Pacific Insects 7 (2): 295-300 June 20, 1965

STUDIES ON ORIBATEI (Acarina) FROM THE SOUTH PACIFIC.[1] I. APOTOMOCEPHEUS GRESSITTI N. GEN., N. SP. (Family Carabodidae) FROM BIAK ISLAND[2]

By Jun-ichi Aoki[3]

BISHOP MUSEUM, HONOLULU, HAWAII

Abstract: This is the first of a series of papers on South Pacific Oribatei. *Apotomocepheus gressitti*, n. gen., n. sp., is described from Bishop Museum material from Biak Island, New Guinea. The new genus belongs to the family Carabodidae and seems to be closely related to the genera *Congocepheus* as well as *Machadocepheus*, but is distinguishable from them by several distinct characters.

The South Pacific is certainly one of the least investigated areas in the world in regard to its oribatid fauna. To date only a few investigations have been made on the oribatids from some parts of this area. As far as I know oribatid mites were recorded from the South Pacific for the first time by Canestrini (1897) who described 12 species from New Guinea. In the following year more species were reported by Canestrini as well as by Kramer and all these species were listed by Oudemans (1906).

Van der Hammen (1953, 1955a, b, 1956 and 1960) published a series of papers containing the detailed descriptions of 4 species of Oribatei of W New Guinea. Many oribatid specimens were collected by the Pacific Entomological Survey in the Marquesas and reported by Jacot (1935) who described 5 species and 10 subspecies. Further, Sellnick (1959) found 31 species from 14 islands of southeastern Polynesia.

My research at Bishop Museum offered an opportunity to examine a large number of Oribatei collected by members of the museum in many islands of the South Pacific. A series of reports on them will follow. The first report is on a new oribatid mite from Biak Island (New Guinea). From this island 2 species of Oribatei were already recorded by van der Hammen (1953, 1960), i. e. *Allonothrus schuilingi* v. d. Hammen, 1953 and *Fortuynia marina* v. d. Hammen, 1960. The third species, described here, is *Apotomocepheus gressitti* n. gen., n. sp, which belongs to the family Carabodidae. It is my pleasure to dedicate this species to Dr. J. L. Gressitt of Bishop Museum, who has contributed greatly to the knowledge of entomology in the Pacific area and is the collector of this interesting

1. Polynesia (except Hawaiian Islands), Melanesia, Micronesia and New Guinea are included here in "the South Pacific", excluding Java, Borneo, Celebes and other islands in the vicinity of South Asia.
2. This investigation was supported by a National Institutes of Health grant (AI 01723) from the National Institute of Allergy and Infectious Disease, Public Health Service. Field work supported by a grant (G-10734) from the National Science Foundation to the Bishop Museum.
3. Permanent address: National Science Museum, Ueno Park, Tokyo, Japan.

oribatid mite.

Genus **Apotomocepheus** Aoki, n. gen.

Prodorsum not trapezoid but almost triangular in shape, narrow in front. A pair of large protuberances on prodorsum highly elevated and steep, nearly triangular in lateral view. Lamellae typical, converging anteriorly, leaving a narrow interspace between their tips. Dorsosejugal suture very weak. Humeral projection on each side of hysterosoma well developed. Situated on the notogaster are 15 (?) pairs of notogastral setae of uniform length and shape, a pair of gland openings and a pair of lyrifissure. Many ridges connect to each other to form a network on dorsum. Middle field of notogaster strongly swollen, so that a deep, wide depression appears between propodosomal protuberances and middle field of notogaster. Posterior corner of notogaster with a rounded protuberance on each side. There are 2 pairs of anal setae, 2 (?) pairs of adanal setae, 7 (or 6) pairs of genital setae and 2 pairs of aggenital setae. Besides 3 pairs of pedotecta (*pd 1*, *pd 2* and *pd 4*) an additional pair of pedotecta-like projections is found posteriorly. Also on ventral plate several ridges are found. Two kinds of epimeral setae, long and short ones, are present. Setal formula of epimerata is (2-1-1-3 or 2-1-1-4). Each tarsus bears 1 claw.

Type species: *A. gressitti* n. sp.

This new genus seems to be most closely related to the genus *Congocepheus* Balogh, 1958 and *Machadocepheus* Balogh, 1958, but they are distinctly separable from each other (Table 1).

Apotomocepheus gressitti Aoki, n. sp. Figs. 1-5.

MATERIAL EXAMINED: 1 adult (Holotype: BISHOP 3664), Kampong Landbouw, Biak I., New Guinea, leaf mold, 28.V.1959, J. L. Gressitt.

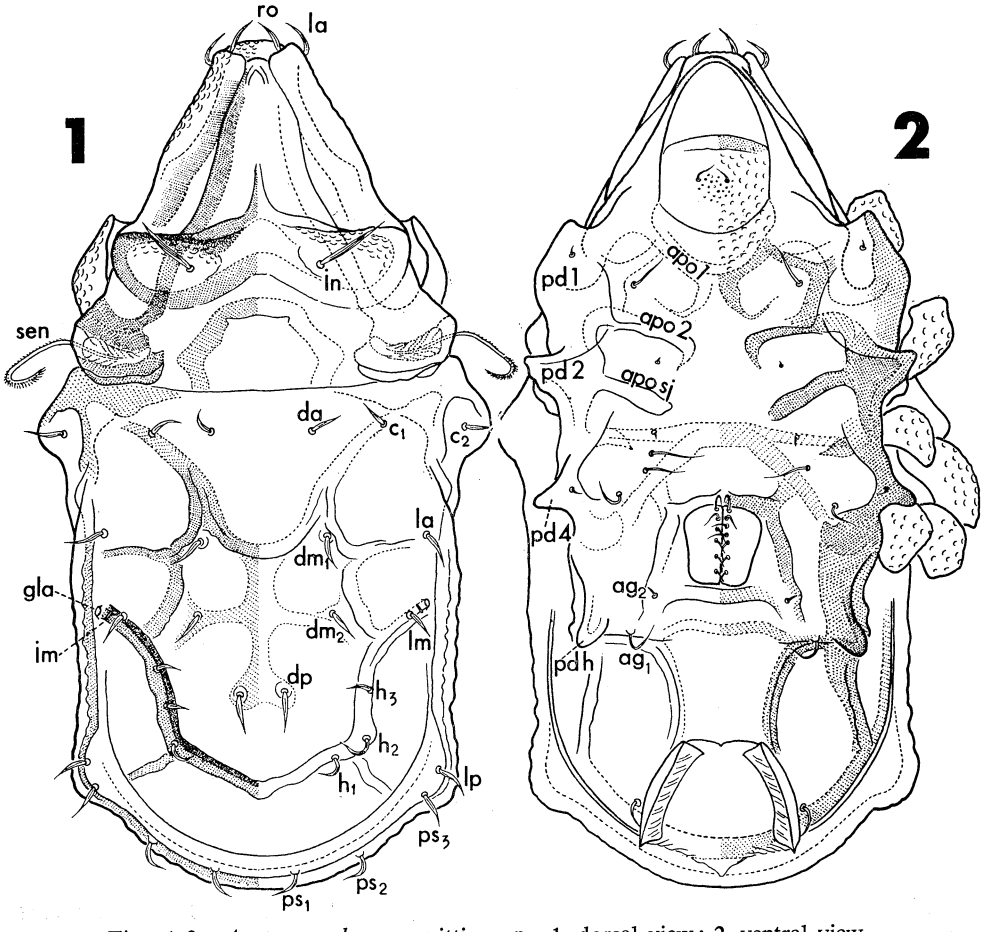
Length: 658 μ; *width*: 403 μ (at widest portion: humeral region of hysterosoma), 353 μ (at posterior portion of hysterosoma), 337 μ (at middle, narrowest portion of hysterosoma).

Table 1. Distinguishing characters among *Apotomocepheus*, *Congocepheus* and *Machadocepheus*.

	Apotomocepheus	*Congocepheus*	*Machadocepheus*
No. of genital setae	7 (or 6) pairs[1]	4 pairs	4 pairs
No. of notogastral setae	15 pairs[2]	14 pairs	14 pairs
Shape of prodorsum	triangular	trapezoid	trapezoid
Notogaster	with network of low ridges	with network of low ridges	with several pairs of elevated ridges
Pair of elevated protuberances on prodorsum	situated behind mid level of prodorsum	situated in front of mid level of prodorsum	absent
Shape of notogastral setae	uniform; leaf-shaped, not as long	shape and length different; partly long	uniform; thin and minute
Distribution	New Guinea	Africa	Africa and Madagascar

1. The only specimen available shows asymmetry in the number of genital setae.
2. A successive pair is perhaps one on the humeral projection.

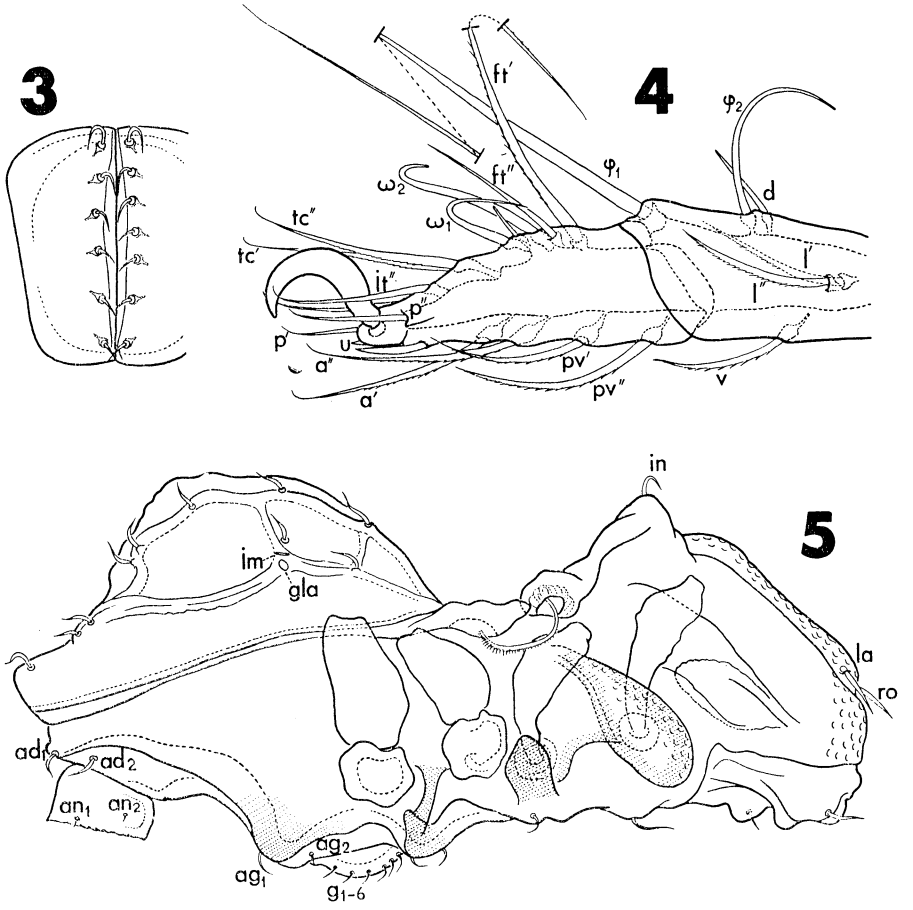
Prodorsum: Shape of prodorsum nearly triangular, narrow in front. Rostrum distinctly foveolate, anterior border almost straight. Rostral setae situated not laterally, but dorsally just behind anterior end of lamellae; setae smooth, curved and somewhat expanded. Lamellae well developed, extending from bothridium to a short distance behind anterior border of rostrum, converging anteriorly leaving a narrow interspace between their tips; their upper surface foveolate; lamellar setae the same in length as rostral setae, situated laterally near distal end of lamellae. Above prodorsum, a little posterior to the mid-distance along its length, is a pair of large protuberances; these are strongly elevated, almost conical in lateral view and with dark-colored anterior edges fused together at middle to form a further longitudinal, faint extension directed forward; interspace between protuberances steeply inclined only a little higher than level of posterior flat area of prodorsum; flat area with a somewhat dark, faint stripe forming a ring. Interlamellar setae lanceolate, slightly curved inward, and far longer and broader than lamellar as well as rostral setae, located near top of above-mentioned protuberances. Bothridium completely buried under dorsal surface of propodosoma producing a strong lateral swelling be-



Figs. 1–2. *Apotomocepheus gressitti* n. sp. 1, dorsal view; 2, ventral view.

yond opening of bothridium on each side; this lateral swelling with a narrow brim posteriorly, interior wall of bothridium bearing many wrinkles. Sensillus exhibits almost same thickness along its length, provided with many (more than 50) short processes unilaterally, being strongly curved backward.

Notogaster: Anterior as well as lateral borders are almost straight lines, although there are 2 pairs of projections each on anterior and posterior portion; the humeral projections are so conspicuous that the largest width of hysterosoma at this point (403 μ) is considerably larger than that of propodosoma (347 μ); each humeral projection has a distinct, strongly curved line on its surface which surrounds a humeral seta, anterior border of projection slightly overlaps posterior brim of prodorsal swelling above bothridium. Each side of posterolateral corner of notogaster (where width of hysterosoma measures 353 μ), with a rounded projection nearly as wide as widest part of propodosoma. Posterior margin of notogaster rounded. Middle field strongly swollen, steeply convex. There are 15 pairs of notogastral setae (2 pairs of *dm*), somewhat broadened, leaf-shaped with a sharply point-



Figs. 3–5. *Apotomocepheus gressitti* n. sp. 3, anal plates; 4, tarsus I and the distal part of tibia I, antiaxial; 5, lateral view of body.

ed tip; setae *da*, c_1 and c_2 arranged on a straight line, *i. e.* they are located on the same level; the same holds true for dm_1 and *la* as well as dm_2 and *im*; c_2 located on humeral projections and ps_3 and *lp* on posterolateral projections; as to the setae of *h*-series (h_1-h_3) the specimen examined shows asymmetrical arrangement, i. e. h_1-h_3 on right side of specimen are somewhat displaced backwards. Middle field of notogaster with many complicated but quite symmetrical dark ridges, the posterior ridge bearing setae h_1, h_2, h_3 and *lm* being the most dark and distinct one on its anterior end (it seems to extend more forward in lateral view) a small crater-like pore, *gla*, is found on each side; from the posterolateral corner of this ridge, a short ridge branches off to the marginal ridge on each side, the foremost ridge strongly concave, becoming faint near setae c_1; 2 strongly curved ridges situated laterally between foremost and posterior ridges. On highest part of dorsum, surrounded by these ridges, is a cross-shaped faint ridge; it bears a pair of setae dm_2 at both ends of its transverse bar and a pair of closely inserted setae *dp* at posterior end of the longitudinal bar where the latter is expanded surrounding the insertions for setae *dp*.

Ano-genital region: Anal and genital aperture widely separated, but the interspace between them shorter than 2× length of genital aperture. Anal plates somewhat wider posteriorly than anteriorly, provided with 2 pairs of very minute anal setae, of which the posterior one (an_1) located close to inner margin while anterior one (an_2) far distant from it (fig 5). There seem to be only 2 (?) pairs of adanal setae which are the same as the notogastral setae in shape. Genital aperture slightly longer than its largest width; on the specimen examined the number of genital setae are different on each plate: 6 on right side and 7 on left; they, especially anterior pairs, strongly bent backward. Between anal and genital aperture are 2 pairs of distinct ridges; outer ones almost straight and fused posteriorly with marginal ridge, while inner ones weakly arched and fused anteriorly with transverse ridges. Around genital aperture is a trapezoid frame of ridges which has a pair of extensions at its anterior and posterior corners, respectively. There are 2 pairs of aggenital setae, of which anterior ones are short and directed ventrad while posterior ones are rather long and bent anteriad.

Epimeral region and pedotecta: 3 pairs of apodemata (*apo 2* and *apo sj*) are well discernible while *apo 1*, *apo 3* and *apo 4* are represented by very faint, short ridges. Setal formula of epimerata on each side shows asymmetry: (2-1-1-4) on right side and (2-1-1-3) on left side, i.e. *4a* on left is lacking (there is undoubtedly even no pore for it); epimeral setae *1a*, *4a*, *4b* and *4c* are rather long bristles while remaining setae are very minute and difficult to find. Pedotecta *1*, *2* and *4* present; *pd 1* largest, spatulate in lateral view; *pd 2* and *pd 4* pointed, bent upward; former larger and covers most of opening for leg I. Far posterior to *pd 4*, behind level of genital opening, a further pedotecum-like projection (provisionally called *pd h*) is found on each side.

Legs: Each leg bears a strong claw. Setal formula of each leg (tarsus - femur) seems to be as follows: I (18-6-4-4), II (17-4-4-4), III(17-3-2-3), IV(12-3-2-2); but these are not quite certain because it was impossible to dissect the unique holotype completely for detailed observation of the setal formula. Formula of solenidions on each leg: I(2-2-1-0), II(2-1-1-0), III(0-1-1-0), IV(0-1-1-0). Setae on tarsus I (fig. 4): solenidions ω_1 and ω_2 bent backward, ω_1 more strongly than ω_2; famulus ε located just behind ω_1, *ft'* far longer than *ft''*; *tc'* as long as *tc''* and also *it'* as long as *it''*; *u'* and *u''* thickened, thorn-like setae; *pv'* situated a considerable distance anterior to *pv''*; no lateral setae (*pl*).

Setae on tibia I: solenidion φ_1 very long, extending far beyond the tip of claw; φ_2 located far posterior to φ_1, far shorter and bent backward; *d* inserted just behind φ_2, crossing the latter; a pair of lateral setae (*l'* and *l''*) and a single ventral seta (*v*) present.

REFERENCES

Balogh, J. 1958 Oribatides nouvelles de l'Afrique tropicale. *Rev. Zool. Bot. Afr.* **58**: 1-34.

Canestrini, G. 1897 Nuovi acaroidei della N. Guinea. *Termész Füzetek* **20**: 461-74.

Hammen, L. van der 1953 Notes on the Oribatei (Acari) of Dutch New Guinea I. *Allonothrus schuilingi* nov. gen., nov. spec. *Proc. Kon. Ned. Ak. Wet.* **C65** (2): 244-50.

1955a *Ibid.* II. A redescription of *Archegozetes magna* (Sellnick). *Ibid.* **C58** (1): 90-97.

1955b *Ibid.* III. The development of *Archegozetes magna* (Sellnick) and *Allonothrus schuilingi* (Van der Hammen). *Ibid.* **C58** (2): 195-205.

1956 *Ibid.* IV. Description of *Trhypochthonius montanus* nov. spec., and preliminary revision of the genus *Trhypochthonius*. *Ibid.* **C59** (3): 398-404.

1960 *Fortuynia marina* nov. gen., nov. spec., an oribatid mite from the intertidal zone in Netherlands New Guinea. *Zool. Med.* **37** (1): 1-9.

Jacot, A. P. 1935 Some Tyroglyphina (Sarcoptiformes) of the Marquesas Island. *Bull. B. P. Bishop Mus.* **114**: 211-38.

Oudemans, A. C. 1906 Acari. *In*: Nova Guinea (Résultats de l'expédition scientifique néerlandaise à la Nouvelle-Guinee. **5** (1): 101-61, pls. 1-4, figs. 1-118.

Sellnick, M. 1959 Acarina from Southeastern Polynesia—II (Oribatidae). *Occ. Pap. B. P. Bishop Mus.* **22** (9): 109-52.