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A NEW SPECIES OF SCHIZOMIDA (ARACHNIDA) FROM CALIFORNIA

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The report of a population of schizomids from near Fresno, California, was brought to my attention by Hom (1967), who treated it as conspecific with *Trithyreus belkini* McDonald and Hogue, 1957. Upon further examination, it appears that this population represents a new species, for which I propose the name:

Trithyreus briggsi, new species

Holotype.—An adult male, taken on the north face of Rocky Hill, 2.7 mi. E Exeter, 1500 ft., Tulare Co., California, on 28 January 1971 by Phyllis J. and J. Mark Rowland, and deposited in the American Museum of Natural History, New York City.

Allotype.—An adult female, taken at the same locality on the same date by the same collectors as the holotype, and also deposited in the American Museum of Natural History.

Description.—The following, except for the last paragraph under this heading, describes the males.

Cephalothorax. Carapace (propeltidium, first cephalothoracic tergum) twice as long as wide, strongly convex, lateral margins nearly vertical, produced anteromesally as a sharp, conical process; eye spots vaguely distinct as elongate, oval, pale areas on anterolateral surface of carapace; mesopeltidium (second pair of cephalothoracic tergites) acutely triangular, gently curved, pointing nearly diagonally toward midline; metapeltidium (third cephalothoracic tergum) divided medially into two plates, medial margin of metapeltidial plates shorter than curving lateral margin, anterior margin nearly parallel with posterior margin of mesopeltidia, posterolateral angle of metapeltidial plates in proximity with small, narrowly curved plate; anterior sternum triangular, pointing caudad, apex extending nearly to caudal limit of coxae II, anterolateral angles curved; posterior sternum (metasternum) vaguely triangular, pointing cephalad.

Abdomen. First abdominal tergum located slightly closer to metapeltidium than second abdominal tergum, nearly chevron shaped; segments II to IX with pleural membrane dividing terga and sterna; terga X to XII fused with sterna X to XII; segment XII with posterodorsal cone projecting horizontally over base of flagellum; lung books vaguely visible under second abdominal sternum; terga III to VII bearing slightly darkened apodemes of dorsoventral muscles; vestigial stigmata appearing as pale areas on sterna IV to VI.

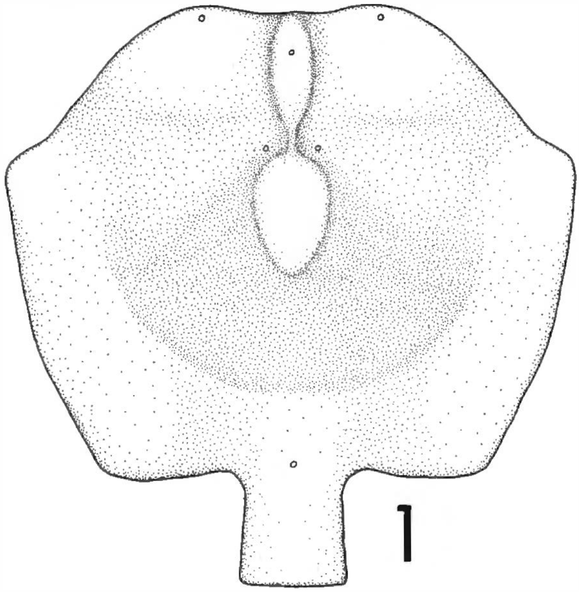
Flagellum. Bulbous, horizontally compressed, bearing 16 setae; dorsal surface concave medially with pair of elevations in longitudinal line arising distally, concave basally; transversely convex ventrally.

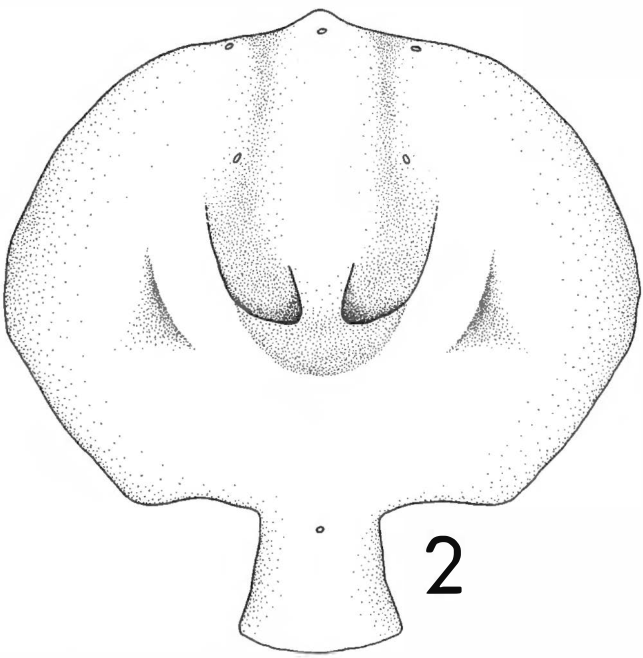
Chelicerae. Lateral aspect of basal segment bearing one seta medially below large dorsal seta, vertical group of five long, feathered setae flanking movable finger (second cheliceral segment), group of three shorter setae arranged basally on fixed digit, horizontal group of seven setae arising on or near ventral margin; mesal surface of basal segment bearing group of three setae arranged horizontally, lower group of four shorter setae arranged vertically, single seta directly below large dorsal seta, movable finger flanked by another vertical group of five long, feathered setae as on lateral surface, three large, elongate, distally enlarged setae originating just below previous group, fixed digit bearing 10 closely situated feathered setae; movable finger laterally destitute of setae, mesal aspect bearing vertical row of 17 long, feathered, distally curled setae or teeth near outer margin, another vertical row of 19 short setae or teeth near inner surface.

Pedipalps. Trochanter vaguely produced distally; femur and patella of varying lengths, narrow proximally, slightly expanded distally; tibia with mesal, subapical spur; tarsus-basitarsus with small spur just above claw; length of segments given in Table 1.

Legs. First leg antenniform, variable in size, terminal segment without tarsal claw; coxa of second leg with anterolateral spur; third leg shorter than others; femur of fourth leg greatly expanded and laterally compressed; legs II to IV with three tarsal claws; length of segments given in Table 1.

Females differ from males in the following respects: Pedipalpal femur, patella, and tibia much shorter than in most males; femur and patella not as narrow proximally; tibia without subapical spurs; length





FIGS. 1-2.—Dorsal view of male flagellum, setae represented by pits only: 1, *T. briggsi*; 2, *T. joshuensis*. Scale, one centimeter = 0.1 millimeter.

TABLE 1.—*Selected measurements, minimum and maximum, of five males (holotype and four paratypes), all from the type locality.*

		Legs			
	Pedipalp	I	II	III	IV
Coxa	.59-.65	.57-.63	.44-.52	.40-.47	.35-.40
Trochanter	.34-.78	.26-.35	.22-.25	.22-.25	.36-.45
Femur	.46-2.13	1.22-1.35	.72-.92	.70-.74	1.18-1.26
Patella	.53-2.19		.36-.50	.28-.36	.50-.56
Tibia	.42-.77	1.62-1.70	.55-.63	.41-.46	.83-.95
Basitarsus		1.14-1.28	.46-.53	.46-.57	.70-.82
	.32-.40				
Tarsus		.82-1.03	.39-.40	.39-.42	.53-.57
Total	2.66-6.92	5.63-6.34	3.14-3.75	2.90-3.27	4.45-5.01

of segments given in Table 2. First leg usually about one-tenth shorter and less variable in length than in males; length of segments given in Table 2. Abdominal segment XII not bearing the posterolateral cone projecting horizontally over flagellum. Flagellum with three annulations, elongate cylindrical, terminal section longer than previous three.

Comparisons.—Of the Californian schizomids, *Trithyreus briggsi* is most similar to *T. joshuensis* Rowland, 1971, and *T. belkini*, but is much smaller in nearly every respect than *T. joshuensis*, and is easily distinguished from *T. belkini* by the abbreviation of the convex longitudinal ridge on the dorsal aspect of the male's flagellum. In *T. belkini*, the ridge is broad and extends from the base to tip of the flagellum, whereas in *T. briggsi* the ridge is narrow and extends from near the middle to the tip of the flagellum. *T. joshuensis* also lacks a complete ridge, but differs from *T. briggsi* by having two lateral pits at the base of the ridge—*briggsi* has none (see Figs. 1 and 2).

Measurements.—The total length (from anterior margin of first cheliceral segment to end of flagellum) of five males and five females, all from the type locality, is 5.13-5.91 and 5.30-5.70 respectively. See also Tables 1 and 2. All measurements are in millimeters.

Variation.—The most notable intrasexual variation is manifest in the pedipalps and first legs of males. The pedipalpal patella and femur are greatly elongate in most males, but in some males are similar in size to those of females. Variability in this secondary sexual character seems comparable to a situation well exemplified in some species of beetles, where male members of a population exhibit sexual dimorphism in varying degrees.

TABLE 2.—*Selected measurements, minimum and maximum, of five females (allotype and four paratypes), all from the type locality.*

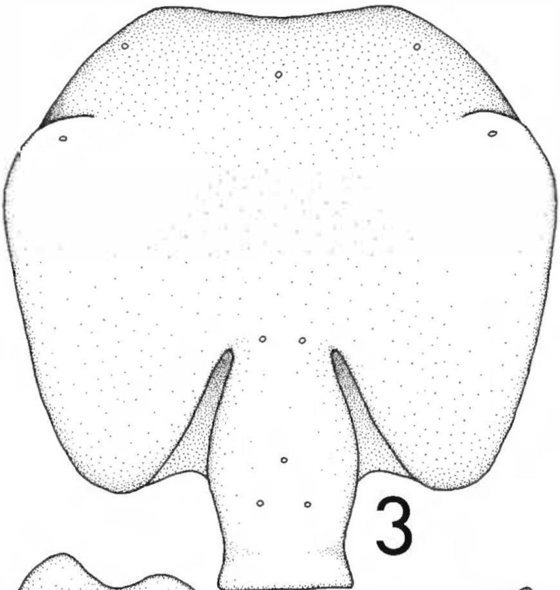
		Legs			
	Pedipalp	I	II	III	IV
Coxa	.55-.67	.50-.58	.47-.51	.39-.41	.35-.39
Trochanter	.28-.35	.32-.35	.18-.24	.20-.25	.36-.41
Femur	.39-.45	1.05-1.25	.80-.84	.65-.79	1.15-1.30
Patella	.41-.47		.45-.52	.35-.38	.45-.57
Tibia	.37-.41	1.31-1.55	.51-.54	.43-.45	.81-.95
Basitarsus		1.00-1.03	.42-.52	.46-.55	.68-.81
	.28-.30				
Tarsus		.82-.98	.38-.42	.40-.42	.48-.50
Total	2.28-2.65	5.00-5.64	3.21-3.59	2.88-3.25	4.28-4.93

Distribution.—*T. briggsi* is known from 7 mi. E Academy, Fresno County, south to Fountain Spring, Tulare County, on scattered rock outcroppings along the west face of the Sierra Nevada foothills. Specimens collected at the type locality were found under scattered rocks below a large granite outcropping between 8 and 11 AM. Conditions were very moist, the area having received heavy dew the previous night, which is not unusual for that time of year.

Remarks.—Heretofore, four species of *Trithyreus* Kraepelin were known from California. *Trithyreus pentapeltis* (Cook), 1899, is the most widely distributed, but may represent two allopatric species. Animals presently referred to this species occur west of the Peninsular Ranges, from the Mexican border north into the Riverside basin with an isolated population on the inland side of the San Jacinto Mountains. *T. belkini* is known from many localities in the San Gabriel and Santa Monica mountains. A population on Santa Cruz Island, just off the coast opposite the Santa Monica Mountains, is tentatively assigned to this species.

The two remaining species are highly relictual, being restricted to desert palm oases. *T. borregoensis* Briggs and Hom, 1966, is known by only six specimens from Palm Canyon Oasis, Anza-Borrego State Park, San Diego County. *T. joshuensis* is similarly confined to Forty-nine Palms Oasis, Joshua Tree National Monument, San Bernardino County. The last three species together with *T. briggsi* represent a closely related species group, the *belkini* group (see Rowland, 1972).

T. briggsi is the northernmost species of this order, having been taken as far north as Academy, (36°53′N) Fresno County. It has been found on scattered rock outcroppings at the base of the Sierra Nevadas



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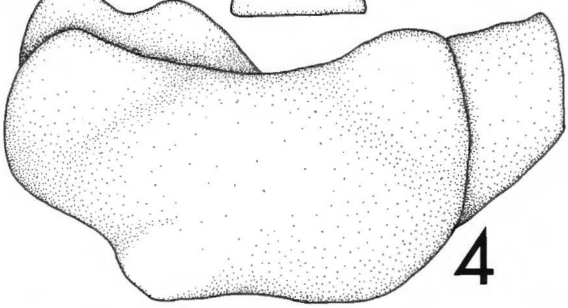

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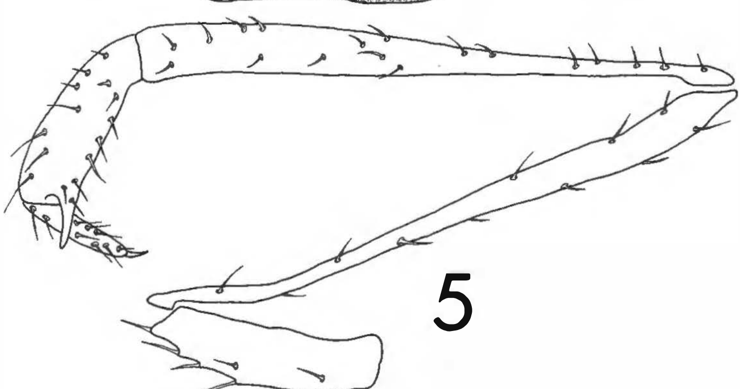

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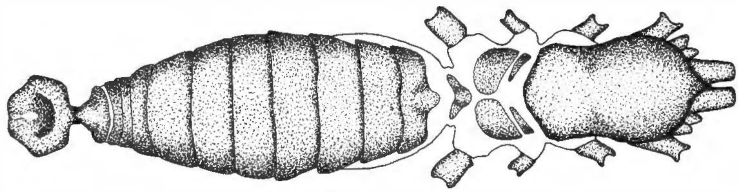

FIG. 6.—Dorsal view of male *T. briggsi*, pedipalps and legs omitted. Scale, one centimeter = 0.6 millimeter.

from near Academy south to near Fountain Spring, Tulare County (Hom, 1967).

The relatively pluvial conditions of the Miocene probably facilitated a Madro Tertiary origin of several species groups of schizomids, all but the *belkini* group now apparently extinct. The fossil record indicates that schizomids were widespread by the Pliocene, and probably much earlier. This suggests that the species of the *belkini* group represent relictual pockets of a once widespread ancestral species, which must have ranged throughout most of central and southern California.

The San Joaquin embayment of the Pacific coastline in the late Pliocene was a significant factor in dispersal of schizomids as well as many other organisms of relatively low vagility. This embayment extended from its inlet near Santa Barbara into the San Joaquin Valley. The eastern border of the embayment was formed by the uplifting Sierras, and on the west by the San Rafael and Santa Lucia mountains. This had the effect of isolating the coastal areas above Santa Barbara from dispersing organisms from the south and east. When the embayment receded, xerothermic conditions caused a rapid drying of the valley and hence precluded the *belkini* group ancestor from a westward movement outward from the base of the Sierras. These drying conditions also became manifest in the Tehachapi Mountains, which prohibited any movement to the south into the San Gabriel and Santa Monica mountains. Finally, the eastern boundary can be relegated to the late Pliocene to Pleistocene uplift of the Sierra Nevadas, a period during which the elevation was increased by 3000 to 8000 feet. No relictual populations are known from east of the Sierran crest, presumably due to lack of proper habitat.

FIGS. 3-5.—Flagellum (setae omitted) and pedipalp (coxa omitted) of *T. briggsi*: 3, ventral view of flagellum; 4, lateral view of flagellum; 5, lateral view of pedipalp. Scale, 5 centimeters = 0.25 millimeter.

Key.—Females and immatures of most species of schizomids are usually indistinguishable, but the males of Californian species can be separated by the following key:

1. Flagellum long and triangular .... *T. pentapeltis*
   Flagellum short and club shaped 2
2. Flagellum pentagonal .... *T. borregoensis*
   Flagellum hexagonal 3
3. Dorsal surface of flagellum convex medially .... *T. belkini*
   Dorsal surface of flagellum concave medially 4
4. Dorsal surface of flagellum as in Fig. 2 .... *T. joshuensis*
   Dorsal surface of flagellum as in Fig. 1 .... *T. briggsi*

Specimens examined.—A total of 177 specimens of *T. briggsi* was examined from the following localities. Specimens in my personal collection are indicated by the initials JMR; those deposited in The Museum, Texas Tech University, by TTU.

FRESNO COUNTY: 7 mi. E Academy, 16 April 1967 (T. S. Briggs), 1 (JMR); Squaw Valley, 23 March 1941 (S. Mulaik), 4 (AMNH); 7 mi. NE Piedra, 21 January 1967 (T.S. Briggs), 1 (TTU); 1.6 mi. SW Piedra, 21 January 1967 (T. S. Briggs, A. Jung, W. Lum, V. Lee, G. Leung, M. Wong, K. Hom), 21 (JMR); TULARE COUNTY: north face of Rocky Hill, 2.7 mi. E Exeter, 21 January 1971 (J. M. and P. J. Rowland), 21 (TTU); north face of Rocky Hill, 2.7 mi. E Exeter, 28 January 1971 (J. M. and P. J. Rowland), 40 (JMR, AMNH, CAS, TTU); north face of Rocky Hill, 2.7 mi. E Exeter, 5 January 1972 (J. M. and P. J. Rowland), 5 (JMR); north face of Rocky Hill, 2.1 mi. E town of Rocky Hill, 19 December 1966 (T. S. Briggs, V. Lee, K. Hom), 22 (JMR); northwest face of Rocky Hill, 1.4 mi. E town of Rocky Hill, 22 January 1967 (T. S. Briggs, A. Jung, W. Lum, K. Hom), 18 (TTU); 12 mi. NE Hammond, 21 March 1941 (S. Mulaik), 1 (AMNH); 5 mi. NE Lemoncove, 20 March 1941 (S. Mulaik), 3 (AMNH); hill, 2 mi. SE Ivanhoe, 18 December 1966 (T. S. Briggs), 2 (JMR); 9 mi. N Woodlake, 22 March 1941 (S. Mulaik), 3 (AMNH); hill, 3 mi. E Lindsay, 19 December 1966 (T. S. Briggs, V. Lee, K. Hom), 10 (JMR); 6.5 mi. E Fountain Spring, 19 March 1967 (T. S. Briggs), 1 (TTU); 7 mi. E Fountain Spring, 19 March 1967 (P. Lum, V. Lee, K. Hom), 24 (JMR).

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