A REMARKABLE NEW ORIBATID MITE FROM SOUTH JAPAN (CRYPTOSTIGMATA : TOKUNOCEPHEIDAE, fam. nov.)

BY

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Many special genera of oribatid mites are found principally in the southern part of Japan, whereas the oribatid fauna of the northern part of the country generally consists of the palearctic genera which are common to Europe. In a litter sample collected in Tokunoshima Island, one of the southernmost islands of Japan, I found an interesting new oribatid mite which did not belong to any of the known families. I erect a new genus and a new family for it, which are described below. I express my sincere thanks to Mr. K. MIZUSAWA who kindly provided me with the litter sample from the island, and I name the species after him.

Tokunocepheidae AOKI, fam. nov.

A prominent pedotectum-like projection (called here " sensillitectum ") covers the bothridium. Prodorsal lamellae (or longitudinal ridges such as costulae) completely absent. Neither tutorium nor lateral lamelliform expansion present. Pedotectum I strikingly developed, being broadly rounded laterally. The remaining pedotecta also distinctly developed, but never protruding beyond the outline of body, so that they are invisible in dorsal view. A pair of distinct notogastral condyles is situated laterally on the anterior margin of notogaster. Neither areae porosae nor sacculi are present on the notogaster. At least 3 pairs of notogastral fissures (*im*, *ih* and *ips*) discernible. Anal and genital apertures remote. There are 2 pairs of anal setae, 3 pairs of adanal setae, 4 pairs of genital setae, and 1 pair of aggenital setae. Setal formula of the epimers (3 — 1 — 3 — 3). Chelicerae normal. Legs monodactylous.

Type-genus : *Tokunocepheus*, gen. nov.

Remarks : The most remarkable character of the family it the strong development of a pedotectum-like projection situated on both sides laterally of the bothri-

dium. Such a structure has never been observed in any family of Cryptostigmata. As to the systematic position of the family, it seems at first sight plausible to classify the Tokunocepheidae with the Oppioidea or Carabodoidea. The complete absence of lamellae as well as costulae, the broadly rounded rostrum, the position of pedotecta II-III and IV, in addition to the presence of the peculiar sensillitecta, constitute, however, a combination of characters that does not fit any of the above-mentioned superfamilies.

Tokunocepheus Aoki, gen. nov.

Only one pair of lateral notogastral condyles (*co. nl*) present ; median notogastral condyles (*co. nm*) and prodorsal condyles (*co. pm* and *co. pl*) absent. Ten pairs of notogastral setae present. *Gla* and *im* situated between *ti* and *ms* ; *im* posteriorly of *gla*. Genital plates not darker in colour than ventral and anals. Adanal fissures situated close to anal aperture. Apodemata II, SJ and IV well developed ; each *apo.* 4 accompanied by a distinct ridge extending backward. Pedipalp 4-segmented (a faint suture exisrs between genu and femur which are fused together). Setae *u* on all tarsi of the legs with flagelliform tips. The greater part of the body surface distinctly foveolate or reticulate.

Type-species : *T. mizusawai*, spec. nov.

Tokunocepheus mizusawai Aoki, spec. nov.

(Figs. 1-6)

Materials examined : 1 specimen (holotype : AJ 1) : Tokuno-shima Island, S. Japan, 23-VI-1963 : the litter sample was collected by K. Mizusawa and the mites were extracted by J. Aoki with a Tullgren-apparatus ; 3 specimens (paratypes : AJ 2, PJ 16-19, and PJ 16-20) : the same data as the holotype. The type material is deposited in National Science Museum, Tokyo.

Body length : 670-745 μ ; width : 330-360 μ ; L/W : 2.0-2.1.

Colour and texture : Yellowish brown ; legs and genital plates are of the same colour as the remaining parts of body. The surface of prodorsum, notogaster, ventral plate, epimeral plates and mentum distinctly foveolate or reticulate. Anal plates irregularly and rather indistinctly reticulate ; the genital plates show many fine, longitudinal furrows (Fig. 3). The latero-anterior part of the hysterosoma (just beneath the notogastral condyle) granulate (Fig. 4).

Prodorsum : Rostrum broadly rounded. Prodorsum simple in structure ; neither lamella, nor tutorium or lateral lamelliform expansion exists. Maximum width of prodorsum about halfway its length ; just behind this level, the lateral

margins are slightly constricted and then run parallel to each other toward the bothridia. On both sides, a conspicuous projection (sensillitectum ; *stc*) arises from the dorsal part of the bothridium ; it expands laterally and terminates in a distinct projection which is directed to the front (Figs. 1, 4 and 5) ; this structure appears to protect the sensillus ; its shape reminds of a pedotectum, for which

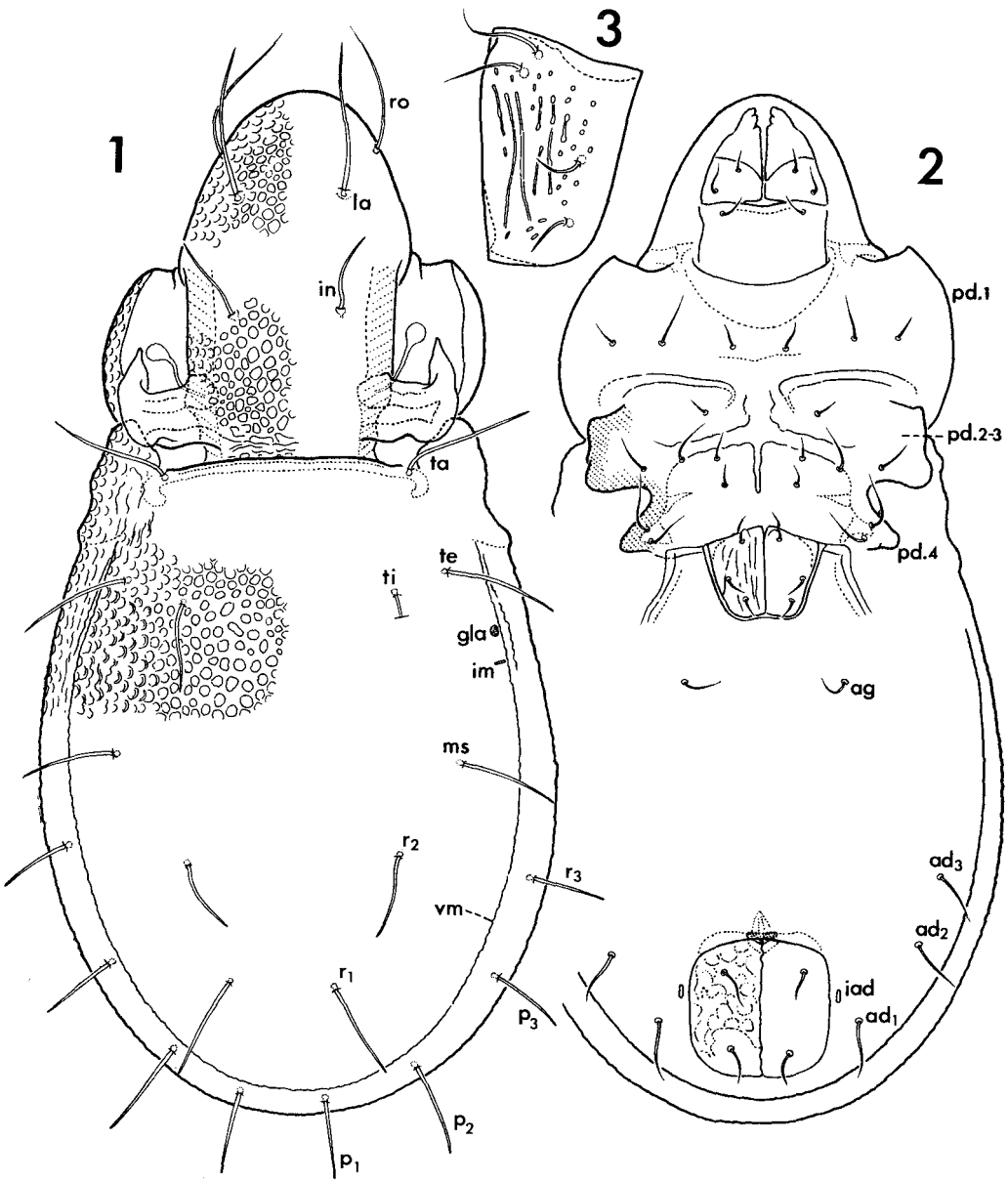

FIG. 1-3. — *Tokunocepehus mizusawai* spec. nov.
1 : Dorsal view. 2 : Ventral view. 3 : Genital plate (left).

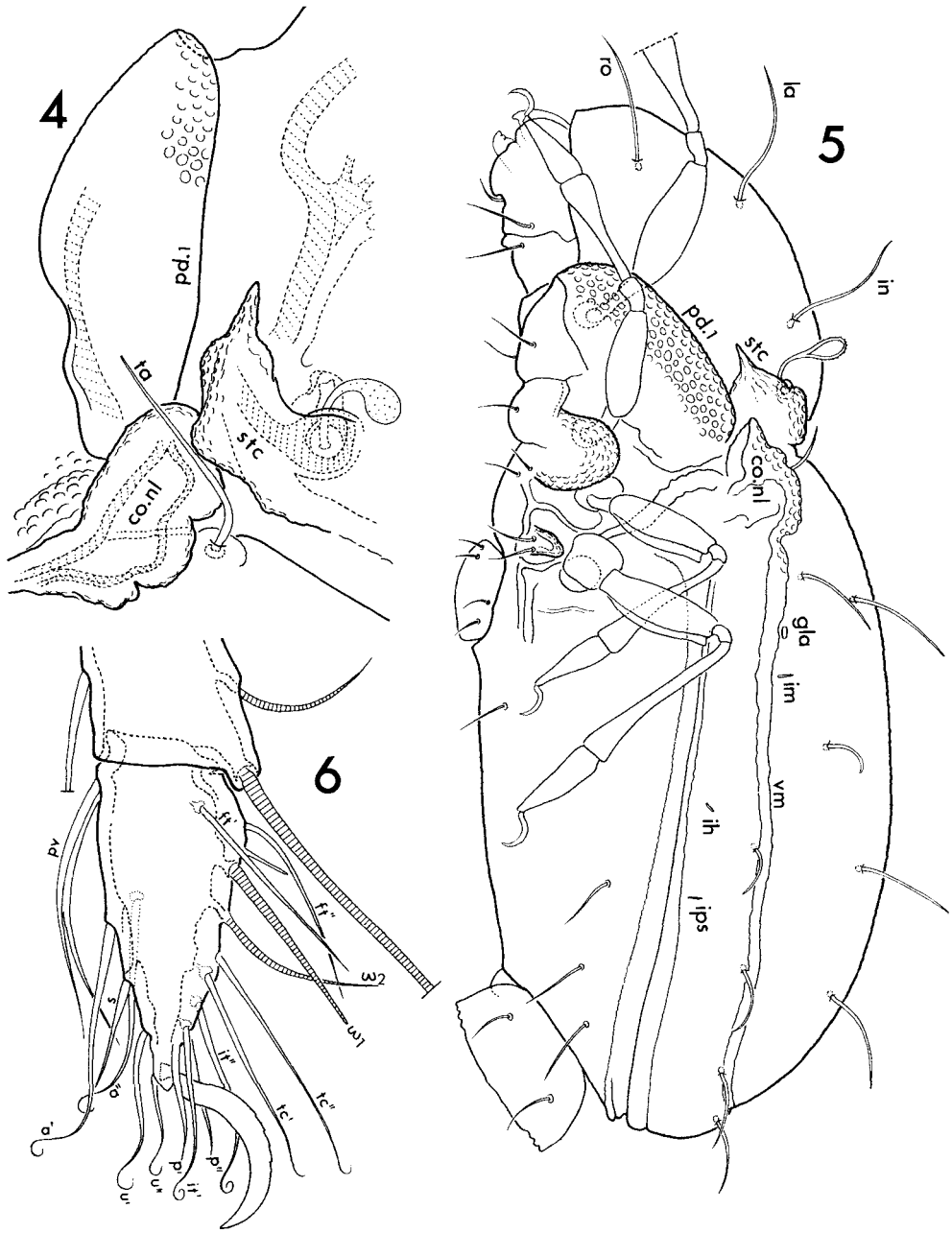

FIG. 4-6. — *Tokunocepheus mizusawai* spec. nov.

4 : The posterior portion of prodorsum and the anterior portion of notogaster (dorsolateral view). 5 : Lateral view. 6 : Tarsus I and the anterior portion of tibia I. *co. nl* = lateral notogastral condyle ; *pd.* 2-3 = pedotecta-complex II-III ; *stc* = sensillitectum, *vm* = marginal ridge.

reason it is named here " sensillitectum ". The opening of the bothridium is hardly visible, because it is hidden by the sensillitectum ; only in lateral view a small part of it can be seen. The sensillus has a thin peduncle and a markedly swollen, clavate head which is slightly rough (Fig. 5). In figs. 1 and 4, the sensilli are directed obliquely upward, so that they create the impression that the shape is more rounded than in reality. Rostral setae thin, slightly roughened and with fine flagelliform tips. Lamellar and interlamellar setae similar in shape, a little thicker than rostrals, slightly rough and with pointed tips. Lamellar setae distinctly longer than rostral as well as interlamellar setae.

Pedotecta : Pedotecta I conspicuously developed ; their lateral margins rounded. Pedotecta-complex II-III well developed, but (because of their position) never visible in dorsal aspect ; in ventral view (Fig. 2), they are nearly rectangular, while in lateral view they appear rounded and rather thumb-like (Fig. 5). Pedotecta IV comparatively small, but distinctly observed as triangular projections in ventral as well as in lateral view.

Notogaster : Pouch-shaped, with the anterior border straight or slightly convex. A conspicuous condyle (*co. nl*) is found on each side of the anterior border ; the apex of *co. nl* partly overlapped by the posterior part of the sensillitectum. Marginal ridge (*vm*) present all round the notogaster ; it is especially well discernible in lateral view (Fig. 5). A total of 10 pairs of notogastral setae is present ; these have rather blunt tips, and are nearly smooth, although slightly rough when studied under a high magnification. Their lengths as well as their distances from each other, expressed in RLN (see AOKI, 1965), are shown in table 1. Although the differences in length are not striking, the following order is observed :

$$ta > te, ti, r_1, r_2, (ms) > ms, p_1\text{-}p_3 > r_3$$

TABLE 1. — Lengths and distances from each other of notogastral setae, being expressed in RLN (reletive length to notogaster ; see AOKI, 1965).

ta	20-23	ta-ta	37-38
te	18-21	te-te	49
ti	17	ti-ti	33-35
ms	15-17	ms-ms	53-57
r_1	17-20	r_2-r_2	33-36
r_2	15-16	r_1-r_1	15-20
r_3	11-13	p_1-p_1	13
p_1	12-13	ta-te	16-18
p_2	14-15	te-ti	8-10
p_3	13-15	ti-ms	26-28

ta, the longest, is strongly curved in the proximal part, and inserted on an apophyse just inside *co. nl* ; *ti* is situated rather inside than posteriorly of *te* ; their mutual distances : ms-ms > te-te > ta-ta, ti-ti, r_2-r_2 > r_1-r_1 > p_1-p_1 ; ti-ms >

ta-te > te-ti (in dorsal aspect). At least 3 pairs of notogastral fissures discernible, namely *im*, *ih* and *ips* (Fig. 5) ; *im* transversely aligned, situated between *ti* and *ms* ; *ih* and *ips* situated outside *vm* ; the former obliquely aligned and situated anteriorly of r_3, whereas the latter is transversely aligned and situated posteriorly of r_3. The latero-abdominal gland (*gla*) is difficult to observe ; an indistinct round mark situated very close to *vm* (between *im* and *te*) probably represents the orifice.

Anogenital region : Anal aperture nearly square ; each anal plate shows a faint irregular network and is provided with 2 smooth setae. The pre-anal organ consists of a well-sclerotized structure and a bell-shaped organ which is situated more internally than the former. Adanal fissure (*iad*) close to anal aperture, and longitudinally aligned. Three pairs of glabrous adanal setae present ; their RLN vary from 10 to 12 ; ad_3 appears to be somewhat shorter than the remaining adanal setae ; ad_2 is inserted at a level with the anterior margin of the anal opening, and ad_3 is distinctly anterior of it ; the distance ad_1-ad_2 is somewhat greater than ad_2-ad_3. Interspace between anal and genital apertures 1.7 ~ 1.8 × as long as genital aperture. Genital aperture wider than long ; each genital plate wider anteriorly than posteriorly, with the anterolateral corner distinctly angulate, and provided with 4 genital setae ; the sculpture of the plate is shown in fig. 3 ; there are small, rather sparsely distributed punctures which, on the paraxial half, have a tendency to be interconnected, in this way forming longitudinal furrows. A pair of aggenital setae are present, being separated from each other by a distance nearly equal to the interspace between anal and genital apertures.

Epimeral region : Apo. 2, *sj* and 4 distinctly developed ; *apo.* 4 situated along the anterior margin of the genital aperture ; a longitudinal ridge arises from the lateral extremity of *apo.* 4 on each side and extends posteriorly a little beyond the posterior margin of the genital aperture. Sternal ridge developed only on *ep.* 3. Setal formula for epimeres : (3 — 1 — 3 — 3) ; setae 4*b* and 4*c* inserted on the basal part of *pd.* 4.

Gnathosoma : Labiogenal articulation slighdly concave medially. Ventral infracapitular setae (*h*, *m* and *a*) thin ; *m* is the longest and *a* the shortest. Pedipalp 4-segmented, although a faint suture is observed between genu and femur ; setal formula for pedipalp : (0 — 3 — 3 — 8 ?). Chelicerae of normal shape.

TABLE 2. Chaetotaxy of legs I-IV. t : total number of setae ; s : number of solenidia ; f : number of famuli.

	Tr	Fe	Ge	Ti	Ta
	t	t	t (s)	t (s)	t (s) (f)
I	1	4	4 (1)	6 (2)	18 (2) (1)
II	1	4	4 (1)	4 (1)	17 (2) (0)
III	1	3	2 (1)	3 (1)	15 (0) (0)
IV	1	2	2 (0)	3 (1)	12 (0) (0)

Legs : Relative lengths of tarsi : IV > I = III = II ; hights of tarsi : IV = III > I = II ; L/H of each tarsus (from I to IV) : 2.5, 2.6, 3.4 and 3.7 ; lengths of tibiae : IV > III > I > II ; tibia/tarsus in length (from I to IV) : 1.5, 1.3, 1.6 and 1.7. No distinct dorsal tooth is found on any of the tarsi. Each femur is provided with a leg-fin of equal width along the whole length ; that on femur I is, however, rather indistinct. The chaetotaxy of each leg is shown in table 2 ; on tarsus I, ω_2 situated anteriorly of ω_1, curved backward, crossing the latter, being distinctly thinner and provided with a more pointed tip than ω_2 ; ω_1 and ω_1 on tarsus II of equal length and shape, being directed nearly in the same direction ; *it* and *ft''* lacking on tarsus IV. Setae *u* on each tarsus with a fine flagelliform tip. No seta of special shape (expanded or ribbon-like) is found. All legs monodactylous.

REFERENCE

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