightly iridescent elytra. *Head* 0.82 and 0.80 width prothorax; eyes moderate; frontal impressions extending onto clypeus; anterior edge of clypeus finely notched at sides; mouthparts *c.* as in *exactus*. *Prothorax* broadly subcordate; width/length 1.43 and 1.46; base/apex 1.15 and 1.10; sides broadly rounded anteriorly, converging and slightly, broadly sinuate before slightly obtuse but well defined posterior angles; margins moderate anteriorly, broader posteriorly, with baso-lateral areas depressed and punctate, punctation not extending across middle of base. *Elytra*: width elytra/prothorax 1.46 and 1.48; humeri broadly rounded; margins behind humeri not distinctly serrate at 50×; striae moderately impressed; 3rd intervals 1-punctate on inner edge as usual. *Measurements*: length 3.5–4.2; width 1.5–1.8 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,392) and 4 paratypes from Dobodura, **Papua**, Mar.–July 1944 (Darlington); and additional paratypes as follows. **Papua**: 1, Oro Bay (near Dobodura), Dec. 1943–Jan. 1944 (Darlington); 1, Fly R., Lake Daviumbu, Sept. 1–10, 1936 (Archbold Exp., A.M.N.H.). **West N. G.**: 2, Hollandia, July–Sept. 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. Except that it is close to *ustus* (above), I cannot state the relationships of this new species. As compared with *ustus*, *papua* is larger, with relatively slightly wider head and wider prothorax.

Tribe ANAULACINI

Csiki 1932, Coleop. Cat. Carabidae, Harpalinae 7, p. 1287 (see for synonymy and additional references).
Jedlicka 1963, Ent. Abhandlungen 28, p. 283.
Masoreini Auct.
Andrewes 1930, Cat. Indian Carabidae, p. XIII.
Jeannel 1949, Coléop. Carabiques de la Région Malgache, Part 3, p. 860.
Masoreitae Jeannel 1942, Faune de France, Coléop. Carabiques, Part 2, p. 1012.
Masoreinae Basilewsky 1953, Exploration Parc National l'Upemba, Fasc. 10, Carabidae, pp. 17, 118.

This is a small, pan-tropical tribe of obscure Carabidae some of which, including all those found in New Guinea, superficially resemble Nitidulidae. They may be recognized by appearance (Figs. 33, 34); short, strongly arcuate, flattened mandibles; rather long tibial spurs; and other technical characters given by authors cited above. All the species that I know are winged, and the widely distributed *Aephnidius adelioides* flies to light, but *Odontomasoreus* has not been taken at light and perhaps does not fly. The few species that I have collected in New Guinea and Australia live in leaf litter on the ground in rain forest. Four genera of the tribe are known from New Guinea.

Key to Genera of Anaulacini of New Guinea

1. Humeri dentate; (antennae short, not reaching base of prothorax; labrum rounded; mentum lobed or subdentate; elytra pale-spotted) (p. 76) ..... *Odontomasoreus*
– Humeri not dentate 2
2. Antennae short, not reaching base of prothorax (p. 77) ..... *Anaulacus*
– Antennae longer, reaching or passing base of prothorax 3
3. Mentum not toothed; size larger, *c.* 5 mm (p. 77) ..... *Aephnidius*
– Mentum toothed; smaller, less than 3 mm (p. 78) ..... *Caphora*

ODONTOMASOREUS n. gen.

Diagnosis. Rather small, convex Anaulacini; immediately distinguished from other genera of tribe by humeri dentate.

Description. Form nitiduloid (Fig. 33), convex; color piceous with pale elytral marks; reticulate microsculpture isodiametric on head, slightly and irregularly transverse on pronotum and elytra. *Head* normal, *c.* as in *Aephnidius adelioides* except labrum rounded; antennae short, reaching *c.* middle of prothorax, with median segments wider than long; mentum bluntly toothed or obtusely prominent at middle. *Prothorax* normal; anterior angles moderately advanced; base sinuate but scarcely lobed; disc with fine, abbreviated middle line. *Elytra*: humeri finely dentate; margins weakly sinuate near apex; striae indicated but scarcely impressed, scutellar striae not visible. *Secondary sexual characters*: ♂ tarsi slightly dilated, 3 segments 2-seriately squamulose; ♂ copulatory organs as in Figure 175.

Type species. Odontomasoreus humeralis (below).

Generic distribution. Known only from **New Guinea**, thus far only from the eastern and central parts of the island.

Notes. I recognize only 1 species of this new genus, with 2 subspecies.

Key to Subspecies of *Odontomasoreus humeralis*

1. Larger (3.4–4.0 mm); humeri broadly pale (Papua) (p. 76) ..... *humeralis s.s.*
– Smaller (3.1–3.5 mm); humeri dark or at most with vague or small pale areas (N-E. N. G. and eastern West N. G.) (p. 77) ..... subsp. *reductus*

Odontomasoreus humeralis n. sp.

Description. With characters of genus; form as in Figure 33; brownish piceous, humeri, base of elytra, and an elongate mark on 2nd interval of each elytron near apex testaceous; mouth parts and appendages brownish or testaceous. *Head* 0.60 and 0.63 width prothorax. *Prothorax* widest near base, narrowed anteriorly; width/

length 1.81 and 1.81; base/apex 1.42 and 1.39; sides weakly arcuate, very narrowly margined, each with usual 2 setae, at base and *c.* ⅔ from apex; base finely margined, apical marginal line weak or interrupted at middle; disc vaguely impressed each side before base. *Elytra*: width elytra/prothorax 1.10 and 1.10. *Measurements*: length 3.4–4.0; width 1.7–1.8 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,393) and 21 paratypes all from Dobodura, **Papua**, Mar.–July 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. Most specimens of the type series were taken in flood water in rain forest after heavy rainfall. The insect evidently inhabits leaf litter and perhaps loose soil in rain forest.

Odontomasoreus humeralis reductus n. subsp.

Description. Similar to typical *humeralis* but smaller, with the basal pale areas of elytra reduced or absent but subapical marks distinct. *Head* 0.62 and 0.62 width prothorax. *Prothorax*: width/length 1.80 and 1.86; base/apex 1.45 and 1.41. *Elytra*: width elytra/prothorax 1.08 and 1.08. *Measurements*: length 3.1–3.5; width 1.5–1.6 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,394) and 6 paratypes from Hollandia, **West N. G.,** July–Sept. 1944 (Darlington). Additional paratypes from **N-E. N. G.**: 1, Astrolabe Bay, 1898 (Biró); 5, Aitape, Aug. 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Hollandia.

Genus *ANAULACUS* Macleay

Macleay 1825, Annulosa Javanica, p. 22.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1292 (see for additional references).
Jedlicka 1963, Ent. Abhandlungen 28, p. 286.

Diagnosis. See preceding *Key to genera.*

Description. None required here.

Type species. Anaulacus sericeipennis Macleay, of Java.

Generic distribution. Tropical **Asia** to the **Philippines** and **New Guinea**; **South Africa**.

Notes. One species (in fact, only 1 individual) of this genus has been taken in New Guinea.

Anaulacus siamensis Chaudoir

Chaudoir 1876, Bull. Soc. Nat. Moscow 51, Part 2, p. 25.
?*sterbai* Jedlicka 1934, Sbornik Ent. Odd. Nar. Mus. Prague 1934, p. 119.
?*kendengensis* Louwerens 1952, Treubia 21, p. 215.

Description (for recognition only). With characters of genus; form (Fig. 34) of *Aephnidius* but antennae relatively short; reddish piceous without well defined markings. *Head* 0.66 width prothorax. *Prothorax*: width/length 1.74; base/apex 1.34. *Elytra*: width elytra/prothorax 1.08. *Measurements*: length *c.* 4.5; width *c.* 1.9 mm.

Type. From **Siam**; in Oberthür Coll., Paris Mus. (not seen).

Occurrence in New Guinea. **West N. G.**: 1, Geelvink Bay, 1878 (Raffray & Maindron, Paris Mus.).

Notes. This individual is identified from description and from notes, made at the British Museum in 1947–1948, on a specimen from the Andaman Islands identified as *siamensis* by Andrewes. The unique type of *sterbai*, from Malinao, Tayabas, Philippine Is., is in the British Museum too; it does not differ significantly from the Andaman *siamensis*. I have a paratype of *kendengensis* from Java, and it too is very close to *siamensis*. All these names probably apply to one species that ranges from the southeastern corner of **Asia** to the **Philippines** and **New Guinea**, but the material seen is too limited to justify a final decision.

Genus *AEPHNIDIUS* Macleay

Macleay 1825, Annulosa Javanica, p. 23.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1288 (see for additional references and list of species).
Jeannel 1949, Coléop. Carabiques de la Région Malgache, Part 3, p. 861.
Jedlicka 1963, Ent. Abhandlungen 28, p. 284.

Diagnosis. See preceding *Key to genera.*

Description. None required here.

Type species. Aephnidius adelioides Macleay (below).

Generic distribution. All principal tropical and some adjacent warm-temperate areas of **world**.

Notes. A single widely distributed species of the genus occurs in New Guinea.

Aephnidius adelioides Macleay

Macleay 1825, Annulosa Javanica, p. 23, pl. 1, fig. 7.
Andrewes 1930, Cat. Indian Insects, Part 18, Carabidae, p. 11.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1288 (see for synonymy and additional references).

Description. None required here; length ± 6 mm.

Type. From **Java**; in British Mus. (seen).

Occurrence in New Guinea. Widely distributed: 29 specimens from **Papua** (including Dobodura), **N-E. N. G.,** and **West N. G.,** at low and moderate altitudes, up to 1200 m (at Wau).

Notes. This species ranges from **SE. Asia**, **Japan**, and **Formosa** to northern **Australia**, east to the **Philippines**, **New Britain**, and **New Ireland**. Seven specimens from Wau and 1 from near Hollandia are labeled as taken in light traps.

Genus *CAPHORA* Schmidt-Goebel

Schmidt-Goebel 1846, Faunula Coleop. Birmaniae, p. 91.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1293 (see for additional references).
Jedlicka 1963, Ent. Abhandlungen 28, p. 288.

Diagnosis. Very small Anaulacini (under 3 mm); characterized in the preceding *Key to Genera* of the tribe.

Description. None required here.

Type species. Caphora humilis Schmidt-Goebel (below).

Generic distribution. SE. **Asia**, **Sumatra**, **Java**, the **Philippines**, **New Guinea**, and Cape York, **Australia** (see following species).

Caphora humilis Schmidt-Goebel

Schmidt-Goebel 1846, Faunula Coleop. Birmaniae, p. 91, pl. 3, fig. 8a-b.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1293 (see for additional references).
Jedlicka 1963, Ent. Abhandlungen 28, p. 289.

Description. None required here. The very small size distinguishes this species from all other members of the tribe found in the region in question. Length *c.* 2.5 mm.

Type. From Burma; should be in Prague Mus. (not seen).

Occurrence in New Guinea. **Papua**: 1, Brown River, May 24, 1956 (E. J. Ford, Jr., Bishop Mus.), in light trap.

Notes. This species is recorded from **India** and **Burma** to **Sumatra** and **Java** and occurs also on the tip of Cape York, **Australia** (collected by me in 1958). My Cape York specimens were found in the Lockerbie rain forest, in leaf litter mixed with bird droppings under a large tree in which colonial birds had nested. The beetles were in company with *Perigona nigriceps*, which is often carried by commerce, and this suggests that *Caphora* too may sometimes be carried by man.

Tribe CYCLOSOMINI

This is another small tribe, represented in all the warmer regions of the world. The name to use for it is doubtful but not worth detailed discussion here. The members of the tribe, although apparently related to Anaulacini, are superficially *Lebia*-like but differ from *Lebia* in having very long tibial spurs. The only genus of the tribe that occurs in New Guinea is *Sarothrocrepis*.

Genus *SAROTHROCREPIS* Chaudoir

Chaudoir 1876, Bull. Soc. Nat. Moscow 51, Part 2, p. 76.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1302 (see for synonymy, additional references, and list of species).
Jedlicka 1963, Ent. Abhandlungen 28, p. 290.

Diagnosis. See under tribe.

Description. None required here.

Type species. *Carabus corticalis* Fabricius, of Australia.

Generic distribution. Represented in **Australia** by numerous, diverse species; 1 species group extends to **New Guinea**, some **Lesser Sunda Islands**, **Celebes**, and the **Philippines**.

Notes. Although most other genera of this tribe are (I think) ground-living, *Sarothrocrepis* is arboreal. Many Australian species live on the trunks of *Eucalyptus* trees, but a few live in foliage, as does the single New Guinean species. The tarsal claws tend to vary with habitat. In the foliage-living New Guinean species and also its immediate Australian relatives, each claw has several long teeth. In some Australian tree-trunk-living forms, the claw teeth are shorter or irregular.

Sarothrocrepis papua n. sp.

Description. Form as in Figure 35; irregular brownish yellow, elytra with variable post-median dark brown mark usually irregularly triangular or M-shaped; reticulate microsculpture isodiametric on front, scarcely or slightly transverse on pronotum, more transverse on elytra. *Head* 0.67 and 0.67 width prothorax. *Prothorax*: width/length 1.45 and 1.50; base/*head* 1.41 and 1.41 (apex of prothorax too rounded for exact measurement); margins moderate anteriorly, much wider posteriorly (as usual in genus), each with seta at basal angle and another *c.* ⅓ from apex; base finely margined, apical marginal line interrupted at middle; median line lightly impressed, subapical transverse impression weak, subbasal transverse impression and posterior-lateral impressions slight. *Elytra*: width elytra/prothorax 1.52 and 1.48; striae deeply impressed, not punctate; a seta-bearing puncture at base each 2nd interval, usually an inconspicuous puncture on inner edge each 3rd interval near apex, and sometimes an apparent minute puncture on outer edge 3rd interval *c.* ⅓ from base. *Inner wings* full. *Lower surface and legs*: no noteworthy characters except tarsal claws each with 4 long teeth, the inner one smaller and sometimes difficult to see. *Secondary sexual characters*: ♂ front tarsi slightly dilated, 3 segments 2-seriately squamulose (4th segments with soles of non-sexual adhesive hairs in both sexes); ♂ (not ♀) apical ventral segment deeply acutely notched at middle; 1 seta each side apex last ventral segment in both sexes. *Measurements*: length 4.6–6.4 (usually 5.0–5.5); width 2.3–3.0 (usually *c.* 2.7) mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,395) and 120 paratypes all from Dobodura, **Papua**, Mar.–July 1944 (Darlington).

Additional material. Thirteen specimens from other localities in **Papua**, **N-E. N. G.,** and **West N. G.**; and 2 specimens from Cape Gloucester, **New Britain**, Jan.–Feb. 1944 (Darlington).

Measured specimens. The holotype and 1 ♀ paratype.

Notes. *Sarothrocrepis papua* resembles *S. fasciata* Macleay of North Queensland, Australia, but is larger, with prothorax narrower and elytral markings slightly different. Three similar species occur in the Malay Archipelago. *S. m-migrum* Jordan, from Tenimber (and in Andrewes Coll. also from Sumbawa, Sumba, and Andonare Is.), has prothoracic margins narrower than *papua* and the dark M-mark usually better defined (but the mark is variable in *papua*). *S. javanica* Van Emden has prothoracic margins narrower and basal impressions of pronotum more linear. And *S. andrewesi* Jedlicka, of the Philippines, has the elytral marks different (3 dark stripes on yellow background) and basal impressions of pronotum better defined, sublinear. These names may all be based on forms of one widely distributed variable species, but I prefer to treat them as separate species for the time being.

S. papua was very common in under-story foliage of rain forest at Dobodura, especially in clumps of dead leaves still attached to low branches. It is probably mainly diurnal, although I have seen 2 specimens taken in light traps.

Tribe LEBIINI

Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1305 ff. (see for synonymy and additional references).
Jedlicka 1963, Ent. Abhandlungen (Dresden) 28, p. 295.
Habu 1967, Fauna Japonica, Carabidae, Truncatipennes Group, p. 57.
Lebiidae Jeannel 1942, Faune de France, Coléop. Carabiques, Part 2, p. 1017.
Jeannel 1949, Coléop. Carabiques de la Région Malgache, Part 3, p. 876.
Lebiinae Basilewsky 1953, Exploration Parc National l'Upemba, Fasc. 10, Carabidae, p. 184.

Lebiini are medium sized and small Carabidae usually recognizable by general appearance. The elytra are usually (but not always) obliquely truncate or sinuate-truncate at apex (and often spined too), and the insects have additional technical characters, including genitalic ones, given by authors cited above.

The tribe is a very large one. It is best represented in the tropics and includes a large proportion of arboreal forms especially in the tropics.

Arboreal Lebiini divide into two ecologic groups, one living on tree trunks and the other in foliage. The tree-trunk dwellers are numerous in rain forest and some occur on fallen trees and logs as well as the trunks and larger branches of living trees. Some are nocturnal, some diurnal. Some of them can be trapped under sacking tied around tree trunks or laid over logs. Lebiini living on tree trunks and logs in New Guinea include *Stenotelus*, *Miscelus*, *Minuthodes*, *Catascopus*, *Pericalus*, *Coptodera* (some), *Mochtherus*, and *Stricklandia*. (Other lebiine genera, especially *Philophloeus*, *Agonochila*, and Australian *Demetrida*, live on the trunks of *Eucalyptus* trees in more open woodland in Australia.) The foliage dwellers in New Guinean rain forest include *Aristolebia*, *Lebia*, *Dolichoctis*, *Celaenephes*, and especially New Guinean *Demetrida*. (The ecology of *Demetrida* is discussed in more detail in *Notes* under the genus.) Different foliage-inhabiting Lebiini in New Guinea probably inhabit different special niches. Some species are commonly taken by sweeping under-story plants in rain forest but other species are not, and these may live at higher levels in the trees. They may be difficult to collect except when trees are felled, unless they fly to light. Besides the arboreal forms, a few Lebiini in New Guinea (and relatively more in colder climates) live on the ground, especially in leaf litter in rain forest. In New Guinea, these include some *Coptodera*, probably *Syntomus* and *Microlestes* and *Apristus*, and certainly *Anomotarus* and *Nototarus*. They can be collected in small numbers, laboriously, by sifting or in Berlese traps, or in larger numbers and more easily by washing out debris and loose earth from the forest floor or by sorting and washing flood debris from rain forest.

Most Lebiini are winged and many of them fly actively to escape danger or to disperse (see *Notes* under *Catascopus*), and some, presumably mostly nocturnal species, fly to light at night. The only known New Guinean lebiine with atrophied wings is *Nototarus papua*.

Although Lebiini are most numerous and diverse in the tropics, the tribe as a whole is virtually cosmopolitan. A few genera, including *Lebia* and *Coptodera*, are very widely distributed too, but most other genera have restricted distributions.

Thirty genera of Lebiini are known in New Guinea and at least 3 additional genera probably occur. Many of the genera are shared with, better represented in, and probably derived from the Oriental Region. These include *Lebia*, *Catascopus*, *Coptodera*, *Dolichoctis*, and more than a dozen smaller genera. Genera shared mainly with and perhaps derived from Australia are fewer but include *Agonochila*, *Trigonothops*, *Phloeocarabus*, *Anomotarus*, *Nototarus*, and especially *Demetrida*. The genera *Minuthodes*, *Stricklandia*, and *Miscelus* now center on New Guinea and may have originated there. The only lebiine genus actually confined to New Guinea is monotypic *Minuphloeus*.

The genus *Demetrida* seems to be in the

very midst of an explosive evolutionary radiation, which is discussed under the genus. I know no other case quite like it among Carabidae.

The following key to the genera of Lebiini of New Guinea is practical, not phylogenetic. Genera that occur together in the key are not necessarily closely related, and the key is designed for *only* the New Guinean species of some genera. I have used form of the whole insect as a key character of some genera. The form *is* characteristic in some cases, and the form of the whole is surely no less important than the form of a part.

After the key, the genera are treated in the order of the *Coleopterorum Catalogus* (Csiki 1932), not in the order in which they are keyed out.

An enormous supposed lebiine, *Holoponerus godeffroyi* (Fairmaire), has been described from New Britain. I do not know this insect, but I think it is probably not a member of the Lebiini but of the tribe Helluodini, under which I shall discuss it in more detail.

KEY TO GENERA OF LEBIINI OF NEW GUINEA

1. Fourth segments of hind tarsi deeply emarginate, with lobes ½ or more total length of segment 2
– Fourth segments of hind tarsi more shallowly emarginate or subtruncate 10
2. Form usually broad *Lebia*-like (Figs. 37–41); base of prothorax ± lobed; upper surface not pubescent; tarsi not pubescent above; ♂ middle tibiae excised on inner edge near apex 3
– Form not *Lebia*-like, usually more slender; base of prothorax often (not always) without lobe; tarsi often (not always) pubescent above; ♂ middle tibiae usually not excised (but tuberculate-serrate in many *Demetrida*) 4
3. Outer-apical angles of elytra sharply formed *and* prothorax ± hemispheric; ♂ middle tibiae with 2 excisions on inner edge near apex (p. 83) ..... *Aristolebia*
– Outer-apical angles of elytra either rounded or sharply formed, but if latter, prothorax not hemispheric (in New Guinean species); ♂ middle tibiae with 1 excision on inner edge near apex (p. 85) ..... *Lebia*
4. Small (4–4.5 mm); prothorax trapezoidal, widest at base (Fig. 87) (p. 134) ..... *Peliocypas*
– Larger; prothorax usually not as described 5
5. Upper surface coarsely rugose and pubescent; prothorax strongly lobed at base; (form as in Fig. 42; length *c.* 8 mm) (p. 89) ..... *Lachnoderma*
– Upper surface not coarsely rugose; pubescent or not, but if pubescent, prothorax not lobed at base 6
6. Fifth elytral intervals with coarse seta-bearing puncture near base; prothorax with (very short) basal lobe (form as in Fig. 95; length *c.* 8–9 mm) (p. 139) ..... *Anchista*
– Fifth elytral intervals without coarse puncture near base; prothorax usually (not always) without basal lobe 7
7. Form (Figs. 97–109) usually slender; apex of elytra sinuate-truncate or angulate or spined but not broadly and strongly rounded; tarsi pilose above (p. 140) ..... *Demetrida*
– Form usually less slender; apex of elytra broadly and strongly rounded or weakly sinuate-truncate with outer angles broadly rounded; tarsi above pilose or not 8
8. Prothorax with (slight) basal lobe; tarsi not pilose above (p. 184) ..... *Trigonothops*
– Prothorax without basal lobe (but base slightly oblique near angles); tarsi usually pilose above (pilosity slight in some *Parena*) 9
9. Upper surface not pubescent (p. 138) ..... *Parena*
– Upper surface pubescent (p. 140) ..... *Endynomena*
10. Form (Fig. 37) characteristic, broadly oval with outer elytral angles sharply formed; ♂ middle tibiae with 2 excisions on inner edge near apex; (length *c.* 9.5–11.0 mm—smaller species of same genus key out in couplet 3) (p. 83) ..... *Aristolebia*
– Form not as above; ♂ middle tibiae usually not 2-excised 11
11. Form (Fig. 36) characteristic; small (*c.* 4 mm or less); upper surface pubescent; prothorax with extra anterior-lateral setae; brown with single broad transverse dark band across elytra (p. 82) ..... (*Somotrichus*)
– Not as above in one or more ways 12
12. Very small (less than 4 mm); color black or (rarely) transversely fasciate 32
– Larger *or*, if length less than 4 mm, with color pattern of longitudinal lines 13
13. Form (Fig. 88) characteristic, slender, with rounded elytral apices; mentum without tooth and claws not toothed; (black; length *c.* 7 mm) (p. 135) ..... *Celaenephes*
– Not as above 14

14. Claws simple, not toothed; size usually large; color often metallic 15
– Claws each with several teeth; size often (not always) smaller; color rarely metallic 17
15. Form (Fig. 45) characteristic, slender, subcylindric, with long genae and small eyes, and with rounded-truncate elytral apices; often (not always) only 1 seta over eye; (length 9.5–14.5 mm) (p. 91) ..... *Miscelus*
– Form not as above; 2 setae over each eye 16
16. Labrum long, notched at apex; size larger (8–22 mm); color metallic or rarely brown, without geometric marks (p. 101) ..... *Catascopus*
– Labrum shorter, not notched; smaller (7–8 mm in New Guinean species); elytra with geometric marks (p. 110) ..... *Pericalus*
17. Mentum not toothed 18
– Mentum toothed 19
18. Third elytral intervals with 2–4 dorsal punctures, but if 2, not as described below; ♂ middle tibiae usually excised on inner edge before apex (p. 110) ..... *Coptodera*
– Third elytral intervals with 2 minute non-seta-bearing punctures behind middle, or without recognizable dorsal punctures; ♂ middle tibiae not excised (p. 124) ..... *Dolichoctis*
19. Elytra spined 20
– Elytra not spined 21
20. Prothorax without extra lateral setae; form (Fig. 44) not strikingly broad (p. 90) ..... *Stenotelus*
– Prothorax with many extra lateral setae; form (Fig. 86) strikingly broad (p. 132) ..... *Stricklandia*
21. Form (Fig. 43) characteristic, broad, with broadly rounded elytral apices; (dull black; length *c.* 10–11 mm) (p. 90) ..... *Sinurus*
– Not as above 22
22. Elytral apices very strongly sinuate-truncate; (slender; color green, blue, or coppery; length in New Guinea *c.* 8–9 mm) (p. 94) ..... *Holcoderus*
– Not as above 23
23. Form (Figs. 47–58) characteristic, very broad, with wide head but relatively small eyes, prothorax usually *c.* 2× wide as long, elytra short-quadrate; (pubescence and color diverse; length *c.* 4–6.5 mm) (p. 95) ..... *Minuthodes*
– Form not as above (if *c.* similar but labrum notched, see *Minuphloeus*, below) 24
24. Labrum notched at apex; pronotum with numerous lateral setae; (shining black; length 7.5–8.0 mm) (p. 117) ..... *Minuphloeus*
– Labrum not notched; pronotum with 2 lateral setae each side 25
25. Third elytral intervals with 3 or 4 dorsal punctures *or* (in some *Agonochila*) these punctures lost amid other coarse punctation and short pubescence 26
– Third elytral intervals with 2 or rarely 1 dorsal punctures 27
26. Surface conspicuously short-pubescent and (at least on elytra) roughened (p. 118) ..... *Agonochila*
– Surface not distinctly pubescent, not roughened; (3rd elytral intervals with 3 punctures) (p. 122) ..... *Oxyodontus*
27. Labial palpi slender 28
– Labial palpi with apical segments ± widened, usually subtriangular 29
28. Third elytral intervals 2-punctate; pronotum setulose (p. 122) ..... *Mochtherus*
– Third elytral intervals 1-punctate; pronotum not setulose (p. 123) ..... (*Mochtheroides*)
29. Antennae and tarsi relatively short and thick; ♂ middle tibiae arcuate and with shallow excision at middle of length; (color brown; length *c.* 8 mm) (p. 138) ..... (*Plochionus*)
– Antennae and tarsi more slender; ♂ middle tibiae not as described 30
30. Eyes abruptly prominent, genae short and forming *c.* right angles with neck (p. 183) ..... *Phloeocarabus*
– Eyes less prominent, genae longer and forming obtuse angles with neck 31
31. Side pieces of metasternum long; inner wings full; color pattern usually present (p. 186) ..... *Anomotarus*
– Side pieces of metasternum scarcely longer than wide; inner wings vestigial; color *c.* uniform brownish black (p. 185) ..... *Nototarus*
32. Claws simple, not toothed; (mentum with entire tooth) (p. 137) ..... *Apristus*
– Claws each with several (sometimes weak) teeth 33
33. Mentum with (emarginate) tooth (p. 135) ..... *Syntomus*
– Mentum not toothed (p. 136) ..... *Microlestes*

(Genus *SOMOTRICHUS* Seidlitz)

Seidlitz 1887, Fauna Baltica, 2nd ed., Gattungen, p. 7.
Mateu 1963, Ann. Mus. Civ. Genoa 74, pp. 131 ff. (See also references under following species)

Diagnosis. Form as in Figure 36, small,

subparallel, with eyes rather small and widely separated (in this tribe); upper surface pubescent; pronotum with several strong setae each side; wings full; 4th hind-tarsal segment weakly emarginate.

Description. None required here.

Type species. Carabus elevatus Fabricius (below).

Generic distribution. One species has been dispersed over the warmer parts of the **world** by man. A second species is known only from Madagascar.

(*Somotrichus elevatus* (Fabricius))

Fabricius 1787, Mantissa Insectorum 1, p. 198 (*Carabus*).
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1308 (see for synonymy and additional references).
Jeannel 1942, Faune de France 40, Coléop. Carabiques, Part 2, p. 1032.

Description (for recognition only). With characters of genus; brown with broad, regular, darker brown fascia across middle of elytra; length *c.* 3.5–4.0 mm.

Types. From tropical **America**; now in Hunter Coll. (Glasgow) and Fabricius Coll. (Kiel) (not seen).

Occurrence in New Guinea. Not recorded but may occur.

Notes. Somotrichus elevatus is supposedly native in tropical **Africa** but has been carried over much of the world by commerce. It is often found in seaport cities. In the Malay Archipelago it has been collected on **Java**, **Celebes**, and Batjan ("Batchian") in the **Moluccas**, and I have a specimen before me from Peleliu in the **Palau Is.** Its occurrence in New Guinea is therefore likely. It has not yet been found in Australia.

Genus *ARISTOLEBIA* Bates

Bates 1892, Ann. Mus. Civ. Genoa 32, p. 428.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1308 (see for additional references, synonymy, and list of species).
Jedlicka 1963, Ent. Abhandlungen 28, p. 311.

Diagnosis. Similar to large *Lebia* with prothorax *c.* hemispheric and outer elytral angles sharply defined; wings full; 4th segments middle and hind tarsi emarginate or lobed (see following *Notes*); claws with 9–11 long teeth in larger species but only 5–7 teeth in smaller species; ♂ middle tibiae each with 2 (not 1 as in *Lebia*) excisions close together on inner edge near apex; most other characters including those of mouth-parts as in *Lebia.*

Description. None required here.

Type species. Aristolebia quadridentata Bates, of Burma.

Generic distribution. Southern **India** (specimens in M.C.Z.), southern **China**, **Burma**, etc., to the **Philippines**, **New Guinea**, and the tip of Cape York, **Australia** (see under *A. wau*, below).

Notes. The smaller species described below are in some ways transitional between *Aristolebia* and *Lebia*, but *Aristolebia* seems to me to be a natural group worth distinguishing from *Lebia*, which is an enormous, unwieldy genus. The tarsal lobes in *Aristolebia* vary, but the variation shows continuity. In large Asiatic species of the genus the 4th segments of the hind and middle tarsi are relatively weakly emarginate. In the large New Guinean species (*papua*) the lobes of the 4th segments are rather short on the hind but longer on the middle tarsi. And in the smaller New Guinean species the lobes of the 4th segments are long, more than ½ the segments' length even on the hind tarsi, and are relatively longer in *capitis* than in *wau.*

In New Guinea, *Aristolebia* occurs chiefly at mid-altitudes. It is probably arboreal (in rain forest) and probably diurnal, although a few individuals have been taken in light traps at Wau.

KEY TO SPECIES OF *ARISTOLEBIA* OF NEW GUINEA

1. Larger, 9.5–11.0 mm (p. 84) ..... *papua*
– Smaller, 5.5–6.5 mm 2
2. Entirely yellow or brownish yellow; sutural angles distinct and usually subdenticulate (p. 84) ..... *wau*
– Elytra dark with broad stripes or spots pale; sutural angles (narrowly) rounded (p. 85) ..... *capitis*

Aristolebia papua n. sp.

Description. With characters of genus; form as in Figure 37; black, sides of pronotum broadly and of elytra narrowly pale, elytra with variable pale marks or sometimes wholly dark, lower surface, mouthparts, and appendages reddish brown; rather shining, microsculpture as described below. *Head* 0.76 and 0.73 width prothorax; front irregularly slightly impressed and rugulose anteriorly, rather sparsely punctulate, with *c.* isodiametric microreticulation especially posteriorly. *Prothorax*: width/length 1.67 and 1.60; base/apex *c.* 1.95 and 1.98 (figures approximate because anterior angles not defined); margins narrow anteriorly, broad posteriorly, each with seta-bearing puncture at basal angle and before middle; base and apex with entire impressed marginal lines; disc slightly transversely rugulose, sparsely punctulate, in part lightly microreticulate. *Elytra* ample; width elytra/prothorax 1.70 and 1.67; outer-apical and sutural angles acute and denticulate; striae entire, impressed, faintly or not punctulate; intervals with slightly transverse microreticulation and sparse fine punctulation, 3rd with 2 dorsal punctures on outer edge *c.* ⅓ from base and less than ¼ from apex (slightly variable in position). *Legs*: 4th segments middle and hind tarsi as in Figure 166; claws broadly triangular, each with *c.* 10 long teeth. *Secondary sexual characters*: ♂ front tarsi scarcely dilated but with narrow, irregularly 2-seriate squamules; ♂ middle tibiae 2-excised; ♂ with 2, ♀ *c.* 4 setae each side before apex last ventral segment. *Measurements*: length 9.5–11.0; width 4.5–5.3 mm.

Types. Holotype ♂ (Bishop Mus.) and 17 paratypes (some in M.C.Z., Type No. 31,396) from Wau, Morobe Dist., **N-E. N. G.,** 1100 to 1300 m, dates in Jan., Feb., Apr., May, Aug., and Sept., 1961–1963 (Sedlaceks) (holotype, 1200–1300 m, May 7, 1963); and additional paratypes as follows. **N-E. N. G.**: 1, Swart Vy., Karubaka, 1500 m, Nov. 11, 1958 (Gressitt). **West N. G.**: 1, "Humbolt Bay" (N. A. Doherty, British Mus.).

Additional material. **Papua**: 1, W. District, Oriomo Govt. Station, Oct. 26–28, 1960 (Gressitt).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Wau.

Notes. This may prove to be a geographic form of *Aristolebia davaonis* (Heller) of the Philippines, but the color is different (*davaonis* has the prothorax rusty red, not black) and other details are probably different, although I cannot be sure about them from Heller's description of his single specimen. A form of *davaonis*, or a related species, has been found also on Salajar Is. off Celebes (specimens received from Louwerens).

The single individual from Papua is the only one in the New Guinean series with wholly dark elytra, and it differs slightly from the type series in other ways. It may prove to be a distinguishable geographic form. Other variation in elytral pattern is individual in the series from Wau.

Aristolebia wau n. sp.

Description. With characters of genus; form *c.* as in preceding species (*papua*); usually entirely reddish yellow, rarely with faint dusky areas especially at base of elytra; upper surface with light, irregular, *c.* isodiametric or slightly transverse microreticulation. *Head* 0.80 and 0.77 width prothorax. *Prothorax*: width/length 1.56 and 1.67 (difference due partly to slight abnormal extension of basal lobe in the first individual); lateral margins wide, flattened or weakly reflexed especially posteriorly, each with usual 2 setae; base and apex with entire marginal lines, but apical line weak at middle; disc irregularly ± transversely rugulose. *Elytra* ample, convex; width elytra/prothorax 1.72 and 1.76; outer-apical angles obtuse but well defined and sometimes subdenticulate, sutural angles slightly dehiscent, ± subdenticulate; striae entire, impressed, not distinctly punctulate;

intervals convex, 3rd with 2 inconspicuous punctures on outer edge before middle and *c.* ¼ from apex. *Legs*: 4th segments hind tarsi deeply emarginate but lobes shorter than usual in *Lebia*, 4th segments of middle tarsi with longer lobes; claws each with *c.* 7 long teeth. *Secondary sexual characters*: ♂ front tarsi with slender squamae probably in 2 series but often disarranged; ♂ middle tibiae with 2 excisions close together on inner edge near apex; ♂ with apparently 2, ♀ 3 setae each side near apex last ventral segment. *Measurements*: length 5.5–6.5; width 2.7–3.2 mm.

Types. Holotype ♂ (Bishop Mus.) and 22 paratypes (some in M.C.Z., Type No. 31,397) all from Wau, Morobe Dist., **N-E. N. G.,** 1100–1500 m, dates in Jan., Feb., Mar., Apr., May, June, Sept., Nov., Dec., 1961–1963 (Sedlaceks).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. I took a single ♀ of this species at Lockerbie, near the tip of Cape York, in January 1958, thus extending the known range of *Aristolebia* to **Australia**.

Aristolebia capitis n. sp.

Description. With characters of genus; form and characters as in *wau* (above) except slightly wider; elytra dark with *either* large humeral and smaller subapical marks reddish yellow *or* very broad reddish yellow stripes running from humeri to apex. *Head* 0.72 and 0.72 width prothorax. *Prothorax*: width/length 1.64 and 1.59. *Elytra*: width elytra/prothorax 1.60 and 1.69; outer-apical angles sharply defined but sutural angles narrowly rounded. *Legs* with 4th segments middle and hind tarsi strongly lobed (Fig. 167); claws each with 5 long teeth and sometimes a 6th (inner) tooth that is difficult to see. *Measurements*: length *c.* 6.0–6.5; width 3.1–3.3 mm.

Types. Holotype ♂ (A.M.N.H.) and 1 ♀ paratype (M.C.Z., Type No. 31,398) both from Mar Village, west Vogelkop, **West N. G.,** Nov.–Dec. 1944 (V. S. Mallory).

Notes. The rounding of the sutural angles and the small number of claw-teeth of *capitis* are *Lebia*-like, but the form is that of an *Aristolebia* (some *Lebia* approach this form too) and the ♂ middle tibiae are decisively 2-excised.

Genus *LEBIA* Latreille

Latreille 1802, Hist. Nat. Crustaceorum et Insectorum 3, p. 85.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1310 (see for additional references, synonymy, subgenera, and list of species).
Jeannel 1942, Faune de France, Coléop. Carabiques, Part 2, p. 1028.
Jedlicka 1963, Ent. Abhandlungen 28, p. 314.

Diagnosis. See *Key to Genera of Lebiini of New Guinea.*

Description (characters of New Guinean species only). Form broad but variable (Figs. 38–41); coloration variable, upper surface not pubescent. *Head*: eyes prominent, genae short; 2 setae over each eye; clypeus transverse, truncate or broadly slightly emarginate, with 1 seta-bearing puncture each side; labrum ± transverse, sometimes slightly rounded anteriorly, 6-setose; mentum strongly toothed; ligula rather broad, 2-setose; paraglossae attached to ligula, broad, setose. *Prothorax* ± lobed at base, anterior angles broadly rounded (so base/apex ratio not determinable); lateral margins broad posteriorly, ± reflexed, each with 2 setae, at or near basal angle and before middle; disc with usual impressed middle line, weak (or obsolete) anterior and deeper posterior transverse impressions, and weak transverse strigulation. *Elytra* wide but variable in form; striae entire; 3rd interval 2-punctate on outer edge. *Inner wings* full. *Lower surface* with some short, often inconspicuous pubescence. *Legs*: 4th segments middle and hind tarsi very deeply emarginate, with long lobes; 5th segments with accessory setae; claws with 4–6 long teeth. *Secondary sexual characters*: ♂ anterior tarsi not or scarcely dilated, with slender squamae in 2 series, often disarranged; ♂ middle tibiae with 1 small deep

excision on inner edge just before apex; ♂ with apparently 1 or 2 (rarely 3), ♀ 2 or more seta-bearing punctures each side near apex last ventral segment (but these punctures often difficult to identify amid other punctures and pubescence).

Type species. Carabus haemorrhoidalis Fabricius (= *Lebia marginata* (Fourcroy)), of Europe.

Generic distribution. Nearly **world-wide** except absent in some cold regions and on some remote islands. Species are numerous in most tropical regions but are relatively few (7) in New Guinea and still fewer in Australia. This suggests that the genus has entered the Australian Region recently, from the direction of tropical Asia.

Notes. The New Guinean representatives of this huge, widely distributed genus are probably all arboreal. Some or all of them live in the lower foliage of rain forest. They are probably diurnal, being rarely taken in light traps.

KEY TO THE SPECIES OF *LEBIA* OF NEW GUINEA

1. Outer-apical angles of elytra well defined ... 2
– Outer-apical angles of elytra rounded ... 3
2. Color piceous; form of *Endynomena* (Fig. 38) (p. 86) ... *endynomena*
– Color yellow; form more of typical *Lebia* (Fig. 39) (p. 86) ... *externa*
3. Elytra with conspicuous black "anchor" mark on testaceous background, or dark with anterior lunules and apex testaceous (p. 87) ... *karenia*
– Elytra differently marked or not marked ... 4
4. Elytra dark with large common cordate area testaceous (p. 87) ... *cordifer*
– Not thus marked ... 5
5. Brown, elytra sometimes vaguely darker or with vague discal cloud but not sharply bicolored, *and* head and pronotum not or only lightly microreticulate (p. 88) ... *papuella*
– *Either* bicolored *or* with head and pronotum heavily microreticulate ... 6
6. Not sharply bicolored, brown, elytra often with disc darker; head and pronotum heavily microreticulate (p. 88) ... *barda*
– Bicolored, head and prothorax red-testaceous, elytra entirely black or piceous; head and pronotum not or lightly microreticulate (p. 89) ... *insularum*

Lebia endynomena n. sp.

Description. With characters of genus; form (Fig. 38) more of *Endynomena* than of typical *Lebia*; piceous, reflexed margins of prothorax and (narrowly) of elytra translucent testaceous, appendages reddish testaceous; shining, reticulate microsculpture absent or faint on front and pronotal disc, distinct and strongly transverse on elytra. *Head* 0.82 width prothorax; front weakly impressed at middle and on each side anteriorly, irregularly rather sparsely punctate. *Prothorax* subcordate; width/length 1.69; base/apex not determinable; base and apex margined. *Elytra c.* ¾ wider than prothorax, narrowed anteriorly; width elytra/prothorax 1.72; apices slightly obliquely sinuate-truncate with outer angles well defined and almost subdenticulate and sutural angles irregularly narrowly rounded; striae impressed, not distinctly punctulate. *Secondary sexual characters* as for genus, including ♂ middle tibiae with 1 deep excision on inner edge just before apex; ♂ with 2 or 3 seta-bearing punctures before apex each side last ventral segment (punctures unsymmetric in the single specimen); ♀ unknown. *Measurements*: length *c.* 7.7; width *c.* 3.9 mm.

Type. Holotype ♂ (Bishop Mus.) from Bubia, Markham Vy., **N-E. N. G.,** 50 m, Sept. 19, 1955 (Gressitt); the type is unique.

Notes. This species differs in form and appearance from any other *Lebia* known to me, but the generic characters, including the excision of the ♂ middle tibiae, are clearly those of *Lebia.*

Lebia externa n. sp.

Description. With characters of genus; form as in Figure 39; reddish yellow, appendages slightly paler; rather shining, reticulate microsculpture absent or faint on front and pronotal disc, distinct and transverse on elytra. *Head* 0.92 and 0.92 width prothorax; front weakly impressed at middle and on each side anteriorly, slightly

irregularly punctate. *Prothorax* rather small, not hemispheric but transversely subquadrate with anterior angles broadly rounded; width/length 1.51 and 1.52; base margined, apex not margined at middle; disc rather strongly transversely strigulose and vaguely punctulate. *Elytra* almost 2× wide as prothorax; width elytra/prothorax 1.98 and —; rather strongly narrowed anteriorly; apices obliquely truncate-emarginate with outer angles obtuse but distinct and sutural angles narrowly rounded; striae impressed, not punctulate. *Secondary sexual characters*: ♂ front tarsi with squamae (if present) not easily distinguishable (worn off?); ♂ middle tibiae with 1 deep excision on inner edge just before apex; ♂ with 2, ♀ 4 setae each side near apex last ventral segment. *Measurements*: length 7.0–7.3; width *c.* 3.2–3.4 mm.

Types. Holotype ♂ (Bishop Mus.) from Pindiu, Huon Pen., **N-E. N. G.,** Apr. 20, 1963 (Sedlacek); 1 ♂ paratype (M.C.Z., Type No. 31,399) from Wau, Morobe Dist., Mt. Missim, 880–1050 m, Feb. 8–9, 1963 (Sedlacek); 1 ♀ paratype, Popondetta, **Papua**, 60 m, Sept. 3–4, 1963 (Sedlacek).

Notes. Except for the distinct outer-apical elytral angles, this species resembles large individuals of *Lebia papuella*, described below.

Lebia karenia Bates

Bates 1892, Ann. Mus. Civ. Genoa 32, p. 426.
Andrewes 1933, Ent. Series Indian Forest Records 18, Part 5, pl. 3, fig. 9.

Description (of New Guinean individuals). With characters of genus; form *c.* of typical *Lebia*; head, prothorax, and lower surface usually reddish testaceous (head and prothorax sometimes infuscate), elytra varying from dark with posthumeral lunules and apices testaceous (as figured by Andrewes) to testaceous with broad sutural anchor mark; appendages reddish or testaceous; microreticulation light and irregular on front, isodiametric or slightly transverse on pronotum, more transverse on elytra. *Head* 0.83 and 0.79 width prothorax. *Prothorax* not hemispheric but transverse-subquadrate with anterior angles broadly rounded; width/length 1.54 and 1.61; base margined, apex with marginal line weak or interrupted at middle. *Elytra* less than 2× width prothorax, narrowed anteriorly; width elytra/prothorax 1.83 and 1.84; apices obliquely sinuate-truncate with outer and sutural angles narrowly rounded; striae deep, impunctate. *Measurements*: length 6.0–7.5; width 2.8–3.8 mm.

Types. From **Burma**, in Genoa Mus. (not seen).

Occurrence in New Guinea. Probably throughout **New Guinea** at low altitudes and in the lower mountains up to 1200 m (at Guega W. of Swart Valley); 20 specimens seen, from all 3 political divisions of the island.

Measured specimens. A ♂ from Dobodura, Papua, and ♀ from Torricelli Mts., N-E. N. G.

Notes. My identification of this species is based on comparison with Andrewes' material at the British Museum.

Lebia cordifer n. sp.

Description. With characters of genus (but 5th segments missing from all tarsi); form (Fig. 40) of typical rather narrow *Lebia*; piceous above with clypeus and labrum, side margins of prothorax, narrow reflexed margins of elytra, and large common heart-shaped area on elytra (extending from inside humeri to apical ¼ at 2nd intervals and reaching 6th intervals laterally) testaceous; lower surface and appendages brownish to testaceous; shining, reticulate microsculpture absent or faint on front and on disc of pronotum (but these areas sparsely punctulate), transverse on elytra. *Head* 0.89 width prothorax; eyes large and very prominent; front with V-shaped impression at middle and impressed each side anteriorly. *Prothorax* relatively small, not hemispheric; width/length 1.58; sides strongly rounded, then strongly sinuate just before *c.* acute but blunted posterior angles; base with broad,

strong, truncate lobe, weakly margined; apex subtruncate, not margined at middle. *Elytra* rather narrow but almost 2× width of (small) prothorax, slightly narrowed anteriorly; width elytra/prothorax 1.95; apices obliquely sinuate-truncate, with outer angles broadly and sutural angles narrowly rounded; striae impressed, not distinctly punctulate. *Secondary sexual characters* of ♂ as described for genus; ♂ with 2 setae each side before apex last ventral segment; ♀ unknown. *Measurements*: length *c.* 5.7; width *c.* 2.7 mm.

Type. Holotype ♂ (Leiden Mus.) from Bivak 39 A, Star Rge., **West N. G.,** 1500 m, July 12, 1959 (Neth. New Guinea Exp.); the type is unique.

Notes. This is distinguished from other New Guinean species in the preceding *Key to Species*, but I do not know its real relationships.

Lebia papuella n. sp.

Description. Form of typical *Lebia* with relatively small prothorax; entirely brownish yellow, elytra sometimes with faint darker cloud; shining, reticulate microsculpture *c.* absent on front and on disc of pronotum, present on elytral intervals as transverse impressions not forming regular reticulations. *Head* 0.92 and 0.88 width prothorax; front scarcely impressed. *Prothorax* small, transversely subquadrate; width/length 1.54 and 1.56; basal and apical marginal lines faint or interrupted at middle; disc with anterior transverse impression subobsolete. *Elytra* much wider than prothorax, narrowed anteriorly; width elytra/prothorax 1.92 and 1.91; apices obliquely slightly sinuately truncate, with outer-apical angles broadly and sutural angles more narrowly rounded; striae impressed, not punctate. *Secondary sexual characters* as for genus; ♂ with apparently 2, ♀ 2 or more apical ventral setae each side. *Measurements*: length 4.1–5.5; width 2.0–2.7 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,400) and 25 paratypes all from Dobodura, **Papua**, Mar.–July 1944 (Darlington).

Additional material. Thirty, from numerous localities in all 3 political divisions of **New Guinea**, from lowlands to 1700 m (above Wau). Some of these specimens are assigned to this species doubtfully.

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. Lebia papuella seems closely related to a species from Queensland, Australia, that I identify as *picipennis* Macleay, but *papuella* has less pronotal microsculpture and less sinuate elytral apices than *picipennis.* Similar (but not identical) undetermined species occur in the Philippines.

Besides the type series, I have one exceptionally large ♀ from Dobodura that seems to be *papuella.* (Exceptional outsize individuals occur in some other, American, species of *Lebia.*) Its proportions and measurements are: head 0.87 width prothorax; prothoracic width/length 1.54; width elytra/prothorax 1.94; length 6.5; width 3.3 mm.

My specimens (the types) were taken by sweeping and beating undergrowth and low foliage in rain forest.

Lebia barda n. sp.

Description. With characters of genus; form of typical *Lebia* except prothorax tending toward hemispheric; yellow, elytra with ± distinct common dorsal plagia dark, the dark area sometimes extending almost to sides of elytra; lower surface and appendages yellow; whole upper surface relatively dull, with deeply impressed isodiametric microsculpture becoming slightly transverse on elytra. *Head* 0.81 and 0.81 width prothorax; front with 2 small impressions anteriorly. *Prothorax*: width/length 1.60 and 1.70; base margined; apex not distinctly margined at middle. *Elytra* narrowed anteriorly; width elytra/prothorax 1.80 and —; apices weakly sinuate-truncate, with outer and sutural angles rounded; striae deep, not distinctly punctulate. *Secondary sexual characters* as for genus; ♂ apparently with 2, ♀ 3 setae each side last ventral segment. *Measurements*: length 4.4–5.8; width 2.2–2.8 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,401) and 2 paratypes from Dobodura, **Papua**, Mar.–July 1944 (Darlington); and additional paratypes as follows. **Papua**: 1, between Laloki R. and Brown R., 25 m, Mar. 16, 1956 (Gressitt); 1, Normanby Is., Wakaiuna, Sewa Bay, Nov. 21–30, 1956 (W. W. Brandt, Bishop Mus.). **N-E. N. G.**: 1, Busu R., E. of Lae, 100 m, Sept. 13, 1955 (Gressitt); 1, Wewak, 2–20 m, Oct. 11, 1957 (Gressitt). **West N. G.**: 1, Hollandia, Apr. 1945 (Malkin, U.S.N.M.); 1, same locality, 100 m, Aug. 24, 1955 (Gressitt).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. This species may be related to the preceding (*papuella*) but has the prothorax more hemispheric, a more distinct elytral cloud, and much heavier dorsal microsculpture. It is somewhat similar also to *Lebia melanota* Chaudoir of Australia and Java (but not New Guinea!) but is much smaller, with more hemispheric prothorax, and with the dark dorsal elytral mark less defined.

Lebia insularum n. sp.

Description. With characters of genus; form (Fig. 41) of typical *Lebia* with rather wide prothorax; bicolored, head and prothorax red, elytra piceous; lower surface red with sides of abdomen piceous; appendages reddish testaceous; shining, reticulate microsculpture absent or faint on front and pronotum, distinct and moderately transverse on elytra. *Head* 0.80 and 0.79 width prothorax; front with trace of large but indistinct (perhaps variable) V-shaped impression. *Prothorax* transverse, not hemispheric; width/length 1.82 and 1.87; sides broadly rounded, slightly sinuate before slightly obtuse, blunted posterior angles; base margined, apex weakly or not margined at middle. *Elytra* slightly narrowed anteriorly; width elytra/prothorax 1.72 and 1.70; apices obliquely weakly sinuate-truncate with outer angles broadly and sutural angles narrowly rounded; striae deep, not distinctly punctulate. *Secondary sexual characters* of ♂ as described for genus; ♂ with 2 setae before apex each side last ventral segment; ♀ unknown. *Measurements*: length *c.* 7.5; width *c.* 3.4 mm.

Types. Holotype ♂ (Bishop Mus.) from Normanby Is., Wakaiuna, Sewa Bay, **Papua**, Jan. 1–8, 1957 (Gressitt); and 1 ♂ paratype (C.S.I.R.O., Canberra, Australia) from Rossel Is., **SE. Papua**, Oct. 1963 (W. W. Brandt).

Notes. Although this distinct species is placed in relation to others in the preceding *Key to Species*, I do not know its real relationships.

Genus *LACHNODERMA* Macleay

Macleay 1873, Trans. Ent. Soc. New South Wales 2, p. 321.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1347 (see for additional references and list of species).
Jedlicka 1963, Ent. Abhandlungen 28, p. 302.

Diagnosis. Form (Fig. 42) diagnostic; and see preceding *Key to Genera of Lebiini of New Guinea.*

Description. None required here.

Type species. Lachnoderma cinctum Macleay, of Australia.

Generic distribution. **SE. Asia** including **India** and **Japan**, and across the islands to the **Philippines**, **New Guinea**, and **Australia**.

Notes. I do not know how the different species of this genus are related to each other, and I do not know their habitats and habits.

Lachnoderma foveolatum Sloane

Sloane 1915, Proc. Linnean Soc. New South Wales 40, p. 472.

Description. None required here: the only species of the genus in New Guinea; readily recognized by form (Fig. 42), color (see *Notes* below), very coarse sculpture, and pubescence; wings full; length (to apex of elytra) *c.* 8 mm.

Type. From Cairns District, North Queensland, **Australia**; in Sloane Coll., Canberra (seen).

Occurrence in New Guinea. Only in **Papua**: 1, Yule Is. (Van Emden Coll., British Mus.); 1, Port Moresby, Sept. 24, 1955 (Gressitt), in light trap; 1, Kiunga, Fly R., Aug. 1–3, 1957 (W. W. Brandt, Bishop Mus.); 2, Laloki, 1909, 1910 (F. Muir, H.S.P.A.); 2, Dogura, Oct. 20–Nov. 19, 1955 (E. L. Cassidy, Bishop Mus.); 1, Goilala, Loloipa, Owen Stanley Rge., Jan. 1–15, 1958 (W. W. Brandt, Bishop Mus.).

Notes. Sloane's (Australian) type had the prothorax red and elytra wholly blue-black. Some Papuan specimens are similar but others have the sides of the prothorax blackish and the suture more or less red. The variation is apparently individual.

Genus *SINURUS* Chaudoir

Chaudoir 1869, Ann. Soc. Ent. Belgium 12, p. 129.
Jedlicka 1963, Ent. Abhandlungen 28, pp. 298, 368 (with key to the 3 known species).

Diagnosis. Form (Fig. 43) diagnostic; and see preceding *Key to Genera of Lebiini of New Guinea.*

Description. None required here, but note labrum long, emarginate, 6-setose; mentum with short tooth; ligula very wide (or fused with paraglossae), 4-setose; 4th hind-tarsal segments small, simply emarginate; claws with *c.* 4 teeth; ♂ front tarsi with 3 segments each with 2 slender squamae at apex; ♂ ♀ both with 1 seta each side last ventral segment.

Generic distribution. **SE. Asia** (**Burma**, etc.) across the islands to the **Philippines** and **New Guinea**.

Type species. Sinurus opacus Chaudoir (below).

Notes. "*Sinurus*?" *obscurus* Sloane, from Sattelberg, N-E. N.G., is transferred to *Mochtherus* (*q. v.*).

Sinurus somewhat resembles but is apparently *not* related to *Coptoglossus* of Australia.

Sinurus opacus Chaudoir

Chaudoir 1869, Ann. Soc. Ent. Belgium 12, p. 130.
Jedlicka 1963, Ent. Abhandlungen 28, p. 368.
Louwerens 1964, Ent. Tidskrift 85, p. 188.

Description (selected characters only). With characters of genus; form as in Figure 43; dull black; not setulose (except elytral margins very finely setulose) but entire upper surface heavily, finely, *c.* isodiametrically microreticulate. *Head* 0.75 and 0.72 width prothorax. *Prothorax* variable in shape and proportions; width/length 1.27 and 1.43; base/apex 1.21 and 1.11; sides slightly (variably) angulate near middle. *Elytra*: width elytra/prothorax 1.65 and 1.59; striae entire, well impressed, with long, impressed scutellar striae. *Measurements* (New Guinean specimens): length *c.* 10–11; width *c.* 4.4–5.2 mm.

Type. From **Borneo**; in Oberthür Coll., Paris Mus. (not seen).

Occurrence in New Guinea. **Papua**: 1, Popondetta, 25 m, May 1966 (Shanahan-Lippert, Bishop Mus.), in light trap. **N-E. N. G.**: 1, lower Busu R., Huon Pen., Mar. 28, 1955 (E. O. Wilson, M.C.Z.), in lowland rain forest. **West N. G.**: 1, Araucaria Camp, 800 m, Mar. 1939 (Toxopeus); 1, Mt. Gyifrie, sea level–1000 ft. (–*c.* 300 m), Apr. 1939 (Cheesman, S. Australian Mus. (*sic*)); 3, Waigeu Is., Camp 1, Mt. Nok, 2500 ft. (*c.* 760 m), May 1938 (Cheesman).

Measured specimens. Two (♂ ♀) from Waigeu.

Notes. The known range of *opacus* is from Perak (**Malay Pen.**) and perhaps **Burma** to the **Philippines** and **New Guinea**. The 7 New Guinean specimens vary in shape and proportions of prothorax. I cannot separate them satisfactorily from 1 from Perak and 4 from the Philippines that I have for comparison.

The few specimens of this species that I have collected (in the Philippines) were, I think, among fermenting leaves on the ground in rain forest.

Genus *STENOTELUS* Bouchard

Bouchard 1903, Ann. Soc. Ent. France 72, p. 174.
Jedlicka 1963, Ent. Abhandlungen 28, p. 371.

Diagnosis. See Figure 44, and *Key to Genera of Lebiini of New Guinea.*

Description. None required here, but note labrum rather narrow, subtruncate, not or at most faintly emarginate, 6-setose; ligula, 4th hind-tarsal segment, claws, and secondary sexual characters *c.* as described for *Sinurus* (above).

Type species. Stenotelus opacus Bouchard.

Generic distribution. **Malay Pen., Greater Sunda Islands**, and **Philippines** (*opacus*); **Celebes** (*piceus* Louwerens 1952, Treubia 21, p. 217); and now **New Guinea** (new species described below).

Notes. The species of this genus live on tree trunks in rain forest and are probably nocturnal.

Stenotelus spinosus n. sp.

Description. With characters of genus; form as in Figure 44; black, appendages dark; upper surface not pubescent, but elytral margins very finely short-setulose; rather shining, reticulate microsculpture *c.* isodiametric on front, somewhat transverse on disc of pronotum, more transverse on elytra; lower surface with sparse, irregular, short pubescence. *Head* 0.88 and 0.88 width prothorax; front weakly impressed each side anteriorly. *Prothorax* cordate with sides angulate before middle and strongly sinuate posteriorly (but sinuation less than in *opacus*); width/length 1.44 and 1.51; base/apex 1.07 and 1.07; apex margined, base not distinctly so; side margins strongly reflexed, each with a seta at angulation and at (blunted) basal angle; disc with usual middle line and transverse impressions, and faintly transversely strigulose. *Elytra*: width elytra/prothorax 1.67 and 1.72; humeri rounded but prominent; outer-apical angles spined, sutural angles acutely toothed; striae entire, moderately impressed (but scutellar striae faint); 3rd intervals each with 2 conspicuous seta-bearing punctures on inner edge slightly behind middle and near apex. *Inner wings* full. *Legs* slender; 4th hind-tarsal segment long, slender, scarcely emarginate; 5th segment with short, weak accessory setae; claws 4-toothed, the innermost tooth small. *Secondary sexual characters*: ♂ front tarsi scarcely dilated but with 3 segments 2-seriately squamulose (squamae often disarranged); ♂ with 1, ♀ 2 setae each side near apex last ventral segment. *Measurements*: length 7.4–8.5; width 3.1–3.7 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,402) and 13 paratypes from lower Busu R., Huon Pen., **N-E. N. G.,** May 4, 1955 (E. O. Wilson), in lowland rain forest; and additional paratypes as follows. **Papua**: 5, Dobodura, Mar.–July 1944 (Darlington); 1, Kiunga, Fly R., Aug. 24–27, 1957 (W. W. Brandt, Bishop Mus.); 4, Normanby Is., Wakaiuna Bay, Dec. 1–10, 1956, and Jan. 1–8, 1957 (W. W. Brandt, Bishop Mus.). **West N. G.**: 1, Mt. Nomo, S. of Mt. Bougainville, 700 ft. (*c.* 210 m), Feb. 1936 (Cheesman); 2, Waigeu Is., Camp 1, Mt. Nok, 2500 ft. (*c.* 760 m), May 1938 (Cheesman).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. S. spinosus is probably related to *S. piceus* Louwerens of Celebes (see under *Generic distribution*, above) but *piceus* is described as pubescent, with outer-apical angles of elytra only strongly toothed, while *spinosus* is not pubescent and has these angles spined, although the length of the spines varies.

The few specimens of this species that I collected were taken on trunks of standing and fallen trees in rain forest, mostly under burlap bands put out to trap nocturnal Carabidae.

Genus *MISCELUS* Klug

Klug 1834, Jahrbüchern Insectenkunde 1, p. 82.
Sloane 1907, Deutsche Ent. Zeitschrift for 1907, p. 473.
——— 1923, Trans. Ent. Soc. London for 1923, p. 250.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1359 (see for synonymy and additional references).
Andrewes 1935, Fauna British India, Coleop., Carabidae 2, p. 3.
Jeannel 1942, Faune de France, Coléop. Ca-

rabiques, Part 2, p. 1017 (footnote: included in "Pericalidae").
Jedlicka 1963, Ent. Abhandlungen 28, p. 398.

Diagnosis. Form (Fig. 45) characteristic (note form of eyes and genae, and of elytral apices); 1 or 2 setae over each eye (see *Notes* below); clypeus emarginate; labrum long, strongly rounded at apex, 6-setose, emarginate in some species but not in others; mentum toothed; ligula truncate, with usually 4 setae at apex, and additional setae in 2 irregular rows posteriorly; paraglossae longer than ligula, rounded, without setae; mesosternum wide between coxae; metasternum with longitudinal row of small tubercles each side of middle; wings full; 4th hind-tarsal segments small, oval, weakly emarginate; 5th segments with weak accessory setae; claws not toothed; ♂ front tarsi scarcely dilated but each with 3 segments 2-seriately squamulose below; ♂ with small patch of dense pubescence on lower edge of front femur near base; ♂ with 1, ♀ 2 setae each side last ventral segment, the inner setae in ♀ distant from margin.

Description. None required here.

Type species. Miscelus javanus Klug.

Generic distribution. SE. **Asia** (including **Ceylon** and **India**) to the **Philippines**, **New Guinea**, and part of Cape York, **Australia**.

Notes. The taxonomic position of this remarkable genus is doubtful, but will not be debated here. Sloane (1907) suggested a separate tribe for it, but one of the characters he stressed (the presence of only 1 seta over each eye) is inconstant within the genus (see below), and Sloane later (1923) doubted if tribal separation was valid. Andrewes (1935) did give it tribal rank.

The variation in number of setae over each eye in this genus is remarkable. It has been noticed before, but has not been adequately described. Some of the species, including the type of the genus (*javanus* Klug), have only 1 seta over each eye (Fig. 169), while others have 2 (Fig. 168). Many species of Carabidae belonging to genera that normally have 2 pairs of setae over the eyes are known to have lost the anterior pair, but the posterior setae then usually remain in their original position, between or slightly behind the posterior corners of the eyes. But in the *Miscelus* with a single seta over each eye, the seta is between the positions of the 2 original ones, and appears to correspond to the single seta over each eye of the tribe Harpalini. The New Guinean *Miscelus* with 1 and with 2 setae over each eye are apparently different species, but they are so similar that some authors (not noticing the setae) have failed to separate them or have treated them as "varieties." Intermediates do not usually occur: each individual has either 2 setae over each eye or 1 seta in intermediate position. The only exception I have found is a ♀ *unicolor* from Geelvink Bay (Paris Mus.) with 1 seta each side in intermediate position and also, but only on the left side, an additional seta posteriorly. Most common species of *Miscelus* have 1 seta over each eye, but forms with 2 occur in Ceylon and southeastern Asia as well as in New Guinea. I plan to consider this case in more detail in Part IV of the present work, in discussion of variation of taxonomic characters.

The variation of the labrum, entire or emarginate in different members of this genus, is noteworthy too.

The species of *Miscelus* that I have collected in New Guinea and the Philippines were on or under the bark of tree trunks or logs in rain forest.

KEY TO SPECIES OF *MISCELUS* OF NEW GUINEA

1. Elytral intervals 3, 5, 7 carinate at base; (2 setae over each eye; prothorax more quadrate; length 14.5 mm) (p. 93) ... *luctuosus*
– Elytral intervals not carinate at base ... 2
2. Two setae over each eye; labrum with apex emarginate; outer-apical elytral angles more narrowly rounded (p. 93) ... *sibling*
– One seta over each eye; labrum not emarginate; outer-apical angles of elytra more broadly rounded ... 3
3. Not spotted (p. 93) ... *unicolor*
– Elytra with subapical sutural red spot (p. 94) ... (*javanus*)

Miscelus luctuosus Putzeys

Putzeys 1875, Ann. Mus. Civ. Genoa 7, p. 725.
Andrewes 1935, Fauna British India, Coleop., Carabidae 2, p. 3, footnote.

Description. A large *Miscelus* with relatively square prothorax and with elytral intervals 3, 5, and 7 carinate at base; length 14.5 mm; other distinguishing characters including number of supraocular setae and emargination of labrum not noted by Putzeys, but Andrewes specifies 2 setae over each eye in this species.

Type. From Andai, **Papua**, New Guinea (Beccari and D'Albertis, Genoa Mus.) (not seen).

Occurrence in New Guinea. Apparently known only from the type.

Notes. I have seen no *Miscelus* with carinate elytral intervals from New Guinea, although carinate forms do occur elsewhere. I think the species is probably distinct. It should be easily recognizable.

Miscelus sibling n. sp.

Description. With characters of genus; form (Fig. 45) as usual; black, not spotted. *Head* 0.83 and 0.78 width prothorax; 2 setae over each eye; labrum emarginate at apex. *Prothorax* subcordate; width/length 1.24 and 1.22; base/apex 0.94 and 0.95; basal transverse impression very deep. *Elytra*: width elytra/prothorax 1.33 and 1.28; outer-apical angles narrowly rounded; intervals not carinate at base. *Wings* full. *Secondary sexual characters* as for genus. *Measurements*: length 12.0–14.5; width *c.* 4.1–4.5 mm.

Types. Holotype ♂ (Bishop Mus.) and 4 paratypes (2 in M.C.Z., Type No. 31,403) from Wau, Morobe Dist., **N-E. N. G.,** 1100–1200 m, dates in Sept., Oct., 1961, 1962 (holotype, 1100 m, Oct. 13, 1961) (Sedlaceks); and additional paratypes as follows. **Papua**: 2 (♀ ♀), Dobodura, Mar.–July 1944 (Darlington); 3, Goilala, Loloipa, Owen Stanley Rge., (1 specimen 975 m), Nov. 16–25, 1957 and Jan. 16–30, 1958 (W. W. Brandt, Bishop Mus.). **N-E. N. G.**: 2, Sattelberg, Huon Gulf, 1899 (Biró); 1, same locality (British Mus.); 1, Karimui, 1080 m, July 14–15, 1963, (Sedlacek); 1, Okapa, Aug. 6, 1965 (Hornabrook). **West N. G.**: 1, Tami, May 11, 1903 (Paris Mus.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. This and the following species (*unicolor*) are sympatric, occurring at several of the same localities, and both occur also in **New Britain**.

Miscelus unicolor Putzeys

Putzeys 1875, Ann. Mus. Civ. Genoa 7, p. 725.
?*stygicus* Putzeys 1875, Ann. Mus. Civ. Genoa 7, p. 726.
Sloane 1907, Deutsche Ent. Zeitschrift for 1907, p. 474.
?*morioformis* Macleay 1876, Proc. Linnean Soc. New South Wales 1, p. 168.
Sloane 1907, Deutsche Ent. Zeitschrift for 1907, p. 474.

Description. None required here. This insect, whatever its proper name (see discussion below), is the common, smaller, unspotted *Miscelus* of New Guinea, with 1 seta over each eye; labrum not emarginate; outer-apical angles of elytra broadly rounded; length (in New Guinea) 9.5–13.0 mm.

Types. Of *unicolor*, from **Java**, should be in Brussels Mus.; of *stygicus*, from Andai, **Papua**, now in Genoa Mus.; of *morioformis*, from Hall Sound, **Papua**, presumably in Macleay Mus., Sydney (none seen).

Occurrence in New Guinea. Common and widely distributed: 69 specimens, from numerous localities in all three political divisions of **New Guinea**; most at low altitudes, but reaching 1200 m at Wau.

Notes. The application of the name *unicolor* to this species in New Guinea is conventional. Without revising the whole genus, which I cannot do, I cannot decide the relationships of the New Guinean population to populations farther west, nor can I decide the relationship of the unspotted populations to spotted *javanus*.

This species ("*morioformis*") is recorded

from Coen, halfway up the Cape York peninsula, Australia, by Sloane (1907).

(*Miscelus javanus* Klug)

Klug 1834, Jahrbüchern Insectenkunde 1, p. 82, pl. 1, fig. 9.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1359 (see for many additional references and conventional synonymy).

Description. None required here. If the typical form of this species occurs in New Guinea, it is the only spotted *Miscelus* there. Length *c.* 8.5–11.0 mm.

Types. From **Java**; now should be in Berlin U. Zool. Mus. (not seen).

Occurrence in New Guinea. Doubtful: New Guinea has sometimes been included in the range of this species, but the synonymy is confused and old published records are doubtful, and I have seen no specimens from the island.

Notes. The supposed unspotted form of *javanus*, *unicolor* Putzeys, which may or may not really be conspecific, does occur in New Guinea and is treated above.

Genus *HOLCODERUS* Chaudoir

Chaudoir 1869, Ann. Soc. Ent. Belgium 12, p. 153.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1360 (see for additional references and list of species).
Jedlicka 1963, Ent. Abhandlungen 28, p. 396.

Diagnosis. Form (of New Guinean species) as in Figure 46 (but form diverse in species outside New Guinea); color metallic; pronotum with 1 or more strong setae at or near each *anterior* angle; elytral apices unarmed but very strongly sinuate-emarginate; length *c.* 8–9 mm.

Description (selected additional characters only). Not pubescent above (sparsely so below). *Head*: labrum moderately long, subtruncate or slightly emarginate, 6-setose; mentum toothed; labium 4-setose, paraglossae distinct, longer than labium, without setae. *Prothorax*: pronotum with middle line coarse. *Elytra*: 3rd intervals with 3 or more punctures, anterior puncture on outer and middle and posterior punctures on inner edge of intervals. *Inner wings* full. *Legs*: 4th hind-tarsal segments scarcely longer than wide, shallowly emarginate; 5th segments with accessory setae; claws with *c.* 4 weak teeth grouped near middle. *Secondary sexual characters*: ♂ front tarsi with 3 segments 2-seriately squamulose (apical squamules of 3rd segment overlapping but not attached to 4th segment); 2 setae each side last ventral segment in both sexes.

Type species. Holcoderus praemorsus Chaudoir, of Ceylon.

Generic distribution. **SE. Asia** (including **Ceylon** and **India**) and across the islands to the **Philippines**, **New Guinea**, and northern **Australia**.

Notes. This genus is relatively diverse in the western part of the Malay Archipelago. A single species group extends eastward to New Guinea and Australia (see *Notes* under following species).

Holcoderus elongatus (Saunders)

Saunders 1863, Trans. Ent. Soc. London (3) 1, p. 466, pl. 18, fig. 5a-b (*Catascopus*).
Wallace 1863, in Saunders paper cited above, p. 460 (*Catascopus*).
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1360 (see for additional references).
Andrewes 1946, Proc. R. Ent. Soc. London (B) 15, p. 87.

Description. None required here. See Figure 46, characters stated under genus, the following *Notes*, and Andrewes' (1946) detailed redescription. Length *c.* 8–9 mm.

Type. From Dorey, **West N. G.,** collected by Wallace; type in Berlin U. Zool. Mus. (not seen).

Occurrence in New Guinea. Probably throughout **New Guinea**: 24 specimens, from all 3 political divisions of the island; most from low altitudes (including Dobodura), but 2 from Wau, 1150, 1200 m, and 1 from Waigeu Is., 2500 ft. (*c.* 760 m).

Notes. The variability of this species (if it is all one species) is remarkable. The form is relatively constant, but color varies from wholly blue or green or coppery to bicolored with blue or green elytra and

bright copper or violet prothorax. The punctation of the pronotal disc varies: the disc is always closely punctate in part, but a variable area centered near or behind the middle is usually less punctate. And the lateral prothoracic setae vary in number and position: at least 1 strong seta is always present (unless broken off) at each posterior angle, at the angulation of the prothoracic margin near or just before the middle on each side, and at each anterior angle, but some individuals have additional lateral setae of different sizes between the anterior and median setae, and the occurrence of these extra setae is sometimes strikingly unsymmetric.

This variation makes exact definition of the species and comparison with other species difficult. I think, however, that all New Guinean specimens of the genus can be referred to *elongatus*, that the latter is probably confined to New Guinea and adjacent small islands, and that closely related forms occur both in the western Malay Archipelago (e.g., *gracilis* Oberthür) and in tropical northeastern Australia (*coeruleipennis* Sloane).

I do not know the habits of *Holcoderus* but I suspect that *elongatus* may inhabit tree tops. This would account for my failure to find the species' natural habitat. My single specimen from Dobodura was taken at light, but this seems to be exceptional. No other specimens are labeled as from light traps, and the bright color suggests partly diurnal habits. However, Wallace (1863) says that *elongatus* flies at dusk.

Genus *MINUTHODES* Andrewes

Andrewes 1941, Ann. Mag. Nat. Hist. (11) 7, p. 317.
Platia Chaudoir 1869, Ann. Soc. Ent. Belgium 12, p. 155 (not *Platia* Hübner 1820, *et al.*).
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1361.
Andrewes 1939, Ann. Mag. Nat. Hist. (11) 3, p. 137.

Diagnosis. Usually immediately recognizable by form (head very wide but eyes smaller than usual in tribe, prothorax usually *c.* 2× wider than long, and elytra short and subquadrate), small size (4–6.5 mm), and other characters given in the *Key to Genera of Lebiini.*

Description. Form as indicated above and in Figures 47–58; upper surface especially of elytra often (not always) with short pubescence, and elytra often (not always) with color patterns of many pale lines or pale blotches. *Head* wide but with relatively small eyes; antennae rather short; 2 setae over each eye; front slightly impressed each side anteriorly; clypeus subtruncate, with 1 seta each side; labrum rather long, irregularly rounded or subtruncate anteriorly, 6-setose; mentum toothed; ligula with 2 principal setae and 1 or more much smaller setae; paraglossae attached to ligula, longer, broadly rounded, without setae. *Prothorax* very wide, scarcely lobed at base, very broadly emarginate anteriorly, with wide, depressed or slightly reflexed lateral margins; each margin with a seta at basal angle and at or before middle of length; disc with usual middle line, weak anterior transverse impression, deeper subbasal transverse impression. *Elytra* very wide and short; humeri prominent but rounded; apices obliquely sinuate-truncate; striae entire; 3rd interval with 3 dorsal punctures at least in some species, but these punctures often difficult to distinguish amid other punctation and pubescence. *Inner wings* full. *Lower surface* not or not extensively pubescent. *Legs* rather slender; tarsi sparsely setose above; 4th hind-tarsal segment weakly emarginate; 5th segment with accessory setae; claws each with *c.* 3 short, weak (vestigial?) teeth. *Secondary sexual characters*: ♂ front tarsi slightly dilated, with numerous narrow squamae not arranged in 2 series; 2 setae each side near apex last ventral segment in both sexes; and see under *M. sexualis* for special secondary sexual characters of this species.

Type species. Platia lineella Chaudoir,

fixed by Andrewes 1939, p. 137. Andrewes designated this species as the type of *Platia* Chaudoir, and it is therefore also the type of *Minuthodes*, proposed as a new name for preoccupied *Platia*.

Generic distribution. Nine species on **New Guinea** and neighboring small islands, fewer on the **Moluccas**, **Celebes**, **New Britain**, and northern **Australia**; none known elsewhere.

Notes. This is a very distinct genus, confined to a limited geographic area (above). The insects live wholly or chiefly on tree trunks and fallen logs in rain forest. Although they are winged, they do not often fly to light, which suggests that they are mainly diurnal.

The striking secondary sexual characters of the ♀ of *sexualis* (and of the related *brachydera* Chaudoir of the Moluccas) are unique, so far as I know.

The Greek ending *-odes* does not indicate gender, and Andrewes did not specify gender when he proposed *Minuthodes* to replace *Platia*. I therefore tentatively treat the name as feminine, to make the gender consistent with *Platia*.

KEY TO SPECIES OF *MINUTHODES* OF NEW GUINEA

1. Elytra marked with numerous longitudinal pale lines, sometimes much interrupted ... 2
– Elytra differently marked or not marked ... 5
2. Median-lateral prothoracic setae before middle, *c.* ⅓ of prothoracic length from apex (p. 96) ... *papuana*
– Median-lateral setae near middle of prothoracic length ... 3
3. Elytra dull; (length *c.* 6.5 mm) (p. 97) ... *rossi*
– Elytra shining (under pubescence) ... 4
4. Smaller (*c.* 4.8 mm) (p. 97) ... *sedlacekorum*
– Larger (*c.* 6.2 mm) (p. 97) ... *subnitens*
5. Metallic blue black (p. 98) ... *metallica*
– Not metallic, black with or without reddish yellow spots ... 6
6. Elytra not plainly pubescent (pubescence actually present but very short, scarcely visible); ♀ last ventral segment usually with square excision at apex, and ♀ hind femur with flange or tooth near apex anteriorly; (shining black, unspotted or 2- or 4-spotted, but if spotted at least 1 pair of spots elongate) ... *sexualis*
6a. Elytra not spotted, or each with a single pale dash *behind middle* (Fig. 55) (Papua) (p. 98) ... *sexualis s. s.*
6b. Elytra *either* each with a single *basal* dash, *or* 4-spotted with posterior spots elongate (Figs. 56, A) (central and western New Guinea) (p. 99) ... subsp. *signata*
– Elytra plainly pubescent; ♀ not as described ... 7
7. Black, not spotted; (Goodenough Is.) (p. 99) ... *simplex*
– Each elytron with 2 rather large red spots; (mainland of New Guinea) ... 8
8. Smaller (4.0–5.3 mm); elytral spots *c.* regular in outline (Fig. 57) (p. 100) ... *regularis*
– Larger (5.5–5.8 mm); elytral spots irregular in outline (Fig. 58) (p. 100) ... *irregularis*

Minuthodes papuana (Sloane)

Sloane 1917, Proc. Linnean Soc. New South Wales 42, p. 433 (*Platia*).

Agonochila lineella Sloane 1907, Deutsche Ent. Zeitschrift for 1907, p. 182 (not *Platia lineella* Chaudoir 1869).

Description. With characters of genus; form as in Figure 48; black or brownish black, appendages irregularly brown, elytra with complex, variable pattern of pale lines (Figs. 48, A); head and pronotum moderately shining although closely punctate, elytra roughened and duller, and upper surface especially elytra with short but distinct pubescence. *Head* 0.78, 0.79, 0.81, and 0.80 width prothorax. *Prothorax*: width/length 2.00, 2.04, 2.00, and 1.96; base/apex 1.04, 1.06, 1.05, and 1.04; median-lateral setae *c.* ⅓ prothoracic length before apex. *Elytra*: width elytra/prothorax 1.46, 1.47, 1.45, and 1.44; outer-apical angles moderately and sutural angles more narrowly rounded. *Secondary sexual characters* as for genus; ♀ last ventral segment and hind femora not modified. *Measurements*: length 4.4–5.2; width 2.2–2.6 mm.

Type. From Herbertshöhe, "New Pomerania" (= **New Britain**); should be in Deutsches Ent. Institut, Berlin (not seen).

Occurrence in New Guinea. Common and widely distributed at low altitudes throughout **New Guinea**, and occurring also on Normanby, Goodenough, and Ros-

sel Is.: 142 specimens seen in all; reaches at least 1200 m at Wau.

Measured specimens. A ♂ ♀ from Dobodura and ♂ ♀ from Normanby Is., figures listed in this order.

Notes. This species occurs on **New Britain** as well as New Guinea, and it apparently represents a group of species (or subspecies?) that includes *lineella* (Chaudoir) of the Moluccas (I have a series from Morotai Is.) and *queenslandica* (Sloane) of North Queensland, Australia (I have specimens from near Cairns and from the Rocky Scrub, Cape York Pen.). The different forms of this group are distinguished mainly by elytral color pattern: *lineella* has a relatively simple pattern of 3 pale lines on each elytron (Fig. 49); *queenslandica*, a complex pattern of short lines, with 1 or 2 longer lines formed by fusion of short ones (Fig. 50); and *papuana*, a *c.* intermediate but very variable pattern (Figs. 48, A). Some specimens from New Guinea have elytral markings like those of the type (from New Britain) as described by Sloane.

The elytral pattern of *papuana* may be genetically dimorphic at some localities (cf. the dimorphism of markings described for *sexualis*), but the variation as a whole is so complex that I have been unable to analyze it satisfactorily.

Minuthodes rossi n. sp.

Description. With characters of genus; form as in Figure 51; brownish piceous, elytra with pattern of many short narrow longitudinal pale lines in 3 transverse series; head and prothorax moderately shining although closely punctate, elytra roughened and duller, and upper surface especially elytra with short pubescence. *Head* 0.71 width prothorax, narrower than usual in genus. *Prothorax*: width/length 1.79; base/apex 1.21; sides irregularly broadly rounded, almost subangulate at middle, slightly sinuate before well defined but slightly obtuse basal angles; median-lateral setae near middle of prothoracic length. *Elytra*: width elytra/prothorax 1.37; outer-apical angles broadly rounded, apices subangulate *c.* opposite ends 2nd intervals, sutural angles narrowly rounded. *Secondary sexual characters* of ♂ as for genus; ♀ unknown. *Measurements*: length 6.5; width 3.2 mm.

Type. Holotype ♂ (California Acad.) from Maffin Bay, **West N. G.,** Sept. 1944 (E. S. Ross); the type is unique.

Notes. This seems to be a distinct species although known from a single specimen from a well collected lowland locality.

Minuthodes sedlacekorum n. sp.

Description. With characters of genus; form as in Figure 52; irregular reddish piceous with complex elytral pattern of many short longitudinal pale lines in 3 irregular transverse series, appendages irregular testaceous and brown; upper surface including elytra shining although pubescent and moderately closely punctate. *Head* 0.74 width prothorax. *Prothorax*: width/length 1.78; base/apex 1.23; sides broadly arcuate, slightly sinuate before well defined posterior angles; median-lateral setae near middle of prothoracic length. *Elytra*: width elytra/prothorax 1.49; outer-apical angles broadly rounded, sutural angles narrowly rounded; striae coarsely but irregularly punctate, intervals more finely punctate. *Secondary sexual characters* of ♂ as described for genus; ♀ unknown. *Measurements*: length 4.6–4.8; width 2.3 mm.

Type. Holotype ♂ (Bishop Mus.) from Wau, Morobe Dist., **N-E. N. G.,** 1050 m, Sept. 16, 1961 (Sedlaceks); 1 ♂ paratype (M.C.Z., Type No. 31,588), Pindiu, Huon Pen., **N-E. N. G.,** 870–1300 m, Apr. 21–22, 1963 (Straatman).

Notes. More material may show that this is a (distinct) geographic representative of the preceding species, *rossi.*

Minuthodes subnitens n. sp.

Description. With characters of genus; black, elytra with pattern (Fig. 53) of many short longitudinal pale lines in 3

irregular transverse series, appendages reddish testaceous; rather shining although whole upper surface rather closely punctate and short-pubescent. *Head* 0.74 width prothorax; as usual in genus except labrum broadly emarginate at apex (an individual rather than specific character?). *Prothorax*: width/length 1.84; base/apex 1.25; base more lobed than usual; sides broadly arcuate, sinuate before *c.* right posterior angles, with median-lateral setae near middle of length. *Elytra*: width elytra/prothorax 1.44; outer-apical angles broadly and sutural angles more narrowly rounded; striae impressed but not more coarsely punctate than intervals. *Secondary sexual characters* of ♂ as for genus; ♀ unknown. *Measurements*: length 6.2; width 2.8 mm.

Type. Holotype ♂ (British Mus.) from Mt. Baduri, Japen Is., **West N. G.,** 1000 ft. (305 m), Aug. 1938 (Cheesman); the type is unique.

Notes. This may (or may not) be a (distinct) geographic representative of the 2 preceding species, *rossi* and *sedlacekorum.*

Minuthodes metallica n. sp.

Description. With characters of genus; form as in Figure 47; black, elytra with strong blue-purple reflections, appendages dark brown; shining but short-pubescent, head and disc of pronotum sparsely punctulate, elytra rather closely punctate as well as punctulate. *Head* 0.79 width prothorax. *Prothorax*: width/length 1.98; base/apex 1.15; sides rather strongly rounded anteriorly, nearly straight and converging posteriorly until abruptly sinuate just before *c.* right posterior angles; median-lateral setae *c.* ⅓ of prothoracic length from apex. *Elytra*: width elytra/prothorax 1.41; outer-apical angles broadly and sutural angles more narrowly rounded; striae obsolete. *Secondary sexual characters* of ♂ as for genus; ♀ unknown. *Measurements*: length 5.0; width 2.6 mm.

Type. Holotype ♂ (British Mus.) from Kokoda, **Papua**, 1300 ft. (*c.* 400 m), Sept. 1933 (Cheesman); 1 ♂ paratype (S. Australian Mus.), Mt. Lamington, **Papua**, 1300–1500 ft. (*c.* 400–460 m) (McNamara).

Notes. This is the only metallic *Minuthodes* known from New Guinea.

Minuthodes sexualis n. sp.

Description. With characters of genus; form as in Figure 55; black or brownish black, appendages dark, elytra *either* without markings *or* each with 1 pale dash on 5th interval behind middle; shining, pubescence of most of upper surface absent or so short as scarcely to be visible. *Head* 0.88 and 0.86 width prothorax; front sparsely punctulate. *Prothorax* wide but with relatively narrow base; width/length 2.03 and 2.03; base/apex 0.98 and 1.00; median-lateral setae *c.* ⅓ of prothoracic length from apex; disc sparsely punctulate. *Elytra*: width elytra/prothorax 1.35 and 1.34; outer-apical angles broadly rounded, sutural angles blunted or subdenticulate (slightly variable); striae impressed and punctate; intervals convex, without distinct reticulate microsculpture, sparsely irregularly punctate or punctulate. *Secondary sexual characters*: ♂ as for genus; ♀ usually with last ventral segment with conspicuous *c.* square excision at apex, and ♀ always with a short ridge or blunt tooth on anterior edge hind femur near apex. *Measurements*: length 4.5–5.6; width 2.0–2.5 mm.

Types. Holotype ♀ (M.C.Z., Type No. 31,404) and 1 ♀ paratype from Dobodura, **Papua**, Mar.–July 1944 (Darlington); and additional paratypes as follows, all from **Papua**: 7, Oro Bay near Dobodura, Dec. 1943–Jan. 1944 (Darlington); 2, Kokoda-Pitoki, 450 m, Mar. 24, 1956 (Gressitt); 1, Mafulu, 4000 ft. (1220 m), Dec. 1933 (Cheesman); 1, "Daradae Pl'n," 80 km N. Port Moresby, 500 m, Sept. 6, 1959 (T. C. Maa, Bishop Mus.); 1, Koitakinumu, Apr. 1, 1918 (J. T. Zimmer, Chicago Mus.); 10, Mt. Lamington, 1300–1500 ft. (*c.* 400–460 m) (McNamara, S. Australian Mus.).

Measured specimens. A ♂ paratype from Kokoda-Pitoki and the ♀ holotype.

Notes. This species is evidently closely related to *M. brachydera* Chaudoir of the Moluccas (described from Batjan Is. and represented by a series from Morotai Is. in the M.C.Z.), but *sexualis* lacks the metallic tone of the elytra of *brachydera*, and the ridge or tooth of the ♀ femur, not quite apical in *sexualis*, is fully apical in *brachydera*. These 2 forms, with the "subspecies" described below, may eventually be considered conspecific, but I prefer to treat the New Guinean populations as a separate species until their interrelationships are better understood.

The material before me suggests that *sexualis* may be dimorphic in two ways. The pale dash on the elytron is either present or absent but never partially developed in all specimens seen, and is sometimes present or absent in different individuals from single localities, for example in those from Oro Bay. And, although most females have a square excision on the last ventral segment as described, 1 of 2 females from Dobodura has the last ventral segment only acutely emarginate.

Minuthodes sexualis signata n. subsp.

Description. As typical *sexualis* (above) except for markings (Figs. 56, A): elytra each with a broad posthumeral spot and usually also a narrow stripe behind middle (chiefly on 5th interval but bent inward posteriorly) reddish or yellow (some individuals from Wau have only the posthumeral stripe, as noted below). *Head* 0.89 and 0.90 width prothorax. *Prothorax*: width/length 1.96 and 2.02; base/apex 1.03 and 1.02. *Elytra*: width elytra/prothorax 1.41 and 1.42. *Secondary sexual characters* as in typical *sexualis*. *Measurements*: length 4.3–5.8; width 2.0–2.9 mm.

Types. Holotype ♀ (M.C.Z., Type No. 31,405) and 3 paratypes from Sambeang, Mongi Watershed, Huon Pen., **N-E. N. G.,** 400 m, Apr. 21, 1955 (E. O. Wilson); and additional paratypes as follows, all from **N-E. N. G.**: 1, Butala, Mongi R., Huon Pen., Apr. 22, 1955 (Wilson, M.C.Z.); 2, lower Busu R., Huon Pen., Apr. 22 and May 12, 1955 (Wilson, M.C.Z.), in lowland rain forest; 2, Finschhafen, Apr. 17 and May —, 1944 (E. S. Ross, California Acad.); 1, Wantoat, Finisterre Rge., 4000 ft. (1220 m), Sept. 9, 1957 (Munroe & Holland, Canadian National Coll.); 1, Lae, 10 m, July 5, 1962 (Sedlacek); 9, Wareo, Finschhafen (L. Wagner, S. Australian Mus.); 16, Simbang, Huon Gulf, 1898 (Biró).

Additional material. **N-E. N. G.**: 11, Wau, Morobe Dist., altitudes from 1050 to 1200 m, dates in Jan., Mar., Aug., Sept., Oct., 1961–1963 (Sedlaceks). **West N. G.**: 42, from localities scattered from Hollandia to the Vogelkop.

Measured specimens. A ♂ paratype from Finschhafen and the ♀ holotype.

Notes. Because this species varies geographically, I have restricted the type series to specimens from a few localities in a comparatively small area.

The elytral markings are essentially constant, with only minor variation, in all specimens except those from Wau, of which only 4 have typical markings, while 7 have markings reduced to a single posthumeral dash on each elytron (Fig. 56 A). I have seen no intermediates between these two patterns. Inheritance of marking in this case, as in typical *sexualis*, may be simply Mendelian.

Minuthodes simplex n. sp.

Description. With characters of genus; form as in Figure 54; black, not marked, appendages brown; surface shining but short-pubescent, head and prothorax punctulate, elytra more closely punctate. *Head* 0.79 width prothorax. *Prothorax*: width/length 2.0; base/apex 1.15; sides irregularly rounded anteriorly, nearly straight and converging posteriorly, abruptly sinuate just before *c.* right posterior angles; median-lateral setae *c.* ⅓ of prothoracic length from apex. *Elytra*: width elytra/prothorax 1.45; outer-apical angles broadly rounded, apices bluntly subangulate opposite ends 2nd intervals, sutural angles narrowly rounded;

striae impressed, not well defined, not specially punctate. *Secondary sexual characters* of ♂ unknown; of ♀ normal, without special characters of *sexualis*. *Measurements*: length 4.7; width 2.4 mm.

Type. Holotype ♀ (Manson Valentine Coll.) from Goodenough Is., **Papua**, Oct. 14, 1943 (W. B. Jones); the type is unique.

Notes. I do not know whether this insular species is represented on New Guinea proper.

Minuthodes regularis n. sp.

Description. With characters of genus; black or brownish black, appendages brownish testaceous, elytra each with *c.* regular posthumeral and subapical spots reddish yellow (Fig. 57); rather shining although surface pubescent and head and pronotum irregularly punctulate or punctate and elytra more closely punctate. *Head* 0.81 and 0.79 width prothorax. *Prothorax*: width/length 1.96 and 1.96; base/apex 1.13 and 1.18; sides rounded anteriorly, *c.* straight and converging posteriorly, briefly but often abruptly sinuate before *c.* right or slightly blunted posterior angles; median-lateral setae *c.* ⅓ of prothoracic length from apex. *Elytra*: width elytra/prothorax 1.46 and 1.44; outer-apical angles broadly and sutural angles narrowly rounded; striae impressed but not sharply limited and not more coarsely punctate than intervals. *Secondary sexual characters* as for genus. *Measurements*: length 4.0–5.3; width 2.1–2.8 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,406) and 3 paratypes from Dobodura, **Papua**, Mar.–July 1944 (Darlington); and additional paratypes as follows. **Papua**: 1, Fly R. 5 miles below Palmer R., May 23–31, 1936 (Archbold Exp., A.M.N.H.). **N-E. N. G.**: 1, Saidor, Gabumi Village, Finisterre Rge., July 1–21, 1958 (W. W. Brandt, Bishop Mus.); 2, Wau, Morobe Dist., 1150, 1200 m, Sept. 7, 1961, Sept. 26–27, 1964 (Sedlaceks); 1, Swart Vy., Karubaka, 1500 m, Sept. 20, 1958 (Gressitt), in light trap; 1, Wewak, 2–20 m, Oct. 11, 1957 (Gressitt). **West N. G.**: 1, vic. Hollandia, July–Sept. 1944 (Darlington); 1, same locality, 60 m, Nov. 26, 1954 (L. D. Brongersma, Leiden Mus.); 1, Maffin Bay, Aug. 1944 (E. S. Ross, California Acad.); 1, Sibil, Star Rge., 1260 m, Aug. 24, 1959 (Leiden Mus.); 1, mountain slope above Bernhard Camp, 100 m, Apr. 1939 (Toxopeus).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. *M. regularis* is apparently widely distributed in New Guinea at moderate altitudes.

Minuthodes irregularis n. sp.

Description. With characters of genus; black, elytra each with 2 (posthumeral and subapical) irregular reddish yellow spots (Fig. 58), antennae and palpi reddish testaceous, legs much darker; rather shining although surface short-pubescent, head punctulate at middle and strigose at sides, pronotal disc ± punctulate, elytra more closely punctate and in part faintly microreticulate. *Head* 0.75 and 0.77 width prothorax, as described for genus except strigose at sides and with labrum distinctly emarginate (both specimens). *Prothorax*: width/length 1.97 and 1.86; base/apex 1.12 and 1.11; sides broadly rounded, converging posteriorly, briefly sinuate before *c.* right posterior angles; median-lateral setae *c.* ⅓ (or slightly more) of prothoracic length from apex. *Elytra*: width elytra/prothorax 1.34 and 1.42; outer-apical angles broadly and sutural angles narrowly rounded; striae impressed but not sharply limited and not more coarsely punctate than intervals. *Secondary sexual characters* of ♂ normal; ♀ unknown. *Measurements*: length 5.5–5.8; width 2.8–2.9 mm.

Types. Holotype ♂ (U.S.N.M.) and 1 ♂ paratype (M.C.Z., Type No. 31,407) both from Hollandia, **West N. G.**, May 1945 (B. Malkin).

Notes. This and the preceding species (*regularis*) are superficially similar, but the two are sympatric and differ in sig-

nificant details, and they may not be closely related.

Genus *CATASCOPUS* Kirby

Kirby 1825, Trans. Linnean Soc. London 14, p. 94.
Wallace 1863, *in* Saunders, Trans. Ent. Soc. London (3) 1, pp. 460–461 (habits).
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1362 (see for additional references).
Andrewes 1937, Proc. R. Ent. Soc. London (B) 6, pp. 187 ff. (key to species of India, etc.).
Jeannel 1949, Coléop. Carabiques de la Région Malgache, Part 2, p. 1007 (in text).
Jedlicka 1963, Ent. Abhandlungen 28, p. 397.

Diagnosis. See *Key to Genera of Lebiini of New Guinea.* In practice most *Catascopus* can be recognized by their medium to large size (in the tribe), form (with prominent eyes, etc.), and usually metallic coloration, without geometric elytral markings.

Description (characters common to New Guinean species of the genus, with exceptions noted). Form variable (Figs. 59–64), slender and convex to broad and depressed; color metallic (except in *brunneus*), usually green, sometimes partly or wholly blue or purple; size *c.* 8–22 mm; upper surface not pubescent, more or less shining (elytra sometimes dull), with microsculpture present or absent, if present *c.* isodiametric on head, somewhat transverse on pronotum and elytra. *Head* with prominent eyes; 2 setae over each eye; front longitudinally impressed each side; clypeus ± emarginate, 1-setose each side; labrum long, rounded at apex, emarginate at apex, 6-setose; antennae with 4 segments glabrous except for tactile setae and a little pubescence at apex 4th segment; mentum toothed; ligula 4-setose, paraglossae much longer, not setose; palpi slender. *Prothorax* quadrate or subcordate; base not lobed; lateral margins variable, each with 1 seta at base and 1 or more near or before middle; base with entire margin (except in *dobodura*), apex at middle not margined or weakly so; disc with impressed middle line, deep posterior transverse impression, and usually weak (but variable) anterior transverse impression. *Elytra* with humeri prominent but rounded (humeral margins slightly thickened in *laevigatus*); apices variable, as described for separate species, often toothed or spined; striae entire, punctation variable; 7th intervals usually and 5th sometimes raised or carinate at base; 3rd intervals usually 3-punctate (2-punctate in *latus*), with punctures often near middle of intervals (not on edges) but position variable. *Inner wings* full. *Lower surface* with some inconspicuous, short, sparse pubescence (much more pubescence along midline in *wallacei* group); last ventral segment usually slightly, broadly (variably) emarginate in both sexes. *Legs* slender; 4th hind-tarsal segments small, weakly emarginate; 5th segments with accessory setae; claws not toothed. *Secondary sexual characters*: ♂ front tarsi slightly (scarcely) dilated, with 3 segments 2-seriately squamulose below; ♂ with 1, ♀ 2 or 3 setae each side last ventral segment (except ♂ as well as ♀ with 2 or 3 setae each side in *strigicollis*).

Type species. C. hardwickei Kirby, of India.

Generic distribution. Represented in 3 separate tropical areas: numerous in tropical **Asia** and the **Malay Archipelago** (and a few in tropical **Australia**); fewer in tropical **Africa** (absent in Madagascar); and probably represented also in tropical **South** and **Central America** (but Jeannel doubts whether the American species should be included in the genus).

Notes. Although *Catascopus* occurs also in Africa and probably in tropical America, its headquarters are in tropical Asia and the Malay Archipelago. The greatest numbers of species are on the Malay Pen. and the western part of the Archipelago, but the genus is well represented east to New Guinea, where 14 species are now known. Of these 14 species, *elegans* and *smaragdulus* range from the mainland of Asia across the islands to northern Australia; *facialis*, from Asia to western New Guinea but not Australia; and *laevigatus* is common to the

Moluccas and New Guinea. Most other New Guinean species of the genus are endemic, and one group of striking species (the *wallacei* group) has probably evolved on New Guinea and is now represented there by at least 5 species. Only 5 *Catascopus* (2 of them endemic) occur in Australia, and they seem to represent 5 separate invasions from New Guinea. So, the distribution of the genus suggests multiple dispersal eastward across the Malay Archipelago, with considerable speciation and some secondary radiation on New Guinea, and minor invasions of northern Australia.

All the *Catascopus* that I know live on tree trunks and fallen logs in rain forest. They are all winged, and very active. Concerning their habits, Wallace (1863) says,

> "The species of the genus *Catascopus* are seminocturnal in their habits, never flying except at night. The species taken at Dorey (viz., *Wallacei*, W. W. S.; *elongatus*, W. W. S. [= *Holcoderus*]; *Aruensis*, W. W. S.; *amoenus*, Chaud. [= *elegans*]) flew against me at dusk. The greater part of the species and individuals I have taken have, however, been captured under the decaying bark of fallen trees.
>
> "As soon as the bark of a tree splits and cracks so as to separate it from the wood, the *Catascopi* frequent it, but I could scarcely ever capture them in that position, owing to their great activity and the force required to tear off the bark. After a tree has lain about a year the bark becomes rotten and can be easily broken off, and then, by the assistance of a net, the insects which lurk beneath it can be more easily captured. The larger species found in Malacca, Borneo and Singapore used frequently to be seen coursing along the surface of some immense fallen trees, from one crack to another, their brilliant bodies glittering splendidly in the sunlight.
>
> "To capture them was by no means easy, as they would get under the trunk where it touched the ground, if closely pursued and no friendly crevice was at hand. Many an hour have I pleasantly spent in hunting them in the dense swampy forests of Borneo. In Malacca and Singapore the spice of fear and danger would be added to the interest of the sport, owing to the probable vicinity of tigers, who might at any moment be watching us as eagerly and with as deadly a purpose as we were watching the poor *Catascopi*.
>
> "However closely pursued I have never seen one of these insects fly in the day time, neither do they come out at all into the light, except to visit some part of the trunk they reside in, to which the subcortical passages do not extend. . . . The species and individuals of this genus are much more abundant in Malacca and Borneo than in the equally luxuriant forests of the Molucas and New Guinea."

Key to Species of *Catascopus* of New Guinea

1. Elytral apices without acute teeth or spines at or near sutural angles 2
– Elytral apices acutely toothed or spined at or near sutural angles 4
2. Outer elytral angles rounded or very obtusely angulate 3
– Outer elytral angles right or (if obtuse) very well defined, sometimes denticulate; length *c.* 10.5–13.5 mm (p. 103) ... *facialis*
3. Color metallic green or blue; length *c.* 8.5–10 mm (p. 103) ..... *elegans*
– Color brown or bronze; length *c.* 12–13 mm (see also *Notes* under this species) (p. 104) ..... *brunneus*
4. Prothorax with 2 or more lateral setae near or before middle on each side (if setae broken off, positions shown by punctures); form relatively broad and depressed 5
– Prothorax with only 1 median-lateral seta each side; form variable but often more slender and convex 7
5. Two or 3 setae near or before middle each side; length 17.5 mm (see also *Description*) (p. 104) ..... *latus*
– More (often 6) such setae each side ... 6
6. Elytral striae lightly impressed; elytral margins wider than usual near middle; length *c.* 10–11 mm (p. 104) ... *laevigatus*
– Elytral striae deeper; elytral margins less wide; length *c.* 12–13 mm (see also *Description*) (p. 105) ..... *sidus*
7. Outer elytral angles blunt or angulate but not spined; relatively small species, usually under 11 mm 8
– Outer elytral angles spined; larger species, 13–21 mm (*wallacei* group) 10
8. Outer elytral angles rounded or obtuse; smaller, *c.* 7.5–8.0 mm (p. 105) ..... *smaragdulus*
– Outer elytral angles usually *c.* right or acute, *or* if obtuse, size larger 9
9. Prothoracic margins narrow (almost as in *elegans*); basal marginal line of pronotum *c.* obsolete; reticulate microsculpture obsolete on disc of elytra; length *c.* 9–10 mm (p. 106) ..... *dobodura*
– Prothoracic margins slightly wider; basal marginal line of prothorax impressed;

reticulate microsculpture distinct on disc of elytra; length 8.7–9.3 mm (p. 106) ... *biroi*

10. Prothoracic margins moderate ... 11
– Prothoracic margins wider (see *Descriptions*) ... 13
11. Fifth elytral intervals not or not much raised near base; length *c.* 13–15.5 mm (p. 107) ... *aruensis*
– Fifth as well as 7th elytral intervals raised near base; usually larger ... 12
12. Prothorax more quadrate with blunter posterior angles; head and prothorax ± green, elytra blue-purple (note head colored as prothorax); length *c.* 15–18 mm (p. 108) ... *strigicollis*
– Prothorax more cordate, with more acute posterior angles; prothorax green or cupreous, head and elytra blue-purple (note head colored as elytra); length *c.* 15–20 mm (p. 108) ... *wallacei*
13. Prothorax narrower (width/length *c.* 1.40); head less depressed posteriorly; head dark, pronotum green cupreous, elytra blue-purple or blue-green; length *c.* 17–22 mm (p. 109) ... *taylori*
– Prothorax wider (width/length *c.* 1.70); head more depressed posteriorly; head as well as prothorax green, elytra blue-green; length *c.* 20 mm (p. 109) ... *rex*

Catascopus facialis (Wiedemann)

Wiedemann 1819, Zoologisches Magazin 1, 3, p. 165 (*Carabus*).
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1364 (see for synonymy, "varieties," and many additional references *not* concerned with New Guinea).
Jedlicka 1963, Ent. Abhandlungen 28, pp. 382, 395 ("*fascialis*").

Description (for recognition only). With characters of genus; form rather compact; green or blue and green; elytra with outer-apical angles well defined, apices sometimes subangulate (variable) near suture, striae deeply impressed and strongly punctate, and 5th and 7th intervals raised; length (in New Guinea) *c.* 10.5–13.5 mm.

Type(s). From "**Bengalia**," in Copenhagen Univ. Mus. (not seen).

Occurrence in New Guinea. **West N. G.**: 1, Maffin Bay, Aug. 1944 (Darlington); 1, "Dorey" (Paris Mus.). Also 1 specimen labeled only "N. guin" (British Mus.).

Notes. If my identifications are correct, this species ranges from **SE. Asia** to the **Philippines**, **Moluccas**, and (western) **New Guinea** but does not reach Australia. It is variable, and its full synonymy and subspecies (if any) remain to be worked out. It is rare in New Guinea and may be confined to the western part of the island (perhaps it has recently arrived from the west). I found it common on Morotai Is. in the Moluccas.

Catascopus elegans (Weber)

Weber 1801, Observations Entomologicae, p. 45 (*Elaphrus*).
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1363 (see for additional references and extensive synonymy).
Andrewes 1937, Proc. Ent. Soc. London for 1937 (B) 6, p. 189.
Van Emden 1937, Stettiner Ent. Zeitschrift 98, p. 35 (as subsp. *australasiae* Hope).
Jedlicka 1963, Ent. Abhandlungen 28, pp. 380, 385.
amoenus Chaudoir 1861, Berliner Ent. Zeitschrift 5, p. 120.
obliquatus Fairmaire 1881, Le Naturaliste 3, p. 381 (new synonymy).

Description (for recognition only). With characters of genus; form convex; green or partly coppery; prothoracic margins narrow; elytral apices unarmed; in general without striking characters; length *c.* 8.5–10 mm.

Types. Of *elegans*, from **Sumatra** (collected by Doldorf), present location of type unknown; of *amoenus*, from Dorey, **West N. G.,** now in Oberthür Coll., Paris Mus.; of *obliquatus*, from **New Britain**, presumably now in Paris Mus. (none seen).

Occurrence in New Guinea. Very common (about 200 specimens) throughout **New Guinea**, chiefly at low altitudes (including Dobodura), but reaching 1700 m near Wau.

Notes. The range of *elegans*, including its supposed subspecies and varieties (which need further study), is from **SE. Asia** to **Australia**, east at least to the **Philippines** and **Solomons**.

The name *obliquatus* Fairmaire has been

overlooked by most authors, and the citation in Csiki is incorrect. The description clearly is based on a small specimen of the present species, which is common in **New Britain**.

Catascopus brunneus n. sp.

Description. With characters of genus; form as in Figure 59, compact and convex (in genus); brown, subaeneous, appendages brown; rather shining, reticulate microsculpture faint on head, light on pronotum and elytra. *Head* large, 0.97 and 0.97 width prothorax; front irregularly sculptured and in part sparsely punctulate. *Prothorax* square-cordate; width/length 1.38 and 1.37; base/apex 1.01 and 0.96; margins moderate; disc lightly transversely strigulose and punctulate. *Elytra*: width elytra/prothorax *c.* 1.53 and 1.59 (but elytra warped so measurements inexact); humeri very prominent, almost subangulate (narrowly rounded) anteriorly; apices oblique, scarcely sinuate, with outer angles scarcely indicated (very broadly rounded) and sutural angles narrowly rounded and sometimes minutely denticulate; striae well impressed, faintly punctulate; no intervals specially elevated at base. *Measurements*: length *c.* 12–13; width *c.* 4.4–5.0 mm.

Types. Holotype ♂ (Bishop Mus.) and 1 ♀ paratype from Goilala, Tapini, Owen Stanley Rge., **Papua**, 975 m, Nov. 16–25, 1957; and 2 additional paratypes (M.C.Z., Type No. 31,408) from Goilala, Loloipa, Owen Stanley Rge., Jan. 16–30, Feb. 1–15, 1958 (all these specimens, W. W. Brandt); 1 paratype (S. Australian Mus.), Wareo, Finschhafen, **N-E. N. G.** (L. Wagner).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Loloipa.

Notes. This species is unusual in its rather compact form, plain brown-aeneous color, and simple elytral apices (except for minute, variable denticles near sutural angles). So far as I know, it is not closely related to any previously described species. Characters distinguishing it from other species are given in the preceding *Key*.

Catascopus latus n. sp.

Description. With characters of genus; form as in Figure 60, very broad, depressed; head and pronotum dark green, elytra purple, lower surface and appendages reddish black; head and pronotum shining with reticulate microsculpture absent or faint, elytra dull and closely microreticulate. *Head* 0.87 width prothorax; front flat, broadly irregularly impressed. *Prothorax* wide-subcordate; width/length 1.77; base/apex 0.97; side margins rather narrow (in relation to width of prothorax), moderately reflexed, left with 3, right with 2 formerly-seta-bearing punctures at and before middle. *Elytra*: width elytra/prothorax 1.36; humeri broad but margin not thickened and not subangulate; margins rather narrow; outer-apical angles prominent, slightly acute; apices with moderate spines *c.* opposite ends sutural striae; striae moderately impressed, scarcely punctulate; intervals not elevated at base, punctulate especially along middle, 3rd with only 2 dorsal punctures, less than ¼ from base and near or behind middle (position unsymmetric). *Measurements*: length 17.5; width 6.3 mm.

Type. Holotype ♀ (British Mus.) from W. Tami R., Pukusan-Humboldt Bay Dist., **West N. G.,** June 1937 (W. Stüber); the type is unique.

Notes. This striking and thoroughly distinct species is sufficiently compared with others in the *Key to Species of Catascopus of New Guinea.*

Catascopus laevigatus Saunders

Saunders 1863, Trans. Ent. Soc. London (3) 1, p. 458, pl. 18, fig. 2a-b.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1365 (see for additional references).

Description (for recognition only). With characters of genus; wide and depressed; green, shining; elytra with sutural angles spined, outer-apical elytral angles *c.* right; length *c.* 10–11 mm.

Types. From "**Batchian**, **Ternate** and **Aru**. Wallace," type now in Oberthür Coll. Paris Mus. (not seen).

Occurrence in New Guinea. Twenty-four, from numerous localities in all 3 political divisions of **New Guinea**; occurs at Dobodura and up to 1200 m at Wau.

Notes. I have seen specimens also from the **Aru Is.** and from **Buru**, **Ceram**, and **Halmahera** (Jilolo) in the **Moluccas**. The closely related *C. laticollis* Macleay of North Queensland (Kuranda and Atherton Tableland, and Coen-Rocky Scrub areas) represents the species in Australia.

Catascopus sidus n. sp.

Description. With characters of genus; form as in Figure 61; rather wide but less depressed than *laevigatus*; green, elytra blue purple with green humeri (at Wau) or *c.* wholly green (Star Rge.) or *c.* wholly purple (Japen Is.), lower surface and appendages dark brown; shining, reticulate microsculpture faint on front and on disc of pronotum, distinct on elytra. *Head* 0.93, 0.90, 0.92 width prothorax; front irregularly impressed at middle, sparsely minutely (scarcely detectably) punctulate. *Prothorax* transverse-cordate with wide base; width/length 1.57, 1.61, 1.47; base/apex 1.14, 1.13, 1.13; side margins broader and more reflexed than in *laevigatus*, each with *c.* 6 strong setae (or punctures) in anterior ⅗; disc almost without transverse strigulation, faintly and sparsely (hardly detectably) punctulate. *Elytra*: width elytra/prothorax *c.* 1.49, 1.54, 1.57; humeri prominent but with margins rounded (not widened and subangulate as in *laevigatus*); outer-apical angles well defined, *c.* right or nearly so; apices with short spines not quite at sutural angles; striae well impressed, scarcely punctate (more impressed but less punctate than in *laevigatus*); intervals scarcely elevated at base. *Secondary sexual characters* as described for genus. *Measurements*: length *c.* 12–13; width 4.6–5.1 mm.

Types. Holotype ♂ (Bishop Mus.) from Wau, Morobe Dist., **N-E. N. G.,** 1200 m, Sept. 15–30, 1962 (Sedlacek); 1 ♂ paratype, same locality, 1250 m, Sept. 16, 1962 (Sedlaceks); 1 paratype, Mt. Missim (near Wau), 1600 m, Mar. 17, 1966; 7 paratypes, Wau Ck., 1200–1500 m, Sept. 16–18, 1964 (M. Sedlacek) (some paratypes in M.C.Z., Type No. 31,409).

Additional material. **West N. G.**: 1 ♂, Sibil, Star Rge., 1260 m, May 16, 1959 (Leiden Mus.), at light; 1 ♂, Mt. Baduri, Japen Is., 1000 ft. (305 m), Aug. 1938 (Cheesman).

Measured specimens. The ♂ holotype and the ♂ ♂ from Star Rge. and Japen Is., in this order.

Notes. Although similar to *laevigatus*, *sidus* is more convex, with wider and more reflexed prothoracic margins, and other differential characters noted in the preceding description. The single specimens from Star Rge. and Japen Is. differ from the types in color of elytra (see *Description*, above) but I do not wish to call them subspecies without seeing more material.

Catascopus smaragdulus Dejean

Dejean 1825, Species Général Coléop. 1, p. 331. Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1366 (see for additional references and synonymy, which do not concern New Guinea).

Description (for recognition only). With characters of genus; small, rather broad; green or partly coppery; prothorax with margins wider than in *elegans* and set off by submarginal longitudinal swellings; elytra with outer-apical angles rounded or bluntly obtuse, apices each with an acute tooth or short spine; intervals not elevated at base; length 8 mm or less.

Type(s). From **Java**; now in Oberthür Coll., Paris Mus. (not seen).

Occurrence in New Guinea. Seventeen specimens from localities in all 3 political divisions of New Guinea and from Normanby Is.; at low altitudes only.

Notes. C. smaragdulus ranges from the southern corner of **Asia** (**Burma**, etc.) to **New Guinea**, **New Britain**, and the northeastern corner of **Australia** (specimens from the Rocky Scrub, mid-peninsular Cape York, taken by me in June 1932).

In this species the width of the prothorax

and the development of elytral spines vary both individually and, I think, geographically, but I do not have enough material from outside New Guinea to define satisfactory subspecies.

Catascopus dobodura n. sp.

Description. With characters of genus; form (Fig. 62) *c.* average with elytra rather wide but convex; green, elytra sometimes greenish castaneous or purplish laterally, lower surface almost black, appendages dark brown; shining, reticulate microsculpture absent or nearly so on front, pronotum, and disc of elytra, indicated toward sides and apex of elytra. *Head* 1.01 and 1.01 width prothorax; front slightly depressed anteriorly and longitudinally impressed each side. *Prothorax* quadrate-subcordate; width/length 1.44 and 1.42; base/apex 1.08 and 1.04; sides broadly rounded anteriorly with anterior angles only a little advanced, strongly sinuate *c.* ¼ of length before right or slightly acute basal angles; side margins very narrow, not set off by longitudinal swellings, each with usual seta at basal angle and 1 median-lateral seta just before middle; basal transverse impression deep (as usual) but basal marginal line obsolete at middle; disc with faint transverse strigae and faint sparse punctulation. *Elytra*: width elytra/prothorax — and 1.59 (elytra of ♂ too spread to measure); lateral margins moderate; outer-apical angles *c.* right or slightly obtuse but distinct, apices each with spine *c.* opposite end 2nd interval; striae moderately impressed, faintly punctulate; intervals not elevated at base. *Measurements*: length *c.* 9–10; width *c.* 3.4–3.8 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,410) from Oro Bay, **Papua**, Dec. 1943–Jan. 1944 (Darlington); and 1 ♀ paratype from Dobodura (near Oro Bay), Mar.–July 1944 (Darlington).

Other material. One ♀, Kiunga, Fly R., July 23–25, 1957 (W. W. Brandt, Bishop Mus.).

Measured specimens. The types.

Notes. It is surprising to find a new, medium-small, green *Catascopus* at low altitudes in Papua, but the species seems clearly distinct. In form (except that it is a little broader) and narrow prothoracic margins it resembles *elegans* but is immediately distinguished by spined elytral apices, reduction of microreticulation of elytra, and in other ways. In form of elytral apices and reduction of microreticulation it somewhat resembles *laevigatus* but is more slender and convex, with only 1 median-lateral pronotal seta on each side. The virtual obliteration of the middle part of the posterior marginal line of the pronotum is diagnostic of this new species.

Catascopus biroi n. sp.

Description. With characters of genus; form as in preceding species (*dobodura*); green or blue-green, with some coppery color at sides of elytra especially behind humeri, lower surface and appendages brown or brownish black; moderately shining, front and disc of pronotum with reticulate microsculpture absent or very light, but disc of elytra entirely (transversely) microreticulate. *Head* 0.99 and 1.00 width prothorax; front flat, slightly irregularly depressed, and with (usual) longitudinal impression each side. *Prothorax* quadrate-subcordate; width/length 1.41 and 1.34; base/apex 1.13 and 1.08; sides broadly arcuate anteriorly, sometimes faintly angulate at median-lateral seta, sinuate slightly less than ¼ before right or slightly acute basal angles; lateral margins narrow but paralleled by slightly swollen ridges accentuating the marginal channels, each with usual seta at basal angle and 1 median-lateral seta slightly before middle; basal marginal line entire in all specimens. *Elytra*: width elytra/prothorax 1.63 and 1.58; outer-apical angles sharply defined, right or slightly acute; apices each with short spine near but not quite at sutural angle; striae well impressed, slightly punc-

tulate; intervals convex, not elevated at base, punctulate. *Measurements* (of types): length 8.7–9.3; width 3.5–3.7 mm.

Types. Holotype ♂ (Hungarian National Mus.) and 2 paratypes from Stephansort, Astrolabe Bay, **N-E. N. G.,** 1897 (Biró); and 1 paratype, Erima, Astrolabe Bay, 1897 (Biró). (Two paratypes now in M.C.Z., Type No. 31,411.)

Additional material. **West N. G.**: 1, Waigeu Is., Camp 1, Mt. Nok, 2500 ft. (*c.* 760 m), May 1938 (Cheesman). This specimen is a ♂ larger than the types (*c.* 11 mm) and with disc of pronotum more distinctly microreticulate, but it seems clearly referable to *biroi*.

Measured specimens. The ♂ holotype and 1 ♀ paratype from Stephansort.

Notes. This is another medium-small, green species presumably related to the preceding one (*dobodura*) but differing in a number of details, including entire basal marginal line of pronotum, presence of distinct reticulate microsculpture on disc of elytra, and position of elytral spines, which are closer to the suture in *biroi* than in *dobodura*.

Catascopus wallacei group

Catascopus wallacei Saunders and its immediate relatives, including all the remaining New Guinean species of the genus, treated below, form an apparently natural group of large, often conspicuously colored species characterized by having both sutural and outer-apical elytral angles acutely toothed or spined and by having a longitudinal zone of dense, conspicuous pubescence along the midline of the body, from prosternum almost to the tip of the abdomen in the ♂ but mainly on the sterna in the ♀. Otherwise the species of this group share the characters stated under the genus, with minor exceptions.

The *wallacei* group of *Catascopus* centers on New Guinea, where 5 species are now known. Most of them are sympatric: 4 of the 5 species have been found at Wau. Of the 5 New Guinean species, *aruensis* and *wallacei* each reach one or more small islands to the west (Aru Is., Waigeu, Mysol), and *aruensis* reaches also New Britain, New Ireland, and Cape York in Australia. A sixth species of the group (*chaudoiri* Castelnau) is endemic in northern Australia.

Some species of this group vary individually in form especially of the prothorax, in degree of elevation of the 5th elytral intervals, and in some other details. Although I can clearly recognize only the 5 species treated below, Straneo (see references under the species) has distinguished others, and he may be right. A thorough study of long series will be required to decide this, including study of genitalic characters, which are indicated by Straneo. I am, incidentally, very much indebted to Prof. Straneo for loan of paratypes of his 3 species of this group.

Catascopus aruensis Saunders

Saunders 1863, Trans. Ent. Soc. London (3) 1, p. 458, pl. 17, fig. 5a-b.
Csiki 1932, Coleop Cat., Carabidae, Harpalinae 7, p. 1362 (see for additional references and partial synonymy).
Straneo 1943, Ann. Mus. Civ. Genoa 61, p. 302.
Jedlicka 1963, Ent. Abhandlungen 28, pp. 382, 393.
cupricollis Chaudoir 1883, in R. Oberthür, Coleopterorum Novitates 1, p. 24 (not *cupricollis* Waterhouse 1877).
brevispinosus Sloane 1910, Proc. Linnean Soc. New South Wales 35, pp. 398, 400 (new synonymy).
aeneicollis Andrewes 1919, Ann. Mag. Nat. Hist. (9) 3, p. 481 (new name for *cupricollis* Chaudoir).
Andrewes 1924, Ann. Mag. Nat. Hist. (9) 14, p. 593.
?*dalbertisi* Straneo 1943, Ann. Mus. Civ. Genoa 61, p. 304.

Description. With characters of genus and of *wallacei* group (above); green or blue-green (elytra rarely purplish); prothorax more square (less cordate) than in *wallacei*, but somewhat variable; elytra with outer-apical angles spined, sutural angles with shorter spines or simply acute

(variable); 5th intervals not or not much elevated near base (slightly variable), 7th intervals subcarinate at base; length *c.* 13–15.5 mm.

Types. Of *aruensis* Saunders, from "**Aru** [**Is.**]. Wallace," now in Oberthür Coll., Paris Mus. Of *cupricollis* Chaudoir, from Fly R., **New Guinea**, now also in Oberthür Coll., Paris Mus. Of *brevispinosus* Sloane, from Coen, Cape York, **Australia**, now in Sloane Coll., Canberra. Of *dalbertisi* Straneo, holotype from Hatam, **Papua**, in Genoa Mus., and allotype from Andai, **Papua**, in Straneo Coll. (See *Notes*, below.)

Occurrence in New Guinea. Widely distributed but much less common than *wallacei* (below): 27 specimens, from all 3 political divisions of **New Guinea** and from Normanby Is.; most from low altitudes but reaching 1200 m at Wau.

Notes. Outside New Guinea this species occurs on the **Aru Is.** (type locality), **New Britain**, **New Ireland**, and Cape York, **Australia** (types of *brevispinosus*). Possibly some of the outlying populations may be distinguishable as subspecies.

Of the types listed above, I have seen only those of *brevispinosus* (briefly in 1957, but Dr. B. P. Moore has sent me additional notes on them) and the allotype of *dalbertisi* (through the kindness of Prof. Straneo).

Catascopus wallacei Saunders

Saunders 1863, Trans. Ent. Soc. London (3) 1, p. 462, pl. 17, fig. 4a-b.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1367 (see for additional references).
Straneo 1943, Ann. Mus. Civ. Genoa 61, p. 302, fig. a.
Jedlicka 1963, Ent. Abhandlungen 28, pp. 382, 393.
?*beccarii* Straneo 1943, Ann. Mus. Civ. Genoa 61, p. 303, fig. b.

Description. With characters of genus and of *wallacei* group (above); usually brightly bicolored, with head and elytra purple and prothorax brassy or coppery, but coloration sometimes duller; prothorax a little more subcordate (less square) than in *aruensis*, with posterior angles more prominent and more acute; elytra with sutural as well as outer-apical angles spined; 5th and 7th intervals elevated near base (slightly variable, especially the 5th); length *c.* 15–20 mm.

Types. Of *wallacei* Saunders, from "Wagiou [**Waigeu**], **Dorey** and **Mysol**"; actual (holo)type now in Oberthür Coll., Paris Mus. (not seen). Of *beccarii* Straneo, holotype from Hatam, **Papua**, in Genoa Mus., and allotype from Andai, **Papua**, in Straneo Coll. (allotype seen).

Occurrence in New Guinea. Common probably throughout **New Guinea**: 176 specimens before me (including 82 from Dobodura); most from low altitudes, but reaching 1300 m near Wau.

Notes. This beautiful carabid is apparently confined to **New Guinea** and zoogeographically closely associated islands including **Aru Is.**, **Waigeu**, and **Mysol**. It apparently does *not* reach the Moluccas proper, nor New Britain, nor Australia.

Most of the individuals from Dobodura were trapped under strips of burlap laid across the trunks of fallen trees in rain forest.

Catascopus strigicollis Straneo

Straneo 1943, Ann. Mus. Civ. Genoa 61, p. 305, fig. c.

Description. With characters of genus and of *wallacei* group, except ♂ as well as ♀ with 2 or 3 setae each side last ventral segment; bicolored, head and prothorax green or slightly coppery, elytra purple or (especially basally) bluish or greenish; prothorax almost square except sides sinuate posteriorly (as usual in group); elytra with rather short spines at outer-apical angles and still shorter (slightly variable) ones at sutural angles; 5th as well as 7th intervals raised near base; length *c.* 15–18 mm.

Types. Holotype (Genoa Mus.) and allotype (Straneo Coll.) both from Andai, **Papua**, Aug. 1872 (D'Albertis). I have examined the allotype, loaned by courtesy of Prof. Straneo.

Occurrence in New Guinea. **Papua**: the types. **N-E. N. G.**: 21, Wau, Morobe Dist., altitudes from 900 to 1500 m, dates in Mar., Apr., May, July, Aug., Sept., Oct., Dec., 1961–1964 (Sedlaceks); 1, Sattelberg, Huon Gulf, 1899 (Biró); 1, Wareo, Finschhafen (L. Wagner, S. Australian Mus.).

Notes. This seems to be a distinct species, immediately distinguished from *wallacei* by head colored like pronotum (not like elytra), elytral spines shorter, and other details, and from *aruensis* by 5th elytral intervals raised, size usually larger, and ♂ with additional apical ventral setae. It *may* occur mainly in mountains rather than in lowlands, and it *may* be confined to part of eastern New Guinea, but further collecting is needed to confirm these possibilities.

Catascopus taylori n. sp.

Description. With characters of genus and of *wallacei* group; form (Fig. 63) of large *wallacei*; head black or very dark blue, prothorax brassy or slightly coppery, elytra blue purple, lower surface and appendages dark; head and pronotum rather shining with reticulate microsculpture absent or weak, elytra duller with close, slightly transverse reticulate microsculpture. *Head* 0.77 and 0.81 width prothorax, impressed across base; front with usual 2 longitudinal impressions and slightly sculptured and irregularly punctulate posteriorly. *Prothorax* quadrate-subcordate; width/length 1.55 and 1.51; base/apex 1.08 and 1.10; sides broadly arcuate anteriorly with anterior angles flattened and roundly produced, very broadly sinuate posteriorly to right or acute slightly denticulate posterior angles; side margins rather wide (at widest point of prothorax, width of the flattened margin is *c.* 1/7 width from outer edge of margin to midline of pronotum), flattened, reflexed, each with usual seta at basal angle and 1 before middle; disc finely transversely strigulose, sparsely and faintly punctulate. *Elytra* long, *c.* as in *wallacei*; width elytra/prothorax 1.42 and 1.34; outer-apical angles spined, sutural angles acutely produced or spined (individual variation); striae well impressed, faintly punctulate; 5th and 7th intervals elevated near base. *Secondary sexual characters* normal for genus; ♂ with 1, ♀ 2 setae each side last ventral segment. *Measurements*: length *c.* 17–22; width *c.* 5.8–7.1 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,412) from Aiura, **N-E. N. G.,** 1900 m, July 1962 (R. W. Taylor, #2147), in rain forest; additional paratypes as follows. **N-E. N. G.**: 4, Mt. Missim, Wau, Morobe Dist., 950–1000, 1500, 1600–2000 m, Dec. 28, 1961, Aug. 10, Sept. 21–24, 1964 (Sedlaceks); 1, Eliptamin Vy., 1200–1350 m, Aug. 16–30, 1959 (W. W. Brandt, Bishop Mus.); 4, Wareo, Finschhafen (L. Wagner, S. Australian Mus.); 1, Moife, 15 km NW. of Okapa, 2100 m, Oct. 7–14, 1959 (T. C. Maa, Bishop Mus.); 2, Okapa, E. Highlands, Apr. 20, 1964 (Hornabrook); 2, 13 km SE. Okapa, 1650–1870 m, Aug. 26, 1964 (Sedlaceks); 2, Morae, Kukukuku [Rge.], E. Highlands, 6000 ft. (*c.* 1850 m), Mar. 1, 1964 (Hornabrook). **West N. G.**: 3, Wissel Lakes, Arabu Camp, 1800 m, Oct. 7, 1939 (H. Boschma, Leiden Mus.); 1, Wissel Lakes, Enarotadi, 1800–1900 m, Aug. 10, 1963 (Sedlacek).

Measured specimens. The ♂ holotype and ♀ paratype from Enarotadi.

Notes. This new species seems close to *wallacei*, from which it differs mainly in its wider prothoracic margins. The difference is striking on comparison of specimens. Mainly because the prothoracic margins are wider, the present new species has a relatively narrower head and wider prothorax as shown by measurements: in a measured ♂ of *wallacei* the head is 0.90 width prothorax and the prothoracic width/length is 1.40. Also, *taylori* averages larger than *wallacei* and usually occurs at higher altitudes.

Catascopus rex n. sp.

Description. With characters of genus and of *wallacei* group; form as in Figure 64; broad with very broad prothorax; green,

front and elytra bluish green, lower surface and appendages brownish black; head roughened and closely microreticulate posteriorly, more shining but slightly strigulose anteriorly, pronotum and elytra duller, closely slightly transversely microreticulate. *Head* large, but only 0.78 and 0.83 width prothorax; depressed across base, with usual longitudinal impression each side anteriorly. *Prothorax* transverse-cordate, very wide but with relatively narrow base; width/length 1.76 and 1.67; base/apex 0.90 and 0.89; side margins rather broad especially anteriorly and with anterior angles flattened and advanced, each with posterior and 1 median-lateral seta, latter slightly farther forward than usual. *Elytra*: width elytra/prothorax 1.23 and 1.29; outer-apical and sutural angles both with short spines; striae well impressed, scarcely punctulate; intervals convex, slightly punctulate, 7th carinate at base, others slightly humped but not carinate. *Secondary sexual characters* of ♂ normal for genus; ♀ unknown. *Measurements*: length *c.* 20; width 6.7–6.8 mm.

Types. Holotype ♂ (Bishop Mus.) from Mokai Village, Torricelli Mts., **N-E. N. G.,** 750 m, Dec. 8–15, 1958 (W. W. Brandt); and 1 ♂ paratype (M.C.Z., Type No. 31,413) from Kiunga, Fly R., **Papua**, Sept. 24–25, 1957 (W. W. Brandt).

Notes. Within the *wallacei* group, the large size and very broad, cordate prothorax immediately distinguish this striking species.

Genus *PERICALUS* Macleay

Macleay 1825, Annulosa Javanica, p. 15.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1368 (see for synonymy and additional references).
Jeannel 1949, Coléop. Carabiques de la Région Malgache, Part 2, p. 1007 (in text).
Jedlicka 1963, Ent. Abhandlungen 28, p. 373.

Diagnosis. Similar to *Catascopus* (labrum emarginate, ligula-paraglossae similar, 4th hind-tarsal segments scarcely emarginate, claws simple, etc.) but eyes more abruptly prominent; clypeus truncate; elytra usually with geometric color pattern; size usually smaller.

Description. None required here.

Type species. Pericalus cicindeloides Macleay, of Java, etc.

Generic distribution. Confined to, but widely distributed and diverse in, tropical **Asia** and the **Malay Archipelago**, reaching **New Guinea** and **New Britain** but not Australia.

Notes. The genus is represented in New Guinea by only the following species (*figuratus*), and on New Britain by a different, endemic species (*klapperichi* Jedlicka 1953, Ent. Blätter 49, p. 145).

Pericalus figuratus Chaudoir

Chaudoir 1861, Berliner Ent. Zeitschrift 5, p. 124.

Description. None required here; the form (Fig. 65) and elytral markings make this insect unmistakable, in New Guinea; length *c.* 7–8 mm.

Type. Supposedly from **Celebes**, collected by Wallace; now in Oberthür Coll., Paris Mus. (not seen).

Occurrence in New Guinea. Common (more than 150 specimens) probably throughout the island at low altitudes, and occurring up to 1320 m near Wau.

Notes. So far as I know, this insect has not been found in Celebes since Wallace's time, and it has not been recorded from the Moluccas. I think it is possible that the type really came from New Guinea and that the species is endemic there. It lives on tree trunks and recently fallen logs in rain forest.

Genus *COPTODERA* Dejean

Dejean 1825, Species Général Coléop. 1, p. 273.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1370 (see for additional references, synonymy, and list of species).
Jeannel 1949, Coléop. Carabiques de la Région Malgache, Part 3, pp. 924, 926.
Jedlicka 1963, Ent. Abhandlungen 28, p. 341.
Ectinochila Chaudoir 1883, Coleopterorum Novitates 1, p. 21 (new synonymy).
?*Trichocoptodera* Louwerens 1958, Treubia 24, p. 255.

Diagnosis. See *Key to Genera of Lebiini of New Guinea.*

Description. Form (Figs. 66–70) broad, ± depressed; upper surface not pubescent (in New Guinean species). *Head*: eyes prominent; 2 setae over each eye; front impressed each side anteriorly; clypeus with 1 seta each side; labrum variable, usually rather long, subtruncate or slightly emarginate at apex, 6-setose; antennae with 3½ segments glabrous; mentum without tooth; ligula 2-setose, paraglossae attached to but much longer than ligula, broadly rounded, without setae at apex but with small setae at sides. *Prothorax* broadly subcordate (except in *grossa*), with base sometimes lobed, usually not; 2 setae each side, at basal angle and before middle; disc with usual impressions. *Elytra* broad; humeri broadly rounded but rather prominent; apices with outer-apical angles rounded, sutural angles variable; striae entire, not distinctly punctate; intervals convex but none specially elevated; 3rd intervals with 2–4 seta-bearing punctures (if 4, near base on outer edge, *c.* ¼ from base on outer edge, behind middle on inner edge, and near apex usually on inner edge), but one or both intermediate punctures missing in some species. *Inner wings* full. *Lower surface*: prosternum usually with a little sparse pubescence, abdomen not pubescent. *Legs* slender; 4th hind-tarsal segments simply emarginate; 5th tarsal segments with accessory setae; claws with 3 or 4 teeth. *Secondary sexual characters*: ♂ front tarsi slightly dilated, with 3 segments 2-seriately squamulose, and ♂ middle tarsi with 2 segments squamulose in some (not all) species; ♂ middle tibiae with 1 or 2 excisions on inner edge near apex in most species (see *Notes*, below); 2 setae each side apex last ventral segment in both sexes.

Type species. Of *Coptodera*, *C. festiva* Dejean, of Cuba; of *Ectinochila*, *E. tesselata* Chaudoir [= *aurata* (Macleay)], of Australia; of *Trichocoptodera*, *T. maculata* Louwerens, of Celebes.

Generic distribution. In a broad sense, the genus is **pan-tropical**. (In Jeannel's restricted sense, *Coptodera* proper is confined to the Americas, and related Old World forms are divided into several genera.) In the Asiatic-Australian area, species of the genus (*sensu lato*) are numerous from southeastern Asia including Japan across the whole Malay Archipelago, and a few occur in Australia and New Caledonia. For further details see *Notes*, below.

Notes. Jeannel (1949) divides *Coptodera* (*sensu lato*) and its immediate allies into a number of small genera based primarily on genitallic characters. It seems to me that in this case, as in many others, Jeannel has carried generic splitting beyond the limit of usefulness. I have not attempted to check the genitallic characters, which would require dissection of many species from many parts of the world. But I can say that, if Jeannel's concept of genera were applied to the New Guinean species, I would have to divide *Coptodera* into about 5 genera, 2 or 3 of which would be new. The new names would be meaningless except to extreme specialists, and the fine splitting would hide the broader relationships and geographic patterns of the group. By treating the diverse New Guinean species as members of one genus, I emphasize what I think is a fact, that the group is a natural one even though the species are diverse, and that it has a pan-tropical distribution. The most useful taxonomic treatment in the end may be to retain *Coptodera* in a broad sense but to divide it into a reasonable number of natural subgenera. This should, of course, be done on a worldwide basis, not in a local faunal work.

Certain characters do vary remarkably in this genus. The larger New Guinean species, which are more typical of *Coptodera*, have the base of the prothorax subtruncate, sometimes slightly oblique toward the sides but not lobed. However, in 2 smaller New Guinean species (*papuella* and *wau*), the

base of the prothorax does have a distinct short basal lobe. And in the Australian "*Ectinochila*" *tesselata*, the base of the prothorax is more strongly lobed. All these species have similar, diagnostic mouthparts (mentum without tooth, and ligula and paraglossae as described), and the small New Guinean species are transitional in other ways: they have wider prothoracic margins and look more like *Coptodera* than *Ectinochila tesselata* does, and *papuella* has elytral markings like some more-typical *Coptodera*, but both *papuella* and *wau* approach *Ectinochila* in dense dorsal microsculpture, and *wau* has *Ectinochila*-like elytral markings.

The dorsal elytral punctures confirm this relationship. The number of punctures varies in *Coptodera*. The full number is 4 on each 3rd interval, placed *c.* as noted in the preceding *Description*. This is the arrangement in the type species of the genus (*C. festiva* Dejean, of Cuba) and in some of the more or less typical New Guinean species, e.g., *cyanella* and *eluta*. However, *grossa* and *lineolata* have the 3rd intervals 3-punctate (puncture at basal ¼ missing), and *oxyptera* has the 3rd intervals only 2-punctate (both median punctures missing, leaving only the subbasal and subapical ones). But the *Ectinochila*-like New Guinean species (*papuella* and *wau*) and also the Australian *E. tesselata* have the 3rd intervals 4-punctate as in typical *Coptodera*.

The excisions of the ♂ middle tibiae also confirm the relationship of *Ectinochila* to *Coptodera*. The ♂ middle tibiae have a single small excision (like that in *Lebia*) in inner edge near apex in the Cuban type species of *Coptodera* (*festiva*), in most New Guinean species of the genus including the *Ectinochila*-like ones, and in the Australian *E. tesselata*. However, 2 non-*Ectinochila*-like New Guinean species are different: *Coptodera oxyptera* has 2 small excisions on each ♂ middle tibia (like *Aristolebia*), and *C. ornatipennis* has none.

Most *Coptodera* have the dorsal surface glabrous, but "*Trichocoptodera*" *maculata* Louwerens of Celebes has the pronotum sparsely pilose. *Coptodera ornatipennis* Louwerens of the Moluccas seems closely related, and a paratype of it (which I owe to the generosity of Mr. Louwerens) has a few inconspicuous fine hairs still on the pronotal disc. Specimens that I assign to this species from New Guinea seem to lack pronotal pubescence, but the hairs may be rubbed off (in light-trap specimens) or be adhering invisibly to the pronotal surface (in specimens mounted from alcohol). However, although I have listed *Trichocoptodera* as a possible synonym of *Coptodera*, it may eventually prove worth recognition as a separate genus or subgenus, distinguished by ♂ middle tibiae without excisions and perhaps by other characters.

The 8 species of *Coptodera* in New Guinea represent 7 stocks with different, independent geographic distributions. (1) *C. grossa* is endemic and without close relatives anywhere, so far as I know. (2) *C. ornatipennis* occurs in the Moluccas as well as New Guinea, with an apparent relative on Celebes. (3) *C. cyanella* represents the *flexuosa* group, which ranges from SE. Asia to Australia (the Australian species being *australis* Chaudoir). (4) *C. lineolata* ranges from Celebes to New Guinea and New Britain, and an apparently related species (*mastersi* Macleay) is in Australia. (5) *C. eluta* apparently occurs from SE. Asia to New Guinea and New Britain, and (6) *C. oxyptera*, from Celebes to New Guinea, New Britain, and New Ireland; these species are not represented in Australia. And (7) *C. papuella* and *wau* are endemic to New Guinea, probably related to each other, and less closely related to "*Ectinochila*" *aurata* of Australia.

Most of the common *Coptodera* in New Guinea inhabit tree trunks and recently fallen logs in rain forest. However, a few species of the genus elsewhere live among dead leaves on the ground, and this may be

the habitat of some of the less common New Guinean ones.

KEY TO SPECIES OF *COPTODERA* OF NEW GUINEA

1. Prothorax not lobed at base; dorsal microreticulation moderate or partly absent; larger (usually 5 mm or more, excepting small individuals of *lineolata*) 2
– Prothorax lobed at base; dorsal microreticulation close, heavily impressed; smaller (3.5–4.8 mm) 7
2. Very large (8.5–9.5 mm); form as in Figure 66, with very long mandibles and transverse prothorax (p. 113) ..... *grossa*
– Smaller; mandibles relatively shorter; prothorax ± subcordate 3
3. Head and disc of pronotum not microreticulate; each elytron with 2 irregular, ± transverse pale blotches (Fig. 67); ♂ middle tibiae without excisions (p. 113) .. *ornatipennis*
– Head and disc of pronotum microreticulate (lightly so in *oxyptera*); ♂ middle tibiae with excision(s) on inner edge near apex 4
4. Elytra with sutural angles blunt, narrowly rounded; elytra usually (not always) conspicuously spotted or striped with pale 5
– Elytra with sutural angles acute, often denticulate; elytra unmarked or with only a few inconspicuous minute pale flecks 6
5. Each elytron with 3 irregular pale blotches sometimes joined to form an irregular longitudinal stripe (p. 114) ..... *cyanella*
– Elytra usually with numerous, more or less separate, longitudinal pale lines (Fig. 68) but pale pattern somewhat variable, sometimes almost obliterated (p. 114) .... *lineolata*
6. Very broad; elytral striae less impressed; color dark without pale markings; 3rd elytral intervals with only 2 (subbasal and subapical) punctures (p. 115) .... *oxyptera*
– Less broad; elytral striae deeply impressed; elytra usually with minute pale flecks; 3rd intervals 4-punctate (p. 115) ..... *eluta*
7. Front of head heavily microreticulate but not longitudinally rugulose; elytra irregularly 2-fasciate with pale (p. 115) ..... *papuella*
– Front of head in part longitudinally rugulose as well as microreticulate; elytra with a large, common, irregular X-shaped pale area (Fig. 70) (p. 116) ..... *wau*

Coptodera grossa n. sp.

Description. With characters of genus; form as in Figure 66; very large; reddish black, appendages brown; shining, elytra faintly silky or subiridescent, reticulate microsculpture absent or faint on front and on disc of pronotum, distinct (but lightly impressed) and transverse on elytra. *Head* 0.73 and 0.72 width prothorax; mandibles exceptionally long, nearly straight; clypeus rounded at sides, sinuately emarginate at middle; labrum very long, narrowed anteriorly, obtusely emarginate; front almost smooth posteriorly, slightly punctate anteriorly, as is clypeus. *Prothorax* very wide, formed as in Figure 66; width/length 1.93 and 1.82; base/apex 1.49 and 1.44; base not lobed; side margins narrow, each with seta almost at basal angle and less than ¼ from apex (farther forward than usual); basal and apical marginal lines entire; disc almost without punctation or strigae. *Elytra* wide; width elytra/prothorax *c.* 1.67 and 1.65; apices slightly obliquely sinuate, outer-apical angles rounded, sutural angles blunt or subdenticulate; striae well impressed, punctulate; intervals convex, finely and sparsely punctulate, 3rd with subbasal and subapical seta-bearing punctures and 1 intermediate puncture on inner edge behind middle. *Secondary sexual characters*: as of genus except ♂ with squamae on front tarsi only (not on middle tarsi); ♂ middle tibiae with 1 excision; ♂ copulatory organs as in Figure 176. *Measurements*: length *c.* 8.5–9.5; width 4.0–4.7 mm.

Types. Holotype ♀ (M.C.Z., Type No. 31,414) from Dobodura, **Papua**, Mar.–July 1944 (Darlington). Paratypes from **N-E. N. G.**: 1 ♂ (Bishop Mus.), Wau (Mt. Missim), Morobe Dist., 1100 m, July 22, 1961 (Sedlaceks); 2, Karimui, 1080 m, July 13, 1963 (Sedlacek); 1, Wareo, Finschhafen (L. Wagner, S. Australian Mus.).

Measured specimens. The ♂ paratype from Wau and the ♀ holotype.

Notes. Although this species scarcely looks like a *Coptodera*, it has the essential characters of the genus. It is distinguished from other New Guinean species in the preceding *Key*.

Coptodera ornatipennis Louwerens

Louwerens 1962, Tijdschrift voor Ent. 105, p. 146, fig. 9.

Description. With characters of genus;

form and markings as in Figure 67; head and pronotum reddish testaceous or reddish piceous, elytra dark with pale marks as shown, but marks somewhat variable; reticulate microsculpture absent or faint on front and on disc of pronotum, present (but light) and transverse on elytra. *Head* 0.85 and 0.86 width prothorax. *Prothorax* wide-subcordate; width/length 1.71 and 1.71; base/apex 1.19 and 1.12; base not lobed; disc with a little faint sparse punctulation, not pubescent but margins with a few short hairs near anterior angles (see following *Notes*). *Elytra*: width elytra/prothorax 1.61 and 1.62; sutural angles blunt; 3rd intervals with subbasal and subapical seta-bearing punctures but no intermediate punctures. *Secondary sexual characters*: ♂ front tarsi with 3 segments with squamae (as usual); ♂ middle tarsi with paired squamae at apex 1st segment and on 2nd segment; ♂ middle tibiae not excised. *Measurements*: length *c.* 5.0–6.5; width 2.3–2.9 mm.

Types. From Amboina, **Moluccas**; in Louwerens Coll. (1 paratype seen).

Occurrence in New Guinea. **Papua**: 1, Dobodura, Mar.–July 1944 (Darlington); 1, Kokoda, 1200 ft. (366 m), Aug. 1933 (Cheesman). **N-E. N. G.**: 3, Finschhafen, Huon Pen., 10 m, Apr. 9–16, 1963 (Sedlacek), in mercury vapor light trap; 1, Pindiu, Huon Pen., 890 m, Apr. 17, 1963 (Sedlacek), in mercury vapor light trap. **West N. G.**: 1, "Neth. New Guinea" [probably vic. Hollandia], Nov. 10, 1944 (T. Aarons, California Acad.).

Measured specimens. A ♂ from Dobodura and ♀ from Finschhafen.

Notes. This species occurs in the **Moluccas** (the types) as well as in **New Guinea**, and it seems closely related to "*Trichocoptodera*" *maculata* Louwerens of Celebes. My Moluccan paratype of *ornatipennis* actually shows vestiges of pronotal pubescence. I can see no sign of it on the New Guinean specimens, but the latter are probably all either from alcohol or from light traps. New Guinean specimens do have a few inconspicuous short setae on the prothoracic margins anteriorly, but such setae are present in *C. oxyptera* too, and very short (vestigial?) stubs of setae are visible at 80× in some other species of *Coptodera*.

I suspect that this is a ground-living rather than arboreal species.

Coptodera cyanella Bates

Bates 1869, Ent. Monthly Mag. 6, p. 74.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1370 (see for synonymy and additional references).
Louwerens 1956, Treubia 23, p. 225 (Moluccas).

Description. None required here; see preceding *Key*; length ± 6–7 mm.

Type(s). From **New Guinea**, collected by Wallace (if really from New Guinea, presumably collected at Dorey); now in Oberthür Coll., Paris Mus. (not seen).

Occurrence in New Guinea. Common throughout **New Guinea** and on Normanby Is.: 181 specimens (including 81 from Dobodura and Oro Bay); most from low altitudes but up to 1200 m at Wau.

Notes. This species ranges west to the **Moluccas**, **Celebes**, and **Borneo**, and east to **New Britain**. It is apparently related to *C. flexuosa* Schmidt-Goebel, which occurs from SE. Asia to the Philippines, Celebes, etc., overlapping the range of *cyanella*. *C. australis* Chaudoir, of eastern Australia, is apparently a distinct but related species.

Coptodera lineolata Bates

Bates 1869, Ent. Monthly Mag. 6, p. 74.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1371 (see for synonymy and additional references).
Louwerens 1956, Treubia 23, p. 225 (Moluccas).

Description. None required here; see preceding *Key* and Figure 68; length ± 5–6 mm.

Types. From **New Guinea**, "collected in numbers [presumably at Dorey] by Mr. Wallace"; presumed type now in Oberthür Coll., Paris Mus. (not seen).

Occurrence in New Guinea. Common probably throughout **New Guinea** and on Biak and Normanby Is.: 231 specimens

(including 66 from Dobodura and Oro Bay); most from low altitudes, but reaching 1200–1500 m at Wau and 1400 m at Karubaka, Swart Valley.

Notes. *C. lineolata* ranges from **Celebes** to **New Guinea** and **New Britain**, and *C. mastersi* Macleay of eastern Australia is closely related.

New Guinean specimens vary in size individually (not geographically) from *c.* 4.5 to 6.3 mm in length. The pale elytral marks vary individually and perhaps also geographically, although I cannot now define useful subspecies. Individuals from Biak Is. have the markings notably reduced, but variably so.

Coptodera eluta Andrewes

Andrewes 1923, Trans. Ent. Soc. London for 1923, p. 30.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1370 (see for synonymy and additional references).
Louwerens 1956, Treubia 23, p. 225 (Moluccas).
——— 1964, Ent. Tidskrift 85, p. 181 (Borneo).
Jedlicka 1963, Ent. Abhandlungen 28, pp. 342, 349, fig. 103.
interrupta Chaudoir 1869, Ann. Soc. Ent. Belgium 12, p. 194 (not *interrupta* Schmidt-Goebel 1846).

Description. None needed here; see *Key to Species of Coptodera of New Guinea*, and following *Notes*; length ± 6.5 mm.

Types. Both Chaudoir and Andrewes had this insect from several different localities, and neither designated a type. Its selection should await careful study of specimens from all pertinent localities, for the species is variable, perhaps polytypic (Jedlicka, 1963), and often misidentified.

Occurrence in New Guinea. Twenty-six specimens from numerous localities in all 3 political divisions of **New Guinea**; most at low altitudes, but one at 1200–1300 m at Wau.

Notes. This species apparently ranges from **SE. Asia** to the **Philippines**, **New Guinea**, and **New Britain**. Most New Guinean individuals have the elytra slightly flecked with pale, but some are almost unmarked. These resemble *C. oxyptera* in dark color and acute sutural angles but differ strikingly in narrower form, deep elytral striae, 3rd intervals 4-punctate, and ♂ middle tibiae with only 1 subapical excision.

Coptodera oxyptera Chaudoir

Chaudoir 1869, Ann. Soc. Ent. Belgium 12, p. 175.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1371 (see for additional references).
Louwerens 1956, Treubia 23, p. 225 (Moluccas).

Description (for recognition only). Form broad; color black, not marked; prothorax usually with a few short fine setae on margins near apical angles; elytra with sutural angles acute or acutely denticulate but not spined; 3rd intervals with only subbasal and subapical seta-bearing punctures; ♂ front but not middle tarsi squamulose, and ♂ middle tibiae each with 2 small excisions on inner edge near apex; length *c.* 5.5–7.0 mm.

Type. From **Celebes** (Wallace), now in Oberthür Coll., Paris Mus. (not seen).

Occurrence in New Guinea. Common probably throughout **New Guinea**: 145 specimens (including 77 from Dobodura); most at low altitudes but reaching at least 1300 m at Wau and 1200 at Rattan Camp, Snow Mts.

Notes. I have not seen specimens from Celebes, but Chaudoir's description fits the present species, specifying (partly by reference to his description of *testrastigma*) pointed-denticulate but not spined elytral apices and presence of only subbasal and subapical punctures of the 3rd elytral intervals. For comparison with *eluta*, see *Notes* under that species, above. *C. oxyptera*, as I identify it, occurs on **Celebes**, the **Moluccas**, **New Guinea**, **New Britain**, and **New Ireland**. It is not represented in Australia.

Coptodera papuella n. sp.

Description. With characters of genus; form (Fig. 69) *c.* as in *wau* (below), *Coptodera*-like but with prothorax lobed or subpedunculate at base; dull green, margins and much of base and apex of prothorax and margins and markings of

elytra testaceous, the elytral markings being 2 transverse series of longitudinal lines of varying length on the intervals, appendages irregularly testaceous; entire upper surface with close, heavily impressed, reticulate microsculpture *c.* isodiametric on head and disc of pronotum, scarcely transverse even on elytra. *Head* 0.82 and 0.81 width prothorax; mandibles rather short (in genus); labrum usually weakly emarginate at apex. *Prothorax* wide-subcordate; width/length 1.71 and 1.68; base/apex 1.14 and 1.19; base lobed, subpedunculate; base and apex not margined at middle; disc with usual impressions and also impressed each side. *Elytra* wide; width elytra/prothorax 1.70 and 1.68; apices obliquely sinuate-truncate with outer and sutural angles rounded; striae impressed, not distinctly punctulate; intervals moderately convex, 3rd 4-punctate as described for genus. *Secondary sexual characters*: ♂ front tarsi very narrowly squamulose, middle tarsi not squamulose; ♂ middle tibiae with 1 small excision or impression on inner edge near apex; 2 setae each side last ventral segment in both sexes. *Measurements*: length 3.5–3.9; width 1.8–2.0 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,415) and 4 paratypes from Dobodura, **Papua**, Mar.–July 1944 (Darlington), and 56 additional paratypes from Oro Bay (near Dobodura), Dec. 1943–Jan. 1944 (Darlington).

Additional material. Forty-five, from numerous localities in all 3 political divisions of **New Guinea**; most at low altitudes but up to 1150 m at Wau. Because the type series is adequate, because I expect to distribute paratypes to all museums concerned, and because some geographic variation (of markings) seems to occur, I have restricted the type series to specimens from Dobodura and Oro Bay.

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. This species resembles the Australian *Ectinochila aurata* (Macleay) in small size and dull, heavily microreticulate surface. The basal lobe of the prothorax is intermediate between the usual (lobeless) condition in *Coptodera* and the very strong lobe in *E. aurata.* In this and in some other characters (see *Notes* under *Coptodera*) the present new species and the following one (*wau*) connect *Coptodera* and *Ectinochila* and (I think) justify reducing *Ectinochila* to synonymy.

Coptodera papuella is common on trunks and large branches of standing and recently fallen trees in rain forest.

Coptodera wau n. sp.

Description. With characters of genus and (except as follows) of preceding species (*papuella*); form as in Figure 70; color *c.* as in *papuella* except pale marks of elytra fused to form a broad X, with anterior arms of X extending (narrowly) to humeri and posterior arms more or less connected across suture. *Head* 0.82 and 0.83 width prothorax; front longitudinally rugose anteriorly especially at sides, more irregularly rugose posteriorly. *Prothorax*: width/length 1.69 and 1.70; base/apex 1.26 and 1.19; disc impressed each side (as in *papuella*), with an area before middle relatively shining and transversely microreticulate. *Elytra*: width elytra/prothorax 1.65 and 1.67; elytra slightly humped near base, the raised area relatively shining and with confused microsculpture, and other dark areas of elytra slightly more shining than pale areas. *Measurements*: length 4.4–4.8; width 2.0–2.3 mm.

Types. Holotype ♂ (Bishop Mus.) and 12 paratypes (some in M.C.Z., Type No. 31,416) from Wau, Morobe Dist., **N-E. N. G.,** altitudes from 1200 to 1500 m, dates in June, Sept., Dec., 1961–1962 (Sedlaceks), and additional paratypes as follows. **N-E. N. G.**: 1, Kainantu, 1250 m, Jan. 8, 1965 (Sedlacek); 3, Okapa, dates in Jan., June, Sept., 1964, 1965 (Hornabrook). **West N. G.**: 6, Enarotadi, Wissel Lakes, 1850–1900 m, July 28, 1962 (Sedlacek).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Wau.

Notes. For distinguishing characters and place of this species among other New Guinean *Coptodera*, see *Description* above, *Notes* under the preceding species (*papuella*), and the *Key to Species of Coptodera of New Guinea.*

MINUPHLOEUS n. gen.

Diagnosis. See *Key to Genera of Lebiini of New Guinea*; Figure 71; and *Notes*, below.

Description. Form broad, depressed; some very short pubescence present above and below, the hairs longer at sides of prothorax and elytra. *Head* broad; eyes rather small but prominent; 2 setae over each eye; clypeus subtruncate, 1-setose each side; labrum subparallel, rounded at sides anteriorly, notched at middle, 6-setose; antennae short, reaching not or not much beyond base of prothorax, pubescent from apex 4th segment; mandibles ordinary; mentum strongly toothed; ligula rather narrow, 4-setose; paraglossae attached to ligula but longer, rounded, not setose; palpi slender. *Prothorax* wide-subcordate; sides of disc widely, irregularly depressed but actual margins moderate or narrow, with numerous lateral setae; basal marginal line entire, apical marginal line weak or interrupted at middle; disc with middle line well impressed, basal transverse impression very deep, anterior transverse impression almost obsolete. *Elytra*: humeri prominent but rounded, strongly margined; apices slightly obliquely sinuate-truncate, with outer angles broadly and sutural angles narrowly rounded; striae entire; intervals not elevated at base, 3rd with *c.* 4, 5th with 1 or 2 (near base), 7th with *c.* 4 or 5 apparent special seta-bearing punctures variable in position and difficult to identify among other punctures. *Inner wings* full. *Legs*: tarsi sparsely pilose above; 4th hind-tarsal segment rather small, weakly emarginate; 5th segment with accessory setae; claws with *c.* 5 or 6 small teeth. *Secondary sexual characters*: ♂ front tarsi very little dilated but with 4 segments squamulose, the squamules slender, rather numerous, not paired; ♂ middle tarsi without squamae; ♂ middle tibiae with small excision on inner edge near apex; 2 setae each side near apex last ventral segment in both sexes; ♂ copulatory organs as in Figure 177.

Type species. Minuphloeus mixtus, below.

Generic distribution. That of the single known species, below.

Notes. This insect differs from *Minuthodes* in form; the labrum is notched (not notched in *Minuthodes*); and the lateral pronotal setae are more numerous. It looks a little like some *Philophloeus* (an Australian genus unknown in New Guinea), but the antennal pubescence is different (antennae pubescent from middle of 3rd segments in *Philophloeus*, from apex of 4th in *Minuphloeus*); the labrum is different (not notched in *Philophloeus*); etc. It slightly resembles some *Coptodera*, but the mentum is toothed (not in *Coptodera*), and the ligula is 4-setose (2-setose in *Coptodera*). *Minuphloeus* even resembles some wide, depressed *Catascopus*, but the toothed claws, excised ♂ middle tibiae, and other characters differentiate it from that genus. I am therefore forced to treat the insect as a new monotypic genus, exact relationships undetermined, occurring (so far as known) only in a small area in New Guinea.

The name of the new genus is formed by combining the first two syllables of *Minuthodes* with the last two of *Philophloeus.*

Minuphloeus mixtus n. sp.

Description. With characters of genus; form as in Figure 71; black, shining, most of upper surface without reticulate microsculpture but extensively punctate. *Head* 0.84 and 0.83 width prothorax; front irregularly impressed, irregularly punctate, with short longitudinal ridge each side inside position of anterior supraocular setae. *Prothorax*: width/length 1.82 and 1.80;

base/apex 1.04 and 1.04; margins with numerous strong setae irregularly spaced in whole length; disc finely, sparsely, irregularly punctate. *Elytra*: width elytra/prothorax 1.51 and 1.55; striae moderately impressed, closely punctate; intervals slightly convex, sparsely punctate. *Measurements*: length *c.* 7.0–8.5; width *c.* 3.3–4.0 mm.

Types. Holotype ♂ (Bishop Mus.) and 32 paratypes (some in M.C.Z., Type No. 31,417) from Wau (including Mt. Missim, Kunai Ck., Mt. Kaindi), Morobe Dist., **N-E. N. G.,** 900, 1200, 1300, 1400, 1500, 1500–1800, 1600–2000 m, dates in Jan., Feb., May, June, July, Aug., Sept., Nov., Dec., 1961–1964 (Sedlaceks), and additional paratypes as follows. **N-E. N. G.**: 1, Moife, 15 km NW. of Okapa, 2100 m Oct. 11–13, 1959 (T. C. Maa, Bishop Mus.); 8, Okapa, dates in Apr., Aug., Oct., 1964, Mar. 1965 (Hornabrook). **West N. G.**: 19, Enarotadi, Wissel Lakes, 1800, 1800–1900, 1850–1950 m, dates from July 19 to Aug. 4, 1962 (Sedlacek).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Wau.

Notes. See *Notes* under genus. The insect looks as if it lived on tree trunks or under bark, but its actual habitat is not recorded.

Genus *AGONOCHILA* Chaudoir

Chaudoir 1848, Bull. Soc. Nat. Moscow 21, Part 1, p. 119.

——— 1869, Ann. Soc. Ent. Belgium 12, p. 223.

Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1379 (see for additional references and list of species).

Sloane 1898, Proc. Linnean Soc. New South Wales 23, p. 494 (in key to Australian genera of Lebiini).

Diagnosis. See *Key to Genera of Lebiini of New Guinea.*

Description: characters common to the New Guinean species of the genus (Australian species are more diverse). Form as in Figures 72–76; small, broad, ± convex; short-pubescent above and below, and part or all of upper surface also closely punctate or (at least elytra) roughened. *Head*: eyes prominent but not large; 2 setae over each eye; clypeus subtruncate, 1-setose each side; labrum broadly rounded or subtruncate, 6-setose; mentum toothed; ligula with 2 long and usually 2 short setae, paraglossae *c.* as long as or slightly longer than and attached to ligula; palpi, especially penultimate segments, short. *Prothorax* variable in form (see Figs. cited); base ± arcuate at middle but not strongly lobed; lateral margins narrow to wide, each with seta at base and at (usually) or slightly before middle of length; base and apex with lightly impressed marginal lines sometimes faint or interrupted at middle; disc with moderate middle line and transverse impressions. *Elytra*: humeri moderately prominent, rounded; apices obliquely sinuate-truncate, with outer angles broadly and sutural angles narrowly rounded or blunted; striae entire or nearly so but usually lightly impressed, not sharply defined; 3rd intervals apparently usually 3- or 4-punctate, but dorsal punctures difficult to identify amid other punctation and pubescence. *Inner wings* full. *Legs* slender; 4th tarsal segments weakly emarginate; 5th segments with accessory setae; claws with *c.* 4 short teeth. *Secondary sexual characters*: ♂ front tarsi slightly dilated, soles formed of many squamae *not* arranged in 2 series (in all species of which ♂ ♂ in satisfactory condition are available); ♂ middle tibiae with small notch or impression on inner edge just before apex (except in *expansa*); 2 setae each side last ventral segment in both sexes.

Type species. *A. guttata* Chaudoir, of southern Australia (only species mentioned by Chaudoir in 1848).

Generic distribution. Many species in **Australia**; 1 Australian species also (introduced?) in **New Zealand**; 7 small species in **New Guinea**, chiefly in lower mountains.

Notes. The 7 New Guinean species that I assign to this genus differ among themselves, but they all seem to belong to one small group of the genus that may be

restricted to New Guinea and the adjacent tropical part of Australia. Described Australian species of the group probably include *Agonochila ovalis* Sloane and *intricata* Sloane (both described 1923, Proc. Linnean Soc. New South Wales 48, p. 39), and I have specimens representing one or more forms of this group from North Queensland, Australia, from rain forest on and near the Atherton Tableland. This group of small, pubescent species, with notched ♂ middle tibiae, *may* prove to be worth generic separation from *Agonochila*, but the Australian *Agonochila* need much more study before division of the genus is undertaken.

Most Australian *Agonochila* live on tree trunks, especially on shaggy-trunked *Eucalyptus* trees. The habitat of the New Guinean ones is not recorded but is probably in rain forest.

KEY TO SPECIES OF *AGONOCHILA* OF NEW GUINEA

1. Elytra with pattern of many pale longitudinal dashes in 3 irregular transverse series which cover nearly the whole elytra (Fig. 72) 2
– Elytra differently marked or not marked 3
2. Prothorax not depressed at sides (p. 119) ..... *minuthoides*
– Prothorax depressed at sides (p. 119) ..... *duplicata*
3. Prothorax not subcordate; anterior prothoracic angles broadly rounded-in 4
– Prothorax broadly subcordate 6
4. Elytra dark with single *c.* regular, common, red or testaceous area behind middle (p. 120) ..... *gressitti*
– Elytra not marked as described 5
5. Elytra with markings varying from isolated pale flecks to irregular X-pattern (Figs. 74, A, B) (p. 120) ..... *variabilis*
– Color entirely red, without elytral markings (p. 120) ..... *rufa*
6. Elytra with 2 irregular transverse pale fasciae behind middle (Fig. 75) or with markings expanded (Fig. 75A); length 5.3–5.7 mm (p. 121) ..... *expansa*
– Elytra with a large common pale area (Fig. 76) or single broad post-median fascia; length 6.0–6.7 mm (p. 121) ..... *dorsata*

Agonochila minuthoides n. sp.

Description. With characters of genus; form as in Figure 72; irregular dark reddish brown, elytra with complex pattern of short pale lines in 3 irregular transverse series, appendages testaceous; most of upper surface irregularly punctate or roughened but surface of head and pronotum shining between punctures. *Head* 0.81 and 0.80 width prothorax. *Prothorax* transverse-quadrate; width/length 1.57 and 1.53; base/apex 1.28 and 1.28; side margins very narrow, with no flattened areas inside margins. *Elytra*: width elytra/prothorax 1.64 and 1.66. *Measurements*: length 4.3–4.8; width 2.2–2.4 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,418) from Didiman Ck., Lae, **N-E. N. G.,** Mar. 27, 1955 (E. O. Wilson), in lowland rain forest; 1 ♂ paratype, Busu R., E. of Lae, 100 m, Sept. 14, 1955 (Gressitt); and 1 ♀ paratype, Sattelberg, Huon Gulf, **N-E. N. G.,** 1899 (Biró).

Measured specimens. The ♂ holotype and ♀ paratype.

Notes. The color pattern and very narrow prothoracic margins distinguish this species. The 3 known specimens are all from a rather small area in northern N-E. N. G., but it would be unsafe to assume that the species is really so localized.

The complex color pattern of this small lebiine is so like that of some *Minuthodes* and of *Coptodera lineolata* as to suggest mimetic convergence.

Agonochila duplicata n. sp.

Description. With characters of genus; form as in Figure 73; irregular dark reddish brown, elytra with complex pattern of short pale lines in 3 irregular transverse series (much as in preceding species, *minuthoides*); appendages testaceous; much of upper surface irregularly punctate, but surface shining between punctures. *Head* 0.71 width prothorax. *Prothorax* wide; width/length 1.77; base/apex 1.25; margins broadly depressed. *Elytra*: width elytra/prothorax 1.50. *Measurements*: length *c.* 4.5; width 2.2 mm.

Type. Holotype ♂ (Hungarian National

Mus.) from Sattelberg, Huon Gulf, **N-E. N. G.,** 1899 (Biró); the type is unique.

Notes. Although the individual described above is colored much like the preceding species (*minuthoides*) and occurs within the range of the latter, I think it is distinct. The wider prothoracic margins are striking, and the greater width they give the prothorax is reflected in the proportions, the head being relatively smaller, the prothorax wider, and elytra relatively narrower in *duplicata* than in *minuthoides.*

Agonochila gressitti n. sp.

Description. With characters of genus; form slender; head and prothorax red or reddish brown, elytra slightly darker (often nearly black) with large, common, red or testaceous area behind middle varying in size and shape but always with relatively regular margin (compared with some following species); appendages testaceous; most of upper surface punctate but moderately shining between punctures. *Head* 0.65 and 0.68 width prothorax. *Prothorax*: width/length 1.72 and 1.76; base/apex not calculated (anterior angles too rounded-in for exact measurement of apex); sides arcuate through most of length, sometimes faintly subangulate at median-lateral setae; posterior angles obtuse, slightly blunted; margins moderate. *Elytra*: width elytra/prothorax 1.53 and 1.62. *Measurements*: length 4.2–5.5; width 2.1–2.7 mm.

Types. Holotype ♂ (Bishop Mus.) and 5 paratypes (2 in M.C.Z., Type No. 31,419) all from Swart Vy., Karubaka, **N-E. N. G.,** 1500–1550 m, dates in Nov. 1958 (Gressitt).

Additional material. **N-E. N. G.**: 2, Adalbert Mts., Wanuma, 800–1000 m, Oct. 26, 27, 1958 (Gressitt, 1 specimen bearing his number 3222); 1, Wum, Upper Jimmi Vy., 840 m, July 16, 1955 (Gressitt).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. The form plus coloration of this species are diagnostic, in New Guinea. The specimens listed under *Additional material* are slightly smaller and less sharply bicolored than the types but seem to be conspecific.

Agonochila rufa n. sp.

Description. With characters of genus; form *c.* as in *variabilis* (following species); entirely rufous, not marked; most of upper surface moderately punctate but head and pronotum shining between punctures, elytra duller; appendages testaceous. *Head* 0.71 and 0.69 width prothorax. *Prothorax*: width/length 1.64 and 1.65; base/apex not calculated (anterior angles rounded-in); sides faintly angulate at median-lateral setae, slightly sinuate before *c.* right (slightly obtuse) basal angles; margins rather narrow. *Elytra*: width elytra/prothorax 1.66 and 1.63. *Measurements*: length *c.* 4.0–4.5; width 2.1–2.3 mm.

Types. Holotype ♀ (Bishop Mus.) from Bisianumu, E. of Port Moresby, Papua, 500 m, Sept. 22, 1955 (Gressitt); and paratypes as follows. **Papua**: 2 ♀♀ (1 in M.C.Z., Type No. 31,420), Kokoda-Pitoki, 450 m, Mar. 23, 24, 1956 (Gressitt); 1 ♂, Keparra-Sangi, nr. Kokoda, 500 m, Mar. 26, 1956 (Gressitt), "Sago palm." **N-E. N. G.**: 1, Wareo, Finschhafen (L. Wagner, S. Australian Mus.).

Measured specimens. The ♀ holotype and 1 ♀ paratype from Kokoda-Pitoki.

Notes. The plain rufous color is diagnostic for this species in this genus in New Guinea.

Agonochila variabilis n. sp.

Description. With characters of genus; form as in Figure 74; irregularly brownish black with variable elytral markings pale (Figs. 74, A, B); appendages brownish testaceous; most of upper surface punctate but shining between punctures, elytra slightly less shining. *Head* 0.70 and 0.71 width prothorax. *Prothorax*: width/length 1.62 and 1.67; base/apex not calculated (anterior angles rounded-in); margins moderate. *Elytra*: width elytra/prothorax 1.58 and 1.63. *Measurements*: length *c.* 4.0–4.5; width 2.1–2.3 mm.

Types. Holotype ♂ (Bishop Mus.) and 13 paratypes (some in M.C.Z., Type No. 31,421) all from Wissel Lakes, **West N. G.,** with following additional details: holotype and 1 ♀ paratype, Urapura, Kamo Vy., 1530 m, Aug. 11, 15, 1955 (Gressitt); 1 paratype, Wagete, Tigi L., 1700 m, Aug. 17, 1955 (Gressitt); 10 paratypes, Enarotadi, altitudes from 1750 to 1900 m, dates in Aug. 1955 (Gressitt) and July, Aug. 1962 (Sedlacek); 1, Moanemani, Kamo V., 1500 m, Aug. 13, 1962 (Sedlacek).

Additional material. **Papua**: 2, Mafulu, 4000 ft. (*c.* 1230 m), Jan. 1934 (Cheesman). **N-E. N. G.**: 24, Wau, Morobe Dist., altitudes from 1100 to 1450 m, dates in all months *except* Apr., June, Nov., 1961–1963 (Sedlacek); 1, Mt. Mis(s)im, Morobe Dist., 5850 ft. (*c.* 1780 m), Apr. (Stevens, M.C.Z.).

Measured specimens. The ♂ holotype and ♀ paratype from Urapura.

Notes. The specimens from Wissel Lakes vary surprisingly in elytral pattern (Figs. cited). Of the 2 from Mafulu, 1 has markings comparable to those of the most heavily marked Wissel Lakes individual, and the other is even more heavily marked. The Wau and Mt. Mis(s)im individuals are heavily marked (Fig. 74B) but somewhat variable. The variation is obviously partly individual, but heavy markings are apparently commoner in eastern than in western New Guinea.

Agonochila expansa n. sp.

Description. With characters of genus except as noted below; form (Fig. 75) broad, with wide-subcordate prothorax; black, elytra with 2 irregular, interrupted pale fasciae behind middle, the posterior one narrower and more interrupted, the fasciae sometimes partly joined and extended anteriorly on each elytron (Fig. 75A); appendages irregularly blackish brown; entire upper surface punctate but moderately shining between punctures, and head also obliquely-longitudinally rugulose at sides between eyes. *Head* 0.76 and 0.76 width prothorax. *Prothorax*: width/length 1.89 and 1.80; base/apex 1.18 and 1.18; side margins broadly depressed, with median-lateral setae before middle of prothoracic length. *Elytra*: width elytra/prothorax 1.52 and 1.59. *Secondary sexual characters* as for genus except ♂ middle tibiae not excised or impressed near apex. *Measurements*: length 5.3–5.7; width 2.5–2.8 mm.

Types. Holotype ♀ (Bishop Mus.) from Finisterre Rge., Saidor, Kiambavi Village, **N-E. N. G.,** Aug. 1–28, 1959 (W. W. Brandt), and paratypes as follows. **N-E. N. G.**: 1 ♂ in poor condition (M.C.Z., Type No. 31,422), Wau, Morobe Dist., 1400–1500 m, Dec. 20, 1961 (Sedlacek); 6, Okapa, Mar. 23, Apr. 4, 1964 (Hornabrook); 1 ♂ (with expanded markings), 11 km S. of Mt. Hagen (town), **N-E. N. G.,** 2000–2300 m, May 20, 1963 (Sedlacek).

Measured specimens. The ♂ paratype from Wau and the ♀ holotype.

Notes. In form and markings this species looks more like a *Coptodera* than an *Agonochila*, but it has the characters of the latter genus, as here defined. The middle tibiae lack excisions in both ♂ ♂ listed, but this is probably a specific (not generic) character, for the following species (*dorsata*), which seems close in most ways to the present one, has the notch present, but weak.

Agonochila dorsata n. sp.

Description. With characters of genus; form as in Figure 76; black or irregularly reddish black, elytra either with large testaceous area as figured or the pale area reduced to a *single* transverse post-median fascia; entire upper surface closely punctate, but ± shining between punctures. *Head* 0.82 and 0.82 width prothorax; front especially at sides slightly rugulose as well as punctate. *Prothorax* broadly cordate; width/length 1.84 and 1.80; base/apex 1.13 and 1.15; sides broadly depressed, with median-lateral seta slightly before middle. *Elytra*: width elytra/prothorax 1.58 and 1.65; sutural angles better defined than

usual, scarcely blunted. *Secondary sexual characters* as for genus, including ♂ middle tibiae impressed on inner edge near apex. *Measurements*: length 6.0–6.7; width 2.9–3.3 mm.

Types. Holotype ♂ (Bishop Mus.) and 11 paratypes (some in M.C.Z., Type No. 31,423) from Kepilam, **N-E. N. G.,** 2420–2540 m, June 21 and 23, 1963 (Sedlacek).

Additional material. **N-E. N. G.**: 3, 11 km S. of Mt. Hagen (town), 2000–2300 m, May 20, 1963 (Sedlacek); 1, Edie Ck., Morobe Dist., 2000–2100 m, Oct. 5–10, 1963 (Sedlaceks); 1, Kainantu, 2150 m, Jan. 8, 1965 (Sedlacek).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. This is the largest *Agonochila* in New Guinea, and it occurs at relatively high altitudes. The form plus markings are diagnostic. The testaceous area of the elytra varies geographically: it is large (*c.* as in Fig. 76) in the whole type series, but reduced to a (broad) transverse fascia (Fig. 76A) in all specimens listed under *Additional material.* However, I do not wish to make subspecies without seeing more material from more localities.

Genus *OXYODONTUS* Chaudoir

Chaudoir 1869, Ann. Soc. Ent. Belgium 12, p. 239.

Diagnosis. See *Key to Genera of Lebiini of New Guinea*; note especially form, small size, long acute mentum tooth, rounded-oblique elytral apices, and plainly 3-punctate 3rd elytral intervals.

Description. Form as in Figure 77; part of surface including pronotum and sides of elytra *very inconspicuously* setulose. *Head*: eyes prominent, 2 setae over each eye; labrum ± rounded, 6-setose; mentum with long, acute tooth; ligula narrow, with 2 long and 2 shorter setae; paraglossae *c.* long as ligula, attached, wide, without setae. *Prothorax* with usual 2 setae each side. *Elytra* formed as figured; apices rounded-oblique; striae entire, moderately impressed; 3rd intervals strongly 3-punctate, with punctures *c.* ¼ from base on outer edge, and near middle and apex on inner edge. *Inner wings* full. *Legs* slender; 4th tarsal segments small, weakly emarginate; 5th segments with accessory setae; claws with *c.* 3 teeth. *Secondary sexual characters*: ♂ front tarsi slightly dilated, 3 segments with narrow squamae *not* in 2 regular series; ♂ middle tibiae with minute but deep excision on inner edge just before apex; ♂ with 1, ♀ 2 setae each side near apex last ventral segment.

Type species. O. tripunctatus Chaudoir (below).

Generic distribution. That of the single species.

Notes. The relationships of this inconspicuous genus are not clear.

Oxyodontus tripunctatus Chaudoir

Chaudoir 1869, Ann. Soc. Ent. Belgium 12, p. 239.
Louwerens 1956, Treubia 23, p. 226 (Moluccas).

Description. None required here. See under genus, of which this is the only known species, and see Figure 77; length *c.* 4–4.5 mm.

Types. Two specimens from **Celebes**, collected by Wallace; type now in Oberthür Coll., Paris Mus. (not seen).

Occurrence in New Guinea. Common probably throughout **New Guinea**: 78 specimens (including 53 from Dobodura), from localities in all 3 political divisions of New Guinea; chiefly at low altitudes, but to 1300 m at Wau.

Notes. This species has been previously recorded from **Celebes** and the **Moluccas**, and I have a series of it (or of a closely related species) also from Leyte and Luzon in the **Philippines**. It is not known in New Britain or Australia. I think it lives in understory foliage in rain forest, but my scanty field notes are not clear about this.

Genus *MOCHTHERUS* Schmidt-Goebel

Schmidt-Goebel 1846, Faunula Coleop. Birmaniae, p. 76.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7,

p. 1382 (see for additional references, synonymy, and list of species).
Jedlicka 1963, Ent. Abhandlungen 28, p. 352.

Diagnosis. See *Key to Genera of Lebiini of New Guinea*; and note form (Fig. 78), unarmed elytral apices, and minutely setulose pronotal disc.

Description. Form *c.* as in Figure 78. *Head:* eyes large; 2 setae over each eye; labrum subtruncate, not emarginate, 6-setose; mentum weakly, usually obtusely (variably?) toothed; ligula and paraglossae subequal, attached, together wide, 4-setose; palpi slender. *Prothorax* cordate, with usual 2 setae each side. *Elytra* wide, unarmed; apices slightly obliquely sinuate-truncate; 3rd intervals 2-punctate, the punctures on inner edge behind middle and near apex. *Inner wings* full. *Legs* slender; 4th tarsal segments small, scarcely emarginate; 5th segments with (weak) accessory setae; claws each with 2 long and 1 shorter tooth. *Secondary sexual characters*: ♂ front tarsi scarcely dilated, 3 segments with paired squamae; ♂ middle tibiae not excised; ♂ with 1, ♀ 2 setae near apex each side last ventral segment.

Type species. M. angulatus Schmidt-Goebel (=*tetraspilotus* Macleay) of SE. Asia, etc.

Generic distribution. **SE. Asia** including **Japan**, and across the **Malay Archipelago** to the **Philippines** and **New Guinea** (not Australia), with one species recorded (introduced?) also on **Christmas Is.** and **Samoa**.

Notes. A single common species of the genus occurs on New Guinea.

Mochtherus obscurus (Sloane)

Sloane 1907, Deutsche Ent. Zeitschrift for 1907, p. 183 (?*Sinurus*).
Andrewes 1927, Ann. Mag. Nat. Hist. (9) 19, p. 110.
immaculatus Maindron (not Redtenbacher) 1908, Nova Guinea 5, p. 299.

Description (for recognition only). With characters of genus; form as in Figure 78; dull black, surface minutely short-setulose; length *c.* 6–7 mm.

Type. From Sattelberg, **N-E. N. G.**; should be in Deutsches Entomologisches Institut, Berlin-Dahlem (seen by Andrewes).

Occurrence in New Guinea. Common probably throughout **New Guinea** (130 specimens, including 79 from Dobodura), most at low altitudes, but reaching 1200 m at Wau (only 1 specimen at this altitude) and 1530 m on the Salawaket Rge. (2 specimens). Found also on Normanby Is. (2 specimens) and Waigeu Is. (1).

Notes. This species occurs also on **New Britain** (6 specimens including 3 from Gazelle Pen.) and **New Ireland** (3).

The relationship of the New Guinean *obscurus* to *asemus* Andrewes (recorded from the Moluccas by Louwerens 1956, Treubia 23, p. 226) and to other species farther west in the Malay Archipelago remains to be determined. In general the "species" seem very closely inter-allied in this genus, and some may prove to be geographic subspecies.

This insect lives on and under the bark of tree trunks and recently fallen logs in rain forest.

(Genus *MOCHTHEROIDES* Andrewes)

Andrewes 1923, Trans. Ent. Soc. London for 1923, p. 50.
Jedlicka 1963, Ent. Abhandlungen 28, p. 352.

Diagnosis. See *Key to Genera of Lebiini of New Guinea.*

Description. Form *c.* as in Figure 79. *Head:* eyes moderate; 2 setae over each eye; mandibles moderate; labrum rounded-truncate, not (or scarcely) emarginate, 6-setose; mentum obtusely prominent at middle but scarcely toothed; ligula wide, 4-setose, with paraglossae not attached (except at base), longer and narrower than ligula. *Prothorax* subcordate, with very narrow margins, each with usual 2 setae. *Elytra* with apices obliquely sinuate-truncate, unarmed; striae entire; 3rd intervals with 1 seta-bearing puncture on inner edge at extreme apex but otherwise impunctate.

Legs slender; 4th tarsal segments emarginate for less than half of length; 5th segments with accessory setae; claws each with *c.* 4 very small teeth. *Inner wings* full. *Secondary sexual characters*: ♂ front tarsi wider than in *Mochtherus*, with 3 segments 2-seriately squamulose; ♂ middle tibiae not excised; ♂ with 1, ♀ with 2 setae near apex each side last ventral segment.

Type species. *Masoreus sericans* Schmidt-Goebel, of Burma, etc.

Generic distribution. Known from **Burma**, **Singapore**, **Sumatra**, **Philippines**, and **New Britain**; not recorded from New Guinea, but may occur there.

Notes. *Mochtheroides* superficially resembles *Mochtherus* but the two genera are probably not related. They differ in mouthparts, punctures of 3rd elytral intervals, claw teeth, etc.

(*Mochtheroides niger* Jedlicka)

Jedlicka 1934, Acta Soc. Ent. Prague 31, p. 122.
——— 1963, Ent. Abhandlungen 28, p. 352.

Description (for recognition only). With characters of genus; form as in Figure 79; black, most of surface (except prosternum) not setulose. *Prothorax* with margins very narrow. *Elytra* with 3rd intervals with only 1 (apical) seta-bearing puncture; length *c.* 4.5–4.8 mm.

Type. From Sibuyan Is., **Philippines**; in Andrewes Coll., British Mus. (seen).

Occurrence in New Guinea. Not yet found, but may occur.

Notes. Three specimens that I collected at Cape Gloucester, **New Britain** (under the bark of a small dead tree) seem indistinguishable from the Philippine type, with which I compared them in 1948. This distribution suggests that the species will be found in New Guinea too.

Genus *DOLICHOCTIS* Schmidt-Goebel

Schmidt-Goebel 1846, Faunula Coleop. Birmaniae, p. 62.
Andrewes 1931, Zool. Mededelingen 14, pp. 62–64 (key to Sumatran species).
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1383 (see for additional references and list of species).
Louwerens 1958, Treubia 24, pp. 258, 259 (comments on some species).
Jedlicka 1963, Ent. Abhandlungen 28, p. 356.

Diagnosis. Small Lebiini, rather diverse in form; not pubescent; mentum without tooth; ligula and paraglossae fused into a broadly rounded whole, with usually 2 principal and several slightly smaller setae; each 3rd elytral interval usually with 2 minute punctures behind middle, these punctures without setae.

Description. Form variable (Figs. 80–85); not pubescent above, with or without reticulate microsculpture, latter (if present) *c.* isodiametric on front, transverse on pronotum, more transverse on elytra. *Head*: eyes moderately prominent (abruptly so in *distorta*), with 2 seta-bearing punctures over each eye except anterior puncture absent in *distorta* and reduced in *aculeata* group to a small impressed puncture without seta; clypeus *c.* truncate, 1-setose each side; labrum rather long, subtruncate or slightly arcuate at apex except slightly emarginate in *microdera*, 6-setose; mentum without tooth, at most slightly arcuately prominent at middle; ligula and maxillae fused, together broadly rounded, with usually 2 principal setae slightly before apex and additional smaller setae at apex (setae often difficult to distinguish); palpi rather short, but apical segments not widened; antennae moderate, pubescent from 5th segments, sometimes a little pubescence on apex of 4th. *Prothorax*: setae at basal angles present, median-lateral setae present or absent; base not margined at middle, apex usually with fine marginal line entire; discal impressions usually present, sometimes almost obsolete. *Elytra* varying in form and in presence or absence of apical spines; striation entire, varying in depth and in punctation; 3rd intervals usually with 2 minute punctures without setae placed irregularly in posterior half of elytral length (see *Notes*, below). *Inner wings* full. *Legs*

slender; 4th tarsal segments weakly emarginate; 5th segments with few, weak accessory setae; claws with *c.* 3 to 5 teeth. *Secondary sexual characters*: ♂ front tarsi very little dilated, 3 segments with paired squamae at least near apex; ♂ middle tarsi without squamae; ♂ middle tibiae not excised; ♂ with 1, ♀ 1 or 2 setae each side last ventral segment.

Type species. Dolichoctis striata Schmidt-Goebel (below).

Generic distribution. Numerous from **SE. Asia** across the islands to **New Guinea**, a few species reaching **New Britain**, **New Ireland**, the **Solomons**, and northern **Australia**.

Notes. The 13 New Guinean species of *Dolichoctis* can be arranged in 5 groups. *D. striata* and *microdera* represent separate species groups which are widely distributed outside New Guinea and which have probably reached New Guinea comparatively recently from the west. *D. distorta* is unique and forms a group of its own; it may be derived from either of the following species groups or from a common ancestor. Six of the remaining New Guinean species form what I call the *aculeata* group, characterized by anterior supraocular seta-bearing punctures reduced to small impressed points without setae, median-lateral pronotal setae lost, elytra dentate or spined, and reticulate microsculpture present on entire upper surface. Excepting *dentata*, which is satisfactorily distinct, the species of this group are very similar to each other and difficult to define because of occurrence of intermediates. They are sympatric —all 6 species occur at Dobodura—and do not seem to be differentiating geographically. This group is represented also outside New Guinea. Finally, 4 species form what I am naming the *polita* group, which is like the *aculeata* group in form and in spined elytra, but anterior supraocular seta-bearing punctures are present, and reticulate microsculpture is absent on head and pronotum and in some cases absent on elytra too. The species of this group differ among themselves in color, elytral microsculpture, and form of elytral striae. This group is thus far known only from the eastern half of New Guinea, and the species are partly allopatric: *divisa* and *huon* seem not to occur together, and neither do *castanea* and *polita*.

Although the New Guinean *Dolichoctis* are rather diverse, they are less so than the Oriental members of the genus. Some Oriental groups, including *Menarus* (a group of small convex species), are not represented in New Guinea at all. The general pattern of distribution of the genus suggests that 3 or 4 stocks have reached New Guinea at different times, probably all from the direction of tropical Asia, and that 1 or 2 of the older stocks have radiated moderately on the island.

The 2 minute impressed punctures, without setae, on each 3rd elytral interval posteriorly are present in most *Dolichoctis* but may be absent in *distorta* (in which these punctures, if present, are lost in the general punctation of the intervals) and are difficult to see and perhaps sometimes absent in the *polita* group. These minute punctures are best seen in carefully cleaned specimens under diffused light. When I have been able to see them clearly in the first 1 or 2 specimens of a series, I have credited that species with possessing them, without attempting to clean and examine whole series.

Although my field notes do not distinguish most species of this genus, I know that most of them (except *microdera*) are arboreal, living in understory foliage in rain forest. They are usually collected by sweeping or beating. They do not often fly to light, which suggests that they may be largely diurnal. However, one species, *distorta*, is apparently known only from light-collected specimens. It may be nocturnal and may occupy a habitat that collectors do not often reach, perhaps treetops in rain forest.

KEY TO SPECIES OF *DOLICHOCTIS* OF NEW GUINEA

1. Elytra obliquely truncate at apex, not spined or denticulate; elytra usually spotted 2
– Elytra spined or acutely denticulate at apex; not spotted, except sutural area sometimes red 3
2. Prothorax wide and widely margined (p. 126) ..... *striata*
– Prothorax narrow, narrowly margined (p. 127) ..... *microdera*
3. Head distorted, eyes small but abruptly prominent, front swollen on each side; prothorax semicircular, more than 2× wide as long (p. 127) ..... *distorta*
– Head normal; prothorax less than 2× wide as long 4
4. Head and pronotum (and elytra) with reticulate microsculpture; anterior seta-bearing punctures over eyes reduced to minute punctures without setae (*aculeata* group) 5
– Head and pronotum without reticulate microsculpture (elytra with or without it); anterior (as well as posterior) seta-bearing punctures present over eyes (*polita* group) 10
5. Form broader, more *Agonum*-like (Fig. 82); prothorax relatively smaller and narrower; elytra dentate at apex (p. 128) ..... *dentata*
– Form more oval or fusiform; prothorax usually relatively larger and wider; elytra spined at apex 6
6. Elytral striae very lightly impressed, 7th striae reduced to very fine superficial lines; elytral spines usually very long (but variable) (p. 128) ..... *spinosa*
– Elytral striae including 7th well impressed; elytral spines usually shorter 7
7. Suture or sutural area red; form usually relatively narrow; length 4.6–5.6 mm. (p. 129) ..... *suturalis*
– Suture not red; form variable; size often larger 8
8. Sides of prothorax ± strongly sinuate; elytral striae moderately impressed (p. 129) ..... *aculeata*
– Sides of prothorax not or only slightly sinuate; elytral striae often deeper 9
9. Prothorax wider (width/length 1.78 and 1.80), with sides more rounded and with wider margins (p. 130) ..... *subrotunda*
– Prothorax narrower (width/length 1.61 and 1.69), with sides less rounded and with narrower margins (p. 130) ..... *subquadrata*
10. Strikingly bicolored, head and prothorax red, elytra black or piceous; often larger (5.8–7.4 mm) 11
– Not or at most vaguely bicolored; often smaller (5.4–6.5 mm) 12
11. Elytra with grooved striae and distinct reticulate microsculpture (p. 131) ..... *divisa*
– Elytra with striae formed by rows of small punctures and elytral disc without reticulate microsculpture (p. 131) ..... *huon*
12. Elytra with reticulate microsculpture (p. 131) ..... *castanea*
– Elytral disc without reticulate microsculpture (p. 132) ..... *polita*

Dolichoctis striata Schmidt-Goebel

Schmidt-Goebel 1846, Faunula Coleop. Birmaniae, p. 62.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1384 (see for synonymy and additional references).
Louwerens 1958, Treubia 24, p. 258.
Jedlicka 1963, Ent. Abhandlungen 28, p. 357.

Description (for recognition only). With characters of genus; form broad, with elytra unarmed; black or piceous, elytra usually with red spots; 2 setae over each eye; prothorax with 2 setae each side (see *Notes*, below); length *c.* 4–4.5 mm.

Type(s). From **Burma**, in Prague Mus. (not seen).

Occurrence in New Guinea. Common probably throughout **New Guinea**: 200 specimens (by count), including examples from Normanby, Woodlark, Biak, and Waigeu Is.; most at low altitudes (including Dobodura), but a few at 1050, 1100, and 1200 m at Wau.

Notes. The recorded range of *striata* is from **SE. Asia** (including **Ceylon** and **Japan**) to the **Philippines**, **New Guinea**, and North Queensland, **Australia**, and I have specimens also from **New Britain** and **New Ireland**. Whether populations from all these places are in fact conspecific is a question for future study.

Most individuals from New Guinea are either 4-spotted (each elytron with a pale spot near base and another near apex), 2-spotted (with only the subapical spots), or intermediate (with conspicuous subapical and fainter subbasal spots—note that the subbasal elytral spots vary in distinctness more than in size). The single individual

seen from Woodlark Is. is the only unspotted one in the New Guinean series. However, 4-spotted, 2-spotted, and unspotted individuals are said to occur elsewhere in the species' range (Louwerens 1958).

Of the 200 New Guinean individuals, all that are in condition to examine have 2 seta-bearing (or formerly seta-bearing) punctures over each eye, and all have both a basal and a median-lateral seta (or puncture) in each prothoracic margin except that 2 specimens from Nabire, West N. G. (Bishop Mus.), lack the median-lateral seta and puncture on one side. These specimens have the pronotum slightly unsymmetric: angulate on the side with median seta, evenly arcuate on the side without seta. Numerous other specimens from the same locality have the median seta and puncture present on both sides.

This species lives in understory foliage in rain forest.

Dolichoctis microdera Andrewes

Andrewes 1930, Ann. Mag. Nat. Hist. (10) 6, p. 665.
——— 1931, Zoologische Mededelingen 14, p. 63.
Louwerens 1956, Treubia 23, p. 226 (Moluccas).
——— 1964, Ent. Tidskrift 85, p. 184 (Borneo).

Description (for recognition only). With characters of genus; form (Fig. 80) relatively slender, with narrow, narrowly margined prothorax; black or piceous, each elytron with 2 pale spots; 2 setae over each eye; prothorax with basal but not median-lateral setae; length *c.* 4.5–5 mm.

Type. From **Sumatra**; in Andrewes Coll., British Mus. (seen).

Occurrence in New Guinea. **Papua**: 6, Dobodura, Mar.–July 1944 (Darlington). **N-E. N. G.**: 1, Nadzab, July 1944 (Darlington); 1, Torricelli Mts., Siaute, sea level, Nov. 9–17, 1958 (W. W. Brandt, Bishop Mus.).

Notes. Comparison (made in 1948) shows that New Guinean specimens differ slightly from the Sumatran type, but the latter is unique. More material from more localities is needed to show whether the differences are individual or geographic. The known range of the species now includes **Sumatra**, **Borneo**, the **Moluccas**, and **New Guinea**.

My New Guinean specimens were (I think) taken among dead leaves on wet ground, a unique habitat for members of this genus in New Guinea.

Dolichoctis distorta n. sp.

Description. With characters of genus; form as in Figure 81; irregularly reddish piceous, appendages irregularly brown; shining, dorsal reticulate microsculpture lacking but most of surface irregularly, rather finely punctate. *Head* 0.64 and 0.65 width prothorax; eyes abnormally small but abruptly prominent, with a channel over each eye running diagonally forward; posterior seta-bearing puncture high above each eye, anterior puncture absent; front strongly swollen each side of median longitudinal channel, each swollen area impressed near middle; sides of head behind eyes longitudinally multisulcate. *Prothorax* very wide; width/length 2.13 and 2.18; base/apex 1.43 and 1.40 (base measured across seta-bearing punctures); sides very broadly rounded into base, with posterior angles not defined; margins very widely depressed, slightly reflexed; posterior-lateral setae present, median-lateral setae absent; base and apex not margined; disc with median line and posterior and anterior transverse impressions. *Elytra*: width elytra/prothorax 1.16 and 1.17; outer-apical angles distinct, *c.* right or minutely acute; apices each with short spine *c.* opposite ends 2nd intervals; striae impressed, not punctate; intervals punctate, 3rd with usual 2 small punctures doubtfully distinguishable behind middle. *Secondary sexual characters* as for genus; ♂ with 1, ♀ 2 setae each side last ventral segment. *Measurements*: length 5.7–6.5; width 2.5–2.7 mm.

Types. Holotype ♀ (M.C.Z., Type No. 31,424) from Dobodura, **Papua**, Mar.–July 1944 (Darlington); 3 paratypes, Kokoda, **Papua**, Mar. 28–29, 1956 (Gressitt), taken in light trap; and 1 paratype, same locality, 1200 ft., June 1933 (Cheesman).

Measured specimens. A ♂ paratype from Kokoda (British Mus.) and the ♀ holotype.

Notes. In spite of its unique modifications, this species is clearly a *Dolichoctis*. All known specimens were probably taken at light: Gressitt's are so labeled; Miss Cheesman's specimen has the scales of Lepidoptera stuck to it; and mine was taken on a lighted window.

Dolichoctis aculeata group

Dolichoctis aculeata Chaudoir and its immediate relatives form a well defined group with the following characters in addition to characters of the genus: form usually suboval or fusiform (but broad *Agonum*-like in *dentata*); entire upper surface microreticulate; posterior seta-bearing punctures over eyes present, anterior punctures reduced to minute points without setae; prothoracic margins with seta-bearing punctures at basal angles, without median-lateral punctures; elytra with outer-apical angles well defined (except in *dentata*) and apices acutely dentate or spined *c.* opposite ends of 1st striae or 2nd intervals; last ventral segment with 1 seta each side in both sexes.

Besides *aculeata* itself (as I identify it), the following 4 closely related new species occur in New Guinea: *spinosa*, *suturalis*, *subrotunda*, and *subquadrata*. These 5 species (including *aculeata*) apparently intergrade to some extent, and their status is therefore doubtful. *D. dentata* is more distinct. The species of this group are all sympatric in New Guinea.

Although most species of the *aculeata* group are New Guinean, the group is represented west at least to Celebes (by typical *aculeata*), on New Britain, New Ireland, and the Solomons, and in North Queensland, Australia. The group is apparently not represented in the Philippines.

Dolichoctis dentata n. sp.

Description. With characters of genus and of *aculeata* group; form as in Figure 82; broad-*Agonum*-like with relatively small prothorax; brownish black, margins and legs paler brown, antennae and mouthparts testaceous. *Head* 0.82 and 0.83 width prothorax. *Prothorax* rather small, quadrate-subcordate; width/length 1.58 and 1.60; base/apex 1.23 and 1.21; side margins moderately wide and reflexed. *Elytra*: width elytra/prothorax 1.71 and 1.73; outer-apical angles rounded, apices acutely dentate; striae moderately impressed, impunctate. *Measurements*: length 6.5–7.0; width 2.8–3.1 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,425) and 21 paratypes from Dobodura, **Papua**, Mar.–July 1944 (Darlington); and 6 additional paratypes from Oro Bay (near Dobodura), Dec. 1943–Jan. 1944 (Darlington).

Additional material. **N-E. N. G.**: 1, Surprise Ck., Morobe Dist., Oct. 7 (Stevens, M.C.Z.); 1, Simbang, Huon Gulf, 1898 (Biró); 2, Torricelli Mts., Wantipi Village, Nov. 30–Dec. 8, 1958 (W. W. Brandt, Bishop Mus.). **West N. G.**: 1, Hollandia, Jan. 1945 (Malkin, U.S.N.M.); 1, Hijob, 25 m, Sept. 10, 1956 (Neth. New Guinea Exp., Leiden Mus.); 1, Wasian, Vogelkop, Sept. 1939 (Wind, M.C.Z.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. I know no very close relatives of this species. It is, of course, placed in relation to others in the preceding *Key to Species*.

Dolichoctis spinosa n. sp.

Description. With characters of genus and of *aculeata* group; black, appendages dark brown; microsculpture more transverse than usual on pronotum and elytra, latter slightly iridescent. *Head* 0.74 and 0.76

width prothorax. *Prothorax* transverse-cordate; width/length 1.67 and 1.64; base/apex 1.26 and 1.25; sides depressed but margins not well defined. *Elytra*: width elytra/prothorax 1.61 and 1.72; outer-apical angles well defined but obtuse, apices with long (but variable) slightly dehiscent spines; striae, especially outer ones, very lightly impressed. *Measurements* (types only); length *c.* 6.0–7.5 (including spines); width 2.6–3.2 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,426) and 9 paratypes from Dobodura, **Papua**, Mar.–July 1944 (Darlington). Additional paratypes as follows, all from **Papua**: 3, Kokoda, 1200 ft., June, Aug., Sept. 1933 (Cheesman); 1, Palmer R. at Black R., June 7–14, 1936 (Archbold Exp., A.M.N.H.).

Additional material. Eighteen from various localities in all 3 political divisions of **New Guinea**; some at low altitudes, some at 1200 (at Wau), 1300, and 2000 m.

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. Typical specimens of this new species are easily recognized by very light elytral striation and very long elytral spines, but some individuals listed under *Additional material* have shorter spines and vary toward one or another of the following species.

Dolichoctis suturalis n. sp.

Description. With characters of genus and of *aculeata* group; form *c.* as in *aculeata* (following species) but more slender, smaller; castaneous with suture or sutural area reddish, appendages brownish testaceous. *Head* 0.69 and 0.74 width prothorax. *Prothorax*: width/length 1.79 and 1.74; base/apex 1.40 and 1.39; sides broadly rounded anteriorly, slightly sinuate before somewhat obtuse, blunted posterior angles; margins rather widely depressed especially posteriorly. *Elytra* rather narrow; width elytra/prothorax 1.44 and 1.52; outer-apical angles well defined but obtuse, apices with short spines; striae moderately impressed, not distinctly punctate. *Measurements*: length *c.* 4.6–5.6; width *c.* 2.0–2.4 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,427) and 23 paratypes from Dobodura, **Papua**, Mar.–July 1944 (Darlington); and 6 paratypes from Oro Bay (near Dobodura), Dec. 1943–Jan. 1944 (Darlington).

Additional material. Thirty-one (some doubtfully identified), from numerous localities including all 3 political divisions of **New Guinea** and Normanby Is.; most from low altitudes (usually below 500 m) but 1 from Finisterre Rge. at 1200, and 1, Upper Jimmi Vy. at 1300 m.

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. In the *aculeata* group of New Guinean *Dolichoctis*, only relatively small, slender individuals have reddish sutures. This correlation of size, form, and color suggests that *suturalis* is a real species, although the distinguishing characters are slight.

Dolichoctis aculeata Chaudoir

Chaudoir 1869, Ann. Soc. Ent. Belgium 12, p. 251.
Andrewes 1930, Treubia 7, Supplement, p. 336.
Louwerens 1956, Treubia 23, p. 226 (Moluccas).

Description. With characters of genus and of *aculeata* group. *Head* 0.72 and 0.67 width prothorax. *Prothorax*: width/length 1.80 and 1.75; base/apex 1.30 and 1.42 (proportions notably variable); sides rather broadly depressed. *Elytra*: width elytra/prothorax 1.50 and 1.49; outer-apical angles well defined, almost right (slightly obtuse), apices spined; striae moderately impressed. *Measurements*: length *c.* 5.0–6.5; width *c.* 2.2–3.0 mm.

Types. From **Celebes**, collected by Wallace; type now in Oberthür Coll., Paris Mus. (not seen).

Occurrence in New Guinea. Common probably throughout the island: 120 specimens (including 65 from Dobodura and Oro Bay), from all 3 political divisions of

New Guinea and Rossel and Woodlark Is.; most at low altitudes but reaching 1200 to 1400 m at some localities.

Measured specimens. A pair (♂ ♀) from Dobodura.

Notes. My identification of this species is based on comparison with specimens identified by Andrewes in his collection.

I collected specimens that I refer to this species at Iron Range and Rocky R. in the mid-peninsular rain forest of Cape York, **Australia**, in 1958.

Dolichoctis subrotunda n. sp.

Description. With characters of genus and of *aculeata* group; similar to *aculeata*, differing principally in form of prothorax (Fig. 83), with broadly rounded sides not or scarcely sinuate posteriorly. *Head* 0.65 and 0.66 width prothorax. *Prothorax*: width/length 1.78 and 1.80; base/apex 1.42 and 1.33; sides flattened but not strongly reflexed. *Elytra*: width elytra/prothorax 1.49 and 1.49; apical spines moderate; striae moderately impressed. *Measurements* (types): length *c.* 5.0–6.5; width *c.* 2.3–2.9 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,428) and 26 paratypes from Dobodura, **Papua**, Mar.–July 1944 (Darlington); and 2 additional paratypes from Oro Bay (near Dobodura), Dec. 1943–Jan. 1944 (Darlington).

Additional material. Sixty (some doubtfully identified) from numerous localities in all 3 political divisions of **New Guinea** and Normanby and Woodlark Is.; most at low altitudes, but recorded above 1000 m at several localities including Wau and at 2500 m in the Chimbu area.

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. Individuals assigned to this species vary considerably in size, depth of elytral striae, etc. A single specimen from **Waigeu Is.** (Camp Nok, 2500 ft. (*c.* 770 m), Apr. 1938, Cheesman) differs from all specimens from the mainland of New Guinea in having a poorly defined subapical red spot on each elytron near suture.

Dolichoctis subquadrata n. sp.

Description. With characters of genus and of *aculeata* group; form similar to *aculeata* except prothorax smaller and subquadrate (Fig. 84). *Head* 0.75 and 0.70 width prothorax. *Prothorax*: width/length 1.61 and 1.69; base/apex 1.36 and 1.44; sides usually slightly sinuate near base; margins scarcely depressed anteriorly, more broadly so posteriorly. *Elytra*: width elytra/prothorax 1.60 and 1.54; apices with moderate spines; striae usually deeply impressed (deeper than in *aculeata*); 7th intervals slightly elevated at base. *Measurements* (types only): length 5.7–6.7; width 2.5–2.8 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,429) and 3 paratypes from Dobodura, **Papua**, Mar.–July 1944 (Darlington); 2 additional paratypes from Oro Bay (near Dobodura), Dec. 1943–Jan. 1944 (Darlington); and 4 paratypes from Milne Bay, **Papua**, Dec. 1943 (Darlington).

Additional material. Four from widely scattered localities in **New Guinea**; and 3, **Aru Is.** (British Mus.). Also several doubtfully identified from Wau.

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. This species seems clearly distinct from the preceding one (*subrotunda*): the proportions of head/prothorax and prothoracic width/length reflect the relatively large, wide prothorax of *subrotunda* and the smaller and narrower one of *subquadrata*. However, *aculeata* is intermediate. These 3 species together form a bewildering, variable complex that includes many individuals which I cannot place satisfactorily.

Dolichoctis polita group

The following four species form a group, apparently confined to New Guinea, characterized as follows: form *c.* as in *aculeata* group but more slender; microsculpture absent on head and pronotum, present or absent on elytra; 2 setae over each eye; pronotum with setae (or punctures) at basal

angles but median-lateral setae absent; elytral apices dentate or spined; 1 seta each side last ventral segment in both sexes.

Dolichoctis divisa n. sp.

Description. With characters of genus and of *polita* group; form as in Figure 85; head and prothorax red, elytra black and slightly silky, legs dark, antennae pale; elytra with transverse microsculpture. *Head* 0.63 and 0.67 width prothorax. *Prothorax*: width/length 1.52 and 1.57; base/apex 1.41 and 1.38; sides slightly sinuate before *c.* right (narrowly rounded) basal angles; sides of disc slightly depressed. *Elytra*: width elytra/prothorax 1.35 and 1.37; outer-apical angles *c.* right, apices with moderate spines; striae well impressed, not punctate. *Measurements*: length 6.6–7.4; width 2.6–2.9 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,430) and 1 ♀ paratype from Dobodura, **Papua**, Mar.–July 1944 (Darlington), and additional paratypes as follows. **Papua**: 2, Bisianumu, E. of Port Moresby, 500 m, Sept. 23, 1955 (Gressitt); 1, Kokoda, 1200 ft. (366 m), Aug. 1933 (Cheesman); 1, Milne Bay, Dec. 1943 (Darlington); 1, Brown River, 20 km N. of Port Moresby, Apr. 29, 1960 (C. W. O'Brien, Bishop Mus.); 1, Popondetta, 60 m, Oct. 18, 1963 (Shanahan, Bishop Mus.); 4, Mt. Lamington, 1300–1500 ft. (*c.* 400–460 m) (C. T. McNamara, S. Australian Mus.).

Measured specimens. The pair (♂ ♀) from Dobodura.

Notes. This strikingly bicolored species is apparently confined to a small part of eastern New Guinea.

Dolichoctis huon n. sp.

Description. With characters of genus and of *polita* group; head and prothorax red, elytra usually darker (castaneous), sometimes scarcely darker; legs and antennae dark; whole upper surface without reticulate microsculpture. *Head* 0.65 and 0.66 width prothorax. *Prothorax*: width/length 1.66 and 1.67; base/apex 1.40 and 1.41; sides slightly sinuate before slightly obtuse (nearly right) basal angles; sides of disc slightly depressed. *Elytra*: width elytra/prothorax 1.39 and 1.40; outer-apical angles *c.* right, apices short-spined or acutely toothed; striae scarcely impressed, formed by rows of small punctures. *Measurements*: length 5.8–6.9; width 2.3–2.8 mm.

Types. Holotype ♂ (Bishop Mus.) and 6 paratypes from Pindiu, Huon Pen., **N-E. N. G.,** 500–600, 750–850, 870–1300 m, Apr. 19, 20, 21, 21–22, 1963 (Sedlacek). Additional paratypes as follows, all from northern part of **N-E. N. G.**: 4, Finschhafen, 10, 80 m, Apr. 12, 16, 1963 (Sedlacek); 1, Lae, 10 m, May 12, 1966 (Gressitt); 1, Busu R., E. of Lae, 100 m, Sept. 15, 1955 (Gressitt); 1, Torricelli Mts., Mobitei, 750 m, Mar. 5–15, 1959 (W. W. Brandt, Bishop Mus.). Some paratypes now in M.C.Z. (Type No. 31,431).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Finschhafen.

Notes. The dark antennae, punctate elytral striae, and absence of elytral microsculpture clearly distinguish this species from *divisa* (above). These 2 species are apparently allopatric, confined to different small areas of eastern New Guinea.

Dolichoctis castanea n. sp.

Description. With characters of genus and of *polita* group; reddish castaneous, prothorax sometimes slightly paler, appendages reddish brown; elytra with transverse reticulate microsculpture. *Head* 0.66 and 0.68 width prothorax. *Prothorax*: width/length 1.62 and 1.63; base/apex 1.32 and 1.31; sides broadly rounded, not or slightly sinuate before usually obtuse basal angles; disc slightly depressed at sides. *Elytra*: width elytra/prothorax 1.33 and 1.45; outer-apical angles distinct but obtuse and slightly blunted, apices short-spined or acutely dentate; striae well impressed, not distinctly punctate. *Measurements*: length 5.4–6.5; width 2.1–2.5 mm.

Types. Holotype ♂ (M.C.Z., Type No.

31,432) and 2 paratypes from Dobodura, **Papua**, Mar.–July 1944 (Darlington); and additional paratypes as follows. **Papua**: 3, Kokoda, 1200 ft., July, Aug. 1933 (Cheesman); 1, Kokoda-Pitoki, 450 m, Mar. 24, 1956 (Gressitt); 2, Mt. Lamington, 1300–1500 ft. (*c.* 400–460 m) (C. T. McNamara, S. Australian Mus.); 1, Brown R., May 25, 1956 (E. J. Ford, Jr., Bishop Mus.). **N-E. N. G.**: 15, Pindiu, Huon Pen., 500–600, 860, 870–1300 m, Apr. 19–22, 1963 (Sedlacek); 1, Busu R. E. of Lae, 100 m, Sept. 14, 1955 (Gressitt); 1, Bubia, Markham Vy., 50 m, Sept. 20, 1955 (Gressitt); 1, Sattelberg, Huon Gulf, 1899 (Biró); 1, Madang (Friedrich-Wilh.-hafen), 1901 (Biró).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. This species is sympatric with the two preceding ones, but perhaps allopatric with the following (*polita*).

Dolichoctis polita n. sp.

Description. With characters of genus and of *polita* group; reddish castaneous, prothorax sometimes slightly paler, appendages not or slightly paler; entire upper surface without reticulate microsculpture. *Head* 0.66 and 0.66 width prothorax. *Prothorax*: width/length 1.64 and 1.78; base/apex 1.38 and 1.36; sides usually not sinuate before obtuse, sometimes blunted posterior angles; sides of disc moderately depressed. *Elytra*: width elytra/prothorax 1.33 and 1.36; outer-apical angles distinct but obtuse and slightly blunted; apices short-spined or acutely toothed; striae well impressed, impunctate. *Measurements*: length 5.5–6.5; width 2.1–2.6 mm.

Types. Holotype ♂ (Bishop Mus.) and 33 paratypes (some in M.C.Z., Type No. 31,433) from Wau, Morobe Dist., **N-E. N. G.,** altitudes from 1050 to 1500 m, dates in Jan., Feb., Mar., June, July, Sept., Oct., Dec., 1961–1964 (Sedlacek); and 2 paratypes, Upper Watut R., 24 km W. of Bulolo, **N-E. N. G.,** 760 m, Mar. 5–6, 1963 (Sedlacek).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Wau.

Notes. This may be a geographic form (confined to the Morobe area) of *Dolichoctis castanea* (above), distinguished primarily by absence of elytral microsculpture, but I do not care to recognize subspecies in this genus until relationships and geographic patterns are better understood.

Genus *STRICKLANDIA* Macleay

Macleay 1886, Proc. Linnean Soc. New South Wales (2) 1, p. 138.

Diagnosis. Form (Fig. 86) characteristic, large, very broad, depressed; prothorax strongly cordate, with numerous extra lateral setae anteriorly; elytra very wide, each 2-spined. See also *Key to Genera of Lebiini of New Guinea.*

Description. Form broad, depressed; black, moderately shining; not obviously pubescent but pronotum and sometimes other parts of upper surface very inconspicuously sparsely setulose; reticulate microsculpture absent or indistinct on head and disc of pronotum (but pronotal disc transversely rugulose), visible but meshes imperfect and irregular on elytra. *Head*: eyes rather small but prominent; 2 setae over each eye; front flattened, weakly depressed; clypeus subtruncate with rounded angles, 1-setose each side; labrum long, apex subtruncate or slightly broadly emarginate, 6-setose; mandibles moderately long, not strongly arcuate, longitudinally striate above at middle of length; antennae slender, pubescent from middle 4th segments; mentum subtruncate in sinus, slightly lobed or with short blunt tooth; ligula wide at apex, with 2 or 3 large and 2 or more smaller setae, and paraglossae attached to and slightly longer than ligula, without setae; palpi slender, apical segments labial palpi with longitudinal row of numerous setae above. *Prothorax* cordate; base not lobed but irregularly obliquely roumded to basal angles; sides angulate or scalloped at middle, reflexed, with principal setae at basal

angles and near middle and several additional often smaller setae anteriorly; median longitudinal and basal and apical transverse areas impressed; base and apex not distinctly margined. *Elytra* very wide, widest near base; humeri rounded but very prominent; outer-apical and sutural angles both spined; margins finely serrate and setulose; striae entire, punctate; 3rd intervals with 1 or 2 seta-bearing punctures behind middle. *Inner wings* full. *Legs* slender; 4th segments middle and hind tarsi narrow, scarcely emarginate; 5th segments with accessory setae minute (vestigial?); claws with *c.* 4 small teeth, in basal half of claw length. *Secondary sexual characters*: ♂ front tarsi scarcely dilated but 3 segments with small 2-seriate squamae; ♂ middle tarsi without squamae; ♂ middle tibiae not excised; ♂ with 1, ♀ 2 setae each side last ventral segment.

Type species. *Stricklandia pericalloides* Macleay.

Generic distribution. **New Guinea** (2 or more species); **Moluccas** (1 species, from Batjan Is., Louwerens 1956, Treubia 23, p. 241); **New Britain** (1 probably undescribed species); and North Queensland, **Australia** (1 species). The members of this genus that I have collected live on tree trunks and fallen logs in rain forest.

Notes. I do not know the relationships or geographic origin of this primarily New Guinean genus.

KEY TO SPECIES OF *STRICKLANDIA* OF NEW GUINEA

1. Prothorax narrower (usually *c.* 1.5× wide as long at middle, but sometimes wider), with relatively narrow margins (reflexed margins often less than ¼ as wide as distance from midline to lateral trough, but sometimes wider) (p. 133) ..... *pericalloides*
– Prothorax very wide (*c.* 1.9× wide as long at middle), with very wide margins (reflexed margins more than ½ as wide as distance from midline to lateral trough) (p. 133) ..... *lata*

Stricklandia pericalloides Macleay

Macleay 1886, Proc. Linnean Soc. New South Wales (2) 1, p. 139.

Description. See generic *Diagnosis* and *Description.* *Head* 0.79 and 0.78 width prothorax. *Prothorax*: width/length 1.48 and 1.56; base/apex 1.18 and 1.15; reflexed margins relatively narrow. *Elytra*: width elytra/prothorax 1.55 and 1.54. *Measurements* (Dobodura series): length *c.* 11.5–13.5 (including elytral spines); width 4.5–5.1 mm.

Type. From Fly R., **Papua**; presumably in Macleay Mus., Sydney (not seen).

Occurrence in New Guinea. Common probably throughout **New Guinea**: 96 specimens (some doubtfully identified, see following *Notes*), from all 3 political divisions of the island; most at low altitudes but reaching *c.* 1500 to 2000 m at several localities including Wau.

Measured specimens. A pair (♂ ♀) from Dobodura, Papua.

Notes. Some individuals tentatively assigned to *pericalloides* have prothoracic margins relatively wide (but not so wide as the following species) and may be specifically distinct, but I do not wish to describe them at present. Mr. Louwerens may refer these individuals to a species he will probably describe from New Britain.

Stricklandia lata n. sp.

Description. With characters of genus; form as in Figure 86, extraordinarily wide; color and surface as described for genus, but elytral microsculpture more transverse than in *pericalloides.* *Head* 0.64 and 0.68 width prothorax. *Prothorax* wide-cordate; width/length 1.89 and 1.89; base/apex 1.06 and 0.99; margins very wide (*c.* ½ wide as distance from inner edge of margin to middle line), with outer edge irregular. *Elytra*: width elytra/prothorax 1.29 and 1.36. *Measurements*: length *c.* 15–16; width *c.* 6.5 mm.

Types. Holotype ♂ (Leiden Mus.) from Arabu Camp, Wissel Lakes, **West N. G.,** 1800 m, 1939 (H. Boschma), and additional paratypes from Wissel Lakes as follows: 1 ♂ (M.C.Z., Type No. 31,434), Digitara, Oct. 1938 (P. J. Eyma); 1 ♀, Wagete, Tigi

L., 1700 m, Aug. 17, 1955 (Gressitt); 3, Enarotadi, 1850, 1850–1900, 1850–2050 m, dates in July, Aug. 1962 (Sedlacek).

Measured specimens. The ♂ holotype and ♀ paratype from Wagete.

Notes. Distinguished from *pericalloides* by much wider prothorax and other differences of proportion shown by ratios in the *Descriptions.*

Genus *PELIOCYPAS* Schmidt-Goebel

Schmidt-Goebel 1846, Faunula Coleop. Birmaniae, p. 33.

Jeannel 1949, Coléop. Carabiques de la Région Malgache, Part 3, p. 991.

Demetrias Csiki 1932 (in part), Coleop. Cat., Carabidae, Harpalinae 7, p. 1386 (see for additional references).

Risophilus Jedlicka 1963 (not Leach), Ent. Abhandlungen 28, p. 401.

Diagnosis. In New Guinea, the form (Fig. 87), small size (under 5 mm), and long-lobed 4th tarsal segments are diagnostic.

Description. None required here. See detailed description of following new species.

Type species. P. suturalis Schmidt-Goebel, of Burma, etc.

Generic distribution. Southern and eastern **Asia** to the **Philippines** and **New Guinea** (not Australia); **Africa**, **Madagascar**.

Notes. Generic distinctions and applications of generic names have been confused in the group of genera to which this genus belongs. In my present use of *Peliocypas* I am following Jeannel, although I do not like his multiplication of higher categories.

Peliocypas papua n. sp.

Description. Form as in Figure 87; brown, appendages slightly paler; not pubescent; rather shining, reticulate microsculpture lightly impressed and irregular, *c.* isodiametric on head and elytra, slightly transverse on disc of pronotum. *Head* 0.97 and 0.97 width prothorax (measured at middle); eyes moderately prominent; 2 setae over each eye; front slightly impressed at sides between eyes and at sides anteriorly; frontal suture indicated but not impressed; clypeus subtruncate, 1-setose each side; labrum transverse, subtruncate with rounded angles, 6-setose; mentum with strong triangular tooth; ligula rounded-subtruncate, apparently 2-setose, with paraglossae of *c.* same length, apparently attached, narrowly rounded, without setae. *Prothorax* subquadrate, widest at base, with anterior angles rounded; width (at middle)/length 1.15 and 1.24; base/apex 1.38 and 1.47; base and apex subtruncate (base slightly sinuate), not margined; side margins narrow, broader basally and reflexed and running into deep baso-lateral impressions, each margin with setae at basal angle and *c.* ¼ from apex; disc with usual median line and transverse impressions and lightly transversely strigulose. *Elytra*: width elytra/prothorax 2.04 and 2.14; humeri broadly rounded but not much narrowed; apices obliquely sinuate-truncate, outer angles rounded, sutural angles blunted; striae entire but light, not punctate; 3rd intervals with 2 conspicuous dorsal punctures *c.* ¼ from base and ¼ from apex. *Inner wings* full. *Legs* slender; 4th segments of middle and hind tarsi with long lobes; 5th segments with accessory setae; claws each with 1 long tooth outside and 2 smaller teeth inside middle of length. *Secondary sexual characters*: ♂ front tarsi with squamae (if present) not clearly differentiated; last ventral segment with apex deeply notched in ♂, entire in ♀; ♂ with 1, ♀ 2 setae each side apex last ventral segment. *Measurements*: length *c.* 4.0–4.5; width *c.* 1.8–1.9 mm.

Types. Holotype ♂ (Hungarian National Mus.) and 5 paratypes (2 in M.C.Z., Type No. 31,435) all from Madang ("Friedrich-Wilh.-hafen"), **N-E. N. G.,** 1901 (Biró).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. This is the easternmost species of a genus or group of genera very well

represented in the Orient. In Jedlicka's (1963, pp. 401–402) key to the species of "*Risophilus*," *papua* runs to couplet 5 but fits neither species there named, being narrower-headed than *unicolor* Jedlicka and smaller than *vimmeri* Jedlicka.

Genus *CELAENEPHES* Schmidt-Goebel

Schmidt-Goebel 1846, Faunula Coleop. Birmaniae, p. 77.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1412 (see for synonymy and additional references).
Jedlicka 1963, Ent. Abhandlungen 28, p. 399.

Diagnosis. See *Key to Genera of Lebiini of New Guinea* and *Description* of following species.

Description. None required here.

Type species. Celaenephes parallelus Schmidt-Goebel (below).

Generic distribution. That of the single species.

Notes. I do not know the relationships of this monotypic genus.

Celaenephes parallelus Schmidt-Goebel

Schmidt-Goebel 1846, Faunula Coleop. Birmaniae, p. 77.
Van Emden 1937, Stettiner Ent. Zeitung 98, p. 35.
Andrewes 1947, Arkiv för Zool. 38A, No. 20, p. 12.
Louwerens 1956, Treubia 23, p. 225 (Moluccas).
See additional references under genus.

Description (for recognition only). Form as in Figure 88; slender, with elytral apices simply rounded-truncate; plain black or piceous; mentum not toothed; claws not toothed; length *c.* 6.5–7.5 mm.

Type(s). From **Burma**; in Prague Mus. (not seen).

Occurrence in New Guinea. Common throughout New Guinea and on Normanby Is.: 206 specimens, most at low altitudes but a few up to 1550 and 1700 m; found at Dobodura and Wau.

Notes. This easily recognized carabid ranges at least from **Ceylon**, extreme **NE. India** (not peninsular India, according to Andrewes), **Burma**, etc. to the **Philippines** and northern **Australia**, and east to **New Britain**, **New Ireland**, the **Solomons**, **Fiji**, **Samoa**, and **New Caledonia** (specimens seen from all these islands). It lives in foliage and may (I think) have been carried eastward into the Pacific by man, perhaps in thatching material.

Genus *SYNTOMUS* Hope

Hope 1838, Coleop. Manual 2, p. 64.
Jeannel 1942, Faune de France, Coléop. Carabiques, Part 2, p. 1075.
Metabletus Schmidt-Goebel 1846, Faunula Coleop. Birmaniae, p. 38.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1413 (see for additional references, synonymy, and list of species).
Jedlicka 1963, Ent. Abhandlungen 28, p. 420.

Diagnosis. Known among New Guinean Lebiini by small size, form (Fig. 89), mentum with emarginate tooth, and tarsal claws with 2 or 3 minute inconspicuous oblique teeth.

Description. None required here.

Type species. Of *Syntomus, Carabus truncatellus* Linnaeus, of Europe; of *Metabletus, M. obscuroguttatus* Schmidt-Goebel, of Burma, etc.

Generic distribution. Temperate and tropical **Eurasia** and across the islands to North Queensland, **Australia**; **North America**; parts of **Africa**.

Notes. Only one, widely distributed species of this genus reaches New Guinea.

Syntomus quadripunctatus (Schmidt-Goebel)

Schmidt-Goebel 1846, Faunula Coleop. Birmaniae, p. 39 (*Metabletus*).
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1418 (see for synonymy and additional references).

Description (for recognition only). With characters of genus; form as in Figure 89; black; upper surface dull but not pubescent; elytra with 3rd intervals 2-punctate; length *c.* 3.5 mm.

Type(s). From **Burma**; in Prague Mus. (not seen).

Occurrence in New Guinea. **N-E. N. G.**: 4, Wau, Morobe Dist., 1250 m, dates in Jan., Feb., Sept. 1961, 1962 (Sedlacek); 1,

Mt. Missim (near Wau), 1050 m, Dec. 27, 1962 (Sedlaceks); 1, Mt. Missim (Stevens, M.C.Z.); 1, Finschhafen, Apr. 1944 (E. S. Ross, Cal. Acad.). **West N. G.**: 1, Eramboe, 80 km ex Merauke, Jan. 29, 1960 (T. C. Maa, Bishop Mus.).

Notes. The known range of *S. quadripunctatus* is from **SE. Asia** including **Ceylon**, **Burma**, and **Japan** across the **Malay Archipelago** to the **Philippines**, **New Guinea**, and the NE. corner of **Australia**. Occurrence in Australia is based on a single teneral ♀ that I collected N. of Mareeba, North Queensland, Feb. 1958.

Genus *MICROLESTES* Schmidt-Goebel

Schmidt-Goebel 1846, Faunula Coleop. Birmaniae, p. 41.

Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1420 (see for additional references, synonymy, and list of species).

Jeannel 1942, Faune de France, Coléop. Carabiques, Part 2, p. 1084.

Mateu 1959, Rev. française d'Ent. 26, pp. 135 ff. (species of tropical Asia).

——— 1963, Ann. Mus. R. l'Afrique Central, Ser. in-8°, No. 121, pp. 1–149 (monograph of African species).

Jedlicka 1963, Ent. Abhandlungen 28, p. 425.

Diagnosis. Distinguished among New Guinean Lebiini by small size, form (note genae not swollen, prothorax lobed at base), mentum without tooth, and tarsal claws toothed (teeth few and minute in *curtatus*).

Description. None required here.

Type species. Microlestes inconspicuus Schmidt-Goebel, of Burma, etc.

Generic distribution. Warm-temperate and tropical **Africa** and **Eurasia** and islands to **Australia**; **North America**; scattered records elsewhere.

Notes. Two unrelated species occur in New Guinea, one with Oriental and the other with apparent Australian relationships.

KEY TO SPECIES OF *MICROLESTES* OF NEW GUINEA

1. Relatively broad (prothoracic width/length 1.50); elytra with 2 incomplete pale fasciae; length 3.8 mm (p. 136) ..... *cinctus*
– Narrower (prothoracic width/length 1.18 and 1.28); dull black, not marked; length not over 3.2 mm (p. 136) ..... *curtatus*

Microlestes cinctus n. sp.

Description. Form as in Figure 91; black, in part slightly brownish, elytra with 2 incomplete transverse fasciae testaceous, appendages irregularly brownish, bases of femora and of antennae slightly darker; rather shining, upper surface with reticulate microsculpture of meshes isodiametric on head and pronotum, less regular and slightly transverse on elytra. *Head* 0.79 and 0.77 width prothorax. *Prothorax* wide-subcordate; width/length 1.50 and 1.55; base/apex 1.12 and 1.14; sides rather narrowly margined, each margin with setae at base and *c.* ⅓ from apex; usual discal impressions present but weak. *Elytra*: width elytra/prothorax 1.67 and 1.56; striae lightly impressed, minutely irregular or faintly punctulate; intervals sparsely minutely punctulate, 3rd with 1 seta-bearing puncture, on inner edge *c.* ¼ from apex. *Legs*: claws each with *c.* 4 distinct, oblique teeth. *Measurements*: length 3.6–3.8; width 1.7 mm.

Type. Holotype ♂ (Bishop Mus.) from Feramin, **N-E. N. G.,** 1200–1500 m, May 11–22, 1959 (W. W. Brandt); 1 ♂ paratype, Okapa (Okasa), **N-E. N. G.,** July 8, 1965 (Hornabrook), "pine forest, leaf mold."

Notes. Of other species known to me, this is most like *M. atrifasciatus* Sloane of NE. Australia (base of Cape York Pen. to northern New South Wales), but the color pattern is different, the elytra in *atrifasciatus* being testaceous with a dark irregular postmedian fascia and subapical and sublateral dark spots.

Microlestes curtatus n. sp.

Description. Form as in Figure 90; slender, with elytra much shorter than abdomen; dull brownish black, appendages dark; entire upper surface with reticulate microsculpture irregular (partly longitudinal) on head, slightly transverse on pronotum and elytra. *Head* 0.92 and 0.89 width prothorax. *Prothorax* narrow-subcordate; width/length

1.18 and 1.28; base/apex 1.08 and 1.04; side margins very narrow, each with setae at basal angle and *c.* ¼ from apex; disc with median line impressed, transverse impressions scarcely indicated. *Elytra* very short, narrowed anteriorly; width elytra/prothorax 1.68 and 1.64; striae lightly indicated, sometimes scarcely visible, irregular but not distinctly punctate; 3rd intervals with 2 punctures, before middle and *c.* ¼ from apex. *Legs*: claws each with *c.* 2 small oblique teeth, easily overlooked. *Measurements*: length to apex elytra 2.4–2.6, to apex abdomen 2.8–3.2; width 1.0–1.1 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,436) and 28 paratypes all from central plains of Luzon, **Philippine Is.,** Feb.–Sept. 1945 (Darlington).

Occurrence in New Guinea. **West N. G.**: 2, Dor(e)y (probably collected by Wallace, British Mus.; this locality is, of course, somewhat doubtful).

Measured specimens. The ♂ holotype and 1 ♀ paratype from central plains of Luzon.

Notes. I have based this new species on Philippine individuals because of doubt about Wallace's locality "Dorey" (see Part 1 of my work on New Guinean Carabidae, pp. 330–331).

M. curtatus is similar to *exilis* Schmidt-Goebel but has shorter elytra. This species (*curtatus*) with very short elytra is not represented in the Andrewes Collection and was evidently not known to Mateu (1959) or Jedlicka (1963). It is unknown in Australia.

Genus *APRISTUS* Chaudoir

Chaudoir 1846, Enumération des Carabiques . . . Caucase . . ., p. 42.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1432 (see for additional references, synonymy, and list of species).
Jeannel 1942, Faune de France, Coléop. Carabiques, Part 2, p. 1083.
Jedlicka 1963, Ent. Abhandlungen 28, p. 427.

Diagnosis. Very small Lebiini, recognizable (in New Guinea) by form (Fig. 92); surface not pubescent but all or part (at least elytra) dull and heavily microreticulate; genae not swollen; mentum with entire tooth; claws not toothed.

Description. None required here.

Type species. Apristus subaeneus Chaudoir, of the Caucasus and Mediterranean region.

Generic distribution. Warm-temperate and tropical **Eurasia** and the **Malay Archipelago** to the **Philippines** and **New Guinea** (not Australia); part of **Africa** (not Madagascar); **North** and **Central America**, **Cuba**.

Notes. American species of this genus, which are the only ones I have collected, live on the ground, usually on sand or gravel near water.

KEY TO SPECIES OF *APRISTUS* OF NEW GUINEA

1. Color brownish bronze; entire upper surface dull; length 3.0–3.5 mm (p. 137) ..... *biroi*
– Color bluish black; front of head and middle of pronotum relatively shining, elytra dull; length 3.5–3.9 mm (p. 137) ..... *sedlaceki*

Apristus biroi n. sp.

Description. With characters of genus; form as in Figure 92; brownish bronze, including appendages; entire upper surface dull, heavily microreticulate. *Head* 0.90 and 0.90 width prothorax. *Prothorax*: width/length 1.28 and 1.30; base/apex 0.91 and 0.90. *Elytra*: width elytra/prothorax 1.64 and 1.70. *Measurements*: length 3.0–3.5; width 1.2–1.5 mm.

Types. Holotype ♂ (Hungarian National Mus.) and 5 paratypes (2 in M.C.Z., Type No. 31,437) all from Madang ("Friedrich-Wilh.-hafen"), **N-E. N. G.,** 1901 (Biró).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. Similar to *A. louwerensi* Andrewes of Java, but with elytra more narrowed anteriorly and with fainter striae.

Apristus sedlaceki n. sp.

Description. With characters of genus; form *c.* as in preceding (*biroi*) except sides of prothorax more rounded anteriorly and much more strongly sinuate *c.* ⅓ from

base; bluish black, appendages dark; front of head shining with reticulate microsculpture faint and fragmentary, middle of pronotal disc ± shining, rest of upper surface including elytra (except edges of suture) microreticulate and dull. *Head* 0.92 and 0.91 width prothorax. *Prothorax*: width/length 1.22 and 1.25; base/apex 0.94 and 0.91. *Elytra*: width elytra/prothorax 1.82 and 2.00. *Measurements*: length 3.5–3.9; width 1.5–1.8 mm.

Types. Holotype ♂ (Bishop Mus.) and 2 paratypes (1 in M.C.Z., Type No. 31,438) from Tobo-Salembeng, Huon Pen., **N-E. N. G.,** Apr. 26, 1963 (Sedlacek); 1 paratype, Golden Pines, Bulolo, **N-E. N. G.,** 600 m, Feb. 19, 1962 (Sedlacek); and 1 paratype, Zengaren, **N-E. N. G.,** 1500 m, Apr. 28, 1963 (Sedlacek).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Tobo-Salembeng.

Notes. This may be related to *A. cuprascens* Bates (described from Japan and identified from the Philippines by Andrewes), but the color of *sedlaceki* is bluish rather than cupreous, the front is more shining than in *cuprascens*, and comparison of specimens shows slight differences of form not worth describing in detail here.

(Genus *PLOCHIONUS* Latreille & Dejean)

Latreille & Dejean 1824, Histoire Naturelle et Iconographie Coléop. d'Europe 1, p. 150.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1451 (see for additional references, synonymy, subgenera, and list of species).
Jeannel 1942, Faune de France, Coléop. Carabiques, Part 2, p. 1033.

Diagnosis. See *Key to Genera of Lebiini*, and *Description* of following species.

Description. None required here.

Type species. Carabus pallens Fabricius (below).

Generic distribution. Native in tropical and subtropical **America**, with the following species now *c.* **cosmopolitan**.

Notes. A supposed endemic *Plochionus* in New Caledonia needs confirmation.

(*Plochionus pallens* (Fabricius))

Fabricius 1775, Systema Ent., p. 244 (*Carabus*).
Britton 1948, Proc. Hawaiian Ent. Soc. 13, p. 237 (Hawaii).
Jedlicka 1963, Ent. Abhandlungen 28, p. 450.
See also references under genus.

Description (for recognition only). Form as in Figure 93; brown; not pubescent; ♂ front and middle tarsi slightly dilated, 2-seriately squamulose; ♂ middle tibiae arcuate, lower edges broadly shallowly emarginate below near middle of length; length *c.* 7–9.5 mm.

Type. From **Europe** ("Habitat Dresdae"), now presumed lost (not seen).

Occurrence in New Guinea. Not yet found, but likely to occur.

Notes. This species, probably originally from **America**, has been carried by man to most of the warmer parts of the **world**. In the Asiatic-Pacific region it is known from **SE. Asia**, **Sumatra**, **Java**, **New Britain**, **New Ireland**, **New Hebrides**, **Fiji**, and **Polynesia** including **Hawaii**.

Genus *PARENA* Motschulsky

Motschulsky 1859, Étude Ent. 8, p. 31.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1453 (see for additional references, synonymy, and list of species).
Jeannel 1949, Coléop. Carabiques de la Région Malgache, Part 3, pp. 948, 971.
Jedlicka 1963, Ent. Abhandlungen 28, p. 439.

Diagnosis. See *Key to Genera of Lebiini of New Guinea* and Figure 94; note form stout, surface not pubescent, 4th tarsal segments long-lobed; length *c.* 8–10 mm.

Description. None required here.

Type species. Parena bicolor Motschulsky, of Java.

Generic distribution. Most species in area from **SE. Asia** (including **Japan**) to northern **Australia**, fewer in **Africa** and **Madagascar**.

Notes. The 3 species that have been found in New Guinea represent 3 independent, widely distributed stocks. Further study is needed to clarify their geographic variation and nomenclature; my present

material is inadequate. I shall therefore treat the species only briefly.

All members of this genus that I know are winged and arboreal.

KEY TO SPECIES OF *PARENA* OF NEW GUINEA

1. Color entirely testaceous (with sometimes *vague* posterior elytral cloud pale brown); tarsi and antennae contrastingly black (p. 139) ..... *testacea*
– Color partly or wholly darker; tarsi and antennae reddish testaceous 2
2. Color testaceous or reddish testaceous with very broad, well defined black elytral fascia (p. 139) ..... *fasciata*
– Color irregular rufo-piceous, without well defined elytral marking (p. 139) ..... *picea*

Parena testacea (Chaudoir)

Chaudoir 1872, Ann. Soc. Ent. Belgium 15, p. 178. (*Crossoglossa*).

Description. None required here; see preceding *Key*; length (in New Guinea) *c.* 10 mm.

Types. From the Deccan, **India**; now in Oberthür Coll., Paris Mus. (not seen).

Occurrence in New Guinea. **N-E. N. G.**: 4, Wau, Morobe Dist., 1200 m, June 25, Oct. 11–18, Nov. 19, Dec. 5–6, 1961 (Sedlaceks).

Notes. This species is now known from **India**, (**China**?), **Sumatra**, **Java** ("variety" *cruralis* Andrewes), and **New Guinea** (not Australia).

Parena fasciata (Chaudoir)

Chaudoir 1872, Ann. Soc. Ent. Belgium 15, p. 179 (*Crossoglossa*).
Jedlicka 1963, Ent. Abhandlungen 28, pp. 440, 443, fig. 154.
sloanei Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1455 (new synonymy).
plagiata Macleay 1876, Proc. Linnean Soc. New South Wales 1, p. 167 (*Phloeodromius*) (new synonymy).

Description (for recognition only). Form as in Figure 94; yellow or reddish yellow with conspicuous, broad, transverse, black elytral fascia; length (in New Guinea) *c.* 8–9 mm.

Types. Of *fasciata*, from the **Moluccas**, now in Oberthür Coll., Paris Mus.; of *plagiata*, from Yule Is., Hall Sound, **Papua**, in Macleay Mus., Sydney; of *sloanei* (new name), as for *plagiata* Macleay (none seen).

Occurrence in New Guinea. **Papua**: Yule Is. (type of *plagiata*). **N-E. N. G.**: 1, Lae, July 1944 (F. E. Skinner, Purdue U. Coll., Bishop Mus.); 1, Busu R. E. of Lae, 100 m, Sept. 13, 1955 (Gressitt); 1, Bulolo, 732 m, Aug. 18, 1956 (E. J. Ford, Jr., Bishop Mus.), in light trap; 1, Finschhafen, Huon Pen., 180 m, Apr. 16, 1963 (Sedlacek); 1, Mumeng, 600 m, Mar. 10, 1962 (Sedlacek). **West N. G.**: 2, Hollandia, 250 ft., May 4, Nov. 3, 1944 (Hoogstraal, M.C.Z.).

Notes. I have seen specimens that I refer to this species from **Java**, **Borneo**, the **Philippines** (including Luzon), **Celebes**, the **Moluccas**, **New Britain**, and northern **Australia**, as well as **New Guinea**.

Parena picea (Macleay)

Macleay 1871, Trans. Ent. Soc. New South Wales 2, p. 86 (*Phloeodromius*).

Description. None required here; see preceding *Key*; length (in New Guinea) *c.* 9–10 mm.

Types. One specimen from Gayndah, South Queensland, **Australia** (probably now in Macleay Mus., Sydney) is presumably the actual type (not seen), although Macleay mentions also "a few specimens from other portions of Queensland."

Occurrence in New Guinea. **N-E. N. G.**: 1, Wau, Morobe Dist., 1200 m, Feb. 25, 1963 (Sedlaceks). **West N. G.**: 1, Nabire, S. Geelvink Bay, 10–40 m, Sept. 1–4, 1962 (Sedlacek).

Notes. I have no specimens from Australia and have identified the New Guinean ones from the original description. I also tentatively assign to this species single individuals from **New Britain** and **Manus Is.** (Bishop Mus.).

Genus *ANCHISTA* Nietner

Nietner 1856, J. Asiatic Soc. Bengal 6, p. 523.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1455 (see for additional references, synonymy, and list of species).
Jedlicka 1963, Ent. Abhandlungen 28, p. 449.

Diagnosis. See *Key to Genera of Lebiini of New Guinea*, and under following species.

Description. None required here.

Type species. Lebia brunnea Wiedemann, of India and Ceylon.

Generic distribution. The few known species are confined to **SE. Asia** including **Ceylon** and **Japan**, except that one (below) is widely distributed on the **Malay Archipelago** and islands of the **western Pacific**.

Notes. I know nothing about the habitat or habits of members of this genus.

Anchista binotata (Dejean)

Dejean 1825, Species Général Coléop. 1, p. 252 (*Plochionus*).
See also references under genus.

Description (for recognition only). Form as in Figure 95; brownish piceous, each elytron with longitudinal testaceous area centered before middle; surface not pubescent; 5th intervals with conspicuous seta-bearing puncture at base; length *c.* 8–9 mm.

Type(s). From the **Marianas**; now in Oberthür Coll., Paris Mus. (not seen).

Occurrence in New Guinea. **Papua**: 1, Hagita, near Milne Bay, Aug. 10, 1919 (J. T. Zimmer, Chicago Mus.).

Notes. This species has now been found in **SE. Asia** (**India** to **Japan**), the **Andaman Is., Sumatra**, **Java**, **Borneo**, the **Philippines**, **Buru**, **New Guinea**, and the **Marianas**. It has probably been dispersed partly by man.

Genus *ENDYNOMENA* Chaudoir

Chaudoir 1872, Ann. Soc. Ent. Belgium 15, p. 186.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1457 (see for additional references, synonymy, and list of species).
Jedlicka 1963, Ent. Abhandlungen 28, p. 308.

Diagnosis. See *Key to Genera of Lebiini of New Guinea.*

Description. None required here.

Type species. Plochionus pradieri Fairmaire (below).

Generic distribution. **SE. Asia** including **Japan**, with the following species very widely spread over the islands of the **Pacific** presumably carried by man.

Notes. The habitat and habits of this genus too are unknown to me.

Endynomena pradieri (Fairmaire)

Fairmaire 1849, Revue and Magazine Zool. 1, pp. 34, 281.
See also references under genus.

Description (for recognition only). Form as in Figure 96; brown or piceous; surface with short pubescence; length *c.* 8 mm.

Type. From **Tahiti**; in Oberthür Coll., Paris Mus. (not seen).

Occurrence in New Guinea. **N-E. N. G.**: 1, Sepik, Maprik area, 160 m, Aug. 29, 1957 (Hardy, Bishop Mus.), at light.

Notes. This insect has been recorded from parts of **SE. Asia**, **Sumatra**, the **Philippines**, **Fiji**, **Samoa**, **Tonga**, **New Caledonia**, **Tahiti**, **Hawaii**, and other remote **Pacific islands**, and I have seen a specimen from **New Britain** (Bishop Mus.).

Genus *DEMETRIDA* White

White 1846, Voyage Erebus & Terror, p. 2.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1459 (as subgenus of *Xanthophoea*) (see for additional references).
Britton 1941, Proc. R. Ent. Soc. London (B) 10, p. 188.
Xanthophoea Chaudoir 1848, Bull. Soc. Nat. Moscow 21, Part 1, p. 73.

Diagnosis. Among New Guinean Lebiini of the same general form (Figs. 97–109) and size (5.5–12.0 mm), the species of *Demetrida* are distinguished by tarsi pubescent (sparsely pilose) above, with 4th segment long-lobed and tarsal claws with several or many long teeth; ligula and paraglossae joined, rounded-truncate, usually 4-setose (sometimes with 2 additional smaller setae); palpi not widely expanded; and ♂ middle tibiae usually (not always) with inner edge in apical ⅓ or ½ of length with a row of several low tubercles.

Description (applicable to all New Guinean species). Form usually slender (broadest in *imitatrix*), convex; color diverse, brown or black or metallic, uniform

or bicolored or tesselated (but pattern not geometric and not simply 2-maculate); upper surface with short or long pubescence or not pubescent; reticulate microsculpture variable, rarely present on whole upper surface, often present only on elytra, sometimes absent; elytral reticulations *c.* isodiametric or slightly transverse when not otherwise described. *Head* narrower than or wider than prothorax; eyes prominent but varying from species to species; genae usually shorter than eyes and oblique, rarely angulately prominent; 2 setae over each eye, the posterior often distant from posterior corners of eyes; front impressed each side anteriorly, often also flattened and/or weakly impressed or subpunctate at middle; mandibles short, strongly curved; clypeus 1-setose each side; labrum transverse, 6-setose anteriorly, with additional smaller depressed setae at rounded angles; antennae slender, pubescent from (part of) 4th segments, first 3 segments more sparsely or not pubescent; mentum with entire tooth; ligula and paraglossae equal in length, united, forming a rounded-truncate structure with 4 principal setae and sometimes 2 additional smaller setae; palpi pubescent, not widely expanded. *Prothorax* cordate or quadrate or trapezoidal, often (not always) as long or longer than wide, sometimes (not usually) wider at base than at middle (but width of prothorax always measured at widest midpoint in computing proportions); side margins varying in width in different species, each margin with a seta at or before middle and sometimes also a seta at or near basal angle, and in *seticollis* with additional setae anteriorly (setae often broken off, but their positions marked by characteristic punctures); disc convex, more so in some species than in others; anterior and posterior marginal lines absent or incomplete, middle line very coarse and deep (except finer in *kokoda*), but subbasal and subapical transverse impressions weak or obsolete; basolateral impressions usually present but not sharply defined, usually subpunctate, but disc otherwise *c.* smooth or at most sparsely punctulate. *Elytra* with humeri rounded, margined; outer apical angles rounded or angulate or denticulate; actual apices obliquely truncate or sinuate-emarginate or angulate, denticulate, or spined *c.* opposite ends of 2nd intervals or 2nd striae; striae entire, usually well impressed, sometimes punctulate; intervals flat or moderately convex, 3rd with 1 (in *tenuis* only) or 2 or more dorsal, usually seta-bearing punctures, and 5th intervals rarely with similar punctures; when 3rd intervals 2-punctate, the punctures often ¼ or less from base on outer edge and ¼ or less from apex on inner edge of intervals, but positions vary; additional punctures (if present) on 3rd intervals sometimes smaller and more irregular than the 2 primary punctures. *Inner wings* full in all New Guinean species (reduced in some New Zealand and Australian ones). *Lower surface* variable, often sparsely or partly pubescent (least so in *imitatrix*); prosternal process variable in profile. *Legs* slender; tarsi pubescent (sparsely pilose) above; 4th tarsal segments very deeply emarginate, with long lobes; 5th segments with accessory setae; claws each with 3 to 8 long teeth (not counting apex of claw) and sometimes additional smaller teeth, the number varying from species to species and also varying a little individually, sometimes different on the 2 claws of one tarsus. *Secondary sexual characters*: ♂ front tarsi not or not much dilated but with 3 segments narrowly 2-seriately squamulose below (the squamae sometimes disarranged and not obviously 2-seriate); ♂ middle tarsi without sexual squamules; *either* ♂ middle tibiae each with a row of 3 to 9 low tubercles on inner edge in outer ⅓ or ½ of length, the tibial edge being thus subsinuate or subserrate in profile (Fig. 160) (this condition called tuberculate-serrate), *or* ♂ middle tibiae modified in some other way, *or* ♂ middle tibiae either straight or slightly bent-in at apex but without tubercles (Fig.

161) (see *Notes* below); last ventral segment with 2 to 4 apical setae each side in ♂ (possibly only 1 each side in ♂ *tenuis*), 3 to 8 or more in ♀ (except only 2 each side in ♀ *tenuis*), the number in each sex usually fairly constant in a species but varying somewhat individually and sometimes unsymmetric with (for example) 2 setae on one side and 3 on the other in a ♂, or 5 on one side and 6 on the other in a ♀.

Type species. So far as I know, type species have not been strictly designated for either *Demetrida* or *Xanthophoea*. These genera were based on New Zealand and Australian forms respectively, and type species should be selected during work on the New Zealand and Australian members of the group. I therefore make no designations now.

Generic distribution. Numerous in **Australia** and **New Guinea**, fewer in **New Zealand**, **New Caledonia**, **New Britain**, and the **Moluccas** (Amboina, Batjan) (occurrence in New Britain and Moluccas based on undescribed material before me).

Notes. As Britton points out, *Demetrida* has priority over *Xanthophoea*. The genus as a whole is diverse. Perhaps it can be usefully divided, but this will require revision of the many Australian species, which seem to bridge the gap between the flightless (ground-living?) *Demetrida* of New Zealand and the winged (arboreal) species of New Guinea.

The New Guinean species of *Demetrida* may all be interrelated but different ones differ remarkably in many details. Variation of some characters within the genus is indicated in the preceding *Description*, and some species groupings are suggested in the *Key to Species*. However, differences in the ♂ middle tibiae, which may distinguish natural species groups, are worth describing in more detail. Of the 56 species of the genus now recognized from New Guinea, both sexes are known of 47, only the ♂ of 4, and only the ♀ of 5. In most species of which the ♂ is known, and also in at least some Australian and New Zealand species, the ♂ middle tibiae have the inner edge tuberculate-serrate (see *Description*, above). The number of tubercles varies from *c.* 3 to 9 in different species (with some individual variation too), and the tubercles vary in prominence, being sometimes poorly developed and difficult to see. The tuberculate-serrate ♂ middle tibiae probably characterize most *Demetrida* throughout the genus' range. However, variations from this pattern occur among New Guinean species. In *D. nigripennis* (and perhaps also in *prima*, of which the ♂ is unknown) the ♂ middle tibiae have the inner edge weakly 2-emarginate. In ♂ *imitatrix* each middle tibia has a long tubercle on inner edge separated from the apex by an emargination. And the following 16 species have the ♂ middle tibiae straight or slightly bent-in (slightly bent-out in *reversa*) at apex but not or not distinctly tuberculate-serrate: *tripuncta*, *genicula*, *angulata*, *reversa*, *kiunga*, *recta*, *rex*, *brunnea*, *fumipes*, *nigriceps*, *saidor*, *divisa*, *humeralis*, *viridibasis*, *mafulu*, and *sibil*.

Because of the large number of species and because many characters are shared by related species or convergent in unrelated ones, most New Guinean *Demetrida* can be defined only by combinations of characters. However, *D. imitatrix* is unique in form (relatively broad) and in form of ♂ middle tibiae. *D. vigil* is unique in abrupt prominence of eyes. *D. kokoda* is unique in form and in fineness of impressed middle line of pronotum. *D. seticollis* is unique (among the nonpubescent species) in possessing extra lateral pronotal setae anteriorly. And *D. tenuis* is unique in sculpture of front, in having only 1 seta-bearing puncture on 3rd elytral interval, and in having only 1 apical seta on each side in the ♂, and only 2 in the ♀. Besides these single species with unique characters, the following pairs or small groups of species share special characters. Among New Guinean *Demetrida*, only *velata*, *viridibasis*, and *mafulu* have

almost the whole upper surface microreticulate; only *tripuncta* and *genicula* have the genae *strongly* angulately prominent, although *tenuis* and some other species have the genae subprominent; only *seriata* and *nubicola* (of nonpubescent species) have special seta-bearing punctures on 5th elytral intervals; and only *nigripennis* and perhaps *prima* have the ♂ middle tibiae 2-sinuate on inner edge.

Some New Guinean species of *Demetrida* are remarkably variable. Great individual variation is indicated by differences in proportions of the *Measured specimens* of some species. And Mendelian dimorphism is suggested in some cases. For example, dimorphism or polymorphism of color apparently occurs in *Demetrida diversa* (markings black or green, legs dark or pale) and in *mafulu* (markings present or absent), and color differences among some other species *may* be Mendelian, and presence or absence of certain prothoracic and elytral setae *may* be Mendelian too, as is the case among some other Carabidae. (Genetic dimorphism of these and other Carabidae will be considered in more detail in Part IV of my work on the carabid beetles of New Guinea.) This situation suggests that the explosive evolution of *Demetrida* in New Guinea, discussed below, is correlated with great genetic variability of some species, as would be expected. Different species may still share homologous genes, and characters that have become stabilized in some species may still be dimorphic or polymorphic in other species.

I think that *Demetrida* is in fact in the very midst of an evolutionary explosion in New Guinea. This is suggested by the diversity of superficial differences among many apparently closely interrelated species and by the great variability of some species. Apparently one or more ancestors have *recently* invaded an open or incompletely occupied habitat in New Guinea—primarily the low foliage of rain forest—where other predaceous beetles of this size are few. This habitat is occupied in other tropical regions by Carabidae of the genus *Calleida*, which many of the New Guinean *Demetrida* resemble in size, form, and even color, although the two genera are well differentiated taxonomically by differences in mouthparts, tarsal pubescence, etc. That *Demetrida* and *Calleida* are geographically complementary is true but an oversimplification. The situation is complicated in many ways, for example by the presence of many species of *Lebia* in some other tropical regions but few in New Guinea.

The ecology of *Demetrida* seems consistent with a recent *independent* radiation of the New Guinean species. While most New Guinean species apparently live in foliage in rain forest, most Australian species live on shaggy-barked tree trunks (especially of *Eucalyptus* trees) in relatively open woodland, and the Australian tree-trunk forms and the New Guinean rain-forest-foliage forms have evidently radiated independently. Although this is true, it is another oversimplification. A few northern Australian species of *Demetrida* do inhabit rain-forest foliage, but they are very few, uncommon, and probably ecologically unimportant. Perhaps they represent the ancestral stock(s) from which the New Guinean rain-forest forms have evolved.[3]

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[3] The following key characterizes 3 species of *Demetrida* from North Queensland, Australia, that are or may be members of the New Guinean radiation of the genus. *D. angulata*, described in the present paper, is the only species known to be common to Australia and New Guinea. The other 2 Australian species named in the key are distinguished by 1-punctate 3rd intervals from all known New Guinean species except *tenuis*.

KEY TO CERTAIN AUSTRALIAN *DEMETRIDA*

1. Elytral apices sinuate-truncate; 3rd intervals 1-punctate 2
– Elytral apices obtusely angulate; 3rd intervals 2-punctate (1 ♀, Rocky R. on Cape York; New Guinea) ..... *angulata* (n. sp.)
2. Prothorax with posterior-lateral setae (11, middle Cape York, Cairns, Kuranda, etc., vic. Brisbane, Clarence R.) ..... *longicollis* Macleay

Also, a few Australian *Demetrida* live in long grass, and a few unrelated New Guinean species (perhaps *pallens*?) may have invaded grassland independently, at high altitudes—but this is a guess, based on the insects' appearance; the actual habitats of the New Guinean species in question are not recorded. However, these exceptions and doubts do not change the general fact: *Demetrida* has radiated ± independently in the New Guinean rain forest, and the radiation may be continuing explosively now. The radiation of these beetles parallels in some ways the radiation of birds of paradise in the same forests.

The geographic distribution of different species of *Demetrida* in New Guinea is not yet very well known, and the ecologic distribution of the species within the rain-forest-foliage habitat is hardly known at all. Some species of the genus are apparently localized in parts of New Guinea, and geographic replacement may occur in some cases. But many other species are evidently wide-ranging on the island, and many species sometimes occur together at one locality or in a very limited area. For example, I found 8 species at Dobodura, at relatively low altitudes. And 19 species have been found at or near Wau on the Morobe Plateau, at mid-altitudes. The genus as a whole ranges in New Guinea from sea level to or above timber line but is evidently best represented at mid-altitudes, where it is apparently dominant, and where most of the strikingly colored species occur. Some species are evidently confined to or specially characteristic of either low, middle, or high altitudes, and related species may replace each other at different altitudes in some cases.

– Prothorax without posterior-lateral setae ... 3
3. Prothorax narrower (width/length 0.84 and 0.93); front subcarinate (New Guinea only) ..... (*tenuis* n. sp.)
– Prothorax wider (width/length 1.07); front not subcarinate (1 ♀, Cairns) ..... *ferruginea* Chaudoir

As to their ecology, the bright color of some New Guinean *Demetrida* and the fewness of individuals taken at light suggest that most species are diurnal. How the various species that occur together, for example at Wau, divide the niches within the rain-forest-foliage habitat can only be guessed at now. A few *may* have become nocturnal. Some species certainly live in understory vegetation in the rain forest, but some *may* live at mid-levels and some *may* live in the actual tree tops. Different species *may* specialize in narrower habitats, or they *may* specialize in different kinds or sizes of prey. But I should repeat that this is mainly guesswork. There is an opportunity here for exciting work in the field, on the ecologic radiation of a dominant group of insects that is radiating structurally.

Some New Guinean *Demetrida* may be mimics. Evolution of mimetic relationships would, I think, be consistent with the genus being now in the midst of an evolutionary explosion, with many species genetically variable, ready to respond to special selection pressures. *Demetrida imitatrix* resembles and may mimic the common New Guinean carabid *Violagonum violaceum* (Chaudoir), and some other brightly colored *Demetrida* may mimic other Carabidae (perhaps certain Colliurini) and other beetles.

An extraordinary circumstance is that, although many species of *Demetrida* occur in New Guinea and although some of them are common (I have examined a total of about 1250 individuals) all 56 New Guinean species seem to be undescribed! However, this should not be interpreted as evidence of evolution within historic times. Most of the common species occur at mid-altitudes in the mountains, where not much carabid collecting was done until Evelyn Cheesman's time, in the 1930's, and where really extensive collections of Carabidae have been made only recently, by Dr. Gressitt, the Sedlaceks, and other Bishop

Museum entomologists. Andrewes, during his work on Oriental Carabidae, did see a few older specimens of *Demetrida* from New Guinea, including one or two of the strikingly colored forms, but he refrained from describing them; he did not know what genus to put them in! So, I think failure of earlier authors to describe New Guinean species of *Demetrida* was a result partly of the inaccessibility of the habitats of most common species, partly of commendable caution on the part of taxonomists including H. E. Andrewes, and probably partly just of chance.

Methods. My specific descriptions in *Demetrida* follow a special, slightly modified form designed to characterize the species adequately without wasting space. Characters covered in the generic *Description* are not repeated, but each specific description begins with a statement that the species shares the generic characters. In addition to the usual proportions, the ratio of width of base of prothorax/width of head is given; it is especially useful in distinguishing some species of *Demetrida*. The headings *Inner wings*, *Lower surface*, and *Legs* are omitted; these subjects are sufficiently covered in the *Description* of the genus. A special heading *Claws* is added because number of claw teeth may prove to be diagnostic of some species.

Secondary sexual characters, especially modifications of the ♂ middle tibiae, have been examined carefully and used in characterizing species. The tibiae are best seen against an illuminated white background. To see a tibia clearly at the proper angle it is often necessary to straighten a middle leg, and this can usually be done without relaxing the specimen, by pulling the tibia straight with a pin point and putting a minute drop of glue on the articulation to hold the straightened tibia in place. However, I have not examined the ♂ copulatory organs. This is a task for third-stage taxonomists, far beyond what I have time to do now (see Part I of my "The Carabid Beetles of New Guinea," Bull. Mus. Comp. Zool. 126, No. 3, pp. 328–330).

In drawing descriptions in this genus I have used "*c.*" (*circa*, meaning approximately) even more often than usual, as a stratagem for saving space where I do not think exact or detailed statements are useful. I have also sometimes used it as a warning that variation probably occurs although my material is too limited to show it.

A statement of my procedure in attacking the particularly difficult problem presented by the New Guinean *Demetrida* may be useful to future taxonomists. My method has been to alternate between the general and the particular, with first a general sorting of individuals into apparent species and preparation of a very preliminary key, then drawing of detailed descriptions species by species to determine characters and variation, then preparation of an improved general classification and an improved key, then further checking of details and variation, and eventually (by a much longer process than this!) preparation of a final key and descriptions emphasizing characters that have proved significant and emphasizing variation, and last of all completion of introductory and explanatory material, including the present statement. This is the general method that taxonomists use in classifying any unknown animals, but the process has been much more complex in *Demetrida* than usual. Specific problems have been numerous and difficult. In some cases I cannot be sure from available material whether differences in color, presence or absence of setae, or length of elytral spines are specific characters, cases of Mendelian dimorphism, or other individual variations. I have had to decide these cases arbitrarily, and my groupings of species are partly arbitrary. The resulting classification is at best an approximation. Of course this is true of most classifications, but I am more than usually conscious of the fact in this case.

The question may be raised, why publish

a classification that is only a doubtful approximation? The answer is that it presents an exciting situation in the only way that it can be presented now. Further work on *Demetrida*, including field work (which is essential), requires some sort of classification. In this and many other cases where a classification is needed, we can only follow what I think is a basic rule of the trade: a taxonomist must do the best he can with the available material in the available time. Actually, this imperfect treatment of *Demetrida* may prove to be the most important part of my taxonomic work on New Guinean Carabidae.

The following *Key to Species of Demetrida of New Guinea* is complicated and at some points difficult to use. This is inevitable in the case of an "exploding" group in which some species are exceptionally variable and others connected by intergrades. The key is designed primarily for identification. It is partly but not wholly phylogenetic: species that are closely grouped in the key are likely to be related but are not necessarily so. A few dimorphic or exceptionally variable species are run out at two different points in the key, but I have had to limit such multiple treatments. A few individuals are therefore unidentifiable by key characters and have to be placed by comparison of specimens. I might be able to construct a multiple-treatment key that would identify every individual variant of each *Demetrida* now known from New Guinea, but the key would be impossibly complex even for present use and it would not take care of new material, which will surely include new variants of many species. The key must be used with care and discretion. Proportions *must* be calculated from measurements. Much variation must be allowed for, more than I have been able to indicate in detail. Alternatives must be tried when specimens do not key out clearly. The test of a key like this is whether it works reasonably well in practice. First-time users will probably find it very difficult. Persons who become more familiar with it will, I hope, find shortcuts, in part suggested by section headings inserted in brackets.

For comparisons of New Guinean *Demetrida* with Australian species see especially Footnote 3 (p. 143) and under *D. prima* (p. 150).

Key to the Species of *Demetrida* of New Guinea

[*Pubescent*]

1. Most of upper surface including sides of head behind eyes plainly pubescent 2
– Surface not pubescent or (*seriata* and *nubicola* only) pubescence very sparse, fine, scarcely detectable 8
2. Pubescence short; elytra truncate or sinuate-truncate at apex 3
– Pubescence long, sparse-pilose; elytra usually lobed or spined at apex (scarcely so in *pallens*) 6
3. Posterior-lateral prothoracic setae present, at basal angles; smaller, length under 7.5 mm (p. 149) ..... *aitape*
– Posterior-lateral prothoracic setae absent; size larger 4
4. Eyes more prominent, head nearly as wide as prothorax (width head/prothorax 0.98 and 0.96); ♀ with 3 (♂ probably 2) apical ventral setae each side; (length *c.* 9 mm) (p. 149) ..... *goroka*
– Eyes less prominent, head relatively narrower; apical ventral setae more numerous 5
5. Color entirely brown; length usually more than 9 mm (p. 150) ..... *prima*
– Bicolored, head and prothorax brown, elytra nearly black; length usually less than 9 mm (p. 151) ..... *nigripennis*
6. Elytral apices sinuate-truncate or weakly lobed; color irregular pale brown (p. 151) ..... *pallens*
– Elytral apices spined 7
7. Brown, elytra with pale speckles (p. 151) ..... *tesselata*
– Almost black, elytra faintly or not speckled (p. 152) ..... *crepera*

[*Elytra truncate*]

8. Elytral apices obliquely truncate or sinuate-truncate (Figs. 97, 99) 9
– Elytral apices angulate, toothed, spined, or at least subangulately lobed (Fig. 102) *c.* opposite ends of 2nd striae or 2nd intervals 15
9. Third and usually 5th elytral intervals each with several seta-bearing punctures; upper surface with a little sparse, fine, scarcely detectable pubescence 10

– Third intervals with 1 or 2 and 5th intervals without seta-bearing punctures; upper surface without such pubescence; (color brown) 11
10. Color entirely brown (p. 153) ..... *seriata*
– Bicolored, reddish brown with base of elytra black; (see also *Description*) (p. 153) ..... *nubicola*
11. Large (over 10 mm) *and* prothorax strongly narrowed in front *and* outer angles of elytra distinct, only slightly blunted (p. 154) ..... *magna*
– *Either* smaller *or* with prothorax differently shaped *or* with outer elytral angles rounded 12
12. Prothorax wider than long at middle (by measurement); posterior-lateral prothoracic setae usually present 13
– Prothorax longer than wide; posterior-lateral prothoracic setae absent 14
13. Larger (7–9.8 mm); outer angles of elytra distinct although sometimes slightly blunted (p. 155) ..... *truncata*
– Smaller (5.6–6.3 mm); outer angles of elytra blunted or rounded (p. 155) ..... *minor*
14. Third elytral intervals 2-punctate; apical ventral setae 3 each side in ♂, probably more in ♀ (p. 156) ..... *subtenuis*
– Third elytral intervals 1-punctate; apical ventral setae 1 each side in ♂, 2 in ♀ (p. 156) ..... *tenuis*

[*Elytra angulate, toothed, or spined*]

15. Pronotum without posterior-lateral seta-bearing punctures 16
– Pronotum with posterior-lateral seta-bearing punctures at or near posterior angles 57
16. Color above brown (testaceous to piceous), reddish, black, or bicolored black-and-paler, but not in any part metallic 17
– Color above partly or wholly metallic blue, blue-black, green, or purple, often but not always bicolored 50
17. Not distinctly bicolored above, usually ± uniform brown, sometimes grading into darker brown or piceous on some parts of body (some doubtful species are run both ways in the key) 18
– Sharply bicolored above, partly brown or reddish, partly (sometimes only broad humeral areas) black 39
18. Genae angulately or roundly prominent; (3rd intervals of elytra 3-punctate) 19
– Genae oblique or weakly rounded, not prominent 20
19. Elytral apices obtusely angulate (p. 157) ..... *tripuncta*
– Elytral apices acutely toothed (p. 158) ..... *genicula*
20. Elytral apices weakly lobed or angulate with the angles blunted, obtuse, or right 21
– Elytral apices acutely dentate or spined 23
21. Prothorax subcordate, wider than head and much wider than long (width/length *c.* 1.35); length 5.5–7.1 mm (p. 158) ..... *latangula*
– Prothorax subquadrate, usually (not always) narrower than head and not or not much wider than long; size larger 22
22. Prothorax slightly narrower (cf. descriptions); ♂ middle tibiae slightly bent-in at apex; length 7.5–8.9 mm; (Papua) (p. 159) ..... *angulata*
– Prothorax slightly wider; ♂ middle tibiae slightly bent-out at apex; length 8.5–9.2 mm; (West N. G.) (p. 159) ..... *reversa*
23. Median impressed line of pronotum fine; (form as Fig. 103, very elongate; length *c.* 10–11 mm) (p. 160) ..... *kokoda*
– Median impressed line of pronotum coarse 24
24. Prothorax at middle usually wider than or equal to width of head, or only slightly narrower 25
– Prothorax much narrower (usually by 1/10 or more) than width of head 33
25. Prothorax more cordate, usually wider (*c.* 1/3 to 1/2 wider than long, with base often wider than head) with sides more rounded and more evenly rounded anteriorly, and with wider margins, *and* 3rd elytral interval with only two dorsal punctures, *and* color entirely brown, *and* length usually less than 7 mm 26
– *Either* prothorax more quadrate and narrower (less than 1/3 wider than long, with base usually narrower than head) with sides often but not always less evenly rounded anteriorly and with narrower margins, *or* 3rd elytral interval with more than two dorsal punctures (additional ones sometimes smaller than the 2 primary ones), *or* color darker (at least partly blackish), *or* size larger 27
26. Elytral apices spined (p. 160) ..... *moda*
– Elytral apices acutely angulate or short-toothed (p. 161) ..... *submoda*
27. Prothorax with wider margins, ± cordate 28
– Prothorax with narrower margins, quadrate or more narrowly cordate 31
28. Smaller, length less than 8 mm 29
– Larger, length 8 mm or more 30
29. Eyes more prominent; base of pronotum less punctate; elytra usually with (sometimes faint) reticulate microsculpture (p. 162) ..... *hollandia*
– Eyes less prominent; base of pronotum more punctate; elytra without reticulate microsculpture (p. 162) ..... *wau*

30. Third elytral interval 2-punctate (p. 163) ..... *similis*
– Third elytral interval with more than two punctures (p. 164) ..... *duplicata*
31. Smaller, length 6.7–7.6 mm; ± piceous; base of prothorax more punctate; 3rd elytral intervals with more than two punctures (p. 164) ..... *subpunctata*
– Larger, length 7.7–9.2 mm; brown; base of prothorax less punctate; 3rd elytral intervals 2-punctate 32
32. Male middle tibiae tuberculate-serrate; length 7.7–9.2 mm (p. 165) ..... *dobodura*
– Male middle tibiae not tuberculate-serrate; length *c.* 10.8 mm (p. 166) ..... *kiunga*

[*Prothorax much narrower than head*]

33. Elytral 3rd intervals 2-punctate, *and* color reddish brown with legs pale except knees sometimes dark, *and* length not over 10 mm 34
– Elytral 3rd intervals 3-punctate, *or* (*if* 3rd interval 2-punctate) color in part darker with legs partly or wholly dark, *or* size over 10 mm 36
34. Most of upper surface distinctly microreticulate (p. 166) ..... *mafulu*
– Microreticulation distinct (if at all) only on elytra 35
35. Male middle tibiae tuberculate-serrate; sides of prothorax usually more rounded-in at apex (p. 167) ..... *forma*
– Male middle tibiae bent-in at apex but not tuberculate-serrate; sides of prothorax usually almost straight anteriorly (p. 167) ..... *recta*
36. Very large, length 10.2–11.4 mm, *and* basal angles of prothorax very prominent (Fig. 105) (p. 168) ..... *rex*
– Smaller; basal angles of prothorax usually less prominent 37
37. Legs red or brown, not darker than disc of elytra (p. 169) ..... *brunnea*
– Legs partly or wholly dark 38
38. Third intervals of elytra usually 3-punctate; pronotum without reticulate microsculpture (p. 169) ..... *fumipes*
– Third intervals usually 2-punctate; pronotum (lightly) microreticulate (p. 170) ..... *velata*

[*Bicolored but not metallic*]

39. Head and pronotum reddish, elytra entirely dark or with only apices slightly reddish 40
– Pattern not as described; elytra usually (not always) bicolored 42
40. Elytral striae very lightly impressed; legs black (p. 171) ..... *nigripes*
– Elytral striae well impressed; legs usually paler 41
41. Elytra usually with reticulate microsculpture (p. 162) ..... *hollandia*
– Elytra without reticulate microsculpture (see also couplet 29) (p. 162) ..... *wau*
42. Prothorax wider (*c.* ⅕ or more wider than long) 43
– Prothorax narrower (*c.* long or longer than wide) 44
43. Elytra black with large common discal area red (p. 171) ..... *dorsalis*
– Elytra reddish brown with dark base (western N. G.; for individuals from central and eastern N. G. see *Notes* under *duplicata*, p. 164) (p. 172) ..... *basalis*
44. Elytral apices angulate; (color diverse, see *Description*) (p. 172) ..... *diversa*
– Elytral apices spined (spines sometimes short) 45
45. Eyes abrupt (Fig. 107); (anterior angles of prothorax more rounded than usual) (p. 173) ..... *vigil*
– Eyes normal, prominent but less abrupt 46
46. Head and pronotum black or piceous, or at least darker than elytral disc 47
– Head and pronotum red or brown 48
47. Elytra wholly brown, long-spined (p. 174) ..... *nigriceps*
– Elytra brown with darker humeri, shorter-spined (p. 174) ..... *saidor*
48. Elytra red or brown with base wholly black, except suture sometimes red to base; legs pale, sometimes with dark knees (p. 175) ..... *divisa*
– Elytra with only humeri dark; legs dark or bicolored 49
49. Dark humeral areas wider, usually including parts of 5th intervals; length 9.3–10.8 mm (p. 175) ..... *humeralis*
– Dark humeral areas narrower; length 8.3–9.4 mm (p. 169) ..... *fumipes*

[*Metallic at least in part*]

50. Broad (broadest *Demetrida*); color entirely blue-black (p. 176) ..... *imitatrix*
– More slender; color not as described 51
51. Head and prothorax red, elytra entirely green except sometimes purplish posteriorly (p. 177) ..... *viridipennis*
– Color not as described 52
52. Color entirely green, green and black, or green and purple 53
– Bicolored, elytra in part red or brown 54
53. Larger (9.2–10.8 mm); eyes more abrupt; elytra long-spined (p. 177) ..... *lepida*
– Smaller (7.0–9.0 mm); eyes less abrupt; elytra usually shorter-spined (p. 178) ..... *sublepida*
54. Head and pronotum red or brown, not plainly metallic 55

– Pronotum and sometimes also head metallic green 56
55. Elytral apices angulate (p. 172) ... *diversa*
– Elytral apices short-spined (p. 179) ..... *viridibasis*
56. Elytral apices acutely angulate; most of upper surface microreticulate (p. 166) .. *mafulu*
– Elytral apices long-spined; only elytra (faintly) microreticulate (p. 179) ..... *sibil*

[*Posterior-lateral setae present*]

57. Color brown-piceous (head and pronotum usually darker than elytra); prothoracic margins with extra setae anteriorly (p. 180) ..... *seticollis*
– Color wholly or mainly black, blue-black, or green-black; prothoracic margins without extra setae anteriorly 58
58. Legs red testaceous (p. 181) ..... *pallipes*
– Legs dark 59
59. Elytra black with common discal area red (p. 181) ..... *discoidalis*
– Elytra metallic blue-black or green-black without discal red area 60
60. Elytra short-spined (p. 182) ... *sedlacekorum*
– Elytra long-spined (p. 182) ..... *brandti*

Demetrida aitape n. sp.

Description. With characters of genus; form nearly as in following species (*goroka*, Fig. 97), slender, eyes prominent, elytral apices obliquely subtruncate; entirely brown; surface short-pubescent, without reticulate microsculpture but sparsely punctulate. *Head* 0.91 and 0.90 width prothorax; eyes moderately prominent, genae shorter and oblique. *Prothorax* narrowly subcordate; width/length 1.10 and 1.13; base/apex 1.36 and 1.34; base/head 0.94 and 0.91; sides broadly rounded in anterior ¾, broadly sinuate before right or slightly acute sometimes minutely blunted posterior angles; margins rather wide in proportion to width of insect, each with seta before middle and at or just before basal angle; basolateral areas slightly depressed and more closely punctate than disc. *Elytra* long; width elytra/prothorax 1.69 and 1.61; apices slightly obliquely sinuate-truncate, with outer angles moderately and sutural angles narrowly rounded; striae deep, subpunctate (or with sides of intervals slightly irregular); 3rd interval with *c.* 4 special seta-bearing punctures (difficult to distinguish amid other punctation). *Claws* with *c.* 6 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae tuberculate-serrate (*c.* 5 small tubercles); ♂ with 3 or 4, ♀ 4 or 5 apical ventral setae each side. *Measurements* (types only): length 5.8–7.2; width 1.8–2.3 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,439) and 3 paratypes from Aitape, **N-E. N. G.,** Aug. 1944 (Darlington); 6 paratypes, Mt. Lamington, **Papua** (C. T. McNamara, S. Australian Mus.).

Additional material. **Papua**: 1, Dobodura, Mar.–July 1944 (Darlington). **N-E. N. G.**: 1, Erima, Astrolabe Bay, 1896 (Biró). **West N. G.**: 1, Dojo [near Hollandia], Apr. 1958 (G. den Hoed, Louwerens Coll., to Leiden Mus. eventually).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. The relatively small size and presence of posterior-lateral prothoracic setae distinguish this species from other short-pubescent ones in New Guinea. The individuals listed under *Additional material* are slightly larger than the types and vary slightly in form, but seem to be conspecific. All have setae at the posterior angles of the prothorax as well as before middle, and all are ♀ ♀ with 5 setae each side last ventral segment.

Demetrida goroka n. sp.

Description. With characters of genus; form as in Figure 97, slender, eyes prominent, elytral apices obliquely subtruncate; reddish brown, elytra darker but not black, appendages brown; surface short-pubescent, without reticulate microsculpture but sparsely irregularly punctate. *Head* 0.98 and 0.96 width prothorax; eyes rather abruptly prominent, genae slightly shorter, sinuate-oblique; front flattened, irregularly impressed. *Prothorax* narrowly subcordate; width/length 1.04 and 1.02; base/apex 1.26 and 1.38; base/head 0.86 and 0.91; sides broadly rounded in anterior ¾, broadly

sinuate before sharply acute posterior angles; margins rather wide in proportion to width of insect, each with seta slightly before middle but none at base; basolateral areas irregularly impressed, punctate. *Elytra* long; width elytra/prothorax 1.69 and 1.68; apices slightly obliquely sinuate-truncate, with outer angles blunted or rounded, sutural angles narrowly rounded; striae deep, irregularly subpunctate; 3rd intervals each with 4 special punctures in type, the punctures in part obscured or absent in paratype. *Claws* with 6 or 7 teeth. *Secondary sexual characters*: ♂ unknown; ♀ with 3 apical ventral setae each side in both specimens. *Measurements*: length ± 9.0; width 2.8 mm.

Types. Holotype ♀ (Bishop Mus.) and 1 ♀ paratype (M.C.Z., Type No. 31,440) both from Goroka, **N-E. N. G.,** 1500 m, May 22, 1961 (J. L. & M. Gressitt), taken in light trap.

Notes. D. goroka superficially resembles *prima* and *nigripennis* (below) but has wider head with more prominent eyes, slightly narrower prothorax (with more distinctly lobed base), and only 3 apical ventral setae each side in ♀ (probably only 2 in ♂), while ♀ ♀ of *prima* and *nigripennis* have 5 or 6 such setae each side.

Demetrida prima n. sp.

Description. With characters of genus; form nearly as in preceding species (*goroka*, Fig. 97), slender, but with eyes less prominent than in *goroka*, elytral apices obliquely subtruncate; reddish brown; surface short-pubescent, without reticulate microsculpture but sparsely punctulate. *Head* 0.91 and 0.87 width prothorax; eyes less prominent than usual in genus, genae long-oblique. *Prothorax* narrowly subcordate; width/length 1.03 and 1.08; base/apex 1.24 and 1.11; base/head 0.96 and 0.93; sides weakly arcuate anteriorly, broadly sinuate before right or slightly acute well defined basal angles; margins moderate, each apparently with special seta-bearing puncture near middle of length but not at base (these setae and punctures difficult to distinguish amid general pubescence); basolateral impressions punctate. *Elytra* long; width elytra/prothorax 1.64 and 1.53; apices truncate or weakly sinuate-truncate, with outer angles moderately and sutural angles more narrowly rounded; striae deep, irregularly punctate; 3rd interval with apparently 2–5 special seta-bearing punctures (sometimes difficult to distinguish amid other punctation). *Claws* with 5 or 6 teeth. *Secondary sexual characters*: ♂ unknown; ♀ with *c.* 5 apical ventral setae each side. *Measurements*: length 9.0–9.8; width 2.8–3.0 mm.

Types. Holotype ♀ (Bishop Mus.) from Wau, Morobe Dist., **N-E. N. G.,** 1200 m, Mar. 23, 1963 (Sedlacek), in mercury vapor light trap. Additional (♀ ♀) paratypes from **N-E. N. G.** as follows: 1, Maprick, 160 m, Dec. 29, 1959–Jan. 17, 1960 (T. C. Maa, now in M.C.Z., Type No. 31,441); 1, Torricelli Mts., Siaute, sea level, Nov. 9–17, 1958 (W. W. Brandt, Bishop Mus.); 1, Mumeng, 600 m, Mar. 9, 1962 (Sedlacek).

Measured specimens. The ♀ holotype and ♀ paratype from Mumeng.

Notes. Among New Guinean *Demetrida*, *prima* should be easily known by form, including form of elytral apices, rather large size, nearly uniform reddish brown color, and short-pubescent surface.

Superficially *prima* resembles some Australian species of *Demetrida*. For example it is somewhat similar in form to *grandis* (Chaudoir) of southern Australia but has shorter antennae, smaller eyes, less prominent genae, prothorax narrower anteriorly with narrower margins, and elytra uniformly brown (not striped as in *grandis*). *D. prima* also somewhat resembles *constricticeps* (Sloane) of southwestern Australia in form and is similar in color, but *prima* has shorter antennae, much less prominent genae, less strongly sinuate sides of prothorax, and differs in other details. And *prima* differs from both the Aus-

tralian species named and from all other Australian species known to me in amount and character of pubescence.

Demetrida nigripennis n. sp.

Description. See Plate 1, figure I; with characters of genus; form, elytral apices, pubescence, punctation, and other asexual characters *c.* same as in preceding species (*prima*), but color brownish red with elytra black or nearly so, and size smaller. *Head* 0.88 and 0.89 width prothorax. *Prothorax*: width/length 1.06 and 1.07; base/apex 1.20 and 1.18; base/head 0.90 and 0.98. *Elytra*: width elytra/prothorax 1.56 and 1.64; 3rd intervals with apparently 1–4 principal seta-bearing punctures (difficult to distinguish). *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae weakly 2-emarginate on inner edge near apex; ♂ with *c.* 4, ♀ *c.* 6 apical ventral setae each side. *Measurements*: length 8.3–9.0; width 2.5–2.8 mm.

Types. Holotype ♂ (Louwerens Coll., eventually to Leiden Mus.) and 1 ♂ paratype (M.C.Z., Type No. 31,442) from Dojo [near Hollandia], **West N. G.,** Apr. 1958 (G. den Hoed); and 1 ♀ paratype, Hollandia, May 1945 (B. Malkin, U.S.N.M.).

Measured specimens. The ♂ holotype and ♀ paratype.

Notes. This may prove to be a geographic form of the preceding species (*prima*), but more material of both sexes from more localities is needed to clarify the relationship. The form of the ♂ middle tibiae is unique among known members of the genus.

Demetrida pallens n. sp.

Description. See Plate 1, figure II; with characters of genus; eyes prominent, prothorax small, cordate-quadrate, and elytral apices sinuate-subtruncate and usually subangulate *c.* opposite ends 2nd striae; color irregular testaceous brown, elytra irregularly tesselated with small paler spots; surface long-pubescent, without reticulate microsculpture, punctate as described below. *Head* 1.10 and 1.08 width prothorax; eyes prominent, genae short-oblique. *Prothorax*: width/length 1.09 and 1.03; base/apex 1.36 and 1.38; base/head 0.85 and 0.91; side margins moderate, entirely fringed with long setae; disc irregularly sparsely punctate. *Elytra*: width elytra/prothorax 2.07 and 2.17; apices usually as figured, subangulate or weakly lobed (simply sinuate-truncate in 1 specimen), outer angles broadly and sutural angles less broadly rounded; striae moderately impressed, in part slightly interrupted, irregularly subpunctate; intervals all with series of coarse seta-bearing punctures among which special dorsal punctures are not distinguishable. *Claws* with 7 or 8 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae tuberculate-serrate (*c.* 6 small tubercles); ♂ with *c.* 4 apical ventral setae each side; ♀ unknown. *Measurements*: length 8–9; width 2.9–3.3 mm.

Types. Holotype ♂ (Leiden Mus.) and 4 ♂ ♂ paratypes (2 in M.C.Z., Type No. 31,443) all from Moss Forest Camp (Snow Mts.), **West N. G.,** 2800 m, Oct. 9–Nov. 5, 1938 (Toxopeus).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. This very distinct species occurs at a higher altitude than any other *Demetrida* known to me. The coloration, which superficially resembles that of some high-altitude Agonini (some *Maculagonum*), suggests that the insect lives in grass, although the specimens were taken at "Moss Forest Camp."

The (slight) variation in form of elytral apices is one of many examples of individual variation in this remarkably variable genus.

Demetrida tesselata n. sp.

Description. With characters of genus; form (Fig. 98) *c.* average, with eyes prominent, prothorax small, elytra spined; color irregular dark reddish brown, elytra with

numerous small pale flecks forming rows most conspicuous on (but not confined to) odd intervals, legs pale; surface sparsely long-pubescent, without reticulate microsculpture, irregular but scarcely punctate except for punctures (variable in size) from which hairs rise. *Head* 1.16 and 1.08 width prothorax; eyes prominent, genae nearly as long as eyes, oblique. *Prothorax* small, narrowly cordate-subquadrate; width/length 1.03 and 1.07; base/apex 1.31 and 1.35; base/head 0.81 and 0.88; sides weakly rounded anteriorly, often subangulate near middle of length; side margins moderate, irregularly fringed for entire length with long setae; baso-lateral depressions poorly defined, irregular but scarcely punctate. *Elytra*: width elytra/prothorax 2.28 and 2.23; apices spined, outer angles rounded or obtusely blunted (variable), sutural angles obtusely blunted; striae lightly impressed, in part interrupted or reduced to rows of punctures; intervals flat but irregular, odd intervals with series of seta-bearing punctures of moderate size, each puncture usually on posterior side of a broad low tubercle. *Claws* with *c.* 6–8 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae tuberculate-serrate (*c.* 5 widely spaced small tubercles); ♂ with 3 (or more?), ♀ 5 or 6 apical ventral setae each side. *Measurements*: length 8.7–9.8; width 3.0–3.4 mm.

Types. Holotype ♀ (Bishop Mus.) and 1 ♀ paratype (M.C.Z., Type No. 31,444) from Mt. Kaindi, **N-E. N. G.,** 2350 m, Jan. 10 and June 9, 1962 (Sedlaceks), the paratype taken in mercury vapor light trap; and 1 additional paratype ♂ without head, same locality, 2400 m, Jan. 28, 1963 (Sedlacek); 3 paratypes, Wau, 2400 m, Jan. 9–12, 1962 (Sedlaceks); 2 paratypes, 32 km S. of Wau, Bulldog Rd., 2850 m, May 29–30, 1962 (Sedlacek), light trap.

Additional material. **Papua**: 1, Mt. Tafa, 8500 ft. (*c.* 2600 m), Mar. 1934 (Cheesman). **N-E. N. G.**: 1 ♂, Edie Creek, 14 km SW of Wau, 2000 m, Feb. 13, 1962 (Sedlacek); 1 ♀, Enarotadi, 2000 m, Aug. 1962 (Sedlacek). **West N. G.**: 1 ♂, Swart Valley, W. ridge 1800–2000 m, Nov. 19, 1958 (Gressitt).

Measured specimens. The ♂ from Edie Creek and the ♀ holotype, figures given in this order.

Notes. The specimens before me vary not only in size and color but also in form of outer-apical elytral angles, depth of striae, presence or absence of low rounded tubercles on odd elytral intervals, and in other ways. Some of this variation is surely individual, but some may be geographic. Only additional series from several localities can decide this.

Demetrida crepera n. sp.

Description. Form and characters *c.* as in preceding species (*tesselata*) except color piceous or slightly reddish piceous without distinct pale flecks on elytra. *Head* 1.04 and 1.05 width prothorax. *Prothorax*: width/length 1.08 and 1.06; base/apex 1.30 and 1.25; base/head 0.85 and 0.85. *Elytra*: width elytra/prothorax 2.05 and 2.12; sculpture somewhat variable but in general like that in preceding species (*tesselata*), in which the sculpture varies too. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae tuberculate-serrate (*c.* 6 tubercles); ♂ with *c.* 4, ♀ *c.* 6 apical ventral setae each side. *Measurements*: length 9.5–10.4; width 3.1–3.5 mm.

Types. Holotype ♂ (A.M.N.H.) and 6 paratypes (2 in M.C.Z., Type No. 31,445) from N. slope, Mt. Dayman, Maneau Rge., **Papua** (the holotype and 4 paratypes at "No. 4," 2230 m, May 19–June 19, 1953; 1 paratype, same data except June 1–7; 1 paratype same except "No. 5," 1550 m, June 30–July 13) (all specimens collected 1953 by Geoffrey M. Tate).

Additional material. **N-E. N. G.**: 1, "No. 10," Purosa Camp, Okapa area, 1950 m, Sept. 29, 1959; 1, "No. 6," Pengagl Camp, east slopes Mt. Wilhelm, 2770 m, July 3, 1959 (both specimens Sixth Archbold Exp., L. J. Brass, A.M.N.H.).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. This form is apparently a geographic representative (perhaps eventually to be considered a subspecies) of the preceding species (*tesselata*) but is almost black rather than brown, is not distinctly pale-speckled, is slightly larger, and differs slightly in proportions, especially in having relatively narrower elytra.

All individuals of the type series have moth scales stuck to them, indicating that they were taken in light traps.

Demetrida seriata n. sp.

Description. With characters of genus; form *c.* average, with prominent eyes, subcordate prothorax, elytra with sinuate-truncate apices and usually slightly narrowed toward base; color brown or testaceous; surface not obviously pubescent (actually very sparsely and inconspicuously so); reticulate microsculpture present (faint) only on elytra. *Head* 1.06 and 0.98 (sometimes less) width prothorax; eyes prominent, genae short-oblique, not prominent. *Prothorax* narrowly subcordate; width/length 1.06 and 1.04 (wider in some specimens); base/apex 1.32 and 1.30; base/head 0.87 and 0.87; sides broadly rather weakly arcuate in anterior ¾, broadly sinuate before *c.* right posterior angles; each side with seta before middle and at posterior angle (all specimens) and additional weaker setae directed more to side than upward near anterior angle; most of disc virtually impunctate. *Elytra*: width elytra/prothorax 1.92 and 1.97; apices obliquely sinuate-truncate, with both outer and sutural angles rounded or blunted; striae impressed, scarcely punctulate; intervals convex, irregularly sparsely punctulate, 3rd with usually 6 (sometimes fewer) larger seta-bearing punctures, and 3 or 4 similar punctures usually present on 5th intervals. *Claws* with *c.* 5 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae weakly tuberculate-serrate (*c.* 6 small tubercles widely spaced); ♂ with 3, ♀ 4–6 apical ventral setae each side. *Measurements*: length 5.6–7.6; width 2.0–2.8 mm.

Types. Holotype ♂ (Bishop Mus.) and 4 paratypes (2 in M.C.Z., Type No. 31,446) from Eramboe, 80 km ex Merauke, **West N. G.,** holotype Feb. 1, paratypes Jan. 29, Feb. 5, 1960 (T. C. Maa).

Additional material. **Papua**: 1 ♂, Aroa Estate, W. of Redscar Bay, 1 m, Sept. 29, 1958 (Gressitt); 1 ♀, Bisianumu, E. of Port Moresby, 500 m, Sept. 23, 1955 (Gressitt); 1, Daradae nr. Javarere, Musgrove R., 100 m?, Oct. 2, 1958 (Gressitt); 4, Mt. Lamington, 1300–1500 ft. (*c.* 400–460 m) (C. T. McNamara, S. Australian Mus.).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. This species is characterized by relatively numerous dorsal elytral seta-bearing punctures. Notable also is presence of a little sparse, inconspicuous pubescence (not visible on sides of head behind eyes) and of several weak outward-directed hairs on margins of prothorax near anterior angles. The species is very distinct and probably ranges over the whole length of New Guinea although it has been found thus far only in two widely separated areas near opposite ends of the island.

Demetrida nubicola n. sp.

Description. See Plate 1, figure III; with characters of genus; head, prothorax, and posterior part of elytra dark red, basal ⅖ of elytra black with black color extending farther back at sides than at suture (suture narrowly red), lower surface red (yellowish on abdomen) with metasterna and contiguous parts of epipleurae dark, femora and outer edges of tibiae dark, tarsi and antennae reddish yellow; not obviously pubescent but with some sparse very inconspicuous hairs; reticulate microsculpture absent. *Head* 1.06 width prothorax; eyes prominent, genae shorter, obliquely rounded into neck; front slightly convex, with 2 impressions anteriorly (as usual in genus) and ir-

regularly slightly impressed at middle. *Prothorax* subquadrate with base slightly broader and apex narrower than usual; width/length 1.03; base/apex 1.48; base/head 0.92; sides weakly arcuate for much of length, subangulate at median-lateral setae, strongly sinuate before slightly acute prominent posterior angles; margins moderate, each with seta-bearing puncture *c.* ⅓ from apex and at basal angle, and with several much finer hairs directed laterally near anterior angles; disc moderately (not strongly) convex, baso-lateral impressions present but irregular, subpunctate. *Elytra*: width elytra/prothorax 2.11; apices sinuate-truncate, outer angles broadly rounded, sutural angles blunted; striae well impressed, finely punctulate; intervals convex, 3rd with *c.* 7 and 5th with 4 or 5 seta-bearing punctures. *Claws* with *c.* 5 teeth. *Secondary sexual characters*: ♂ unknown; ♀ with 4 apical ventral setae each side. *Measurements*: length 7.8; width 2.8 mm.

Type. Holotype ♀ (Leiden Mus.) from Lower Mist Camp [Snow Mts.], **West N. G.,** 1550 m, Jan. 31, 1939 (Toxopeus); the type is unique.

Notes. This distinct species is the only known *Demetrida* that combines unarmed elytral apices with dual (black and red) coloration. The sparse, very inconspicuous pubescence and the extra seta-bearing punctures of 3rd and 5th elytral intervals are noteworthy too. The form of elytral apices and the character of pubescence and setae suggest a relationship with *seriata*, but *nubicola* is specifically distinct not only in color but also in form of prothorax.

Demetrida magna n. sp.

Description. With characters of genus; form large, slender, with large eyes, long-quadrate or trapezoidal prothorax, elytra sinuate-truncate at apex; color entirely reddish brown; surface not pubescent, reticulate microsculpture distinct (and slightly transverse) only on elytra, punctation as described below. *Head* 0.94 and 0.98 width prothorax; eyes prominent, genae short and oblique. *Prothorax* long, subparallel or trapezoidal; width/length 0.98 and 1.00; base/apex 1.46 and 1.58; base/head 1.01 and 1.01; sides broadly arcuate anteriorly, usually broadly sinuate before right or slightly acute usually blunted posterior angles; margins moderate, each with seta at basal angle and before middle; disc faintly or not punctulate except irregularly subpunctate in baso-lateral depressions. *Elytra* long; width elytra/prothorax 1.92 and — (elytra of 2nd specimen too spread for measurement); apices obliquely sinuate-truncate, outer angles well defined (sometimes slightly blunted), sutural angles narrowly rounded or blunted; striae impressed, faintly punctulate; intervals convex, sparsely punctulate, 3rd with 2 seta-bearing punctures (present in all specimens but varying in position). *Claws* with *c.* 7 or 8 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae weakly tuberculate-serrate; ♂ with 3, 4, or 5 (number sometimes unsymmetric), ♀ *c.* 6 apical ventral setae each side. *Measurements*: length 10.3–12.0; width 3.3–4.2 mm.

Types. Holotype ♂ (Bishop Mus.) from Finschhafen, Huon Pen., **N-E. N. G.,** 20–150 m, Apr. 15, 1963 (Sedlacek). Paratypes as follows: **N-E. N. G.**: 2 (♂ ♀), Pindiu, Huon Pen., 870–1300 m, Apr. 20, 21–22, 1963 (Sedlacek, M.C.Z., Type No. 31,447); 1 ♀, Adalbert Mts., Wanuma, 800–1000 m, Oct. 25, 1958 (Gressitt); 1, Markham R., 10 m, Jan. 18, 1961 (Sedlaceks). **Papua**: 1, Kokoda, 1200 ft. (366 m), May 1933 (Cheesman); 1, Owen Stanley Rge., Goilala, Loloipa, Feb. 1–15, 1958 (W. W. Brandt, Bishop Mus.); 1, Mt. Lamington, 1300–1500 ft. (*c.* 400–460 m) (C. T. McNamara, S. Australian Mus.). **West N. G.**: 1 ♂, Guega, W. of Swart Valley, 1200 m, Nov. 15, 1958 (Gressitt).

Measured specimens. The ♂ holotype and ♀ paratype from Adalbert Mts.

Notes. Comparative characters of *magna* are given in the preceding *Key*. The species

appears to be widely distributed at low altitudes in New Guinea, but not common.

Demetrida truncata n. sp.

Description. With characters of genus; form *c.* average, but variable; entirely reddish brown; not pubescent, reticulate microsculpture present (but light and variable) only on elytra, and surface not or not much punctulate. *Head* 0.96 and 0.91 width prothorax; eyes moderately prominent, genae much shorter, oblique. *Prothorax* rather long, variable in shape (narrowly subcordate to trapezoidal); width/length 1.07 and 1.05; base/apex 1.37 and 1.38; base/head 0.95 and 1.02; sides variably arcuate anteriorly, broadly sinuate before right or slightly acute blunted or well defined posterior angles; margins moderate, each usually with seta at or near basal angle and before middle (but see *Notes* below); disc smooth at middle, slightly wrinkled or subpunctate at base and sides. Elytra long; width elytra/prothorax 1.80 and 1.78; apices obliquely sinuate-truncate, outer angles well defined (*c.* right but slightly variable), sutural angles narrowly rounded; striae impressed, punctulate; intervals ± punctulate, often with an irregular row of small punctures near middle each interval, 3rd with 2 dorsal punctures in all specimens. *Claws* with 7 or 8 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae finely tuberculate-serrate (about 9 slight tubercles); ♂ with 3 or 4, ♀ 5 or 6 apical ventral setae each side. *Measurements*: length 7.0–9.8; width 2.5–3.5 mm.

Types. Holotype ♂ (Bishop Mus.) from Wau, Morobe Dist., **N-E. N. G.,** 1150 m, Oct. 16, 1961 (Sedlacek); and paratypes as follows. **N-E. N. G.**: 1 ♂, Wau, Mt. Missim, 880–1050 m, Feb. 8–9, 1963 (Sedlacek); 1 ♀, Busu R., E. of Lae, 100 m, Sept. 14, 1955 (Gressitt); 1 ♀, Finschhafen, Huon Pen., 180 m, Apr. 16, 1963 (Sedlacek); 1 ♂, Torricelli Mts., Mobitei, 750 m, Feb. 28–Mar. 4, 1959 (W. W. Brandt, Bishop Mus.). **West N. G.**: 1 ♀, Hollandia, Nov. 21, 1944 (H. Hoogstraal, M.C.Z.); 1 ♀, Waris, S. of Hollandia, 450–500 m, Aug. 16–23, 1959 (T. C. Maa, Bishop Mus.); 1 ♀, Jutefa Bay, Pim, sea level–100 ft. (30 m), Feb. 1936 (Cheesman); 1 ♂, mountain slope above Bernhard Camp, 750 m, Mar. 1939 (Toxopeus). (Some paratypes in M.C.Z., Type No. 31,448.)

Additional material. **N-E. N. G.**: 1 ♀, Finisterre Rge., Saidor: Aiyawa Village, June 16–23, 1958 (W. W. Brandt, Bishop Mus.). **West N. G.**: 1 teneral ♀, Hollandia, 250 ft. (*c.* 75 m), Nov. 3, 1944 (H. Hoogstraal, M.C.Z.); 1 ♀, Camp 1, Mt. Nok, Waigeu Is., 2500 ft. (*c.* 760 m), May 1938 (Cheesman).

Measured specimens. The ♂ holotype and the ♀ paratype from Busu R.

Notes. This species (if it is all one species) is widely distributed at low altitudes in central and western New Guinea. It is not recorded in Papua and may be replaced there by the following species (*minor*). Much more material from many localities is needed to establish the specific limits and geographic variation of these forms.

Although *truncata* usually has a seta-bearing puncture at or near each posterior prothoracic angle, the individual from Jutefa Bay has a well developed seta on the right but no trace of seta or puncture on the left, and seta and puncture are lacking on both sides in the individual from the Finisterre Range. The types and other specimens listed above vary in other ways the significance of which cannot be determined without more material. For example, the prothorax is narrowly subcordate or subquadrate in most of the types while the individual from Waigeu Is. has the prothorax strikingly trapezoidal, but the extremes are connected by intermediates.

Demetrida minor n. sp.

Description. With characters of genus; form as in *truncata* except outer apical elytral angles *c.* rounded; reddish brown; not pubescent, reticulate microsculpture in-

distinct or lightly indicated on elytra, surface very little punctulate. *Head* 0.89 and 1.02 width prothorax; eyes prominent, genae short and oblique. *Prothorax* quadrate-subcordate; width/length 1.17 and 1.08; base/apex 1.52 and 1.44; base/head 1.03 and 0.97; sides broadly rounded in anterior ¾, broadly sinuate before right-obtuse, slightly blunted basal angles; margins moderate, each with seta at base and before middle (posterior seta-bearing puncture present on both sides in all specimens); disc scarcely punctate. *Elytra*: width elytra/prothorax 1.71 and 2.02; apices obliquely sinuate-truncate, outer angles blunted or rounded, sutural angles narrowly rounded; striae impressed, faintly or not punctulate; intervals sparsely inconspicuously punctulate, 3rd with 2 dorsal punctures. *Claws* with *c.* 5 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae weakly tuberculate-serrate; ♂ with 2, ♀ 4 apical ventral setae each side. *Measurements*: length 5.6–6.3; width 2.0–2.2 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,449) and 1 ♂ paratype from Dobodura, **Papua**, Mar.–July 1944 (Darlington); and 1 ♀ paratype from Brown R., **Papua**, 5 m, Oct. 23, 1960 (Gressitt).

Measured specimens. The ♂ holotype and ♀ paratype.

Notes. This species is probably related to *truncata* but is smaller, with more rounded outer apical elytral angles and fewer apical ventral setae.

Demetrida subtenuis n. sp.

Description. With characters of genus; form (Fig. 99) *c.* as in *truncata* and *minor* but more slender; reddish brown; not pubescent, reticulate microsculpture at most faintly indicated on elytra, surface not much punctulate. *Head* 1.09 and 1.04 width prothorax; eyes prominent, genae short and oblique, not prominent. *Prothorax* elongate-subquadrate; width/length 0.89 and 0.94; base/apex 1.36 and 1.40; base/head 0.88 and 0.96; sides weakly arcuate in much of length, broadly sinuate well before *c.* right, scarcely blunted basal angles; margins narrow, each with seta-bearing puncture before middle but none at base. *Elytra*: width elytra/prothorax 2.08 and — (elytra of 2nd specimen too spread to measure); apices obliquely sinuate-truncate, with outer angles obtuse and slightly blunted or narrowly rounded and sutural angles blunted; striae impressed, faintly punctulate; intervals slightly punctulate, 3rd with 2 dorsal punctures. *Claws* with 5 or 6 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae ± bent-in and weakly tuberculate-serrate; ♂ with 3 apical ventral setae each side (both sides both specimens); ♀ unknown. *Measurements*: length *c.* 7.0; width *c.* 2.3 mm.

Types. Holotype ♂ (Bishop Mus.) from Wum, Upper Jimmi Valley, **N-E. N. G.**, 840 m, July 17, 1955 (Gressitt); and 1 broken ♂ paratype (M.C.Z., Type No. 31,450), vic. Hollandia, **West N. G.**, July–Sept. 1944 (Darlington).

Notes. D. subtenuis resembles *minor* (above) but is much narrower and lacks posterior-lateral prothoracic setae, which are present in *minor*.

Demetrida tenuis n. sp.

Description. With characters of genus; form (Fig. 100) *c.* as in preceding species (*subtenuis*) but even more slender; brownish red, legs slightly paler; not pubescent, reticulate microsculpture visible (but very light) only on elytra, surface not much punctulate. *Head* 1.09 and 1.07 width prothorax; eyes large, moderately prominent, genae much shorter, oblique but convexly prominent; front carinate at middle anteriorly (all specimens). *Prothorax* elongate-quadrate; width/length 0.84 and 0.93; base/apex 1.21 and 1.19; base/head 0.87 and 0.83; sides very weakly irregularly angulate, very broadly sinuate before right or slightly obtuse but well defined basal angles; margins rather narrow, each with seta-bear-

ing puncture before middle but without posterior seta or puncture; disc faintly punctulate, wrinkled or subpunctate in baso-lateral areas. *Elytra*: width elytra/prothorax 2.36 and 2.32; apices sinuate-truncate, outer and sutural angles ± rounded; striae impressed, punctulate; intervals slightly convex, faintly sparsely punctulate, 3rd with 1 dorsal puncture, *c.* ¼ or less from apex (both sides all examples). *Claws* with *c.* 4 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae tuberculate-serrate (4 tubercles); ♂ with 1, ♀ 2 apical ventral setae each side. *Measurements*: length *c.* 6.0–6.5; width 2.0–2.3 mm.

Types. Holotype ♀ (Bishop Mus.) from Aroa Estate, W. of Redscar Bay, **Papua**, 1 m, Sept. 29, 1958 (Gressitt); and 1 ♀ paratype (M.C.Z., Type No. 31,451) from Owen Stanley Rge., **Papua**, Goilala: Loloipa, Feb. 1–15, 1958 (W. W. Brandt); 1 ♂ paratype, Brown R., 20 km N. of Port Moresby, Apr. 29, 1960 (C. W. O'Brien, Bishop Mus.).

Measured specimens. The ♀ holotype and ♀ paratype.

Notes. D. tenuis is characterized by small size, very narrow form especially of prothorax, carination of front, 1-punctate 3rd elytral intervals, and small number of setae of apical ventral segment. The last three characters are unique among New Guinean *Demetrida*, but some Australian species have 1-punctate 3rd intervals, as indicated in *Notes* under the genus and in Footnote 3 (p. 143).

Demetrida tripuncta n. sp.

Description. With characters of genus; form *c.* average, except genae angulate, elytral apices obtusely angulate; reddish brown; not pubescent, reticulate microsculpture distinct (but light) only on elytra, surface not much punctulate. *Head* 1.06 and 0.94 width prothorax; eyes large, prominent (slightly variable), genae slightly shorter than eyes, subangulately prominent; front flattened and irregularly impressed anteriorly. *Prothorax* subquadrate; width/length 1.04 and 1.06; base/apex 1.28 and 1.14; base/head 0.80 and 0.87; sides broadly irregularly arcuate in *c.* anterior ¾, broadly sinuate before *c.* right but blunted posterior angles; margins moderate, each with seta before middle but none at posterior angle; surface punctate-wrinkled in baso-lateral impressions and margins. *Elytra*: width elytra/prothorax—(elytra spread) and 1.91; apices obtusely angulate, with outer angles right or slightly obtuse, sutural angles obtuse; striae impressed, sometimes finely punctulate; intervals convex, sparsely punctulate, 3rd with 3 dorsal punctures (all specimens). *Claws* with *c.* 6 long teeth and sometimes an additional minute one. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae slightly bent-in near apex but not tuberculate-serrate; ♂ with apparently 3, ♀ 6–8 apical ventral setae each side. *Measurements*: length *c.* 8–9; width 3.0–3.3 mm.

Type. Holotype ♀ (M.C.Z., Type No. 31,452) from Hollandia, **West N. G.,** Nov. 21, 1944 (Hoogstraal).

Additional material. **Papua**: 1 ♂, Oriomo Govt. Sta., W. District, Oct. 26–28, 1960 (Gressitt), taken in Malaise trap; 1 ♀, Brown R., 5 m, Oct. 23, 1960 (Gressitt), taken on palm. **N-E. N. G.**: 1 ♀, Bulolo, 730 m, Aug. 15, 1956 (E. J. Ford, Jr., Bishop Mus.), taken in light trap.

Measured specimens. The ♂ from Papua and the ♀ holotype, in this order.

Notes. The subangulate genae distinguish this species from all the preceding ones except *tenuis*, which is very different in many ways (see preceding *Key to Species of Demetrida*).

The four specimens listed above agree in a general way and in such important characters as prominence of genae, 3-punctate 3rd intervals, and obtusely angulate elytral apices, but they are from scattered localities and they differ in many details. The single ♂ is teneral and warped so that width of

elytra cannot be measured, and some other characters are difficult to see. More material is needed to show whether all these specimens really are conspecific.

Demetrida genicula n. sp.

Description. With characters of genus; form (Fig. 101) as in preceding species (*tripuncta*) but elytral apices acutely toothed; reddish brown; not pubescent, reticulate microsculpture distinct (but light) only on elytra, surface not much punctulate. *Head* 1.08 and 1.03 width prothorax; eyes prominent, genae subangulately prominent; front flattened and irregularly slightly impressed anteriorly. *Prothorax* quadrate-subcordate; width/length 0.97 and 1.04; base/apex 1.24 and 1.19; base/head 0.83 and 0.83; sides irregularly weakly arcuate in anterior ¾, strongly sinuate before right or slightly acute slightly blunted posterior angles; margins moderate, each with seta-bearing puncture just before middle but none at base; disc weakly strigulose or subpunctate especially laterally. *Elytra*: width elytra/prothorax 1.89 and 1.98; apices with short spines or acute teeth, outer angles sharply defined, right or slightly acute, sutural angles obtuse; striae impressed, scarcely punctulate; intervals convex, slightly sparsely punctulate, 3rd usually 3-punctate (4-punctate on left side only in individual from above Bernhard Camp). *Claws* with 5 or 6 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae bent-in at apex but not tuberculate-serrate; ♂ with 3 or 4, ♀ 4 or 5 apical ventral setae each side. *Measurements*: length 8.2–9.2; width 2.6–3.0 mm.

Types. Holotype ♂ (U.S.N.M.) from Hollandia, **West N. G.** (J. W. Bongberg); and paratypes as follows. **West N. G.**: 1 ♀, Mountain slope above Bernhard Camp, 100 m, Apr. 1939 (Toxopeus). **N-E. N. G.**: 1 ♀, Wau, Morobe Dist., 1200 m, Oct. 29, 1961 (Sedlacek); 1 ♂, Erima, Astrolabe Bay, 1896 (Biró). **Papua**: 1, Daradae, near Javarere, Musgrove R., 100 m, Oct. 4, 1958 (Gressitt).

Additional material. **N-E. N. G.**: 1 ♀, Tsenga, Upper Jimmi Valley, 1200 m, July 14, 1955 (Gressitt).

Measured specimens. The ♂ holotype and the ♀ paratype from Wau.

Notes. The acutely dentate or short-spined rather than obtusely angulate elytral apices distinguish this from the preceding species (*tripuncta*). More material, especially a good series taken at one time and place, is needed to show whether the difference is in fact specific.

Demetrida latangula n. sp.

Description. With characters of genus; form (Fig. 102) small and moderately broad (in genus); reddish brown; not pubescent, reticulate microsculpture present (sometimes faint, and slightly transverse) only on elytra, surface not much punctulate. *Head* 0.89 and 0.91 width prothorax; eyes prominent, genae short, not prominent; front slightly irregularly impressed or with punctiform impression before middle. *Prothorax* subcordate, wide; width/length 1.35 and 1.35; base/apex 1.38 and 1.39; base/head 0.97 and 0.94; sides broadly rounded anteriorly, sinuate before well defined right (sometimes slightly obtuse or acute) basal angles; margins moderately wide, each with seta before middle but none at base; disc sometimes slightly wrinkled or subpunctate basally and laterally. *Elytra* rather short and broad (in genus); width elytra/prothorax 1.85 and 1.78; apices obtusely angulate, with outer angles obtuse and usually slightly blunted, sutural angles blunted; striae impressed, vaguely or not punctulate; intervals convex, sparsely punctulate, 3rd with 2 dorsal punctures. *Claws* with 3 or 4 teeth (and sometimes a small 5th one). *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae strongly tuberculate-serrate; ♂ with 2 or 3, ♀ 3 or 4 apical ventral setae each side. *Measurements*: length 5.5–7.1; width 2.3–2.9 mm.

Types. Holotype ♂ (Bishop Mus.) from Bisianumu, E. of Port Moresby, **Papua**, 500 m, Sept. 3, 1959 (T. C. Maa); and

paratypes as follows. **Papua**: 1 ♀, Brown R., E. of Port Moresby, 100 m, June 8, 1955 (Gressitt, now in M.C.Z., Type No. 31,453); 1 ♀, Brown R., May 21, 1956 (E. J. Ford, Jr., Bishop Mus.); 1, Mt. Lamington, 1300–1500 ft. (*c.* 400–460 m) (C. T. McNamara, S. Australian Mus.); 1, Buna Bay (C. T. McNamara, S. Australian Mus.). **N-E. N. G.**: 1 ♀, Huon Pen., Pindiu, Apr. 20, 1963 (Sedlacek). **West N. G.**: 1 ♂, Maffin Bay, Sept. 1944 (E. S. Ross, Cal. Acad.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Brown R.

Notes. This apparently widely distributed lowland species is characterized by small size, relatively broad form, and obtuse angulation of elytral apices. See preceding *Key to Species of Demetrida* for further differential characters.

Demetrida angulata n. sp.

Description. With characters of genus; form slender-average, with obtusely angulate elytral apices; reddish brown; not pubescent, reticulate microsculpture distinct (light and usually slightly transverse) only on elytra, surface not much punctulate. *Head* 1.07 and 1.08 width prothorax; eyes prominent, genae short, oblique, not prominent. *Prothorax* subquadrate, narrow; width/length 1.01 and 1.04; base/apex 1.40 and 1.31; base/head 0.88 and 0.87; sides weakly irregularly arcuate (sometimes almost parallel) in *c.* anterior ¾, broadly sinuate before ± right but blunted posterior angles; margins moderate, each with seta-bearing puncture before middle but none at base; disc variably wrinkled or subpunctate posteriorly and laterally. *Elytra*: width elytra/prothorax 1.88 and 2.08; apices obtusely angulate, outer angles sharply defined but varying from slightly obtuse to acute, sutural angles blunted; striae impressed, usually faintly punctulate; intervals convex, sparsely inconspicuously punctulate, 3rd with 2 dorsal punctures. *Claws* with 5 or 6 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae scarcely modified, slightly bent-in near apex, not distinctly tuberculate-serrate; ♂ with 3 or 4, ♀ 5 or 6 setae each side last ventral segment. *Measurements*: length 7.5–8.9; width 2.5–3.1 mm.

Types. Holotype ♂ (Bishop Mus.) from Brown R., **Papua**, Sept. 30, 1959 (T. C. Maa), taken sweeping; and paratypes as follows (some in M.C.Z., Type No. 31,454). **Papua**: 1 ♀, same data as type except dated Aug. 30, 1959; 1 ♀, Brown R., E. of Port Moresby, 100 m, June 8, 1955 (Gressitt); 1, same locality, Apr. 27, 1960 (C. W. Obrien, Bishop Mus.); 1 ♀, Laloki, nr. Port Moresby, Aug. 30–Sept. 2, 1959 (T. C. Maa, Bishop Mus.); 1 ♀, Kiunga, Fly R., July 11–14, 1957 (W. W. Brandt, Bishop Mus.); 1 ♀, Daradae, nr. Javarere, Musgrove R., 100 m, Oct. 2, 1958 (Gressitt).

Measured specimens. The ♂ holotype and 1st ♀ paratype from Brown River.

Notes. See *Key to Species of Demetrida of New Guinea* for distinguishing characters of *angulata*. It is the only New Guinean *Demetrida* known to occur also in **Australia** (1 ♀, Rocky R., mid-peninsular Cape York). In New Guinea, it has been found only in Papua.

Demetrida reversa n. sp.

Description. With characters of genus; form of preceding species (*angulata*) but slightly less narrow; reddish brown; not pubescent, reticulate microsculpture distinct (and somewhat transverse) only on elytra, but much of surface sparsely punctulate. *Head* 1.03 and 1.07 width prothorax; eyes prominent, genae short and oblique, not prominent. *Prothorax* subquadrate; width/length 1.10 and 1.12; base/apex 1.32 and 1.31; base/head 0.94 and 0.98; sides nearly straight and subparallel or slightly converging anteriorly, subangulate at setae, broadly sinuate before right or slightly acute basal angles; margins moderate, each with seta-bearing puncture at or before middle but none at base; disc slightly irregularly subpunctate at base and laterally. *Elytra*: width elytra/prothorax 1.85 and

1.83; apices angulate (the angles *c.* right, but variable), outer angles right or acute, sharply formed; sutural angles obtuse-blunted; striae impressed, faintly punctulate; intervals sparsely punctulate, 3rd with 2 dorsal punctures. *Claws* with 6 or 7 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae slightly bent *out* near apex, inconspicuously or irregularly tuberculate-serrate (Fig. 162); ♂ with *c.* 3, ♀ *c.* 6 setae each side last ventral segment. *Measurements*: length 8.5–9.2; width 3.0–3.4 mm.

Types. Holotype ♂ (Bishop Mus.) and 7 paratypes (3 in M.C.Z., Type No. 31,455) from Guega, W. of Swart Valley, **West N. G.,** 1200 m, Nov. 14, 15, 1958 (Gressitt), and 1 paratype, Swart Valley, W. Fork, 1300–1350 m, Nov. 17, 1958 (Gressitt).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Guega.

Notes. Among similar species with angulate but not spined elytral apices, this is distinguished by quadrate prothorax, proportions as given, and especially by form of ♂ middle tibiae, slightly bent *outward* at apex. Nevertheless the present species may be closely related to the preceding one (*angulata*), which is known only from Papua (and Australia), while the present one is known only from a restricted area of West New Guinea.

Demetrida kokoda n. sp.

Description. With characters of genus; form as in Figure 103, large, slender; reddish brown; not pubescent, reticulate microsculpture present (light or faint) only on elytra, surface not much punctulate. *Head* 0.99 and 0.99 width prothorax; eyes slightly smaller than usual but prominent, genae scarcely distinct from neck. *Prothorax* cordate-subquadrate; width/length 1.11 and 1.12; base/apex 1.22 and 1.23; base/head 0.84 and 0.87; sides strongly rounded in anterior ⅔, strongly sinuate before *c.* right or slightly acute but blunted posterior angles; margins narrow, each with seta slightly before middle but none at base; disc with middle line finer than usual in genus, baso-lateral areas slightly punctate. *Elytra* very long; width elytra/prothorax 1.72 and *c.* 1.86 (elytra spread); apices with moderate spines, outer angles *c.* right or slightly acute, sharply formed, sutural angles slightly obtuse, sometimes denticulate; striae impressed, punctulate; intervals only slightly convex, scarcely punctulate, 3rd with 2 seta-bearing punctures. *Claws* with 7 or 8 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae weakly tuberculate-serrate; ♂ with *c.* 4, ♀ numerous (up to 9) apical ventral setae each side. *Measurements*: length *c.* 10.0–11.0; width 2.9–3.5 mm.

Types. Holotype ♂ (British Mus.) and 5 paratypes (2 in M.C.Z., Type No. 31,456) from Kokoda, **Papua**, 1200 ft. (366 m), May, Aug. (holotype), Sept., Oct., 1933 (Cheesman); 1 paratype, Popondetta, **Papua**, 25 m, June 1966 (Shanahan-Lippert, Bishop Mus.).

Additional material. **N-E. N. G.**: 1 ♀, Wau, Morobe Dist., 1050 m, Apr. 30, 1962 (Sedlacek). **West N. G.**: 1 ♀, Waris, S. of Hollandia, 450–500 m, Aug. 24–31, 1959 (T. C. Maa, Bishop Mus.); 1 ♀, Hollandia, Jan. 1945 (B. Malkin, U.S.N.M.).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. The form of this species is unique in the genus, so far as I know, and other characters including the relatively fine middle line of the pronotum are distinctive.

Demetrida moda n. sp.

Description. See Plate 1, figure IV; with characters of genus; reddish brown; not pubescent, reticulate microsculpture distinct (but light) only on elytra, parts of upper surface sparsely punctulate. *Head* 0.85 and 0.84 width prothorax; eyes prominent, genae short, oblique, not prominent. *Prothorax* subcordate; width/length 1.46 and 1.33; base/apex 1.40 and 1.37; base/head 1.02 and 1.04; sides arcuate anteriorly, strongly sinuate before sharply defined right or acute posterior angles; margins moderate,

each with seta before middle but none at base; disc slightly punctate basally. *Elytra*: width elytra/prothorax 1.69 and 1.77; apices with moderate spines, outer angles obtuse, sutural angles obtuse; striae impressed, faintly punctulate; 3rd intervals 2-punctate. *Claws* with *c.* 4 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae strongly tuberculate-serrate (*c.* 4 rounded tubercles, Fig. 160); ♂ with 2, ♀ 3 apical ventral setae each side (number may vary). *Measurements*: length *c.* 5.5–6.5; width 2.1–2.5 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,457) and 4 paratypes from Dobodura, **Papua**, Mar.–July 1944 (Darlington), and additional paratypes as follows. **Papua**: 8, Kokoda, 1200 ft. (366 m), Aug., Sept., Oct., 1933 (Cheesman). **N-E. N. G.**: 2, Sattelberg, Huon Gulf, 1899 (Biró).

Additional material. **N-E. N. G.**: 2, Pindiu, Huon Pen. (1 labeled 500–600 m), Apr. 19, 20, 1963 (Sedlacek); 1, Finschhafen, May 7, 1944 (E. S. Ross, Cal. Acad.); 1, Bubia, Sept. 1949 (N. L. H. Krauss, Bishop Mus.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. This species, as the name *moda* is intended to suggest, is the first of several generally similar forms which differ among themselves slightly in proportions and color and more significantly in length of elytral spines and punctation of 3rd elytral intervals. Some of these forms may be geographically limited and allopatric and may eventually be considered subspecies. The present species seems to be confined to the eastern half of New Guinea. Its differential characters are given in the preceding *Key to species.*

Demetrida submoda n. sp.

Description. With characters of genus; form of preceding species (*moda*) except elytra acutely toothed, not spined, and proportions slightly different, with head relatively slightly wider and base of prothorax narrower; color, microsculpture, etc. as in *moda.* Head 0.89 and 0.91 width prothorax; eyes prominent, genae short and oblique. *Prothorax* subcordate; width/length 1.40 and 1.37; base/apex 1.43 and 1.45; base/head 0.97 and 0.95; sides rounded anteriorly, strongly sinuate before *c.* right posterior angles; margins rather wide, each with seta near or before middle but none at base; disc slightly irregular or subpunctate basolaterally. *Elytra*: width elytra/prothorax 1.70 and 1.81; apices acutely angulate or denticulate, outer angles obtuse or blunted, sutural angles obtuse; striae impressed, not distinctly punctulate; intervals convex, slightly inconspicuously punctulate, 3rd 2-punctate. *Claws* with *c.* 5 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae tuberculate-serrate (4 tubercles); ♂ with 2, ♀ 3 apical ventral setae each side. *Measurements*: length 6.0–7.0; width 2.3–2.8 mm.

Types. Holotype ♂ (Bishop Mus.) and 17 paratypes (7 in M.C.Z., Type No. 31,458) from Wau and vicinity (including Mt. Missim), Morobe Dist., **N-E. N. G.**, altitudes from 950 to 1400 m, dates in Jan., Feb., May, July, Aug., Sept., Nov., Dec., 1961–1964 (Sedlaceks, T. C. Maa) (holotype, 1250 m, May 3, 1963); and additional paratypes from **N-E. N. G.** as follows: 2, Bulolo, 1065 m, Aug. 15, 16, 1956 (E. J. Ford, Jr., Bishop Mus.); 1, Upper Watut R., 24 km W. Bulolo, 760 m, Mar. 5–6, 1963 (Sedlacek).

Additional material. **N-E. N. G.**: 1, vic. Nadzab, July 1944 (Darlington); 2, Kassem, 48 km E. of Kainantu, 1350 m, Nov. 7, 1959 (T. C. Maa, Bishop Mus.); 1, Kumun, Upper Jimmi Valley, 1000 m, July 13, — (Gressitt); 1, Maprik, 150 m, Dec. 29–Jan. 17, 1960 (T. C. Maa, Bishop Mus.); 1, Eliptamin Vy., 1200–1350 m, July 16–31, 1959 (W. W. Brandt, Bishop Mus.); 1, Goroka, 1550 m, June 19, 1955 (Gressitt), "pigeon peas cane." **West N. G.**: 1, Hollandia, Dec. 15, 1944 (Hoogstraal, M.C.Z.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Wau.

Notes. This species differs from *moda*

as indicated in the preceding *Description*. It may prove to be only a subspecies of *moda*, and has thus far been found only in the central-eastern part of the north side of New Guinea, chiefly in the lower mountains.

Demetrida hollandia n. sp.

Description. With characters of genus; form *c*. of *moda* and *submoda* (above) but color darker, reddish brown with elytra darker brown or brownish black with apical ¼ or less often paler, the pale apical area varying in distinctness and extent; microsculpture, etc. *c*. as in *moda*, with reticulations faint but usually visible on elytra. *Head* 0.89 and 0.88 width prothorax, eyes prominent, genae short. *Prothorax* subcordate, slightly narrower than in *moda*; width/length 1.32 and 1.31; base/apex 1.36 and 1.34; base/head 0.97 and 0.95; sides slightly irregularly rounded, often subangulate at lateral setae; margins moderately wide, each with seta near or before middle but none at base; surface not or very little punctate. *Elytra*: width elytra/prothorax 1.86 and 1.85; apices short-spined, outer angles obtuse but more distinct than in *moda*, sutural angles blunted; striae impressed, not distinctly punctulate; intervals convex, scarcely punctulate, 3rd with 2 principal punctures and often (not always) with 1 or more intermediate punctures which vary in size and sometimes do and sometimes do not bear setae. *Claws* with *c*. 4 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae strongly tuberculate-serrate (*c*. 4 tubercles); ♂ with 2, ♀ 3 apical ventral setae each side. *Measurements*: length 5.8–7.6; width 2.1–2.9 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,459) and 33 paratypes from vic. Hollandia, **West N. G.,** July–Sept. 1944 (Darlington).

Additional material. **West N. G.**: 11, Hollandia and vicinity including Cyclops Mts., at low altitudes (not over 500 m), various dates and collectors; 10, Maffin Bay, dates in June, July, Aug., Sept., Oct. 1944 (E. S. Ross, Cal. Acad.); 5, Nabire, S. Geelvink Bay, 5–50 m, Aug. 25–Sept. 5, 1962 (Sedlacek); 1, Wasian (Vogelkop), Sept. 1939 (Wind, M.C.Z.); 1, Fac Fac, June 1939 (Wind, M.C.Z.). **N-E. N. G.**: 33, various localities including Huon Pen.; Torricelli Mts.; Sepik Dist.; Wewak; Lae; Bulolo; Wau. **Papua**: 1 teneral ♂, doubtfully identified, from Bisianumu, E. of Port Moresby, 500 m, Sept. 24, 1955 (Gressitt).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. *D. hollandia* seems closely related to *moda* and *submoda* but is distinguished by characters given above. Some of the specimens listed under *Additional material* vary toward *wau* (see below).

Demetrida wau n. sp.

Description. With characters of genus; form *c*. as in *moda*, *submoda*, and *hollandia* but more slender with eyes less prominent and genae slightly longer and less abrupt than in the species named; reddish brown, elytra brownish black, usually not paler at apex; not pubescent, upper surface including elytral disc without reticulate microsculpture but in part (especially elytra) sparsely punctulate. *Head* 0.89 and 0.89 width prothorax; eyes and genae as indicated above. *Prothorax* subcordate; width/length 1.21 and 1.22; base/apex 1.44 and 1.44; base/head 0.99 and 0.99; sides rounded anteriorly, often subangulate at setae (as in *hollandia*), strongly sinuate before *c*. right basal angles; margins rather wide, each with seta near or before middle but none at base; disc more punctate basally and laterally than in the 3 preceding species. *Elytra*: width elytra/prothorax 1.73 and 1.73; apices short-spined (or with long acute teeth), with outer angles obtuse but distinct, sutural angles blunted; striae impressed, punctulate; intervals convex, punctulate, 3rd often 4-punctate but intermediate punctures variable in size and sometimes absent and with or without setae. *Claws* with *c*. 5 teeth. *Secondary*

sexual characters: ♂ tarsi as genus; ♂ middle tibiae weakly tuberculate-serrate (*c.* 3 tubercles distinct); ♂ with 2, ♀ 3 apical ventral setae each side. *Measurements*: length 6.4–7.9; width 2.4–2.9 mm.

Types. Holotype ♂ (Bishop Mus.) and 118 paratypes (some in M.C.Z., Type No. 31,460) all from Wau, Morobe Dist., **N-E. N. G.**; altitudes from 1000 to 1450 m; dates in every month, 1961–1963 (holotype, 1200 m, July 22, 1961) (Sedlaceks).

Additional material. **N-E. N. G.**: 9 additional teneral, broken, or atypical specimens from Wau; 1, Jim(m)i R., E. Highlands, July–Sept. 1961 (W. W. Brandt, C.S.I.R.O.); 1, Upper Watut R., 24 km W. Bulolo, 760 m, Mar. 5–6, 1963 (Sedlacek); 1, Erima, Astrolabe Bay, 1897 (Biró). **West N. G.**: 2, Hollandia, May, June 1945 (B. Malkin, U.S.N.M.); 1, Waris, S. of Hollandia, 450–500 m, Aug. 16–23, 1959 (T. C. Maa, Bishop Mus.); 1, Ifar, 400–550 m, June 23, 1959 (T. C. Maa, Bishop Mus.).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. D. wau may be primarily a geographic representative of *hollandia*, but the long type series seems distinct; the specimens listed above from Hollandia and Waris are plainly *wau*, not *hollandia*; and the one from Ifar seems to be *wau* except that the elytra are distinctly microreticulate. Apparent intermediates do occur at some other localities, however. They are tentatively placed with *Additional material* under *hollandia*. See also *Notes* under *D. subpunctata* (3rd species below).

One ♀ of *wau*, from Wau, is a noteworthy abnormality, with the posterior prothoracic angles irregularly widened and each with 2 setae, although normal individuals of *wau* lack posterior-lateral setae.

Demetrida similis n. sp.

Description. With characters of genus; form of *moda*, etc. but larger, rather slender, with prothorax narrowly subcordate and elytra spined or acutely dentate and with outer angles sharply formed; reddish brown, elytra not or only slightly darker; not pubescent; reticulate microsculpture visible (often faint) only on elytra. *Head* 0.87 and 0.90 width prothorax; eyes prominent, genae shorter, oblique. *Prothorax* subcordate; width/length 1.26 and 1.22; base/apex 1.35 and 1.34; base/head 0.98 and 0.98; sides broadly sometimes slightly irregularly arcuate in more than ¾ of length, strongly sinuate before right or slightly acute usually slightly blunted posterior angles; margins rather wide, each with seta-bearing puncture before middle but none at base; disc slightly punctate at base and sides. *Elytra* long; width elytra/prothorax 1.61 and 1.69; apices short-spined (rarely only acutely toothed), outer angles well formed, varying from slightly obtuse to acute, sutural angles blunted-obtuse; striae impressed, finely punctulate; intervals slightly convex, sparsely finely punctulate, 3rd 2-punctate (all specimens). *Claws* with 6 or 7 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae tuberculate-serrate (*c.* 4 tubercles); ♂ with 2, ♀ 3 or 4 apical ventral setae each side. *Measurements*: length 8.8–10.8; width 3.0–3.5 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,461) and 3 paratypes from Dobodura, **Papua**, Mar.–July 1944 (Darlington); and additional paratypes as follows. **Papua**: 4, Kokoda, 1200, 1300 ft. (*c.* 366, 400 m), June, Aug., Sept. 1933 (Cheesman), 1 labeled also "In fungus, A, & under bark behind it," and 1 "At light"; 1, same locality, 380 m, Mar. 20, 1956 (Gressitt), in light trap; 2, Kokoda-Pitoki, 400 m, Mar. 23, 1956 (Gressitt); 2, Mt. Lamington, 1300–1500 ft. (*c.* 400–460 m), (C. T. McNamara, S. Australian Mus.).

Additional material. **Papua**: 1, Kiunga, Fly R., Oct. 1–7, 1957 (W. W. Brandt, Bishop Mus.). **N-E. N. G.**: 1, Ebabaang, Mongi Watershed, Huon Pen., 1300–1400 m, Apr. 16–18, 1955 (E. O. Wilson, M.C.Z.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. Characters distinguishing this species from *moda*, etc. are given in the *Description*, above; and see also *Notes* under the following species.

Demetrida duplicata n. sp.

Description. With characters of genus; form *c.* as in *similis* (above); reddish brown, elytra not or not much darker; not pubescent, reticulate microsculpture visible only on elytra, more transverse than in *similis*, surface in part sparsely punctulate. *Head* 0.92 and 0.91 width prothorax; eyes prominent, genae shorter, oblique. *Prothorax* quadrate-subcordate; width/length 1.27 and 1.29; base/apex 1.31 and 1.31; base/head 0.94 and 0.96; sides (usually a little irregularly) rounded anteriorly, sinuate before *c.* right but usually blunted posterior angles; margins rather wide, each with seta at or slightly before middle but none at base; disc not much punctate even basally. *Elytra*: width elytra/prothorax 1.71 and 1.75; apices with moderate spines, outer angles sharply defined and sometimes acutely denticulate, sutural angles blunted-obtuse; striae moderately impressed, scarcely punctulate; intervals slightly convex, 3rd with 2 principal and usually one or more smaller intermediate dorsal punctures. *Claws* with *c.* 5 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae tuberculate-serrate (*c.* 6 small tubercles); ♂ with 2, ♀ 3 apical ventral setae each side. *Measurements*: length *c.* 8.0–9.0; width 2.9–3.3 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,462) and 10 paratypes from Dobodura, **Papua**, Mar.–July 1944 (Darlington); 3 paratypes from Kokoda, **Papua**, 1200 ft. (366 m), Apr., June, Aug. 1933 (Cheesman); 94 paratypes, Mt. Lamington, **Papua**, 1300–1500 ft. (*c.* 400–460 m) (C. T. McNamara, S. Australian Mus.).

Additional material. Sixty-one (including 44 from Wau), from 12 localities, in all 3 political divisions of **New Guinea** (from Milne Bay to mountain slope above Bernhard Camp), altitudes from near sea level to at least 1500 m (at Wau), various dates and collectors.

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. D. duplicata is much like *similis* and occurs at some of the same localities but differs constantly (at least at Dobodura) by having the elytra more distinctly and more transversely microreticulate, with 3rd intervals with more than 2 dorsal punctures. The additional punctures vary in size and sometimes do and sometimes do not bear setae.

At Dobodura, *duplicata* (like *similis*) is uniformly brown, but individuals with base of elytra ± darker occur with brown individuals at many localities including Wau. The color is not obviously dimorphic but apparently continuously variable. A related population in which the elytra are always dark at base occurs in West N. G. (see *basalis*, p. 172). The specimens summarized above under *Additional material* vary in other ways which cannot profitably be discussed in detail here.

Demetrida subpunctata n. sp.

Description. With characters of genus; form *c.* as in *moda*, *wau*, etc., but slightly more slender; dark reddish brown, elytra darker (dark castaneous), legs brown; not pubescent; microsculpture visible (faint, distinctly transverse) only on elytra, but much of upper surface finely sparsely punctulate. *Head* 1.00 and 0.96 width prothorax; eyes moderate, genae slightly shorter, oblique. *Prothorax* narrowly subcordate; width/length 1.16 and 1.16; base/apex 1.37 and 1.38; base/head 0.93 and 0.98; sides weakly irregularly arcuate in anterior ¾ or more, strongly sinuate before right or slightly acute posterior angles; margins narrower than in *moda* and *wau*, each with seta before middle but none at base; surface rather closely punctate across base and in margins. *Elytra*: width elytra/prothorax 1.88 and 1.88; apices with short spines, outer angles distinct but obtuse and

sometimes slightly blunted, sutural angles blunted or narrowly rounded; striae impressed, faintly punctulate; intervals convex, 3rd usually 3- (rarely 4-) punctate but intermediate puncture(s) variable in size and sometimes indistinguishable. *Claws* with *c.* 4 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae tuberculate-serrate (*c.* 4 rounded tubercles); ♂ with 2, ♀ 3 apical ventral setae each side. *Measurements*: length 6.7–7.6; width 2.3–2.7 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,463) and 5 paratypes from Dobodura, **Papua**, Mar.–July 1944 (Darlington); and additional paratypes from **Papua** as follows: 7, Kokoda, 1200 ft. (366 m), May, June, July, Aug., Oct. 1933 (Cheesman); 5, Kokoda-Pitoki, 450 m, Mar. 24, 1956 (Gressitt); 1, Bisianumu, E. of Pt. Moresby, 500 m, Sept. 23, 1955 (Gressitt); 1, "Papua," (Hungarian Nat. Mus.); 3, Mt. Lamington, 1300–1500 ft. (*c.* 400–460 m) (C. T. McNamara, S. Australian Mus.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. This may (or may not) be the Papuan representative of the *hollandia-wau* group of central and western New Guinea. *D. subpunctata* most resembles *wau* but is slightly more slender, with narrower prothoracic margins (which distinguish it also from *hollandia*), and with distinct elytral microsculpture.

Demetrida dobodura n. sp.

Description. With characters of genus; form *c.* as in *moda* and *similis* but slightly more slender; brown (not dark), elytra not or not much darker; not pubescent, reticulate microsculpture visible (light or faint) only on elytra, surface (except of elytra) not much punctulate. *Head* 0.98 and 0.96 width prothorax; eyes prominent, genae short, oblique. *Prothorax* subquadrate; width/length 1.11 and 1.12; base/apex 1.34 and 1.30; base/head 0.95 and 0.96; sides weakly irregularly arcuate in ¾ or more of length, weakly sinuate before *c.* right but blunted posterior angles; margins narrower than in *moda* and *similis*, each with seta at or slightly before middle but none at base; surface weakly punctate across base and in margins. *Elytra*: width elytra/prothorax 1.88 and 1.87; apices with moderate spines, outer angles acutely denticulate (or right but sharply formed in some individuals listed under *Additional material*), sutural angles blunted-obtuse; striae moderately impressed, finely punctulate; intervals slightly convex, punctulate, 3rd with 2 dorsal punctures. *Claws* with *c.* 5 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae tuberculate-serrate (3 or 4 well spaced small tubercles); ♂ with 2 or 3, ♀ 5 to 7 apical ventral setae each side. *Measurements*: length 7.7–9.2; width 2.6–3.3 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,464) and 21 paratypes from Dobodura, **Papua**, Mar.–July 1944 (Darlington); and 9 paratypes, Kokoda, **Papua**, 1200 ft. (366 m), Aug., Sept. 1933 (Cheesman).

Additional material. **Papua**: 1, Kiunga, Fly R., Aug. 8–10, 1957 (W. W. Brandt, Bishop Mus.); 1, Koitaki, 1500 ft. (*c.* 450 m), Oct.–Nov. 1928 (Pemberton, H.S.P.A.). **N-E. N. G.**: 1, Pindiu, Huon Pen., 500–600 m, Apr. 19, 1963 (Sedlacek). Also 1 old specimen, ♂, labeled "New Guinea. Sayer," "probably N. gen. near Euproctus," and "Gen. probably near Ctenodactylus" (the last 2 labels probably by Andrewes).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. Among other brown, spined *Demetrida*, this should be recognizable by prothorax subquadrate *c.* wide as head and slightly wider than long by measurement, by the rather large size, and the 2-punctate 3rd elytral intervals. See also *Notes* under following species (*kiunga*).

The specimens listed under *Additional material* are doubtfully identified. *D. dobodura* is therefore known with certainty only from Dobodura and Kokoda, in Papua.

Demetrida kiunga n. sp.

Description. With characters of genus; form *c.* of preceding (*dobodura*) but larger; reddish brown, elytra slightly but not much darker; not pubescent, reticulate microsculpture distinct only on elytra, surface not much punctulate. *Head* 1.04 and 1.00 width prothorax; eyes moderately prominent, genae shorter and oblique. *Prothorax* subquadrate; width/length 1.00 and 1.02; base/apex 1.31 and 1.24; base/head 0.90 and 0.89; sides very weakly arcuate anteriorly, slightly subangulate at setae, strongly sinuate well before slightly acute sometimes slightly blunted basal angles; margins rather narrow, each with seta at or before middle but none at base; disc slightly irregular or subpunctate at base and in margins. *Elytra* long; width elytra/prothorax 1.87 and 1.80; apices long-spined, outer angles *c.* right and sharply formed but not denticulate, sutural angles obtuse; striae impressed, faintly punctulate; intervals slightly convex, 3rd 2-punctate. *Claws* with *c.* 7 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae unmodified, virtually straight, not tuberculate-serrate; ♂ with 3 or 4, ♀ 4 or 5 (unsymmetric in both individuals) setae each side last ventral segment. *Measurements*: length 10.8; width 3.4 mm.

Types. Holotype ♂ (Bishop Mus.) and 1 ♀ paratype (M.C.Z., Type No. 31,465) from Kiunga, Fly R., **Papua**, Aug. 14–17, 18–23, 1957 (W. W. Brandt).

Notes. Among other plain reddish brown *Demetrida* with quadrate prothorax and spined elytra, this is distinguished by relatively large size, proportions, simple ♂ middle tibiae, and other characters given in the *Key to Species.*

As compared with *dobodura*, the present species is larger, with longer elytral spines but less produced outer elytral angles, as well as with different ♂ tibiae. The single individual of *dobodura* seen from Kiunga is a ♂ with all the characters of *dobodura*: smaller size, denticulate outer elytral angles, and plainly tuberculate-serrate middle tibiae.

Demetrida mafulu n. sp.

Description. See Plate 2, figure V; with characters of genus; color dimorphic, *either* dark red with prothorax and basal ⅔ of elytra green with green color extending farther back at sides than at suture *or* entirely irregular dark reddish brown, legs *either* dark with paler tarsi *or* entirely brown, antennae brown in both cases; not pubescent, reticulate microsculpture present, *c.* isodiametric on head and elytra and transverse on pronotum, surface not much punctulate. *Head* 1.11 and 1.07 width prothorax; eyes prominent, genae shorter, oblique, not prominent; front flattened and irregularly slightly impressed before middle. *Prothorax* subquadrate; width/length 0.96 and 0.99; base/apex 1.35 and 1.35; base/head 0.84 and 0.87; sides weakly arcuate for much of length, scarcely angulate at setae, sinuate before prominent *c.* right basal angles; margins narrow, each with seta-bearing puncture slightly before middle but none at base; disc more convex than usual, baso-lateral impressions irregularly punctate. *Elytra*: width elytra/prothorax 1.96 and 2.03; apices acutely angulate or dentate, outer angles sharply formed, *c.* right or obtuse, sutural angles obtuse; striae well impressed, finely punctulate; intervals slightly convex, faintly sparsely punctulate, 3rd 2-punctate. *Claws* with *c.* 6 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae bent in at apex but not tuberculate-serrate; ♂ with 4, ♀ *c.* 5 apical ventral setae each side. *Measurements*: length 9.3; width 2.9 mm.

Type. Holotype ♂ (British Mus.) from Mafulu, **Papua**, 4000 ft. (1220 m), Dec. 1933 (Cheesman); and 1 ♀ paratype (also British Mus.) with same data except dated Jan. 1934.

Notes. Comparison with *diversa* (p. 172) suggests that the color dimorphism of *mafulu* is simply Mendelian, not sexual. These 2 species may be related, but *mafulu*

seems surely distinct by form, greater convexity of pronotum, and more distinct reticulate microsculpture of much of the upper surface. The 2 individuals of *mafulu* share these characters and, except in color, differ only slightly in other ways: *e.g.*, the ♀ has the elytral apices more acutely toothed but the outer angles more obtuse. The 2 color forms of *mafulu* are keyed out separately in the *Key to Species*.

Demetrida forma n. sp.

Description. With characters of genus; form as in Figure 104; reddish brown, legs testaceous; not pubescent, microsculpture present (weak or faint) only on elytra, surface not much punctulate. *Head* 1.12 and 1.10 width prothorax; eyes prominent, genae short, oblique. *Prothorax* subquadrate, long; width/length 0.99 and 1.01; base/apex 1.37 and 1.23; base/head 0.82 and 0.81; sides weakly irregularly rounded through much of length, moderately sinuate posteriorly before *c.* acute but blunted basal angles; margins narrow, each with seta-bearing puncture slightly before middle but none at base; surface in part irregular or weakly punctate posteriorly and laterally. *Elytra* rather long; width elytra/prothorax 2.11 and 2.18; apices spined, outer angles *c.* right, sharply formed, sutural angles right or slightly obtuse, sometimes slightly blunted; striae impressed, weakly punctulate; intervals convex, 3rd with 2 dorsal punctures. *Claws* with 7 or 8 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae tuberculate-serrate (*c.* 3 or more tubercles); ♂ with 2 or 3, ♀ *c.* 4 apical ventral setae each side. *Measurements* (type series): length 9.3–9.6; width 3.1–3.3 mm (specimens listed under *Additional material* 6.8–9.6 mm long).

Types. Holotype ♂ (Bishop Mus.) and 7 paratypes (3 in M.C.Z., Type No. 31,466) all from Pindiu, Huon Pen., **N-E. N. G.**, 500–600, 870–1300 m; dates in Apr. 1963 (holotype, 500–600 m, Apr. 19) (Sedlacek).

Additional material. Twenty-three specimens from 9 localities in **Papua**, **N-E. N. G.**, and eastern **West N. G.** Because of variations (see following *Notes*) and doubtful identifications these specimens are not recorded in detail.

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. Under this species I have tentatively placed all nonpubescent, brown, pale-legged New Guinean *Demetrida* with spined elytra, prothorax elongate-subquadrate and considerably narrower than head (width head/prothorax usually but not always *c.* 1.10 or more), and 3rd intervals 2-punctate (but see below). The specimens thus assembled vary considerably in size, prominence of eyes, exact form of prothorax, and length of elytral spines. Several species may be represented but, if so, I cannot separate them now.

Although the 3rd intervals are 2-punctate on both elytra in most individuals, in 3 cases a 3rd (intermediate) puncture is present on one side only, and an individual from Wau which I tentatively assign to *forma* is 3-punctate on both sides. This individual is the only *forma* (if it is this species) seen from Wau. It is a small ♂ with tuberculate-serrate middle tibiae.

Demetrida recta n. sp.

Description. With characters of genus; form *c.* as preceding species (*forma*) except elytra short-spined; reddish brown, legs pale with dark knees; not pubescent, reticulate microsculpture distinct only on elytra, but surface in part finely sparsely punctulate. *Head* 1.14 and 1.20 width prothorax; eyes prominent, genae shorter, oblique, not prominent (but see *Notes* below). *Prothorax* long-quadrate; width/length 0.92 and 0.88; base/apex 1.28 and 1.28; base/head 0.85 and 0.84; sides virtually straight anteriorly or weakly angulate at setae, sinuate well before slightly acute basal angles; margins narrow, each with seta slightly before middle but none at base; baso-lateral impressions weak, subpunctate.

Elytra: width elytra/prothorax 2.14 and 2.30; apices short-spined or acutely toothed, outer angles sharply formed, acute, inner angles obtuse; striae impressed, punctulate; intervals convex, 3rd 2-punctate. *Claws* with *c.* 6 or 7 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae bent in at apex but not tuberculate-serrate; ♂ with 3, ♀ 4 or 5 setae each side last ventral segment. *Measurements*: length 8.4–9.7; width 2.7–3.3 mm.

Types. Holotype ♂ (Bishop Mus.) and 2 ♀ ♀ paratypes (1 in M.C.Z., Type No. 31,467) from Wau, Morobe Dist., **N-E. N. G.,** 1200 (holotype), 1050, and 1090 m, dates in Jan. 1963 (holotype, Jan. 8–10) (Sedlacek).

Additional material. **West N. G.**: 1 ♂, Hollandia, May 1945 (Hoogstraal, M.C.Z.).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. D. recta resembles *forma* but is distinguished by straighter sides of prothorax and especially by bent-in but not tuberculate-serrate ♂ middle tibiae. *D. recta* may be more closely related to *kiunga* but is smaller, more slender, with shorter elytral spines. The real interrelationships of these and other more or less similar species are doubtful.

This species emphasizes that the ratio base/apex of prothorax must be interpreted with caution. The ratio of 1.28 in *recta* suggests that the apex is considerably narrower than the base, and this is true when the apex is measured in the standard way, between the most advanced points of the angles. Nevertheless, the prothorax appears virtually rectangular.

The genae of the holotype are unsymmetric: the right one is normal, as described above and as in the other specimens of the species, while the left one is subangulate just behind the eye, although not so prominent as in *tripuncta* and *genicula.* This slight angulation of the left gena in one specimen only of *recta* is presumably an abnormality.

Demetrida rex n. sp.

Description. With characters of genus; form as in Figure 105; reddish brown; not pubescent, reticulate microsculpture faint or absent even on elytra, but much of upper surface sparsely inconspicuously punctulate. *Head* 1.06 and 1.08 width prothorax (at middle); eyes prominent, genae shorter, oblique. *Prothorax* trapezoidal, wider at base than at middle; width (at middle)/length 1.06 and 1.02; base/apex 1.41 and 1.34; base/width at middle 1.04 and 1.06; base/head 0.98 and 0.98; sides shaped as figured, narrowly margined, each with seta-bearing puncture at or slightly before middle but none at base; surface irregularly slightly punctate at base and sides. *Elytra* ample; width elytra/prothorax (at middle) 2.00 and 2.12; apices spined, outer angles acutely denticulate, sutural angles obtuse-blunted; striae impressed, punctulate; intervals slightly convex, 3rd with 3 dorsal punctures (all specimens). *Claws* with 7 or 8 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae slightly bent-in toward apex but not tuberculate-serrate; ♂ with 2 or 3, ♀ *c.* 5 apical ventral setae each side. *Measurements*: length 10.2–11.4; width 3.5–4.0 mm.

Types. Holotype ♂ (Bishop Mus.) from Mokai Village, Torricelli Mts., **N-E. N. G.,** 750 m, Dec. 8–15, 1958 (W. W. Brandt); and additional paratypes as follows. **N-E. N. G.**: 1 ♀, Eliptamin Vy., 1200–1350 m, June 19–30, 1959 (W. W. Brandt, Bishop Mus.); 1 ♀, Adalbert Mts., Wanuma, 800–1000 m, Oct. 24, 1958 (Gressitt); 1 ♂, Pindiu, Huon Pen., Apr. 20, 1963 (Sedlacek). **Papua**: 1 ♂, Dogon, Amazon Bay Dist., 2400 ft. (*c.* 730 m), Oct.–Nov. 1962 (W. W. Brandt, C.S.I.R.O.); 1 ♀, Owen Stanley Rge., Goilala, Bome, 1950 m, Apr. 16–30, 1958 (W. W. Brandt, Bishop Mus.). (The paratypes from Adalbert Mts. and Pindiu now in M.C.Z., Type No. 31,468.)

Measured specimens. The ♂ holotype and ♀ paratype from Eliptamin Valley.

Notes. Although the 6 specimens listed

above come from 6 different localities, they seem to be conspecific and to represent a very distinct species, characterized by large size, form of prothorax, presence of an acute tooth (almost a short spine) at outer-apical elytral angle, and 3-punctate 3rd intervals. See *Key to Species* for place of *rex* among other New Guinean *Demetrida*.

Demetrida brunnea n. sp.

Description. With characters of genus; form average, with spined elytra; brownish testaceous, head and prothorax usually slightly darker than elytral disc, legs pale; not pubescent, reticulate microsculpture visible (light) only on elytra, surface not much punctulate. *Head* 1.12 and 1.13 width prothorax; eyes prominent, genae shorter, oblique. *Prothorax* quadrate; width/length 1.02 and 0.99; base/apex 1.23 and 1.26; base/head 0.83 and 0.87; sides subparallel or weakly irregularly arcuate in anterior ¾ or more, subangulate at lateral setae, broadly sinuate before right or slightly acute posterior angles; margins narrow, each with seta at or slightly before middle but none at base; surface irregular or slightly punctate at base and sides. *Elytra*: width elytra/prothorax 2.06 and 2.14; apices spined, outer angles denticulate, sutural angles right or slightly obtuse, slightly blunted; striae impressed, faintly punctulate; intervals slightly convex, 3rd usually 3-punctate. *Claws* with *c.* 6 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae slightly bent in at apex but not tuberculate-serrate (Fig. 161); ♂ with usually 3, ♀ 5 or 6 apical ventral setae each side. *Measurements*: length 8.5–10.0; width 2.9–3.4 mm.

Types. Holotype ♂ (British Mus.) and 8 paratypes (3 in M.C.Z., Type No. 31,469) from Mt. Baduri, Japen Is., **West N. G.,** 1000 ft. (305 m), Aug. 1938 (Cheesman); and the following additional paratypes from **West N. G.**: 1, R. Manai-Undei, Japen Is., 500 ft. (*c.* 150 m), Oct. 1938 (Cheesman); 3, Mt. Lina, Cyclops Mts., 3500–4500 ft. (*c.* 1070–1370 m), Mar. 1936 (Cheesman); 6, Sibil, Star Rge., 1260 m, dates in May, June 1959 (Neth. N. G. Exp., Leiden Mus.), at light; 2, Sibil Vy., Star Mts., 1245 m, Oct. 18–Nov. 8, 1961 (S. Quate, Bishop Mus.); 1, Bivak 36, Star Rge., 1220 m, July 29, 1959 (Neth. N. G. Exp., Leiden Mus.).

Additional material. **N-E. N. G.**: 2, Eliptamin Vy., 1200–1350 m, June 19–30, Aug. 1–15, 1959 (W. W. Brandt, Bishop Mus.); 1, Feramin, 1200–1500 m, June 1–6, 1959 (W. W. Brandt, Bishop Mus.); 1, Pindiu, Huon Pen., 1200–1450 m, Apr. 18, 1963 (Sedlacek). **Papua**: 3, Mafulu, 4000 ft. (*c.* 1220 m), Jan. 1934 (Cheesman); 1, Wakaiuna, Sewa Bay, Normanby Is., Dec. 11–20, 1956 (W. W. Brandt, Bishop Mus.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Japen Is.

Notes. D. brunnea resembles *forma* in most key characters, but *brunnea* has outer apical elytral angles acutely denticulate (*c.* right in *forma*), 3rd intervals usually 3-punctate (2-punctate in *forma*), and ♂ middle tibiae slightly bent-in but not tuberculate-serrate as in *forma*.

Actually, the punctures of the 3rd intervals vary slightly. Two individuals of *brunnea* (the holotype and the paratype from Bivak 36) have 3 punctures on one and 2 on the other side, although all other *brunnea* listed above are 3-punctate on both sides.

Demetrida fumipes n. sp.

Description. See Plate 2, figure VI; with characters of genus; form slender, with prominent eyes and short-spined elytra; reddish brown, elytra ± paler on disc but with sides behind humeri blackish, legs pale with outer edges of tibiae and apices of femora dark or legs more extensively dark; not pubescent, reticulate microsculpture faint or light even on elytra, surface not much punctulate. *Head* 1.12 and 1.18 width prothorax; eyes prominent, genae shorter and not prominent. *Prothorax* quadrate; width/length 1.05 and 0.99; base/apex 1.21 and 1.17; base/head 0.83 and

0.82; sides almost straight or weakly arcuate in anterior ¾, sinuate before *c.* right but irregular basal angles; margins narrow, each with seta-bearing puncture before middle, none at base; surface scarcely punctate even baso-laterally. *Elytra*: width elytra/prothorax 2.07 and 2.26; apices short-spined, outer angles acute, sutural angles slightly blunted; striae impressed, slightly punctulate; intervals slightly convex, faintly sparsely punctulate, 3rd usually 3-punctate. *Claws* with *c.* 5 or 6 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae slightly bent-in at apex but not tuberculate-serrate; ♂ with 2 or 3, ♀ 4–6 apical ventral setae each side. *Measurements*: length 8.3–9.4; width 2.7–3.2 mm.

Types. Holotype ♂ (Bishop Mus.) and 17 paratypes (6 in M.C.Z., Type No. 31,470) all from Wau and vicinity (including Mt. Missim), Morobe Dist., **N-E. N. G.,** altitudes from 1100 to 1500–1900 m, dates in Feb., Mar., Apr., July, Sept., Nov., 1961–1963 (holotype, Wau, 1200–1300 m, Apr. 6, 1963) (Sedlaceks).

Additional material. **Papua**: 3, Doveta, Amazon Bay Dist., 2400 ft. (730 m), Aug. 1962 (W. W. Brandt, C.S.I.R.O.). **N-E. N. G.**: 1 teneral, Wau, 1200 m, Sept. 2, 1961 (Sedlacek).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Wau.

Notes. Among species that are not obviously bicolored, *fumipes* is closest to *forma* but has legs in part darker, sides of elytra behind humeri darker, and 3rd intervals 3-punctate (2-punctate in *forma*). Among bicolored species, *fumipes* is nearest *humeralis* but is smaller, with humeri less extensively black. See also comparative notes under following species.

Demetrida velata n. sp.

Description. With characters of genus; form as in preceding species (*fumipes*); reddish brown, disc of elytra ± paler but sides of elytra narrowly blackish behind humeri, legs in part dark (at least darker than elytral disc); not pubescent, reticulate microsculpture faintly indicated on pronotum and sometimes on part of head and distinct (but light) on elytra, surface not much punctulate. *Head* 1.14 and 1.08 width prothorax; eyes prominent, genae shorter, not prominent. *Prothorax* quadrate, long; width/length 0.94 and 1.00; base/apex 1.21 and 1.34; base/head 0.84 and 0.88; sides weakly irregularly arcuate anteriorly, strongly sinuate before right or slightly acute basal angles; margins narrow, each with seta-bearing puncture before middle but none at base; baso-lateral areas irregularly subpunctate. *Elytra*: width elytra/prothorax 2.05 and 2.16; apices short-spined or acutely toothed, with outer angles ± right and sharply defined, sutural angles obtuse or slightly rounded; striae impressed, faintly punctulate; intervals slightly convex, faintly sparsely punctulate, 3rd usually 2-punctate. *Claws* with 5 or 6 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae tuberculate-serrate (*c.* 6 low tubercles); ♂ with 3 (rarely 4), ♀ *c.* 5 setae each side last ventral segment. *Measurements*: length 8.4–8.8; width 2.7–3.0 mm.

Types. Holotype ♂ (Bishop Mus.) from Saidor, Kiambavi Village, Finisterre Rge., **N-E. N. G.,** July 22–29, 1958 (W. W. Brandt), and 9 paratypes from Finisterre Rge. (3 in M.C.Z., Type No. 31,471) as follows: 1, same data as holotype except Aug. 1–28; 7, Saidor, Matoko (Village), Aug. 29–Sept. 5, Sept. 6–24, 1958 (all collected by W. W. Brandt).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Matoko Village.

Notes. This apparent relative of *forma* is distinguished from the latter by dark elytral edges and dark legs and from *fumipes* by usually 2-punctate rather than 3-punctate 3rd intervals, and *velata* differs from these and from other similar species also in having reticulate microsculpture visible, although faint, on pronotum (and sometimes part of head) as well as elytra. *D. velata* may be more closely related to *diversa* but is less distinctly bicolored and

more distinctly microreticulate, with usually better developed (but still short) elytral spines.

The 3rd intervals are 2-punctate on both sides of all individuals except that an extra (3rd) puncture is present on one side only in two individuals.

One specimen of the type series has moth scales stuck to it and is presumably from light-trap material.

Demetrida nigripes n. sp.

Description. With characters of genus; form as in Figure 106; head and prothorax red, elytra black, legs and antennae extensively dark with pale bases, tarsi paler; not pubescent, reticulate microsculpture virtually absent in ♂, present (moderately transverse) on elytra in ♀, surface not much punctulate. *Head* 0.98 and 0.94 width prothorax; eyes prominent, genae shorter and oblique. *Prothorax* cordate-subquadrate; width/length 1.20 and 1.28; base/apex 1.39 and 1.34; base/head 0.94 and 0.98; sides broadly slightly irregularly arcuate in more than anterior ¾, moderately sinuate before *c.* right posterior angles; margins rather wide, each with seta-bearing puncture slightly before middle but none at base; disc slightly punctate at sides and base. *Elytra* parallel; width elytra/prothorax 1.77 and 1.71; apices with short spines, outer angles well defined but slightly obtuse, sutural angles obtuse-blunted; striae less impressed but more punctulate than usual; intervals slightly or not convex, 3rd with 3 dorsal punctures (middle puncture sometimes doubtful). *Claws* with 5 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae tuberculate-serrate (3 or 4 rounded tubercles); ♂ with 2, ♀ 3 apical ventral setae each side. *Measurements*: length 7.4–7.7; width 2.3–2.7 mm.

Types. Holotype ♂ (Bishop Mus.) from Swart Vy., Karubaka, **N-E. N. G.,** 1350 m, Nov. 18, 1958 (Gressitt); and 1 ♀ paratype (Bishop Mus.), Daradae, nr. Javarere, Musgrove R., **Papua**, 100 m ?, Oct. 2, 1958 (Gressitt).

Notes. Although the 2 specimens listed above are from different localities, they agree in so many ways (in spite of disagreement in a few details) that I feel sure they are conspecific and that they represent an unusually distinct species, characterized by form, color, and relatively light but strongly punctulate elytral striae, as well as by other characters given in the *Key to Species of Demetrida of New Guinea.*

Demetrida dorsalis n. sp.

Description. See Plate 2, figure VII; with characters of genus; black, elytra with large common red area centered behind middle, appendages dark; not pubescent, reticulate microsculpture absent or indistinct, but parts of upper surface (especially elytra) sparsely punctulate. *Head* 0.93 and 0.89 width prothorax; eyes prominent, genae shorter, oblique; front slightly convex, impressed each side anteriorly, slightly punctate at middle. *Prothorax* subcordate; width/length 1.33 and 1.39; base/apex 1.34 and 1.33; base/head 0.95 and 0.96; sides broadly arcuate in more than anterior ¾, strongly sinuate before right or slightly acute posterior angles; margins rather wide, each with seta-bearing puncture at or slightly before middle but none at base; surface slightly punctate at base and sides. *Elytra*: width elytra/prothorax 1.77 and 1.78; apices angulate, the angulations right or slightly acute, outer angles obtuse or narrowly rounded, sutural angles obtuse; striae well impressed, scarcely punctulate; intervals convex, sparsely but distinctly punctulate, 3rd with *c.* 4 dorsal punctures. *Claws* with *c.* 5 teeth. *Secondary sexual characters*: ♂ tarsi as genus (squamae of front tarsi disarranged, but probably in 2 series); ♂ middle tibiae tuberculate-serrate (*c.* 4 low rounded tubercles); ♂ with 2 or 3, ♀ 3 or 4 apical ventral setae each side. *Measurements*: length 6.8–8.2; width 2.7–3.1 mm.

Types. Holotype ♂ (Bishop Mus.) and 7 paratypes (3 in M.C.Z., Type No. 31,472) all from Wau and vicinity (including Mt. Missim and Nami Creek), Morobe Dist., **N-E. N. G.,** altitudes from 1100 to 1650 m, dates in Jan., Feb., Mar., 1962, 1963 (holotype, Wau, 1100 m, Jan. 31, 1963) (Sedlacek).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. Although known only from a single locality, this species seems a distinct one, characterized by form, color, angulate but not spined elytral apices, and virtual absence of dorsal elytral reticulate microsculpture, as well as by other key characters.

Demetrida basalis n. sp.

Description. With characters of genus; form and most characters of *duplicata* (p. 000); red or brown with base of elytra (sometimes only humeri) black, legs and antennae reddish with part of femora and tibiae usually darker; not pubescent, microsculpture visible (sometimes faint or indistinguishable) only on elytra, surface in part sparsely punctulate. *Head* 0.93 and 1.02 width prothorax; eyes prominent, genae shorter, oblique. *Prothorax* quadrate-subcordate; width/length 1.21 and 1.17; base/apex 1.36 and 1.30; base/head 0.92 and 0.87; sides irregularly arcuate in more than anterior ¾, sometimes subangulate at setae, strongly sinuate before *c.* right or slightly acute sometimes slightly blunted posterior angles; margins moderately wide, each with seta-bearing puncture at or slightly before middle but none at base; disc slightly punctate across base and in margins. *Elytra*: width elytra/prothorax 1.86 and 2.10; apices spined, outer angles ± right and sharply defined, sutural angles slightly obtuse, blunted; striae impressed, scarcely punctulate; intervals slightly convex, slightly punctulate, 3rd with 2 principal and 1 or 2 intermediate smaller dorsal punctures (all specimens). *Claws* with *c.* 5 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae tuberculate-serrate (*c.* 6 small tubercles); ♂ with 2 or 3, ♀ 3 (or more?) apical ventral setae each side. *Measurements*: length 8.4–10.0; width 2.9–3.5 mm.

Types. Holotype ♂ (Bishop Mus.) from Swart Vy., **West N. G.,** W. ridge, 1800–2000 m, Nov. 19, 1958 (Gressitt); and paratypes as follows. **West N. G.**: 4 (2 in M.C.Z., Type No. 31,473), Swart Vy., Karubaka, 1500 m, Nov. 11, 20, 1958 (Gressitt); 2, Wissel Lakes, Kamo Vy., Itouda and Moanemani, 1500–1700 m, Aug. 18, 16, 1962 (Sedlacek); 1, Star Rge., Sibil Vy., 1245 m, Oct. 18–Nov. 8, 1961 (S. Quate, Bishop Mus.); 1, same locality, 1260 m, June 16, 1959 (Neth. N. G. Exp., Leiden Mus.), at light; 1, Star Rge., Bivak 39, 1300 m, June 28, 1959 (Neth. N. G. Exp., Leiden Mus.); 1 teneral, Araucaria Camp, 800 m, Apr. 2, 1939 (Toxopeus).

Additional material. One teneral, Karubaka, 1450 m, Nov. 16, 1958 (Gressitt), light trap.

Measured specimens. The ♂ holotype and 1 ♀ paratype from Karubaka.

Notes. This may be a geographic (western) representative of *duplicata* (p. 164) with elytra black at base rather than entirely reddish brown (but intermediate color forms occur as noted under *duplicata*) and with elytra less distinctly microreticulate. Its place among other similarly bicolored species is indicated in the *Key to Species.*

Demetrida diversa n. sp.

Description. See Plate 2, figure VIII; with characters of genus; form slender, with prominent eyes and acutely angulate or short-spined elytral apices; color diverse, brownish red with either whole base of elytra (except suture) or only humeri either black or green (individual variation), legs either entirely red or almost entirely black (holotype, basal ⅓ of elytra black, legs red); not pubescent, reticulate microsculpture indistinct or light even on elytra, surface not much punctulate. *Head* 1.07 and

1.14 width prothorax; eyes prominent, genae shorter and oblique. *Prothorax* subquadrate or trapezoidal with base varying from narrower than to wider than width at middle; width (at middle)/length 1.04 and 0.95; base/apex 1.39 and 1.46; base/head 0.88 and 0.94; sides weakly irregularly arcuate in *c.* anterior ¾, sinuate before *c.* right or acute but blunted or narrowly rounded posterior angles; margins rather narrow, each with seta-bearing puncture before middle but none at base; surface irregularly punctate basally and in margins. *Elytra*: width elytra/prothorax (at middle) 1.97 and 2.25; apices with slightly obtuse or acute angulations or very short spines, outer angles well defined but varying from slightly obtuse to acute, sutural angles obtuse; striae moderately impressed, slightly punctulate; intervals slightly convex, 3rd usually 2- sometimes 3-punctate (see *Notes*, below). *Claws* with *c.* 5 or 6 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae tuberculate-serrate (*c.* 7 small tubercles); ♂ with 2 or 3, ♀ 4 or more apical ventral setae each side. *Measurements*: length 7.5–9.5; width 2.7–3.3 mm.

Types. Holotype ♂ (Bishop Mus.) and 27 paratypes (some in M.C.Z., Type No. 31,474) all from Wau and vicinity (including Mt. Missim), Morobe Dist., **N-E. N. G.,** altitudes from 1090 to 1700 m, dates in Jan., Feb., Mar., May, June, July, Sept., Oct., Nov. 1961–1963 (holotype, 1250 m, May 3, 1963) (Sedlaceks).

Additional material. **N-E. N. G.**: 3, Eliptamin Vy., 1200–1350, 1665–2530 m, June 23–30, July 1–15, 16–31, 1959 (W. W. Brandt, Bishop Mus.); 1, Korop, Upper Jimmi Vy., 1300 m, July 12, 1955 (Gressitt), in light trap; 1, Swart Vy., Karubaka, 1550 m, Nov. 8, 1958 (Gressitt, No. 3145); 1, Jim(m)i R., E. Highlands, July–Sept. 1961 (W. W. Brandt, C.S.I.R.O.).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. The series from Wau shows the entire range of variation indicated in the preceding *Description.* Occurrence together of such diverse individuals in what seems to be one population suggests Mendelian dimorphism of color (elytral bases black or green, legs red or black), and exceptional genetic variation of some other characters. The different characters vary independently. For example, leg color is not correlated with color or extent of basal elytral marks. Of the type series, 15 individuals have 2 punctures on each 3rd interval, 4 (including the holotype) have 2 on one side and 3 on the other, and 2 individuals have 3 punctures on each side.

For distinguishing characters of *diversa* see the *Key to Species of Demetrida of New Guinea.*

Demetrida vigil n. sp.

Description. With characters of genus; form as in Figure 107; head and prothorax brownish red, elytra red with basal ⅓ black, antennae red, legs mainly black; not pubescent, reticulate microsculpture faint and irregular even on elytra in ♂ (possibly more distinct in ♀), surface not much punctulate. *Head* 1.03 width prothorax; eyes not larger than usual but exceptionally abruptly prominent, joining neck posteriorly with virtually no genae. *Prothorax* long-quadrate with anterior angles virtually obliterated; width/length 0.99; base/apex 1.39; base/head 0.91; sides weakly arcuate, sinuate before *c.* right basal angles; margins narrow, each with seta-bearing puncture at or slightly before middle (an extra adventitious puncture on left) but none at base; disc very convex, slightly rugulose and punctulate especially in baso-lateral depressions. *Elytra*: width elytra/prothorax 1.92; apices spined, outer angles acute-denticulate, sutural angles obtuse-blunted; striae slightly impressed, faintly punctulate; intervals slightly convex, 3rd 2-punctate. *Claws* with 4 or 5 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae weakly tuberculate-serrate (*c.* 4 low tubercles); ♂ with 3 apical ventral setae

each side; ♀ unknown. *Measurements*: length 7.8; width 2.5 mm.

Type. Holotype ♂ (C.S.I.R.O., Canberra) from Doveta, Amazon Bay Dist., **SE. Papua**, 2400 ft. (*c*. 730 m), Aug. 1962 (W. W. Brandt); the type is unique.

Notes. The eyes, more abruptly prominent than in any other *Demetrida* that I know, distinguish *vigil* from such similarly colored species as *diversa* and *divisa*.

Demetrida nigriceps n. sp.

Description. With characters of genus; form (Fig. 108) *c*. average, with prominent but not abrupt eyes, rather narrow prothorax, and spined elytra; head and prothorax black, elytra entirely brown, appendages brown with antennae darker outwardly; not pubescent, microsculpture indicated (faint and irregular) on elytra only. *Head* 0.96 and 1.01 width prothorax; eyes prominent, genae shorter, oblique. *Prothorax* subquadrate, long, with base sometimes wider than middle; width/length 0.96 and 1.01; base/apex 1.30 and 1.30; base/head 0.89 and 0.85; sides subparallel in anterior ¾, faintly angulate at lateral setae, broadly sinuate before right or slightly acute posterior angles; lateral margins narrow, each with seta-bearing puncture at or slightly before middle but none at base; surface scarcely or slightly punctate in margins. *Elytra*: width elytra/prothorax 2.21 and 2.14; apices spined, outer angles acute and subdenticulate, sutural angles obtuse-blunted; striae slightly impressed, slightly punctulate; intervals scarcely convex, 3rd 2-punctate. *Claws* with 6 or 7 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae not modified (*c*. straight, not tuberculate-serrate, in both specimens); ♂ with 2–4 apical ventral setae each side (holotype, 4 on each side; paratype, 2 on one side, 3 on other); ♀ unknown. *Measurements*: length *c*. 10.0; width 3.2 mm.

Types. Holotype ♂ (Bishop Mus.) and 1 ♂ paratype (M.C.Z., Type No. 31,475) both from Sibil Valley, Star Mts., **West N. G.,** 1245 m, Oct. 18–Nov. 8, 1961 (S. Quate), the holotype at light, the paratype in Malaise trap.

Notes. The unmodified ♂ tibiae distinguish this species among other similar ones, and other differential characters are given in the *Key to Species of Demetrida of New Guinea*.

The sex (♂ ♂) of both specimens has been determined by dissection as well as by examination of the front tarsi.

Demetrida saidor n. sp.

Description. With characters of genus; form slender, with prominent but not abrupt eyes and spined elytra; head and prothorax brownish black, elytra brownish testaceous with humeri and sometimes entire base narrowly black, appendages irregularly dark with paler tarsi; not pubescent, reticulate microsculpture visible (faint or light) only on elytra, surface not much (slightly, finely, sparsely) punctulate. *Head* 1.25 and 1.11 width prothorax; eyes prominent, genae short, oblique. *Prothorax* long-quadrate with relatively wide base; width/length 0.93 and 1.02; base/apex 1.43 and 1.30; base/head 0.85 and 0.88; sides subparallel or slightly arcuate in *c*. anterior ¾, sinuate before usually acute but slightly blunted posterior angles; margins narrow, each with seta-bearing puncture at or slightly before middle but none at base; surface slightly punctate at base and in margins. *Elytra*: width elytra/prothorax 2.28 and 2.17; apices spined, outer angles acute, sharply defined, sutural angles obtuse; striae lightly impressed, punctulate; intervals flat or slightly convex, 3rd 2-punctate (all specimens), the posterior puncture far back. *Claws* with *c*. 6–7 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae not or very little modified, not bent in at apex and not tuberculate-serrate; ♂ with 3, ♀ *c*. 6 apical ventral setae each side. *Measurements*: length 8.6–10.0; width 2.8–3.3 mm.

Types. Holotype ♂ (Bishop Mus.) from

Saidor, Matoko Village, Finisterre Rge., **N-E. N. G.,** Sept. 6–24, 1958 (W. W. Brandt); 1 ♂ paratype (M.C.Z., Type No. 31,476) from Saidor, Kiambavi Village, Aug. 1–28, 1958 (W. W. Brandt); 2 (♂ ♀) paratypes from Sepalakembang, Salawaket Rge., **N-E. N. G.,** 1920 m, Sept. 11–14, 12, 1956 (E. J. Ford, Jr., Bishop Mus.), in light trap.

Additional material. **West N. G.**: 1 teneral ♂, Wissel Lakes, Moanemani, Kamo Vy., 1500 m, Aug. 19, 1962 (Sedlacek).

Measured specimens. The ♂ holotype and the ♀ paratype from Sepalakembang.

Notes. Among more or less similar species (*fumipes, velata, nigriceps*) this is distinguished by combination of polished (not microreticulate) black head and pronotum, black humeri and legs, and simple ♂ middle tibiae.

Demetrida divisa n. sp.

Description. With characters of genus; form *c.* average, with prominent but not abrupt eyes, rather narrow prothorax, spined elytra; red or yellowish with basal ⅓ or ¼ of elytra black, lower surface reddish yellow with metepisterna mainly dark, legs testaceous with dark knees, antennae brown; not pubescent, reticulate microsculpture distinct (light) only on elytra, surface not much punctulate. *Head* 1.14 and 1.11 width prothorax; eyes prominent, genae oblique and shorter than eyes, sometimes slightly convex in profile but not very prominent. *Prothorax* quadrate, long; width/length 0.95 and 0.95; base/apex 1.30 and 1.32; base/head 0.88 and 0.95; sides nearly straight (except subangulate at setae) in more than anterior ¾, sinuate before *c.* right or acute, slightly blunted posterior angles; margins rather narrow, each with seta-bearing puncture before middle but none at base; surface vaguely subpunctate baso-laterally. *Elytra*: width elytra/prothorax 2.05 and—(elytra spread); apices variably spined (spines usually short), outer angles sharply defined, right or acute, sutural angles obtuse; striae impressed, scarcely punctulate; intervals slightly convex, sparsely slightly punctulate, 3rd with 2 or 3 dorsal punctures (see following *Notes*). *Claws* with *c.* 7 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae scarcely modified, at most slightly bent in at apex, not tuberculate-serrate; ♂ with *c.* 4, ♀ 5 or 6 apical ventral setae each side. *Measurements*: length 9.5–11.5; width 3.1–3.9 mm.

Types. Holotype ♂ (Bishop Mus.) and 1 ♂ paratype (M.C.Z., Type No. 31,477) from Tsenga, Upper Jimmi Vy., **N-E. N. G.,** 1200 m, July 14, 1955 (Gressitt); and additional paratypes as follows. **N-E. N. G.**: 2, Wau, Morobe Dist., 1200 m, Sept. 27, 1961, May 1–15, 1962 (Sedlacek), in light trap; 5, Okapa (Hornabrook); 1, Swart Vy., Karubaka, 1300 m, Nov. 7, 1958 (Gressitt); 1, Sattelberg (British Mus.); **Papua**: 1, Kokoda, 1200 ft. (366 m), May 1933 (Cheesman); 2, Dogon, Amazon Bay Dist., 2400 ft. (*c.* 730 m), Sept., Oct.–Nov. 1962 (W. W. Brandt, C.S.I.R.O.). **West N. G.**: 1 ♀, Bomberi, Vogelkop, 700–900 m, June 5, 1959 (Gressitt).

Measured specimens. The ♂ holotype and ♀ paratype from Sattelberg.

Notes. D. divisa resembles one of the color forms of *diversa*, but *divisa* is larger, with elytra at least short-spined and ♂ middle tibiae not tuberculate-serrate as in *diversa*.

In the ♂ holotype and ♂ paratype from Tsenga and also the ♀ from Bomberi the 3rd intervals are 2-punctate; in all other specimens, 3-punctate; but I find no other characters to suggest that this is a specific difference.

The specimen from Sattelberg is labeled by Andrewes, "Genus mihi ignotum."

Demetrida humeralis n. sp.

Description. With characters of genus; form *c.* average, with prominent eyes, quadrate prothorax, and short-spined elytra; reddish brown, humeri black, legs black or bicolored; not pubescent, microsculpture

faint even on elytra, surface not much punctulate. *Head* 1.07 and 1.08 width prothorax; eyes prominent, genae shorter and oblique. *Prothorax* subquadrate with rather broad base; width/length 1.06 and 1.00; base/apex 1.33 and 1.23; base/head 0.89 and 0.90; sides weakly irregularly arcuate, usually subangulate at setae, broadly sinuate before right or slightly acute posterior angles; margins rather narrow, each with seta-bearing puncture at or before middle but none at base; disc subpunctate across base and in margins. *Elytra*: width elytra/prothorax 1.99 and 2.16; apices short-spined, outer angles sharply defined, usually denticulate, sutural angles *c.* right or slightly obtuse; striae moderately impressed, faintly punctulate; intervals slightly convex, 3rd usually 3-punctate. *Claws* with 5 or 6 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae scarcely modified, at most slightly bent in at apex but not tuberculate-serrate; ♂ with 3, ♀ *c.* 6 apical ventral setae each side. *Measurements*: length 9.3–10.8; width 3.0–3.5 mm.

Types. Holotype ♂ (Bishop Mus.) and 12 paratypes (some in M.C.Z., Type No. 31,478) all from Swart Vy., Karubaka, **N-E. N. G.,** 1300 to 1600 m, dates in Nov. 1958 (holotype, 1300 m, Nov. 7) (Gressitt).

Additional material. **N-E. N. G.**: 2, Kassem, 48 km E. of Kainantu, 1350 m, Nov. 7, 1959 (T. C. Maa, Bishop Mus.); 1, Tsenga, Upper Jimmi Vy., 1200 m, July 13, 1955 (Gressitt); 1, Jim(m)i R., E. Highlands, July–Sept. 1961 (W. W. Brandt, C.S.I.R.O.). **West N. G.**: 1, Sibil, Star Rge., 1260 m, May 24, 1959 (Neth. N. G. Exp., Leiden Mus.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Karubaka.

Notes. D. humeralis differs from the preceding species (*divisa*) principally in color, having less black on elytral bases but darker legs. It is close also to *fumipes* but is larger and more heavily marked. The interrelationships of these forms are still not clear.

The 3rd intervals are usually 3-punctate in *humeralis* but are only 2-punctate in the individual from Sibil.

Demetrida imitatrix n. sp.

Description. See Plate 3, figure IX; with characters of genus; relatively wide; dark blue-black with dark appendages; not pubescent, reticulate microsculpture absent or faint, but surface finely sparsely punctulate. *Head* 0.84 and 0.88 width prothorax; eyes prominent, genae much shorter and oblique. *Prothorax* subcordate; width/length 1.39 and 1.36; base/apex 1.36 and 1.40; base/head 1.02 and 1.02; sides broadly slightly irregularly rounded anteriorly, strongly sinuate before *c.* right slightly blunted posterior angles; margins moderately wide, each with seta-bearing puncture at or slightly before middle but none at base; disc subpunctate baso-laterally. *Elytra* short and wide; width elytra/prothorax 1.74 and 1.80; apices spined, outer angles obtuse or blunted, sutural angles obtusely blunted; striae impressed, slightly or scarcely punctulate; intervals nearly flat or slightly convex, 3rd 2-punctate. *Claws* with 4 or 5 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae with inner edge swollen or thickened before apex, the swollen portion separated from the apex by a broad emargination; ♂ with 2 or 3, ♀ *c.* 4 apical ventral setae each side. *Measurements*: length 7.4–8.5; width 3.0–3.5 mm.

Types. Holotype ♂ (Bishop Mus.) from Karimui, S. of Goroka, **N-E. N. G.,** 1000 m, June 2, 1961 (Gressitt), taken in light trap; and paratypes as follows. **Papua**: 1 broken ♀, Dobodura, Mar.–July 1944 (Darlington) (M.C.Z., Type No. 31,479), taken on a lighted window; 1, Kokoda, 1200 ft. (366 m), Aug. 1933 (Cheesman); 1, Dogon, Amazon Bay Dist., 2400 ft. (*c.* 730 m), Sept. 1962 (W. W. Brandt, C.S.I.R.O.); 1, Misima Is., Nov. 1963 (W. W. Brandt, C.S.I.R.O.). **West N. G.**: 1, Camp 2, Sabron, Cyclops Mts., 2000 ft. (610 m), July 1936 (Cheesman).

Measured specimens. The ♂ holotype and the ♀ paratype from Dogon.

Notes. Among the New Guinean species of *Demetrida*, this one is unique in its broad form and in form of ♂ tibiae. Nevertheless it has the essential characters of *Demetrida* and I do not think it should be separated from that genus, at least not unless the genus as a whole is divided.

Superficially, *D. imitatrix* resembles *Violagonum violaceum* (Chaudoir), which is very common at low altitudes in New Guinea. This may be an example of Batesian mimicry.

Demetrida viridipennis n. sp.

Description. See Plate 3, figure X; with characters of genus; not pubescent; head and prothorax red, elytra bright green usually shading to purple toward apex, appendages reddish yellow; reticulate microsculpture visible (light) only on elytra, but surface in part slightly sparsely punctulate. *Head* 1.08 and 1.11 width prothorax; eyes moderately prominent, genae shorter and oblique, not prominent. *Prothorax* subquadrate; width/length 1.08 and 1.03; base/apex 1.32 and 1.31; base/head 0.88 and 0.86; basal angles *c.* right, *c.* blunted; margins rather narrow, each with seta near or slightly before middle but none at base; disc subpunctate across base and in margins. *Elytra*: width elytra/prothorax 1.99 and 2.17 (latter spread by pin?); apices spined, outer angles sharply defined, *c.* right (somewhat variable), sutural angles obtuse; striae deeply impressed, slightly punctulate; intervals slightly convex, faintly punctulate, 3rd with 2 dorsal punctures. *Claws* with *c.* 5 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae tuberculate-serrate (*c.* 6 low tubercles); ♂ with 2, ♀ 3 setae each side last ventral segment. *Measurements*: length 6.9–8.5; width 2.5–3.1 mm.

Types. Holotype ♂ (Bishop Mus.) from Wau, Morobe Dist., **N-E. N. G.,** 1200–1300 m, Mar. 14, 1963 (Sedlacek); and paratypes (some in M.C.Z., Type No. 31,480) as follows. **N-E. N. G.**: 4, Wau, 1200, 1220–1250, 1300 m, Nov. 12, 1961, Feb. 11, Jan. 23, 1963, Oct. 14, 1965 (Sedlaceks); 1, Bulolo (near Wau), 1005 m, Aug. 25, 1956 (E. J. Ford, Jr., Bishop Mus.); 1, Mt. Missim, 1600–2000 m, Sept. 21–24, 1964 (M. Sedlacek); 1, Karimui, 1080 m, July 14–15, 1963 (Sedlacek); 1, Okapa, Apr. 19, 1965 (Hornabrook); 1, Kainantu, July 9 (Sedlaceks); 1, Wum, Upper Jimmi Valley, 840 m, July 17, 1955 (Gressitt); 1, Finisterre Rge., Saidor, Funyende, 1200 m, Sept. 24–30, 1958 (W. W. Brandt, Bishop Mus.); 1, Adalbert Mts., Wanuma, 800–1000 m, Oct. 26, 1958 (Gressitt). **Papua**: 1, Kokoda, 1200 ft. (366 m), June 1933 (Cheesman); 2, Owen Stanley Rge., Goilala (Loloipa, Nov. 25–Dec. 10, and Tapini, 975 m, Nov. 16–25, 1957) (W. W. Brandt, Bishop Mus.); 1, Mt. Lamington, 1300–1500 ft. (*c.* 400–460 m) (C. T. McNamara, S. Australian Mus.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Wau.

Notes. Form, color, and deep elytral striae set this distinct species off from all others of the genus known to me. It is evidently widely distributed in at least the eastern half of New Guinea at moderate altitudes.

Demetrida lepida n. sp.

Description. See Plate 3, figure XI; with characters of genus; head and prothorax black, elytra green-purple (variable, often more green toward base and more purple toward apex, sometimes slightly reddish on disc), appendages dark; not pubescent, reticulate microsculpture faint even on elytra, surface not much punctulate. *Head* 1.24 and 1.12 width prothorax; eyes rather abruptly prominent, genae *c.* long as eyes, slightly convex in outline but not very prominent; front wide, irregularly flattened and impressed or subpunctate at middle. *Prothorax* subquadrate; width/length 0.95 and 1.05; base/apex 1.30 and 1.22; base/head 0.74 and 0.77; sides arcuate anteriorly, sinuate before *c.* right but blunted or nar-

rowly rounded posterior angles; margins narrow, each with seta-bearing puncture at or slightly before middle but none at base; disc convex, baso-lateral impressions almost obsolete, surface faintly subpunctate across base and in margins. *Elytra*: width elytra/prothorax—(elytra spread) and 1.95; apices long-spined, outer angles acute or denticulate, sutural angles obtuse; striae lightly impressed, lightly punctulate; intervals flat or slightly convex, 3rd 3-punctate. *Claws* with *c.* 7 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae slightly tuberculate-serrate (*c.* 4 spaced tubercles); ♂ with 3, ♀ 4–6 apical ventral setae each side. *Measurements*: length 9.2–10.8; width 3.0–3.3 mm.

Types. Holotype ♀ (Bishop Mus.) and 10 paratypes (some in M.C.Z., Type No. 31,481) from Swart Vy., Karubaka, **N-E. N. G.,** altitudes from 1300 to 1600 m, dates in Nov. 1958 (holotype, 1450 m, Nov. 12) (Gressitt); and additional paratypes as follows. **West N. G.**: 17, Wissel Lakes, Enarotadi, altitudes from 1750 to 1900 m, dates in July, Aug. 1962 (Sedlacek); 1, Wissel Lakes, Itouda, Kamo Vy., 1500–1700 m, Aug. 18, 1962 (Sedlacek); 1, Wissel Lakes, Kamo-Debei div., 1700 m, Aug. 13, 1955 (Gressitt); 1, Lower Mist Camp, 1700 m, Jan. 17, 1939 (Toxopeus). **Papua**: 1, Owen Stanley Rge., Goilala, Loloipa, Feb. 1–15, 1958 (W. W. Brandt, Bishop Mus.).

Measured specimens. A ♂ paratype from Swart Valley and the ♀ holotype.

Notes. The bright color, rather abruptly prominent eyes, and long elytral spines characterize this fine species. It appears to be widely distributed in New Guinea at moderate altitudes. Of the 19 specimens seen, only 3 are ♂ ♂.

Two Karubaka individuals and one from Enarotadi are labeled as taken in light traps.

Demetrida sublepida n. sp.

Description. With characters of genus; form *c.* as in preceding species (*lepida*) but eyes less abruptly prominent and elytral spines shorter; head and prothorax green, elytra green-purple (variable); appendages dark, tarsi paler; not pubescent, reticulate microsculpture visible (faint) only on elytra, surface not much punctulate. *Head* 1.16 and 1.11 width prothorax; eyes prominent but not abrupt, genae shorter and oblique. *Prothorax* subquadrate; width/length 1.01 and 1.03; base/apex 1.20 and 1.18; base/head 0.80 and 0.86; sides weakly slightly irregularly arcuate in more than anterior ¾, usually strongly sinuate before usually acute posterior angles; margins narrow, each with seta-bearing puncture slightly before middle but none at base; baso-lateral impressions subobsolete, disc slightly transversely wrinkled, vaguely subpunctate across base and in margins. *Elytra*: width elytra/prothorax 2.11 and 2.19; apices spined, outer angles *c.* right or obtuse, sutural angles obtuse; striae well impressed, scarcely punctulate; intervals convex, finely sparsely punctulate, 3rd 2-punctate. *Claws* with 5 or 6 teeth. *Secondary sexual characters*: ♂ unknown; ♀ with 3 or 4 apical ventral setae each side last ventral segment. *Measurements*: length 7.0–9.0; width 2.5–3.1 mm.

Types. Holotype ♀ (Bishop Mus.) from Wissel Lakes, Enarotadi, **West N. G.,** 1850 m, Aug. 1, 1962 (Sedlacek); and additional paratypes as follows. **West N. G.**: 7 (some in M.C.Z., Type No. 31,482), Enarotadi, 1750 to 1900 m, dates in July, Aug. 1962 (Sedlacek); 1, Wissel Lakes, Urapura, Kamo Vy., 1530 m, Aug. 11, 1955 (Gressitt). **N-E. N. G.**: 1, Swart Vy., Karubaka, 1300 m, Nov. 7, 1958 (Gressitt); 1, Wau, Morobe Dist., 1300 m, June 15, 1961 (Gressitt), on Pipturus. All specimens are ♀ ♀.

Measured specimens. The ♀ holotype and ♀ paratype from Enarotadi.

Notes. Although perhaps related to the preceding species (*lepida*), *sublepida* differs in a surprising number of characters including less abrupt eyes, head and pronotum green rather than black, elytral spines shorter, elytral striae deeper, claws

with fewer teeth, and size smaller. These species evidently occur together at some localities, and they may be involved in some sort of mimicry.

Demetrida viridibasis n. sp.

Description. With characters of genus; form slender, with ± prominent eyes and short-spined elytra; red, *c.* basal ⅓ of elytra bright green with the green color extending back more at sides than at middle, femora and parts of tibiae dark; not pubescent, reticulate microsculpture usually visible (but light) on front of head and on pronotum as well as on elytra, much of upper surface also sparsely finely punctulate. *Head* 1.05 and 1.02 width prothorax; eyes prominent, genae *c.* long as eyes and slightly convex in outline but not very prominent. *Prothorax* subquadrate, long; width/length 1.00 and 1.09; base/apex 1.25 and 1.23; base/head 0.85 and 0.85; sides nearly straight for much of length except slightly subangulate at setae, broadly sinuate before *c.* right slightly blunted posterior angles; margins narrow, each with seta-bearing puncture slightly before middle but none at base; disc less convex and with more distinct baso-lateral impressions than in *lepida* and *sublepida*, subpunctate across base and in margins. *Elytra* moderately long; width elytra/prothorax 1.98 and 1.86; apices short-spined, outer angles *c.* right, sharply formed, sutural angles obtuse; striae impressed, faintly punctulate; intervals convex, 3rd 3-punctate. *Claws* with *c.* 5 teeth. *Secondary sexual characters*: ♂ see *Notes*, below; ♀ with 5 or more apical ventral setae each side. *Measurements*: length 8.5–10.3; width 2.9–3.5 mm.

Types. Holotype ♀ (C.S.I.R.O., Canberra) from Dogon, Amazon Bay Dist., **SE. Papua**, 2400 ft. (*c.* 730 m), Sept. 1962 (W. W. Brandt); 1 ♀ paratype (C.S.I.R.O.) with same data except collected Oct.–Nov.; 1 ♀ paratype (M.C.Z., Type No. 31,483), Doveta, Amazon Bay Dist., 2400 ft. (*c.* 730 m), Aug. 1962 (W. W. Brandt).

Additional material. **N-E. N. G.**: 3, Swart Vy., Karubaka, 1300, 1500 m, Nov. 7, 11, 20, 1958 (Gressitt); 1, Finisterre Rge., Saidor, Kiambavi Village, Aug. 1–28, 1958 (W. W. Brandt, Bishop Mus.). **West N. G.**: 1, Cyclops Mts., 3400–4500 ft. (*c.* 1040–1370 m), Mar. 1936 (Cheesman).

Measured specimens. The ♀ holotype and ♀ paratype from Doveta.

Notes. This species seems close to the green-marked form of *diversa* but has longer elytral spines. Some specimens listed under *Additional material* are doubtfully identified. Most are ♀ ♀; the only ♂, from Swart Vy., has middle tibiae slightly bent in toward apex but not tuberculate-serrate, and *c.* 4 apical ventral setae each side.

Demetrida sibil n. sp.

Description. With characters of genus; form slender, with prominent eyes and spined elytra; head, prothorax, and *c.* basal ¼ of elytra dark greenish, the dark color extending farther back at sides of elytra than at middle, and suture sometimes red almost to base, rest of elytra red, femora and outer edges of tibiae greenish black, antennae brown, lower surface greenish black in anterior half, abdomen red; not pubescent, reticulate microsculpture faint even on elytra. *Head* 1.19 and 1.10 width prothorax; eyes moderately abruptly prominent, genae nearly as long as eyes, oblique; front flattened, irregularly slightly impressed and subpunctate at middle. *Prothorax* subquadrate; width/length 0.94 and 0.98; base/apex 1.38 and 1.28; base/head 0.81 and 0.82; sides weakly irregularly arcuate for much of length, rather abruptly sinuate before right or slightly acute sometimes slightly blunted posterior angles; margins narrow, each with seta-bearing puncture slightly before middle but none at base; disc strongly convex, with baso-lateral impressions weakly indicated, surface slightly punctate across base and in margins. *Elytra*: width elytra/prothorax 2.09 and 1.98; apices spined, outer angles acute or denticulate, sutural angles obtuse; striae

moderately impressed, finely punctulate; intervals slightly convex, very sparsely inconspicuously punctulate, 3rd 3-punctate (except intermediate puncture lacking on 1 side in 1 paratype). *Claws* with *c.* 6 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae bent-in at apex but not tuberculate-serrate; ♂ with apparently 4, ♀ *c.* 8 or 9 apical ventral setae each side. *Measurements*: length 9.4–10.8; width 3.0–3.4 mm.

Types. Holotype ♂ (Leiden Mus.) and 5 paratypes (2 in M.C.Z., Type No. 31,484) from Sibil, Star Rge., **West N. G.,** 1260 m, dates in May and June, 1959 (holotype, June 17) (Neth. New Guinea Exp.), taken at light; and additional paratypes as follows. **West N. G.**: 2, preceding locality ("Star Mts. Sibil Val."), 1245 m, Oct. 18–Nov. 8, 1961 (S. Quate, Bishop Mus.), at light. **N-E. N. G.**: 1, Feramin, 1200–1500 m, June 15–18, 1959 (W. W. Brandt, Bishop Mus.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Sibil.

Notes. The color (head and pronotum as well as elytral bases green) and long-spined elytra distinguish this from other species of the *diversa* complex.

Demetrida seticollis n. sp.

Description. With characters of genus; form as in Figure 109; brown, with head and prothorax and sometimes base of elytra slightly darker; appendages brown; not pubescent, reticulate microsculpture visible (but very light) only on elytra. *Head* 1.20 and 1.19 width prothorax; eyes very prominent, genae oblique and not sharply distinct from neck; front irregularly flattened or impressed and subpunctate at middle. *Prothorax* quadrate-trapezoidal; width/length 1.02 and 0.97; base/apex 1.45 and 1.29; base/head 0.86 and 0.90; sides weakly arcuate or *c.* straight in ¾ or more of length, strongly sinuate before prominent, *c.* right or acute (somewhat variable) basal angles; margins narrow, each with seta before middle and at base and additional usually smaller setae anteriorly; disc moderately convex, with irregular baso-lateral impressions, surface irregular or subpunctate across base and in margins. *Elytra* ample; width elytra/prothorax 2.20 and 2.22; apices long-spined, outer angles acute-denticulate, sutural angles obtuse; striae lightly impressed, finely punctulate; intervals slightly convex or *c.* flat, 3rd 3- or 4-punctate (variable, sometimes unsymmetric). *Claws* with 6–8 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae tuberculate-serrate (*c.* 4 widely sometimes irregularly spaced tubercles); ♂ with 2–4, ♀ *c.* 6 apical ventral setae each side. *Measurements*: length 8.7–10.5; width 2.9–3.4 mm (except 1 ♂ from Wissel Lakes, doubtfully identified, 11.3 × 3.7 mm).

Types. Holotype ♂ (Bishop Mus.) from Wissel Lakes, Enarotadi, **West N. G.,** 1900 m, Aug. 21, 1955 (Gressitt); 61 paratypes (some in M.C.Z., Type No. 31,485) from the Wissel Lakes area (Enarotadi, Moanemane, Itouda, Urapura, Okaitadi, "Paniai-Kamo div."), 1500–2050 m, dates in July, Aug., 1955, 1962 (Gressitt, Sedlacek); and 4 additional paratypes from the same area, Arabu Camp, 1800 m, Oct. 7, 8, 12, 17, 1939 (H. Boschma, Leiden Mus.).

Additional material. **West N. G.**: 1 very large ♂, data as holotype except 1500 m, Aug. 14, 1962 (Sedlacek); 2, Juliana Bivak, 1800 m, Aug. 30, Sept. 5, 1959 (Neth. N. G. Exp., Leiden Mus.); 1, Star Rge., Bivak 39A, 1500 m, July 2, 1959 (Neth. N. G. Exp., Leiden Mus.); 1, Swart Vy., W. ridge, 1800–2000 m, Nov. 19, 1958 (Gressitt). **N-E. N. G.**: 1, Gewak, Salawaket Rge., 1530 m, Sept. 6, 1956 (E. J. Ford, Jr., Bishop Mus.), in light trap. **Papua**: 1, Owen Stanley Rge., Goilala, Bome, 1950 m, Mar. 8–15, 1958 (W. W. Brandt, Bishop Mus.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Enarotadi.

Notes. The extra seta of the prothoracic margins anteriorly distinguish this species from all other nonpubescent *Demetrida* known to me. These setae are much

stronger and more erect than the fine extra marginal hairs of *D. seriata* and *nubicola*. When the setae are broken off, or perhaps lacking in aberrant individuals, the species is still recognizable by form especially of prothorax, color, and long elytral spines.

D. seticollis apparently ranges widely in New Guinea at considerable altitudes (not known below 1500 m) on the higher mountain ranges. The fact that it has not been found on the Morobe Plateau (Wau, etc.) is noteworthy.

Demetrida pallipes n. sp.

Description. With characters of genus; form slender, with moderately prominent eyes and strongly spined elytral apices; head and pronotum reddish piceous, elytra blackish with small discal area usually reddish, legs testaceous, antennae brown, lower surface dark with metepisterna paler; not pubescent, reticulate microsculpture absent or indistinct, surface not much punctulate. *Head* 1.14 and 1.16 width prothorax; eyes prominent, genae shorter, oblique. *Prothorax* subquadrate, long; width/length 1.03 and 0.96; base/apex 1.35 and 1.34; base/head 0.84 and 0.86; sides very weakly arcuate in *c.* anterior ¾, strongly sinuate before right or acute usually slightly blunted posterior angles; margins narrow, each with seta-bearing puncture before middle and at basal angle; disc with moderate baso-lateral impressions, scarcely punctate. *Elytra*: width elytra/prothorax 2.04 and 2.05; apices strongly spined, outer angles acute or denticulate, sutural angles obtuse; striae lightly impressed, finely irregularly punctulate; intervals almost flat, 3rd usually 2-punctate, sometimes 3-punctate on 1 side. *Claws* with *c.* 5 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae weakly tuberculate-serrate (*c.* 4 low tubercles); ♂ with 3, ♀ 5 or 6 apical ventral setae each side. *Measurements*: length 8.4–9.6; width 2.5–2.9 mm.

Types. Holotype ♂ (Bishop Mus.) and 19 paratypes (some in M.C.Z., Type No. 31,486) from Wau, Morobe Dist., **N-E. N. G.,** altitudes from 1100–1500 m, dates in Jan., Feb., Mar., Apr., Sept., Dec., 1961–1966 (holotype, 1450 m, Feb. 6, 1963) (Sedlacek, 1 paratype T. C. Maa); 1 paratype, Mt. Missim, 1600–2000 m, Sept. 21–24, 1964 (M. Sedlacek).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. See *Key to Species* for place of *D. pallipes* among other New Guinean *Demetrida*.

Demetrida discoidalis n. sp.

Description. With characters of genus; form *c.* as in preceding species (*pallipes*); black, elytra with large elongate common red area centered behind middle, lower surface and appendages dark; not pubescent, reticulate microsculpture absent or indistinct on elytra, surface not much (sparsely inconspicuously) punctulate. *Head* 1.06 and 1.13 width prothorax; eyes prominent, genae shorter, oblique. *Prothorax* subquadrate, but anterior angles rounded to neck; width/length 1.04 and 1.00; base/apex 1.51 and 1.47; base/head 0.90 and 0.91; sides arcuate through much of length, sinuate before *c.* right slightly blunted posterior angles; margins narrow, each with seta-bearing puncture before middle and at base; disc with baso-lateral impressions weak, surface slightly irregular or subpunctate across base and in margins. *Elytra*: width elytra/prothorax 1.91 and 2.02; apices (variably) spined, outer angles sharply defined, varying from acute to slightly obtuse, sutural angles obtuse; striae lightly impressed, punctulate; intervals flat, 3rd 2-punctate. *Claws* with 6 or 7 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae tuberculate-serrate (*c.* 4 low rounded tubercles); ♂ with 2 or 3, ♀ 4 or 5 apical ventral setae each side. *Measurements*: length 9.0–11.5; width 3.0–3.7 mm.

Types. Holotype ♂ (Bishop Mus.) from Sibil Vy., Star Rge., **West N. G.,** 1245 m,

Oct. 18–Nov. 8, 1961 (S. & L. Quate), in Malaise trap; and paratypes as follows. **West N. G.**: 1, Sibil, Star Rge., 1260 m, June 1959; 2, Bivak 36, Star Rge., 1220 m, July 28, 1959; 1, Bivak 39A, Star Rge., 1550 m, July 5, 1959 (these 4 paratypes all Neth. N. G. Exp., Leiden Mus.). **N-E. N. G.**: 1, Eliptamin Vy., 1665–2530 m, June 19, 1959 (W. W. Brandt, Bishop Mus.); 1, Feramin, 1200–1500 m, June 15–18, 1959 (W. W. Brandt, Bishop Mus.). (Some paratypes in M.C.Z., Type No. 31,487.)

Measured specimens. The ♂ holotype and ♀ paratype from Bivak 39A.

Notes. This may be a geographic representative of the preceding species (*pallipes*) from which it differs only slightly in form but more in color, with larger red area on elytra and dark rather than pale legs. It resembles *dorsalis* in color but differs in form (much narrower than *dorsalis*), presence of posterior-lateral prothoracic setae, and in other ways: in fact, these 2 species are not closely related.

Demetrida sedlacekorum n. sp.

Description. With characters of genus; form slender, *c.* as in preceding species (*pallipes*, *discoidalis*) but elytra short-spined; black with bluish tone especially on elytra, appendages dark; not pubescent; reticulate microsculpture absent or indistinct, but upper surface in part with very fine, sparse, inconspicuous punctulation. *Head* 1.14 and 1.08 width prothorax; eyes prominent, genae shorter, oblique. *Prothorax* subquadrate, long, with rather broad base; width/length 0.98 and 0.99; base/apex 1.41 and 1.43; base/head 0.86 and 0.87; sides weakly arcuate in *c.* ¾ of length, sinuate before *c.* right but variable, blunted posterior angles; margins rather narrow, each with seta-bearing puncture before middle and at basal angle; disc with baso-lateral impressions deep but small, subpunctate. *Elytra*: width elytra/prothorax 2.03 and 1.93; apices short-spined, outer angles sharply defined, usually acute, sutural angles obtuse; striae lightly impressed, punctulate; intervals flat or slightly convex, third usually 2-, sometimes 3-punctate. *Claws* with 6 or 7 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae weakly tuberculate-serrate (margin wavy); ♂ with 2 or 3, ♀ 4 or 5 apical ventral setae each side. *Measurements*: length 8.5–9.8; width 2.6–3.1 mm.

Types. Holotype ♂ (Bishop Mus.) and 28 paratypes (some in M.C.Z., Type No. 31,488) all from Wau, Morobe Dist., **N-E. N. G.,** altitudes from 1180 to 1500 m, dates in Jan., Feb., Mar., Apr., June, Sept., Nov., 1961–1964 (holotype, 1220–1250 m, Jan. 23, 1963) (Sedlaceks).

Additional material. **N-E. N. G.**: 2, Jim(m)i R., E. Highlands, July–Sept., 1961 (W. W. Brandt, C.S.I.R.O.). **Papua**: 1, Owen Stanley Rge., Goilala, Tororo, 1560 m, Feb. 21–24, 1958 (W. W. Brandt, Bishop Mus.).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. See final couplets of *Key to Species* for place of *sedlacekorum* among other New Guinean *Demetrida*.

Demetrida brandti n. sp.

Description. See Plate 3, figure XII; with characters of genus; form *c.* of *pallipes* and *discoidalis*, slender, with long-spined elytra; color entirely blue-black, with dark appendages; not pubescent, microsculpture virtually absent even on elytra, surface not much (very finely, sparsely, inconspicuously) punctulate. *Head* 1.09 and 1.07 width prothorax; eyes prominent, genae shorter, oblique. *Prothorax* quadrate, long; width/length 0.98 and 1.03; base/apex 1.44 and 1.43; base/head 0.87 and 0.88; sides weakly arcuate in *c.* anterior ¾, broadly sinuate before *c.* right or slightly acute posterior angles; margins rather narrow each with seta near or before middle and at base; baso-lateral impressions moderate, subpunctate. *Elytra*: width elytra/prothorax 1.98 and 1.94; apices with moderately long spines, outer angles well defined, ± right, sutural angles blunted; striae slightly

impressed, faintly punctulate; intervals slightly convex, 3rd 2-punctate. *Claws* with *c.* 6 teeth. *Secondary sexual characters*: ♂ tarsi as genus; ♂ middle tibiae tuberculate-serrate (*c.* 4 tubercles); ♂ with 3, ♀ 4 or 5 apical ventral setae each side. *Measurements*: length 8.8–10.2; width 2.8–3.3 mm.

Types. Holotype ♂ (Bishop Mus.) and 2 paratypes from Finisterre Rge., Saidor, Kiambavi Village, **N-E. N. G.,** 1400 m, July 22–29 (holotype), Aug. 1–28 (paratypes); 1 paratype, Saidor, Funyende, 1200 m, Sept. 24; 2 paratypes, Saidor, Matoko, Aug. 29–Sept. 5, Sept. 6–24 (all collected 1958 by W. W. Brandt for Bishop Mus.; some paratypes now in M.C.Z., Type No. 31,489).

Additional material. **N-E. N. G.**: 2, Swart Vy., Karubaka, 1500 m, Sept. 20, 1958 (Gressitt); 1, Gewak, Salawaket Rge., 1530 m, Sept. 6, 1956 (E. J. Ford, Jr., Bishop Mus.), in light trap. **West N. G.**: 2, Wamena, 1700 m, Feb. 10–25, 1960 (T. C. Maa, Bishop Mus.). **Papua**: 1, Purosa Camp, Okapa area, 1950 m, Sept. 23, 1959 (L. J. Brass, Sixth Archbold Exp., A.M.N.H.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Kiambavi.

Notes. This will probably prove to be a geographic subspecies of *sedlacekorum* distinguished mainly by longer elytral spines.

Genus *PHLOEOCARABUS* Macleay

Macleay 1871, Trans. Ent. Soc. New South Wales 2, p. 85.
Sloane 1898, Proc. Linnean Soc. New South Wales 23, p. 499.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1488 (see for additional references, synonymy, and list of species).

Diagnosis. See *Key to Genera of Lebiini of New Guinea* and Figure 110.

Description (characters common to the 2 New Guinean species). Form *c.* as in Figure 110; color diverse; not pubescent. *Head*: eyes large, prominent; 2 setae over each eye; antennae pubescent from middle of 4th segments; front with long, slightly curved costa on each side passing inside position of anterior seta; clypeus transverse, 1-setose each side; labrum wide, arcuate-truncate, 6-setose; mentum with long, entire tooth; ligula subtruncate with 2 principal setae, paraglossae attached to ligula, narrowed and rounded to apex of ligula; palpi rather short, apical segments of labial palpi widened, *c.* triangular. *Prothorax* transverse, arcuately narrowed anteriorly, slightly lobed at base; margins rather wide, flat, scarcely reflexed, each with usual 2 setae; disc with impressed middle line and weak transverse impressions; base with fine marginal line entire or nearly so, apex not margined at middle. *Elytra* with rounded, slightly narrowed humeri; apices obliquely sinuate-truncate, with outer angles broadly and inner angles narrowly rounded; striae entire, moderately impressed, not punctate; intervals not specially elevated at base, 3rd 2-punctate with punctures before middle on outer edge and behind apical ¼ near inner edge. *Inner wings* full. *Legs* moderate; 4th segments middle and hind tarsi emarginate; 5th segments with accessory setae; claws each with *c.* 4 rather long teeth. *Secondary sexual characters*: ♂ front tarsi scarcely dilated, 2-seriately squamulose; ♂ middle tarsi also squamulose; ♂ middle tibiae not excised; ♂ with 1 principal (sometimes a 2nd smaller), ♀ 2 setae each side last ventral segment.

Type species. P. mastersi Macleay, of Australia.

Generic distribution. **Australia**, with 1 Australian species extending to **New Guinea** and **New Britain**, and an additional species endemic in New Guinea.

Notes. The 2 species here assigned to *Phloeocarabus* are very different superficially but share the technical characters of the genus.

KEY TO SPECIES OF *PHLOEOCARABUS* OF NEW GUINEA

1. Color black or piceous, elytra with testaceous marks (p. 184) ..... *nigricollis*
– Strikingly bicolored, head and prothorax red, elytra blue (p. 184) ..... *euplenes*

Phloeocarabus nigricollis (Macleay)

Macleay 1864, Trans. Ent. Soc. New South Wales 1, p. 111 (*Trigonothops*).
See also references under genus.
basalis Sloane 1907, Deutsche Ent. Zeitschrift for 1907, p. 182 (new synonymy).

Description. None required here; length *c.* 6–8 mm.

Types. Of *nigricollis*, from Port Denison (Bowen), Queensland, **Australia**, presumably in Macleay Mus., Sydney; of *basalis*, from the Gazelle Pen., **New Britain**, should be in Deutsche Ent. Institut, Berlin-Dahlem (none seen).

Occurrence in New Guinea. Thirty-four specimens, from localities covering almost the whole length of **New Guinea**, most at low altitudes but records up to 1300 (at Wau), 1400, and 1500 m.

Notes. Sloane distinguished *basalis* from *nigricollis* by a slight color difference, which does not hold in the series before me: 5 specimens from New Britain include both individuals with base of elytra entirely dark (*basalis*) and individuals with the pale marks reaching the elytral base (*nigricollis*). The series from New Guinea is even more variable, with elytra ranging from almost wholly reddish testaceous to almost wholly piceous with subbasal pale marks scarcely indicated. The pronotum also varies, from reddish piceous with pale margins to reddish testaceous, and the variation is partly independent of the variation of elytral pattern. All these color forms seem to me to be one species. The variation of pattern may prove to be partly geographic, but the material before me is not sufficient to establish this.

Phloeocarabus euplenes n. sp.

Description. With characters of genus; form as in Figure 110; strikingly bicolored, head and prothorax red, elytra blue, lower surface and appendages reddish testaceous; moderately shining, reticulate microsculpture absent or faint on front and on disc of pronotum, distinct and slightly transverse on elytra. *Head*: 0.76 and 0.76 width prothorax; front scarcely impressed, faintly sparsely punctulate. *Prothorax*: width/length 1.58 and 1.62; base/apex 1.67 and 1.62; margins broadly flattened, not much reflexed; disc sparsely irregularly punctulate and faintly transversely strigulose. *Elytra*: width elytra/prothorax 1.42 and 1.47; striae well impressed, faintly punctulate; intervals slightly convex, each with an irregular row of punctules along middle. *Secondary sexual characters*: ♂ as for genus; ♀ unknown. *Measurements*: length 5.0–5.2; width 2.1–2.2 mm.

Types. Holotype ♂ (Bishop Mus.) from Torricelli Mts., Wantipi Village, **N-E. N. G.**, Nov. 30–Dec. 8, 1958 (W. W. Brandt); and 1 ♂ paratype (M.C.Z., Type No. 31,490) from Kiunga, Fly R., **Papua**, July 11–14, 1957 (W. W. Brandt).

Notes. This new *Phloeocarabus* is strikingly different in color from any other member of the genus known to me. In form and color it resembles and may mimic New Guinean species of the agonine genus *Euplenes*.

Genus *TRIGONOTHOPS* Macleay

Macleay 1864, Trans. Ent. Soc. New South Wales 1, p. 110.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1488 (see for additional references and list of species).

Diagnosis. See *Key to Genera of Lebiini of New Guinea* and *Notes* under the following species.

Description. None required here.

Type species. Calleida pacifica Erichson of Australia (original designation).

Generic distribution. Heretofore known only from **Australia** including **Tasmania** and other close-lying islands; range now extended to **New Guinea**.

Notes. The Australian members of this genus live on tree trunks, I think.

Trigonothops lateralis n. sp.

Description. Form as in Figure 111; entirely (slightly reddish) yellow except for a wide brownish black stripe along the

outer side of each elytron (not including the reflexed margin) from humerus nearly to apex; not pubescent; moderately shining, with lightly impressed reticulate microsculpture isodiametric on front, slightly transverse on disc of pronotum and elytra. *Head* 0.86 width prothorax; 2 setae over each eye; front slightly impressed at middle, longitudinally impressed each side anteriorly; clypeus broadly rounded anteriorly (a small notch at middle may be abnormal), 1-setose each side; labrum transverse, irregularly broadly rounded in front, 6-setose; mentum with triangular tooth; ligula thickened, blunt, probably originally setose but setae broken short; paraglossae *c.* long as or slightly shorter than ligula, attached except at extreme apex, apparently without setae; maxillary palpi not or not much thickened, labial palpi with apical segments wider, not quite ½ wide as long, narrowly obliquely truncate. *Prothorax* subcordate but with broad base; width/length 1.44; base/apex 1.54; base broadly briefly lobed, margined; apex broadly emarginate, not distinctly margined at middle; side margins broad and reflexed especially toward base, each with 2 seta-bearing punctures, at basal angle and *c.* ⅓ from apex; disc with middle line deep, transverse impressions less well defined, baso-lateral foveae deep but not sharply limited; surface of disc with faint weak transverse strigulation, almost impunctate. *Elytra*: width elytra/prothorax 1.94; humeri slightly narrowed and rounded but not obliterated; reflexed lateral margins moderate; apices slightly obliquely truncate and very slightly sinuate, with outer angles broadly and sutural angles narrowly rounded; striae entire, moderately impressed, faintly irregular but not distinctly punctulate; intervals slightly convex, not distinctly punctate except 3rd with 2 small dorsal punctures, on inner edge just before middle and behind apical ¼ (subbasal puncture, if present, minute and not surely detectable). *Inner wings* full. *Legs*: hind tarsi missing; middle tarsi with 4th segments very deeply emarginate, with lobes much longer than ½ length of segment; claws (of front tarsi) each with 4 long teeth and apparently an additional very short tooth toward base; 5th segments (of front tarsi) with accessory setae. *Secondary sexual characters*: ♂ unknown; ♀ with last ventral segment subtruncate, slightly subsinuate at middle, with 2 setae near apex each side. *Measurements*: length 6.7; width 2.9 mm.

Type. Holotype ♀ (Leiden Mus.) from Wissel Lakes, central **West N. G.,** Arabu Camp, 1800 m, Oct. 12, 1939 (H. Boschma); the type is unique.

Notes. Even without the ♂ I am reasonably sure that this insect is a *Trigonothops*. It agrees with *T. pacificus* Erichson in form and in significant characters including the mouthparts (see preceding *Description*) and position of the dorsal elytral punctures. Moreover, the elytral color pattern is derivable from that of *Trigonothops pacificus*: lateral stripes like those of *lateralis* would be left if the inner portion of the dark elytral pattern of *pacificus* were erased.

This individual had lost most of its legs before I received it. Only the left front leg is still complete, and the left middle leg is complete except for the 5th segment. But these are enough to show essential characters, and the specimen is in good condition otherwise.

Genus *NOTOTARUS* Chaudoir

Chaudoir 1875, Bull. Soc. Nat. Moscow 49, Part 2, p. 19.
Sloane 1898, Proc. Linnean Soc. New South Wales 23, p. 494.

Diagnosis. As *Anomotarus* (following genus) but side pieces of metasternum short, scarcely longer than wide; and (in the New Guinean species) genae short-setulose; antennae with segments 2 and 3 more or less pubescent; tarsi pubescent (sparsely short-pilose) above; ♂ middle tibiae not modified.

Description. See *Notes* (below) and detailed *Description* of following species.

Type species. Nototarus australis Chaudoir, of Western Australia.

Generic distribution. Previously known only from **Australia**; range now extended to **New Guinea**.

Notes. Chaudoir described *Nototarus* as without a mentum tooth, and the tooth is certainly difficult to see in some Australian species, but it may be depigmented rather than absent. The characters and generic classification of this group of Carabidae need further study, which will have to be based on the Australian rather than New Guinean forms. Some Australian species assigned to *Nototarus* by Sloane do have the mentum toothed, and the single New Guinean species (below) is evidently closely related to some of them.

Nototarus papua n. sp.

Description. Form as in Figure 112; brownish black, humeri broadly paler brown, appendages brownish testaceous; reticulate microsculpture lightly impressed, *c.* isodiametric on front, slightly transverse on pronotum, more irregular on elytra, and surface irregularly rather sparsely punctulate. *Head* 0.81 and 0.80 width prothorax; eyes moderately prominent, genae rounded-oblique, short-setulose; 2 setae over each eye; front longitudinally rugulose each side; clypeus slightly emarginate-truncate, 1-setose each side; labrum wide, slightly emarginate-truncate, 6-setose; mandibles rather short, curved; antennae moderate, pubescent from middle of 3rd segments; mentum with long, narrowly rounded tooth; ligula 2-setose, paraglossae attached, equal in length, wide, not setose; maxillary palpi slender, labial palpi with apical segments wide. *Prothorax* cordate, short-lobed at base; width/length 1.31 and 1.30; base/apex 0.88 and 0.92; margins narrow, each with seta at basal angle and *c.* ¼ from apex; basal and apical marginal lines interrupted at middle; disc with middle line coarse, almost entire, transverse impressions almost obsolete. *Elytra* short, narrowed toward base, connate; width elytra/prothorax 1.49 and 1.51; striae entire, impressed, faintly punctulate; intervals convex especially toward base, 3rd 2-punctate, the punctures near middle of length and *c.* ¼ from apex. *Inner wings* vestigial. *Lower surface* not obviously pubescent (in part with very short inconspicuous sparse pubescence). *Legs* moderate; tarsi short-pilose above; 4th segments middle and hind tarsi slightly emarginate; 5th segments with long accessory setae; claws each with 3 or 4 teeth. *Secondary sexual characters*: labial palpi with apical segments wider in ♂ (truncate apex wider than length of inner edge), narrower in ♀ (truncate apex narrower than inner edge); ♂ front tarsi slightly (scarcely) dilated, 3 segments 2-seriately squamulose; ♂ middle tarsi not squamulose; ♂ middle tibiae not modified; ♂ with 1, ♀ 2 seta-bearing punctures each side last ventral segment. *Measurements*: length 4.6–5.3; width 1.9–2.3 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,491) and 20 paratypes all from Dobodura, **Papua**, Mar.–July 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. This is the only *Nototarus* thus far found in New Guinea. It may be related to *N. morosus* Sloane of Port Darwin, Australia, but has the prothorax evidently more narrowed posteriorly, with sinuate sides. Other, apparently related, undescribed species occur in North Queensland.

This species is one of the very few strictly flightless Carabidae found at low altitudes in New Guinea. Most or all of my specimens were, I think, taken in flood debris from the floor of rain forest. The rain-forest-floor habitat and the insect's flightlessness perhaps explain why other collectors have not found it.

Genus *ANOMOTARUS* Chaudoir

Chaudoir 1875, Bull. Soc. Nat. Moscow 49, Part 2, p. 48.

Sloane 1898, Proc. Linnean Soc. New South Wales 23, p. 494.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1493 (see for additional references, synonymy, and list of species).
Jedlicka 1963, Ent. Abhandlungen 28, pp. 300, 450.

Diagnosis. See *Key to Genera of Lebiini of New Guinea.*

Description (based on New Guinean species only). Form as in Figures 113–117; small, slender, depressed; elytra usually (not always) with characteristic pale marks; not pubescent. *Head*: eyes moderately prominent, genae rounded, more or less prominent (usually less so than eyes); 2 setae over each eye; antennae moderate, pubescent from 4th segment (3rd segment with only usual apical setae); clypeus transverse with rounded angles, 1-setose each side; labrum transverse, broadly emarginate, 6-setose; mandibles short, strongly curved; mentum with long tooth; ligula rather broad, 2-setose, paraglossae attached and *c.* equal in length, wide, not setose; maxillary palpi moderate, not widened; labial palpi with apical segments widened. *Prothorax* cordate, with base briefly lobed; side margins moderate or narrow, with setae at basal angle and *c.* ¼ or ⅓ from apex; disc with impressed middle line and less distinct transverse impressions. *Elytra* with apices simple; striae entire, not distinctly punctate; 3rd intervals 2-punctate, with punctures near or before middle and *c.* ¼ from apex; 8th intervals usually finely carinate on inner edge near base (carinae sometimes so fine as to be scarcely detectable). *Inner wings* full. *Lower surface* not extensively pubescent; side pieces of metasternum long. *Legs* slender; tarsi not pubescent above; 4th segments middle and hind tarsi slightly emarginate; 5th segment with long accessory setae; claws with *c.* 4 or 5 teeth. *Secondary sexual characters*: ♂ front tarsi slightly (scarcely) dilated, 3 segments 2-seriately squamulose; last segment ♂ labial palpus wider (truncate outer edge almost as long as inner side), of ♀ less wide; ♂ middle tarsi without squamae; ♂ middle tibiae with inner edge tuberculate-serrate (cf. *Demetrida*), with *c.* 3 or 4 low tubercles in row toward apex (in all New Guinean species of which the ♂ is known); ♂ with 1, ♀ 2 setae each side last ventral segment.

Type species. Anomotarus olivaceus Chaudoir, from Melbourne, Australia.

Generic distribution. Southern **Asia** (**Ceylon**, **India**, **Japan**, etc.) to **Australia** and **Tasmania**, and **New Caledonia**.

Notes. Although I recognize 8 (closely interallied) species of *Anomotarus* in **New Guinea**, material is scanty and almost nothing is known of their habits. I think most of them probably live among dead leaves on the ground in rain forest. A few specimens have been taken at light.

KEY TO SPECIES OF *ANOMOTARUS* OF NEW GUINEA

1. Each elytron *either* with *longitudinal* post-humeral stripe (outside 4th stria) and subapical-sutural spot pale, *or* with only the subapical spot, *or* unmarked 2
– Each elytron with a more or less incomplete *oblique or transverse* (not longitudinal) spot or band before middle and usually (not always) a subapical-sutural spot pale 5
2. Very slender (prothoracic width/length 1.15); subsericeous black, unmarked (p. 188) ..... *gressitti*
– Less slender (prothoracic width/length *c.* 1.20 or more); elytra with at least subapical-sutural pale spot(s) 3
3. Elytra with distinct post-humeral stripes (as well as subapical-sutural spot(s)) pale; prothorax less narrowed basally (base/apex *c.* 1.10 or more) (p. 188) ..... (*stigmula*)
– Post-humeral stripes indistinct or absent (subapical-sutural spot(s) distinct); prothorax more narrowed basally (base/apex 1.05 or less) 4
4. Brown, with subapical-sutural spots small and separated; prothorax narrowed (width/length 1.22 and 1.23); elytra more narrowed toward base (p. 188) ..... *wallacei*
– Black, with subapical-sutural spots united in conspicuous square plagia; prothorax wider (width/length 1.35); elytra less narrowed toward base (Fig. 115) (p. 189) ..... *plagifer*
5. Each elytron with transverse-oval pale spot before middle but without subapical spot (Fig. 114) (p. 189) ..... *ocellatus*

– Elytra with anterior and posterior pale spots 6
6. Elytra with an almost strictly transverse, regular, *c.* entire pale fascia before middle (as well as an incomplete subapical fascia); elytral margins bicolored; femora bicolored; surface in part sericeous; length 5.5–6.0 mm (p. 189) ..... *transversus*
– Anterior elytral marks more oblique and/or more irregular and/or more interrupted; elytral margin usually entirely translucent-testaceous; femora not bicolored; surface not or not so strongly sericeous, more shining; size usually smaller 7
7. Anterior elytral marks usually more oblique; femora pale (Moluccas and western and central New Guinea) (p. 190) ..... *ornatus*
– Anterior elytral marks more nearly transverse; femora darker (central and eastern New Guinea) 8
8. Prothorax wider (width/length 1.38 and 1.41); markings wide (p. 190) ..... *fuscipes*
– Prothorax narrower (width/length 1.27); markings narrower (Fig. 117) (see also *Description*) (p. 191) ..... *wau*

Anomotarus gressitti n. sp.

Description. With characters of genus; form as in Figure 113; slender; black, not marked, but margins of prothorax and especially of elytra more or less pale translucent; surface dull, closely punctulate and microreticulate, elytra subalutaceous; legs testaceous, antennae and mouthparts brownish testaceous. *Head* 0.80 width prothorax. *Prothorax*: width/length 1.15; base/apex 1.00. *Elytra*: width elytra/prothorax 1.73; striae lightly impressed, faintly punctulate; intervals *c.* flat, 6th, 7th, and 8th with inner edges finely carinate for increasing distances from base. *Measurements*: length *c.* 5.0; width 1.9 mm.

Type. Holotype ♀ (Bishop Mus.), from Maprik, **N-E. N. G.,** 160 m, Oct. 14, 1957 (Gressitt); the type is unique.

Notes. The slender form and dull black color, without markings, should make this species easy to recognize.

(*Anomotarus stigmula* (Chaudoir))

Chaudoir 1852, Bull. Soc. Nat. Moscow 25, Part 1, p. 57 (*Cymindis*).
Andrewes 1930, Cat. Indian Insects 18, Carabidae, p. 28.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1493 (see for synonymy and additional references).
Louwerens 1953, Verhandlungen Naturforschenden Gesellschaft Basel 64, p. 316.
Jedlicka 1963, Ent. Abhandlungen 28, p. 451.

Description. With characters of genus; form, including elytra, elongate; brown, elytra each with longitudinal humeral mark (outside 4th stria) and variable apical mark pale; appendages including femora testaceous; rather shining, but surface finely microreticulate and sparsely inconspicuously punctulate. *Head* 0.84 and 0.86 width prothorax. *Prothorax*: width/length 1.24 and 1.29; base/apex 1.14 and 1.11; margins moderate, with basal angles well defined, *c.* right or obtuse (not acute). *Elytra* long; width elytra/prothorax 1.65 and 1.69; striae moderately impressed, not distinctly punctulate. *Measurements*: length *c.* 4.7–5.3; width *c.* 1.9–2.1 mm.

Type. From Simla(h), northern **India**; now in Oberthür Coll., Paris Mus. (not seen).

Occurrence in New Guinea. Doubtful; see following *Notes.*

Measured specimens. A ♂ from Coimbatore, South India, and ♀ from Lawa, Malita, Davao Prov., Mindanao, Philippine Islands (both specimens M.C.Z.).

Notes. This species is now recorded over a very wide area, from **SE. Asia** including **Ceylon** and **Japan** to **Timor** and **New Caledonia**, but apparently not Australia. New Guinea is included in the species' range by Andrewes and Csiki, but I have found no detailed record of its occurrence there. I suspect its supposed occurrence is erroneous, based on the old specimens in the British Museum described below as *wallacei.* I have not seen true *stigmula* from New Guinea.

Anomotarus wallacei n. sp.

Description. With characters of genus; form shorter than usual in genus; brownish piceous, elytra each with faint paler area behind humerus (corresponding to post-

humeral spot of *stigmula*), a small testaceous spot on intervals 2 and 3 just before apex, and lateral margin narrowly brownish testaceous; appendages brownish testaceous; surface (in part) moderately shining, with reticulate microsculpture lightly impressed and punctulation rather sparse. *Head* 0.84 and 0.89 width prothorax. *Prothorax*: width/length 1.23 and 1.22; base/apex 1.00 and 1.05. *Elytra* shorter and more narrowed basally than usual in genus; width elytra/prothorax 1.69 and 1.74; striae moderately impressed, not distinctly punctulate. *Inner wings* apparently fully developed in spite of narrowing of humeri. *Measurements*: length 4.3–4.9; width 1.8–2.0 mm.

Types. Holotype ♀ (British Mus.) and 1 ♀ paratype (M.C.Z., Type No. 31,492) both from Dory, **West N. G.** (presumably collected by Wallace); ♂ unknown.

Notes. This species is very close to *stigmula* (above) but has elytra shorter, more narrowed at base, and with markings reduced, and the prothorax coaptively narrowed at base, as the ratio base/apex shows. It may prove to be a geographic subspecies of *stigmula*. It may prove not to be from New Guinea (because the "Dory" locality is always dubious), but it seems not to be known anywhere else.

Anomotarus plagifer n. sp.

Description. With characters of genus; form as in Figure 115; brownish black, elytra with conspicuous, common, square spot just before apex pale and lateral margins slightly pale translucent; appendages testaceous; surface rather shining but lightly microreticulate and faintly sparsely punctulate. *Head* 0.88 width prothorax. *Prothorax* strongly cordate (more so than in *stigmula*); width/length 1.35; base/apex 1.02; posterior angles abruptly right-acute. *Elytra* of moderate length, slightly narrowed toward base (less than in *wallacei*); width elytra/prothorax 1.57; striae well impressed, not distinctly punctulate. *Measurements*: length *c.* 4.9; width *c.* 2.0 mm.

Type. Holotype ♂ (Bishop Mus.) from Port Moresby, **Papua**, May 20, 1956 (Gressitt), taken in light trap; the type is unique.

Notes. As compared with *stigmula*, *plagifer* is slightly broader, with more cordate prothorax, and is darker in color, without basal but with more conspicuous subapical elytral marks.

Anomotarus ocellatus n. sp.

Description. With characters of genus; form as in Figure 114; black (bluish black in some lights), each elytron with transverse-oval pale spot before middle between striae 1 and 7; appendages brownish testaceous, femora darker brown; shining, reticulate microsculpture light (faint on part of pronotal disc) and punctulation very fine, faint, sparse. *Head* 0.85 width prothorax. *Prothorax* cordate; width/length 1.31; base/apex 0.96; side margins narrower than usual. *Elytra*: width elytra/prothorax 1.59; striae moderately impressed. *Measurements*: length 4.4; width 1.8 mm.

Type. Holotype ♀ (Louwerens Coll., eventually to Leiden Mus.) from Sorong "Kpg. Roefci," **West N. G.,** July 8–Aug. 14, 1948 (M. A. Lieftinck); the type is unique.

Notes. The small size, relatively shining surface, and unique markings distinguish this species.

Anomotarus transversus n. sp.

Description. With characters of genus; form as in Figure 116; large, with wide-cordate prothorax; dull aeneous black, elytra more alutaceous, with *c.* entire cross-band before middle and incomplete transverse mark before apex pale; elytral margins bicolored, pale at transverse fascia, dusky elsewhere; femora bicolored, dark with pale apices; appendages otherwise brownish testaceous, antennae slightly darker distally; surface closely microreticulate, sparsely punctulate. *Head* 0.72 and 0.76 width prothorax. *Prothorax*: width/length 1.46 and 1.43; base/apex 1.08 and 1.03; posterior angles abruptly acute. *Elytra*:

width elytra/prothorax 1.46 and 1.44; striae fine, lightly impressed, not punctulate; intervals almost flat. *Measurements*: length *c.* 5.5–6.0; width 2.1–2.3 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,493) and 1 ♀ paratype both from Dobodura, **Papua**, Mar.–July 1944 (Darlington); 3 paratypes, Popondetta, **Papua**, 60 m, Aug. 30–31, Sept. 1–4, 1963 (Sedlacek), light trap.

Notes. The large size, dull partly alutaceous surface, and color pattern, especially the evenly transverse anterior elytral fascia, characterize this species.

Anomotarus ornatus Louwerens

Louwerens 1956, Treubia 23, p. 237.

Description. With characters of genus; form *c.* as of following species (*fuscipes*); piceous black, elytra each with broad pale mark before middle, this mark being irregularly transverse-oblique with outer-anterior corner extended toward and sometimes reaching humerus, and elytra also with subapical-sutural spot pale and lateral margins entirely pale; legs entirely testaceous; antennae brownish testaceous; surface shining, reticulate microsculpture light on head, faint on disc of pronotum, more distinct on elytra. *Head* 0.86, 0.85, and 0.83 width prothorax. *Prothorax* cordate; width/length 1.43, 1.36, and 1.33; base/apex 1.08, 1.07, and 1.08; posterior angles abruptly right or acute. *Elytra*: width elytra/prothorax 1.72, 1.77, and 1.77; striae moderately impressed, not punctulate. *Measurements*: length 5.1–5.8; width 2.2–2.4 mm.

Types. From **Obi Is.** (Laiwui, 0–200 m, Sept.–Oct. 1953, A. M. R. Wegner); holotype in Leiden Mus. (not seen).

Occurrence in New Guinea. **West N. G.**: 8, Cyclops Mts., Sabron, Camp 2, 2000 ft. (610 m), July 1936 (Cheesman); 4, vic. Hollandia (various collectors); 1, Kebar Vy. W. of Manokwari, 550 m, Jan. 4–31, 1962 (S. & L. Quate, Bishop Mus.), in light trap; 1, Sansapor, Aug. 1944 (Darlington).

Measured specimens. A pair (♂ ♀) from Cyclops Mts. and a ♀ paratype from Obi Is.; figures given in this order.

Notes. See under the following species (*fuscipes*).

Anomotarus fuscipes n. sp.

Description. With characters of genus; form average; black (slightly brownish or aeneous), elytra each with slightly oblique transverse fascia just before middle and subapical-sutural spot pale and lateral margins entirely pale brownish translucent; femora brown (not distinctly bicolored), tibiae and tarsi paler; antennae brown; upper surface rather shining, reticulate microsculpture light especially on disc of pronotum. *Head* 0.76 and 0.77 width prothorax. *Prothorax* cordate; width/length 1.38 and 1.41; base/apex 1.17 and 1.09; basal angles abruptly right or acute. *Elytra*: width elytra/prothorax 1.66 and 1.59; striae moderately impressed, not punctulate. *Measurements*: length 4.1–5.5; width 1.9–2.3 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,494) from Dobodura, **Papua**, Mar.–July 1944 (Darlington); and paratypes as follows. **Papua**: 1, Karema, Brown R., Mar. 8–11, 1955 (E. O. Wilson, M.C.Z.), taken in lowland rain forest; 2, Mt. Riu, Sudest Is., 250–350 m, "No. 10," Sept. 3, 5, 1956 (L. J. Brass, A.M.N.H.); 1, Abaleti, Rossel Is., 0–50 m, "No. 12," Oct. 9, 1956 (Brass, A.M.N.H.). **N-E. N. G.**: 1, vic. Nadzab, July 1944 (Darlington); 1, same locality, May 20–22, 1955 (E. O. Wilson, M.C.Z.), in dry evergreen forest; 1, Erima, Astrolabe Bay, 1896 (Biró); 1, Stephansort, Astrolabe Bay, 1898 (Biró). **West N. G.**: 4, Hollandia, Nov. 21, 1944; May 1945; May 4, 1947 (Hoogstraal, M.C.Z.); 1, same locality, May 1945 (Malkin, U.S.N.M.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Hollandia.

Notes. This species is very close to the preceding (*ornatus*), but is distinguished by brown rather than testaceous femora and by more transverse anterior elytral

fascia which approaches the humeri less closely, although this mark varies somewhat in both species. *A. fuscipes* occupies approximately the eastern half of New Guinea, *ornatus* the western half and the Moluccas, but their ranges are not strictly allopatric, since both occur in the vicinity of Hollandia.

Anomotarus wau n. sp.

Description. With characters of genus; form as in Figure 117; black, elytra each with oblique fascia before middle and with common subapical-sutural spot testaceous and margins brownish translucent; appendages brownish testaceous with femora darker; shining, reticulate microsculpture and fine sparse punctulation present but light especially on pronotum. *Head* 0.84 width prothorax. *Prothorax* narrow-cordate, with relatively narrow margins; width/length 1.27; base/apex 1.05; sides more oblique posteriorly (less broadly rounded) than in *fuscipes*, with posterior angles abruptly *c.* right. *Elytra*: width elytra/prothorax 1.67; striae well impressed, not punctulate. *Measurements*: length 5.1; width 2.0 mm.

Type. Holotype ♀ (Bishop Mus.) from Wau, Morobe Dist., **N-E. N. G.,** 1200 m, July 5, 1961 (Sedlaceks), taken in light trap; the type is unique.

Notes. Although this may be only a form of the preceding species (*fuscipes*), it has a relatively narrow prothorax and reduced elytral fasciae and will probably prove to be worth distinguishing. More material from more localities is needed to show whether it is a species or a geographic subspecies.

Tribe PENTAGONICINI

Pentagonicidae Auct. including Jeannel 1949, Coléop. Carabiques de la Région Malgache, Part 3, p. 767.
Jeannel 1942, Faune de France, Coléop. Carabiques, Part 2, p. 1017, footnote.
Pentagonicinae Basilewsky 1953, Exploration Parc National l'Upemba, Fasc. 10, p. 183.
Scopodini Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1500 (see for synonymy and additional references).
Jedlicka 1963, Ent. Abhandlungen 28, p. 505.

The beetles of this tribe resemble Lebiini but (according to Jeannel 1949) are not related to them. Pentagonicini can usually be recognized at a glance by form, and the tribe is defined by technical characters including obliteration of the suture that, in most Carabidae, separates the mentum from the base of the head posteriorly. However, this suture is still indicated in *Parascopodes.*

This tribe consists of four genera. One, *Pentagonica*, occurs in all the warm regions of the world. One, *Parascopodes* (described below), consists of a single species that occurs in both eastern New Guinea and northeastern Australia. One, *Actenonyx* (1 species), is confined to New Zealand. And the fourth genus, *Scopodes*, is best represented in Australia and extends to New Zealand and to mountains on New Guinea and on Java. Ecologically, *Pentagonica* alone of these 4 genera is primarily arboreal, occurring especially in masses of vines and other vegetation near the ground, although some species are found among dead leaves on the ground. *Parascopodes cyaneus* occurs, in my limited experience, in grass or on the ground under grass (I am not sure which). The New Zealand genus (*Actenonyx*) is probably ground-living. And *Scopodes* is ground-living but some species occur on logs or tree trunks.

The distribution of genera of Pentagonicini suggests two possible geographic histories. The tribe may once have been better represented in other parts of the world and may have withdrawn (or may be withdrawing) into the Australian Region. Or the tribe may have originated in Australia and diversified there, and *Pentagonica* may have spread from there over the rest of the world, its spread perhaps facilitated by its invasion of arboreal habitats in which flight and dispersal may have been

favored. The very wide distributions of some species of *Pentagonica* show that the insects do disperse readily. Of course, there is a third possibility, that the geographic history of the tribe has been more complex than can be guessed from present distributions of genera and cannot now be deciphered at all. Nevertheless, the history of the tribe is worth guessing about. Its distribution may become more significant if other Carabidae or other animals are found to have similar geographic patterns. There is, for example, a suggestive general similarity between the distributions of this tribe of carabid beetles and of the parrots, which are most diverse in the Australian Region with one of the several Australian subfamilies spread over the warmer parts of the world (Darlington, *Zoogeography*, Wiley, 1957, pp. 271–272, 300–301, fig. 34).

KEY TO GENERA OF PENTAGONICINI OF NEW GUINEA

1. Form *Lebia*-like, with eyes only normally prominent (Fig. 118) (p. 192) ... *Pentagonica*
– Form more compact, with eyes larger and more abruptly prominent (Figs. 120, 121) ... 2
2. Ligula normal, not much swollen, much shorter than paraglossae; ♂ front tarsi 2-seriately squamulose; elytral striae and intervals regular, without conspicuous foveae (p. 195) ... *Parascopodes*
– Ligula swollen, club-like, as long as or longer than paraglossae; ♂ front tarsi with soles of densely packed slender squamae; elytral striae and intervals usually more or less irregular, 3rd intervals usually with conspicuous foveae (p. 197) ... *Scopodes*

Genus *PENTAGONICA* Schmidt-Goebel

Schmidt-Goebel 1846, Faunula Coleop. Birmaniae, p. 47.

Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1500 (see for additional references, synonymy, and list of species).

Diagnosis. Immediately recognizable by form (Fig. 118) and tribal characters.

Description. None required here.

Type species. Pentagonica ruficollis Schmidt-Goebel (below).

Generic distribution. All warm regions of the **world**.

Notes. The members of this genus are winged, active, and apparently diurnal. They usually live in dense vegetation within a few feet of the ground, or sometimes in leaf litter on the ground. Specific characters in the genus are few, principally slight differences of form, microsculpture, and color pattern. There is some individual variation, including apparent dimorphism of color in some cases. And understanding of the species is made more difficult by the very wide distributions of some of them.

Because the prothorax has no distinct anterior angles, the ratio base/apex is omitted in the following specific descriptions.

KEY TO SPECIES OF *PENTAGONICA* OF NEW GUINEA

1. Prothorax strongly pedunculate; (bicolored, dark with prothorax red; elytral striae punctulate; size small, length 3–3.8 mm) (p. 192) ... *pallipes*
– Prothorax less strongly pedunculate; size usually larger ... 2
2. Pronotum with lateral margins usually connected posteriorly by a weak transverse ridge that is not quite basal; reticulate microsculpture of elytra often somewhat transverse; (color above uniformly dark or with prothorax red; length *c.* 3.5–4.5 mm) (p. 193) ... *blanda*
– Pronotum with lateral margins connected posteriorly by a fine ridge that reaches extreme base; elytral microreticulation usually *c.* isodiametric; size larger ... 3
3. Prothorax relatively narrower (width/length 1.57 and 1.65); (color dark, with lateral margins of prothorax and elytra strikingly pale) (p. 194) ... *erichsoni*
– Prothorax relatively wider (width/length 1.72–1.79) ... 4
4. Bicolored, dark with red prothorax (p. 194) ... *ruficollis*
– Not bicolored, entirely dark ... 5
5. Elytral striae clearly indicated (but scarcely impressed); antennae relatively dark and femora relatively pale (p. 194) ... *papua*
– Elytral striae virtually obsolete; antennae testaceous, femora relatively dark (p. 195) ... *estriata*

Pentagonica pallipes (Nietner)

Nietner 1856, J. Asiatic Soc. Bengal 25, p. 525 (*Elliotia*).

Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1502 (see for synonymy and additional references).

Jedlicka 1963, Ent. Abhandlungen 28, pp. 505, 507.

Description (for recognition only). Head and elytra dark, prothorax red. *Head* 0.91 and 0.93 width prothorax. *Prothorax* pedunculate; width/length 1.71 and 1.59. *Elytra*: width elytra/prothorax 1.62 and 1.79; striae punctate; reticulate microsculpture slightly irregular but scarcely transverse. *Measurements*: length 3.0–3.8; width *c.* 1.5–1.9 mm.

Type. From **Ceylon**; should be in Stettin Mus. (not seen).

Occurrence in New Guinea. Nineteen specimens from all 3 political divisions of **New Guinea**; most from low altitudes (including Oro Bay near Dobodura) but 2 at 1200 m at Wau. One specimen (from Wau) is labeled as taken at light.

Measured specimens. A ♂ from Hollandia and ♀ from Port Moresby.

Notes. The known range of this relatively distinct species is from **Ceylon**, the **Malay Pen.,** etc., to the **Philippines**, **New Guinea**, **New Britain**, and mid-peninsular Cape York, **Australia** (collected by me in 1958).

Pentagonica blanda Andrewes

Andrewes 1929, Tijdschrift voor Ent. 72, pp. 315, 339.
?*luzoensis* Jedlicka 1934, Sbornik Ent. Mus. Prague 12, p. 123.
?*philippinensis* Jedlicka 1934, Sbornik Ent. Mus. Prague 12, p. 124.
?*bottcheri* Jedlicka 1935, Acta Soc. Ent. Czechoslovakia 32, p. 140.
?*euryodes* Andrewes 1938, Ann. Mag. Nat. Hist. (11) 1, p. 207.
?*quadratipennis* Louwerens 1956, Treubia 23, p. 236.

Description (for recognition only). Form (Fig. 118) broad; color above *either* entirely dark *or* dark with red or reddish prothorax; antennae brown or testaceous; legs pale, often with darker femora. *Head* 0.77 and 0.74 width prothorax. *Prothorax*: width/length 1.83 and 1.80; lateral margins usually connected by a poorly defined (sometimes vague) transverse *pre*basal ridge. *Elytra*: width elytra/prothorax 1.51 and 1.54; sutural angles usually blunted or narrowly rounded but sometimes denticulate; striae lightly impressed, usually finely punctulate (but variable); reticulate microsculpture often ± transverse. *Measurements*: length *c.* 3.5–4.5; width *c.* 1.6–1.8 mm.

Types. Of *blanda*, from **Sumatra**, in British Mus. (seen); of Jedlicka's species, from the **Philippines**, types of *luzoensis* and *philippinensis* in Jedlicka Coll. (not seen), of *bottcheri*, in British Mus. (seen); of *euryodes*, from **Java**, in British Mus. (seen); of *quadratipennis*, from Halmahera, **Moluccas**, in Leiden Mus. (not seen).

Occurrence in New Guinea. Very common throughout **New Guinea**: *c.* 130 specimens (about half from Dobodura), most at low altitudes but a few up to 2500 m (at 1200 m at Wau).

Measured specimens. A pair (♂ ♀) from Dobodura.

Notes. I am not ready to synonymize the names listed above under *blanda*, but I suggest that they *may* all prove to apply to a single variable species or to members of a group of very closely interrelated species that ranges from **SE. Asia** across the **Malay Archipelago** to **NE. Australia**. This species or species group varies strikingly in color pattern (individuals unicolored or bicolored) and to some extent in proportions, size, degree of paleness of margins and appendages, and distinctness of punctures of elytral striae. Most individuals from New Guinea are entirely dark above, but 3 from Finschhafen, N-E. N. G., and 8 from Hollandia, West N. G., have the prothorax red. These superficially resemble *ruficollis* (second following species), but have different prothoracic bases, usually rounded sutural angles, and ± transverse elytral microsculpture. Except for the red prothorax, these individuals do not seem to differ from specimens with dark prothorax taken at the same localities. At these localities the species is apparently dimorphic in color of prothorax. However, at some other localities intermediates oc-

cur: 4 examples that I have from Sansapor (Vogelkop), West N. G., have the prothorax paler than head and elytra but reddish brown rather than clear red. Obviously this species or group of species requires further study, of material from outside as well as inside New Guinea, before its variation can be understood.

Most of the many specimens that I collected in New Guinea were taken by day, by sweeping low vegetation. However, a few individuals, including both color forms at Finschhafen, are from light-trap material and evidently flew to light at night.

I collected numerous dark (not bicolored) specimens apparently of this species at several localities in North Queensland in 1957–1958. The species seems not to have received a name in Australia.

Pentagonica erichsoni Schmidt-Goebel

Schmidt-Goebel 1846, Faunula Coleop. Birmaniae, p. 48.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1501 (see for synonymy and additional references).
Jedlicka 1963, Ent. Abhandlungen 28, pp. 506, 511.

Description (for recognition only). Form of large *Pentagonica* with rather narrow prothorax; dull black, reflexed margins of prothorax and elytra very pale or translucent, legs testaceous, antennae brown. *Head* 0.85 and 0.84 width prothorax. *Prothorax*: width/length 1.57 and 1.65; margins posteriorly connected by a fine curved ridge across extreme base. *Elytra*: width elytra/prothorax 1.82 and 1.78; sutural angles usually denticulate; striae slightly impressed, vaguely or not distinctly punctate; elytral microreticulation *c.* isodiametric. *Measurements*: length *c.* 5.0–5.5; width *c.* 2.0–2.2 mm.

Type. From Burma; in Prague Mus. (not seen).

Occurrence in New Guinea. **Papua**: 1, Dobodura, Mar.–July 1944 (Darlington); 1, Woodlark Is. (Murua), Kulumadau Hill, Apr. 20–30, 1957 (W. W. Brandt, Bishop Mus.). **N-E. N. G.**: 1, Simbang, Huon Gulf, 1898 (Biró); 1, Wau, 1200 m, Sept. 15–30, 1962 (Sedlacek); 1, Wum, Upper Jimmi Vy., 840 m, July 16, 1955 (Gressitt).

Measured specimens. Two ♀♀, from Dobodura and Wum.

Notes. *P. erichsoni* ranges from **Ceylon** and **SE. Asia** to **New Guinea** and mid-peninsular Cape York, **Australia** (1 specimen, Rocky R., 1958, taken by myself).

Pentagonica ruficollis Schmidt-Goebel

Schmidt-Goebel 1846, Faunula Coleop. Birmaniae, p. 48.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1503.
Jedlicka 1963, Ent. Abhandlungen 28, p. 509.

Description (for recognition only). Form of large *Pentagonica*; black, prothorax red, appendages usually black or brown. *Head* 0.81 and 0.77 width prothorax. *Prothorax*: width/length 1.79 and 1.78. *Elytra*: width elytra/prothorax 1.59 and 1.61; sutural angles usually denticulate; striae very light or *c.* absent; microsculpture *c.* isodiametric. *Measurements*: length *c.* 5.0–5.7; width *c.* 2.0–2.3 mm.

Type. From **Burma**, should be in Prague Mus. (not seen).

Occurrence in New Guinea. Twenty-six specimens from **Papua**, **N-E. N. G.**, and **West N. G.**, at low altitudes and up to 1950 m.

Measured specimens. A pair (♂ ♀) from Dobodura, Papua.

Notes. The known range of *ruficollis* is from **SE. Asia** to **Australia**.

Pentagonica papua n. sp.

Description. Form (Fig. 119) of large, rather slender *Pentagonica*; entirely black or piceous except suture sometimes reddish, margins sometimes reddish but not contrastingly pale; femora brown, tibiae and tarsi testaceous; antennae brown with 1st segments darker brown; reticulate microsculpture isodiametric on head and pronotum, more irregular or slightly transverse on elytra. *Head* 0.78 and 0.78 width prothorax; labrum transverse, 6-setose ante-

riorly, the 4 inner setae much smaller than outer ones; mentum without tooth; ligula not much swollen, 2-setose; paraglossae slightly shorter than ligula and apparently attached to it. *Prothorax*: width/length 1.73 and 1.72; margins posteriorly connected by *basal* loop. *Elytra*: width elytra/prothorax 1.63 and 1.63; sutural angles usually narrowly rounded, not denticulate; striae very finely and lightly indicated, scarcely impressed, irregularly punctulate; 3rd intervals apparently usually with 3 minute, well spaced punctures but latter small, difficult to find, perhaps sometimes absent. *Secondary sexual characters*: ♂ front tarsi scarcely dilated but with slender squamae in 2 slightly irregular rows; ♂ with 1, ♀ 2 setae each side last ventral segment. *Measurements*: length 4.8–5.7; width 1.8–2.2 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,495) and 10 paratypes all from Dobodura, **Papua**, Mar.–July 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. The preceding *Description* gives all the characters that seem to me worth mentioning in this genus, in which the species are so similar to each other. The particular characters that separate this species from others in New Guinea are indicated in the *Key to Species*. The present new species is larger than *blanda*, relatively narrower, with different pronotal base and slightly different elytral microsculpture, as well as more lightly impressed elytral striae. As compared with *erichsoni*, *papua* has a wider prothorax, shallower elytral striae, and darker prothoracic and elytral margins. The closest relative of *papua* may be *ruficollis* (above), but the latter is bicolored and always (in the specimens before me) has the sutural angles subdenticulate or at least angulate, while *papua* is dark, with sutural angles usually blunted, rarely subdenticulate. The difference in sutural angles is not absolute but is enough to suggest that the color difference is specific.

Pentagonica estriata n. sp.

Description. Form of large *Pentagonica*; black or piceous, legs dark, antennae including basal segments pale; entire upper surface with *c.* isodiametric microsculpture, at most slightly transverse on elytra. *Head* 0.83 and 0.82 width prothorax; details of mouthparts as in *papua*. *Prothorax*: width/length 1.76 and 1.78; margins posteriorly connected by a *basal* loop. *Elytra*: width elytra/prothorax 1.71 and 1.74; sutural angles usually finely denticulate; striae effaced or at most faintly indicated; dorsal punctures, if present, minute, almost undetectable. *Secondary sexual characters* as in preceding species (*papua*). *Measurements*: length 4.9–6.2; width 2.1–2.6 mm.

Types. Holotype ♂ (Bishop Mus.) and 1 ♀ paratype from Eliptamin Vy., **N-E. N. G.,** 1200–1350 m, June 19–30, 1959 (W. W. Brandt); and additional paratypes as follows. **N-E. N. G.**: 1, Eliptamin Vy., 1350–1665 m, June 23–30, 1959 (W. W. Brandt, Bishop Mus.); 1, Wau, Morobe Dist., 1200 m, Jan. 3–4, 1963 (Sedlacek); 1, "No. 14," Umi R., Markham Vy., 480 m, Nov. 11, 1959 (L. J. Brass, A.M.N.H.). **West N. G.**: 1, Hollandia, Dec. 15, 1944 (Hoogstraal, M.C.Z.); 1, Star Mts., Sibil Vy., 1245 m, Oct. 18–Nov. 8, 1961 (S. & L. Quate, Bishop Mus.), taken in Malaise trap; 3, Japen Is., Mt. Baduri, 1000 ft. (*c.* 300 m), Aug. 1938 (Cheesman). Some paratypes in M.C.Z., Type No. 31,496.

Measured specimens. The ♂ holotype and 1 ♀ paratype from Eliptamin Vy.

Notes. P. estriata is the same size and nearly the same form as *papua* but slightly broader, with differently colored appendages, usually denticulate rather than blunted sutural angles, and virtually no elytral striae. The latter character, as well as color, differentiates *estriata* from *ruficollis*.

PARASCOPODES n. gen.

Diagnosis. Form *Scopodes*-like. *Head*: eyes enormous; labrum transverse-quadrate, 6-setose; mentum with basal suture in-

dicated, and with broad, short, more or less emarginate tooth; ligula not swollen, 2-setose; paraglossae much longer than ligula, with apices narrowly rounded. *Prothorax* weakly subpedunculate, angulate at sides, 2-setose each side. *Elytra* with entire, regular striae; 3rd intervals very inconspicuously 3-punctate. *Secondary sexual characters*: ♂ front tarsi narrow, 2-seriately squamulose below; ♂ copulatory organs as figured (Fig. 178); most other characters as in *Scopodes* (below).

Description. See *Diagnosis* (above) and *Description* of the single species (below).

Type species. Scopodes cyaneus Sloane.

Generic distribution. As of the single known species: eastern **New Guinea** and North Queensland, **Australia**.

Notes. Although the *Scopodes*-like form and enormous eyes are striking specializations, the labrum, mentum, ligula, elytra, and perhaps the ♂ tarsi of *Parascopodes cyaneus* seem generalized within the tribe and suggest that the insect may be a superficially specialized relict of a primitive stock from which both *Pentagonica* and *Scopodes* may have evolved.

Parascopodes cyaneus (Sloane)

Scopodes cyaneus Sloane 1907, Proc. Linnean Soc. New South Wales 32, p. 380.

Description. With characters of genus; form as in Figure 120; color above blue, more or less purplish on elytra, below piceous; appendages testaceous, mouthparts in part browner; shining, reticulate microsculpture virtually absent on head, light, irregular, usually slightly transverse on pronotum and elytra. *Head* 1.36, 1.32, 1.31 width prothorax; 2 setae over each eye; front smooth at middle, with a deep groove each side. *Prothorax*: width/length 1.19, 1.16, 1.23; margins narrow, each with 2 setae on small projections; disc strongly convex; middle line and transverse impressions sharply impressed, latter irregularly subpunctate; surface of disc smooth except with faint transverse strigulation toward sides. *Elytra*: width elytra/prothorax 1.72, 1.72, 1.65; striae entire, regular, coarsely punctate; intervals regular, flat or slightly convex, 3rd with 3 very inconspicuous dorsal punctures (see *Notes*, below). *Inner wings* dimorphic: short in 1 ♂ from Dobodura, full in all other specimens. *Lower surface* sparsely pubescent; base of abdomen on each side (under bases of femora) with *c.* 6 parallel grooves that *may* form a stridulating organ. *Legs* slender; 4th hind-tarsal segments shallowly emarginate; 5th segments with accessory setae; claws simple. *Secondary sexual characters*: ♂ tarsi as described under genus; ♂ with 1, ♀ 2 setae each side last ventral segment. *Measurements*: length 3.7–4.0; width 1.4–1.6 mm.

Type. From Kuranda, North Queensland, **Australia**; should be in Sloane Coll., Canberra, but I was not able to find it there in 1957.

Occurrence in New Guinea. **Papua**: 3, Dobodura, Mar.–July 1944 (Darlington); 1, Misima Is. ("St. Aignan") (ex coll. E. C. Morrell, British Mus.). Also 1, "New Guinea, Sayer" (Sharp Coll., British Mus.).

Measured specimens. A pair (♂ ♀) from Dobodura and a ♀ from N. of Mareeba, Australia (see below); figures listed in this order.

Notes. Besides the specimens from New Guinea, I have 1 ♀ taken by myself N. of Mareeba (about 20 miles SW. of the type locality), North Queensland, Australia, Feb. 1958, in flooded grassland. I can find no significant difference between the New Guinean and Australian specimens, but of course I have not been able to compare ♂ characters.

In a footnote to the original description, Sloane says that he could find only 1 (fine) dorsal puncture on the elytra of the type. However, under a good stereoscopic microscope with good light, I find what appear to be 3 punctures nearly evenly spaced along the length of each 3rd interval in both New Guinean and Australian individuals.

The habitat of this species, in or under grass at low altitudes, is different from that of any *Scopodes* in New Guinea. *If* this insect is a relict of an ancestral stock from which *Pentagonica* and *Scopodes* have evolved, as I have suggested under the genus, it may still be in an ancestral habitat from which *Pentagonica* may have invaded low vegetation, and *Scopodes*, habitats on the ground.

Genus *SCOPODES* Erichson

Erichson 1842, Archiv für Naturgeschichte 8, Band 1, p. 123.

Sloane 1903, Proc. Linnean Soc. New South Wales 28, pp. 637–638 (key to Australian species).

Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1504 (see for additional references, synonymy, and list of species).

Diagnosis. Form (Fig. 121) characteristic, with eyes very large and sides of prothorax usually angulate; mentum not toothed; ligula swollen, club-like, longer than paraglossae, 2-setose; ♂ front tarsi with soles of numerous close-packed slender squamae not in 2 series. For additional diagnostic characters see under the tribe and *Key to Genera of Pentagonicini.*

Description. None required here, but note wings full or reduced or dimorphic in different Australian species, full in all New Guinean species except *altus*, in which reduced.

Type species. Scopodes boops Erichson, of southern Australia.

Generic distribution. **Australia**, **New Zealand**, **New Guinea**, **Java**; and 1 species (not seen by me) described from **New Caledonia**.

Notes. This genus divides into 2 groups. The typical group includes all the Australian and New Zealand species, 1 species (*altus*) at very high altitudes on the Snow Mts. in New Guinea, and 1 (*irregularis* Andrewes) on mountains in Java. The other New Guinean members of the genus form a distinct, endemic group of relatively compact, often brightly colored species occurring mostly at moderate altitudes in the mountains. These species can be arranged in what seems to be an evolutionary sequence involving change of form, loss of elytral striae, simplification and reduction of sculpture, and intensification of color, but the lines of evolution have probably been complex. In the last species of the *Key* (*adonis*, Fig. 123), which is at the end of the apparent evolutionary sequence, the *Scopodes* form is much modified (the prothorax being long and narrow and without lateral angulations, and the elytra being oval); the elytral striae and sculpture have almost disappeared, and the color is deep purple.

These beetles live in the ground or in logs. They are probably diurnal: most of them are winged, but they apparently do not come to light at night. Evelyn Cheesman, in *The Land of the Red Bird* (London, Herbert Joseph Ltd., no date, p. 134), says apparently of *Scopodes cheesmani* (which I describe below), "Other insects were very tiny violet beetles, which appeared from inside the log, out of one of its many passage ways, and ran about on the surface." This was between 3400 and 4500 ft. (*c.* 1380 m) altitude in the rain-forested Cyclops Mts.

In the following descriptions, the width of prothorax includes the tubercles. The frontal sulci are counted between the eyes just behind the anterior supraocular setae. The sculpture of the front of the head, especially of the clypeus, is variable, heavily impressed or almost obsolete in different individuals of single species from single localities, and I have therefore not described it in detail in most cases.

KEY TO SPECIES OF *SCOPODES* OF NEW GUINEA

1. Prothorax with 2 setae each side, the posterior on conspicuous dentiform processes; (depressed; elytra with *c.* complete striation indicated) (p. 198) ..... *altus*
– Prothorax with only 1 seta each side, *c.* ⅓ of prothoracic length from apex, without posterior-lateral setae or processes 2

2. Elytra with conspicuous irregular sericeous pattern *and* extensively but irregularly striate 3
– Elytra without conspicuous sericeous pattern 4
3. Color bronze, elytral foveae conspicuously blue, legs pale (p. 199) ..... *tafa*
– Color dark bronze or greenish, elytral foveae not conspicuously contrasting, legs dark (p. 199) ..... *chimbu*
4. Color usually bronze, never primarily bright blue or purple 5
– Color primarily blue or purple 7
5. Elytra with striae indicated at least anteriorly 6
– Elytra without striae (p. 201) ..... *simplex*
6. Extensively substriate (p. 200) ..... *wilsoni*
– Striae indicated only at base of elytra (p. 200) ..... *basalis*
7. Prothorax with lateral margins (p. 201) ..... *cheesmani*
– Prothorax without lateral margins (p. 201) ..... *adonis*

Scopodes altus n. sp.

Description. With characters of genus; form (Fig. 121) relatively depressed, with humeri narrowed; black, appendages dark; rather shining, but complexly sculptured as described below. *Head* 1.26 and 1.23 width prothorax; labrum long, strongly rounded, with 4 decurved setae anteriorly, the inner setae much shorter than the outer (setae sometimes broken off); front with *c.* 20 or more fine sulci, latter subparallel at sides and base but connected and partly transverse at middle of head; front anteriorly and clypeus and labrum more finely and closely longitudinally sculptured in ♂ ♂, sculpturing reduced in ♀ (see *Notes*). *Prothorax*: width/length 1.24 and 1.27; sides margined, each with 2 setae, at angulation *c.* ⅓ from apex and on conspicuous triangular process before base; disc with weak median longitudinal impression and strong subbasal and subapical transverse impressions; surface of disc covered with rather fine, complex, more or less anastomosing sculpture. *Elytra*: width elytra/prothorax 1.69 and — (elytra too spread to measure in ♀); striae indicated by undulations of the surface but not sharply defined, slightly irregular; intervals slightly convex, 3rd with 3 moderate foveae; elytral surface with rather light irregular reticulate microsculpture. *Inner wings* reduced to *c.* ½ length of elytra. *Measurements*: length *c.* 3.3–3.5; width *c.* 1.3 mm.

Types. Holotype ♂ (Leiden Mus.) from Scree Vy. Camp, Snow Mts., **West N. G.,** 3600 m, Sept. 19, 1938; 1 ♂ paratype (M.C.Z., Type No. 31,497) from same locality, 3800 m, Sept. 1938; 1 ♀ paratype (Leiden Mus.), from Lake Habbema, Snow Mts., 3250–3300 m, late July–Aug. 1938 (all specimens collected by Toxopeus).

Measured specimens. The ♂ holotype and ♀ paratype.

Notes. This species differs from all other *Scopodes* known from New Guinea in its depressed form and in possessing 2 pairs of lateral prothoracic setae. In these ways it resembles some Australian species including the type of the genus, *Scopodes boops* Erichson, but *altus* is more shining than *boops*, with better defined pronotal sculpture, and other minor differences of detail. *S. altus* resembles also *irregularis* Andrewes of Java but is black rather than aeneous, with elytra less narrowed anteriorly and more distinctly striate, as shown by comparison with a specimen of *irregularis* from "G. Tengger, Java, Drescher." Of the 3 species just discussed, the Australian *boops* has dimorphic wings; the New Guinean and Javan species, reduced ones; but they all are probably derived from a winged ancestor that dispersed by flight. The distribution of this group of *Scopodes* in the Malay Archipelago is comparable to that of *Mecyclothorax*, which also occurs primarily in Australia but is represented at very high altitudes on the Snow Mts. of New Guinea and on the mountains of Java (Darlington, Bull. M.C.Z. 126, 1962, pp. 505–507). See also *Microferonia*, page 18 of my present paper.

Whether the difference in sculpture of clypeus and labrum of the ♂ ♂ (Scree Vy.) and the ♀ (Lake Habbema) is sexual,

geographic, or individual cannot be decided without more material.

Scopodes tafa n. sp.

Description. With characters of genus; form compact, convex; aeneous, labrum dark, dorsal and lateral foveae of elytra blue, appendages pale, antennae browner distally; head and pronotum shining, sculptured as described (below), elytra irregularly sericeous with irregular reticulate microsculpture. *Head* 1.19 and 1.20 width prothorax; labrum rounded, 6-setose; front with *c.* 8 longitudinal sulci abbreviated anteriorly and running into coarse rugosity posteriorly; labrum more finely longitudinally rugose. *Prothorax*: width/length 1.26 and 1.27; sides margined, each with seta-bearing puncture on triangular process at angulation *c.* ⅓ from apex; disc with coarse rugosity transverse posteriorly but more confused anteriorly. *Elytra* subquadrate; width elytra/prothorax 1.83 and 1.77; several striae indicated on disc but striation obsolete externally and apically; 3rd interval conspicuously 3-foveate. *Measurements*: length 3.5–4.0; width 1.4–1.7 mm.

Types. Holotype ♀ (British Mus.) and 4 paratypes (2 in M.C.Z., Type No. 31,498) all from Mt. Tafa, **Papua**, 8500 ft. (*c.* 2600 m), Feb. 1934 (Cheesman).

Additional material. One ♀, Wau, Bulldog Rd., **N-E. N. G.,** 2400 m, May 31, 1962 (Sedlaceks).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. See preceding *Key* for characters distinguishing this from related species. The specimen from Wau is slightly larger than the types, with narrower humeri (but still with large folded inner wings) and less distinct elytral striation. Additional material may show it to be a distinguishable form.

Scopodes chimbu n. sp.

Description. With characters of genus; form compact; color dark, subaeneous or greenish, elytral foveae not contrasting, appendages dark except antennae paler basally; head and pronotum sculptured but with irregular reticulate microsculpture. *Head* 1.15 and 1.22 width prothorax; labrum rounded, 6-setose; front with *c.* 7 longitudinal sometimes slightly sinuous sulci shining, elytra irregularly sericeous and running into coarse rugosity posteriorly and sometimes anteriorly. *Prothorax*: width/length 1.25 and 1.21; sides margined, each with 1 seta-bearing puncture, on tubercle at angulation *c.* ⅓ from apex; disc coarsely rugose, the rugosity in general transverse but somewhat confused especially anteriorly. *Elytra* subquadrate; width elytra/prothorax — and 1.83 (elytra of ♂ too spread to measure); several striae indicated on disc, outer striae fainter or obsolete; 3 conspicuous foveae on each 3rd interval. *Measurements*: length 3.5–4.4; width 1.4–1.7 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,499) and 2 (♀ ♀) paratypes from Chimbu Vy., Bismarck Rge., **N-E. N. G.,** 5000–7000 ft. (*c.* 1500–2135 m), Oct. 1944 (Darlington).

Additional material. N-E. N. G.: 2, Mt. Mis(s)im, Morobe Dist. (1 specimen at 6400 ft. = 1950 m) (Stevens, M.C.Z.); 1, Joangang, 500 m, Apr. 7–8, and 1, Tumnang, 1400–1600 m, Apr. 14–15, both on Mongi Watershed, Huon Pen. (1955, E. O. Wilson, M.C.Z.); 1, Saruwaged (Salawaket) Rge., upper Bunbok Vy., 1800–2000 m, May 1955 (E. O. Wilson, M.C.Z.); 1, Sepalakembang, Salawaket Rge., 1920 m, Sept. 12, 1956 (E. J. Ford, Jr., Bishop Mus.); 1, Kepilam, 2420–2540 m, June 21, 1963 (Sedlacek); 1, Finisterre Rge., Saidor, Matoko, Aug. 29–Sept. 5, 1958 (W. W. Brandt, Bishop Mus.).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. This species varies somewhat from locality to locality, but I do not have enough material to distinguish geographic forms. Except that my specimens were taken on the ground in the more open part of the

Chimbu Valley, I can say nothing about their habits.

Scopodes wilsoni n. sp.

Description. With characters of genus; compact, convex; color dark, subaeneous, elytral foveae not contrasting, appendages dark, antennae paler basally; shining, head and pronotum coarsely sculptured, elytra irregularly microreticulate but without conspicuous sericeous pattern. *Head* 1.25 and 1.24 width prothorax; labrum narrowly rounded, 6-setose; front with *c.* 8 longitudinal sulci running into coarse rugosity posteriorly and usually anteriorly. *Prothorax*: width/length 1.23 and 1.18; sides margined, each with seta-bearing puncture on tubercle at angulation *c.* ⅓ from apex; disc coarsely rugose, the rugosity transverse but somewhat irregular and varying in depth, and disc also variably punctulate. *Elytra* quadrate; width elytra/prothorax 1.91 and—(elytra too spread to measure in second specimen); all or several striae indicated for much of length; 3 conspicuous foveae on or near each 3rd interval. *Measurements*: length 3.4–4.1; width 1.4–1.7 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,500) from Nganduo to Yunzain, Mongi Watershed, Huon Pen., **N-E. N. G.,** 1000–1500 m, Apr. 6, 1955 (E. O. Wilson); and following paratypes (all ♂♂) from N-E. N. G.: 1, Nadzab, Markham Vy., July 13, 1944 (K. V. Krombein, U.S.N.M.), this specimen further labeled "E. fork Ngafir Cr. 1000–3000 ft. native trail"; 1, Mt. Mis(s)im, Morobe Dist., 6400 ft. (1950 m) (Stevens, M.C.Z.); 1, Wau, 1300 m, Dec. 10, and 1, same locality, Nami Ck., 1750 m, Aug. 12 (both 1961, Sedlaceks).

Additional material. **Papua**: 1, Owen Stanley Rge., Goilala, Bome, 1950 m, Apr. 30–May 2, 1958 (W. W. Brandt, Bishop Mus.). **West N. G.**: 1, Rattan Camp, 1150 m, Feb.–Mar., and 1, Sigi Camp, 1500 m, Feb. 26, both 1959 (Neth. Ind.-American [Snow Mts.] Exp.; Toxopeus).

Measured specimens. The ♂ holotype and ♀ paratype from Nadzab.

Notes. As in the case of *chimbu* (preceding), this species appears to vary geographically, but my material is too limited to justify describing geographic forms.

Scopodes basalis n. sp.

Description. With characters of genus; very compact, convex; dark green or aeneous, elytral foveae not contrasting, labrum and legs dark, antennae yellowish brown; shining, reticulate microsculpture faint or absent even on elytra. *Head* 1.22 and 1.20 width prothorax; labrum narrowly rounded, 6-setose; front with *c.* 7 longitudinal sulci sometimes abbreviated anteriorly and posteriorly. *Prothorax*: width/length 1.21 and 1.25; sides margined, each with seta-bearing puncture on tubercle at angulation *c.* ⅓ from apex; disc coarsely transversely rugose (rugosity sometimes only lightly impressed) and rather sparsely finely punctulate. *Elytra* quadrate; width elytra/prothorax 1.79 and 1.82; striae absent or virtually so except deeply but variably impressed at base, sometimes only on basal declivity; 3 conspicuous punctiform foveae on positions of 3rd intervals. *Measurements*: length *c.* 3.3; width *c.* 1.7 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,501) from Joangang, Mongi Watershed, Huon Pen., **N-E. N. G.,** 500 m, Apr. 7–8, 1955 (E. O. Wilson); and following paratypes from **N-E. N. G.**: 1, Saruwaged (Salawaket) Rge., upper Bunbok Vy., 2300–3200 m, May 29–31 (E. O. Wilson, M.C.Z.), "mossy forest"; 1, Mt. Mis(s)im, Morobe Dist. (Stevens, M.C.Z.); 1, Torricelli Mts., Siaute, sea level, Nov. 9–17, 1958 (W. W. Brandt, Bishop Mus.).

Measured specimens. The ♂ holotype and ♀ paratype from Saruwaged Rge.

Notes. *S. basalis* differs from *wilsoni* not only in reduction of elytral striation but also in more punctiform elytral foveae and virtual absence of reticulate microsculpture of elytra. The occurrence of an individual near sea level is unusual in this genus in New Guinea.

Scopodes simplex n. sp.

Description. With characters of genus; compact, convex; aeneous black, elytra sometimes *faintly* purplish, front anteriorly, clypeus, and labrum bright aeneous, appendages dark, base of antennae paler; shining, elytra lightly irregularly microreticulate. *Head* 1.25 and 1.25 width prothorax; front with 7 sulci running into coarse rugosity posteriorly and sometimes anteriorly. *Prothorax*: width/length 1.19 and 1.22; sides margined, each with seta on tubercle *c.* ⅓ from apex; disc lightly transversely wrinkled, ± punctulate (variable). *Elytra* subquadrate; width elytra/prothorax 1.90 and 1.92; disc virtually estriate, with 3 conspicuous punctiform foveae near position of each 3rd interval. *Measurements*: length 3.8–4.2; width 1.5–1.7 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,502) and 2 paratypes from Nganduo to Yunzain, Mongi Watershed, Huon Pen., **N-E. N. G.,** 1000–1500 m, Apr. 6, 1955 (E. O. Wilson); and additional paratypes as follows. **N-E. N. G.**: 1, Gemeheng, Mongi Watershed, Huon Pen., 1300 m, Apr. 11–13, 1955 (E. O. Wilson, M.C.Z.); 1, vic. Nadzab, July 1944 (Darlington); 2, Sattelberg (British Mus., ex Coll. Hauser). **West N. G.**: 8, Wissel Lakes, Moanemani, Kamo Vy., 1500 m, Aug. 14, 1962 (Sedlacek); 2, Wissel Lakes, Enarotadi, 1500 m, Aug. 14, 1962 (Sedlacek).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Nganduo to Yunzain.

Notes. This species, like the preceding (*basalis*), occurs at relatively low altitudes, sometimes down almost to sea level (at Nadzab).

Scopodes cheesmani n. sp.

Description. With characters of genus; form (Fig. 122) compact, convex; blue-purple (in general blue with elytra purple with foveae bluer); shining, reticulate microsculpture faint or obsolete even on elytra. *Head* 1.31 and 1.35 width prothorax; front with 7 sulci running into coarsely rugose areas posteriorly and usually anteriorly. *Prothorax* narrower and less angulate than usual; width/length 1.13 and 1.18; sides margined, each with seta on small projection *c.* ⅓ from apex; disc coarsely transversely sulcate or wrinkled, ± punctulate especially anteriorly. *Elytra* subquadrate, slightly narrowed toward base; width elytra/prothorax 1.98 and 2.09; disc estriate, with 3 conspicuous punctiform foveae on position of each 3rd interval. *Measurements*: length 3.9–4.4; width 1.6–1.8 mm.

Types. Holotype ♂ (British Mus.) and 2 paratypes from Mt. Lina, Cyclops Mts., **West N. G.,** 3500 ft. (1067 m), Mar. 1936 (Cheesman); and additional paratypes as follows. **West N. G.**: 4, Cyclops Mts., 3400–4500 ft. (*c.* 1040–1370 m), Mar. 1936 (Cheesman); 3, Rattan Camp, 1150 m, Feb.–Mar., and 1, Sigi Camp, 1350 m, Snow Mts., Feb. 28, 1939 (Toxopeus); 1, Bivak 36, 1220 m, July 30, and 1, Bivak 39, 1300 m, June 30, 1959, Star Rge. (Neth. New Guinea Exp., Leiden Mus.). **N-E. N. G.**: 1, Chimbu Vy., Bismarck Rge., 5000–7500 ft. (*c.* 1500–2300 m), Oct. 1944 (Darlington); 1, Eliptamin Vy., 1665–2530 m, June 23–30, 1959 (W. W. Brandt, Bishop Mus.). Some paratypes in M.C.Z., Type No. 31,503.

Measured specimens. The ♂ holotype and 1 ♀ paratype from Mt. Lina.

Notes. Although not very different in form and basic structure from the several preceding compact species, *cheesmani* does suggest transition toward the following (*adonis*).

The habits of this species are suggested in *Notes* under the genus.

Scopodes adonis n. sp.

Description. With characters of genus; form (Fig. 123) less compact, with longer prothorax and more oval elytra, than in other members of the "New Guinean group" of *Scopodes*; purple; front anteriorly, clypeus, and labrum cupreous; legs dark; antennae with basal and outer segments brown, segments 2–5 paler; shining, upper

surface without reticulate microsculpture, sparsely punctulate. *Head* 1.37 and 1.32 width prothorax; front with *c.* 7 slightly unequal sulci behind level of anterior supraocular punctures, the sulci abbreviated anteriorly and curving toward sides posteriorly; neck irregularly rugose. *Prothorax* oval, long; width/length 0.93 and 0.96; sides not margined, not angulate, each with seta-bearing puncture *c.* ⅓ from apex; disc strongly convex, with fine but distinct middle line, weakly transversely wrinkled. *Elytra* suboval; width elytra/prothorax 2.13 and 2.17; humeri narrower and more broadly rounded than in other species of group; outer-apical angles obtusely angulate, sutural angles acute; striae absent; 3 minute, inconspicuous seta-bearing punctures on position of each 3rd interval. *Measurements*: length 4.7–4.9; width 1.7–1.9 mm.

Types. Holotype ♂ (Bishop Mus.) and 8 paratypes (some in M.C.Z., Type No. 31,504) from Torricelli Mts., Mokai Village, **N-E. N. G.,** 750 m, Dec. 8, 16 (holotype, Dec. 8), 1958 (W. W. Brandt); and 2 paratypes, Torricelli Mts., Mobitei, 750 m, Feb. 28–Mar. 4 and Apr. 1–15, 1959 (W. W. Brandt, Bishop Mus.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Mokai Village.

Notes. This very distinct species is distinguished from all others known to me by form, prothorax long with margins obsolete, elytra oval with acute sutural angles, elytral foveae reduced, and color. However, as noted in discussion under the genus, it probably does not represent a separate stock in New Guinea but seems to be at the end of an evolutionary sequence which includes other New Guinean species.

Tribe HEXAGONIINI

Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1506 (see for synonymy and additional references).

Hexagoniitae Jeannel 1948, Coléop. Carabiques de la Région Malgache, Part 2, p. 759.

This is a small tribe (4 genera) of characteristically formed (Fig. 124), subparallel, often flattened carabids at least some of which are specialized to live under the leaf sheaths of plants. In this tribe the inner lobe of the maxilla has a slender, *movable* apical segment that is diagnostic, occurring in no other Carabidae except the Cicindelinae.

The tribe is confined to the Old-World tropics. The genus *Hexagonia* (below) is widely distributed there; 1 additional genus occurs in the Oriental Region; 2 more, in Madagascar.

Genus *HEXAGONIA* Kirby

Kirby 1825, Trans. Linnean Soc. London 14, p. 563.

Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1506 (see for synonymy and additional references).

Jeannel 1948, Coléop. Carabiques de la Région Malgache, Part 2, p. 759.

Basilewsky 1948, Bull. Mus. Hist. Nat. Belgian Congo 24, p. 3 (African species).

Diagnosis. See under tribe, of which this is the only genus represented in New Guinea.

Description. None required here.

Type species. H. terminata Kirby, of SE. Asia.

Generic distribution. Tropical **Asia** and islands to **New Guinea** and northeastern **Australia**; **Africa**, **Madagascar**.

Notes. Members of this genus are rather diverse in the Oriental Region including the Philippines, but only 1 species group extends to New Guinea and Australia. Probably because they occupy an unusual niche and perhaps also because they are diurnal and may not fly to light, these insects are rarely collected. The 1 New Guinean and the 1 (undescribed) Australian species are each known from a single collection made by myself, by breaking down tall grass and other aquatic vegetation into water and picking up the beetles as they came to the surface.

Hexagonia papua n. sp.

Description. With characters of tribe; form as in Figure 124; head black; pronotum piceous, reddish at base and apex; elytra red in anterior ½ or more, black posteriorly, the black area extending farther forward on inner than on outer part of elytra; lower surface irregularly reddish and piceous; appendages brown; shining, reticulate microsculpture faint or absent on head and pronotum, imperfect on elytra; head and pronotum irregularly punctate. *Head* 1.05 and 1.05 width prothorax; front semicircularly impressed each side; neck deeply transversely impressed. *Prothorax* subcordate; width/length 1.06 and 1.09; base/apex not calculated (because prothorax rounded into neck without distinct anterior angles); margins narrow, each with seta *c.* ⅓ from apex, without posterior seta; disc with middle groove deeply impressed and subpunctate, other impressions irregular and weak. *Elytra*: width elytra/prothorax 1.66 and 1.67; striae well impressed, punctate; intervals slightly convex, 3rd with 3 or 4 conspicuous seta-bearing punctures, 5th with 1 such puncture *c.* ⅓ from apex on outer edge. *Lower surface*: head below transversely rugulose; prothorax below subrugosely punctate. *Inner wings* full. *Legs* moderate; tarsi wide; 4th tarsal segments very deeply emarginate, long-lobed; claws simple, not toothed. *Secondary sexual characters*: ♂ tarsi not or not much modified, without special squamules; ♂ with 2, ♀ 3 short setae near apex each side last ventral segment. *Measurements*: length 7.2–7.8; width 2.2–2.4 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,505) and 12 paratypes all from Aitape, **N-E. N. G.,** Aug. 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype (sexes of these specimens determined by dissection).

Notes. This new *Hexagonia* is probably related to *lucasseni* van der Poll of Java but is slightly more slender and much darker, with pronotum piceous (red in *lucasseni*) and elytra more extensively black posteriorly. One or more similar but apparently undescribed species occur in the Philippines.

The habitat of the species is noted under the genus.

Tribe ODACANTHINI

Sloane 1917, Proc. Linnean Soc. New South Wales 42, p. 413.

——— 1923, Proc. Linnean Soc. New South Wales 50, p. 30.

Jedlicka 1963, Ent. Abhandlungen 28, p. 488.

Habu 1967, Fauna Japonica, Carabidae, Truncatipennes Group, p. 13.

Odacanthidae Jeannel 1948, Coléop. Carabiques de la Région Malgache, Part 2, p. 745.

Odacanthinae Basilewsky 1953, Exploration Parc National l'Upemba, Fasc. 10, Carabidae, p. 108.

Colliurini Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1517 (see for synonymy and additional references).

Liebke 1938, Festschrift Embrik Strand 4, pp. 37–141.

Most members of this tribe have a characteristic form (Figs. 125–131), with prothorax very long and narrow, usually much narrower than head. Technical characters of the tribe are given by authors cited above. The tribe is well represented in the tropics of both hemispheres, less well represented in most temperate regions, but several remarkable endemic genera occur in Australia.

Liebke (1938) has published a useful generic classification of this tribe for the world. His classification is, however, artificial, as shown by the failure of some of my new New Guinean species to fit into it. The form of the 4th hind-tarsal segments, used by Liebke in the first couplet of his key, is a particularly unsatisfactory generic character. Form of the 4th hind-tarsal segments does characterize some genera, but it is extremely variable in others. See, for example, *Notes* under *Dicraspeda* in the following pages. However, I cannot undertake to revise the generic classification in dealing with the few members of the tribe that occur in New Guinea, except in the case of primarily New Guinean genera.

Ecologically, Odacanthini are active, winged carabids some of which live in foliage and some on the ground. Of the New Guinean forms, *Dicraspeda* (including *Philemonia* and *Macrocentra*) lives in understory foliage of rain forest; *Clarencia* and some *Colliuris*, in or under low vegetation or dead leaves in wet places; *Casnoidea*, among reeds and in other vegetation in water; *Eudalia* (in Australia), *Dobodura*, and I think also *Lachnothorax*, in gravel and among stones by running water; and *Basisticus* (in Australia), on the ground in relatively dry places including open *Eucalyptus* woodland.

Eight genera, 19 species of Odacanthini, are known from New Guinea. Two or 3 stocks of *Colliuris*, 1 species of *Casnoidea*, and *Lachnothorax* have probably reached New Guinea rather recently from the Oriental Region. A second species of *Casnoidea* and also *Basisticus micans* (which may be related to *Colliuris*) are shared with Australia. *Clarencia* and *Eudalia* are shared with Australia and may be of Australian origin. Monotypic *Dobodura* is confined to New Guinea but may be derived from *Eudalia*. And *Dicraspeda* (*sensu lato*) has radiated chiefly in the rain forests of New Guinea, where 6 diverse species now exist.

Key to Genera of Odacanthini of New Guinea

1. Lateral margins of prothorax incomplete *and* 4th hind-tarsal segments very long-lobed; strikingly bicolored, black (or piceous) and red (p. 207) ..... *Casnoidea*
– Not as above in one or more ways; usually not black-and-red bicolored (obscurely so in *Basisticus*) 2
2. Antennae with 3rd segments very long, *c.* ⅔ longer than 4th segments (p. 209) ..... *Clarencia*
– Antennae with 3rd segments shorter, equal to or not more than ¼ longer than 4th segments 3
3. Head with fine costa each side above eye *and* pronotum channeled at sides and middle; (base of elytra not *coarsely* punctate-striate) (p. 210) ..... *Dicraspeda*
– Not as above in one or more ways 4
4. Body pubescent (p. 214) ..... *Lachnothorax*
– Not pubescent 5
5. Eyes not margined on inner edges by costae *and* front smooth 6
– Eyes usually margined by costae, or if (rarely) not margined, front so coarsely punctate that supraocular costae are indistinct 7
6. Elytra not spined (p. 214) ..... *Eudalia*
– Elytra spined (see also *Notes* under this genus) (p. 215) ..... *Dobodura*
7. Side margins of prothorax absent or incomplete *or* (if margins nearly complete) pronotum not channeled at middle; elytra not very differently sculptured at base and apex (p. 205) ..... *Colliuris*
– Side margins of prothorax complete *and* pronotum channeled at middle; elytra coarsely punctate-striate in anterior ⅓, smooth posteriorly (p. 208) ..... *Basisticus*

Genus COLLIURIS Degeer

Degeer 1774, Mém. Hist. Insectes 4, p. 79.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1518 (see for synonymy and additional references).
Liebke 1938, Festschrift Embrik Strand 4, p. 45.
Jedlicka 1963, Ent. Abhandlungen 28, pp. 489, 490.

Diagnosis. See preceding *Key to Genera.*

Description. None required here.

Type species. Attelabus surinamensis Linnaeus, of South America.

Generic distribution. All warm regions of the **world**. In the Asiatic-Australian area, species are moderately numerous and diverse in southern **Asia** and the western **Malay Archipelago**, but only 4 species (representing 3 independent stocks) have been found in **New Guinea**. According to Liebke, the genus does not reach **Australia**, but I found 3 species of it (representing 2 of the same stocks that are in New Guinea) in North Queensland in 1958.

Notes. I cannot fit the New Guinean species into Liebke's subgenera satisfactorily. *C. rossi* (below) and also the Australian *C. obscura* Castelnau have virtually complete lateral prothoracic margins, which rules these species out of *Colliuris* entirely, according to Liebke (who in fact incorrectly put *obscura* in *Dicraspeda*). Nevertheless, in form and other characters these

species seem to me to be closely related to *Colliuris* subgenus *Eucolliuris* of Africa and the Oriental Region.

KEY TO SPECIES OF *COLLIURIS* OF NEW GUINEA

1. Prothorax with lateral margins; intervals 3, 5, 7 with seta-bearing punctures; (pronotum and elytral striae coarsely punctate, head smooth) (p. 205) ..... *rossi*
– Prothorax without lateral margins, or margins reduced to sutures; only 3rd intervals with seta-bearing punctures 2
2. Not maculate; subcylindric, elytra not more than 2× width prothorax; entire upper surface coarsely punctate (p. 205) ..... *fuscipennis*
– Quadrimaculate; broader, elytra more than 2× width prothorax; upper surface *c.* impunctate except for finely punctate elytral striae 3
3. Less slender, prothoracic width/length 0.60 and 0.63; elytra not or not much impressed (p. 206) ..... *papua*
– More slender, prothoracic width/length 0.46 and 0.46; elytra transversely impressed near base (see also *Description*) (p. 206) ..... *par*

Colliuris rossi n. sp.

Description. Form (Fig. 125) of *Colliuris* of Oriental *fuscipennis* group; black, legs brown with dark knees, antennae brown, paler at base; shining, without reticulate microsculpture. *Head* 1.13 width prothorax; right mandible with acute tooth on inner edge; a fine costa over each eye separated from eye by groove; anterior and posterior supraocular seta-bearing punctures present but no other setae posteriorly; front convex, slightly impressed at middle and anteriorly, impunctate; mentum with acute tooth; ligula broad, 2-setose; palpi slender, acuminate, not pubescent. *Prothorax* long-oval; width/length 0.71; base/apex 1.34; side margins entire except confused by punctation at extreme base, narrow, each with 1 seta before middle; middle line light; disc strongly convex, irregularly coarsely punctate. *Elytra* subparallel; width elytra/prothorax 2.00; apices obliquely sinuate-truncate with outer and sutural angles blunt; striae coarsely punctate, the punctures becoming finer posteriorly; intervals 3, 5, 7 each with 4 to 6 well spaced seta-bearing punctures. *Inner wings* full. *Lower surface* not pubescent, coarsely punctate anteriorly including sides of metasternum, smooth posteriorly. *Legs* normal; tarsi not pubescent and not sulcate above; 4th hind-tarsal segments shallowly emarginate. *Secondary sexual characters*: ♂ front tarsi narrow, 3 segments narrowly 2-seriately squamulose; ♂ last ventral segment *c.* semicircularly emarginate at apex, with 1 seta each side; ♂ copulatory organs as in Figure 179; ♀ unknown. *Measurements*: length *c.* 6.5; width 2.0 mm.

Type. Holotype ♂ (Cal. Acad.) from Finschhafen, **N-E. N. G.,** May 7, 1944 (E. S. Ross); the type is unique.

Notes. This new species seems closely allied only to *C. obscura* (Castelnau) of NE. Australia, but *obscura* has only the 3rd elytral intervals with seta-bearing punctures. Otherwise the two species agree in most characters including presence of virtually entire prothoracic margins, distribution of coarse punctation (head impunctate, pronotum contrastingly coarsely punctate), ♂ secondary sexual characters, and presence of an acute tooth on the right mandible in some individuals. However, presence of the mandibular tooth does seem to be an individual character in *obscura*: in my series from Cairns, the tooth is well developed in some and almost absent in other specimens.

The generic assignment of *obscura* and *rossi* is doubtful. Sloane (1923, Proc. Linnean Soc. New South Wales 48, p. 31) thought *obscura* might go in *Arame*, which is doubtful, and Liebke (1938, Festschrift Embrik Strand 4, p. 89) put it in *Dicraspeda*, which is certainly wrong. Only the presence of nearly entire prothoracic margins prevents placing both *obscura* and *rossi* in *Colliuris* in Liebke's classification, and I doubt if the prothoracic margins are of generic value in this case.

Colliuris fuscipennis (Chaudoir)

Chaudoir 1850, Bull. Soc. Nat. Moscow 23, Part 1, p. 26 (*Casnonia*).

Andrewes 1927, Ann. Mag. Nat. Hist. (9) 19, p. 106 (*Odacantha*).
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1527 (see for synonymy, "varieties," and additional references).
Liebke 1938, Festschrift Embrik Strand 4, p. 65, fig. 27.
Jedlicka 1963, Ent. Abhandlungen 28, p. 494, figs. 190–193.

Description. None required here. Note form rather slender; color black with apex of elytra reddish, legs testaceous; upper surface including head coarsely punctate; length *c.* 5½ mm.

Type. From **China** ("Chine, Tchusan?"); in Oberthür Coll., Paris Mus. (not seen).

Occurrence in New Guinea. **Papua**: 1, Lake Daviumbu, Fly R., Aug. 19–30, 1936 (Archbold Exp., A.M.N.H.).

Notes. *Fuscipennis* is the oldest name for a very common species or group of closely related species previously known from **SE. Asia** to **Celebes** and the **Philippines**. Andrewes (1927) says of it that *fuscipennis* Chaudoir, *punctata* Nietner, *haemorrhoidalis* Motschulsky, and *flavicauda* Bates "appear to differ very little from each other; they may all prove to belong to the same species, but at present I have not the means of deciding this." Csiki's, Liebke's, and Jedlicka's treatment of some of the doubtful forms as subspecies or varieties is not acceptable. Under these circumstances I can only refer the New Guinean individual to *fuscipennis sensu lato*, pending revision of all related forms.

Colliuris papua n. sp.

Description. With characters of genus; form (Fig. 126) of *Colliuris*, with moderately broad elytra scarcely impressed before middle; black, each elytron with 2 *c.* round yellow spots, centered on 4th and 5th intervals, before middle and before apex; appendages brown, antennae paler at base; moderately shining, reticulate microsculpture faint and *c.* isodiametric on front, transverse on head posteriorly and on pronotum, indistinct on elytra. *Head* 1.44 and 1.41 width prothorax; 2 setae over each eye but no other setae posteriorly; front scarcely impressed, impunctate. *Prothorax* long, swollen at sides behind middle, strongly narrowed anteriorly; width/length 0.60 and 0.63; base/apex 1.54 and 1.56; lateral margins reduced to sutures, each with 1 seta before middle; disc strongly convex, base scarcely impressed, middle line fine, surface faintly transversely strigulose, punctate across base. *Elytra*: width elytra/prothorax 2.24 and 2.22; apices obliquely truncate (slightly emarginate) with outer angles rounded, sutural angles scarcely blunted; striae formed by rows of small punctures which become minute posteriorly; 3rd intervals with *c.* 4 seta-bearing punctures, intervals 5 and 7 without punctures. *Inner wings* full. *Lower surface* punctate only around front coxae and at front of mesosternum. *Legs* normal; tarsi not pubescent and not sulcate above; 4th hind-tarsal segments shallowly emarginate. *Secondary sexual characters*: ♂ front tarsi narrow, narrowly 2-seriately squamulose below; last ventral segment slightly emarginate at apex in ♂, variably impressed in ♀, with 1 seta each side in ♂, 2 in ♀. *Measurements*: length *c.* 5.5–6.0; width 1.6–1.8 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,506) and 35 paratypes all from Dobodura, **Papua**, Mar.–July 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. See *Notes* under the following species, *par.*

Colliuris par n. sp.

Description. Similar in form and most characters to preceding (*papua*) but more slender, with elytra impressed before middle; anterior elytral spots longer and almost confined to 5th intervals, legs pale at base; reticulate microsculpture not distinct on pronotum. *Head* 1.65 and 1.58 width prothorax. *Prothorax*: width/length 0.46 and 0.46; base/apex 1.55 and 1.56; disc transversely impressed and constricted before base. *Elytra*: width elytra/prothorax 2.60 and 2.62. *Lower surface* as in *papua* except

with row of coarse punctures each side prosternum before coxae. *Secondary sexual characters*: as for *papua*. *Measurements*: length *c.* 6.0–7.0; width 1.7–2.0 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,507) and 5 paratypes all from Hollandia, **West N. G.,** July–Sept. 1944 (Darlington).

Additional material. **N-E. N. G.**: 7, Aitape, Aug. 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. C. papua and *par* seem to be allopatric representatives of one ancestral stock, but they differ too much to be considered subspecies. *C. par* is the more widely distributed: I found it at Cape Gloucester, **New Britain**, in 1944, and (1 ♀) at Lockerbie, near the tip of Cape York, Queensland, **Australia**, in 1958. A second ♀ from Lockerbie is superficially similar but much more compact and differs in other details. I think it probably represents a 3rd, distinct species of this group of *Colliuris*.

Genus *CASNOIDEA* Castelnau

Castelnau 1834, Études Ent. 1, p. 40.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1534 (see for synonymy, additional references, and list of species).
Jedlicka 1963, Ent. Abhandlungen 28, pp. 489, 498.
Ophionea Eschscholtz 1829, Zool. Atlas 2, p. 5 (not *Ophionea* Klug 1821).
Liebke 1938, Festschrift Embrik Strand 4, p. 79.

Diagnosis. See preceding *Key to Genera.*

Description. None required here.

Type species. Of both *Casnoidea* and *Ophionea* Eschscholtz, *Attelabus indica* Thunberg.

Generic distribution. **SE. Asia** including **Ceylon** and **Japan** to **Australia**; a species recorded also from the **Seychelles Is.**

Notes. This genus of slender, usually strikingly bicolored (red and black) carabids includes several species widely distributed in SE. Asia and the Malay Archipelago. They are usually found in grass, reeds, and other vegetation growing in water.

KEY TO SPECIES OF *CASNOIDEA* OF NEW GUINEA

1. Color dark with basal ⅓ or ⅖ of elytra red (p. 207) ..... *gestroi*
– Color red with head, post-median elytral fascia, and sometimes bases of elytra dark (the post-median fascia with a pale spot on each elytron) 2
2. Pronotum conspicuously punctate (p. 207) ..... *puncticollis*
– Pronotum not conspicuously punctate 3
3. Elytra not dark at base (p. 208) ..... (*nigrofasciata*)
– Elytra dark at base (p. 208) ..... (*indica*)

Casnoidea gestroi (Maindron)

Maindron 1910, Bull. Soc. Ent. France for 1910, p. 34 (*Ophionea*).
Dupuis 1913, Ann. Soc. Ent. Belgium 57, p. 270.
Liebke 1938, Festschrift Embrik Strand 4, p. 79, fig. 60 (*Ophionea*).
gestronis Seidlitz 1912, Archiv für Naturgeschichte 77, Part 3, p. 155 (error for *gestroi*).

Description. None required here; see preceding *Key to Species*; length *c.* 7.0–7.5 mm.

Type. From Dilo, **Papua**, July 1890 (D. Loria); presumably in Paris Mus. (not seen).

Occurrence in New Guinea. **Papua**: 7, Dobodura, Mar.–July 1944 (Darlington); 2, Kiunga, Fly R., July 15–21, Aug. 1–3, 1957 (W. W. Brandt, Bishop Mus.). **West N. G.**: 1, Waris, S. of Hollandia, 450–500 m, Aug. 8–15, 1959 (T. C. Maa, Bishop Mus.); 1, Wasian, Vogelkop, Sept. 1939 (Wind, M.C.Z.).

Notes. This distinct species is evidently widely distributed in New Guinea and is represented also on **New Britain** (an undescribed subspecies from Cape Gloucester) but is unknown elsewhere.

Casnoidea puncticollis (Sloane)

Sloane 1923, Proc. Linnean Soc. New South Wales 48, p. 31 (*Ophionea*).
Liebke 1938, Festschrift Embrik Strand 4, p. 80 (*Ophionea*).

Description (for recognition only). Form as in Figure 127; red, head black, elytra with broad transverse fascia (bluish) black, the fascia with an elongate pale fleck on each 5th interval, legs bicolored; shining,

without reticulate microsculpture. *Head* short, rounded posteriorly; front wrinkled anteriorly, impunctate. *Prothorax* long-oval; side margins irregularly indicated anteriorly; disc conspicuously punctate. *Elytra* punctate-striate. *Measurements* (New Guinean specimen): length *c.* 7.5; width 2.1 mm.

Type. From Burdekin R., Queensland, **Australia**; in Sloane Coll., C.S.I.R.O., Canberra (seen).

Occurrence in New Guinea. **Papua**: 1, Kiunga, Fly R., Aug. 1–3, 1957 (W. W. Brandt, Bishop Mus.).

Notes. I do not have *puncticollis* from Australia and have identified the New Guinean individual from description. Note that *C. gestroi* (preceding species) as well as *puncticollis* occurred at Kiunga.

(*Casnoidea nigrofasciata* (Schmidt-Goebel))

Schmidt-Goebel 1846, Faunula Coleop. Birmaniae, p. 21 (*Ophionea*).
Andrewes 1930, Treubia 7, Supplement, p. 334 (*Ophionea*).
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1535 (see for synonymy and additional references).
Liebke 1938, Festschrift Embrik Strand 4, p. 80, fig. 57 (*Ophionea*).

Description. None required here; see preceding *Key to Species.*

Type. From **Burma**; in Prague Mus. (not seen).

Occurrence in New Guinea. Probably does not occur.

Notes. C. nigrofasciata ranges from **SE. Asia** to **Java** and **Borneo**. It is apparently not recorded from Celebes or the Moluccas. New Guinea is included in the species' range by Csiki, but I can find no authority for this. I suspect that a too-hasty compiler, not noticing the negative, picked "New Guinea" out of Andrewes' (1930) statement that "I have seen no examples either from Japan or New Guinea."

(*Casnoidea indica* (Thunberg))

Thunberg 1784, Novas Insectorum Species 3, p. 68, fig. 81 (*Attelabus*).
Andrewes 1930, Cat. Indian Insects, Part 18, Carabidae, p. 241 (*Ophionea*).
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1534 (see for synonymy and additional references).
Liebke 1938, Festschrift Embrik Strand 4, p. 79, fig. 55 (*Ophionea*).
Louwerens 1958, Treubia 24, p. 249 (Moluccas) (*Ophionea*).

Description. None required here; see preceding *Key to Species.*

Type. From "**India orientali**"; presumed lost (not seen).

Occurrence in New Guinea. Doubtful.

Notes. This common Oriental carabid ranges from **SE. Asia** including **Ceylon** and **Japan** to **Celebes** and the **Moluccas**. A specimen in the British Museum is labeled "Dory, New Guinea" but may be from Celebes or the Moluccas (see Part I of my "Carabid Beetles of New Guinea," p. 331). Other collectors have failed to find the species in New Guinea. Andrewes' statement that *indica* occurs south to New Guinea is probably based on the doubtful "Dory" specimen.

Genus *BASISTICUS* Sloane

Sloane 1917, Proc. Linnean Soc. New South Wales 42, p. 415.
——— 1923, Proc. Linnean Soc. New South Wales 48, p. 30.
Liebke 1938, Festschrift Embrik Strand 4, p. 81.

Diagnosis. See preceding *Key to Genera.*

Description. None required here.

Type species. Odacantha micans Macleay (below).

Generic distribution. As of the single known species.

Notes. This genus is close to *Colliuris* (*sensu lato*), from which it differs in having the lateral margins of the prothorax entire.

Basisticus micans (Macleay)

Macleay 1864, Trans. Ent. Soc. New South Wales 1, p. 107 (*Odacantha*).
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1535 (see for additional references).
Liebke 1938, Festschrift Embrik Strand 4, p. 81.

Description (for recognition only). Form

of *Colliuris*; head and prothorax red, base of elytra dark reddish, smooth part of elytra piceous, antennae red, legs dark with pale bases; elytra very coarsely punctate-striate in anterior ⅓, smooth with striae of minute punctules in posterior ⅔; length *c.* 6.5 mm.

Type. From Port Denison, northern **Australia** (presumably near Bowen, Queensland); probably in Macleay Mus., Sydney (not seen).

Occurrence in New Guinea. **Papua**: 1, Rouku, Morehead R., March 1962 (W. W. Brandt, C.S.I.R.O.).

Notes. This is an Australian species, well known in North Queensland. I have specimens from the vicinity of Cairns, Mareeba, and Townsville. The single individual from New Guinea matches Australian ones well. In Australia, this insect is found on the ground in open woodland; the type was "found under dried cow dung."

Genus *CLARENCIA* Sloane

Sloane 1917, Proc. Linnean Soc. New South Wales 42, p. 415.
——— 1923, Proc. Linnean Soc. New South Wales 48, p. 30.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1535.
Liebke 1938, Festschrift Embrik Strand 4, p. 81.

Diagnosis. See preceding *Key to Genera*; note form of large *Colliuris*; antennae with very long 3rd segments (and see *Notes*, below); ♂ front tarsi with 3 segments with numerous narrow squamae loosely arranged (not 2-seriate as in *Colliuris*); last ventral segment slightly emarginate at apex in both sexes, with 1 seta each side in ♂, 2 in ♀.

Description. None required here.

Type species. Casnonia aliena Pascoe, of Australia.

Generic distribution. Eastern **Australia**, **New Guinea**.

Notes. Although only 1 *Clarencia* is currently recognized (Csiki, 1932), 4 species are represented in Australian material collected by me in 1957–1958. One of these species (described below as *quadridens*) occurs also in New Guinea, and 1 additional species of the genus is endemic in New Guinea.

The antennae of some Australian *Clarencia* not only have very long 3rd segments but also have the 4th segments uniquely modified: expanded and obliquely truncate at apex so that the 5th segments hinge forward, and with the pubescence of the 4th segments restricted to the segments' anterior edges. This modification of the 4th segments is only slightly indicated in the New Guinean species, more clearly in *papua* than in *quadridens.*

The species of *Clarencia* are usually found in wet places, often by standing water, either among wet leaves or in or under low vegetation.

KEY TO SPECIES OF *CLARENCIA* OF NEW GUINEA

1. Elytra toothed at sutural and outer-apical angles (p. 209) ..... *quadridens*
– Elytra not toothed (p. 210) ..... *papua*

Clarencia quadridens n. sp.

Description. With characters of genus; form as in Figure 128, with elytra transversely impressed near base; black, elytra ± yellowish at apex but not spotted, epipleuri pale, femora pale at base, dark at apex, tibiae dark banded with pale, tarsi pale, antennae brown darker basally; shining, without distinct reticulate microsculpture. *Head* 1.37 and 1.27 width prothorax; front with conspicuous V-shaped impression anteriorly, impunctate. *Prothorax* long, with sides swollen behind middle; width/length 0.59 and 0.61; base/apex 1.38 and 1.40; disc very convex, with fine middle line, punctate across base with a few punctures along lateral margins and across apex but otherwise impunctate. *Elytra*: width elytra/prothorax 2.30 and 2.47; apices obliquely sinuate-truncate with outer and sutural angles acutely dentate; striae formed by lines of punctures anteriorly, obsolete posteriorly; 3rd intervals with *c.* 6 and 5th intervals with *c.* 4 seta-bearing punctures. *Legs* slender; tarsi above not pubescent and not sulcate; 4th hind-tarsal seg-

ments shallowly emarginate. *Measurements*: length 10.0–11.5; width 2.8–3.1 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,508) and 14 paratypes from Hollandia, **West N. G.,** July–Sept. 1944 (Darlington); and additional paratypes from **West N. G.** as follows: 4, Hollandia, Apr., May 1945 (B. Malkin, U.S.N.M.); 2, "Neth. N. G." without further locality (T. Aarons, Cal. Acad.).

Additional material. **West N. G.**: 1 teneral ♂, Maffin Bay, Aug. 1944 (Darlington). **Papua**: 1 ♂, Normanby Is., Wakaiuna, Sewa Bay, Jan. 1–8, 1957 (W. W. Brandt, Bishop Mus.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Hollandia.

Notes. The denticulate elytra distinguish this species from all other known *Clarencia* in Australia as well as New Guinea. This species occurs in **Australia**: I have one ♀ from near Cairns, N. Queensland (Darlington). This Australian specimen and the one from Normanby Is. have more yellow at apex of elytra than Hollandia specimens do.

Clarencia papua n. sp.

Description. With characters of genus; form *c.* as in *quadridens* (above) except elytra relatively narrower and not dentate; black, elytra scarcely paler at apex, legs bicolored as in *quadridens*, antennae brown; shining, without distinct reticulate microsculpture. *Head* 1.32 and 1.22 width prothorax; front convex except impressed anteriorly as in *quadridens*, impunctate. *Prothorax* formed as in *quadridens* but slightly shorter; width/length 0.62 and 0.68; base/apex 1.37 and 1.41; disc very convex, middle line fine, surface closely wrinkled-punctate across base, variably punctate across apex, and more extensively punctate at sides than in *quadridens*. *Elytra*: width elytra/prothorax 2.21 and 2.10; apices obliquely sinuate-truncate with outer and sutural angles narrowly rounded; striae nearly entire (longer than in *quadridens*), punctate, the punctures becoming minute posteriorly; 3rd and 5th intervals with a few seta-bearing punctures. *Legs c.* as in *quadridens*. *Measurements*: length *c.* 9.0–10.0; width 2.5–2.9 mm.

Types. Holotype ♂ (U.S.N.M.) and 7 paratypes (some in M.C.Z., Type No. 31,509) from Hollandia, **West N. G.,** Apr., May, June (holotype, Apr.) 1945 (B. Malkin); 1 paratype, same locality, "11/5/44" (W. T. Nailon, Fenton Coll.); 1 paratype, Yentchan, Main R., Sepik, **N-E. N. G.,** Feb. 1965 (R. Hornabrook).

Additional material. **Papua**: 2, Lake Daviumbu, Fly R., Aug. 19–30, Sept. 11–20, 1936 (Archbold Exp., A.M.N.H.).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. See preceding *Description* for details distinguishing *papua* from *quadridens*. Actually, *papua* may be more closely related to undescribed Australian species.

Genus *DICRASPEDA* Chaudoir

Chaudoir 1862, Bull. Soc. Nat. Moscow 35, Part 2, p. 300.

Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1536 (see for partial synonymy and additional references).

Liebke 1938, Festschrift Embrik Strand 4, pp. 43, 88.

Macrocentra Chaudoir 1869, Revue et Magasin Zool. (2) 21, p. 205 (new synonymy).

Liebke 1938, Festschrift Embrik Strand 4, pp. 39, 100.

Loxocara Sloane 1907, Deutsche Ent. Zeitschrift for 1907, pp. 179, 474.

Philemonia Liebke 1938, Festschrift Embrik Strand 4, pp. 39, 83 (new synonymy).

Diagnosis. Form as in Figure 129 but somewhat variable, color black or metallic, not maculate. *Head*: a fine costa over each eye; antennae with 3rd segments not or not much longer than 4th segments. *Prothorax* moderately long; pronotum channeled at sides and with deep median groove. *Elytra*: apices variable (see following *Key to Species*). *Legs*: tarsi not pubescent above (Liebke's statement that tarsi of *Macrocentra* are pubescent above is erroneous); 4th hind-tarsal segments variably emarginate or lobed (see *Notes*,

below). *Secondary sexual characters*: ♂ front tarsi narrow, narrowly 2-seriately squamulose; ♂ with 1, ♀ 2 setae each side last ventral segment.

Description. None required here.

Type species. Of *Dicraspeda, D. brunnea* Chaudoir (see below). Of *Macrocentra, M. quadrispinosa* Chaudoir, of New Guinea. Of *Loxocara, L. quadrispinosa* Sloane (= *M. quadrispinosa* Chaudoir). Of *Philemonia, P. longiloba* Liebke, of New Guinea.

Generic distribution. Most diverse in **New Guinea**; several New Guinean species reach **New Britain**, etc.; species of *Dicraspeda sensu stricto* (small forms with unarmed elytra) occur in **Australia**, and 1 (*brunnea* Chaudoir, below) extends to **Timor**, **Java**, and the **Philippines**.

Notes. The 6 New Guinean species here brought together in *Dicraspeda* are superficially diverse, differing in form, presence or absence of elytral spines, and form of 4th hind-tarsal segments. But the differences are all gradational (see following paragraphs), different characters vary independently, and the 6 species all share characters given in the preceding *Diagnosis*. Moreover, they all inhabit understory foliage of rain forest, and I think that they are all probably derived from one ancestral stock that has diversified in this habitat. Five of the species are lowland forms and are sympatric, occurring together at Dobodura. The sixth species, *D.* ("*Macrocentra*") *violacea* (Sloane), occurs at moderate altitudes in the mountains.

The elytral apices are obliquely truncate with sutural angles usually slightly blunted and outer angles obtuse in *D.* (*sensu stricto*) *brunnea*. In the 3 species of "*Philemonia*," the sutural angles are either slightly blunted (most individuals of *longiloba*), variably denticulate (*dubia* and some individuals of other species), or spined (typical individuals of *bispinosa*); the outer-apical angles are well formed in these species and usually acute in *longiloba*, but not spined. And in the 2 species of "*Macrocentra*" (*quadrispinosa* and *violacea*), outer-apical as well as sutural angles are spined.

Variation of the 4th hind-tarsal segments is noteworthy and is not correlated with the insects' size or with form of elytral apices. The 4th hind-tarsal segments are shallowly emarginate (Fig. 163) in *D.* (*sensu stricto*) *brunnea*; very deeply emarginate with extremely long lobes (Fig. 165) in *D.* ("*Philemonia*") *longiloba*, which resembles *brunnea* in size and elytral apices; and intermediate but variable in the other species (other "*Philemonia*" and "*Macrocentra*").

KEY TO SPECIES OF *DICRASPEDA* OF NEW GUINEA

1. Elytra without spines or with spines only at sutural angles 2
– Elytra with spines at sutural and outer-apical angles 5
2. Fourth hind-tarsal segments emarginate for *c.* ⅓ segments' length; elytra with sutural angles slightly blunted, outer-apical angles obtuse; length *c.* 5.5–6.0 mm (p. 211) ... *brunnea*
– Fourth hind-tarsal segments more deeply emarginate; elytra with sutural angles denticulate or spined (except in most *longiloba*); size larger 3
3. Fourth hind-tarsal segments very long-lobed (Fig. 165); sutural angles usually blunted; length *c.* 6.5–7.5 mm (p. 212) ... *longiloba*
– Fourth hind-tarsal segments with shorter lobes; sutural angles denticulate or spined; size usually larger 4
4. Fourth hind-tarsal segments with lobes *c.* ½ segments' length; sutural angles denticulate; length 6.5–8.0 mm (p. 212) ..... *dubia*
– Fourth hind-tarsal segments with longer lobes; sutural angles spined or denticulate; length 8.0–9.5 mm (p. 212) ..... *bispinosa*
5. Color black; tarsi sulcate-carinate above; length *c.* 11–13 mm (p. 213) ..... *quadrispinosa*
– Color green-purple; tarsi not sulcate-carinate above; length *c.* 11–12 mm (p. 213) ... *violacea*

Dicraspeda brunnea Chaudoir

Chaudoir 1862, Bull. Soc. Nat. Moscow 35, Part 2, p. 300.

Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1536 (see for synonymy and additional references).

Liebke 1938, Festschrift Embrik Strand 4, p. 89.

Description. None required here; note

size small; pronotum punctate across base and apex and in lateral and median grooves but widely smooth at middle; elytral apices unarmed; 4th hind-tarsal segments not deeply emarginate (Fig. 163); length *c.* 5.5–6.0 mm.

Type. From **Celebes**; in Oberthür Coll., Paris Mus. (not seen).

Occurrence in New Guinea. **Papua**: 9, Dobodura, Mar.–July 1944 (Darlington); 1, Normanby Is., Wakaiuna, Sewa Bay, Jan. 1–8, 1957 (W. W. Brandt, Bishop Mus.). **N-E. N. G.**: 1, Wareo, Finschhafen (Rev. L. Wagner, S. Australian Mus.). **West N. G.**: 3, Hollandia and vicinity (various dates and collectors).

Notes. *D. brunnea* is recorded from **Australia** (Queensland), **Timor**, **Celebes**, **Java**, and **Mindanao**, and I have specimens from **Leyte** and **Luzon** and **New Britain** as well as from **New Guinea**.

Dicraspeda longiloba (Liebke)

Liebke 1938, Festschrift Embrik Strand 4, p. 83 (*Philemonia*).

Description. None required here; note elytra with sutural angles blunt or at most minutely denticulate; 4th hind-tarsal segments very long-lobed (Fig. 165); length *c.* 6.5–7.5 mm.

Type. From **N-E. N. G.** ("Deutsch-Neu-Guinea"); in Liebke Coll., present location unknown (not seen).

Occurrence in New Guinea. **N-E. N. G.**: the type. **Papua**: 5, Dobodura, Mar.–July 1944 (Darlington).

Notes. I have a specimen also from Cape Gloucester, **New Britain**.

Dicraspeda dubia (Gestro)

Gestro 1879, Ann. Mus. Civ. Genoa 14, p. 558 (*Odacantha*).

Liebke 1938, Festschrift Embrik Strand 4, p. 83, fig. 67 (*Philemonia*).

Description. None required here; note elytra with sutural angles variably denticulate but not spined; 4th hind-tarsal segments rather short-lobed but somewhat variable; length *c.* 6.5–8.0 mm.

Type. From Fly R., presumably Papua; in Genoa Mus. (not seen).

Occurrence in New Guinea. **Papua**: 3, Dobodura, Mar.–July 1944 (Darlington); 5, Kokoda, 1200, 1300 ft., May, Aug., Sept., Oct. 1933 (Cheesman). **N-E. N. G.**: 1, Aitape, Aug. 1944 (Darlington); 1, Wau, Morobe Dist., 1200 m, Aug. 18, 1961 (Sedlacek), in light trap. **West N. G.**: 1, Waris, S. of Hollandia, 450–500 m, Aug. 16–23, 1959 (T. C. Maa, Bishop Mus.); 1, Nabire, S. Geelvink Bay, 0–30 m, July 2–9, 1962 (Gressitt); 1, Waigeu Is., Camp 1, Mt. Nok, 2500 ft. (*c.* 760 m), May 1938 (Cheesman).

Notes. I found this or a closely related species also at Bamaga, near the tip of Cape York, **Australia**.

Dicraspeda bispinosa n. sp.

Description. With characters of genus; form as in Figure 129; brownish black, legs dark, antennae and mouthparts paler brown; moderately shining, reticulate microsculpture indistinct on head and pronotum, isodiametric or slightly transverse on elytra. *Head* 1.17 and 1.17 width prothorax; front irregularly impressed anteriorly, impunctate; mentum with long narrow tooth; ligula 4-setose. *Prothorax* elongate-subquadrate with sides swollen below margins; width/length 0.99 and 0.98; base/apex 1.19 and 1.12; pronotum strongly convex, narrowly channeled each side near margin and with well impressed middle groove; surface punctate chiefly across base, slightly at apex. *Elytra*: width elytra/prothorax 2.08 and 2.05; apices obliquely sinuate-truncate with sutural angles spined or denticulate, outer-apical angles obtuse, and apical margin in part minutely denticulate; striae entire, punctate; 3rd intervals 3-punctate, the posterior puncture near apex. *Inner wings* full. *Legs* normal; tarsi not sulcate and not pubescent above; 4th hind-tarsal segments long-lobed (Fig. 164). *Secondary sexual characters* as of genus; last ventral segment with small notch at apex in both sexes. *Measurements*: length

(including spines) *c.* 8.0–9.5; width 2.8–3.3 mm.

Types. Holotype ♀ (M.C.Z., Type No. 31,510) and 15 paratypes from Dobodura, **Papua**, Mar.–July 1944 (Darlington); and additional paratypes as follows. **Papua**: 2, Kokoda (Cheesman); 2, Mt. Lamington, 1300–1500 ft. (*c.* 400–460 m) (C. T. McNamara, S. Australian Mus.). **N-E. N. G.**: 4, Wau, Morobe Dist., 1150, 1200, 1300 m, dates in Jan., Feb., Oct., 1961, 1963 (Sedlacek); 1, Finschhafen, Huon Pen., 80–200 m, Apr. 13, 1963 (Sedlacek).

Additional material. **N-E. N. G.**: 4, Finschhafen, 80 m, Apr. 16, 1963 (Sedlacek); 1, same locality, 80–200 m, Apr. 13, 1963 (Sedlacek); 3, Pindiu, Huon Pen., dates in Apr. 1963 (Sedlacek).

Measured specimens. The ♂ paratype and ♀ holotype from Dobodura.

Notes. This new species would go in *Philemonia* in Liebke's classification. The specimens listed under *Additional material* have the sutural angles of the elytra denticulate rather than spined, but I think they are referable to *bispinosa.* Note that both spined and denticulate forms have been found at Finschhafen.

Dicraspeda quadrispinosa (Chaudoir)

Chaudoir 1869, Revue et Magasin Zool. (2) 21, p. 206 (*Macrocentra*).
Sloane 1907, Deutsche Ent. Zeitschrift for 1907, p. 474 (*Macrocentra*).
Liebke 1938, Festschrift Embrik Strand 4, p. 100 (*Macrocentra*).
Louwerens 1956, Treubia 23, p. 223 (Moluccas) (*Macrocentra*).
Loxocara quadrispinosa Sloane 1907, Deutsche Ent. Zeitschrift for 1907, p. 180.

Description. None required here; known among New Guinean Colliurini by size large; color plain black; elytra spined at sutural and outer-apical angles; tarsi sulcate-carinate above; length (including spines) *c.* 11–13 mm (rarely slightly smaller or larger).

Types. Of *quadrispinosa* Chaudoir, from Dorey, **West N. G.** (Wallace); in Oberthür Coll., Paris Mus. Of *quadrispinosa* Sloane, from Simbang, **N-E. N. G.**; "returned to Dr. Horn (for Bennigsen's collection)" (not seen).

Occurrence in New Guinea. Common: 227 specimens from localities on **New Guinea** and Normanby, Ferguson, Woodlark, Rossel, Sudest, and Waigeu Is.; apparently confined to low altitudes, up to 700, 750, 800, and 975 m at different localities, but none found higher; common at Dobodura.

Notes. This characteristic New Guinean carabid has been found also in the **Moluccas**, **New Britain**, and the **Solomons**, but not Australia.

Dicraspeda violacea (Sloane)

Sloane 1907, Deutsche Ent. Zeitschrift for 1907, pp. 181, 474 (*Macrocentra*).
Liebke 1938, Festschrift Embrik Strand 4, p. 100 (*Macrocentra*).
habilis Sloane 1907, Deutsche Ent. Zeitschrift for 1907, p. 181 (name used in error for *violacea*).

Description. None required here; similar to preceding (*quadrispinosa*) but head and pronotum greenish or bluish, elytra purple; tarsi not sulcate-carinate above; length *c.* 11–12 mm.

Type. From Sattelberg, **N-E. N. G.**; "returned to Dr. Horn (for Bennigsen's collection)" (not seen).

Occurrence in New Guinea. **N-E. N. G.**: 8, Wau, Morobe Dist., 1200, 1300 m, Jan., Mar., Apr., June, Sept., Nov., 1961–1963 (Sedlaceks); 1, Eliptamin Vy., 1665–2530 m, June 23–30, 1959 (W. W. Brandt, Bishop Mus.); 1, Finisterre Rge., Saidor, Kiambavi Village, July 22–29, 1958 (W. W. Brandt, Bishop Mus.); 1, Wareo, Finschhafen (Rev. L. Wagner, S. Australian Mus.); 1, Goroka, E. Highlands, 5200 ft. (*c.* 1600 m), J. H. Barrett, Dept. Agr. Port Moresby). **West N. G.**: 3, Rattan Camp, Snow Mts., 1150, 1200 m, Feb.–Mar. 1939 (Toxopeus); 5, Fac Fac, Vogelkop, 100–700 m, June 9, 1959 (Gressitt and T. C. Maa, Bishop Mus.), in light trap; 1, Mt. Baduri, Japen Is., 1000 ft., Aug. 1938 (Cheesman).

Notes. D. violacea apparently replaces *quadrispinosa* above 1000 m altitude in

New Guinea, but the two species overlap below 1000 m. *D. violacea* occurs also in **New Britain** (Gaulim, Gazelle Pen., 130 m, Nov. 28, 1962, Sedlacek).

Genus *LACHNOTHORAX* Motschulsky

Motschulsky 1862, Étude Ent. 11, p. 48.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1542 (see for additional references).
Liebke 1938, Festschrift Embrik Strand 4, p. 103.
Jeannel 1948, Coléop. Carabiques de la Région Malgache, Part 2, p. 756.

Diagnosis. See *Key to Genera of Colliurini of New Guinea*; this is the only conspicuously pubescent colliurine in New Guinea.

Description. None required here.

Type species. L. biguttatus Motschulsky, of India.

Generic distribution. **Africa** and **Madagascar**; **SE. Asia** to **New Guinea**.

Notes. The few species of *Lachnothorax* are all very much alike. They are probably ground-living, and I suspect that they occur by running water.

Lachnothorax tokkia Gestro

Gestro 1875, Ann. Mus. Civ. Genoa 7, p. 856.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1542 (see for synonymy and additional references).
Liebke 1938, Festschrift Embrik Strand 4, p. 104.
Jedlicka 1963, Ent. Abhandlungen 28, p. 504.

Description. None required here; note form, color black with pale spot before apex each elytron, and conspicuous pubescence; length *c.* 5.0–5.5 mm.

Type. From Kandari, SE. **Celebes**; in Genoa Mus. (not seen).

Occurrence in New Guinea. **N-E. N. G.**: 7, Stephansort, Astrolabe Bay, 1900 (Biró).

Notes. Lachnothorax tokkia has been recorded previously from the **Malay Pen.**, **Sumatra**, **Java**, and **Celebes**, and a very closely related species (*biguttata* Motschulsky) occurs in India and Ceylon.

Genus *EUDALIA* Castelnau

Castelnau 1867, Notes on Australian Coleop., p. 16.
Sloane 1917, Proc. Linnean Soc. New South Wales 42, pp. 415, 417–422 (with key to Australian species).
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1542 (see for synonymy and additional references).
Liebke 1938, Festschrift Embrik Strand 4, pp. 44, 105.

Diagnosis. See *Key to Genera.*

Description. None required here.

Type species. Odacantha latipennis Macleay, of Australia.

Generic distribution. **Australia** (*c.* 6 species) and **New Guinea** (1 species, doubtfully assigned to this genus).

Notes. The species described below as *Eudalia anomala* has entire lateral prothoracic margins and therefore runs to *Eudalia* in Liebke's key, but if the margins were obsolete, it would run to *Andrewesia*, to which it may be more closely related. (*Andrewesia obesa* (Andrewes) ranges from the Malay Pen. to the Moluccas.) Generic characters and limits in this group (as in so many others!) need revision.

Eudalia anomala n. sp.

Description. Form as in Figure 130; black, elytra faintly aeneous and tipped with yellow, legs testaceous, antennae brown paler at base; head and pronotum shining and without reticulate microsculpture, elytra duller with isodiametric meshes. *Head* 1.18 and 1.17 width prothorax; strongly constricted at neck; antennae with segments 3 and 4 subequal, pubescent from 4th segments; mandibles moderate in length and curvature; front convex, irregularly impressed anteriorly, impunctate; mentum with moderate tooth; ligula broad, with 2 long and 2 shorter setae; palpi slender, not pubescent. *Prothorax* suborbicular except parallel at base; width/length 0.89 and 0.90; base/apex 1.25 and 1.26 (sides of prothorax curve into condyle of neck at apex); lateral margins narrow but entire, with a seta-bearing puncture inside margin (on disc) before middle; disc very convex, strongly transversely impressed at base; middle line slightly impressed; surface

punctate across base, impunctate or nearly so elsewhere. *Elytra* ample; width elytra/prothorax 2.15 and 2.16; apices obliquely truncate with outer angles obtuse and inner angles acute-blunted; striae entire, punctate; 3rd intervals with 4 or 5 seta-bearing punctures including 1 near base. *Inner wings* full. *Legs* moderate; tarsi not pubescent above and not sulcate; 4th hind-tarsal segments emarginate but not lobed. *Secondary sexual characters*: ♂ front tarsi narrow, 2-seriately squamulose; last ventral slightly emarginate at apex in ♂, not in ♀, with 1 seta each side in ♂, 2 in ♀. *Measurements*: length *c.* 7.0; width 2.5 mm.

Types. Holotype ♂ (A.M.N.H.) and 1 ♂ paratype (M.C.Z., Type No. 31,511) from Menapi, Cape Vogel Pen., **Papua**, 0–30 m, "No. 1," Aug. 8–11, 1953 (Geoffrey M. Tate); and 1 ♀ paratype from Wasian, Vogelkop, **West N. G.,** Sept. 1939 (Wind, M.C.Z.).

Measured specimens. The ♂ holotype and ♀ paratype.

Notes. For possible relationships of this species, see under genus. This species is smaller and much less punctate and less roughened above than any typical (Australian) *Eudalia* known to me, and the New Guinean species has the outer-apical elytral angles more angulate.

DOBODURA n. gen.

Diagnosis. See *Key to Genera of Colliurini of New Guinea.*

Description. Form (Fig. 131) *c.* as in some *Colliuris. Head* without supraocular costae; mandibles long, slender, weakly arcuate; antennae very long, 3rd segments *c.* ¼ longer than 4th segments, 1st segments with 1 long seta near apex; mentum with triangular tooth; ligula rounded, with 2 long setae at apex and 2 shorter setae laterally; paraglossae small, membranous; palpi slender, not pubescent. *Prothorax*: lateral margins entire; median impressed line fine; base deeply transversely channeled with transverse ridge behind channel. *Elytra* spined. *Inner wings* full. *Legs* slender; tarsi not pubescent above, not sulcate above; 4th hind-tarsal segments moderately emarginate, emargination *c.* ½ length of segment; claws not toothed. *Secondary sexual characters*: ♂ front tarsi scarcely dilated, 3 segments narrowly 2-seriately squamulose; last ventral segment of ♂ weakly, of ♀ subcircularly emarginate, with 1 seta each side in ♂, 2 in ♀.

Type species. D. armata (below).

Generic distribution. The single species is known only from **New Guinea**.

Notes. This striking new genus may be related to *Eudalia* but differs in form, longer and less arcuate mandibles, much longer antennae with relatively longer 3rd segments, and presence of elytral spines. The position of the principal spines, *c.* opposite the ends of the 4th intervals rather than at the sutural or outer-apical angles, is unusual in this tribe.

Dobodura armata n. sp.

Description. With characters of genus; form as in Figure 131; black above and below, appendages testaceous except femora dark on inner sides; shining, reticulate microsculpture absent or indistinct on most of upper surface, present and *c.* isodiametric on elytra posteriorly. *Head* 1.07 and 1.06 width prothorax; front evenly convex except slightly impressed anteriorly, impunctate; neck slightly constricted. *Prothorax* suboval, swollen at sides below margins; width/length 0.92 and 0.91; base/apex 1.14 and 1.15; margins each with seta-bearing puncture *c.* ⅔ from apex; disc *c.* evenly convex, impunctate. *Elytra*: width elytra/prothorax 2.00 and 2.09; apices with sutural and outer angles denticulate or short-spined and with long spines *c.* opposite ends 4th intervals; striae entire, formed by lines of fine punctures; 3rd intervals with 3 well spaced seta-bearing punctures. *Secondary sexual characters* as of genus; ♂ copulatory organs as in Figure 180. *Measurements* (types); length (including spines) *c.* 10.5–11.5; width 3.3–3.5 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,512) and 5 paratypes from Dobodura, **Papua**, Mar.–July 1944 (Darlington); and 2 paratypes, Mt. Hansemann, Astrolabe Bay, **N-E. N. G.** (Biró).

Additional material. **West N. G.**: 1 ♂, mountain slope above Bernhard Camp, 100 m, Apr. 8, 1939 (Toxopeus).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. My specimens were taken among spray-drenched stones beside small torrents in rain forest.

The specimen from Bernhard Camp has the strial punctures of the elytra coarser than in the types and the tip of the aedeagus slightly different. Additional material may show it to represent a distinguishable subspecies.

Tribe DRYPTINI

Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1548 (see for synonymy and additional references).
Jeannel 1949, Coléop. Carabiques de le Région Malgache, Part 3, p. 1063.
Jedlicka 1963, Ent. Abhandlungen 28, p. 481.
Habu 1967, Fauna Japonica, Carabidae, Truncatipennes Group, p. 266.
Dryptidae Jeannel 1942, Faune de France, Coléop. Carabiques, Part 2, p. 1098.
Dryptinae Basilewsky 1953, Exploration Parc National l'Upemba, Fasc. 10, Carabidae, p. 228.

Members of this small but widely distributed tribe (represented in New Guinea by only 2 genera) are easily recognized by characteristic form (Fig. 132); pubescent surface; antennae with very long 1st and very short 2nd segments; and elytra without raised outer margins. The New Guinean species live chiefly in grass, I think. They are winged and probably diurnal.

KEY TO GENERA OF DRYPTINI OF NEW GUINEA

1. Claws simple (p. 216) ..... *Drypta*
– Claws pectinate (p. 218) ..... *Desera*

Genus *DRYPTA* Latreille

Latreille 1796, Précis Caractères Génériques Insectes, p. 75.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1548 (see for additional references).
Andrewes 1936, Proc. R. Ent. Soc. London (B) 5, p. 134 (key to "Indian" species).
See also references under tribe.

Diagnosis. See characters given for tribe and in preceding *Key to Genera.*

Description. None required here.

Type species. Carabus dentatus Rossi, of Europe, etc.

Generic distribution. Tropical and warm temperate regions of the **Old World**; 1 species listed from **Brazil**.

Notes. The Oriental-Australian species of *Drypta* are much alike, differing chiefly in proportions and color.

KEY TO SPECIES OF *DRYPTA* OF NEW GUINEA

1. Head, prothorax, and elytra blue-green (p. 216) ..... *papua*
– Head and prothorax red; elytra brown, black, blue-black, or striped 2
2. Elytra broadly longitudinally striped with red (p. 217) ..... *mastersi*
– Elytra not striped 3
3. Less slender (prothoracic width/length *c.* 0.78 or more); femora dark (p. 217) ..... *fumigata*
– More slender (prothoracic width/length *c.* 0.75 or less); femora pale (p. 217) ..... *sulcicollis*

Drypta papua n. sp.

Description. With characters of genus; form as in Figure 132, *c.* average in genus; greenish blue, appendages yellow with apices of femora and of 1st antennal segments narrowly darker; entire upper surface closely punctate. *Head* 1.09 width prothorax; eyes moderate, genae convex. *Prothorax* subcylindric; width/length 0.76; base/apex 1.08; lateral margins indistinct; middle line poorly defined. *Elytra*: width elytra/prothorax 2.09; apices obliquely subtruncate with outer angles obtuse-blunted and sutural angles *c.* right; striae impressed, coarsely very closely punctate; intervals more finely, less closely punctate. *Legs*: tarsi not sulcate above; 4th hind-tarsal segments long-lobed; claws curved, not pectinate, each with obtuse angulation of inner edge near base but with no trace of teeth. *Secondary sexual characters* not determined (♂ unknown). *Measurements*: length 8.5; width 2.7 mm.

Type. Holotype ♀ (M.C.Z., Type No.

31,513) from Lae, **N-E. N. G.,** Oct. 1944 (Darlington); the type is unique.

Notes. I am not sure of the relationships of this unexpected species. In Andrewes' (1936) key to "Indian" species of *Drypta* (see reference under genus), *papua* runs to couplet 18 (19) but fits neither species there named, having a relatively narrower head and broader prothorax than *aetheria* Andrewes (of Assam) and more closely punctate elytral intervals than *cyanopa* Andrewes (of Bengal). *Drypta papua* does not resemble any Australian species of the genus. It does superficially resemble *Desera elegans* Sloane (below) but is smaller, with relatively broader prothorax and obtuse rather than acute outer-apical elytral angles, and of course with simple rather than pectinate tarsal claws.

Drypta mastersi Macleay

Macleay 1871, Trans. Ent. Soc. New South Wales 2, p. 82.
Chaudoir 1877, Bull. Soc. Nat. Moscow 52, Part 1, p. 257.

Description. None required here; note elytra striped with red; length (of New Guinean specimen) *c.* 8.5 mm.

Type. From Gayndah, South Queensland, **Australia**; presumably in Macleay Mus., Sydney (not seen).

Occurrence in New Guinea. **Papua**: 1, Rouku, Morehead R., W. Papua (opposite the tip of Cape York), Apr. 1962 (W. W. Brandt, C.S.I.R.O.).

Notes. In Australia, *mastersi* ranges north at least to mid-peninsular Cape York. I do not know whether it is really distinct from *Drypta australis* Dejean of more-southern Australia.

Drypta fumigata Putzeys

Putzeys 1875, Ann. Mus. Civ. Genoa 7, p. 720.
Chaudoir 1877, Bull. Soc. Nat. Moscow 52, Part 1, p. 258.

Description. None required here; length 13.5–15.0 mm.

Type. From Andai, **Papua**, Aug. 1872 (Beccari and D'Albertis); in Genoa Mus. (not seen).

Occurrence in New Guinea. **Papua**: 3, Dobodura, Mar.–July 1944 (Darlington); 5, Kiunga, Fly R., dates from July 23 to Sept. 25, 1957 (W. W. Brandt, Bishop Mus.); 1, Owen Stanley Rge., Goilala, Bome, 1950 m, Apr. 1–15, 1958 (W. W. Brandt, Bishop Mus.); 1, Popondetta, N. Dist., Jan. 29, 1965 (R. Hornabrook). **N-E. N. G.**: 1, Erima, Astrolabe Bay, 1896 (Biró); 1, Chimbu Vy., Bismarck Rge., 5000–7500 ft. (*c.* 1500–2300 m), Oct. 1944 (Darlington); 1, Aiyura, E. Highlands, 5600 ft. (*c.* 1700 m), "9.10.1960" (J. H. Barrett, Dept. Agr. Port Moresby), at light; 2, Okapa, June 23, 1965 (R. Hornabrook). **West N. G.**: 2, Hollandia, Apr., May 1945 (B. Malkin, U.S.N.M.); 32, Sansapor, Aug. 1944 (Darlington).

Notes. This species is presumably of Oriental origin, but I cannot determine to which Oriental species it is most closely related.

Drypta sulcicollis Putzeys

Putzeys 1875, Ann. Mus. Civ. Genoa 7, p. 721.
Chaudoir 1877, Bull. Soc. Nat. Moscow 52, Part 1, p. 258.

Description. None required here; length *c.* 10.5–11.5 mm.

Type. From Andai, **Papua**, Aug. 1872 (Beccari and D'Albertis) (note locality same as for type of *fumigata*); in Genoa Mus. (not seen).

Occurrence in New Guinea. **Papua**: 1, Dobodura, Mar.–July 1944 (Darlington); 3, Kiunga, Fly R., Aug. 1–3, 14–17, 1957 (W. W. Brandt, Bishop Mus.). **N-E. N. G.**: 1, Erima, Astrolabe Bay, 1897 (Biró); 1, Stephansort, Astrolabe Bay, 1897 (Biró). **West N. G.**: 1, Hollandia-Binnen, 25 m, Oct. 16, 1957 (Gressitt); 1, Humboldt Bay Dist., 1934 (British Mus.); 3, Tor R. (mouth), 4 km E. of Hol Maffen, July 2, 1959 (T. C. Maa, Bishop Mus.), at light; 2, Wasian, Vogelkop, Sept. 1939 (Wind, M.C.Z.).

Notes. This species too is probably derived from an Oriental (not Australian) stock, but I do not know its exact relationships.

Genus *DESERA* Hope

Hope 1831, Zoological Miscellany, p. 21.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1553 (see for additional references).
Andrewes 1936, Proc. R. Ent. Soc. London (B) 5, p. 136 (key to "Indian" species).
——— 1939, Ann. Mag. Nat. Hist. (11) 3, p. 133.
Dendrocellus Schmidt-Goebel 1846, Faunula Coleop. Birmaniae, p. 24.

Diagnosis. Characters as of *Drypta*, except claws pectinate.

Description. None required here.

Type species. Desera nepalensis Hope, of SE. Asia (see following *Notes*).

Generic distribution. **SE. Asia** to **Australia**; **Africa**.

Notes. Desera differs from *Drypta* apparently *only* in having pectinate tarsal claws. A modern revision of the species is needed to show whether both genera are really monophyletic and distinct.

Andrewes (1939) outlines the history of the name *Desera*. It was used by Hope (1831) in combination with the valid description of a new species (*nepalensis*, which is therefore the type species), and the combined description includes reference to the pectinate tarsal claws. This use validates *Desera* Hope 1831 under Article 16(a)(VI) of the 1964 edition of the International Code of Zoological Nomenclature.

A single, common species of this genus occurs in New Guinea.

Desera elegans (Sloane)

Sloane 1907, Deutsche Ent. Zeitschrift for 1907, p. 473 (*Dendrocellus*).
Andrewes 1927, Ann. Mag. Nat. Hist. (9) 19, p. 110.

Description (for recognition only). With characters of tribe and genus; form slender; green (sometimes blue-green or bronze-green), antennae red with 1st segment dark at apex, legs red with knees usually darker (legs and antennae sometimes more extensively dark); length *c.* 9.5–10.5 mm.

Type. From Baining Berge, Gazelle Pen., **New Britain**; in Deutsche Ent. Institute, Berlin-Dahlem (Andrewes 1927) (not seen).

Occurrence in New Guinea. Common: 197 specimens from many localities widely scattered over **New Guinea**, from sea level to *c.* 1700 m altitude; occurs at Dobodura and Wau.

Notes. Desera elegans of **New Guinea**, **New Britain**, and **New Ireland** is similar to *geniculata* Klug (SE. Asia to the Moluccas) on one side and to *smaragdula* Chaudoir (Australia) on the other. In fact a single individual from Rouku, Morehead R., West Papua, Apr. 1962 (W. W. Brandt, C.S.I.R.O.) looks more like the Australian *smaragdula* than like the New Guinean *elegans*. Relationships (or identities?) of these and other similar species in the whole Asiatic-Australian area need further study.

Tribe ZUPHIINI

Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1562 (see for synonymy and additional references).
Habu 1967, Fauna Japonica, Carabidae, Truncatipennes Group, p. 253.
Zuphiidae Jeannel 1942, Faune de France, Coléop. Carabiques Part 2, p. 1091.
Zuphiitae Jeannel 1949, Coléop. Carabiques de la Région Malgache, Part 3, p. 1047.
Zuphiinae Basilewsky 1953, Exploration Parc National l'Upemba Fasc. 10, p. 224.

This is another small but widely distributed tribe. Its characters and taxonomic limits need not be discussed here. It is represented in New Guinea by 2 easily recognized genera and a total of 6 known species.

The members of the tribe live in wet places, often among dead leaves on the ground (*Zuphium*) or in grass and vegetation growing in water (*Planetes*). Most species, including all those in New Guinea, are winged.

KEY TO GENERA OF ZUPHIINI OF NEW GUINEA

1. Head subtriangular, very wide at base; elytra not costate (p. 219) ..... *Zuphium*
– Head normal; elytra with many fine costae (p. 220) ..... *Planetes*

Genus *ZUPHIUM* Latreille

Latreille 1806, Genera Crustaceorum et Insectorum 1, p. 198.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1562 (see for synonymy and additional references).
Jedlicka 1963, Ent. Abhandlungen 28, p. 477.
See also references under tribe.

Diagnosis. Form (Fig. 133) diagnostic; and see preceding *Key to Genera.*

Description. None required here.

Type species. Carabus olens Rossi, of Europe, etc.

Generic distribution. All tropical and some temperate regions of the **world**.

Notes. The various Oriental and Australian species of *Zuphium* are not well understood. For example, the 7 listed Australian species were all described between 1867 and 1888, most of them from single specimens or single localities, and they have never been revised. The real relationships of the 2 New Guinean species are therefore doubtful, although I have made some comparisons.

Besides the 2 species recorded from New Guinea below, I have seen (British Mus.) 1 specimen of *Zuphium celebense* Chaudoir labeled as from Dory, presumably collected by Wallace. I think this specimen is probably really from Celebes (see Part I of my "Carabid Beetles of New Guinea," pp. 330–331), and I see no reason to list the species from New Guinea even tentatively.

KEY TO SPECIES OF *ZUPHIUM* *of* NEW GUINEA

1. Large (*c.* 8.3 mm); color piceous (p. 219) ..... *thouzeti*
– Small (*c.* 3.5 mm); color brown (p. 219) ..... *sinuum*

Zuphium thouzeti Castelnau

Castelnau 1867, Notes on Australian Coleop., p. 17.
——— 1868, Trans. R. Soc. Victoria 8, p. 103.

Description. None required here. Note size large; color dark, not spotted; length (of New Guinean specimen) *c.* 8.3 mm.

Types. From Rockhampton, Queensland, **Australia**; present location of type unknown (not seen).

Occurrence in New Guinea. **Papua**: 1 ♀, Port Moresby, Feb.–May 1943 (W. B. Jones, U.S.N.M.).

Notes. Besides the types from Rockhampton, Castelnau had a specimen from Port Denison (near Bowen) farther north, and I have specimens (identified from description) from W. of Ravenshoe and N. of Mareeba still farther north in Queensland. The Port Moresby specimen agrees reasonably well with my Australian ones except that the color of the legs varies.

Zuphium sinuum n. sp.

Description. Form as in Figure 133, very small; brown, head slightly darker, appendages and lower surface paler; dull, entire upper surface densely microreticulate or roughened. *Head* 0.92 and 0.94 width prothorax; antennae short, middle segments *c.* 2× long as wide; surface densely microreticulate, moderately punctulate. *Prothorax*: width/length 1.13 and 1.10; base/apex 0.88 and 0.81; posterior angles right-acute and not quite basal (base very briefly subpedunculate); surface closely roughened-punctate. *Elytra*: width elytra/prothorax 1.65 and 1.70; apices sinuate at middle of width, lobed between sinuations and suture; surface roughened, striae indicated but not well defined. *Secondary sexual characters*: ♂ front tarsi slightly dilated, 3 segments with soles of dense short squamae; ♂ with 1, ♀ 2 setae each side last ventral segment. *Measurements*: length *c.* 3.5; width 1.3–1.4 mm.

Types. Holotype ♀ (M.C.Z., Type No. 31,514) from Aitape, **N-E. N. G.,** Aug. 1944 (Darlington); and 1 ♂ paratype, Kota Nika, Res. Hollandia, **West N. G.,** Jan. 31, 1956 (R. T. Simon Thomas, Louwerens Coll.).

Measured specimens. The ♂ paratype and ♀ holotype, in this order.

Notes. This species or a close relative occurs also at Cape Gloucester, **New Britain**. Small size, color, dull surface, and sinuate elytral apices distinguish *sinuum* from other comparable species including

celebense Chaudoir (see under genus), in which the elytral apices are scarcely sinuate. *Z. inconspicuum* Schmidt-Goebel of Burma, etc., has strongly sinuate elytral apices but is much more shining than *sinuum*.

Genus *PLANETES* Macleay

Macleay 1825, Annulosa Javanica, p. 28.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1567 (see for synonymy and additional references).
Jedlicka 1963, Ent. Abhandlungen 28, p. 464.

Diagnosis. Form *c.* as in Figure 134; elytra each with more than 20 fine longitudinal costae.

Description. None required here.

Type species. P. bimaculatus Macleay, of Java, etc.

Generic distribution. **SE. Asia** including **Ceylon** and **Japan** to northern **Australia**; **Africa**.

Notes. Most and most diverse species of *Planetes* occur in the Oriental Region. Four species, all rather small and unspotted, are known in New Guinea. And only 1 or 2 species, the same as or close to New Guinean forms, have been found in Australia. This geographic pattern suggests dispersal from Asia to Australia.

The species of this genus that I have collected live in swamps and beside standing water. They are winged and often fly to light.

In the present work I have not distinguished *Heteroglossa* Nietner from *Planetes*, although the two probably are distinct (see Habu, 1967, reference cited under tribe).

KEY TO SPECIES OF *PLANETES* OF NEW GUINEA

1. Smaller, length 6.0–7.5 mm; see also *Description* (p. 220) ..... *secernendus*
– Usually larger; *if* length under 8 mm, 19th (posthumeral) elytral intervals specially conspicuous 2
2. Elytra with an interval (the 19th, near humeri) more conspicuous than others at base; see also *Description* (p. 220) .. *humeralis*
– Elytra with no single interval more conspicuous than others at base 3
3. Prothorax subcordate, with sides not or weakly sinuate; pronotum more evenly punctate, the punctures rather coarse and of *c.* uniform size (p. 221) ..... *australis*
– Prothorax strongly cordate, with sides strongly sinuate; pronotum less evenly punctate, with coarse and fine punctures mixed (p. 221) ..... *cordens*

Planetes secernendus Oberthür

Oberthür 1883, Notes Leyden Mus. 5, p. 217.

Description (for recognition only). Form small; sparsely inconspicuously pubescent; piceous, not spotted, appendages brownish testaceous; prothorax cordate or subcordate, pronotum unevenly punctate, the punctures varying in size and usually sparser near middle of pronotum; elytra each with more than 20 fine costae, the costae subequal except 1st, 4th, 7th, etc. usually *slightly* wider or more prominent toward base and apex, but 19th costa not specially conspicuous at base; length *c.* 6.0–7.5 mm.

Types. From **Sumatra**; in Oberthür Coll., Paris Mus. (not seen).

Occurrence in New Guinea. Sixty-three specimens from localities (including Dobodura) scattered over most of the length of **New Guinea**; at low altitudes only, none above 500 m.

Notes. P. secernendus is now known from the **Malay Pen.** (British Mus.), **Sumatra**, **Java** (British Mus.), **Borneo**, Leyte and Luzon in the **Philippines** (M.C.Z.), **New Guinea**, and **New Britain** (M.C.Z.). Geographic variation probably occurs but is confused by individual variation especially (in New Guinea) in form and punctation of prothorax. See also *Additional material* and *Notes* under *P. humeralis*, below.

Planetes humeralis n. sp.

Description. With characters of genus; form as in preceding species (*secernendus*), reddish brown, sometimes darker, appendages slightly paler; head and pronotum shining between punctures, elytra duller. *Head* 0.77 and 0.78 width prothorax, weakly impressed across base; front convex, slightly impressed anteriorly, slightly irregularly

finely punctate. *Prothorax* narrowly subcordate; width/length 1.25 and 1.26; base/apex 1.06 and 1.05; sides broadly arcuate anteriorly, moderately sinuate posteriorly, with moderate margins, each with usual 2 setae; disc slightly convex, with middle line well impressed but lateral longitudinal impressions vague; baso-lateral impressions moderate, roughened; surface of disc moderately punctate with punctures of mixed sizes, more closely punctate across base and apex. *Elytra* subparallel; width elytra/prothorax 1.35 and 1.37; apices obliquely truncate, outer angles broadly rounded, sutural angles scarcely blunted; each elytron with more than 20 fine costae, the 1st, 4th, 7th, etc., slightly more prominent than others and the 19th specially prominent (but still fine) at base. *Secondary sexual characters*: ♂ front tarsi slightly dilated, 3 segments 2-seriately squamulose; 1 principal seta each side last ventral segment in both sexes. *Measurements* (of types): length 7.3–8.3; width 2.5–2.9 mm.

Types. Holotype ♂ (Bishop Mus.) and 1 ♂ paratype (M.C.Z., Type No. 31,515) from Eliptamin Vy., **N-E. N. G.,** 1200–1350 m, July 16–31, 1959 (W. W. Brandt); 1 ♂ paratype, Torricelli Mts., Mokai Village, **N-E. N. G.,** 750 m, Jan. 1–23, 1959 (W. W. Brandt, Bishop Mus.); 1 ♂ paratype, Mt. Dayman, Maneau Rge., **Papua**, 700 m, "N. Slope No. 6," July 13–20, 1953 (Geoffrey M. Tate, A.M.N.H.).

Additional material. **N-E. N. G.**: 3, Krisa, Vanimo, Apr. 1939 (Cheesman). **West N. G.**: 1, Dojo, 2nd Strip, Res. Hollandia, Apr. 15, 1957 (R. T. Simon Thomas, Louwerens Coll.).

Measured specimens. The ♂ holotype and ♂ paratype from Eliptamin Vy.

Notes. The diagnostic character of this species is the relative conspicuousness of one costa (the 19th) at base of each elytron. Form, color, punctation, and size are also characteristic of the types. However, the individuals listed under *Additional material* are darker and much smaller than the types, *c.* 6.5 mm long. They have the 19th costae relatively conspicuous, as in the types, but otherwise are more like *secernendus.* More material from more localities is needed to show whether these specimens are referable to *humeralis* or to *secernendus*, or whether they represent a separate species. One possibility is that *humeralis* occurs principally at higher altitudes than *secernendus* and that intermediates occur where their ranges overlap.

Planetes australis (Macleay)

Macleay 1871, Trans. Ent. Soc. New South Wales 2, p. 82 (*Polisticus*).

Description. None required here; note size, prothorax with sides weakly or not sinuate; pronotum *c.* evenly rather coarsely punctate; length (in New Guinea) 7.7–9.5 mm.

Type(s). From Rockhampton, Queensland, **Australia**; presumably in Macleay Mus., Sydney (not seen).

Occurrence in New Guinea. **Papua**: 1, L. Daviumbu, Fly R., Sept. 11–20, 1936 (Archbold Exp., A.M.N.H.). **West N. G.**: 1, Kota Nika, Res. Hollandia, Jan. 25, 1956 (R. T. Simon Thomas, Louwerens Coll.), in light trap; 1, Hol Maffin, near Sarmi, July 18, 1959 (T. C. Maa, Bishop Mus.).

Notes. The New Guinean specimens agree reasonably well with specimens from Cairns, North Queensland, identified as *australis* from description.

Planetes cordens n. sp.

Description. With characters of genus; form as in Figure 134, depressed, with wide-cordate prothorax; reddish piceous, appendages paler; surface inconspicuously pubescent (as usual); head and pronotum shining between punctures, elytra dull. *Head* 0.76 and 0.79 width prothorax, irregularly impressed across base; front convex except irregularly impressed anteriorly, with a little irregular fine punctation. *Prothorax*: width/length 1.42 and 1.44; base/apex 0.97 and 0.96; sides broadly rounded anteriorly, strongly sinuate posteriorly, mod-

erately margined, with usual 2 setae; posterior angles well defined, right or slightly obtuse; pronotum weakly convex, with well impressed middle line and less distinct longitudinal impressions each side nearer margin than middle; baso-lateral impressions shallow, closely microreticulate; surface of disc otherwise rather closely punctate with mixture of moderate and minute punctures. *Elytra* subparallel; width elytra/prothorax 1.34 and 1.30; apices obliquely truncate with outer angles broadly rounded and inner angles scarcely blunted (as usual); each elytron with more than 20 fine costae, the 1st, 4th, 7th, etc. slightly more prominent than others, but no costa specially conspicuous at base. *Secondary sexual characters* as for *humeralis* (2nd species above). *Measurements*: length *c.* 9.0–9.5; width 3.2–3.3 mm.

Types. Holotype ♂ (Hungarian National Mus.) and 3 paratypes (2 in M.C.Z., Type No. 31,516) from Madang ("Friedrich-Wilh.-hafen"), **N-E. N. G.,** 1896 (Biró); and additional paratypes as follows, all from **N-E. N. G.** (Biró): 1, Stephansort, Astrolabe Bay, 1900; 1, Simbang, Huon Gulf, 1899; 1, Erima, Astrolabe Bay, 1897.

Measured specimens. The ♂ holotype and 1 ♀ paratype from Stephansort.

Notes. Among New Guinean *Planetes*, this should be immediately recognized by rather large size and wide-cordate prothorax with disc flatter than usual and punctate as described. Why Biró should have found this species at four localities while no one else has found it anywhere is a mystery. Perhaps he obtained his specimens in a special habitat by special collecting methods, perhaps by sifting leaf-debris from the ground in rain forest.

Tribe HELLUODINI

Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1571 (see for synonymy and additional references).

This is a small tribe, confined to the tropical Asiatic-Australian area. Only 3 genera are recognized, of which only 1 is represented in New Guinea and (northern) Australia. However, *Holoponerus godeffroyi* (Fairmaire) (1881, Le Naturaliste 3, p. 381; 1883, Ann. Soc. Ent. Belgium 27, p. 2) of New Britain, although considered a lebiine by Fairmaire and listed as one in the Coleopterorum Catalogus (Csiki 1932, p. 1361), may belong in this tribe. I do not know this insect, but the description is of a large carabid (perhaps the largest member of the family in New Britain), 28 mm long, with long mandibles, prothorax expanded at sides, elytra sinuate-truncate and not spined, and head at base with a strong spine on each side. This description suggests a very large *Pogonoglossus*-like carabid with genae, which are prominently angulate or tuberculate in some *Pogonoglossus*, produced as spines.

Genus *POGONOGLOSSUS* Chaudoir

Chaudoir 1862, Bull. Soc. Nat. Moscow 35, Part 2, p. 304.

Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1571 (see for synonymy and additional references).

Andrewes 1937, Bull. Soc. Ent. France for 1937, pp. 152*ff* (with key to species of Java and Sumatra).

Diagnosis. Form including form of eyes characteristic; upper surface at least partly pubescent; antennae not geniculate, with moderate 2nd segments; see description of ligula and paraglossae, below.

Description (characters common to New Guinean species). Form as in Figures 135–140; variably pubescent. *Head*: eyes ± abruptly prominent, genae rounded or angulate-tuberculate behind eyes; 2 setae over each eye; antennae not geniculate, 2nd segments moderate (not very short), segments 1–4 variably setulose, outer segments more densely pubescent; mandibles long, weakly arcuate; neck deeply transversely constricted; front 2-impressed anteriorly; clypeus irregularly truncate, apparently 2- or 4-setose anteriorly (setae difficult to distinguish from other pubescence); labrum variable, 6-setose; mentum with

triangular tooth; ligula short, rounded, with *c.* 4 setae at apex and 2 more near middle of length; paraglossae very slender, much longer than and free from ligula; palpi with apical segments narrowly subtruncate. *Prothorax* cordate or subcordate; apex slightly or moderately (not deeply, in New Guinean species) emarginate, with anterior angles usually rounded (± pointed in some *glabricollis*) and not or not much advanced beyond arc of emargination; base subtruncate or emarginate at middle, ± oblique at sides; posterior angles or sides of prothorax just before angles usually minutely emarginate; margins moderate or wide, reflexed, each with seta at base and before middle; disc usually only weakly convex, with middle line and transverse impressions distinct, baso-lateral impressions present but not sharply defined. *Elytra* quadrate; margins usually faintly subserrate; apices obliquely emarginate-truncate with membranous margins, with outer angles usually rounded (obtuse in *papua*), inner angles *c.* acute or blunted, not armed; striae entire (± obsolete in *unicolor* and *glabricollis*); intervals variably punctate, 3rd with up to 3 or 4 special dorsal punctures (often not distinguishable especially in species with extensive general punctation). *Inner wings* full. *Lower surface* variably punctate-pubescent. *Legs* moderately slender; tarsi pubescent above, not sulcate above; 4th hind-tarsal segments shallowly emarginate; 5th segments setulose above and below; claws simple. *Secondary sexual characters*: ♂ front tarsi not or not much widened, 3 segments narrowly 2-seriately squamulose; ♂ usually with 2 or 3, ♀ 3 or 4 setae each side last ventral segment, but these setae and their punctures sometimes difficult to distinguish.

Type species. *P. validicornis* Chaudoir, of Java.

Generic distribution. **SE. Asia** to northern **Australia**.

Notes. Species of this genus are probably moderately numerous and diverse from the SE. corner of Asia to New Guinea (fewer in northern Australia), but individuals are rarely collected. Of 9 Javan and Sumatran species, Andrewes (1937) saw only single specimens of 6; and of 9 (or 10, with *unicolor* (Macleay)) New Guinean species, I have seen a satisfactory series of only 1. All the New Guinean species appear to be endemic. I compared some of them with the Andrewes Collection in 1948 (see *Notes* under several species, below); none fits the description of *P. horni* Sloane (1907, Deutsche Ent. Zeitschrift for 1907, p. 184) of New Britain; and the 2 Australian species that I have seen are different from any New Guinean species.

KEY TO SPECIES OF *POGONOGLOSSUS* OF NEW GUINEA

1. Elytral striae distinct, impressed 2
– Elytral striae faint or absent 9
2. Genae rounded or irregular behind eyes but not conspicuously angulate or tuberculate (see *Description* of *taylori*) 3
– Genae conspicuously angulate or tuberculate .. 7
3. Entire upper surface including much of head rather closely punctate or (on elytra) roughened 4
– Part or all of upper surface sparsely punctate or impunctate 6
4. Elytra with outer-apical angles obtuse but distinct; size medium (length 9.0–11.5 mm); (found at low altitudes) (p. 224) ..... *papua*
– Elytra with outer-apical angles rounded; size either larger or smaller; (often at higher altitudes) 5
5. Larger, length 12.3–13.0 mm (see also *Description*) (p. 224) ..... *taylori*
– Smaller, length 7.6–8.7 mm (see also *Description*) (p. 225) ..... *minor*
6. Prothorax less wide (width/length 1.49), with moderate margins (p. 225) ..... *major*
– Prothorax very wide (width/length 1.88 and 1.97), with very wide margins (p. 225) .. *latior*
7. Sides of prothorax oblique but scarcely sinuate posteriorly; length *c.* 13 mm (p. 226) ..... *obliquus*
– Sides of prothorax sinuate posteriorly; smaller 8
8. Length 9.6–11.0 mm (p. 226) ..... *grossulus*
– Length 7.0–9.0 mm (p. 227) ..... *parvus*
9. Pronotum densely minutely punctate and pubescent (p. 227) ..... *unicolor*
– Pronotum virtually impunctate and glabrous (p. 227) ..... *glabricollis*

Pogonoglossus papua n. sp.

Description. With characters of genus; form as in Figure 135; brownish black, appendages dark; entire upper surface moderately pubescent, punctate, with reticulate microsculpture indistinct or (on elytra) irregular. *Head* 0.84 and 0.81 width prothorax; genae rounded, not strongly angulate; front moderately punctate, shining between punctures. *Prothorax* strongly cordate; width/length 1.45 and 1.48; base/apex 1.14 and 1.19; base broadly slightly emarginate, slightly oblique at sides; sides strongly sinuate well before base; basal angles sharply formed, *c.* right; margins rather wide, moderately reflexed; disc weakly convex, surface moderately closely punctate-pubescent, less shining than head but more shining than elytra. *Elytra*: width elytra/prothorax 1.46 and 1.46; outer-apical angles obtuse but more distinct than usual in genus, striae moderately impressed, indistinctly punctulate; intervals slightly convex, closely punctate-pubescent. *Secondary sexual characters* as for genus; ♂ with 2, ♀ 3 special seta-bearing punctures each side last ventral segment. *Measurements*: length *c.* 9.0–11.5; width 3.4–4.1 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,517) and 10 paratypes from Dobodura, **Papua**, Mar.–July 1944 (Darlington); and additional paratypes as follows. **Papua**: 1, without precise locality (Hungarian National Mus.). **N-E. N. G.**: 1, Lae, sea level, July 24, 1955 (Gressitt), in light trap; 1, Busu R., E. of Lae, 100 m, Sept. 13, 1955 (Gressitt); 7, Aitape, Aug. 1944 (Darlington). **West N. G.**: 1, Hollandia, July–Sept. 1944 (Darlington); 2, same locality, May 1945 (H. Hoogstraal, M.C.Z.); 1, same locality, June 1945 (B. Malkin, U.S.N.M.); 3, same locality, dates in Nov., Dec., Jan. 1944–1945 (W. T. Nailon, Fenton Coll.); 1, Sentani, 90+ m, June 22, 1959 (Gressitt and T. C. Maa, Bishop Mus.), in light trap; 1, Hol Maffin, near Sarmi, July 18, 1959 (T. C. Maa, Bishop Mus.); 1, Neth. N. G. without further locality, Oct. 10, 1944 (T. Aarons, Cal. Acad.). Also 1, "Sinimi" (= Senimi R., Papua?), "⅕ 1943" (T. Niimura, Uéno Coll.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Dobodura.

Notes. In Andrewes' key (1937, see reference under genus), this species runs to *latus* Andrewes of Sumatra but has the prothorax probably narrower at base and less emarginate at apex and the pronotum certainly more closely punctate. Of Australian species, *papua* is closest to *porosus* Sloane (I have specimens, identified from description, from Rocky R., mid-peninsular Cape York) but has a more strongly cordate prothorax and better defined outer-apical elytral angles.

Since *papua* is the common *Pogonoglossus* in New Guinea, I shall take it as a standard for comparison of several of the following species.

Most of my Dobodura specimens were taken in piles of dead leaves on the ground in rain forest.

Pogonoglossus taylori n. sp.

Description. With characters of genus; form and characters *c.* as preceding species (*papua*) except as follows. *Head* 0.75 and 0.78 width prothorax; genae more prominent than in *papua*, nearly wide as eyes, minutely tuberculate and *c.* subangulate behind eyes. *Prothorax*: width/length 1.44 and 1.58; base/apex 1.18 and 1.18; apex slightly more emarginate than in *papua* and sides slightly more broadly and evenly reflexed. *Elytra*: width elytra/prothorax 1.43 and 1.43; outer-apical angles more rounded than in *papua*. *Measurements*: length 12.3–13.0; 4.3–4.9 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,518) from Aiyura, **N-E. N. G.,** 1900 m, July 1962 (R. W. Taylor, #2147), in rain forest; 1 ♀ paratype, Eliptamin Vy., **N-E. N. G.,** 1665–2530 m, June 23–30, 1959 (W. W. Brandt, Bishop Mus.); 1 ♂ paratype, Okapa, **N-E. N. G.,** Aug. 29, 1965 (R. Hornabrook).

Measured specimens. The ♂ holotype and ♀ paratype from Eliptamin Vy.

Notes. This is apparently a mountain-living species probably related to the lowland *papua* but differing from it as indicated in the *Description* above.

Pogonoglossus minor n. sp.

Description. With characters of genus (except ♂ unknown); form *c.* as in *papua*; characters *c.* as in *papua* except as follows. Color browner (less black), surface slightly more shining. *Head* 0.88 and 0.86 width prothorax; eyes slightly smaller and genae more evenly rounded than in *papua*. *Prothorax*: width/length 1.47 and 1.49; base/apex 1.08 and 1.07. *Elytra*: width elytra/prothorax 1.50 and 1.51; outer-apical angles more rounded than in *papua*; intervals less roughened. *Measurements*: length 7.6–8.7; width 3.0–3.3 mm.

Types. Holotype ♀ (M.C.Z., Type No. 31,519) from lower Busu R., Huon Pen., **N-E. N. G.,** May 12, 1955 (E. O. Wilson), in lowland rain forest; 1 ♀ paratype, Wau, Morobe Dist., **N-E. N. G.,** 1200 m, June 22, 1961 (Sedlaceks); 1 ♀ paratype, Hollandia, **West N. G.,** Jan. 20, 1945 (W. T. Nailon, Fenton Coll.); 1 ♀ paratype, Njau-limon, S. of Mt. Bougainville, **West N. G.,** 300 ft., Feb. 1936 (Cheesman).

Measured specimens. The ♀ holotype and ♀ paratype from Njau-limon.

Notes. P. minor differs from *papua* as indicated in the preceding *Description.* The 2 species are sympatric but *minor* is apparently the less widely distributed, being known only from a comparatively small part of east-central New Guinea.

P. minor is similar also to *porosus* Sloane of North Queensland, Australia, but has the head more punctate and the prothorax more strongly cordate.

Pogonoglossus major n. sp.

Description. With characters of genus; form as in Figure 136; irregular brownish piceous, appendages dark brown; rather shining, reticulate microsculpture absent or indistinct on head and pronotum, light, irregular, moderately transverse on elytra; surface punctate as described below. *Head* 0.82 width prothorax; genae prominently rounded but not angulate; front sparsely punctate-pubescent. *Prothorax* weakly cordate; width/length 1.49; base/apex 1.05; sides broadly sinuate before obtuse except minutely subdenticulate posterior angles; surface irregularly rather sparsely punctate-pubescent. *Elytra*: width elytra/prothorax 1.44; outer-apical angles broadly rounded, sutural angles blunted; striae deep, entire, finely punctulate; intervals convex, sparsely punctate, 3rd with apparently 3 or 4 special dorsal punctures difficult to distinguish from other punctures. *Secondary sexual characters*: ♂ front tarsi as genus; ♂ with apparently 3 principal setae on left, 4 on right side last ventral segment; ♀ unknown. *Measurements*: length 17.5; width 6.0 mm.

Type. Holotype ♂ (M.C.Z., Type No. 31,520) from vic. Nadzab, **N-E. N. G.,** July 1944 (Darlington); the type is unique.

Notes. This is the largest New Guinean *Pogonoglossus.* It is about the size of *P. horni* Sloane (Deutsche Ent. Zeitschrift for 1907, p. 184) of New Britain but has the prothorax more narrowed behind with more obtuse posterior angles, the outer elytral striae not fainter, and the elytral intervals sparsely rather than closely setose-punctate.

Pogonoglossus latior n. sp.

Description. With characters of genus; form as in Figure 137, very broad; brownish black, appendages dark; moderately shining, reticulate microsculpture indistinct on head and pronotum, light, fine, rather strongly transverse on elytra; punctation as described below. *Head* 0.74 and 0.67 width prothorax; genae oblique for most of length, slightly rounded or very obtusely subangulate behind eyes; front *c.* impunctate except sparsely punctate laterally and posteriorly. *Prothorax* very wide, cordate; width/length 1.88 and 1.97; base/apex 1.24

and 1.12; sides strongly but variably sinuate well before *c.* right or obtuse posterior angles; margins widely reflexed; disc more convex than usual, sparsely inconspicuously punctate-pubescent. *Elytra:* width elytra/prothorax 1.45 and 1.30; outer-apical angles rounded, sutural angles blunted; striae entire, well impressed, slightly irregular but scarcely punctulate; intervals convex, sparsely inconspicuously punctulate, 3rd with 3 or 4 dorsal punctures difficult to distinguish. *Secondary sexual characters*: ♂ front tarsi as for genus; ♂ with 3, ♀ 4 setae each side last ventral segment. *Measurements*: length 14.5–15.5; width 5.7–6.0 mm.

Types. Holotype ♂ (Leiden Mus.) and 1 ♀ paratype (M.C.Z., Type No. 31,521) from Lower Mist Camp, Snow Mts., **West N. G.,** 1550 m, Jan. 31, 1939 (Toxopeus).

Notes. See *Key to Species* for distinguishing characters of this well defined species. The ♀ has a wider prothorax with more obtuse angles than the ♂, but this is probably individual rather than sexual variation. I have no doubt the 2 specimens are conspecific.

Pogonoglossus obliquus n. sp.

Description. With characters of genus; form as in Figure 138; black, appendages dark; shining, reticulate microsculpture absent or indistinct even on elytra; punctation as described below. *Head* 0.77 width prothorax; genae prominently angulate-tuberculate behind eyes; front almost smooth, very sparsely punctulate-pubescent. *Prothorax* very wide; width/length 2.00; base/apex 1.22; sides oblique and converging and scarcely sinuate before obtuse posterior angles; margins widely reflexed; disc moderately convex, sparsely punctate-pubescent, more closely so across base and apex. *Elytra*: width not measured (specimen broken); humeral margins wider than usual; outer-apical angles rounded, sutural angles acute, scarcely blunted; striae entire, impressed, irregular but scarcely punctulate; intervals convex, finely sparsely punctulate, 3rd with *c.* 3 special dorsal punctures difficult to distinguish. *Secondary sexual characters*: ♂ front tarsi as for genus; ♂ with 3 setae each side last ventral segment; ♀ unknown. *Measurements*: length *c.* 13 mm; width not measured.

Type. Holotype ♂ (Bishop Mus.) from Eliptamin Vy., **N-E. N. G.,** 1665–2530 m, June 23–30, 1959 (W. W. Brandt); the type is unique.

Notes. The single specimen was received in bad condition and remounted in pieces on a card, but it shows the essential characters of this very distinct species. See *Key to Species* for its differential characters.

Pogonoglossus grossulus n. sp.

Description. With characters of genus; form average; black or brownish black, appendages dark; shining, reticulate microsculpture indistinct even on elytra. *Head* 0.80 and 0.79 width prothorax; genae prominently angulate-tuberculate behind eyes; front virtually smooth at middle, very sparsely punctulate-setose at sides. *Prothorax* wide-cordate; width/length 1.95 and 1.94; base/apex 1.23 and 1.19; sides broadly sinuate before *c.* right or obtuse posterior angles; margins wide, widely reflexed; disc weakly convex, very sparsely punctulate-pubescent. *Elytra*: width elytra/prothorax 1.27 and 1.36; outer-apical angles rounded, sutural angles acute (except for membranous margins); striae deep, scarcely punctulate; intervals convex, very sparsely punctulate, 3rd with up to 3 special dorsal punctures difficult to distinguish. *Secondary sexual characters* as for genus; ♂ with 2, ♀ with 3 setae each side last ventral segment. *Measurements*: length 9.6–11.0; width 3.7–4.1 mm.

Types. Holotype ♀ (M.C.Z., Type No. 31,522) from vic. Zengaru, Vy. of Kua R., Mongi Watershed, Huon Pen., **N-E. N. G.,** 800 m, Apr. 14, 1955 (E. O. Wilson); 1 ♀ paratype, Lae, **N-E. N. G.,** July 1944 (F. E. Skinner, Purdue U. Coll., borrowed fr. Bishop Mus.); 1 ♂ paratype, Kokoda,

Papua, 1200 ft. (366 m), Sept. 1933 (Cheesman).

Measured specimens. The ♂ paratype and ♀ holotype, in this order.

Notes. Although the 3 individuals listed above vary somewhat, they agree in form of genae, wide-cordate prothorax, shining sparsely punctate surface, and moderate size. I think they probably represent a single, variable species.

Pogonoglossus parvus n. sp.

Description. With characters of genus; form as in Figure 139; brownish black, head with 2 narrow oblique red marks posteriorly (see following *Notes*), appendages dark brown; moderately shining, reticulate microsculpture indistinct on head, irregular or transverse and light on pronotum and elytra. *Head* 0.85 and 0.85 width prothorax; genae angularly prominent behind eyes; much of front virtually impunctate. *Prothorax* cordate; width/length 1.48 and 1.56; base/apex 1.21 and 1.23; sides broadly sinuate before obtuse or nearly right posterior angles; margins rather narrow and not strongly reflexed; disc moderately convex, finely punctate-pubescent (pubescence rubbed off in part in holotype). *Elytra*: width elytra/prothorax 1.34 and 1.35; outer-apical angles narrowly rounded, sutural angles acute or slightly blunted; striae well impressed, irregular but scarcely punctulate; intervals convex, sparsely punctulate-pubescent, 3rd with special dorsal punctures not surely distinguishable. *Secondary sexual characters* as for genus; ♂ with 2 or 3 (unsymmetric), ♀ 3 setae each side last ventral segment. *Measurements*: length 7.0–9.0; width 2.5–3.2 mm (the ♂ is the larger).

Types. Holotype ♂ (M.C.Z., Type No. 31,523) from vic. Hollandia, **West N. G.,** July–Sept. 1944 (Darlington); and 1 ♀ paratype, Dobodura, **Papua**, Mar.–July 1944 (Darlington).

Notes. The small size, angulate genae, and form and microsculpture distinguish this species. The red marks on the head are distinct in both specimens and may prove to be characteristic of the species, although similar marks are indicated in some individuals of some other species.

Pogonoglossus unicolor (Macleay)

Macleay 1886, Proc. Linnean Soc. New South Wales (2) 1, p. 137 (*Planetes*).
Sloane 1907, Deutsche Ent. Zeitschrift for 1907, p. 184.

Description (significant details only, from Macleay's description). Color brownish black, legs dark; head shining, pronotum and elytra dull and densely minutely punctate; prothorax a little wider than long, with sides narrowed to posterior angles which are "rather obtusely rectangular"; elytra "with 8 or 9 almost invisible striae"; length *c.* 10 mm.

Type. From Fly R. (probably **Papua**); should be in Macleay Mus., Sydney (not seen).

Notes. Sloane (1907) adds nothing to Macleay's description of *unicolor* except that the insect is a *Pogonoglossus*. The very lightly striate elytra distinguish it from all known New Guinean species of this genus except *glabricollis* Van Emden (below), from which it differs in having the pronotum densely punctate and pubescent rather than smooth and virtually glabrous as in *glabricollis*.

Pogonoglossus glabricollis Van Emden

Van Emden 1937, Stettiner Ent. Zeitung 98, p. 44.

Description. With characters of genus; form as in Figure 140 (but somewhat variable); irregular dark brown or brownish black, head with 2 reddish marks posteriorly, appendages brown; moderately shining, elytra duller, reticulate microsculpture indistinct on head and pronotum, light and irregular on elytra. *Head* 0.85 and 0.83 width prothorax; genae rounded; front almost impunctate. *Prothorax* cordate, variable; width/length 1.39 and 1.60 (*sic*); base/apex 0.98 and 1.07; sides broadly sinuate before obtuse or *c.* right posterior

angles; margins rather narrow but variable; anterior angles rounded or bluntly pointed; disc almost flat, scarcely punctulate. *Elytra*: width elytra/prothorax 1.35 and 1.37; outer-apical angles broadly rounded, sutural angles acute or blunted; striae faintly indicated or virtually obsolete; surface closely punctulate; up to 3 apparent dorsal punctures sometimes visible on position of 3rd intervals. *Secondary sexual characters* undetermined (♂ unknown); ♀ with 3 or 4 (sometimes unsymmetric) setae each side last ventral segment. *Measurements*: length 12.5–16.0; width 4.2–5.3 mm.

Type. A ♀ from **N-E. N. G.**; in Van Emden Coll., British Mus. (seen).

Occurrence in New Guinea. **Papua**: 1 ♀, Kokoda-Pitoki, 400 m, Mar. 23, 1956 (Gressitt); 1 ♀, Fiume Purare, Jan. 1894 (Loria, borrowed from Straneo). **N-E. N. G.**: the holotype; 1 ♀, Motae, Kuku Kuku, E. Highlands, 6000 ft. (*c.* 1830 m), "1/3/64" (R. Hornabrook). **West N. G.**: 1 ♀, Geelvink Bay, 1878 (Raffray and Maindron, Paris Mus.).

Measured specimens. The ♀♀ from Kokoda-Pitoki and Motae.

Notes. Although the 4 individuals listed above vary in several characters (e.g. form of prothorax, degree of obliteration of elytral striae), the variations are not obviously concordant, and I think only one very distinct species is involved. It is uniquely characterized by form, elytral striae faint or obsolete, and combination of virtually impunctate pronotum and densely punctulate elytra.

Tribe HELLUONINI

Sloane 1914, Proc. Linnean Soc. New South Wales 39, p. 568.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1572 (see for synonymy and additional references).
Jeannel 1949, Coléop. Carabiques de la Région Malgache, Part 3, p. 1041.
Jedlicka 1963, Ent. Abhandlungen 28, p. 467.
Helluoninae Basilewsky 1953, Exploration Parc National l'Upemba, Fasc. 10, p. 219.

This is still another small but widely distributed tribe. The members of it are medium-sized or large carabids, usually of characteristic form, usually with sparse or short pubescence, and usually with mouthparts including the labrum strikingly modified. Three genera are confined to the Americas; 6, to Africa and/or the Oriental Region (except that a species of *Creagris* extends to Australia); 13, to the Australian Region. (A supposed helluonine on New Caledonia has been shown not to be one by Britton, 1937, Ent. Monthly Magazine 73, p. 127.) The Australian genera form a distinct group of the tribe, characterized by Sloane (1914, p. 570). Five genera (1 of them new) and 8 species of Australian-group Helluonini occur in New Guinea, where the only other member of the tribe is *Creagris labrosa*, which ranges from Ceylon and India to Australia.

In spite of Sloane's (1914) careful study of the Australian genera, I have had trouble with the generic classification of the New Guinean forms. This is partly because my material is inadequate: 2 obviously distinct new species are represented by unique females which I have assigned to *Helluonidius* with some doubt, and I have been forced to base an apparent new genus on a single male. I myself found no Helluonini during 11 months in New Guinea and I can say nothing about their habitats or habits there except that all the New Guinean species are winged and that some of them fly to light. In Australia, different helluonines live on the ground and on tree trunks, usually in open or openly-wooded places rather than in rain forest.

KEY TO GENERA OF HELLUONINI OF NEW GUINEA

1. Front femora not angulate-protuberant below; size smaller, length *c.* 9 mm (p. 229) ..... *Creagris*
– Front femora thickened and bluntly angulate or protuberant below near base; size larger 2
2. Prothorax moderately narrowed posteriorly, with sides moderately sinuate (p. 233) ..... *Helluodema*

– Prothorax strongly narrowed posteriorly, with sides strongly sinuate and base subpedunculate 3

3. Ligula subtriangular, narrowed anteriorly, with apex narrowly rounded (p. 233) ..... *Helluosoma*

– Ligula very wide, with apex broadly rounded or emarginate 4

4. Labrum with 2 principal setae; elytra with 8th intervals much wider than 7th and closely punctate; length (in New Guinea) *c.* 30 mm (p. 233) ..... *Gigadema*

– Labrum with 4 or more principal setae; elytra with 8th intervals not much wider than 7th and less closely punctate; length *c.* 20 mm or less 5

5. Tarsal segments unusually widened or parallel-sided, the 4th hind-tarsal segments emarginate for more than ½ the segments' length; labrum usually with 4 principal setae (p. 229) ..... *Helluonidius*

– Tarsal segments not thus widened and not parallel-sided, the 4th hind-tarsal segments shallowly emarginate; labrum with *c.* 10 principal setae (see also *Description*) (p. 232) ..... *Helluopapua*

Genus *CREAGRIS* Nietner

Nietner 1857, J. Asiatic Soc. Bengal 26, p. 139.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1575 (see for synonymy and additional references).

Diagnosis. See preceding *Key to Genera.*

Description. None required here.

Type species. Creagris labrosa Nietner, below.

Generic distribution. Six species in the **Oriental Region**, 1 of them extending to **New Guinea** and Queensland, **Australia**; possibly an additional species in Queensland.

Notes. The listing of *C. wilsoni* Castelnau (the supposed endemic Queensland species) also from Java by Csiki (p. 1576) is apparently a compiler's error based on a misreading of Sloane 1914 (see reference under following species).

Creagris labrosa Nietner

Nietner 1857, J. Asiatic Soc. Bengal 26, p. 139.
Sloane 1914, Proc. Linnean Soc. New South Wales 39, p. 570.
——— 1920, Proc. Linnean Soc. New South Wales 45, p. 322.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1575 (see for synonymy and additional references).

Description. None required here; note size small; color dark brown; labrum expanded, *c.* circular, shallowly channeled each side; mentum with lateral lobes and median tooth all produced as long very slender processes; front femora not angulate below; length *c.* 9 mm.

Types. From **Ceylon**; in Berlin U. Zool. Mus. and Stettin Mus. (not seen).

Occurrence in New Guinea. **Papua**: 2, Mt. Lamington, 1300–1500 ft. (*c.* 400–460 m) (C. T. McNamara, S. Australian Mus.).

Notes. C. labrosa is now known from **Ceylon**, **India**, **Burma**, etc., **Java**, **New Guinea**, and Queensland, **Australia** (a specimen from Mackay, recorded by Sloane, 1914).

Genus *HELLUONIDIUS* Chaudoir

Chaudoir 1872, Revue et Magasin Zool. (2) 23, p. 216.
Sloane 1914, Proc. Linnean Soc. New South Wales 39, pp. 571, 582.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1580 (see for synonymy and additional references).

Diagnosis. Form *c.* as in Figure 142; pubescent (as usual in tribe); genae variable; labrum variable, produced or angulate at apex, usually with 4 principal setae; mentum toothed; ligula rounded; prothorax strongly constricted at base; elytra with 8th intervals not much wider than 7th, irregularly punctate; 4th hind-tarsal segments ± wide, deeply emarginate; see also preceding *Key to Genera of Helluonini of New Guinea.*

Description. None attempted here; material inadequate.

Type species. Aenigma cyanipenne Hope, of Australia.

Generic distribution. Eastern and northern **Australia**, **New Guinea**.

Notes. Of the 4 New Guinean species now placed in this genus, only *chrysocomes* Maindron is a typical *Helluonidius.* The other 3 species, 2 of them based on unique

females (sex determined by dissection), differ in form of labrum and differ among themselves in form of genae, form of tarsi, and in other ways. They are obviously distinct species, but males are needed to determine generic assignments.

KEY TO SPECIES OF *HELLUONIDIUS* OF NEW GUINEA

1. Labrum longer than wide, narrowly produced at apex (p. 230) ..... *chrysocomes*
– Labrum wider than long, not narrowly produced at apex 2
2. Labrum with median setae close to margin; elytra microreticulate (p. 230) ... *laevifrons*
– Labrum with median setae *c.* ⅓ labrum's length behind margin; elytra not microreticulate 3
3. Genae abruptly truncate, *c.* straight from posterior edges of eyes to neck; tarsi very wide (Fig. 184) (p. 231) ..... *latipes*
– Genae moderately convex; tarsi less wide (p. 231) ..... *politus*

Helluonidius chrysocomes Maindron

Maindron 1908, Nova Guinea 5, Livraison 2, p. 299.

Description. None required here; form as in Figure 142; form of labrum (longer than wide, and narrowly produced at apex) unique in tribe Helluonini in New Guinea; genae prominent; antenna and hind tarsus, Figure 182; color black or dark brown; surface without reticulate microsculpture; length *c.* 16.0–18.5 mm.

Type. From "Sentani" (near Hollandia), **West N. G.**; probably in Paris Mus. (not seen).

Occurrence in New Guinea. Twenty-two specimens from 11 localities scattered over most of the length of **New Guinea**, from Port Moresby and the Fly R. to the Vogelkop; at low altitudes, none labeled higher than 800 m (Araucaria Camp).

Notes. This is a typical *Helluonidius*, very close to and perhaps the same as one of the Australian species, which are all very similar and which need revision.

Most specimens of *chrysocomes* have the surface especially of the elytra with a pearly luster which is apparently due to a surface film of some sort, but 6 individuals widely scattered within the range of the species are shining black without luster.

Helluonidius laevifrons n. sp.

Description. With characters of genus; form as in Figure 143; antenna and hind tarsus, Figure 183; black, appendages dark; head and pronotum shining (but punctate as described below), elytra duller, with *c.* isodiametric microsculpture. *Head* 0.84 width prothorax; genae oblique, not at all prominent; clypeus subtruncate, 1-setose each side; labrum wider than long, obtusely subangulate, sinuate each side of angulation, 4-setose with inner setae very close to anterior margin (see *Notes*, below); front deeply impressed each side, the impressions punctate but front otherwise broadly impunctate; neck moderately impressed and punctate; mentum with large triangular tooth; ligula wide, irregularly rounded, depressed at middle, with 3 pairs seta-bearing punctures one behind the other; inner lobe of maxillae with inner edge irregular near middle and with strong hook at *c.* right angles from inner-apical angle; palpi rather short and thick. *Prothorax*: width/length 1.19; base/apex 1.02; base/head 0.72; margins narrow, scarcely interrupted; disc irregularly convex, irregularly coarsely punctate with punctures tending to form longitudinal rows between narrow smooth spaces at middle. *Elytra*: width elytra/prothorax 1.22; striae well impressed, punctulate; intervals slightly convex, most intervals slightly irregularly 2-seriately punctate, special dorsal punctures of 3rd not surely distinguishable, 8th slightly wider than 7th and irregularly (not 2-seriately) punctulate. *Legs*: tarsal segments more nearly parallel than usual (Fig. 183); 4th hind-tarsal segments emarginate for slightly more than ½ length. *Measurements*: length 18.0; width 6.5 mm.

Type. Holotype ♀ (Bishop Mus.) from Torricelli Mts., Mokai Village, **N-E. N. G.**, 750 m, Jan. 1–23, 1959 (W. W. Brandt); the type is unique.

Notes. The front margin of the labrum

is slightly sinuate on each side, with the inner seta-bearing puncture near margin at the sinuation. This form of labrum is intermediate between that of *H. chrysocomes* and those of the following two species. But in some other ways (form of genae and especially form of tarsi) the present species is strongly characterized, not intermediate.

Helluonidius latipes n. sp.

Description. With characters of genus; form as in Figure 144; antenna and hind tarsus, Figure 184; dark brown, appendages dark; shining, without reticulate microsculpture, but punctate as described below. *Head* 0.82 width prothorax; genae oblique, not at all prominent; clypeus subtruncate, 2-setose each side; labrum wider than long, bluntly obtusely angulate, not sinuate at sides of angulation, 4-setose with inner setae almost ⅓ length of labrum behind anterior margin; front irregularly convex, deeply impressed each side anteriorly, punctate at sides and base but *c.* impunctate at middle; mentum with strong bluntly triangular tooth; ligula wide, rounded, scarcely impressed at middle, probably 6-setose as in *laevifrons* (above) but anterior setae covered or broken; inner lobe of maxillae *c.* as in *laevifrons*; palpi stout. *Prothorax*: width/length 1.40; base/apex 1.01; base/head 0.72; margins narrow, much interrupted anteriorly; disc irregularly convex, irregularly punctate. *Elytra*: width elytra/prothorax 1.52; striae impressed, scarcely punctulate; intervals slightly convex, irregularly 2-seriately punctate, 3rd with special dorsal punctures not surely distinguishable, 8th not wider than 7th, irregularly, rather sparsely in part 2-seriately punctate. *Legs*: tarsi exceptionally wide (Fig. 184); 4th hind-tarsal segments much wider than long, deeply and widely emarginate; 5th segments wide and flattened. *Measurements*: length 19.8; width 6.8 mm.

Type. Holotype ♀ (Leiden Mus.) from Rattan Camp, **West N. G.,** 1200 m, Feb.–Mar. 1939 (Toxopeus); the type is unique.

Notes. This species is assigned to *Helluonidius* with doubt. The genae are formed as in the preceding species (*laevifrons*) and the labrum is almost the same in shape, but the 2 inner setae of the labrum are much farther back and the tarsi are strikingly different.

Helluonidius politus n. sp.

Description. With characters of genus; form as in Figure 145; antenna and hind tarsus, Figure 185; brownish black, appendages dark; shining, without reticulate microsculpture but punctate as described below. *Head* 0.84 width prothorax; genae moderately convex, subprominent; clypeus broadly slightly emarginate, 2-setose each side; labrum wider than long, bluntly angulate, with apparently 2 principal setae on right and 4 on left, the inner seta on each side almost ⅓ length of labrum behind anterior margin; front weakly convex, deeply impressed each side anteriorly, punctate at sides and across base and with a few widely scattered punctures near middle; mentum with strong blunt tooth; ligula wide, rounded, scarcely impressed, 6-setose as in *laevifrons*; inner lobe of maxillae *c.* as in *laevifrons* and *latipes*, with hook from inner-apical angle; palpi less thick than in preceding species. *Prothorax*: width/length 1.33; base/apex 0.97; base/head 0.68; margins narrow, much interrupted anteriorly; disc weakly irregularly convex, irregularly coarsely punctate. *Elytra*: width elytra/prothorax 1.44; striae impressed, punctulate; intervals convex, irregularly 2-seriately punctate, 3rd with special dorsal punctures not surely identifiable, 8th not much wider than 7th, irregularly in part 2-seriately sparsely punctate. *Legs*: tarsi moderately wide and flattened, but less so than in preceding species (*latipes*); 4th hind-tarsal segments wide, very deeply emarginate. *Measurements*: length 16.7; width 5.3 mm.

Type. Holotype ♀ (M.C.Z., Type No. 31,524), from Maba Vy., Menyama, Mo-

robe Dist., **N-E. N. G.** (L. Hastings); 1 ♂ paratype (Bishop Mus.), Oriomo River, 6 m, Feb. 13, 1964 ("H.C."), light trap; 1 ♀ paratype (M.C.Z.), Maprik, **N-E. N. G.,** Oct. 14, 1957 (Gressitt), light trap.

Notes. This species is similar to the preceding (*latipes*) but has more prominent genae and narrower tarsi. The genae are less prominent than in *chrysocomes* but lead toward that species, while the labrum suggests a relationship with *latipes*.

HELLUOPAPUA n. gen.

Diagnosis. Form of *Helluonidius*; labrum wide, multisetose; ligula wide, slightly emarginate, setose as in *Helluonidius*; inner lobe maxillae strongly hooked on inner side *before* apex; 8th elytral intervals *c.* wide as 7th, 2-seriately punctate with few or no scattered punctures; tarsi slender, 4th hind-tarsal segments shallowly emarginate; front femora obtusely prominent below near base; ♂ front tarsi without squamae; ♂ copulatory organs as in Figure 181.

Description. See description of only known species, below.

Type species. H. toxopei, below.

Generic distribution. Known from a single locality in **West N. G.**

Notes. This new genus differs from *Helluonidius* in labrum multisetose; hook of inner lobe of the maxillae subapical (not apical), and tarsi much more slender with 4th hind-tarsal segments shallowly (not deeply) emarginate. It differs from *Gigadema* in labrum multisetose and 8th elytral intervals much narrower and 2-seriately (not densely) punctate. It fits no other genus in Sloane's (1914, pp. 571–572) key. And it differs from all previously known Helluonini of Sloane's (1914, p. 570) "Australian Group" in lacking sexual squamae on ♂ front tarsi.

Helluopapua toxopei n. sp.

Description. With characters of genus; form as in Figure 146; slender, subparallel, depressed; antennae and hind tarsus, Figure 186; black, appendages dark brown, 2 minute red spots on head posteriorly; surface sparsely pubescent, moderately shining, microsculpture faint and irregular on head and pronotum, more distinct and *c.* isodiametric on elytra, and surface punctate as described below. *Head* 0.90 width prothorax; genae rounded, moderately prominent; clypeus slightly sinuate-truncate, with several setae each side; labrum wider than long, wide in front, broadly sinuate each side in front with apex obtusely angulate, with several principal setae each side but none near middle; front irregularly convex, deeply impressed each side and transversely impressed anteriorly (individual character?), irregularly punctate at sides and posteriorly; mentum with strong triangular tooth and side lobes long and pointed; ligula as described for genus; palpi rather slender. *Prothorax*: width/length 1.38; base/apex 0.78; base/head 0.69; margins narrow, not interrupted; disc weakly irregularly convex, surface irregularly punctate. *Elytra*: width elytra/prothorax 1.52; striae impressed, not punctulate; intervals slightly convex, rather sparsely 2-seriately punctate. *Measurements*: length 22.5; width 6.7 mm.

Type. Holotype ♂ (sex determined by dissection) (Leiden Mus.) from Rattan Camp, **West N. G.,** 1200 m, Feb.–Mar. 1939 (Toxopeus); the type is unique.

Notes. Although this ♂ is from the same locality as the ♀ type of *Helluonidius latipes*, the two specimens differ in so many ways that they cannot be one species but have to be assigned to different genera: the two specimens differ in form, in genae, in shape and setae of labrum, in position of hook of inner lobe of maxillae, and in form of tarsi, and this is just a beginning of the list of differences. A revision of all New Guinean and Australian members of the tribe, with much additional material, will probably be necessary to decide the real relationships of this new genus as well as of the new species of *Helluonidius* described above.

Genus *HELLUOSOMA* Castelnau

Castelnau 1867, Notes on Australian Coleop., p. 20.
Sloane 1914, Proc. Linnean Soc. New South Wales 39, pp. 571, 585.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1581 (see for synonymy and additional references).

Diagnosis. See preceding *Key to Genera.*

Description. None required here.

Type species. H. atrum Castelnau (below).

Generic distribution. Tropical **Australia** and **New Guinea**.

Notes. Only one species of this genus is adequately known, although a second species may exist in Australia (Sloane 1914, p. 586).

Helluosoma atrum Castelnau

Castelnau 1867, Notes on Australian Coleop., p. 21.
Sloane 1914, Proc. Linnean Soc. New South Wales 39, p. 586.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1581 (see for synonymy and additional references).

Description. None required here; note form *c.* as in *Helluonidius*; color black or dark brown; genae prominent; labrum wider than long, obtusely angulate, 4-setose; ligula narrower than usual in tribe, narrowed anteriorly, narrowly rounded at apex; length *c.* 12.5–15.0 mm.

Type. From Rockhampton, Queensland, **Australia**; present location unknown (not found at Melbourne in 1958).

Occurrence in New Guinea. **Papua**: 3, Rouku, Morehead R., Apr. 1962 (W. W. Brandt, C.S.I.R.O.); 7, Port Moresby and vicinity, various dates and collectors (Dept. Agr. Port Moresby; A.M.N.H.); 1, Bisianumu, Sogeri Subdistrict, *c.* 1600 ft. (485 m), Mar. 1955 (J. J. H. Szent-Ivany and J. McAdam, Dept. Agr. Port Moresby).

Notes. The relatively narrow ligula is diagnostic of this species in this tribe in New Guinea. I find no significant differences between specimens from Australia and from New Guinea, although individual variation occurs in both places.

Genus *HELLUODEMA* Castelnau

Castelnau 1867, Notes on Australian Coleop., p. 19.
Sloane 1914, Proc. Linnean Soc. New South Wales 39, pp. 571, 586.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1581 (see for synonymy and additional references).

Diagnosis. See preceding *Key to Genera.*

Description. None required here.

Type species. Helluomorpha batesi Thomson (= *unicolor* Hope), of Australia (see below).

Generic distribution. Eastern and northern **Australia**, **New Guinea**.

Notes. Two species of this genus occur in Australia, one of them extending to New Guinea.

Helluodema unicolor (Hope)

Hope 1842, Proc. Ent. Soc. London for 1842, p. 47 (*Aenigma*).
Sloane 1914, Proc. Linnean Soc. New South Wales 39, p. 587.
Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1581 (see for synonymy and additional references).

Description. None required here; note form (Fig. 141) slender; genae prominently rounded; prothorax only moderately (not strongly) constricted before base; labrum wider than long, obtusely angulate, 4-setose; ligula broadly rounded, obtusely emarginate at apex; length *c.* 13–15 mm.

Type. From **Australia**; present location unknown.

Occurrence in New Guinea. **Papua**: 3, Rouku, Morehead R., Apr. 1962 (W. W. Brandt, C.S.I.R.O.). **West N. G.**: 2, Merauke, sea level, Mar. 24, 28, 1955 (L. D. Brongersma, Leiden Mus.), evidently taken in light trap.

Notes. This species occurs in eastern Australia at least from northern New South Wales to Cooktown. The New Guinean specimens agree well with Australian ones.

Genus *GIGADEMA* Thomson

Thomson 1859, Arcana Naturae, p. 93.
Sloane 1914, Proc. Linnean Soc. New South Wales 39, pp. 572, 593.

Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1582 (see for synonymy and additional references).

Diagnosis. See preceding *Key to Genera.*

Description. None required here.

Type species. G. titanum Thomson (= *nocte* Newman), of Australia.

Generic distribution. **Australia**; southern **New Guinea.**

Notes. This is the principal genus of the tribe in Australia. One of the 12 or more Australian species is now recorded from a single locality in southern New Guinea, almost opposite the tip of the Cape York Peninsula.

Gigadema maxillare Sloane

Sloane 1914, Proc. Linnean Soc. New South Wales 39, pp. 595, 599.

Description. None required here; note large size; prothorax constricted at base; color dark; surface short-pubescent; labrum *c.* long as wide, rounded, 2-setose; length of Australian specimens 27–35, of New Guinean specimen 32 mm.

Types. From tropical Queensland, **Australia**: Townsville, Kuranda, Cooktown, Princess Charlotte Bay. I here designate as lectotype a specimen labeled "Cktn., Q., Olive, ♂" and "*Gigadema maxillare* Sl., Id. by T. G. Sloane"; in Sloane Coll., C.S.I.R.O., Canberra (seen).

Occurrence in New Guinea. **Papua**: 1 ♀, Rouku, Morehead R., Apr. 1962 (W. W. Brandt, C.S.I.R.O.).

Notes. The Papuan ♀ agrees with Australian examples of *maxillare* in nonsexual characters, but a ♂ is needed to confirm the identification. Another specimen apparently of *maxillare*, but also a ♀, is before me from **Mona Is., Torres Straits** (J. W. Schomberg, S. Australian Mus.).

Tribe BRACHININI

Brachynini Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1593 (see for synonymy and additional references).

Jedlicka 1963, Ent. Abhandlungen 28, p. 524.

Brachinidae Jeannel 1942, Faune de France, Coléop. Carabiques, Part 2, p. 1102.

——— 1949, Coléop. Carabiques de la Région Malgache, Part 3, p. 1079.

Brachininae Basilewsky 1953, Exploration Parc National l'Upemba, Fasc. 10, Carabidae, p. 235.

Habu 1967, Fauna Japonica, Carabidae, Truncatipennes Group, p. 280.

The beetles of this tribe are bombardiers (but are not the only Carabidae that "shoot" repellents) and are well known to most entomologists in most parts of the world. Their form is characteristic, and identification is confirmed by presence of 8 visible ventral abdominal segments.

Two genera of the tribe are very widely distributed, and these are the only genera that reach New Guinea. *Pheropsophus*, which occurs (discontinuously) in all principal tropical regions, has 6 New Guinean species of which 5 are endemic and 1 shared with Australia. *Brachinus*, which is almost worldwide except that it does not reach Australia, has 1 New Guinean species which is endemic but which is the easternmost member of an Oriental species group.

KEY TO GENERA OF BRACHININI OF NEW GUINEA

1. Elytra with costae strong, distinct, and separate to apex (p. 234) ..... *Pheropsophus*
– Elytra with costae weaker and becoming faint and in part vaguely connected before apex (p. 239) ..... *Brachinus*

Genus *PHEROPSOPHUS* Solier

Solier 1833, Ann. Soc. Ent. France 2, p. 461.

Csiki 1932, Coleop. Cat., Carabidae, Harpalinae 7, p. 1595 (see for subgenera and additional references).

Parapheropsophus Hubenthal 1914, Deutsche Ent. Zeitschrift for 1914, pp. 440, 442 (new synonymy).

Csiki 1933, Coleop. Cat., Carabidae, Harpalinae 8, p. 1604 (as subgenus of *Pheropsophus*).

Diagnosis. See preceding *Key to Genera.*

Description. None required here; see Figures 147–151.

Type species. Of *Pheropsophus*, *Brachinus senegalensis* Dejean, of Africa. Of *Parapheropsophus*, *P. intermedius* Hubenthal (= *verticalis* Dejean) by present designation.

Generic distribution. All principal tropical and some warm-temperate regions of

the **world**. In the Asiatic-Australian area species are numerous in southeastern Asia and the western Malay Archipelago, fewer eastward, and only 1 variable species reaches Australia.

Notes. The supposed "subgenus" *Parapheropsophus* was based on trivial characters, primarily on the shape of the dark mark between the eyes (which is variable) supported by a supposedly characteristic habitus which, according to Hubenthal, is "leichter zu erkennenden als zu beschreibenden." In my opinion all the 4 "species" and 5 additional "varieties" listed in this subgenus by Csiki (following Hubenthal) are forms of a single species (*verticalis* Dejean) which is not worth subgeneric separation from *Pheropsophus*.

The 6 species of *Pheropsophus* that occur in New Guinea are ecologically differentiated. *P. verticalis* is very common in a variety of wet places and is winged. *P. amnicola* has been found only on the banks of large rivers (Markham and Sepik) and is always winged. The other 4 species are rare, local, flightless forms; 1 (*catulus*) is known to occur in leaf-litter on the ground in rain forest, and this is probably the habitat of the others too.

Besides the 6 species of *Pheropsophus* treated below, I have seen a single specimen of *javanus* Dejean (*agnatus* Chaudoir) labeled as from New Guinea ("New Guinea, Mimika R., A. F. R. Wollaston. 1911–229." (British Mus.)). This conspicuous species is common in the western Malay Archipelago but has not been found in New Guinea by recent collectors and has apparently not been found in the Moluccas. I think the specimen in question is probably wrongly labeled. New Guinea should be deleted from the range of the species as given by Csiki (p. 1601) and others.

KEY TO SPECIES OF *PHEROPSOPHUS* OF NEW GUINEA

1. Elytra each with 8 costae *c.* equally prominent 2
– Elytra with odd costae more prominent than even ones at least at base 5
2. Strictly bicolored: head and prothorax yellow or reddish yellow without dark marks, elytra dark without pale marks (p. 235) ... *amnicola*
– Not thus bicolored: all or part of pronotum and part of head dark, elytra dark with or without pale marks 3
3. Front yellow with isolated usually V-shaped dark mark between eyes; inner wings large and folded (p. 236) ..... *verticalis*
– Posterior half or more of head dark; inner wings vestigial 4
4. Head bicolored, yellow anteriorly, dark posteriorly; prothorax wider than long at middle (by measurement); femora not or only minutely black-tipped; length 8.5–12.5 mm (p. 237) ..... *aptinomorphus*
– Head dark with small V-shaped reddish mark on front; prothorax as long (at middle) as wide and appearing longer; femora conspicuously black-tipped; length *c.* 18 mm (p. 237) ..... *pedes*
5. Pronotum (sparsely) punctate, much roughened at base and apex; length *c.* 15–16 mm (p. 238) ..... *catulus*
– Pronotum virtually impunctate, scarcely roughened; length 20.5 mm (p. 238) ... *canis*

Pheropsophus amnicola n. sp.

Description. With characters of genus; form (Fig. 147) *c.* as of *verticalis*; head and pronotum yellow without dark marks, elytra black without pale marks, appendages yellow. *Head* 0.92 and 0.93 width prothorax. *Prothorax* subcordate; width/length 1.14 and 1.13; base/apex 0.94 and 1.01; sides broadly arcuate anteriorly, broadly sinuate before *c.* right posterior angles; margins very narrow; disc convex, irregularly subpunctate and punctulate. *Elytra* moderately narrowed anteriorly; width elytra/prothorax 1.64 and 1.66; each elytron with 8 well defined costae (including raised suture), the costae equally elevated and equally prominent at base; surface of costae finely microreticulate, intercostal intervals longitudinally roughened. *Inner wings* full. *Measurements*: length *c.* 8.5–15.0; width 3.2–5.3 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,525) and 34 paratypes from vic. Nadzab, **N-E. N. G.,** July 1944 (Darlington); and 1 paratype, Main R., Sepik, **N-E. N. G.,** Feb. 1965 (R. Hornabrook).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Nadzab.

Notes. The preceding description contains all the characters that now seem worth specifying for this new species, which is distinguished from *verticalis* primarily by color. Color, properly understood and with allowance for variation, is in fact specific in this genus. The geographic and ecologic restriction of *amnicola*, as compared with *verticalis*, is another indication that the two species are fully distinct. My specimens were all taken on the banks of the Markham R., and none was found in any other situation.

Pheropsophus verticalis Dejean

Dejean 1825, Species Général Coléop. 1, p. 302.
Csiki 1933, Coleop. Cat., Carabidae, Harpalinae 8, p. 1604 (see for Australian "varieties" and additional references).
australis Castelnau 1867, Notes on Australian Coleop., p. 23 (new synonymy).
papuensis Macleay 1876, Proc. Linnean Soc. New South Wales 1, p. 166 (new synonymy).
Heller 1910, Abhandlungen und Berichte Zool. Mus. Dresden 13, No. 3, p. 7.
macleayi Sloane 1894, Proc. Linnean Soc. New South Wales (2) 9, p. 453 (new synonymy).
baliothorax Heller 1910, Abhandlungen und Berichte Zool. Mus. Dresden 13, No. 3, p. 6 (new synonymy).
intermedius Hubenthal 1914, Deutsche Ent. Zeitschrift for 1914, p. 440 (new synonymy).

Description. None required here. This is the only New Guinean *Pheropsophus* with an isolated black (or brown) frontal spot. See also under genus (above) and *Notes* (below); length 8.5–16.5 mm.

Types. Of *verticalis* Dejean, from "Nouvelle Hollande" (= **Australia**); in Oberthür Coll., Paris Mus. Of *australis* Castelnau, from Rockhampton, Queensland, **Australia**; present location unknown. Of *papuensis* Macleay, from Katow, **Papua**; presumably in Macleay Mus., Sydney. Of *macleayi* Sloane, from King's Sound, NW. **Australia**; lectotype not designated. Of *baliothorax* Heller, from Finschhafen, **N-E. N. G.**; in Dresden Mus. Of *intermedius* Hubenthal, from **New Britain**; in Berlin Zool. Mus. (Of all these types, I have seen only some cotypes of *macleayi*.)

Occurrence in New Guinea. Common throughout **New Guinea**: 215 specimens; most from low altitudes, only 2 individuals from above 1000 m; common at Dobodura.

Notes. The synonymy proposed above is based not on comparison of types but on examination of much material from many localities in Australia as well as New Guinea, New Britain, and some other islands. As a result of it I have concluded that, in the area in question, all the *Pheropsophus* with an isolated dark frontal spot belong to one variable species, *verticalis* Dejean, which ranges over the whole of **Australia** and **New Guinea** and extends to **New Britain**, **New Ireland**, the **Solomons**, and perhaps other islands.

In reaching this conclusion, I first considered the supposed separate northern Australian species, *macleayi* Sloane. Of it, Sloane had only 3 specimens, which happened to be rather small (11.5–13 mm) and to share some minor peculiarities of form and markings including presence of yellow shoulder spots and elytral fasciae of constant shape. My material from subtropical and tropical northern Australia shows that these characters are in fact individual rather than specific. For example, 6 specimens from the Blackall Range, in subtropical South Queensland, vary in size from 11.5 to 14.5 mm (to apex of elytra) and vary also considerably in form and somewhat in markings, although none has shoulder spots; and 4 specimens from mid-peninsular Cape York (Coen and Silver Plains) are large (*c.* 14.5–16.5 mm) and vary in exact form of prothorax, in prominence of humeri, and in markings: e.g., 2 have and 2 have not yellow shoulder spots.

The New Guinean individuals that I include in *verticalis* vary in details of form, especially in prominence of humeri. They vary in size from *c.* 8.5 to 16.5 mm. And they vary in markings: the transverse usually V-shaped dark mark between the eyes is relatively constant but is sometimes slightly extended posteriorly; the pronotum varies from wholly dark to broadly reddish yellow with only the margins dark (inter-

mediates are common); and the elytra vary from wholly dark to conspicuously marked, with median fascia often present but variable (but rarely large), shoulder spots sometimes present (distinct in only 2 individuals, from S. Highlands and Popondetta, and vestigial in a few other individuals), and apices sometimes with (variable) yellow margins. Although much of this variation is surely individual, some of it is or may be geographic. For example, New Guinean specimens usually have the elytra less heavily spotted than Australian specimens, although extremes overlap. But I think nothing is to be gained by recognizing subspecies now. The variations of this species should first be analyzed statistically, in detail, using series of specimens from exact localities, not just the New Guinean against Australian specimens. This will be third stage taxonomy (see Part I of my "Carabid Beetles of New Guinea," p. 329), far beyond what I can attempt now.

The wings of *verticalis* are fully developed, or at least large enough to be strongly folded at apex, in all my Australian specimens and all New Guinean specimens that I now assign to this species. However, occasional short-winged individuals occur that may prove to be mutants of *verticalis* although I am tentatively treating them as a separate species, *aptinomorphus* Heller (below).

P. verticalis is common in a variety of wet places. Although all individuals are winged, they may not often fly and are not often taken in light traps. Observations on their flight would be interesting.

The great variation in size of adults suggests that the larvae may be parasitoid, perhaps feeding on pupae of other beetles, as some other members of the tribe are known to do.

Pheropsophus aptinomorphus Heller

baliothorax var. *aptinomorphus* Heller 1910, Abhandlungen und Berichte Zool. Mus. Dresden 13, No. 3, p. 7.

Description. Form as in Figure 148; similar to *verticalis* (above) but elytra more narrowed to base; head bicolored, yellow anteriorly, dark posteriorly; elytra not marked (in the few specimens seen); inner wings vestigial, reduced to thin strips less than ½ long as elytra; length (to apex of elytra) *c.* 8.5–12.5 mm.

Type. From **New Guinea**, exact locality not given, but altitude stated as 120 m; in Dresden Mus. (not seen).

Occurrence in New Guinea. **N-E. N. G.**: 1, Aitape, Aug. 1944 (Darlington). **West N. G.**: 1, Waris, S. of Hollandia, 450–500 m, Aug. 16–23, 1959 (T. C. Maa, Bishop Mus.); 1, Maffin Bay, Aug. 1944 (Darlington); 1, same locality, June 15, 1944 (E. S. Ross, California Acad.).

Notes. Heller does not say whether the type is winged, but the 4 specimens listed above answer his description in color of head (which is diagnostic), and their form, with narrowed humeri, does recall *Aptinus*.

If it were not for the different head marking, I would consider my specimens of *aptinomorphus* to be short-winged mutants of *verticalis*. The distribution of the short-winged individuals, widely scattered and occurring with *verticalis* (which I have from Waris and Maffin Bay and which probably occurs at Aitape too), would be consistent with their being mutants. But if they are mutants, then the mutant gene apparently must modify color of head as well as length of wings and form of elytra, and I do not dare assume that this is the case without further evidence.

Pheropsophus pedes n. sp.

Description. With characters of genus; form as in Figure 149, with relatively long narrow prothorax and elytra ample but strongly narrowed to base; black, head with irregular red marks including U-shaped mark between eyes, appendages reddish, femora broadly tipped with black. *Head* 0.96 width prothorax; eyes normal; 1st antennal segments swollen; labrum semicircular; front 2-impressed anteriorly, with surface finely *c.* isodiametrically reticulate.

Prothorax long; width/length 1.01; base/apex 1.06; margins narrow, each with 1 principal seta behind middle of length; disc moderately convex, with scattered punctures (the punctures with setae as usual in genus), strongly roughened at base, less so apically, and with disc finely irregularly microreticulate. *Elytra*: width elytra/prothorax 1.95; each elytron with 8 costae (including raised suture) *c.* equally developed; surface of costae finely irregularly microreticulate, intercostal intervals longitudinally roughened. *Inner wings* evidently atrophied. *Measurements*: length 18; width 6.5 mm.

Type. Holotype ♀ (Bishop Mus.) from Bomberi, Vogelkop, **West N. G.,** 700–900 m, June 7, 1959 (T. C. Maa); the type is unique.

Notes. I do not know the relationships of this obviously distinct species. Characters distinguishing it from other New Guinean *Pheropsophus* are given in the preceding *Key to Species.*

Pheropsophus catulus n. sp.

Description. With characters of genus; form as in Figure 150, with elytra strongly narrowed to base; brownish black, head variably red-marked anteriorly, appendages reddish. *Head* 0.91 and 0.90 width prothorax; eyes moderate; 1st antennal segments slightly swollen; labrum transverse, slightly prominent at middle; front 2-impressed anteriorly, with surface finely irregularly microreticulate, roughened posteriorly. *Prothorax* quadrate-subcordate; width/length 1.01 and 1.07; base/apex 1.11 and 1.13; sides weakly arcuate anteriorly, broadly sinuate before basal angles; latter acute except blunted, slightly produced posteriorly; margins moderate, each with one principal seta behind middle of length; disc irregularly convex, irregularly roughened especially posteriorly and anteriorly, and surface also with scattered punctures (with hairs as usual) and irregularly faintly microreticulate. *Elytra*: width elytra/prothorax 1.72 and 1.74; each elytron with 8 costae (including raised suture), even costae stronger than odd ones and reaching base; surface of costae faintly finely microreticulate, intercostal intervals finely longitudinally roughened, and alternate intervals each with row of widely spaced setae. *Inner wings* reduced to vestiges that hardly extend beyond edge of metathorax. *Measurements*: length *c.* 15–16; width 5.0–5.6 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,526) and 2 ♀ ♀ paratypes all from Dobodura, **Papua**, Mar.–July 1944 (Darlington).

Measured specimens. The ♂ holotype and 1 ♀ paratype.

Notes. I do not know the relationships of this very distinct species, which is quite different from any of the preceding ones although closely related to the following (*canis*). The beetles were taken among dead leaves on the ground in rain forest.

Pheropsophus canis n. sp.

Description. With characters of genus; form as in Figure 151, with elytra strongly narrowed to base; brownish black, head red anteriorly dark posteriorly, pronotum with faint reddish marks, legs reddish yellow, antennae brown. *Head* 0.87 width prothorax; eyes moderate; 1st antennal segments slightly swollen; labrum transverse, with margin broadly rounded; front weakly 2-impressed, closely irregularly microreticulate, roughened posteriorly. *Prothorax* narrowly subcordate; width/length 1.07; base/apex 1.06; sides broadly arcuate anteriorly, broadly sinuate before slightly obtuse, slightly blunted, posterior angles; latter not produced posteriorly; margins moderate, each with 1 principal seta behind middle; disc moderately convex, weakly roughened posteriorly but otherwise nearly smooth, surface with fine irregular reticulate microsculpture. *Elytra*: width elytra/prothorax 1.80; each elytron with 5 conspicuous costae (nos. 1, 3, 5, 7, 8), the intermediate costae (nos. 2, 4, 6) weak or obsolete; surface of costae finely irregularly microreticulate, in-

tercostal intervals finely roughened; even intervals probably with widely spaced setae, but latter in part broken off or missing. *Inner wings* evidently vestigial. *Measurements*: length *c.* 20.5; width 7.6 mm.

Type. Holotype ♀ (Hawaiian Sugar Planters Association) from Koitaki, **Papua**, 1500 ft. (*c.* 460 m), Nov.–Dec. 1928 (Pemberton Coll.); the type is unique.

Notes. This flightless species is probably a geographic representative of the preceding (*catulus*) but is larger, slightly different in proportions, with antennae darker, pronotum much less roughened, and even intervals of elytra much more reduced. Other, related forms of this flightless group are to be expected elsewhere in New Guinea.

Genus *BRACHINUS* Weber

Weber 1801, Observationes Entomologicae, p. 22.
Brachynus Auct. including Csiki 1933, Coleop. Cat., Carabidae, Harpalinae 8, p. 1606 (see for additional references).

Diagnosis. See preceding *Key to Genera.*

Description. None required here.

Type species. Carabus crepitans Linnaeus, of Europe.

Generic distribution. Most of the **world**, except Australia. In the Indo-Australian area, many diverse species occur in India, etc.; fewer, in the western part of the Malay Archipelago; and a single species occurs in New Guinea.

Brachinus papua n. sp.

Description. Form as in Figure 152; dark brown or brownish black, head red anteriorly or with 2 red spots between eyes, pronotum sometimes vaguely reddish, appendages reddish with tibiae, tarsi, and apices of femora darker brown; dull, entire upper surface with fine, *c.* isodiametric but irregular reticulate microsculpture, and much of upper surface with inconspicuous fine pubescence, often in part rubbed away, and perhaps missing on front, part of prothoracic disc, and disc of elytra. *Head* 1.01 and 0.99 width prothorax; eyes moderate, genae oblique, setose; front longitudinally impressed each side, nearly smooth or slightly roughened and punctulate (variable), with head more roughened posteriorly. *Prothorax* subcordate (exact form variable); width/length 1.07 and 1.07; base/apex 1.03 and 1.01; margins moderate, each with apparently 1 principal seta near middle of length; disc weakly convex, slightly finely transversely wrinkled, irregularly punctulate, slightly longitudinally roughened at base and apex. *Elytra* ample; width elytra/prothorax 2.34 and 2.33; intervals slightly raised but not costate. *Inner wings* full. *Measurements*: length 17.5–19.0; width 7.3–8.0 mm.

Types. Holotype ♂ (M.C.Z., Type No. 31,527) from Hollandia, **West N. G.,** 250 ft., May 1945 (H. Hoogstraal); 1 paratype, same locality, Apr. 1945 (B. Malkin, U.S.N.M.); 2 paratypes, Tanahmerah, Res. Boven Digoel, **West N. G.,** Feb. 1958 (R. T. Simon Thomas); and 1 paratype, Fenichel (Hungarian National Mus.).

Measured specimens. The ♂ holotype and 1 ♀ paratype from Tanahmerah.

Notes. This, the first known New Guinean *Brachinus*, may represent *bigutticeps* Chaudoir of Java, etc., but *papua* is larger than my specimens of *bigutticeps*, with less sharply bicolored legs and less roughened pronotum. Further study is needed to clarify the relationships of these and related species in the Malay Archipelago.

Tribe PSEUDOMORPHINI

Csiki 1933, Coleop. Cat., Carabidae, Harpalinae 8, p. 1634 (see for synonymy and additional references).
Pseudomorphidae Auct. including Notman 1925, Proc. United States National Mus. 67, Art. 14, p. 1.

Pseudomorphini (Figs. 153–159) do not look like Carabidae but superficially resemble dytiscids or scolytids or *Cryptocephalus*-like chrysomelids. They are numerous only in Australia; a few small species occur in New Guinea; a species of

the Australian and New Guinean genus *Adelotopus* has been found in Java; one genus, *Cryptocephalomorpha*, ranges from New Guinea across the Malay Archipelago to the SE. corner of Asia; and a supposed endemic genus is localized on New Caledonia. Outside this area the tribe contains only a single genus, *Pseudomorpha*, confined to the Americas and ranging from southern United States to Brazil and Argentina.[4]

Although I have only 15 specimens of this tribe from New Guinea, they include 3 genera and 7 species, and all the species are different from the single pseudomorphine (*Adelotopus papuanus*) previously known from the island. (An "*Adelotopus sp.*" listed from New Guinea by Heller, in Abhandlungen und Berichte Zool. Mus. Dresden 13, 1910, No. 3, p. 4, has not been identified.) Because my material is very limited and because the species are well defined by easily seen characters, I shall treat the members of this tribe rather superficially, leaving dissection of the mouthparts, etc., to the next reviser of the tribe as a whole. Notman's (1925) keys to the Australian species of this tribe are very useful but, because they are based largely on old descriptions rather than on specimens, they should be used with caution.

Most Australian Pseudomorphini live on the trunks of trees, especially on the shaggy trunks of *Eucalyptus*. They are very active, winged beetles. I do not know the habits of the New Guinean forms.

[4] The following notes are necessary to justify my summary of the distribution of this zoogeographically interesting tribe. The African *Hydroporomorpha* has only 4 entire ventral abdominal segments; it is not a pseudomorphine but probably a harpaline. *Paussotropus* is Australian and probably does not occur on Batchian Is. (Notman 1925, p. 5, footnote; confirmed by me at the British Mus. in 1948). And *Silphomorpha amaroides* (Newman), listed from Oceania by Csiki (1933, p. 1639), is probably really Australian; Newman gives no locality except "Its habitat is 3753," but he refers to the insect as "this pretty antipodean."

KEY TO GENERA OF PSEUDOMORPHINI OF NEW GUINEA

1. Eyes superior in position, not interrupting lateral margins of head (p. 240) ... *Adelotopus*
– Eyes lateral in position, broadly interrupting lateral margins of head ... 2
2. Form wider, more depressed; head not strongly deflexed, labrum and mandibles visible from in front (p. 242) ... *Sphallomorpha*
– Form subcylindric; head strongly deflexed, labrum and mandibles (except sometimes their tips) not visible from in front (p. 242) ... *Cryptocephalomorpha*

Genus *ADELOTOPUS* Hope

Hope 1834, Trans. Ent. Soc. London 1, p. 11.
Notman 1925, Proc. United States National Mus. 67, Art. 14, pp. 5, 6.
Csiki 1933, Coleop. Cat., Carabidae, Harpalinae 8, p. 1634 (see for additional references).

Diagnosis. See preceding *Key to Genera.*

Description. None required here.

Type species. *A. gyrinoides* Hope, of Australia.

Generic distribution. **Australia** including **Tasmania** (many species), **New Guinea** (4 species), and **Java** (1 species).

Notes. *A. jacobsoni* Ritsema (1909, Notes Leiden Mus. 31, p. 255) of Java evidently really is an *Adelotopus*, not a *Cryptocephalomorpha*, for Ritsema knew both genera.

KEY TO SPECIES OF *ADELOTOPUS* OF NEW GUINEA

1. Piceous, with narrow reddish translucent margins but otherwise unmarked; length 6.6–7.0 mm (p. 240) ... *exactor*
– Black, elytra marked or tipped with red or yellow; smaller ... 2
2. Elytra with red apices (p. 241) ... *debitor*
– Elytra with yellow or reddish marks near base ... 3
3. Elytra with wide basal fascia rufo-testaceous; scutellum yellow-margined (p. 241) ... *papuanus*
– Elytra each with large subbasal yellow spot; scutellum not yellow-margined (p. 241) ... *bijugus*

Adelotopus exactor n. sp.

Description. With characters of genus; form as in Figure 153, moderately convex; piceous, unmarked except prothorax and elytra narrowly reddish translucent at sides, lower surface red; no dorsal pubescence or

setae except on humeral margins; not shining, entire upper surface with fine *c.* isodiametric to slightly transverse microsculpture and very fine well spaced punctulation. *Head* 0.54 width prothorax. *Prothorax*: width/length 1.98; base/apex 1.84; margins moderate, moderately reflexed. *Elytra*: width elytra/prothorax 1.07; basal marginal line sharply impressed, nearly entire, not punctate; posthumeral impressions weak; margins moderate; striae not indicated. *Measurements*: length 6.6–7.0; width 3.5–3.7 mm.

Types. Holotype, sex not determined (S. Australian Mus.) and 1 paratype (M.C.Z., Type No. 31,528) both from Wareo, Finschhafen ("Finsch Haven"), **N-E. N. G.** (Rev. L. Wagner).

Measured specimen. The holotype. The paratype has the pronotum broken and cannot be satisfactorily measured.

Notes. In Notman's (1925) key to Australian *Adelotopus* this runs to *hydrobioides* Westwood, but comparison with Australian specimens identified as *hydrobioides* shows that *exactor* is narrower, with narrower prothoracic and elytral margins.

Adelotopus debitor n. sp.

Description. With characters of genus; form as in Figure 154, very convex especially elytra; black, apical ⅕ of elytra red, lower surface black anteriorly, red posteriorly, appendages red; no dorsal pubescence or setae except on humeral margins; shining, fine isodiametric microsculpture distinct on head, indistinct on pronotum, absent on elytra, but whole upper surface with fine moderately spaced punctulation. *Head* 0.54 width prothorax. *Prothorax*: width/length 2.18; base/apex 1.76; margins moderate, poorly defined, moderately reflexed especially anteriorly. *Elytra*: width elytra/prothorax 1.04; basal margin irregular or obsolete on *c.* inner ½ of width of elytron; sides scarcely impressed behind humeri; margins moderate; striae not indicated. *Measurements*: length 5.5; width 2.8 mm.

Types. Holotype, sex not determined (Bishop Mus.), from Wau, Morobe Dist., **N-E. N. G.,** 1200 m, Jan. 16, 1961 (Sedlaceks); 1 paratype (M.C.Z., Type No. 31,590), Kokoda-Pitoki, **Papua**, 450 m, Mar. 24, 1956 (Gressitt).

Notes. In Notman's (1925) key to the Australian species of *Adelotopus*, this runs to *apicalis* Macleay or possibly *haemorrhoidalis* Erichson, but comparison with Australian specimens of these species shows that *debitor* is broader anteriorly and more narrowed posteriorly.

Adelotopus papuanus Gestro

Gestro 1893, Ann. Mus. Civ. Genoa 33, p. 287.
Notman 1925, Proc. United States National Mus. 67, Art. 14, p. 8.

Description (significant details from Gestro). Form perhaps similar to other New Guinean species of genus; black, prothorax with reddish margins, elytra with wide basal fascia reddish testaceous and scutellum with testaceous margin; shining, very finely punctulate; length 4.75 mm.

Type. From "Ighibirei, lungo il Kemp Welch"; in Genoa Mus. (not seen).

Notes. This species seems surely different from any New Guinean *Adelotopus* I have seen. Gestro compared it only with *A. bimaculatus* Macleay of Australia.

Adelotopus bijugus n. sp.

Description. With characters of genus; form as in Figure 155, very convex; black, elytra each with large yellowish plagia before middle, lower surface mainly dark, some ventral segments narrowly yellow at apex, appendages rather dark; no dorsal pubescence or setae except on humeral margins; shining, reticulate microsculpture faint or absent but whole upper surface rather closely conspicuously punctulate. *Head* 0.55 and 0.57 width prothorax. *Prothorax*: width/length 1.72 and 1.84; base/apex 1.71 and 1.60; margins moderate, well reflexed, not sharply defined inwardly. *Elytra*: width elytra/prothorax 1.01 and 1.02; basal margin irregular or obsolete in inner ½ of width of elytron; sides slightly

impressed behind humeri; margins moderate anteriorly, obsolete posteriorly; striae not indicated on elytral surface but vaguely suggested under the surface in the pale areas. *Measurements*: length 4.4–5.2; width 2.2–2.5 mm.

Types. Holotype, sex not determined (Bishop Mus.), from Wau, Morobe Dist., **N-E. N. G.,** 1200 m, May 25, 1962 (Sedlacek), and paratypes as follows: 1, Wau, 1200 m, Dec. 1, 1961; 1, Wau, 1200 m, Dec. 18, 1961; 1, Wau, 1250 m, Mar. 27, 1964; 1, Mt. Missim (near Wau), 980–1100 m, Aug. 14, 1964; all specimens collected by the Sedlaceks; 2 paratypes now in M.C.Z. (Type No. 31,529).

Notes. In Notman's (1925) key to the Australian species of *Adelotopus*, this runs to *bimaculatus* Macleay but has wider prothoracic and elytral margins than my Australian *bimaculatus*.

Genus *CRYPTOCEPHALOMORPHA* Ritsema

Ritsema 1875, Tijdschrift voor Ent. 18, Verslag, p. XCII.
Notman 1925, Proc. United States National Mus. 67, Art. 14, pp. 5, 12.

Diagnosis. See preceding *Key to Genera.*
Description. None required here.
Type species. C. gaverei Ritsema, of Java, etc.
Generic distribution. Previously known from **Thailand**, **Sumatra**, **Java**, **Borneo** (British Mus.), and **Philippines** (Luzon, in M.C.Z.); now recorded from **New Guinea**.
Notes. This genus of very small scolytid-like Pseudomorphini is the only genus of the tribe known to be widely distributed in the Malay Archipelago and the only genus known to reach the Asiatic mainland.

Cryptocephalomorpha papua n. sp.

Description. With characters of genus; form as in Figure 156, subcylindric; entirely slightly irregular reddish brown; no dorsal pubescence or setae; reticulate microsculpture indistinct or absent but whole upper surface with fine moderately spaced punctulation. *Head* 0.72 and 0.71 width prothorax. *Prothorax*: width/length 1.41 and 1.49; base/apex 1.37 and 1.41; margins very narrow. *Elytra*: width elytra/prothorax 1.00 and 1.00; basal margin apparently absent (possibly hidden by base of prothorax); side margins very narrow; striae not indicated. *Measurements*: length 3.0–3.3; width 1.4–1.5 mm.

Types. Holotype, sex not determined (British Mus.) and 1 paratype (M.C.Z., Type No. 31,530) both from Kokoda, **Papua**, 1200 ft. (*c.* 370 m), Sept. (holotype) and June (paratype) 1933 (Cheesman), the paratype taken at light.

Notes. The plain, unspotted coloration distinguishes this from the 2 previously known species of the genus, *gaverei* Ritsema and *collaris* Waterhouse, both of which occur farther west in the Malay Archipelago.

Genus *SPHALLOMORPHA* Westwood

Westwood 1841, Trans. Linnean Soc. London 18, p. 414.
Notman 1925, Proc. United States National Mus. 67, Art. 14, pp. 6, 25.
Csiki 1933, Coleop. Cat., Carabidae, Harpalinae 8, p. 1641 (see for additional references).

Diagnosis. See preceding *Key to Genera.*
Description. None required here.
Type species. S. decipiens Westwood, of Australia.
Generic distribution. **Australia** (many species) and **New Guinea** (3 species).
Notes. The following 3 species, like other members of the tribe in New Guinea, are probably not directly related among themselves but are all independently related to Australian species.

KEY TO SPECIES OF *SPHALLOMORPHA* OF NEW GUINEA

1. Color pattern 4-maculate (elytra each with 2 large yellow spots) (p. 243) ..... *quadrua*
– Color pattern not 4-maculate 2
2. Elytra each with a large, irregular yellow plagia (p. 243) ..... *dupla*
– Elytra with a common heart-shaped yellow plagia (p. 243) ..... *unita*

Sphallomorpha quadrua n. sp.

Description. With characters of genus; form as in Figure 157, moderately convex; brownish black, margins of prothorax and elytra paler, elytra each with 2 large pale yellow spots as indicated (Fig. 157), below reddish with head darker, appendages reddish; no dorsal pubescence or setae except setae at humeral angles and at posterior angles of head; dull, entire upper surface isodiametrically to irregularly microreticulate and finely punctulate. *Head* 0.63 width prothorax. *Prothorax*: width/length 2.50; base/apex 1.51; margins narrowly slightly reflexed. *Elytra*: width elytra/prothorax 1.10; base not margined; sides scarcely impressed behind humeri; margins not strongly reflexed; striae not indicated. *Measurements*: length 5.7; width 3.0 mm.

Type. Holotype, sex not determined (Chicago Mus.), from Gadaisu, **Papua**, Nov. 15, 1917 (J. T. Zimmer); the type is unique.

Notes. In Notman's (1925) key to Australian members of this genus, *quadrua* runs to *quadrimaculata* Macleay, but *quadrua* is dull, while the description of *quadrimaculata* calls for a "brilliant shining black" insect.

The unique type of *quadrua* was probably taken in a light trap, for many insect scales are stuck to its surface.

Sphallomorpha dupla n. sp.

Description. With characters of genus; form as in Figure 158, moderately convex; black, lateral and basal margins of prothorax and lateral margins of elytra slightly rufescent, elytra each with large yellow plagia as indicated (Fig. 158), lower surface and appendages reddish or yellow; no dorsal pubescence or setae except setae at humeral angles and posterior angles of head; head and pronotum dull, elytra more shining, entire upper surface with fine *c.* isodiametric microsculpture and faint fine punctulation. *Head* 0.58 width prothorax. *Prothorax*: width/length 2.32; margins poorly defined, weakly reflexed. *Elytra*: width elytra/prothorax 1.10; base not margined; sides scarcely impressed behind humeri; margins narrowly reflexed; striae not indicated on surface. *Measurements*: length 5.8; width 3.2 mm.

Type. Holotype, sex not determined (Bishop Mus.), from Wau, Morobe Dist., **N-E. N. G.,** 1500 m, June 15, 1962 (Sedlaceks); the type is unique.

Notes. The color pattern of *dupla* is somewhat like that of *colymbetoides* Westwood and *bimaculata* Castelnau, but *dupla* is much smaller than either of these Australian species.

The type of this species too has insect scales stuck to it and was probably taken in a light trap.

Sphallomorpha unita n. sp.

Description. With characters of genus; form as in Figure 159, moderately convex; without pubescence or setae above, except setae behind eyes; piceous black, margins faintly paler, elytra with large common plagia as indicated (Fig. 159), lower surface and appendages irregular dark reddish; no pubescence or setae above except setae at posterior angles of head (apparently not at humeral angles); moderately shining, but whole upper surface isodiametrically to irregularly reticulate (finely) and just visibly punctulate. *Head* 0.54 width prothorax. *Prothorax*: width/length 2.47; base/apex 1.72; sides narrowly moderately reflexed. *Elytra*: width elytra/prothorax 1.08; base not margined; sides slightly impressed behind humeri; margins narrowly reflexed; striae faintly indicated especially in pale area. *Measurements*: length 5.1; width 3.0 mm.

Type. Holotype, sex not determined (British Mus.), from Mafulu, **Papua**, 4000 ft. (1220 m), Jan. 1934 (Cheesman); the type is unique.

Notes. The marking of *unita* is probably like that of *cordifer* Blackburn, of North Queensland, Australia, but *cordifer* is *c.* 8 mm long, against *c.* 5 mm for *unita.*

(Received 23 March 1967.)

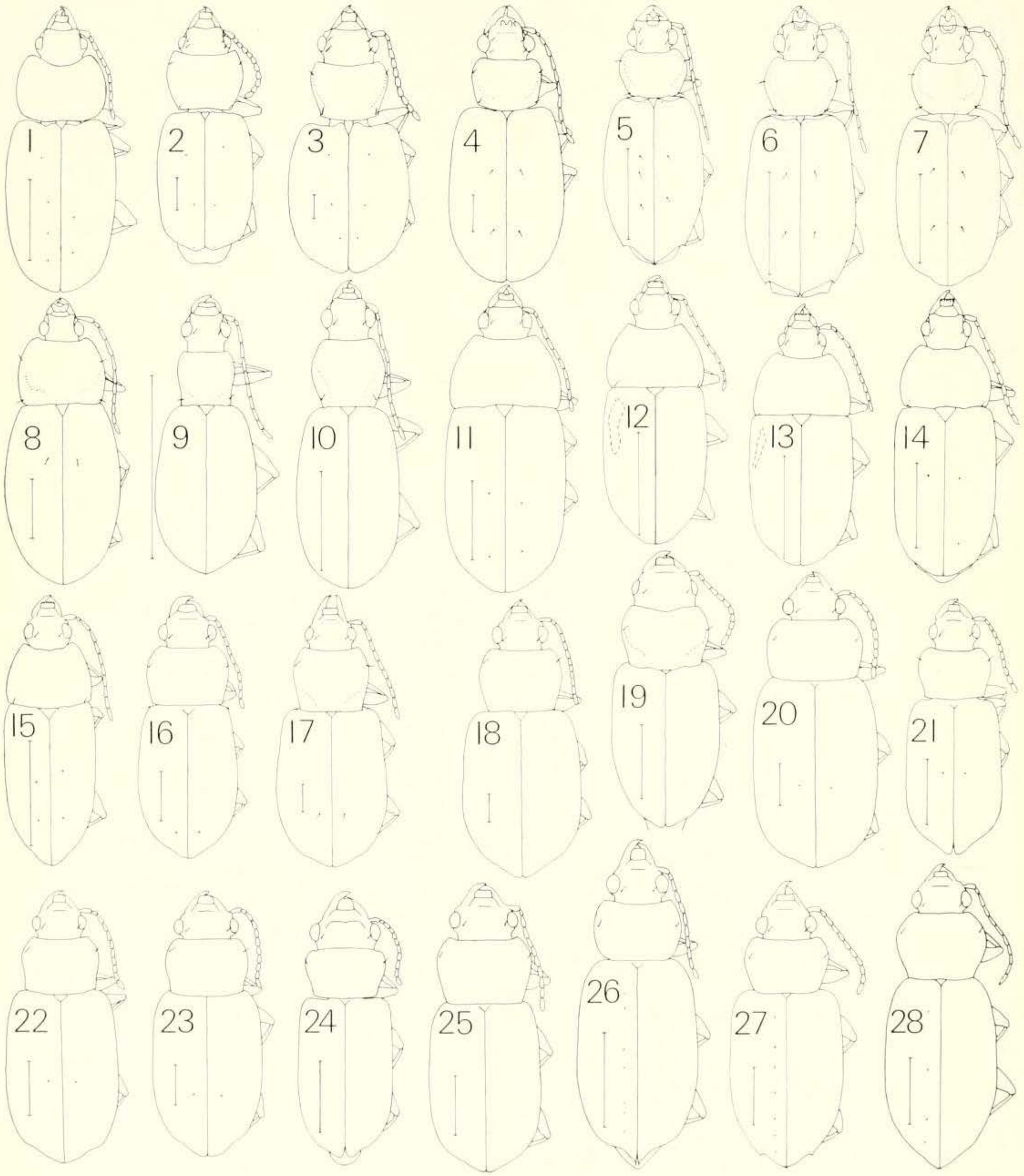
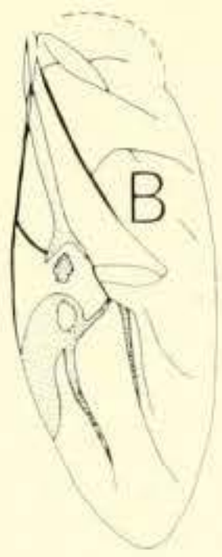
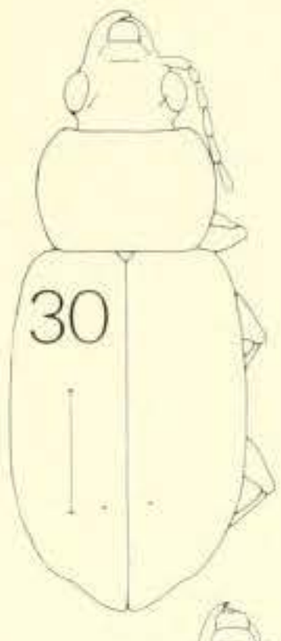
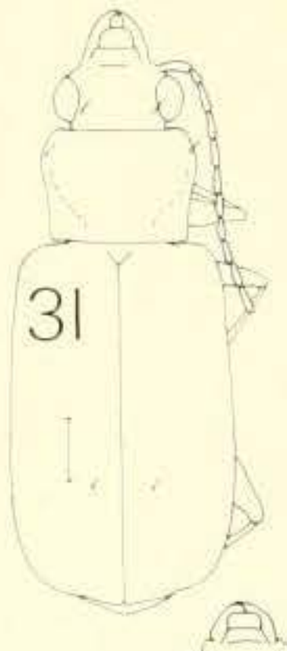
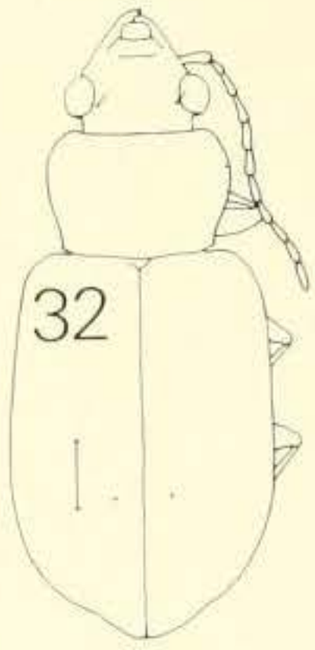


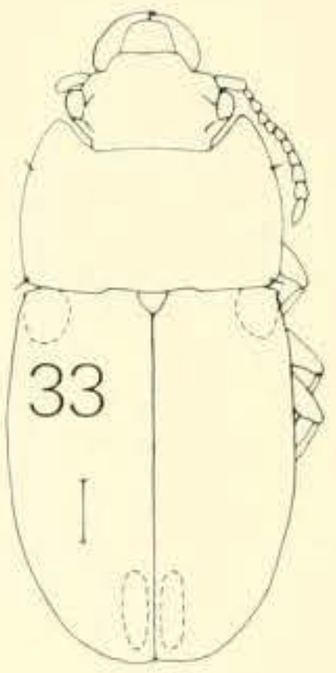
Fig. **1**, *Perigona rex* n. sp., ♂ holotype; **2**, *P. rossi* n. sp., ho'o.; **3**, *P. dentifer* n. sp., holo.; **4**, *Physolaethus caviceps* Andrewes, ♂ Enarotadi; **5**, *Omestes torta* Andrewes, ♀ Hollandia; **6**, *Dicrochile acuta* n. sp., ♂ holo.; **7**, *D. alternans* n. sp., ♂ paratype, Chimbu Vy.; **8**, *Microferonia baro* n. sp., ♂ holo.; **9**, *Chlaenius pan* n. sp., ♀ para., Kota Nika; **10**, *C. olthofi* n. sp., ♀ para., Bernhard Camp; **11**, *Oodes nil* n. sp., ♀ holo.; **12**, *O. rossi* n. sp., ♂ holo.; **13**, *O. wilsoni* n. sp., ♀ holo.; **14**, *O. par* n. sp., ♂ holo.; **15**, *O. longior* n. sp., ♂ holo.; **16**, *Diaphoromerus papuellus* n. sp., ♀ para., Kokoda; **17**, *Lecanomerus angustior* n. sp., ♀ para., Hollandia; **18**, *L. latior* n. sp., ♂ holo.; **19**, *Chydaeus papua* n. sp., ♀ para., Mt. Wilhelm; **20**, *Trichotichnus straneoi* (Louwerens), ♀, Hollandia; **21**, *T. modus* n. sp., ♂ holo.; **22**, *T. mongi* n. sp., ♀ holo.; **23**, *T. delicatus* n. sp., ♀ para., I. Deslacs; **24**, *Harpaloxenus fortis* n. sp., ♀ para., Dobodura; **25**, *Lyter glaber* n. gen. & sp., ♂ para., Finschhafen; **26**, *Coleolissus papua* n. sp., ♀ para., Hollandia area; **27**, *C. angulatus* n. sp., ♀ para., Dobodura; **28**, *Hyphaereon levis* n. sp., ♀ para., Sibil.

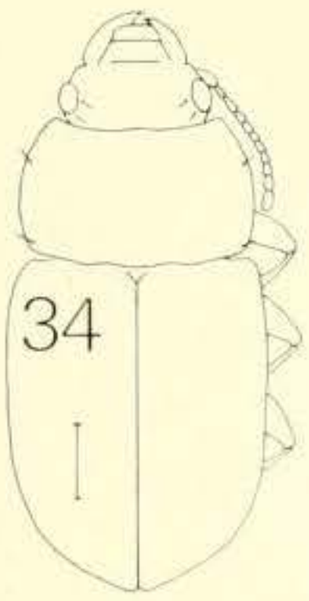


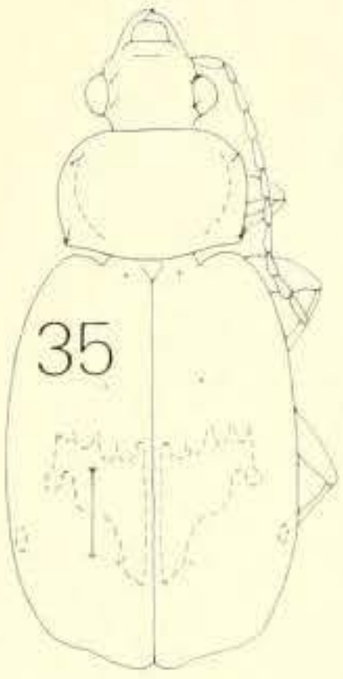


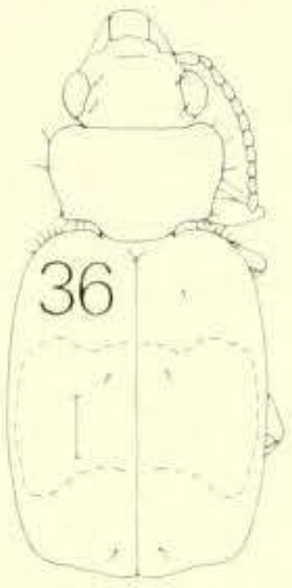


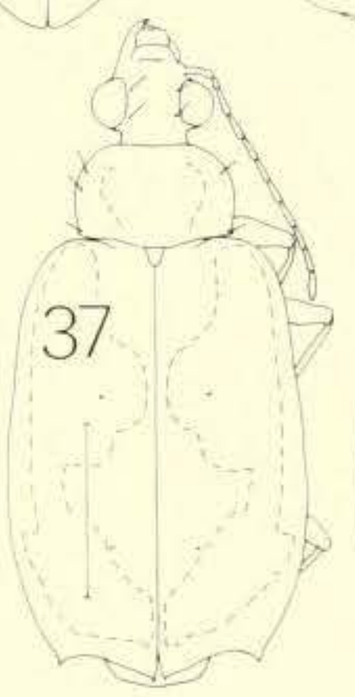


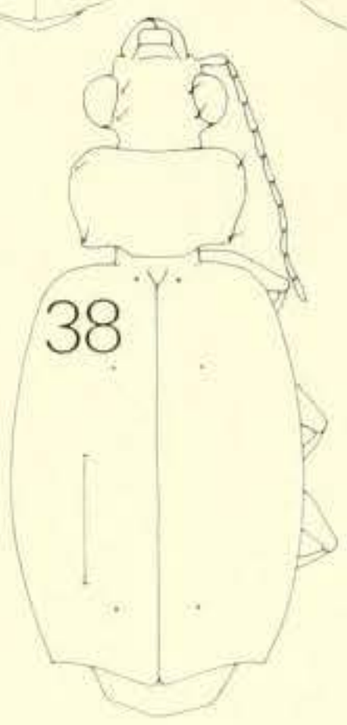


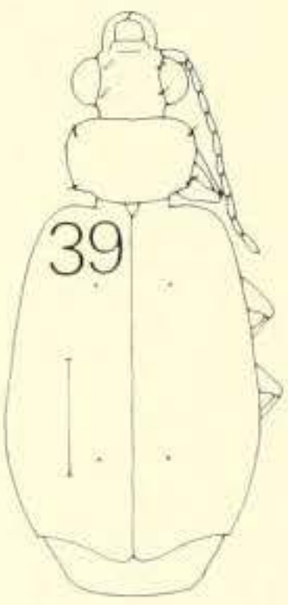


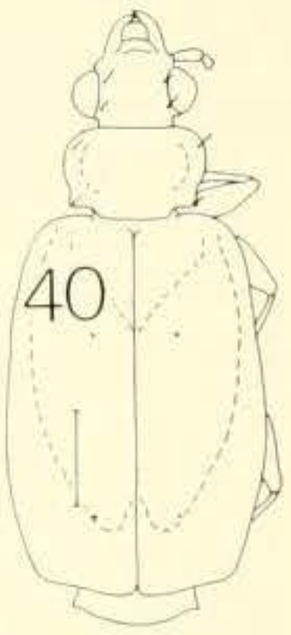


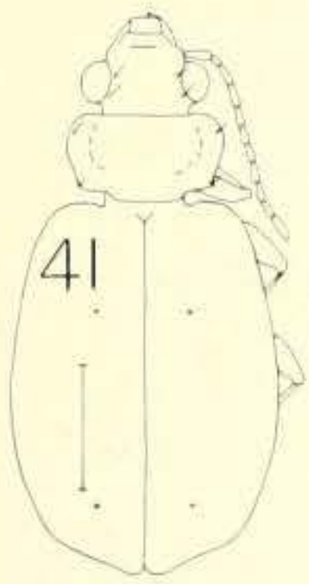


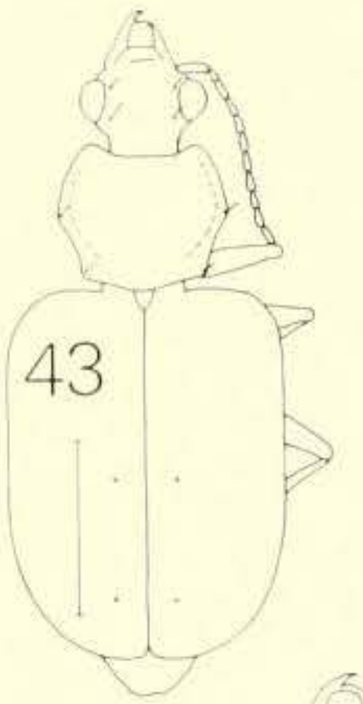


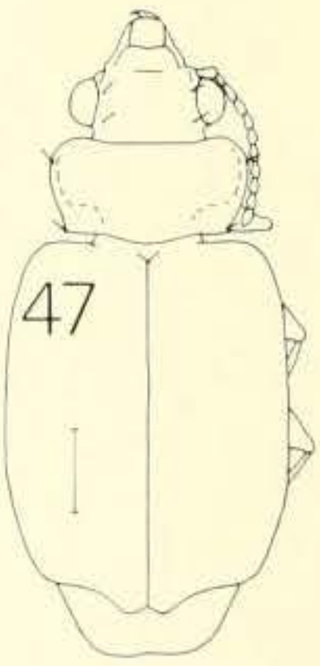


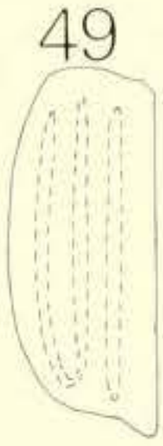


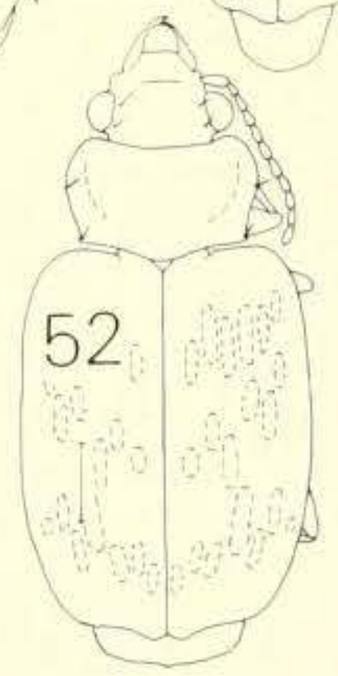


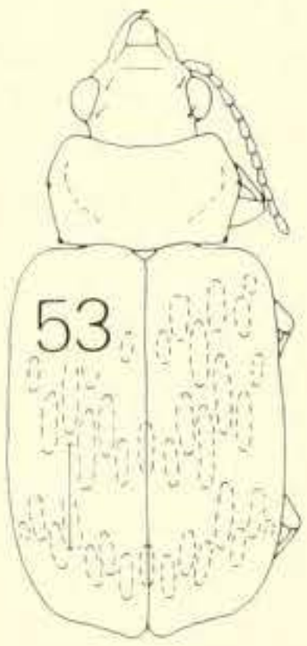












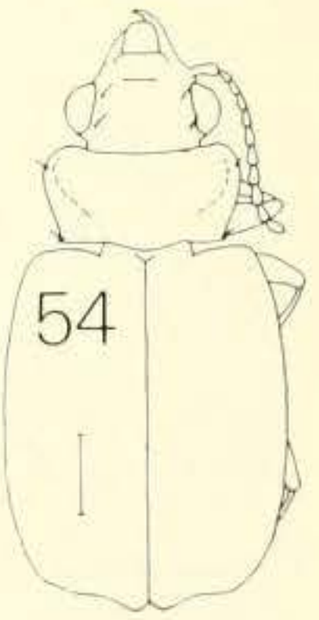


Fig. **29**, *Hyphaereon timidus* n. sp., ♂ paratype, Dobodura; **29A**, same, wing to same scale, ♀ para., Dobodura; **29B**, same, wing to same scale, another ♀ para., Dobodura; **30**, *Egadroma cyclops* n. sp., ♀ holotype; **31**, *Acupalpus exactus* n. sp., ♀ holo.; **32**, *A. papua* n. sp., ♀ para., Dobodura; **33**, *Odontomasoreus humeralis* n. gen. & sp., ♀ para., Dobodura; **34**, *Anaulacus siamensis* Chaudoir, ♂ Geelvink Bay; **35**, *Sarothrocrepis papua* n. sp., ♂ para., Dobodura; **36**, *Somotrichus elevatus* (Fabricius), ♀ Peleliu Is.; **37**, *Aristolebia papua* n. sp., ♀ para., Wau; **38**, *Lebia endynomena* n. sp., ♂ holo.; **39**, *L. externa* n. sp., ♂ holo.; **40**, *L. cordifer* n. sp., ♂ holo.; **41**, *L. insularum* n. sp., ♂ holo.; **42**, *Lachnoderma foveolatum* Sloane, ♀ Goilala; **43**, *Sinurus opacus* Chaudoir, ♂ Waigeu Is.; **44**, *Stenotelus spinosus* n. sp., ♀ para., Dobodura; **45**, *Miscelus sibling* n. sp., ♀ para., Dobodura; **46**, *Holcoderus elongatus* (Saunders), ♀ Wau; **47**, *Minuthodes metallica* n. sp., ♂ holo.; **48**, *M. papuana* (Sloane), ♂ Dobodura; **48A**, same, another ♂, Dobodura; **49**, *M. lineella* (Chaudoir), ♀ Morotai Is.; **50**, *M. queenslandica* (Sloane), ♂ Rocky Scrub; **51**, *M. rossi* n. sp., ♂ holo.; **52**, *M. sedlacekorum* n. sp., ♂ holo.; **53**, *M. subnitens* n. sp., ♂ holo.; **54**, *M. simplex* n. sp., ♀ holo.

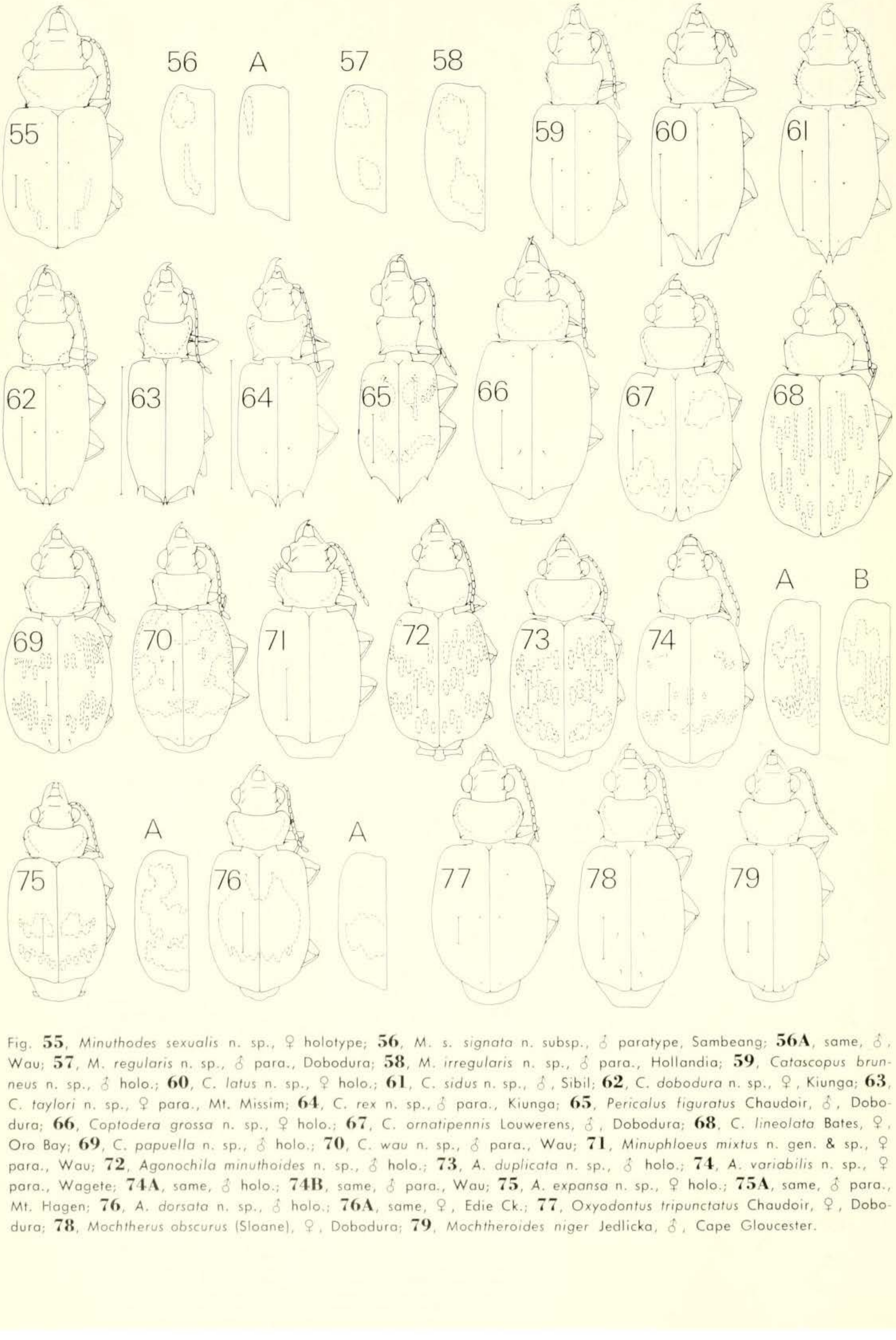


Fig. **55**, *Minuthodes sexualis* n. sp., ♀ holotype; **56**, *M. s. signata* n. subsp., ♂ paratype, Sambeang; **56A**, same, ♂, Wau; **57**, *M. regularis* n. sp., ♂ para., Dobodura; **58**, *M. irregularis* n. sp., ♂ para., Hollandia; **59**, *Catascopus brunneus* n. sp., ♂ holo.; **60**, *C. latus* n. sp., ♀ holo.; **61**, *C. sidus* n. sp., ♂, Sibil; **62**, *C. dobodura* n. sp., ♀, Kiunga; **63**, *C. taylori* n. sp., ♀ para., Mt. Missim; **64**, *C. rex* n. sp., ♂ para., Kiunga; **65**, *Pericalus figuratus* Chaudoir, ♂, Dobodura; **66**, *Coptodera grossa* n. sp., ♀ holo.; **67**, *C. ornatipennis* Louwerens, ♂, Dobodura; **68**, *C. lineolata* Bates, ♀, Oro Bay; **69**, *C. papuella* n. sp., ♂ holo.; **70**, *C. wau* n. sp., ♂ para., Wau; **71**, *Minuphloeus mixtus* n. gen. & sp., ♀ para., Wau; **72**, *Agonochila minuthoides* n. sp., ♂ holo.; **73**, *A. duplicata* n. sp., ♂ holo.; **74**, *A. variabilis* n. sp., ♀ para., Wagete; **74A**, same, ♂ holo.; **74B**, same, ♂ para., Wau; **75**, *A. expansa* n. sp., ♀ holo.; **75A**, same, ♂ para., Mt. Hagen; **76**, *A. dorsata* n. sp., ♂ holo.; **76A**, same, ♀, Edie Ck.; **77**, *Oxyodontus tripunctatus* Chaudoir, ♀, Dobodura; **78**, *Mochtherus obscurus* (Sloane), ♀, Dobodura; **79**, *Mochtheroides niger* Jedlicka, ♂, Cape Gloucester.

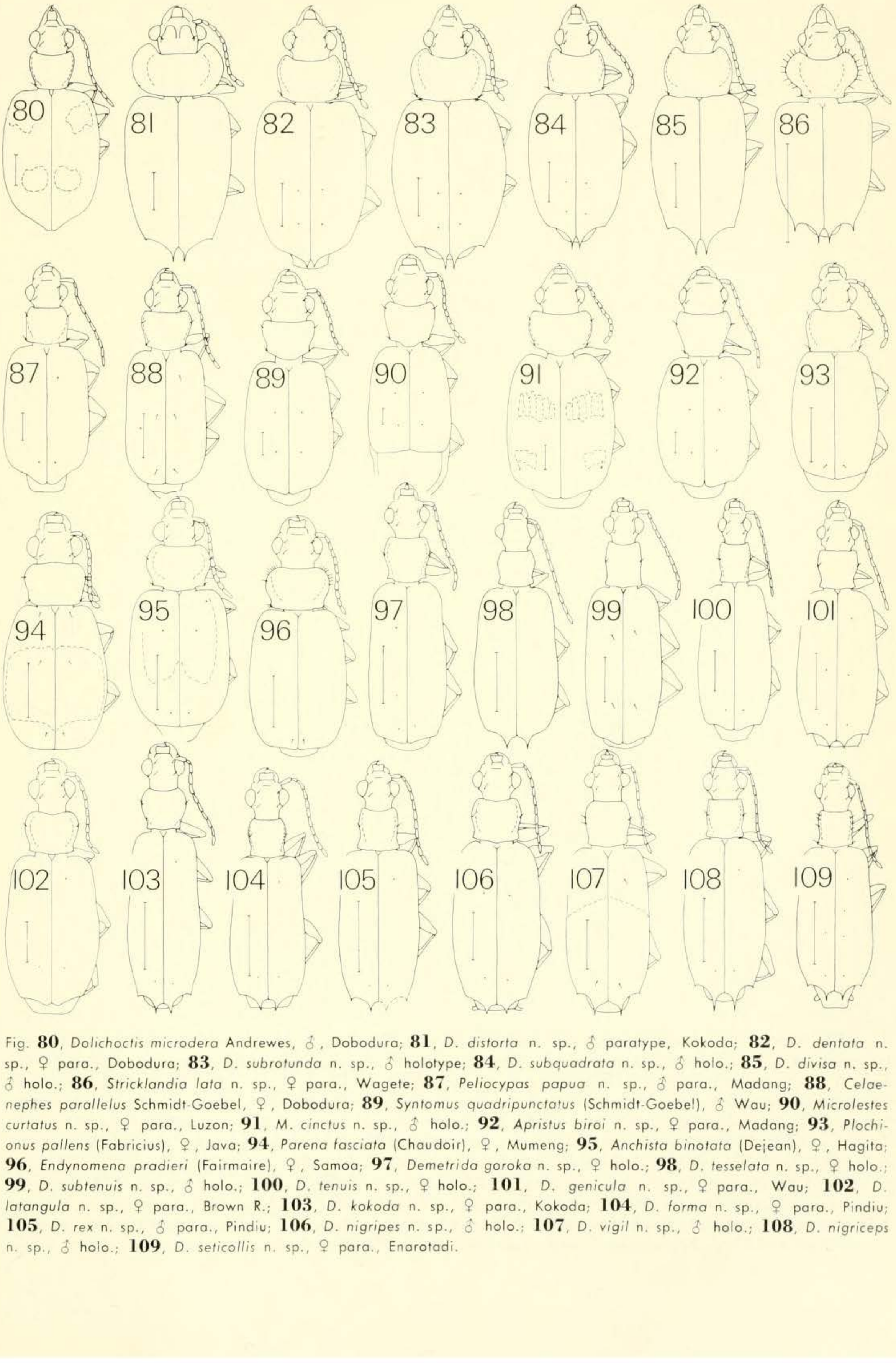


Fig. **80**, *Dolichoctis microdera* Andrewes, ♂, Dobodura; **81**, *D. distorta* n. sp., ♂ paratype, Kokoda; **82**, *D. dentata* n. sp., ♀ para., Dobodura; **83**, *D. subrotunda* n. sp., ♂ holotype; **84**, *D. subquadrata* n. sp., ♂ holo.; **85**, *D. divisa* n. sp., ♂ holo.; **86**, *Stricklandia lata* n. sp., ♀ para., Wagete; **87**, *Peliocypas papua* n. sp., ♂ para., Madang; **88**, *Celaenephes parallelus* Schmidt-Goebel, ♀, Dobodura; **89**, *Syntomus quadripunctatus* (Schmidt-Goebel), ♂ Wau; **90**, *Microlestes curtatus* n. sp., ♀ para., Luzon; **91**, *M. cinctus* n. sp., ♂ holo.; **92**, *Apristus biroi* n. sp., ♀ para., Madang; **93**, *Plochionus pallens* (Fabricius), ♀, Java; **94**, *Parena fasciata* (Chaudoir), ♀, Mumeng; **95**, *Anchista binotata* (Dejean), ♀, Hagita; **96**, *Endynomena pradieri* (Fairmaire), ♀, Samoa; **97**, *Demetrida goroka* n. sp., ♀ holo.; **98**, *D. tesselata* n. sp., ♀ holo.; **99**, *D. subtenuis* n. sp., ♂ holo.; **100**, *D. tenuis* n. sp., ♀ holo.; **101**, *D. genicula* n. sp., ♀ para., Wau; **102**, *D. latangula* n. sp., ♀ para., Brown R.; **103**, *D. kokoda* n. sp., ♀ para., Kokoda; **104**, *D. forma* n. sp., ♀ para., Pindiu; **105**, *D. rex* n. sp., ♂ para., Pindiu; **106**, *D. nigripes* n. sp., ♂ holo.; **107**, *D. vigil* n. sp., ♂ holo.; **108**, *D. nigriceps* n. sp., ♂ holo.; **109**, *D. seticollis* n. sp., ♀ para., Enarotadi.

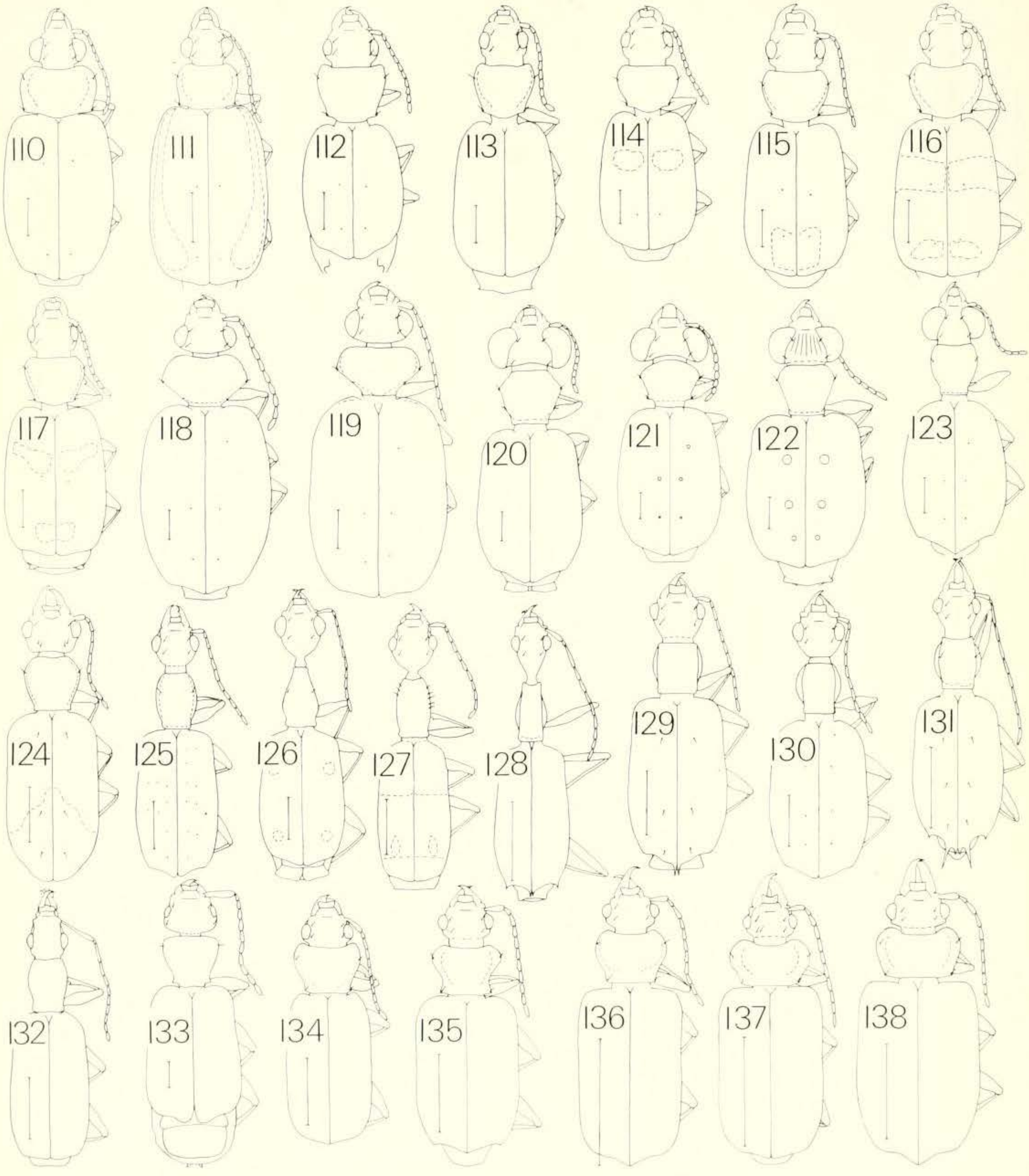


Fig. **110**, *Phloeocarabus euplenes* n. sp., ♂ paratype, Kiunga; **111**, *Trigonothops lateralis* n. sp., ♀ holotype; **112**, *Nototarus papua* n. sp., ♀ para., Dobodura; **113**, *Anomotarus gressitti* n. sp., ♀ holo.: **114**, *A. ocellatus* n. sp., ♀ holo.; **115**, *A. plagifer* n. sp., ♂ holo.; **116**, *A. transversus* n. sp., ♂ holo.; **117**, *A. wau* n. sp., ♀ holo.; **118**, *Pentagonica blanda* Andrewes, ♂ Dobodura; **119**, *P. papua* n. sp., ♀ para., Dobodura; **120**, *Parascopodes cyaneus* (Sloane), ♂ Dobodura; **121**, *Scopodes altus* n. sp., ♂ holo.; **122**, *S. cheesmani* n. sp., ♂ para., Cyclops Mts.; **123**, *S. adonis* n. sp., ♂ para., Mobitei; **124**, *Hexagonia papua* n. sp., ♂ para., Aitape; **125**, *Colliuris rossi* n. sp., ♂ holo.; **126**, *C. papua* n. sp., ♀ para., Dobodura; **127**, *Casnoidea puncticollis* (Sloane), ♀, Kiunga; **128**, *Clarencia quadridens* n. sp., ♂ para., Hollandia; **129**, *Dicraspeda bispinosa* n. sp., ♀ holo.; **130**, *Eudalia anomala* n. sp., ♀ para., Wasian; **131**, *Dobodura armata* n. gen. & sp., ♂ para., Dobodura; **132**, *Drypta papua* n. sp., ♀ holo.; **133**, *Zuphium sinuum* n. sp., ♀ holo.; **134**, *Planetes cordens* n. sp., ♀ para., Stephansort; **135**, *Pogonoglossus papua* n. sp., ♀ para., Dobodura; **136**, *P. major* n. sp., ♂ holo.; **137**, *P. latior* n. sp., ♀ para., Lower Mist Camp; **138**, *P. obliquus* n. sp., ♂ holo.

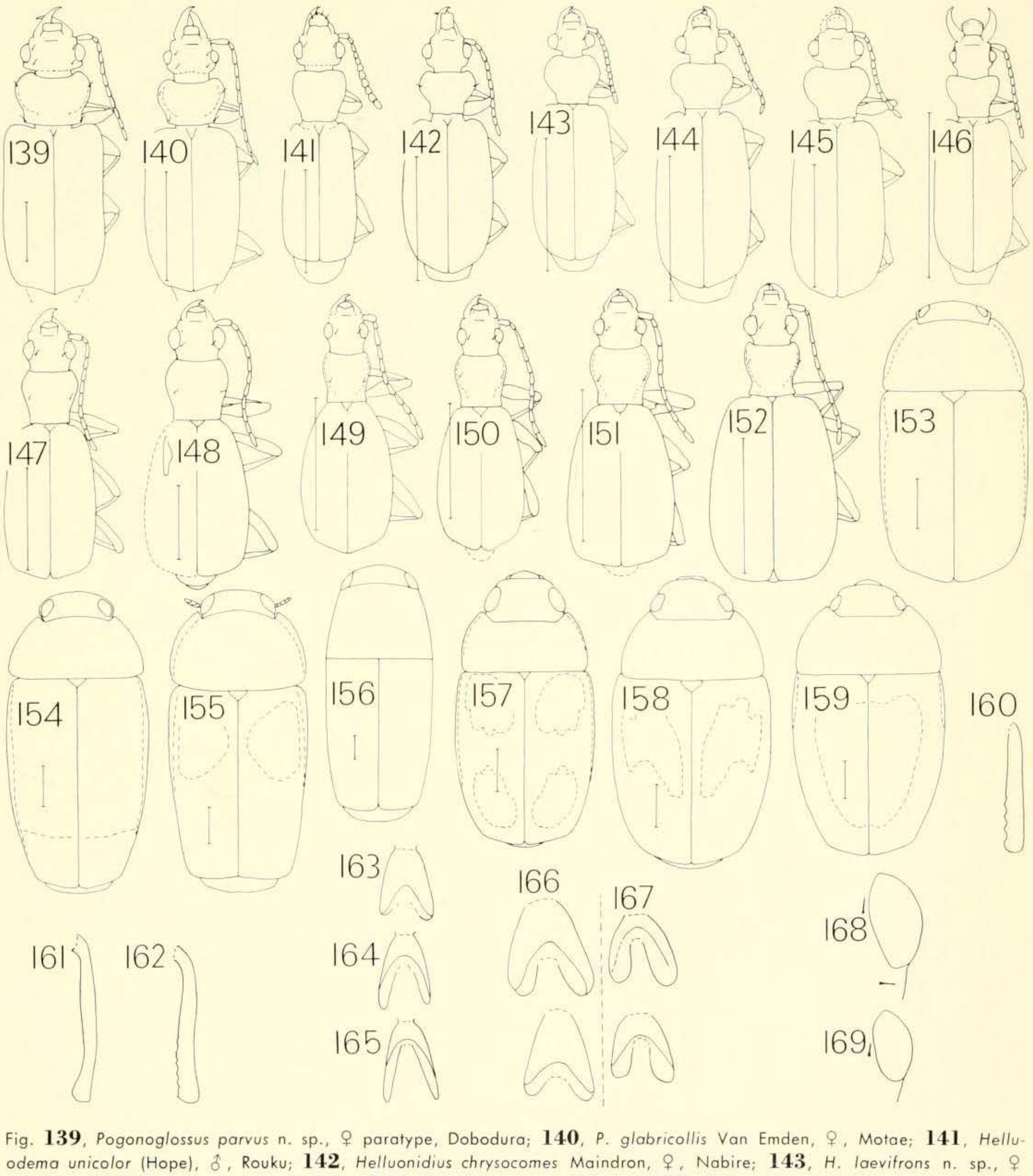
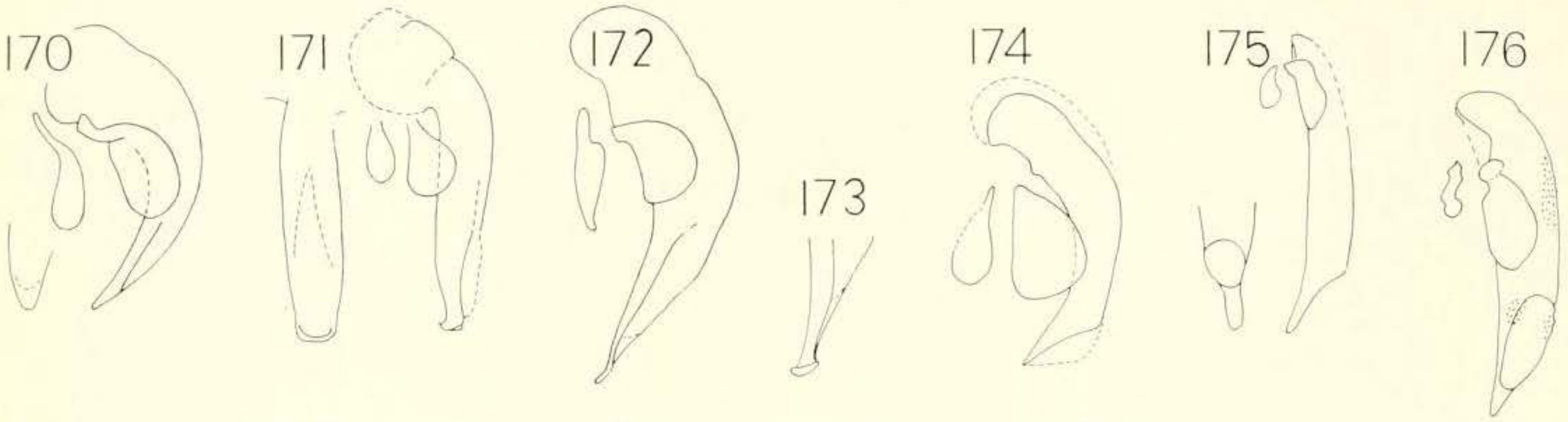
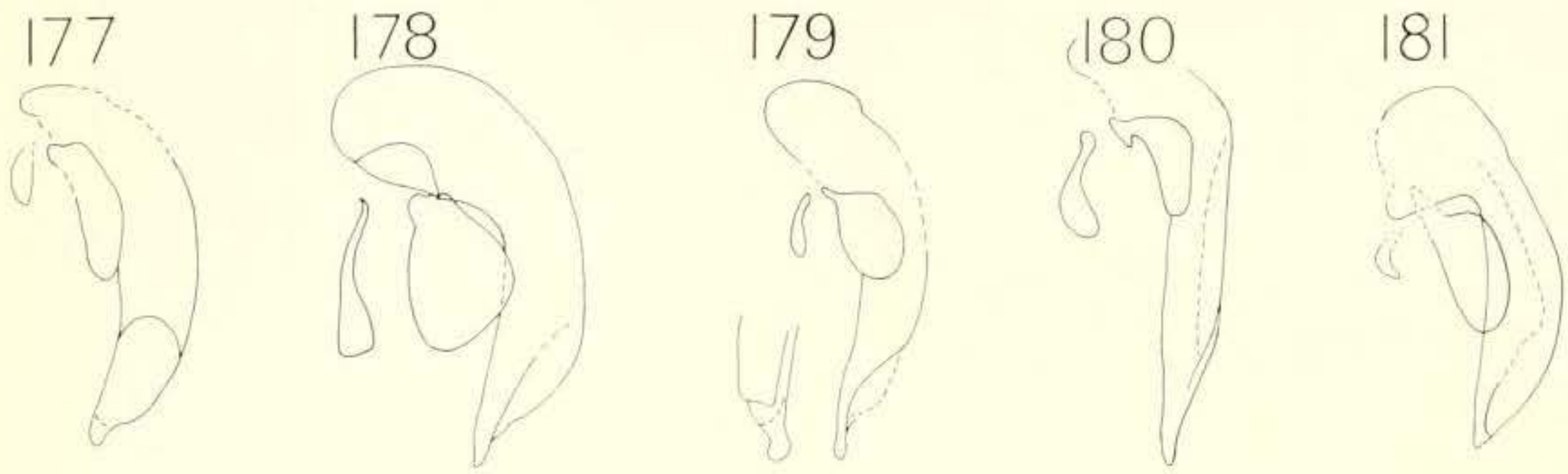


Fig. **139**, *Pogonoglossus parvus* n. sp., ♀ paratype, Dobodura; **140**, *P. glabricollis* Van Emden, ♀, Motae; **141**, *Helluodema unicolor* (Hope), ♂, Rouku; **142**, *Helluonidius chrysocomes* Maindron, ♀, Nabire; **143**, *H. laevifrons* n. sp., ♀ holotype; **144**, *H. latipes* n. sp., ♀ holo.; **145**, *H. politus* n. sp., ♀ holo.; **146**, *Helluopapua toxopei* n. gen. & sp., ♂ holo.; **147**, *Pheropsophus amnicola* n. sp.; **148**, *P. aptinomorphus* Heller, ♂ Maffin Bay; **149**, *P. pedes* n. sp., ♀ holo.; **150**, *P. catulus* n. sp., ♂ holo.; **151**, *P. canis* n. sp., ♀ holo.; **152**, *Brachinus papua* n. sp., ♀ para., Tanahmerah; **153**, *Adelotopus exactor* n. sp., holo.; **154**, *A. debitor* n. sp., holo.; **155**, *A. bijugus* n. sp., holo.; **156**, *Cryptocephalomorpha papua* n. sp., holo.; **157**, *Sphallomorpha quadrua* n. sp., holo.; **158**, *S. dupla* n. sp., holo.; **159**, *S. unita* n. sp., holo.; **160**, *Demetrida moda* n. sp., ♂ middle tibia, para., Dobodura; **161**, *D. brunnea* n. sp., same, holo.; **162**, *D. reversa* n. sp., same, holo.; **163**, *Dicraspeda brunnea* Chaudoir, 4th segment right hind tarsus (without setae), ♂, Dobodura; **164**, *D. bispinosa* n. sp., same, ♂ holo.; **165**, *D. longiloba* (Liebke), same, ♂, Dobodura; **166**, *Aristolebia papua* n. sp., 4th segments middle & hind tarsi (without setae), ♀ para., Wau; **167**, *A. capitis* n. sp., same, ♂ holo.; **168**, *Miscelus sibling* n. sp., right eye & supraocular setae, ♂ holo.; **169**, *M. unicolor* Putzeys, same, ♀, Wau.





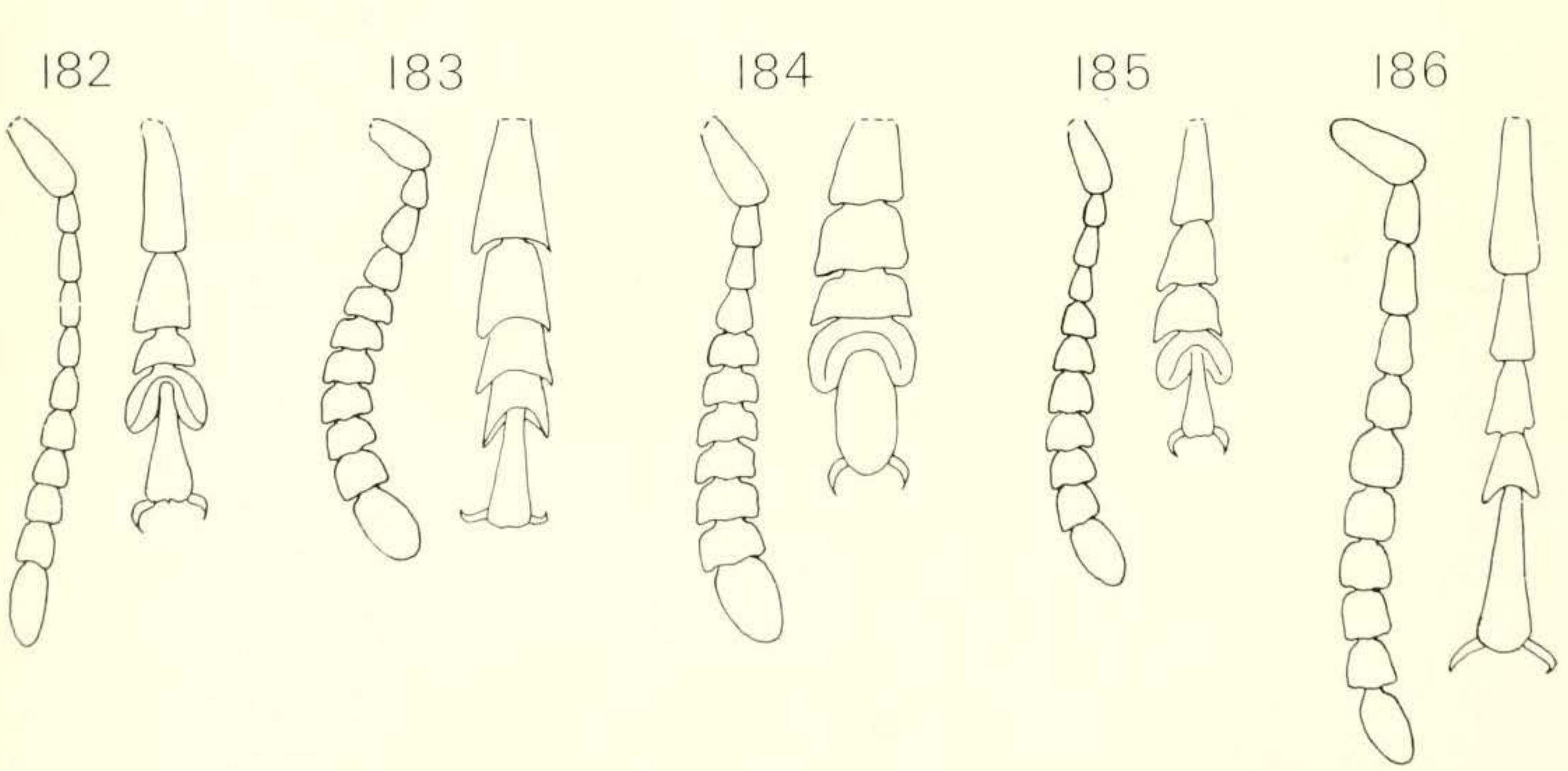


Fig. **170**, *Microferonia baro* n. sp., ♂ copulatory organs, holotype; **171**, *Chlaenius pan* n. sp., same, holo.; **172**, *Trichotichnus altus* n. sp., same, paratype, Wau 1200 m; **173**, *T. dux* n. sp., same (apex of middle lobe only), para., Wau 1700 m; **174**, *Lyter glaber* n. gen. & sp., same, para., Finschhafen; **175**, *Odontomasoreus humeralis* n. gen. & sp., same, para., Dobodura; **176**, *Coptodera grossa* n. sp., same, para., Wau; **177**, *Minuphloeus mixtus* n. gen. & sp., same, para., Wau; **178**, *Parascopodes cyaneus* (Sloane), same, Dobodura; **179**, *Colliuris rossi* n. sp., same, holo.; **180**, *Dobodura armata* n. gen. & sp., same, para., Dobodura; **181**, *Helluopapua toxopei* n. gen. & sp., same, holo.; **182**, *Helluonidius chrysocomes* Maindron, right antenna and right hind tarsus (without setae), ♀, Nabire; **183**, *H. laevifrons* n. sp., same, ♀ holo.; **184**, *H. latipes* n. sp., same, ♀ holo.; **185**, *H. politus* n. sp., same, ♀ holo.; **186**, *Helluopapua toxopei* n. gen. & sp., same, ♂ holo.

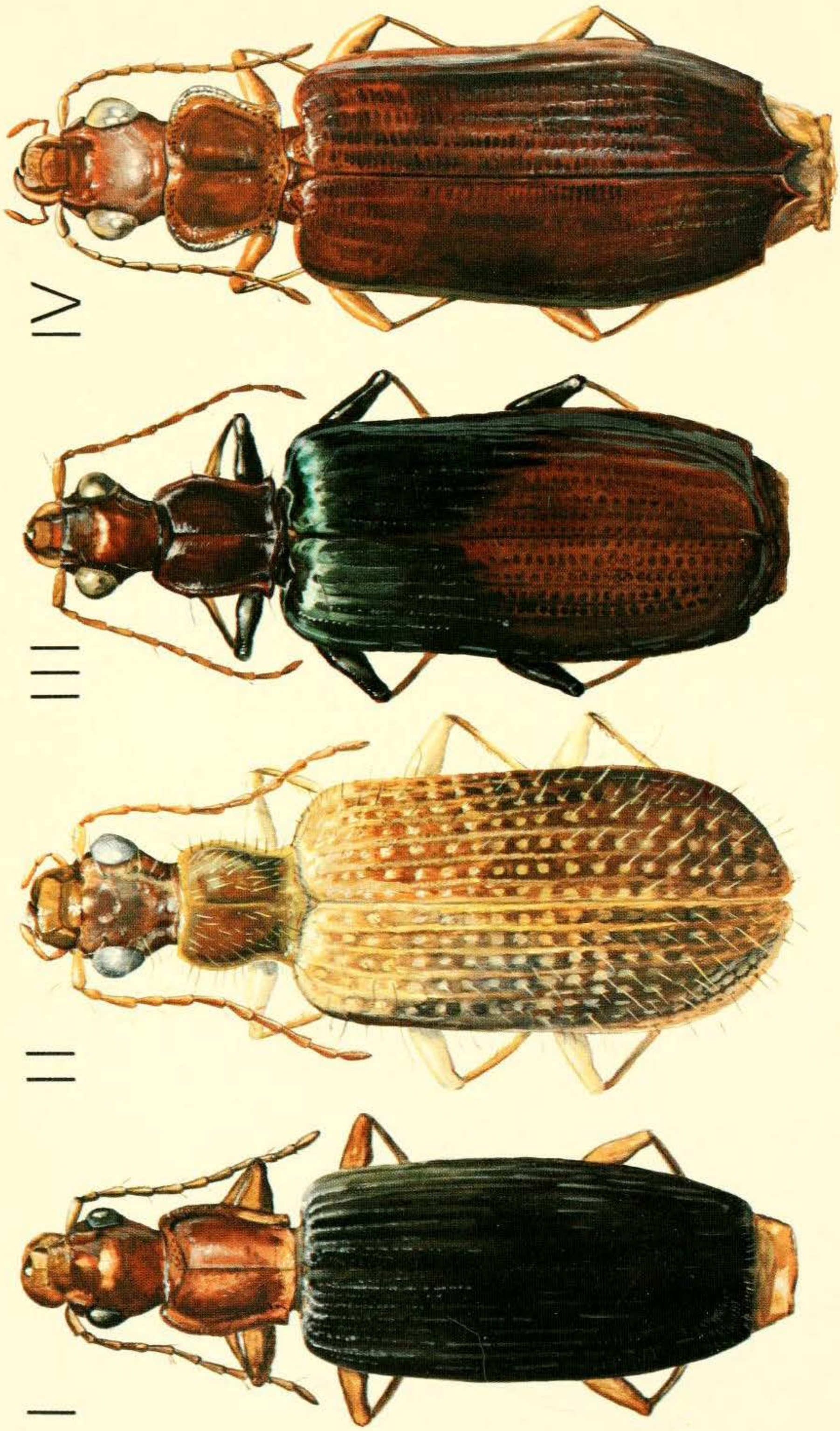


Plate 1, *Demetrida nigripennis* n. sp., ♂ holotype. II, *D. pallens* n. sp., ♂ holotype. III, *D. nubicola* n. sp., ♀ paratype, Dobodura.

Fig. 1, *Demetrida nigripennis* n. sp., ♂ holotype. II, *D. pallens* n. sp., ♀ holotype. III, *D. nubicola* n. sp., ♂ holotype. IV, *D. moda* n. sp., ♀ holotype.

Plate 2

Fig. V, *Demetrida fumipes* n. sp., ♀ paratype, SE of Wau. VII, *D. dorsalis* n. sp., ♀ paratype, Wau. VIII, *D. diversa* n. sp., ♀ paratype, Wau. VI, *D. fumipes mafulu* n. sp., ♂ holotype.

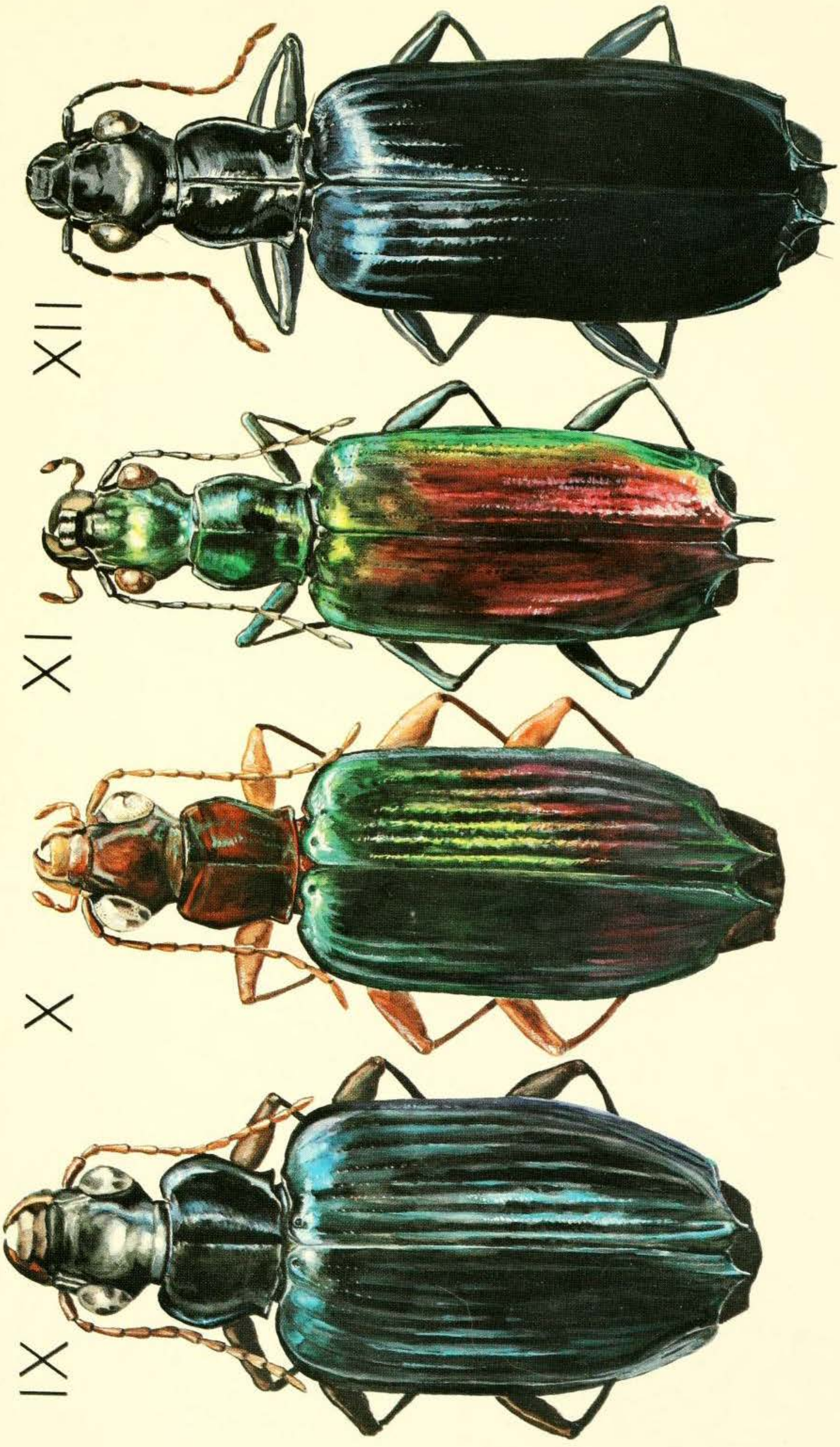


Plate 3

Fig. IX, *Demetrida imitatrix* n. sp., ♂ paratype, Sabron. X, *D. viridipennis* n. sp., ♂ holotype. XI, *D. lepida* n. sp., ♀ holotype. XII, *D. brandti* n. sp., ♀ paratype, Kiambavi.