

## ARADIDAE IN THE BISHOP MUSEUM, HONOLULU, III (Hemiptera : Heteroptera)<sup>1, 2</sup>

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*Abstract* : This paper only treats the subfamily Carventinae, with the exception of the genus *Carventus* Stål, which will be treated later. Included are descriptions of 5 new species of *Zimmermania* Usinger from New Guinea and Solomon Is.; 5 new species of *Proxius* (*Nesoproxius*) Usinger & Matsuda from Viet Nam, North Borneo and New Guinea; 5 new species of *Acaraptera* (*Nesiaptera*) Usinger & Matsuda from Fiji; 1 new species of *Notoplocaptera* Usinger & Matsuda from North Borneo; 1 new species of *Apteraradus* Drake from Viet Nam; 1 new species of *Libiocoris* Kormilev from New Guinea, and 1 new species of *Eurycoris* Kormilev also from New Guinea.

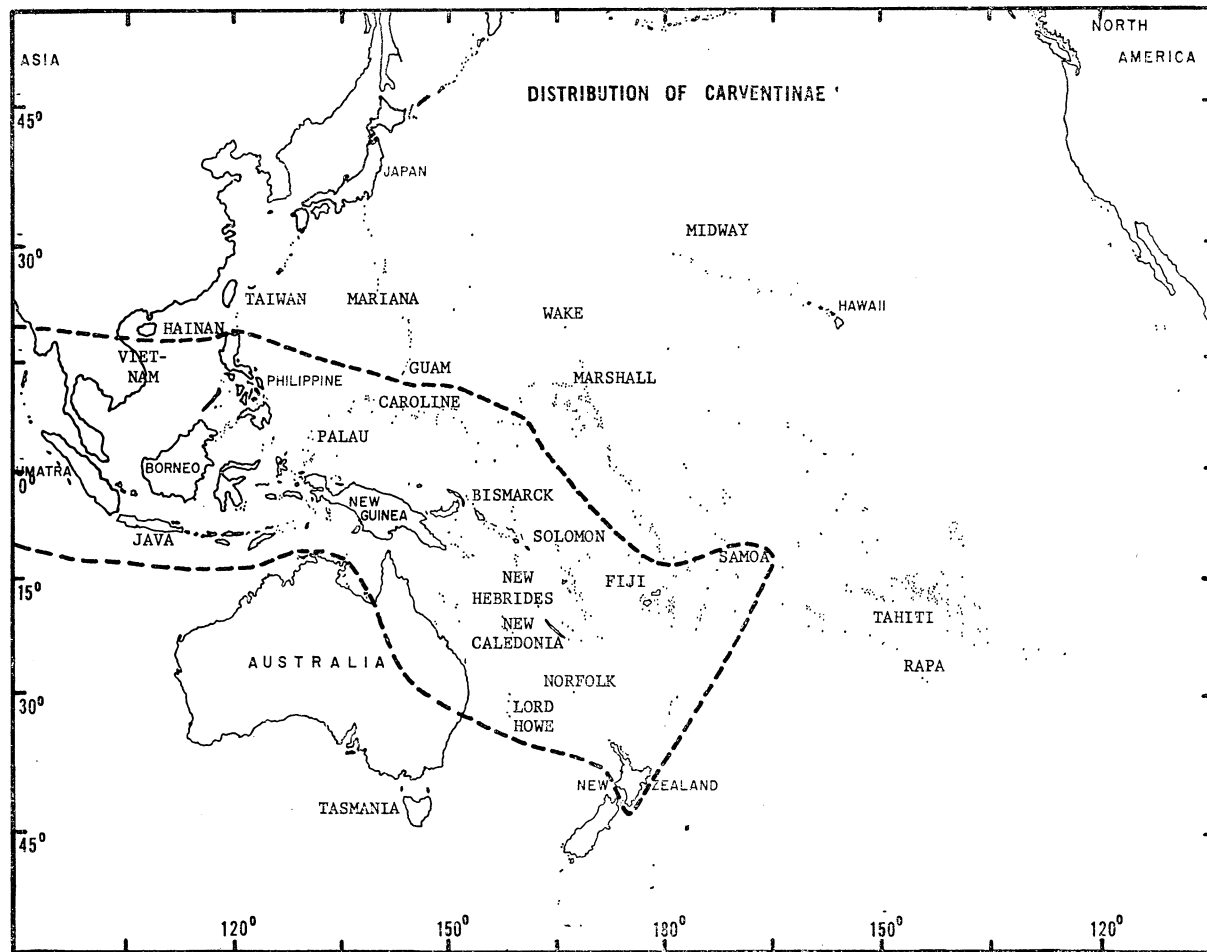
Keys are provided for the species of *Zimmermania*, *Proxius* (*Nesoproxius*), *Acaraptera* (*Nesiaptera*), *Notoplocaptera*, *Apteraradus*, *Libiocoris* and *Eurycoris*.

The subfamily Carventinae Usinger is exclusively circumtropical, and as such is distributed mostly in tropical America, penetrating the extreme south of North America, and south as far as SE Brasil. It is represented in the Oriental and Australian Regions and Madagascar in the Ethiopian Region. It is absent from the Palaearctic Region. In the Oriental and Australian Regions Carventinae are distributed from India and Ceylon to Micronesia, and from Burma, Viet Nam, Indonesia and the Philippines to New Zealand, Lord Howe Is. and Australia. It is represented in the South Pacific only in Samoa (at least, I have not seen them east of Samoa).

More than any other subfamily of Aradidae, Carventinae are inclined to develop apterous forms, which very often have various bizarre humps and protuberances. Very often some of thoracical or abdominal segments are fused together. The fully winged genera may have besides the macropterous forms, also micropterous ones (*Zimmermania*). However, once apterism is reached, that is irreversible, and we never have macropterous or micropterous species in the truly apterous genera.

Carventinae are always more or less covered with incrustation, which in some cases (*Proxius*, *Drakeida*, *Zimmermania*) can produce, in combination with brush-like rows of dense, erect bristles completely immersed into ivory-like incrustation, very bizarre protuberations similar to ivory carvings.

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This paper treats Carventinae from the Oriental Region, New Guinea, and the Pacific Islands south of the Equator, with the exception of the genus *Carventus* Stål, which will be treated later.

All measurements indicated in the descriptions were taken with a micromillimeter eyepiece (25 units = 1 mm). First figure in ratios is the length, and the second the width of measured part. For convenience, in the fully winged specimens the length of abdomen was taken from the tip of scutellum to the tip of hypopygium (♂), or segment IX (♀) respectively.

### Subfamily CARVENTINAE

#### Genus *Zimmermania* Usinger, 1948

*Zimmermania* is an odd genus with reduced clypeus and jugae, so that the lower part of head is produced beyond the upper. The rostrum is apical with an open atrium. Dense rows of brush-like bristles, completely immersed into incrustation form peculiar lateral fringes on borders of pronotum and abdomen.

The first species which was recorded from Fiji, was micropterous. Later 1 macropterous and 1 micropterous species were described from New Guinea and New Hebrides. Now I am able to add 5 more species from New Guinea and Solomon Is., one of which is micropterous.

#### KEY TO SPECIES OF ZIMMERMANIA USINGER

1. Micropterous species.....2  
Macropterous species ..... 4
2. Elongate species, ratio length: maximum width at least as 2.2 : 1 (♀) ..... 3  
Elongate ovate species, ratio length: maximum width as 1.9 : 1 (♀) (New Hebrides). ...  
.....**usingeri** Kormilev
3. Body flat on upper side; antennal segment III longer than width of head (33 : 31) (Fiji)  
.....**brachyptera** Usinger  
Body deeply excavated on upper side; lateral borders of pronotum and abdomen very thick and high, bank-like; antennal segment III as long as head width (20 : 20) (New Guinea) ..... **excavata**\*
4. Spiracles III ventral..... 5  
Spiracles III lateral, or sublateral, but not visible from above..... 6
5. Lateral borders of abdomen with PE-II and III not protruding, PE-IV and V slightly protruding, PE-VI more protruding, PE-VII produced backward as pointed and raised lobes (New Guinea) ..... **magdalenae** Kormilev  
Lateral borders of abdomen distinctly festooned from segment II to VI (Solomon Is.)  
..... **solomonensis**\*
6. PE-VII (♂) produced into long, tapering spines about 1.5× as long as width of head across eyes (25 : 17) (New Guinea)..... **bicaudata**\*  
PE-VII at most forming an acute angle about half as long as width of head across eyes (10 : 16)..... 7
7. PE-IV to VI forming an acute angle, PE-VII with an acute apex; spiracles III sublateral;

\* Described as new.

- lateral borders of pronotum with a double row of long, incrustate bristles (New Guinea) ..... **angulata\***  
 PE-IV to VI are produced but rounded, PE-VII with a blunt apex; spiracles III lateral;  
 lateral borders of pronotum with a double row of short, incrustate bristles (Solomon Is.)..... **gressitti\***

**Zimmermania excavata** Kormilev, new species      Fig. 1-2.

♀. Micropterous. Elongate ovate, strongly attenuated anteriorly. Lateral borders of pronotum and abdomen covered with a wide band of stiff, erect bristles, completely immersed into incrustation and forming a high and wide bank, or swell, so that the body appears excavated. The whole body covered with a thick layer of a brown incrustation.

*Head* as long as width across eyes (20 : 20), typical for the genus, with greatly reduced clypeus and jugae, not reaching tip of produced lower part. Antennae strong; relative length of antennal segments I to IV are: 16 : 10 : 20 : 8. Labium reaching to hind border of labial groove, which is closed posteriorly. *Pronotum* shorter than its maximum width (25 : 37.5). Anterolateral angles inflated and produced forward as far as collar. Lateral borders inflated like a high bank leaving middle portion at much lower level. *Scutellum* cordate, almost half as long as its basal width (15 : 28); its basal border angularly cut out, lateral borders convex anteriorly and sinuate before tip, the latter is rounded. Disc rugose, with sparse bristles. *Hemelytra* reduced to very small, rounded pads. *Abdomen* completely fused with metanotum anteriorly; terga I and II forming together with metanotum a median, smooth, low elevation, which is bifurcate anteriorly. Laterad of elevation with various depressions and raised portions. Hind border of tergum II carinate and separated from central dorsal plate by a deep sulcus. Abdomen longer than its maximum width across segment IV (70 : 66). Central dorsal plate rectangular, longer than wide (45 : 35), with lateral borders slightly convex. Disc raised medially forming a low longitudinal ridge; limits of segments marked by low, transverse ridges originating from median ridge; disc uneven, forming various depressions and elevations between ridges. Tergum VII raised posteriorad. Connexivum strongly raised; discs of connexiva with groups of erect bristles immersed into incrustation; outer borders of groups rounded, not reaching outer borders of connexiva, and separated from the latter by a deep sulcus, so that outer borders of abdomen look double. PE-angles II to VI slightly protruding, rounded; PE-VII forming raised, pointed lobes produced obliquely backward. Paratergites very short; segment IX slightly produced. Spiracles II lateral, III to VII ventral, progressively more remote from border, VIII terminal. *Legs* long and thin; fore tibia with an anteapical spine.

*Color*: Walnut brown, partly lighter, smooth and shiny, but completely covered with brown incrustation.

Total length 5.76 mm; width of pronotum 1.50 mm; width of abdomen 2.64 mm.

Holotype ♀ (BISHOP 7778), NE New Guinea, Wau, Morobe Distr., 1650 m, 5.XII.1961, J. Sedlacek. Paratype 1 ♀, same data, 1700-1800 m, 7.X.1962, J. Sedlacek (Kormilev coll'n).

**Zimmermania magdalena**e Kormilev, 1954, Phil. J. Sci. **83** (2) : 130, fig. 4.

NW NEW GUINEA: 1 ♀, Waris S. of Hollandia, 450-500 m, 8-15.VIII.1959, T. C. Maa.

**Zimmermania solomonensis** Kormilev, new species      Fig. 3-4.

♂. Macropterous. Elongate, attenuated anteriorly; abdomen with parallel and festooned sides; heavily incrustated with calciform incrustation.

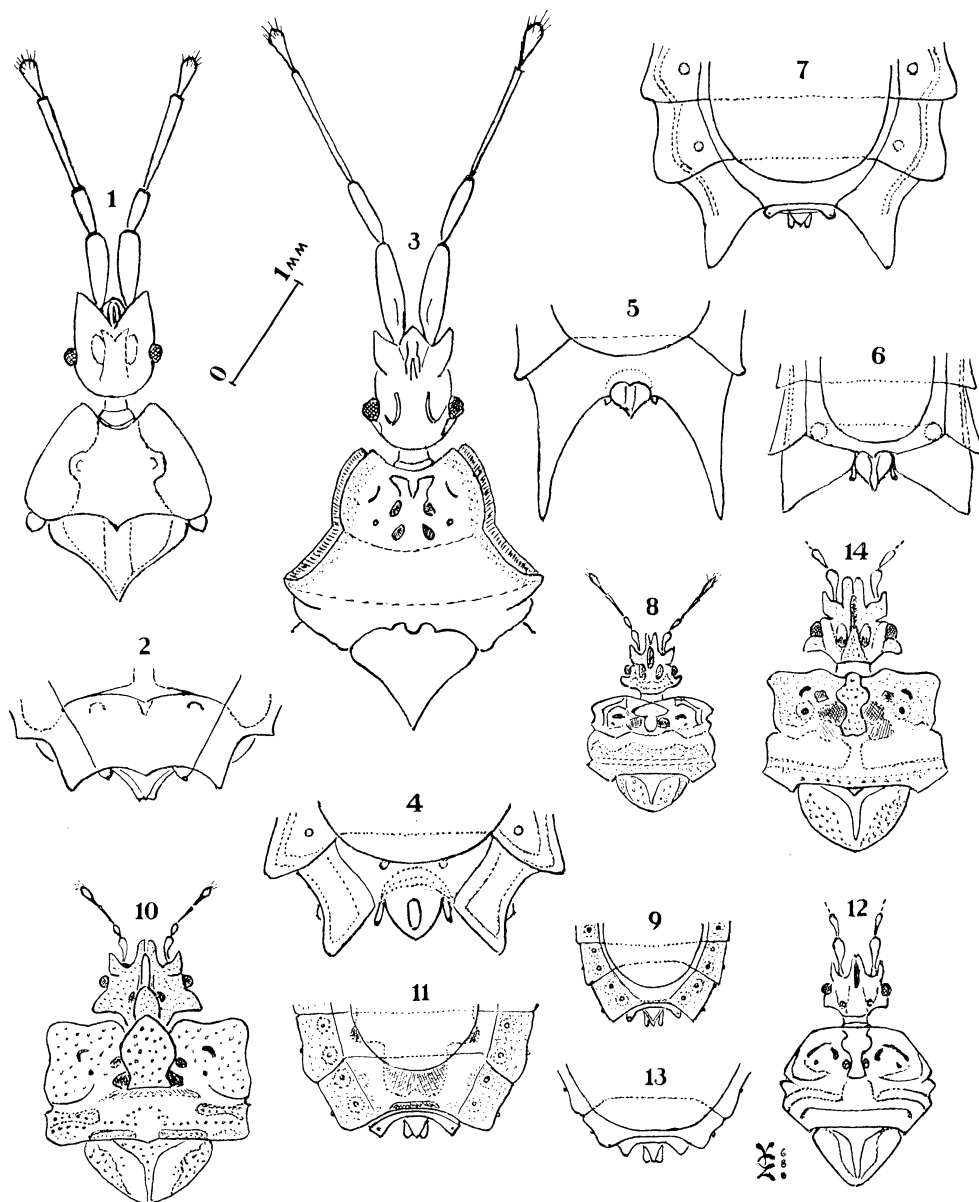


Fig. 1-14. 1, *Zimmermania excavata*, n. sp., (♀), head, pronotum, scutellum, and wing pads; 2, same, tip of abdomen from above; 3, *Zimmermania solomonensis*, n. sp., (♂), head, pronotum, and scutellum; 4, same, tip of abdomen from above; 5, *Zimmermania bicaudata*, n. sp., (♂), tip of abdomen from above; 6, *Zimmermania angulata*, n. sp., (♂), tip of abdomen from above; 7, *Zimmermania gressitti*, n. sp., (♀), tip of abdomen from above; 8, *Proxius (Nesoproxius) gracilis*, n. sp., (♀), head, pronotum, and scutellum; 9, same, tip of abdomen from above; 10, *Proxius (Nesoproxius) vietnamensis*, n. sp., (♀), head, pronotum, and scutellum; 11, same, tip of abdomen from above; 12, *Proxius (Nesoproxius) hexagonalis*, n. sp., (♀), head, pronotum, and scutellum; 13, same, tip of abdomen from above; 14, *Proxius (Nesoproxius) punctulatus*, n. sp., (♀), head, pronotum, and scutellum.

*Head* longer than width across eyes (26 : 21), typical for genus, with greatly reduced clypeus and jugae. Antenniferous tubercles strong, dentiform, with parallel outer sides, reaching to middle of antennal segment I. Postocular borders very slightly sinuate and strongly converging; hind border moderately convex. Entire upper surface of head, inclusive of antenniferous tubercles, and exclusive of clypeus, jugae and 2 (1+1) crescent-shaped, deep cavities corresponding to infraocular callosities, is covered with dense, erect bristles immersed into calciform incrustation. Antenna strong and long, more than  $2.5 \times$  as long as head (72.5 : 26); relative length of antennal segments I-IV are: 22 : 15 : 25 : 10.5. Labium short, reaching  $3/5$  of a deep labial groove formed by dense rows of incrustate bristles. *Pronotum* subhexagonal, much shorter than its maximum width (32 : 52); fore lobe much narrower than hind lobe (34 : 52). Collar not visible under heavy incrustation; lateral borders with a double row of long and dense incrustate bristles, leaving between them a long and deep cavity, extended from anterior angles to humeri; anterior angles, formed by incrustate bristles, produced far beyond collar; lateral borders of fore lobe slightly convex, those of hind lobe straight in front of humeri, incised and then convex behind humeri; humeral angles blunt; posterior angles rounded and protruding laterad of scutellum. Hind border widely and weakly sinuate. Fore disc with 2 transverse rows of 4 small callosities each; rest of pronotum heavily incrustate. *Scutellum* cordate, shorter than its basal width (17 : 25); basal border with 2 (1+1) protuberances laterad of median line; the latter widely and shallowly depressed; lateral borders convex at base, then slightly sinuate; tip acute. Disc with scattered granules formed by incrustate, short bristles. *Hemelytra* reaching to middle of tergum VII. *Abdomen* longer than its maximum width across segment V (96 : 70); connexivum moderately wide; discs of connexiva covered with short, erect bristles, immersed into incrustation and forming a sulcus along outer border; each segment with 1 round, small, callous spot. PE angles produced and rounded from II to IV; more produced, and more angular on V to VIII; the latter produced far beyond small hypopygium. Paratergites small, cylindrical, reaching to middle of hypopygium; the latter small, shorter than wide (10 : 13), caudal in position, and with a high, pear-shaped median ridge. Spiracles II lateral, III to VII ventral, placed close to margin, VIII terminal. *Legs*: Fore tibia with preapical spines.

*Color*: Yellow brown, but real color mostly concealed under heavy, calciform incrustation; membrane infusate at base, then whitish, transparent, partly incrustate.

Total length 7.0 mm; width of pronotum 2.08 mm, width of abdomen 2.80 mm.

Holotype ♂ (BISHOP 7779), Solomon Is., Bougainville (S), Kokuro, 690 m, 12.VI.1956, E. J. Ford, Jr.

**Zimmermania bicaudata** Kormilev, new species      Fig. 5.

♂. Macropterous. Elongate, attenuated anteriorly; abdomen with parallel sides, and with PE-VII produced into long, tapering spines; covered with heavy, ochraceous incrustation.

*Head*, pronotum and scutellum similar to preceding species, but smaller; collar visible from above in front of middle of anterior border; anterolateral borders of hind lobe with only 1 row of long, incrustate bristles, corresponding to lower row in preceding species. Hind disc in middle with a thin and low, transverse carina, formed by short, erect, incrustate bristles, and laterad of it 2 (1+1) similar, short, oblique carinae. Pattern of small, callous spots on fore disc slightly different. Basal border of scutellum with 4 (2+2) smaller protrudings. Hemelytra reaching to middle of tergum VII. *Abdomen* quite different: lateral borders parallel, but slightly convergent anteriorly; PE-II and III directed upward; PE-IV to VI directed sideways, and slightly protruding, rounded; PE-VII produced far beyond hypopygium into very long, subparallel, tapering spines directed backward. Paratergites small, short, cylindrical, reaching  $2/3$  of a small hypopygium; the latter caudal in position, with a high median ridge anteriorly, reaching only

to middle of disc. Spiracles II and III lateral; IV to VII ventral, placed close to border; VIII terminal. *Legs*: Fore tibia with preapical spines. *Measurements*: head 20 : 16.5; relative length of antennal segments I to IV are: 15 : 10 : 17.5 : 8.5; pronotum 27.5 : 42; ratio width of fore lobe : width of hind lobe as 26 : 42; scutellum 12 : 20; abdomen 75 : 47 to tip of hypopygium, 97 to tip of PE-VII; hypopygium 5.5 : 10.

*Color*: Yellow brown, but mostly concealed under ochraceous incrustation; membrane brown.

Total length 5.56 mm, width of pronotum 1.68 mm; width of abdomen 1.88 mm; length to tips of PE-VII 6.44 mm.

Holotype ♂ (BISHOP 7780), NW New Guinea, Wisselmeren, Okaitadi, 1800 m, 8.VIII.1955, J. L. Gressitt.

A nymph collected by Dr J. L. Gressitt at Wisselmeren, Enarotadi, 1900 m, is covered with ivory incrustation; antennal segment III and IV are semifused together; pronotum with 2 (1+1) larger, meso and metanotum similar but smaller round, callous spots, surrounded by concentric striation; terga I to III have smaller, transversely-ovate callous spots; terga IV to VII similar, but round, callous spots, of which those on tergum VII are much smaller than others. Two openings of dorsal scent glands are clearly visible between terga IV-V, and V-VI. PE-IV to VII are progressively larger, VII more than 2× as large as VI. Segment IX laterad of anus has 2 (1+1) long spines, which are narrower than PE-VII, but produced far beyond their tips. Spiracles II to III lateral; IV to VII sublateral; VIII terminal.

*Color*: Brown or yellow brown, concealed under ivory incrustation.

Total length 2.93 mm; width of abdomen 1.12 mm.

It is difficult to decide if this specimen belongs to *Z. bicaudata*, or to some other species.

#### **Zimmermania angulata** Kormilev, new species      Fig. 6.

♂. Macropterous. Elongate triangular, widening from head to PE-VI, then narrowed; PE-VII forming large, triangular lobes with acute tips, produced far beyond hypopygium. Body mostly covered with brownish incrustation.

*Head* and antenna similar to preceding species, but pronotum is somewhat different. Lateral borders of fore lobe with 2 rows of particularly long, incrustate bristles forming a shelf-like projection; middle of anterior border without these bristles permitting one to see the middle portion of collar; anterolateral borders of hind lobe without rows of incrustate bristles, except for a few small bunches of bristle. Fore disc with a slightly different pattern of callous spots; hind disc with 2 parallel, laterally contiguous, transverse rows of incrustate bristles, and in front of them 2 (1+1) oblique rows converging mesad anteriorly. *Scutellum* with same shape as in *Z. solomonensis* n. sp. Hemelytra reaching to middle of tergum VII. Abdomen with a narrow connexivum; each segment with exterior and interior borders highly carinate, carinae formed by dense rows of incrustate bristles; discs of connexiva are deeply excavate between carinae. PE-II and III not protruding; PE-IV to VI progressively more protruding sideways, forming small, angular tips; PE-VII, as was said, forming large triangular lobes with acute tips. Paratergites small, cylindrical, reaching to 3/4 of hypopygium; latter small, caudal in position, with a high, narrow, median ridge extending from fore border to 3/5 of disc. Spiracles II lateral; III sublateral; IV to VII ventral, placed close to border; VIII terminal. *Measurements*: head 20 : 16.5; relative length of antennal segments I to IV are: 18 : 12 : 18 : 10; pronotum 26 : 30; scutellum 11 : 16; abdomen 66 : 45; length of abdomen to tips of PE-VII 72; hypopygium 7 : 9.

*Color*: Dark brown, concealed under thick, brownish incrustation; antennal segments II-III, and legs yellow brown, antennal segment IV piceous; membrane infusate at base, then white, semitransparent.

Total length 5.04 mm; width of pronotum 1.20 mm; width of abdomen 1.80 mm; length to tips of PE-VII 5.28 mm.

Holotype ♂ (BISHOP 7781), NW New Guinea, Hollandia, 13.III.1960, T. C. Maa.

**Zimmermania gressitti** Kormilev, new species      Fig. 7.

♀. Macropterous. Elongate triangular, widening from head to segment V, then slightly narrowing; mostly covered with thick yellowish incrustation.

*Head* longer than width across eyes (22 : 18); clypeus and jugae greatly reduced; antenniferous tubercles strong, dentiform, reaching to 1/7 of antennal segment I. Eyes large, semiglobose. Postocular border slightly sinuate; posterior convex. Head covered with thick incrustation, with exception of 2 (1+1) thin, curved, callous spots on vertex, and 2 (1+1) streaks on ventral side parallel to labial groove. Antenna more than 3× as long as head (68.5 : 22); segments I-II partially covered with incrustation; relative length of antennal segments I to IV are: 21 : 14 : 25 : 8.5. Labium not reaching to hind border of labial groove. *Pronotum* subhexagonal, shorter than its maximum width (30 : 40); fore lobe narrower than hind lobe (26 : 40). Anterior border deeply sinuate and with a dense row of moderately long incrustate bristles. Lateral borders of fore lobe with a double row of incrustate bristles, which are moderately long in the upper row, and progressively diminishing backward in the lower row. Anterolateral borders of hind lobe with 2 rows of short, incrustate bristles. Fore disc with a peculiar pattern of callous spots, and a thin layer of incrustation around them. Hind disc with a very thin layer of incrustation and with a few small groups of extremely short bristles. Humeral angles rounded; posterior angles produced laterad of scutellum; hind border deeply sinuate. *Scutellum* shorter than its basal width (15 : 20), similar to preceding species. *Hemelytra* reaching to middle of tergum VII; corium with incrustate bristles, membrane semitransparent. *Abdomen* longer than its maximum width across segment V (88 : 63 to tip of segment IX, or 95 to tip of PE-VII). Connexivum moderately wide; discs of connexiva covered with dense, extremely short, erect bristles completely immersed into thick incrustation. Along outer borders of connexiva extends a depressed streak without incrustation. PE-II angles not protruding, PE-III to VI progressively more protruding and rounded, PE-VII forming a long, acute triangle directed backward and produced far beyond segment IX. Paratergites small, cylindrical, divergent, reaching to middle of segment IX; the latter small and tricuspidate. Spiracles II and III lateral; IV to VII ventral, placed, close to border; VIII terminal. *Prosternum* with a double, longitudinal, incrustate carina along median line. *Legs*: Fore tibia with anteapical spines.

*Color*: Yellow brown, membrane brownish, incrustation ivory to ochraceous.

Total length 6.36 mm to tip of segment IX, or 6.64 mm to tip of PE-VII; width of pronotum 1.60 mm; width of abdomen 2.52 mm.

Holotype ♂ (BISHOP 7782), Solomon Is., New Georgia group, Buruku, summit of Rendova Pk, 1050 m, 17.VII.1959, J. L. Gressitt.

It is a pleasure to dedicate this species to its collector, Dr J. L. Gressitt, Chairman of Entomology at the Bishop Museum, who collected so many new species of Aradidae.

Genus **Proxius** Stål, 1873

*Proxius* Stål was considered as an American genus with a few species distributed in the tropical and subtropical America. Only a few years ago Usinger & Matsuda described the first Oriental species from Sumatra, and established for its reception a new subgenus, *Nesoproxius* (1959 : 113). Actually *Proxius* (*Nesoproxius*) *minutus* Usinger & Matsuda has



much wider area of distribution. In this present lot were specimens from West New Guinea, and last year I recorded it from Pahang, Malay Peninsula (1967 : 477). Besides the type species, the subgenus *Nesoproxius* has in the Oriental Region and on New Guinea a few species more, which may be separated by the following key :

KEY TO SPECIES OF PROXIUS (NESOPROXIUS)

1. Small species, less than 3.5 mm ..... 2  
Larger species, over 4.0 mm ..... 3
2. Fore disc of pronotum with a pentagonal median ridge; PE-VII short, blunt, reaching to middle of paratergites (♀) (Malay Pen., Sumatra, W. New Guinea) ..... *minutus* Usinger & Matsuda  
Fore disc of pronotum with a T-form median ridge; PE-VII acute, produced as far as paratergites (♀) (NE New Guinea) ..... *gracilis*\*
3. Anterolateral borders of pronotum and median ridge strongly inflated, the latter overlapping base of head (Viet Nam) ..... *vietnamensis*\*  
Anterolateral borders of pronotum and median ridge only slightly inflated, the latter not overlapping base of head ..... 4
4. Pronotum hexagonal; PE-VII short, rounded, not reaching tips of paratergites (♀) (SE New Guinea) ..... *hexagonalis*\*  
Pronotum subrectangular, or trapezoidal; PE-VII produced at least as far as paratergites ..... 5
5. Pronotum subrectangular, with lateral borders sinuate in middle; PE-VII produced as far as paratergites and segment IX (♀) (N. Borneo) ..... *punctulatus*\*  
Pronotum trapezoidal with lateral projection slightly before middle of lateral borders; PE-VII extended as far as segment IX (♀), but far beyond short paratergites (West New Guinea) ..... *angulatus*\*

**Proxius (Nesoproxius) minutus** Usinger and Matsuda, 1959, *Class. of Aradidae*, p. 114, fig. 32.

NW NEW GUINEA: 1♀, Bodem, Sarmi Area, 10.VII.1959, T. C. Maa.

**Proxius (Nesoproxius) gracilis** Kormilev, new species Fig. 8-9.

♀. Elongate ovate; head and fore lobe of pronotum more, rest of the body less, incrustate.

Similar to *P. minutus*, but genae longer, produced to 5/6 of antennal segment I; median ridge of fore lobe of pronotum T-shaped; hind lobe finely granulate, and with a thin layer of white incrustation around granules. Lateral borders of pronotum with a small tooth on fore lobe posteriorly, and sinuate in front of it. Scutellum semicircular, with T-shaped median carina as in *P. minutus*, but lateral incrustations are shorter, reaching only to middle of lateral border; disc laterad of median carina granulate, and thinly incrustate around granules. Hemelytra similar to those in *P. minutus*. Connexivum flat; PE-angles II to VI slightly, but acutely protruding; PE-VII acute, produced as far as paratergites; the latter also acute, reaching to 3/4 of segment IX, which is tricuspidate. Spiracles as in all species of *Nesoproxius*: II to V ventral, placed far from margin; VI and VII lateral; VIII dorsal. *Measurements*: head 12.5 : 12; relative length of antennal segments I to IV are: 5.5 : 3 : 7 : 6; pronotum 15 : 25; scutellum 13 : 14; abdomen 42.5 : 31 across segment III or IV.

*Color*: Yellow brown; incrustation ivory.

Total length 3.24 mm; width of pronotum 1.00 mm, width of abdomen 1.24 mm.

Holotype ♀ (BISHOP 7783), NE New Guinea, Maprik, 160 m, 14.X.1957, J. L. Gressitt.

**Proxius (Nesoproxius) vietnamensis** Kormilev, new species      Fig. 10-11.

♀. Elongate ovate; abdomen with parallel sides from segment II to VI, then narrowed. Head, fore lobe of pronotum, connexivum and pleurae, mostly covered with thick, ivory incrustation forming bizarre protuberances on head and pronotum. Hind lobe of pronotum, scutellum and ventral side of body less incrustated; antennae, hemelytra and legs without incrustation.

*Head* slightly shorter than width across eyes (16 : 17), or across postocular projections (16 : 21). Clypeus small, with parallel sides, without incrustation, reaching slightly beyond tips of antenniferous tubercles; jugae cylindrical, parallel, not contiguous, heavily incrustated, reaching to 4/5 of antennal segment I. Antenniferous tubercles stout, dentiform, with parallel outer borders, reaching to middle of antennal segment I. Eyes small, semiglobose. Postocular portion of head produced into 2 (1+1) large, triangular projections with blunt tips, produced far beyond outer border of eyes. Vertex longitudinally raised; mesad of eyes are 2 (1+1) small, round, callous spots. Antennae short and slender, only 1.5× as long as head (19.5 : 16); relative length of antennal segments I to IV are: 5.5 : 3 : 5.5 : 5.5. Labium reaching to hind border of labial groove. *Pronotum* quadrate, truncate anteriorly and posteriorly, and with parallel sides; shorter than wide (25 : 41), divided into 2 lobes by a thin, but deep, transverse furrow. Fore disc inflated in middle like a hood, anterolateral angles and lateral borders also inflated; area between median and lateral inflations deeply depressed and bearing 8 (4+4) callous spots of different size. Collar without incrustation. Hind lobe sulcate along hind border. Hind disc with 2 (1+1) lateral, transverse streaks of incrustation in front of sulcus, and with 2 (1+1) more, placed behind sulcus and more mesally; rest of hind disc with dispersed, round, incrustate dots. *Scutellum* semicircular, shorter than basal width (12.5 : 24); lateral borders convex, with incrustate inflations; rest of disc with a few, minute, incrustate dots. Median ridge T-form, tapering backward, and not reaching to tip of scutellum. *Hemelytra* reaching to middle of tergum VII; corium reaching to middle of scutellum. Basolateral border of corium expanded beyond tip of connexivum II, rounded and reflexed; disc of corium rugose; membrane large, semitransparent. *Abdomen* longer than its maximum width across segment III (67.5 : 51). Connexivum wide, flat, and completely covered with ivory incrustation, with exception of 2 small, round, callous spots on each connexivum from III to VII. PE-angles not protruding, but outer borders of connexiva slightly convex on hind 1/2 of each segment, so that lateral borders of abdomen look slightly festooned. Connexiva II and III completely fused together, other separated by thin split in incrustation. Terga I to VI without incrustation; VII incrustated, with exception of 2 large, round, fused together, callous spots in middle of disc. Tergum VIII deeply sinuate posteriorly, covered with incrustation. Paratergites subtriangular, incrustate, reaching to 3/4 of segment IX; the latter rectangular, without incrustation. Spiracles II to V ventral, placed far from border; VI to VIII lateral. Sterna III to VI each with 6 (3+3) round, callous spots.

*Color*: Reddish brown; incrustation ivory.

Total length 4.84 mm; width of pronotum 1.64 mm; width of abdomen 2.04 mm.

Holotype ♀ (BISHOP 7784), Viet Nam, Dilinh (Djiring), 1200 m, 22-28.IV.1960, L. W. Quate.

**Proxius (Nesoproxius) hexagonalis** Kormilev, new species      Fig. 12-13.

♀. Elongate ovate; head, pronotum, scutellum, connexivum and pleurae, more or less heavily incrustated.

*Head* shorter than width across eyes (12.5:14.5), covered with thick incrustation, with exception of clypeus, 2 (1+1) dots laterad of median ridge posteriorly, and antenna. Genae tapering, longer than clypeus and contiguous anteriorly, reaching to middle of antennal segment I. Antenniferous tubercles dentiform, parallel, reaching as far as clypeus. Eyes small. Postocular borders subparallel exteriorly and slightly produced backward. Vertex raised medially. Antennae strong; relative length of antennal segments I to II are: 8:5:—:— (2 apical segments missing). Labium reaching to hind border of labial groove. *Pronotum* hexagonal, shorter than its maximum width (22:32). Collar truncate anteriorly and with thinner incrustation; anterior borders laterad of collar truncate; anterolateral angles rounded, neither produced forward, nor sideways; lateral borders of fore lobe straight, divergent backward; those of hind lobe subparallel, slightly sinuate; hind border truncate in middle, but hind angles acutely produced laterad of scutellum. Fore disc with moderately high, swollen median ridge, and anterolateral borders; laterad of median ridge with 2 (1+1) round, callous dots, and with 6 (3+3) small spots without incrustation. Hind disc with an incrustate band along fore border, and with a line of incrustated dots in sulcus along hind border. *Scutellum* subtriangular, shorter than basal width (12.5:19). Basolateral angles and tip rounded; lateral borders slightly convex and with broad bands of incrustation which taper backward; median carina T-shaped; disc between carina and lateral bands without incrustation. *Hemelytra* reaching almost to hind border of tergum VII; basolateral border of corium reflexed and incrustated; limit between corium and membrane badly marked. *Abdomen* elongate ovate, longer than its maximum width across segment IV or V (57:40). Connexivum narrow, heavily incrustated, leaving in open only most of round callous spots and a streak on connexivum II. Connexiva II and III fused together; PE-angles II to IV not protruding; V and VI slightly protruding, rounded; VII rounded, reaching to middle of paratergites. Paratergites short, rounded, reaching to 2/3 of segment IX; the latter truncate posteriorly. Spiracles II to V ventral, placed far from border; VI and VII lateral; VIII dorsal.

*Color*: Yellow brown; incrustation brownish, mostly with fine punctures.

Total length 4.20 mm; width of pronotum 1.28 mm; width of abdomen 1.60 mm.

Holotype ♀ (BISHOP 7785), SE New Guinea, Mt Giluwe, 2550 m, 27.V.1963, J. Sedlacek.

**Proxius (Nesoproxius) punctulatus** Kormilev, new species      Fig. 14-15.

♀. Elongate ovate; head, pronotum, scutellum, connexivum, paratergites, and pleurae, more or less heavily incrustated; incrustation mostly densely punctured; on hind lobe of pronotum and scutellum it is ring-like, with a deep dot in the middle of ring.

*P. punctulatus* n. sp. is more similar to American species than any other known Oriental species. Only its incrustation is more flattened, not making grotesque high ridges and deep excavations.

*Head* shorter than width across eyes (18:20), typical for subgenus; genae parallel, reaching to 3/4 of antennal segment I; clypeus incrustated; postocular borders angularly protruding far beyond outer borders of eyes, but their tips rounded; vertex slightly raised, and with 4 (2+2) small dots without incrustation. Antenna without incrustation; relative length of antennal segments I to II (III and IV missing) are: 7:4.5. Labium, and basal, globose portion of antenniferous tubercles without incrustation. *Pronotum* subrectangular, shorter than its maximum width (24:38); anterior border slightly convex; collar thin, sinuate in front; anterolateral angles slightly produced sideways; inflated, and rounded; lateral borders sinuate, convex at humeri; hind border convex; hind angles acute, protruding. Fore disc with a low median ridge which is cross-shaped anteriorly, and dilated posteriorly; laterad of it with 10 (5+5) callous spots of different size. Hind disc mostly covered with ring-shaped incrustation, and with a transverse streak of similar, ring-shaped dots along hind border; 2 (1+1) short streaks of similar, but small-

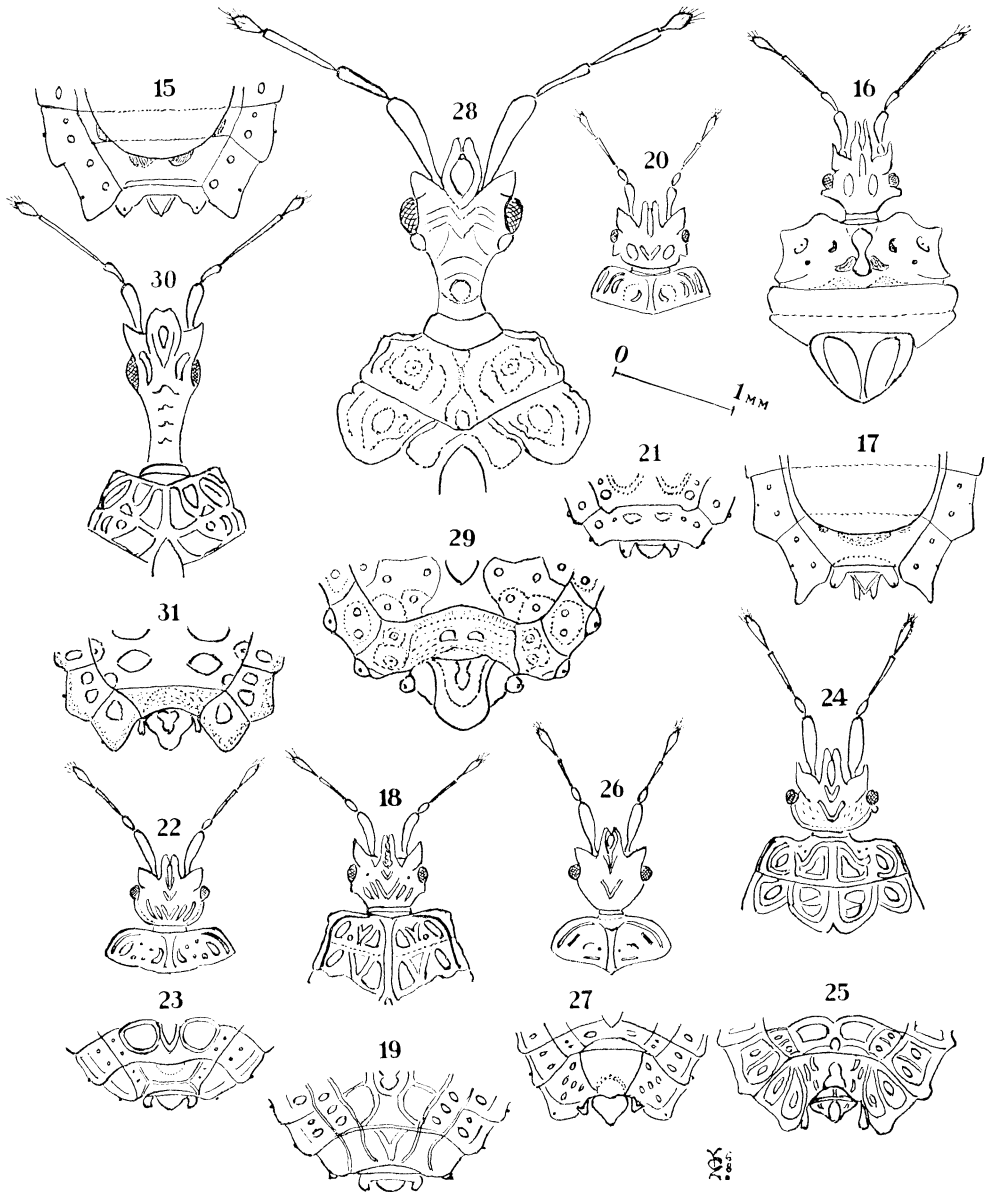


Fig. 15-31. 15, *Proxius (Nesoproxius) punctulatus*, n. sp., (♀), tip of abdomen from above; 16, *Proxius (Nesoproxius) angulatus*, n. sp., (♀), head, pronotum, and scutellum; 17, same, tip of abdomen from above; 18, *Acaraptera (Nesiaptera) ovata*, n. sp., (♀), head, pronotum, and mesonotum; 19, same, tip of abdomen from above; 20, *Acaraptera (Nesiaptera) denticulata*, n. sp., (♀), head and pronotum; 21, same, tip of abdomen from above; 22, *Acaraptera (Nesiaptera) rotundata*, n. sp., (♀), head and pronotum; 23, same, tip of abdomen from above; 24, *Acaraptera (Nesiaptera) tuberculata*, n. sp., (♂), head, pronotum, and mesonotum; 25, same, tip of abdomen from above; 26, *Acaraptera (Nesiaptera) gibbosa*, n. sp., (♂), head and pronotum; 27, same, tip of abdomen from above; 28, *Notoplocaptera mystica*, n. sp., (♂), head, pronotum, and mesonotum; 29, same, tip of abdomen from above; 30, *Apteraradus vietnamensis*, n. sp., (♀), head, pronotum, and mesonotum; 31, same, tip of abdomen from above.

ler dots extend laterad of hind angles. *Scutellum* subtriangular, shorter than its basal width (12.5 : 22.5). Basolateral angles and apex rounded; disc with T-shaped median carina; the rest of disc mostly covered with large, ring-shaped, incrustated dots. *Hemelytra* similar as in preceding species, reaching to 3/5 of tergum VII. *Abdomen* longer than its maximum width across segment IV (65 : 50); lateral borders parallel and slightly festooned; PE-angles II to VI progressively protruding and rounded; VII angular with blunt tips, reaching as far as paratergites and segment IX. Discs of connexiva heavily incrustated, with exception of round, callous spots, and antero-exterior angles on connexiva IV to VII. Paratergites long, acute, reaching as far as long and declivous segment IX. Spiracles II to V ventral, placed far from border; VI and VII lateral, VIII dorsal.

*Color*: Yellow brown; incrustation dirty-ivory.

Total length 4.32 mm; width of pronotum 1.52 mm; width of abdomen 2.00 mm.

Holotype ♀ (BISHOP 7786), North Borneo, Gomantong Caves, 22-26.XI.1958, T. C. Maa.

**Proxius (Nesoproxius) angulatus** Kormilev, new species      Fig. 16-17.

♀. Elongate ovate: head, pronotum, scutellum, connexivum, and pleurae covered with thick, ochraceous incrustation.

*Head* longer than width across eyes (20 : 16.5); genae very long, anteriorly contiguous, reaching to 5/6 of antennal segment I. Antenniferous tubercles dentiform, parallel, reaching to 1/3 of antennal segment I. Postocular borders produced, just behind eyes, into a large, blunt tubercles, distinctly extending beyond outer border of eyes; hind border truncate. Vertex slightly raised medially, and with 2 (1+1) ovate depressions mesad of eyes. Antennae long and thin; relative length of antennal segments I to IV are: 10 : 5 : 11.5 : 8. Labium reaching to hind border of labial groove. Antennae and labium without incrustation. *Pronotum* flat, shorter than its maximum width (24 : 38.5). Anterior border sinuate; anterior angles produced forward beyond collar and rounded; anterolateral angles obliquely produced sideways and angularly rounded; one more smaller projection placed posteriorly on the lateral border of fore lobe; borders between anterior and anterolateral angles, and between anterolateral and posterolateral angles of fore lobe sinuate. Lateral borders of hind lobe convex, then cut out; posterolateral borders of hind lobe obliquely truncate; posterior angles acute, protruding laterad of scutellum; posterior border straight. Fore disc with a small and low median ridge tapering backward, then dilated again and rounded; laterad to it are 10 (5+5) spots without incrustation. Hind lobe thickly and uniformly incrustated. *Scutellum* subtriangular, shorter than its basal width (14 : 21). Basolateral angles and apex rounded; disc with T-shaped median carina, completely covered with incrustation. *Hemelytra* reaching to 2/3 of tergum VII; corium reaching to 1/3 of scutellum, covered with a thin layer of incrustation; membrane as in other species. *Abdomen* longer than its maximum width across segment IV (67 : 47). Lateral borders subparallel, slightly convex; PE-angles II to VI not protruding, but lateral borders of connexiva slightly convex, so that lateral border of abdomen looks festooned; PE-VI forming a slightly obtuse angle with a blunt tip; PE-VII produced into long spines with a blunt tip reaching as far as segment IX. Paratergites short, rounded; segment IX tricuspidate. Spiracles II to V ventral, placed far from border; VI and VII dorsolateral; VIII terminal.

*Color*: Yellow brown, but mostly covered with ochraceous incrustation.

Total length 4.96 mm; width of pronotum 1.54 mm; width of abdomen 1.88 mm.

Holotype ♀ (BISHOP 7787), NW New Guinea, Vogelkop, Bomberi, 700-900 m, 4.VI.1959, J. L. Gressitt. Paratype 1♀, same locality, 3.VI.1959, T. C. Maa (Kormilev coll'n).

Genus *Acaraptera* Usinger and Matsuda, 1959.

A small genus of apterous aradids distributed in New Zealand and in some South Pacific Islands. Usinger & Matsuda split this genus into 3 subgenera: *Acaraptera* s. str., *Lisaptera* and *Nesiaptera*. In this lot were 5 species from Fiji, all collected by Dr E. C. Zimmerman, and all belonging to subgenus *Nesiaptera*. Usinger & Matsuda probably have seen at least some of these species, but have described only 1 species from Samoa to validate the subgenus.

The *Nesiaptera* species may be separated by the following key:

## KEY TO NESIAPTERA SPECIES

1. Lateral borders of pronotum convex, rounded and produced beyond those of mesonotum (Samoa) ..... **zimmermani** Using. & Mats.  
Lateral borders of pronotum straight, forming together with those of mesonotum a straight line.....2.
2. Postocular tubercles present ..... 3  
Postocular tubercles absent ..... 4
3. Larger species, over 3.25 mm (♀); ovate; anterior process of head reaching almost to middle of antennal segment I; postocular tubercles small, angular (Fiji)..... **ovata**\*  
Smaller species, less than 3.0 mm (♀); elongate ovate; anterior process reaching to 1/3 of antennal segment I; postocular tubercles dentiform, directed backward (Fiji)...**denticulata**\*
4. PE-angles of connexiva rounded, barely protruding; thorax and tergum VII in profile are at the same level as central dorsal plate, all three are slightly raised posteriorly, or in the middle respectively (Fiji).....**rotundata**\*  
PE-V and VI distinctly protruding; thorax and tergum VII in profile are distinctly higher than central dorsal plate ..... 5
5. Larger species, over 3.75 mm (♂); body subtriangular, widest point across segment V; PE-II to IV barely protruding, rounded; PE-V and VI produced into round tubercles (Fiji) ..... **tuberculata**\*  
Smaller species, less than 3.25 mm (♂); body ovate, widest point across segment III or IV; PE-II rounded, PE-III to V angularly protruding; thorax inflated (Fiji) ..... **gibbosa**\*

*Acaraptera* (*Nesiaptera*) **ovata** Kormilev, new species      Fig. 18-19.

♀. Apterous. Ovate; postocular tubercles small, angular; body covered with a thin layer of white incrustation.

*Head* shorter than width across eyes (16:20). Anterior process with parallel sides, incised anteriorly, reaching almost to middle of antennal segment I. Antenniferous tubercles acute with parallel outer sides. Eyes small, globose. Postocular borders parallel, then sinuate and strongly convergent. Vertex raised and with a V-form carina. Relative length of antennal segments I to IV are: 10:4:7.5:8. Labium reaching to hind border of labial groove, which is closed posteriorly. *Pronotum* short and wide (10:27.7). Anterior border truncate; anterolateral angles obliquely subtruncate, neither produced forward, nor sideways; lateral borders of pro, meso and metanotum together form a straight, divergent line; disc carinate on median line, and with a few small carinae and callous spots laterad of it. *Mesonotum* wider than pronotum (35:27.5), separated from latter by oblique sulci; median carina bifurcates posteriorly and continues as a double carina across metanotum and tergum I. Thin carinae extending along lateral borders; disc with a few irregular carinae, elevations, and depressions. Outer borders of metanotum fused

with connexivum II, the latter semifused with III. Disc of metanotum also with a few carinae, elevations and depressions. *Abdomen* shorter than its maximum width (42.5 : 49). Terga I and II fused together, but latter placed at a slightly lower level; central dorsal plate raised medially in area of dorsal scent glands; laterad to it is a usual pattern of low carinae and irregular spots. Connexivum wide, horizontal; PE-angles rounded and very slightly protruding; tergum VII raised posteriorly. Paratergites short, rounded posteriorly, produced as far as segment IX; the latter placed at a lower level and rounded. Spiracles II to VII lateral, VIII dorsolateral.

*Color*: Testaceous; middle of terga III and IV black.

Total length 3.28 mm; width of pronotum 1.10 mm; width of abdomen 1.96 mm (paratype is larger: 3.68 mm, 1.30 mm, and 2.24 mm respectively).

Holotype ♀ (BISHOP 7788), Fiji, Viti Levu, Nandarivatu, by beating, 2.IX.1938, E. C. Zimmerman.

Paratype 1 ♀, Fiji, Matuku I., 7.V.1924, E. H. Bryan, Jr. (Kormilev coll'n).

**Acaraptera (Nesiaptera) denticulata** Kormilev, new species      Fig. 20-21.

♀. Apterous. Smaller and narrower than *A. ovata* n. sp.; head relatively shorter, anterior process reaching to 2/5 of antennal segment I; antenniferous tubercles dentiform, robust; eyes small, semiglobose; postocular borders parallel, but forming a small tooth directed backward; vertex with a V-form carina. Anterolateral angles of pronotum angularly rounded, neither produced forward, nor sideways; disc with a pattern of carinae and irregular spots laterad of a low and narrow median carina. Thorax, central dorsal plate and tergum VII more flattened than in preceding species. Paratergites reaching as far as segment IX. Spiracles II to VII lateral, VIII dorsolateral. *Measurements*: head 12.5 : 17.5; relative length of antennal segments I to IV are: 9 : 4 : 6 : 7.5; pronotum 9 : 24; mesonotum's width 30; abdomen 39 : 42.

*Color*: Testaceous, covered with a thin layer of white incrustation.

Total length 2.92 mm; width of pronotum 0.96 mm; width of abdomen 1.68 mm.

Holotype ♀ (BISHOP 7789), Fiji, Viti Levu, Tholo-i-suva, 150-180 m, 21.VI.1938, E. C. Zimmerman.

**Acaraptera (Nesiaptera) rotundata** Kormilev, new species      Fig. 22-23.

♀. Apterous. Similar to *A. ovata* n. sp., of the same size and general shape, but with head relatively shorter, and postocular borders regularly rounded, without any trace of a tubercle; vertex with 4 (2+2) carinae converging backward. Anterolateral angles of pronotum regularly rounded, neither produced forward, nor sideways. Thorax and tergum VII less raised posteriorly, and central dorsal plate also less raised on terga IV and V, all 3 reaching the same height. Paratergites produced as far as segment IX, which is rounded posteriorly. *Measurements*: head 15 : 17.5; relative length of antennal segments I to IV are: 10 : 3.5 : 7 : 8; pronotum 10 : 27.5; width of mesonotum 32; abdomen 43 : 46. Spiracles II to VII lateral, VIII dorsolateral.

*Color*: Testaceous; middle of terga III and VI blackish, incrustation white.

Total length 3.20 mm; width of pronotum 1.10 mm; width of abdomen 1.84 mm.

Holotype ♀ (BISHOP 7790), Fiji, Viti Levu, Belt Road, 26-29 km W of Suva, Beating shrubs, 22.VII.1938, E. C. Zimmerman.

**Acaraptera (Nesiaptera) tuberculata** Kormilev, new species Fig. 24-25.

♂. Apterous. Generally similar to *A. ovata* n. sp., but larger, subtriangular-shaped body, widening backward until segment V, then narrowing. Anterior process reaching almost to middle of antennal segment I; postocular borders strongly converging backward and almost straight, slightly convex (at right side with a minute, round granule close to eye, which is missing on left side). Vertex with a V-form carinae. Anterolateral angles of pronotum rounded, and very slightly produced forward, but not sideways. All carinae on thorax more prominent than in any of previous species. Thorax somewhat inflated, sloping forward and sideways. Lateral borders of abdomen parallel from segment III to V; exterior borders of connexiva VI and VII sinuate. PE-II to IV rounded and barely protruding; PE-V and VI terminating in a round tubercle; PE-VII rounded and reflexed. Central dorsal plate raised medially and sloping laterally; Tergum VII strongly raised medially and posteriorly. Paratergites long, cylindrical, enlarged apically, adherent to connexivum VII, and produced as far as PE-VII. Hypopygium small, subcordate, rounded on upper and tapering on lower side, and strongly declivous. *Measurements*: head 16 : 20; relative length of antennal segments I to IV are: 13 : 5 : 9 : 9; pronotum 12 : 32.5; width of mesonotum 38; abdomen 50 : 50; hypopygium 11 : 11. Spiracles II to VI lateral, VII sublateral, VIII terminal.

*Color*: Reddish brown; antennal segments II to IV, central dorsal plate laterally, connexivum, labium, tibiae and tarsi, are yellow brown; area of dorsal scent glands on terga IV and V with a yellow, triangular spot; some carinae of head and thorax infuscate.

Total length 3.84 mm; width of pronotum 1.30 mm; width of abdomen 2.0 mm.

Holotype ♂ (BISHOP 7791), Fiji, Marci Moala I., beating shrubs, 24.VIII.1938, E. C. Zimmerman.

**Acaraptera (Nesiaptera) gibbosa** Kormilev, new species Fig. 26-27.

♂. Apterous. Elongate ovate, lateral borders from pronotum to connexivum VII regularly rounded. Anterior process of head with slightly converging borders and incised tip, reaching to 2/5 of antennal segment I. Antenniferous tubercles short and wide at base, acute apically. Postocular borders slightly convex and strongly converging, without any tubercle. Vertex with 2 (1+1) carinae converging backward. Thorax strongly inflated, sloping forward, backward, and sideways; its highest point is on metanotum. Anterolateral angles of pronotum rounded, neither produced forward, nor sideways; lateral borders of pronotum, mesonotum, and connexivum II together forming straight, divergent lines. Pattern of carinae on thorax slightly different, but on central dorsal plate the same as in *A. ovata* n. sp. Central dorsal plate is on a much lower level than thorax, or tergum VII, and strongly raised medially on terga IV and V (area of dorsal scent glands), but much less on terga III and VI. PE-angles II to VI slightly, angularly protruding; PE-VII angular with a rounded tip and a tuberculiform inflation below spiracle. Paratergites short, cylindrical, adherent to connexivum VII. Hypopygium small, cordate, strongly declivous. Spiracles II to VI lateral, VII dorsolateral, VIII terminal. *Measurements*: head 15 : 19; relative length of antennal segments I to IV are: 10 : 4 : 7 : 8; pronotum 10 : 27; width of mesonotum 32.5; abdomen 40 : 42; hypopygium 11 : 9.

*Color*: Reddish brown, partially yellow brown; tarsi yellow.

Total length 3.24 mm; width of pronotum 1.08 mm; width of abdomen 1.68 mm.

Holotype ♂ (BISHOP 7792), Fiji, Andubangda, Ovalan, beating, 15.VII.1938, E. C. Zimmerman.



Genus **Notoplocaptera** Usinger and Matsuda, 1959.

This small Oriental genus had only two species, from North Borneo and Burma, both based on a single known specimen. Now I am able to add one more species, also from North Borneo. These species may be separated by the following key:

## KEY TO NOTOPLOCAPTERA SPECIES

1. Anterolateral angles of pronotum produced forward like angular, or rounded lobes ..... 2  
    Anterolateral angles of pronotum forming an obtuse angle, neither produced forward, nor  
    sideways (N. Borneo) ..... **mystica\***
2. Anterolateral angles of pronotum broadly rounded and produced anteriorly; mesonotum  
    roundly produced laterally; larger species, over 7.0 mm (N. Borneo).....  
    ..... **enigma** Usinger & Matsuda  
    Anterolateral angles of pronotum angularly produced forward; mesonotum less produced  
    laterally; smaller species, less than 7.0 mm (Burma).....**malaisei** Kormilev

**Notoplocaptera mystica** Kormilev, new species      Fig. 28-29.

♂. Apterous. Elongate ovate, glabrous, with exception of a few short, curled hairs on prominent portions of body; partially covered with white incrustation.

*Head* longer than width across eyes (34 : 26). Anterior process strong, with convergent lateral borders and incised tip, reaching to 2/5 of antennal segment I. Antenniferous tubercles short, stout, with blunt tips. Eyes large, deeply inserted in head, exteriorly slightly convex, with convex facetae. Postocular borders forming a small, rounded tubercle just behind eyes, then convergent in a sinuate line forming a long neck. Vertex rugose and with deep furrows between rugae. Antenna long and strong; relative length of antennal segments I to IV are: 19 : 14 : 15 : 8. Labium not reaching hind border of a shallow, long and wide labial groove; lateral borders of the latter terminating with 2 (1+1) small tubercles posteriorly. *Pronotum* 1/2 as long as its maximum width (23 : 44). Collar stout, sinuate in front, naked, produced far beyond fore border of pronotum. Anterolateral angles subangular, lateral borders strongly divergent backward, hind border forming a wide "V". Disc with a deep median sulcus, and laterad of it with 2 (1+1) large, rugose humps, occupying the rest of disc. *Mesonotum* separated from pronotum by a deep sulcus. The whole median portion of meso- and metanotum occupied by a flat and long median plate, pointed anteriorly, slightly constricted in middle, and truncate posteriorly. This plate cuts into halves the meso-, metanotum, and 1st 2 tergites. Anterior, pointed portion of plate flanked by 2 (1+1) oblique, trapezoidal plates of mesonotum, separated by deep sulci from lateral, inflated and rugose portions. Metanotum laterad of median plate consists of 2 (1+1) high, ovate, oblique, hump-like ridges, sloping laterally to produced forward connexiva II. *Abdomen* longer than its maximum width across segment IV (68 : 65), length, exceptionally, was taken from hind border of median plate to tip of hypopygium. Terga I and II which are cut into 2 plates by median mesometanotal plate are fused together forming 2 (1+1) oblique plates limited by sulci from all sides. Central dorsal plate consists of terga III to VI and has a pentagonal shape. Tergum III highly raised in middle forming an ovate hump, which is tapering posteriorly and sloping across middle of terga IV and V; anteriorly it is produced forward between plates of tergum II touching hind border of meso-metanotal median plate. Rest of central dorsal plate more or less flat with usual pattern of ridges and callosities of different sizes. Tergum VII strongly raised for reception of a large, high hypopygium. Connexivum moderately wide and horizontal with uneven surface. Connexiva II and III fused together. Spiracles II to VII placed on tubercles; II, III and V to VII are lateral, IV sublateral, but still visible from above, VIII terminal.

Paratergites short, cylindrical, directed slightly upward and divergent. Hypopygium in dorsal aspect shorter than wide (15 : 19); in caudal aspect elongate ovate, longer than wide (23 : 19); its upper portion raised and separated from lower by transverse depression. *Legs* long, unarmed.

*Color*: Black; petiolate base of antennal segment III and apical 1/2 of IV, labium and tarsi, are reddish brown.

Total length 6.16 mm; width of pronotum 1.76 mm; width of abdomen 2.60 mm.

Holotype ♂ (BISHOP 7793), North Borneo, Mt. Kinabalu, Kamaranga, 2140 m, 22-30.X. 1958, L. W. Quate.

#### Genus *Apteraradus* Drake, 1957

This odd long-necked genus has 3 species. They are all from the Oriental Region. At hand is the fourth, from Viet Nam.

The 4 species of *Apteraradus* may be separated by the following key:

#### KEY TO APTERARADUS SPECIES

1. Long, flat, meso-metanotal median plate fully developed..... 2  
    Long, flat, meso-metanotal median plate absent and substituted by longitudinal elevation  
    with median sulcus ..... 3
2. Spiracle V lateral; meso-metanotal median plate tapering anteriorly, truncate posteriorly,  
    reaching fore border of tergum III (Viet Nam) ..... **vietnamensis\***  
    Spiracle V ventral, not visible from above; meso-metanotal median plate truncate anteri-  
    orly and tapering posteriorly, reaching tergum I (Java)..... **bloetei** Drake
3. Mesonotum very short laterally, forming a small, pad-like projection (Perak) .....  
    ..... **longicollis** Usinger & Matsuda  
    Mesonotum much longer laterally, forming a produced, rounded lobe (Sumatra; ?).....  
    ..... **collaris** Usinger & Matsuda

Drake indicated *Apteraradus javanicus* sp. nov. (1957 : 409) as a type species, but at the same time described *Apteraradus bloetei* sp. nov. as the type. It seems, that he first named the species *javanicus* and later changed the name to *bloetei*, but forgot to change it in various places. Usinger & Matsuda accepted as type species, *A. bloetei*, and I concur with it (1959 : 176).

As can be noted from the key, 2 species of Usinger & Matsuda lack the long, flat, meso-metanotal median plate, and it is possible that they need to be separated at least into a different subgenus. However, as I could not see the types, I am restraining from doing it now.

#### ***Apteraradus vietnamensis*** Kormilev, new species      Fig. 30-31.

♂. Elongate ovate, flat; head with a very long neck; glabrous and shiny, covered with a thin layer of brownish incrustation. Apterous.

*Head* 2× longer (with neck) than wide across eyes (32 : 16). Anterior process short and wide, its lateral borders convergent, tip shallowly, angularly notched, reaching middle of antennal segment I. Clypeus small, raised above level of genae; the latter flat and contiguous in front of clypeus. Antenniferous tubercles stout, dentiform, with acute tips and divergent. Eyes large but only slightly convex, with large, convex facetæ. Postocular borders slightly convex just behind

eyes, then widely sinuate in area of neck. Vertex with 2 (1+1) low carinae contiguous posteriorly and limited by deep sulci. Infraocular callosities depressed posteriorly. Antennae long and thin, more than  $2\times$  as long as head's width across eyes (36.5:16). Relative length of antennal segments I to IV are: 9:5.5:16:6. Labium reaching hind border of a shallow labial groove. *Pronotum* less than  $1/2$  as long as its maximum width (13:29). Collar glabrous, separated from disc by a fine sulcus. Anterolateral angles rectangular, placed at slightly lower level than disc; lateral borders straight, divergent backward; hind border convex, rounded in middle, slightly sinuate laterally. Disc with a deep median sulcus, and laterad of it with a few deep sulci separating disc into a few raised lobes; at the base of anterolateral angles extend 2 (1+1) oblique ridges. *Mesonotum* wider than pronotum, separated from it by a deep sulcus; its lateral borders convex, rounded; its disc cut by deep sulci in a few plates of different sizes and shapes. Median plate pointed anteriorly, its lateral borders subparallel, posterior border truncate, extending backward to front border of tergum III without any suture, or furrow, being completely fused with metanotum and 1st 2 tergites. *Metanotum* laterad of median plate separated from mesonotum by deep sulci; it consists of 2 (1+1) large round plates surrounded by deep sulci and longitudinally crossed by another sulcus; their lateral borders raised, ridge-like, but not protruding sideways. *Abdomen* longer than its maximum width across segment IV (50:48). Terga I and II completely fused together, and in middle with mesometanotal, median plate. Central dorsal plate consisting of terga III to VI is limited by deep sulci. Tergum I laterad of median plate is carinate along fore border, carina reaching connexivum II. Tergum II laterad of median plate is cut into 4 (2+2) plates by longitudinal, or oblique sulci. Central dorsal plate flat, only median portion slightly elevated; disc with 4 (2+2) rows of large (inner rows), or small (outer rows) glabrous spots. PE-angles II to IV not protruding; PE-V slightly, PE-VI more protruding, PE-VII forming large, angular lobes, produced backward beyond hypopygium. Discs of connexiva with glabrous spots similar to those of central dorsal plate. Paratergites small, subcylindrical, reaching middle of hypopygium; the latter caudal in position, pyriform, almost as long as its maximum width (9.5:10); its upper surface with a T-form ridge reaching slightly over middle of disc. Spiracles: II ventral, placed far from margin; III and IV ventral, placed close to margin; V to VII lateral and visible from above; VIII terminal. Venter without posterior protuberances, similar as in *Eurycoris* as was suggested by Usinger & Matsuda (1959:176). *Legs* unarmed.

Total length 4.56 mm; width of pronotum 1.16 mm; width of abdomen 1.92 mm.

Holotype ♂ (BISHOP 7794), Viet Nam, 6 km S of Dalat, 1400-1500 m, 9.VI-7.VII.1961, N. R. Spencer.

#### Genus *Libiocoris* Kormilev, 1957

This small, apterous genus has only been recorded from New Guinea. Its 4 species, one of which is new and described in this paper, may be separated by the following key:

#### KEY TO LIBIOCORIS species

1. PE-VII forming large triangular lobes, produced far beyond segment IX (♀); larger species, over 7.0 mm (New Guinea) ..... **lobatus\***  
 PE-VII forming smaller lobes, or processes, at most reaching as far as segment IX (♀); some times, in the ♂, they are produced beyond hypopygium, but then it is a small species, less than 5.0 mm ..... 2
2. All spiracles lateral and visible from above (New Guinea).....**antennatus** Usinger & Matsuda  
 Spiracles IV and V sublateral, placed close to margin, but not visible from above..... 3
3. Antennal segment I shorter than head (18:22); PE-VII produced as far as segment IX (♀), or beyond it (♂) (New Guinea) ..... **poecilus** Kormilev

Antennal segment I longer than head (24 : 19); PE-VII not reaching tip of segment IX

(♀), (New Guinea).....**angulatus** Usinger & Matsuda

Usinger & Matsuda (1959 : 181) erroneously indicated that the type species *L. poecilus* Kormilev, 1957, is 10 mm long, whereas the ♂ is only 4.1 mm and the female 4.75 mm.

**Libiocoris lobatus** Kormilev, new species

♀. Apterous. Elongate ovate, attenuated anteriorly; antennae, legs, and outer borders of connexiva with short, curled, rusty hairs; lateral borders of thorax and femora also with sparse, long, stiff bristles; body covered with red-brown incrustation, under which it is deeply and coarsely punctured, and shiny.

*Head* as long as wide across eyes (35 : 35). Anterior process deeply cleft, with genae much longer than clypeus, produced forward like 2 teeth, reaching 1/3 of antennal segment I. Antenniferous tubercles dentiform, slightly divaricating. Eyes small, subglobose, protruding. Postocular tubercles dentiform, not contiguous with eyes, produced as far as outer borders of latter. Vertex slightly convex in middle. Antennae long and strong, relative length of antennal segments I to IV are: 35 : 17.5 : 30 : 12.5. Labium short, reaching 2/3 of a shallow labial groove. *Pronotum* short and wide (20 : 65). Collar carinate and finely granulate laterally. Anterolateral angles inflated, rounded, and produced forward far beyond collar. Lateral borders sinuate, divergent backward; hind border carinate, slightly convex in middle and slightly sinuate laterally. Disc with a deep and narrow median sulcus, flanked by 2 (1+1) carinae, and produced backward across meso- and metanotum, and 2 1st tergites, almost to hind border of tergum II; across tergum II it becomes shallower and obsolete. Laterad of median sulcus disc has a few, irregularly-shaped, glabrous plates surrounded by fine carinae. *Mesonotum* wider than pronotum (80 : 65), limited from pro- and metanotum by deep furrows; disc with a few irregularly-shaped glabrous plates surrounded by deep punctures and fine, irregular carinae; lateral borders slightly convex, almost parallel. *Metanotum* similar to mesonotum only wider (90 : 80), completely fused posteriorly with terga I and II; lateral borders straight, divergent backward. *Abdomen* slightly longer (on median line) than its maximum width across segment IV (112 : 108). Tergum I cariniform, with a row of fine punctures. Tergum II with 2 (1+1) transversely ovate depressions limited by fine carinae and coarsely punctured on disc, separated from central dorsal plate by a deep furrow. Central dorsal plate consists of terga III to VI, separated from connexivum and tergum VII by deep and narrow furrows. Disc flat, slightly raised only in area of dorsal scent glands, and narrowly carinate medially across tergum III; disc with usual pattern of glabrous spots, surrounded by coarse punctures. Tergum VII trapezoidal, raised backward, and separated from connexiva VII by deep sulci; its disc is densely rugose. Connexivum wide and reflexed; connexiva II and III fused together; connexiva II to VI with a deep furrow extending along outer borders, and with usual, round, callous spots, surrounded with a row of coarse punctures. PE-angles II to VI protruding, blunt; PE-VII produced posteriorly into long, acute lobes extending far beyond segment IX, and separated from the disc of connexivum VII by curved, deep and narrow sulci. Paratergites short, triangular, extending as far as segment IX. Spiracles II, III, VI and VII lateral and visible from above; IV ventral, V sublateral, VIII dorsolateral.

*Color*: Black with red-brown tinge, covered with brown incrustation.

Total length 8.08 mm; width of pronotum 2.60 mm; width of abdomen 4.32 mm.

Holotype ♀ (BISHOP 7795), NE New Guinea, Karimui, 1080 mm, 11-12.VII.1963, J. Sedlacek.

Genus **Euricoris** Kormilev, 1957

This small genus so far was recorded only from New Guinea and Australia (Queensland). Its 6 species, one of which is new and is described in this paper, may be separated by the following key:

## KEY TO EURICORIS SPECIES

1. Species from New Guinea.....2  
Species from Australia.....5
2. Anterolateral angles of pronotum forming a large, rounded lobe, larger than acute posterolateral.....3  
Anterolateral angles of pronotum forming a smaller, rounded lobe, only slightly larger than acute posterolateral.....4
3. PE-VI angles short, forming an obtuse angle directed sideways; PE-VII also short, forming an almost right angle reaching (♂), or not reaching (♀), apex of hypopygium, or segment IX respectively; central dorsal plate with a hump posteriorly (New Guinea)..... **piliferus** Usinger & Matsuda  
PE-VI and PE-VII angles forming acute lobes, PE-VII produced far beyond apex of hypopygium, or segment IX; central dorsal plate flat (New Guinea)..... **occultus** Kormilev
4. Scutellum-like median process of mesosternum reaching middle of metasternum; connexivum II without lateral processes (New Guinea)..... **hollandicus** Usinger & Matsuda  
Median process of mesosternum cutting metasternum into 2 pieces; connexivum II with 2 small lateral processes (New Guinea).....**squalidus**\*
5. Body ovate; anterolateral angles of pronotum rounded, not produced beyond collar (Australia)..... **australicus** Usinger & Matsuda  
Body subtriangular; anterolateral angles of pronotum inflated and produced forward far beyond collar (Australia)..... **gloriosus** Kormilev

**Euricoris piliferus** Usinger & Matsuda, 1959, Class. Aradidae, p. 187, fig. 55.

NE NEW GUINEA: 3♀♀, Mt. Kaindi, 16 km SW of Wau, 2300 m, 8-9.VI.1962, J. Sedlacek coll.; 1♀, Wau, Morobe Distr., 1200 m, 11-15.X.1961, J. Sedlacek coll.; 1♂, Edie Creek, Wau, 1900 m, 4-10.X.1961, J. & J. H. Sedlacek coll.

**Euricoris occultus** Kormilev, 1957, Phil. J. Sci. **85** (3): 395, fig. 6.

NE NEW GUINEA: 1♂, 2♀♀, Wau, Morobe Distr., 1200 m, 29.VII-15.VIII.1961, J. Sedlacek; 1♂, 1♀, Wau, Morobe Distr., 1700-1800 m, 7.X.1962, J. Sedlacek.

**Euricoris squalidus** Kormilev, new species

♂. Apterous. Ovate; covered with gray incrustation and dirt, under which is ferruginous and shiny; sparse, erect, stiff bristles dispersed over body, particularly on lateral borders and femora.

*Head* as long as wide across eyes (♂-32:32, ♀-35:35). Anterior process strong, forked in front, genae being much longer than elevated clypeus and acute, reaching slightly over (♂), or to middle (♀), of antennal segment I. Antenniferous tubercles dentiform, acute, divaricating. Eyes moderately large, globose, subpedunculate. Postocular borders rectangular with blunt tip and covered with small granules. Vertex raised medially and coarsely granulate. Antennae long, moderately strong; relative length of antennal segments I to II (III and IV missing in all available specimens) are: ♂-17:12.5:—:—, ♀-18:12.5:—:—. Labium not reaching hind border of labial groove. *Pronotum* much shorter than its maximum width (♂-18:53, ♀-19:55).

Collar pentagonal, sinuate in front and angularly produced backward, granulate. Anterior borders laterad of collar oblique and provided with 2 (1+1) small, convergent tubercles; anterolateral angles lobular, rounded, obliquely produced forward beyond collar. Lateral borders deeply, angularly cut out; posterolateral angles produced sideways into angular, granulate lobes, with blunt tips. Disc separated from collar by fine, oblique sulci, and from mesonotum by sparsely granulate carina flanked in front and behind by furrows; in middle of disc is placed a very deep, short, median furrow, flanked by 2 (1+1) ovate elevations, and more laterad with a few rugae, and sparse, rounded granulation. *Mesonotum* wider than pronotum ( $\sigma$ -65 : 53,  $\varphi$ -68 : 55); middle of disc with a median, triangular, laevigate plate, produced backward and cutting metanotum into 2 plates, its fore border bears 2 (1+1) small protuberances; laterad of median plate with mesonotum somewhat raised and granulate; lateral borders lobularly produced sideways, these lobes rounded anteriorly and pointed posteriorly. *Metanotum* consists of 2 (1+1) irregularly raised plates, obliquely produced backward, flanking 1st 2 tergites; these plates are separated from lateral borders by densely granulate depressions; lateral borders produced sideways as rounded, granulate lobes. *Abdomen* as long ( $\sigma$ ), or slightly shorter ( $\varphi$ ), than its maximum width across segment IV ( $\sigma$ -75 : 75,  $\varphi$ -87 : 89). First 2 tergites separated from each other, from metanotum, and from central dorsal plate, by deep and narrow furrows, only medially are they fused together by 2 (1+1) parallel carinae flanking median furrow. Central dorsal plate rectangular and flat, but uneven: in  $\sigma$  inner and outer rows of glabrous spots with 1 round tubercle on each spot;  $\varphi$  with only outer row with such tubercles. Dorsal scent glands clearly visible. Tergum VII strongly raised for reception of hypopygium in  $\sigma$ , medially raised in  $\varphi$ . Connexivum wide and horizontal; connexiva II and III fused together, the former bearing 2 small, granulate tubercles on outer border; outer borders of connexiva III to V straight, or slightly convex, and finely denticulate. PE-angles II to V not protruding, but limit between connexiva slightly cut out. PE-VI angularly produced in both sexes; PE-VII forming acute, granulate lobes produced slightly over tip of hypopygium, or segment IX respectively. Connexiva III to VII each with 2 tuberculiform, glabrous spots interiorly, finely and densely granulate exteriorly. Paratergites ( $\sigma$ ) small, clavate, reaching middle of conical hypopygium; the latter carinate on basal 1/2 of upper surface. Paratergites ( $\varphi$ ) dentiform, slightly shorter than tricuspidate segment IX. Male with 2 (1+1) small tubercles on disc of sternum VII medially, and 2 (1+1) more, larger, laterad of them. Spiracles II ventral, placed far from border; III and IV ventral, placed close to margin; V sublateral, though not visible from above; VI and VIII lateral, VII dorsolateral.

Total length:  $\sigma$ -6.20,  $\varphi$ -6.84 mm; width of pronotum:  $\sigma$ -2.12,  $\varphi$ -2.20 mm; width of abdomen:  $\sigma$ -3.00,  $\varphi$ -3.56 mm.

Holotype  $\sigma$  (BISHOP 7796), SE New Guinea, Wau, Morobe Distr. 30.IX.1961, J. Sedlacek. Allotopotype  $\varphi$ , 14.VIII.1961, J. H. Sedlacek (BISHOP).

Paratopotypes: 3 $\sigma$  $\sigma$  & 5 $\varphi$  $\varphi$ , same locality, from 29.VII.1961 to 4.X.1962, J. & M. Sedlacek (BISHOP & Kormilev coll'n).

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