A NEW MEXICAN *SCAPHEREMAEUS* (ORIBATEI: CYMBAEREMAEIDAE) FROM TROPICAL FORESTS

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SCAPHEREMAEUS
TAXONOMY
TROPICAL FORESTS

ABSTRACT: Adults of *Scapheremaeus tonatiuh* sp. nov. are described from tropical forests in Mexico.

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RÉSUMÉ : Les adultes de *Scapheremaeus tonatiuh* sp. nov. sont décrits, provenant des forêts tropicales du Mexique.

INTRODUCTION

During the project IN 2078/91 DGAPA (UNAM) for the study of the ecology of arthropods from the "Chamela" Biological Station (IBUNAM), Jalisco, several new species of *Scapheremaeus* were found. The species described here was obtained by fogging the canopy of tropical dry forest. It was collected (together with others of the same genus) by Prof. VÁZQUEZ, when studying mites from the Sian Ka'an Biosphere Reserve (Quintana Roo State), thanks to the project "Caracterización de la fauna edáfica y su efecto sobre la descomposición de necromasa en una selva baja inundable" 0163P-N9506 supported by CONACyT (Consejo Nacional de Ciencia y Tecnología). It was also collected at Montes Azules Biosphere Reserve (Chiapas state), thanks to the project "Sistemática de Microartrópodos" (Facultad de Ciencias, UNAM).

The genus *Scapheremaeus* is represented by 18 known species from the Neotropical Region (BALOGH & BALOGH, 1992), but it is very little known in Mexico. Only one species has been described before (RIOS, 1996), living in mosses of high altitude forests in Central Mexico. This genus is very often found in epiphytic environments, such as moss and lichens, but can also occasionally be found in other biotopes.

The oribatid mites living in arboreal environments show a reduced sensillus with a globular head (AOKI, 1973). This kind of convergence has been observed in several families, as in Belbidae (NORTON & PALACIOS-VARGAS, 1982), and it seems to be an adaptive character for life in the canopy level.

Scapheremaeus Berlese, 1910

Prodorsum with or without a well developed lamellar-translamellar system. Sensillus with globular or clavate head with different surface textures. Notogaster often with a well separated dorsocentral region and a marginal zone, showing different kinds of microsculpture. Six pairs of genital, one pair of aggenital, two pairs of anal and three pairs of adanal setae. Legs monodactylous or heterotridactylous.

Type species: *Cymbaeremaeus (Scapheremaeus) patella* Berlese, 1910.

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Scapheremaeus tonatiuh sp. nov.
(Figs. 1–11)

ADULT. Measurements: mean length (n=5) 395 μm; mean notogastral width (n=5) 245 μm.

Integument. All body surfaces with integument sculptured, small oval sculptures on notogaster, larger sculptures on prodorsum. Cerotegument covering all body surfaces, leg segments, and in some parts it forms a very thick (over 10 μm) layer (Figs. 1, 2, and 4). It forms round tubercles irregularly distributed on the body, excepting the lenticulus, lamellae and bothridium (Figs. 9 and 10). On the legs, the cerotegument can form a layer 50 μm thick covering all setae and making them difficult to observe (Fig. 11).

Prodorsum. Rostrum broadly rounded (Fig. 1). Rostral setae (*ro*) 30 μm long, with small, short barbs, almost setous. Lamella short and thin, cusps short (15 μm), with incomplete translamellae. Lamellar setae (*le*) on the tips of cusps, short, (15 μm), with few barbs (Fig. 5). Sensillus 55 mm long, head clavate, very dark and profusely barbed, stalk sparsely barbed.

Notogaster. Without a clearly separate marginal zone. Length to width ratio about 1.6, elliptical, with the dorsointernal part not very well defined. Dorsosejugal scissure complete. One scapular process, small (about 15 μm). Notogastral setae are of three kinds. The internal setae are 7 μm, almost bacillar in shape; the external setae are thick, dentate and with inner side hyaline, about 20 μm long (Figs. 1, 4 and 5); seta *c2* is barbulate and is the shortest. The bases of these setae are covered by the cerotegument (Fig. 8); seta *c2* is located in humeral position (Fig. 3). There is a total of ten pairs of setae, five of them in the inner part of notogaster (*la*, *lm*, *lp*, *h2*, *h1*) and five external, each on a well defined tubercle (*c2*, *h3*, *p3*, *p2*, *p1*). Lyrifissures and the opisthosomal gland opening difficult to distinguish (Fig. 1).

Ventral region. Apodemes partially obscured by heavy sculpturing on coxisterna. All ventral setae smooth and short. Coxisternal setation 3, 1, 2, 2 (Fig. 2). Genital plate with six setae, two of which (*g5* and *g6*) are on the anterior margin. One pair of adgenital setae. Anal plate with two setae. Three pairs of adanal setae. Anogenital formula: 6-1-2-3. A pair of well developed lyrifissures *iad* located at the anterior corner of the anal opening.

Legs. Famulus is included in tarsal setal count on leg I and solenidial counts are in parentheses. Setation (I–IV): trochanters, 0, 0, 1, 0; femora, 4, 4, 2, 1; genua, 2(1), 2(1), 1(1), 2; tibiae, 4(2), 4(1), 3(1), 3(1); tarsi, 14(2), 14(2), 12, 12. Femora of legs I and II with tracheal-secretory organs in the form of sacculi, with openings on the paraxial surface, femora of legs III and IV with paraxial porose areas. All legs are heterotridactylous (Figs. 6 and 8), with very small punctuation on dorsal surface of middle claw. Some setae strongly modified on femora, genu and tibiae; on the tarsi, only the fastigial seta is plumose (Figs. 6–8).

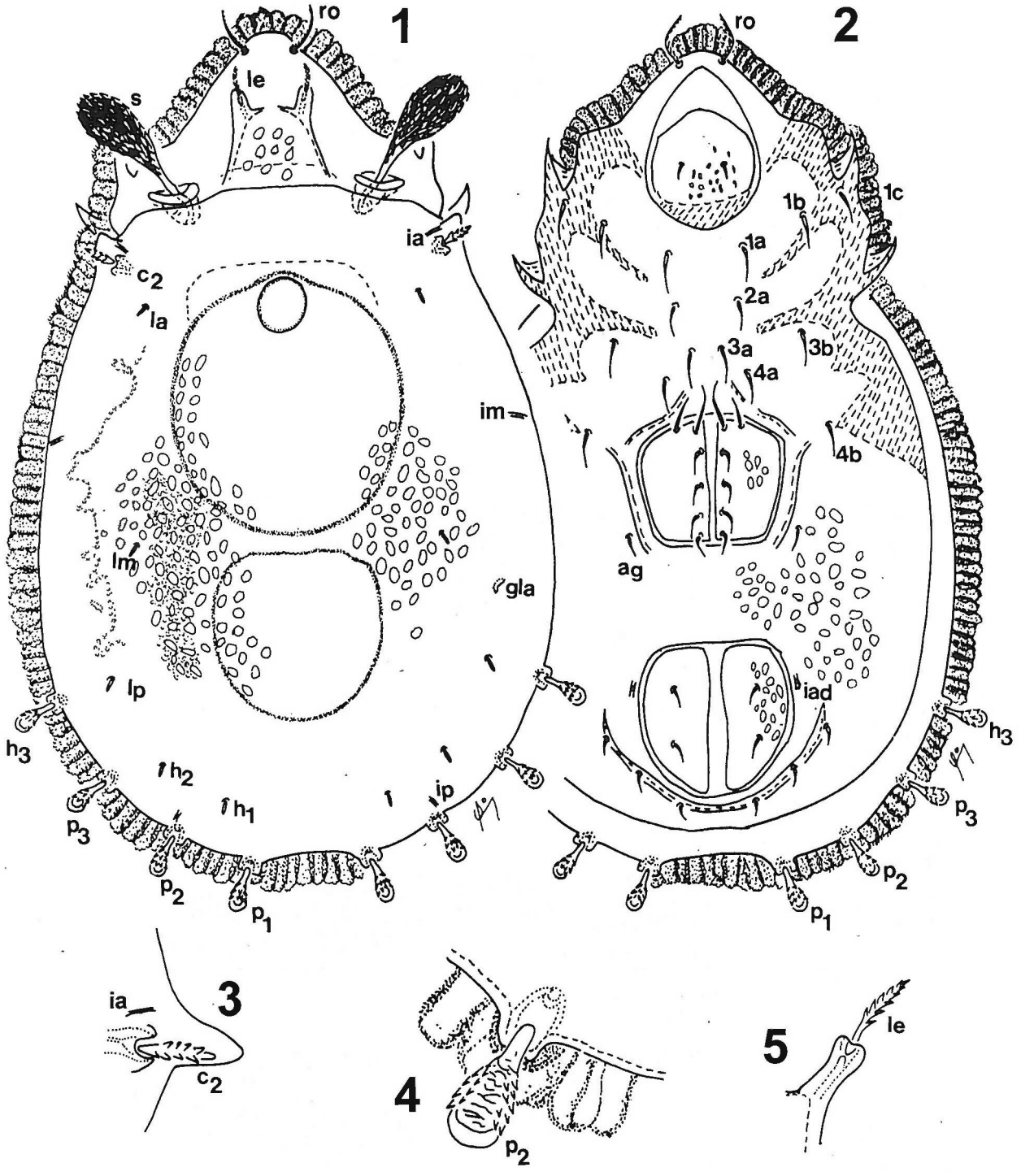
IMMATURES. Unknown.

Material examined. Holotype: Adult female, MÉXICO: Jalisco, "Chamela" Biological Station (IBUNAM), *ex* canopy (fogging), 24 Feb. 1993, 15 May 1993, 24 Feb. 1994, 14 May 1995. A. PESCADOR and G. RÍOS colls. Paratypes: 5 on slides, with the same data; 20 paratypes in alcohol. Other material studied: MÉXICO: Quintana Roo, Sian Ka'an Biosphere Reserve, soil from epiphytic Bromeliaceae, 16 May 1995. M. VÁZQUEZ coll. (2 specimens); MÉXICO: Chiapas, Montes Azules Biosphere Reserve, "Chajul" Tropical Biology Station (UNAM), *ex* canopy (fogging), 25 Aug. 1994. G. RÍOS coll. (1 specimen).

Type locality: México, Jalisco, Chamela.

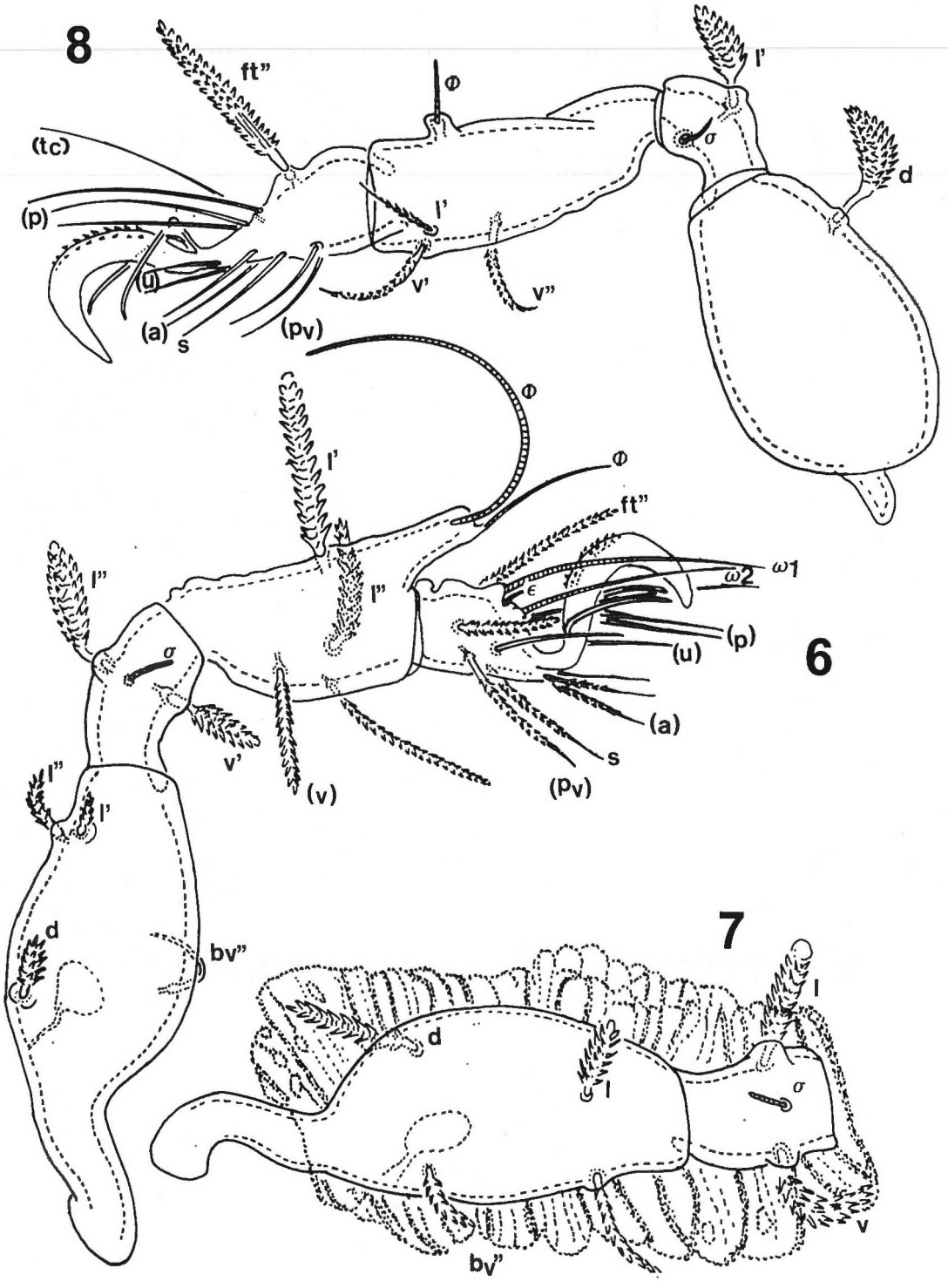
Etymology: From the name of the Aztec god of the sun: Tonatiuh.

Discussion: By the presence of four pairs of posteromarginal setae, *Scapheremaeus tonatiuh* sp. nov. resembles *S. longilamellatus* Mahunka, 1985, from Santa Lucia Island (Antilles). Both species also share the absence of a well defined marginal zone, but the lamellar cusps are very short in *S. tonatiuh* sp. nov. in comparison with *S. longilamellatus*, in which they are very long. Five pairs of modified posteromarginal setae are observed in *S. longicuspis* Mahunka, 1984, from Paraguay, and *S. cellulatifer* Mahunka, 1987, from Vietnam, but *S. tonatiuh* sp. nov. has a different notogastric microsculpture, and shorter lamellar cusps.



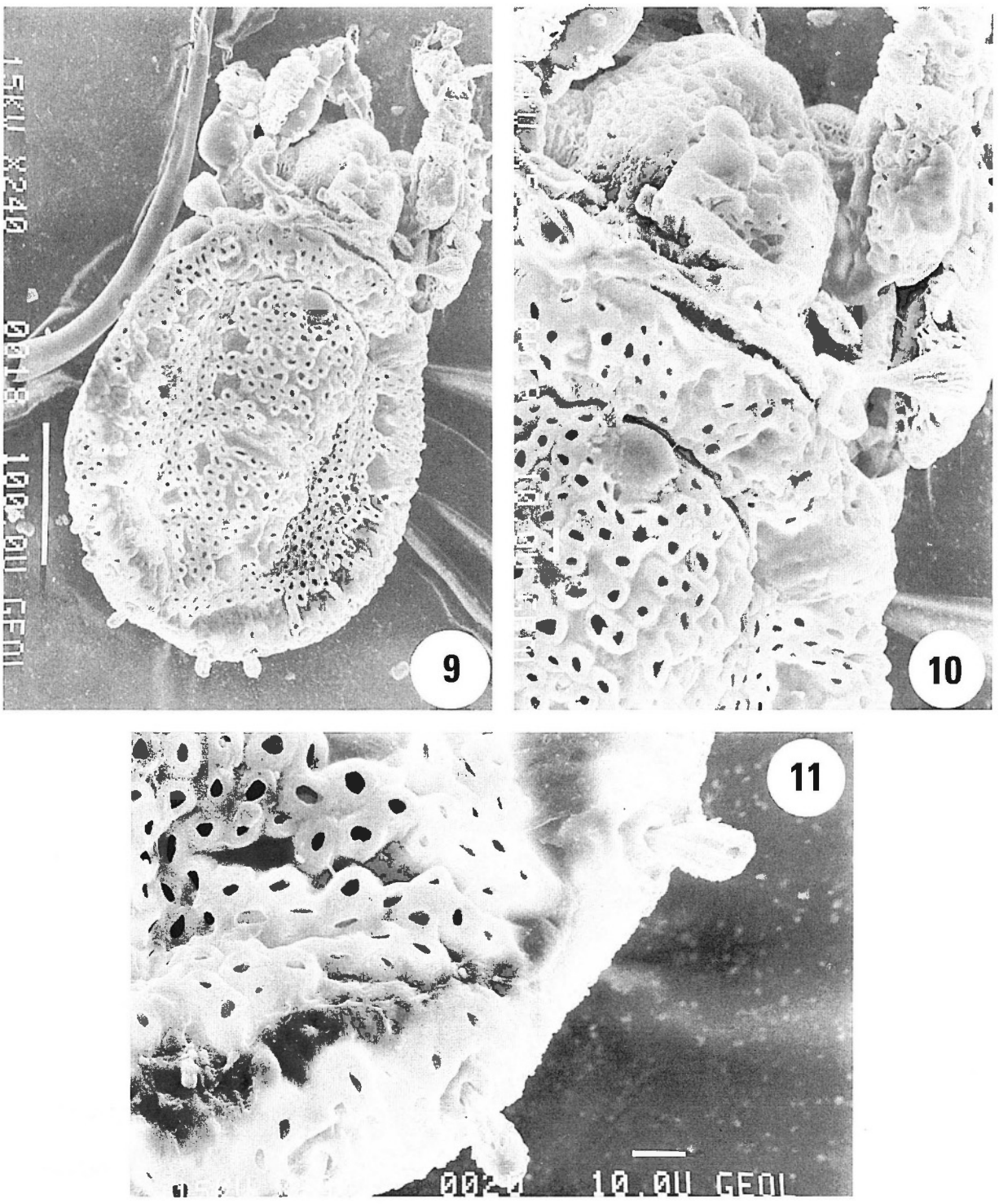
FIGS. 1–5. *Scapheremaeus tonatiuh* sp. nov.

1. — Dorsal aspect. 2. — Ventral aspect. 3. — Humeral region. 4. — Magnification of seta *p2*. 5. — Magnification of lamella and lamellar setae (*le*).



FIGS. 6–8. *Scapheremaeus tonatiuh* sp. nov.

6. — Leg I from femur to tarsus, antiaxial view. 7. — Leg II, femur and genua, with cerotegument. 8. — Leg IV, from femur to tarsus, antiaxial view.



FIGS. 9–11. *Scapheremaeus tonatiuh* sp. nov.
9. — Dorsal view. 10. — Aspect of distribution of cerotegument. 11. — Posterior notogastral setae.

S. tonatiuh sp. nov. is similar to *S. cornutus* Balogh, 1958, from Angola and Ethiopia, in the shape of the lamellar cusps, and the presence of a well developed scapular process. However, the new species shows a smaller scapular process and pectinate lamellas setae. It is also similar to *S. emarginatus* Hammer, 1966, from New Zealand, in the absence of a well defined marginal zone, but this latter species has only 7 pairs of notogastral setae.

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