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THE ORDER SCHIZOMIDA (ARACHNIDA) IN THE NEW WORLD. I. PROTOSCHIZOMIDAE AND *DUMITRESCOAE* GROUP (SCHIZOMIDAE: *SCHIZOMUS*)[1]

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ABSTRACT

This is the first of a series of papers reviewing the systematics of the arachnid order Schizomida in the New World. The four species of the family Protoschizomidae are redescribed. Seven species groups of *Schizomus* (family Schizomidae) are recognized in the New World. The 13 species of the *dumitrescoae* group are described in this part. These are *Schizomus decui* Dumitresco, *S. dumitrescoae* n. sp., *S. cousinensis* n. sp., *S. primibiconourus* n. sp., *S. longipalpus* n. sp., *S. brevipatellatus* n. sp., *S. gladiger* Dumitresco, *S. monensis* n. sp., *S. desecheo* n. sp., *S. biconourus* n. sp., *S. insignis* Hansen, *S. peckorum* n. sp., and *S. viridis* n. sp.

INTRODUCTION

The order Schizomida includes 101 species divided very disproportionately between two families. The family Protoschizomidae includes two genera, each with only two species, and is known only from México. The family Schizomidae contains two subfamilies, the Megaschizominae and the Schizominae. The Megaschizominae includes one genus and two species and is known only from South Africa and Mozambique. The Schizominae includes the poorly known genus *Trithyreus*, containing only its type-species, *T. grassii* (Thorell), from Burma, and the world-wide genus *Schizomus* with 94 species. Rowland (1972) has discussed at some length the nomenclatural and systematic

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history of the order. In that report he placed all African species of *Schizomus* in the genus *Trithyreus* and used a split or entire metapeltidium to separate the two genera. This character, however, is highly variable and appears to be of no phylogenetic significance. For the present we are considering all New World species to belong to the genus *Schizomus*. *Trithyreus*, however, has priority, and should a study of topotypes of *T. grassii* reveal that it is congeneric with other schizomids, the New World species must all be placed in *Trithyreus*.

No general review of the Schizomida has been published since that of Hansen and Sörensen (1905), and the only regional study is that of Lawrence (1969) for the Ethiopian Region. The cavernicole fauna of México, Guatemala, and Belize was reviewed by Rowland and Reddell (1977). The present systematic review of the New World Schizomida is based on a dissertation prepared by the senior author at Texas Tech University, Lubbock, Texas (Rowland, 1975a). This paper is the first of a series of reports and includes redescriptions of the four species of the family Protoschizomidae and a systematic study of one species group in the family Schizomidae. A general discussion of the zoogeography and phylogeny of the New World fauna will follow completion of the systematic study.

A total of 54 species of Schizomida are known from the New World. Of these, nine are from South America, one from Panama, two from Guatemala, 24 from México, two from Martinique, seven from Cuba, and eight from the United States. In addition, *Schizomus portoricensis* (Chamberlin) is known from Florida (U.S.A.), the Antilles, Bermuda, México, Guatemala, Costa Rica, Ecuador, the Galapagos Islands, and England (introduced). The present report adds 10 species to the New World fauna. The following is a chronological list of the described species of New World Schizomida:

Family Protoschizomidae:
Agastoschizomus lucifer Rowland, 1971a - San Luis Potosí, México
A. huitzmolotitlensis Rowland, 1975b - San Luis Potosí, México
Protoschizomus pachypalpus (Rowland, 1973a) - Tamaulipas, México
P. occidentalis Rowland, 1975b - Colima, México
Family Schizomidae:
Schizomus pentapeltis (Cook, 1899) - California, U.S.A.
S. dispar Hansen, in Hansen and Sörensen, 1905 - Martinique
S. flavescens Hansen, in Hansen and Sörensen, 1905 - Venezuela
S. insignis Hansen, in Hansen and Sörensen, 1905 - Martinique
S. simonis Hansen, in Hansen and Sörensen, 1905 - Venezuela
S. portoricensis (Chamberlin, 1922) - New World tropics
S. guatemalensis Chamberlin, 1922 - Guatemala
S. antilus Hilton, 1933 - Cuba (may be a synonym of *S. portoricensis*)
S. wessoni (Chamberlin, 1939) - Arizona, U.S.A. – NEW COMBINATION
S. davisi Gertsch, 1940 - Tamaulipas, México
S. mulaiki Gertsch, 1940 - Texas, U.S.A.
S. centralis Gertsch, 1941 - Panama
S. belkini (McDonald and Hogue, 1957) - California, U.S.A. – NEW COMBINATION
S. cumbalensis (Kraus, 1957) - Colombia – NEW COMBINATION
S. sturmi (Kraus, 1957) - Colombia – NEW COMBINATION
S. macarensis (Kraus, 1957) - Colombia – NEW COMBINATION
S. gladiator Remy, 1961 - Surinam

S. surinamensis Remy, 1961 - Surinam
S. vanderdrifti Remy, 1961 - Surinam
S. borregoensis (Briggs and Hom, 1966) - California, U.S.A. – NEW COMBINATION
S. brasiliensis (Kraus), in Kraus and Beck, 1967 - Colombia – NEW COMBINATION
S. mexicanus Rowland, 1971b - San Luis Potosí and Tamaulipas, México
S. mitchelli Rowland, 1971b - Tamaulipas, México
S. cookei Rowland, 1971b - San Luis Potosí, México
S. reddelli Rowland, 1971b - Tamaulipas, México
S. joshuensis (Rowland, 1971c) - California, U.S.A. – NEW COMBINATION
S. briggsi (Rowland, 1972) - California, U.S.A. – NEW COMBINATION
S. shoshonensis (Briggs and Hom, 1972) - California – NEW COMBINATION
S. goodnightorum (Rowland, 1973a) - Yucatán, México
S. orthoplax Rowland, 1973a - Chiapas, México
S. bartolo Rowland, 1973a - Nuevo León, México
S. firstmani Rowland, 1973a - Veracruz and ? Oaxaca, México
S. pecki Rowland, 1973a - Tabasco, México
S. sbordonii Brignoli, 1973 - Veracruz, México
S. arganoi Brignoli, 1973 - Chiapas, México
S. stewarti Rowland, 1973c - Oaxaca, México
S. moisii Rowland, 1973c - Oaxaca, México
S. lukensi Rowland, 1973c - Tamaulipas, México
S. negreai Dumitresco, 1973 - Cuba
S. rowlandi Dumitreso, 1973 - Cuba
S. lanceolatus Rowland, 1975b - Veracruz, México
S. trilobatus Rowland, 1975b - Tabasco, México
S. pallidus Rowland, 1975b - Veracruz, México
S. lacandonus Rowland, 1975b - Chiapas, México
S. infernalis Rowland, 1975b - Chiapas, México
S. silvino Rowland and Reddell, 1977 - Guatemala
S. orghidani Dumitresco, 1977 - Cuba
S. decui Dumitresco, 1977 - Cuba
S. gladiger Dumitresco, 1977 - Cuba
S. digitiger Dumitresco, 1977 - Cuba

The descriptions of species in this and subsequent reports include only those characters which have been determined to be of systematic importance. Many earlier descriptions have included characters which are either common to most or all species of schizomids, or which have proven upon more study to be so variable as to be of little value in diagnosing species. The following is a brief discussion of the characters which we use. Further discussion of these characters, particularly with respect to their phylogenetic importance, is deferred until the discussion on phylogeny.

Carapacial setae. The number of pairs of dorsal setae on the carapace is given for each species. Most species of schizomines possess three pairs of dorsal setae, but some may have either two or four pairs. In many species there has also been a reduction of the middle pair when three pairs are present.

Eyespots. Supposedly light sensory structures, referred to here as eyespots, are present only in the subfamily Schizominae. These structures may not be morphologically comparable to the lateral eyes of any other arachnid, but the histological details have not been

studied. In many cave-dwelling species the eyespots are absent or only barely visible, while in epigean species they may range in shape from irregular to oval to triangular and are distinctly paler than the carapace.

Metapeltidium. The presence or absence of a suture dividing the metapeltidium has been used by many authors to distinguish genera. A split metapeltidium has been consistently used to characterize the genus *Trithyreus*. This study has revealed this character state to be present or absent in closely related species and, furthermore, transitional states occur in which the metapeltidial plates are separated only by a narrow suture. This character is, therefore, of only limited systematic value, and of use only at the specific level.

Abdominal tergal setae. The number of setae on the terga of the abdomen is given for each species. This character has proven to be quite consistent. Most species possess two setae on terga I-VII and four setae on terga VIII-IX, but variations do occur and are of specific value.

Anterior sternal setae. The number of setae on the anterior sternum of the prosoma is given for each species. This character, however, is somewhat variable and is of only limited taxonomic value.

Abdominal attenuation. Males of many species demonstrate varying degrees of attenuation of the distal abdominal segments. It is most highly developed in *Schizomus goodnightorum*, but occurs to a lesser degree in species from California, México, Guatemala and South America. The elongation may involve segments V-XII, or may only involve the pygidial segments, X-XII. A telescopic intercalation of the abdominal segments occurs in species with a highly attenuated abdomen. All species possessing an attenuated abdomen have elongate flagella and short, non-dimorphic pedipalps.

Spermathecae. Brignoli (1973) introduced the use of the spermathecae as a taxonomic character in the description of two Mexican species. Rowland (1973c) expressed reservations about the value of this character in diagnosing new species. Although Brignoli (1974) illustrated three additional species of schizomids to further show the importance of this character, he worked with very limited material and was unable to show the extent of variation which may occur in this character. Extensive study of the spermathecae has shown the value of this character in systematics, but it is unfortunately subject to transfigurations by preservation and mounting. Furthermore, in some species, it is highly variable; while in other instances, the spermathecae of related species may be essentially indistinguishable despite easily distinguishable male flagella. The spermathecae, however, should be illustrated when possible. We consider, however, that little can be gained by formally describing new taxa on the basis of the female alone. The following spermathecal traits have been found to be of value and are given for each species where the female is known: number of pairs, relative size of median and lateral pairs, presence or absence of terminal bulbs, and degree and location of sclerotization.

Posterodorsal abdominal process. This structure consists of a posterior emargination of the dorsal side of abdominal segment XII. It may project out over the base of the flagellum, or may only slightly protrude. In most species it is truncate, but it may also be pointed or gently rounded. It occurs only in males and may be completely absent in some species.

Male flagellum. The flagellum of the adult male has proven to be the most useful character in the identification of species. It is not affected by preservation and is usually highly consistent within populations. There is never the degree of intraspecific variation in male flagella that is found in female spermathecae.

Female flagellum. The articles of the female flagellum are joined either by segmentation and annulation or by annulation alone. The term segmentation does not suggest that the articles are derived from metameres, but only that they are separated from each other by a slight membranous region. Annulations, on the other hand, appear to represent lines of incomplete fusion of two flagellar articles.

Pedipalps. The pedipalps of many species of the subfamily Schizominae are sexually dimorphic. The pedipalps of females are all fairly similar and of limited value in species recognition. In males, however, the pedipalps are frequently elongated. This elongation may be a result of attenuation of the femora, patellae, and tibiae, or various combinations of these segments. The trochanter may or may not be produced apically. In some species the femora and patellae may bear an armature of spines. When the tibia is elongate it may bear a spur which is apposible to the tarsus-basitarsus. This spur may be either very prominent or small. In some species several stout spines or a prominent set occurs in the position of the spur. The characters of the male pedipalps have been found to be of systematic importance, especially when they are elongate. When large collections are available, however, it is occasionally found that there is some variation in the degree of elongation of the pedipalps. Although most males of any given species appear to have elongate pedipalps, there are occasionally males with pedipalps like the females.

Color. The color of schizomids ranges from extremely pale in the troglobitic species to brown or green. In the descriptions of the species the color is indicated by the terms brownish or greenish. These imprecise terms are used because of the variation in the degree of pigmentation in different individuals of a single species and between immatures and adults. It is also true that various parts of the body are somewhat different in color. The chelicerae are often a dark reddish color. The color of the carapace and dorsum of the abdomen is that which we refer to as greenish or brownish.

SYSTEMATICS

Seven species groups are recognized in the New World Schizomidae. Detailed descriptions of each group will be given in the text, but the accompanying comparisons table (Table 1) will serve to separate them. Keys are not included in this series of reports because they are of only limited value in accurately determining the identity of species in a group where most specimens collected will probably prove to be undescribed. The comparisons tables included for each species group should serve to distinguish the species within that group from one another and allow the student to determine the relationships of any new specimens obtained.

The species groups of *Schizomus* and their distribution are as follows: *dumitrescoae* group (Central America: Costa Rica; Antilles: Cuba, Jamaica, Haiti, Puerto Rico, Martinique); *simonis* group (Central America: Costa Rica, Panama; South America: Venezuela, Trinidad, Tobago, British Guiana); *brasiliensis* group (México: Oaxaca, Tabasco, Chiapas; Central America: Costa Rica; South America: Colombia, Ecuador, Brazil, Bolivia); *mexicanus* group (excluding *S. portoricensis*: United States: Texas; México: Nuevo León, Tamaulipas, San Luis Potosí, Guerrero, Veracruz, Oaxaca, Chiapas, Campeche, Quintana Roo, Yucatán; Central America: Guatemala, Belize. *S. portoricensis*: Bermuda, Florida, Antilles, southern México, Central America, northern South America, Galapagos Islands); *pecki* group (México: Veracruz, Oaxaca, Tabasco, Chiapas; Central America: Belize, Guatemala); *goodnightorum* group (México: Veracruz, Chiapas, Yucatán; Central America: Guatemala); *briggsi* group (United States: California, Arizona).

ORDER SCHIZOMIDA

Protoschizomidae Rowland

Protoschizomidae Rowland 1975b:1.

Description.—Carapace without eyespots; mesopeltidia large, separated by about 1/3 to 1/10 their greatest dimension; metapeltidium entire or divided. Abdomen with eight pairs of dorsoventral muscles. Flagellum segmented in females. Cheliceral serrula absent, but represented by a row of blunt, nearly hemispherical knobs; no row of closely situated setae at base of fixed digit (brush). Two teeth on fixed digit, basal one arising at an angle from ventral surface of basal segment. Ratio of pedipalpal claw length to dorsal length of tarsus-basitarsus 1:0.5 or 1:1; basitarsal spurs symmetrically placed, long, about 1/3 to 1/2 dorsal length of tarsus-basitarsus; "true spines" present. Trochanter IV about 2.2 times longer than wide; femur IV from about three to five times longer than deep.

Distribution.—México.

Protoschizomus Rowland

Protoschizomus Rowland 1975b:2. Type: *Agastoschizomus pachypalpus* Rowland 1973 (orig. desig.).

Description.—Carapace about 1 mm in length. Mesopeltidial plates separated by 1/3 their length; greatest length to width ratio of metapeltidial plates about 1.3:1. Abdominal sterna IV to VII about six times wider than long. Pedipalpal claw shorter than dorsal length of tarsus-basitarsus. Femur IV about three times longer than deep.

Distribution.—Tamaulipas and Colima, México.

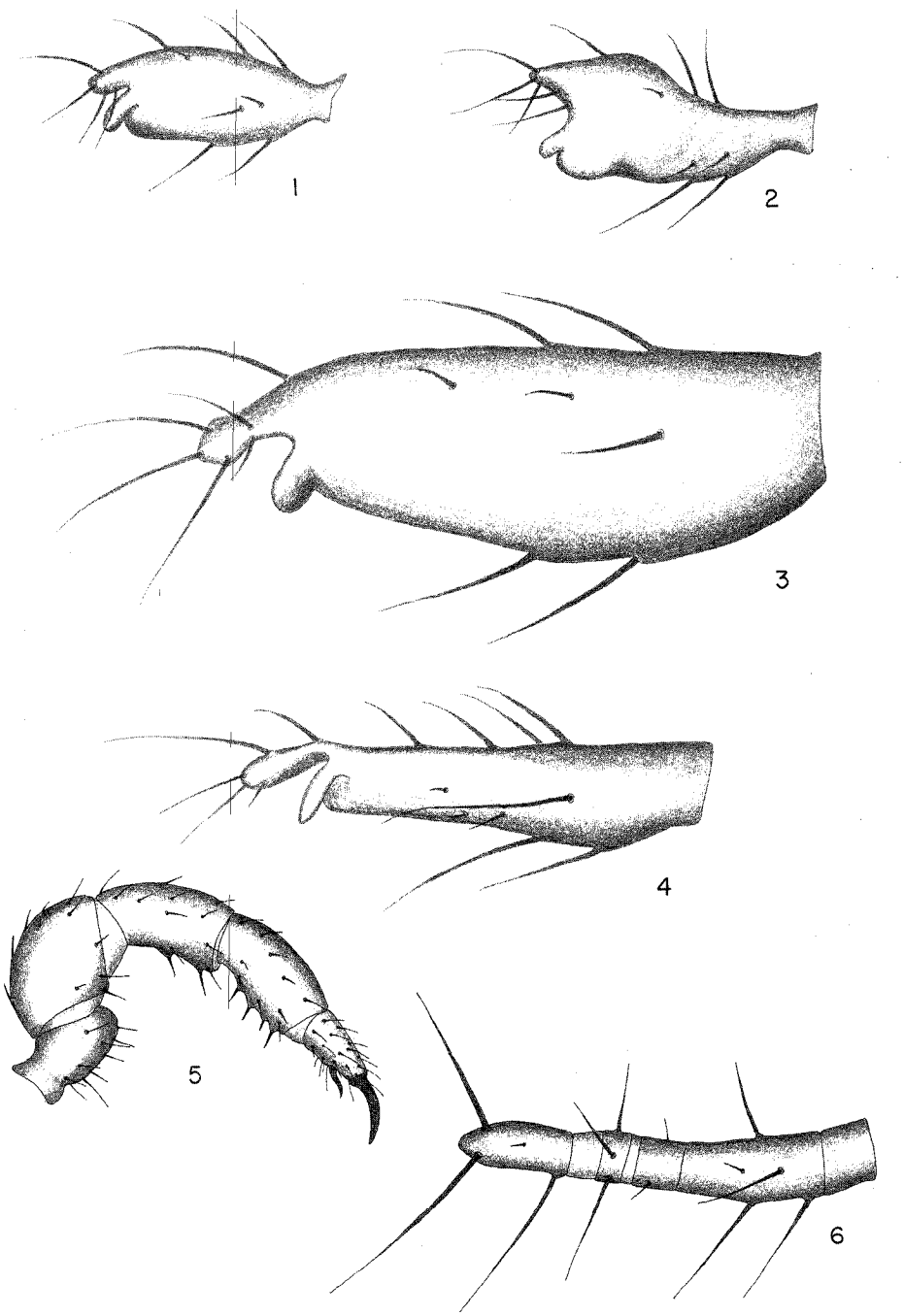
Protoschizomus pachypalpus (Rowland)
(Figs. 2, 5-7)

Agastoschizomus pachypalpus Rowland 1973a:8-10.
Protoschizomus pachypalpus: Rowland 1975b:2-4.

Description.—Male. Color brownish. Carapace with five pairs of dorsal and two apical setae. Eyespots absent. Metapeltidium divided medially into two plates. Anterior sternum with 11 entire setae. Abdominal terga I to II with two setae, terga III to VII with four setae, tergum VIII with 10 setae, tergum IX with four setae. Vestigial stigmata slightly darker than sterna. Flagellum long, club shaped, expanded distally, bearing 22 major setae. Pedipalpal trochanter not produced distally; femur and patella narrow proximally, expanded distally; tibia without mesal, subapical spur. Tarsal-basitarsal spurs about 2/5, claw about 4/5 length of tarsus-basitarsus. Tarsal segments of leg I of the following approximate proportions: 23-7-9-8-8-8-26. Other leg segment measurements given in Table 2.

Female. Flagellum with five articles.

Type data.—Holotype female and paratype juvenile taken at Nacimiento del Río Frío, 3 mi S Gómez Farías, Tamaulipas, México, 12 March 1969 (J. Reddell); two paratype



Figs. 1-6.–Parts of protoschizomids: 1-4, lateral views of male flagella: 1, *Protoschizomus occidentalis*; 2, *P. pachypalpus*; 3, *Agastoschizomus lucifer*; 4, *A. huitzmolotitlensis*; 5, lateral view of right pedipalp of female *P. pachypalpus*; 6, lateral view of female flagellum of *P. pachypalpus*

females and one paratype juvenile taken at Arroyo Nacimiento del Río Frío, Tamaulipas, México, 16 February 1970 (R. W. Mitchell); one paratype female taken at Gómez Farías, Tamaulipas, México, 6 January 1964 (J. Reddell, D. McKenzie, L. Manire). All specimens deposited in the AMNH.

Comparisons.–See under *P. occidentalis*.

Distribution.–This species is known from five localities in Tamaulipas, México.

Additional records .–México: Tamaulipas; 51.5 mi E Ciudad Victoria on Highway 70, 17 Oct. 1972 (B. L. Firstman, V. D. Roth), 1 male (AMNH), 60 mi S Ciudad Victoria, *ex* bromeliads, 17 November 1948 (H. B. Leech), 2 females (CAS).

Protoschizomus occidentalis Rowland
(Figs. 1, 7)

Protoschizomus occidentalis Rowland 1975b:4-5.

Description.–Male. Color brownish. Carapace with four pairs of dorsal and two apical setae. Eyespots absent. Metapeltidium divided medially into two plates. Anterior sternum with 11 entire setae. Abdominal terga I to II with two setae, terga III to IV with four setae, terga VIII to IX with six setae. Vestigial stigmata darker than sterna. Flagellum long, club shaped, expanded distally, bearing 22 major setae. Pedipalpal trochanter not produced distally; tibia with mesal, subapical spur. Tarsal-basitarsal spurs about 2/5, claw about 4/5 length of tarsus-basitarsus. Tarsal-basitarsal segments of leg I of the following approximate proportions: 24-7-8-7-8-7-27. Other leg segment measurements given in Table 2.

Female unknown.

Type data.–Holotype male and paratype subadult female taken under a rock 13 mi SW Colima, México, 16 July 1972 (A. Jung) (AMNH).

Comparisons.–The two species of this genus can be separated most easily by comparison of the male flagella. It is distally more expanded in *P. pachypalpus* than in *P. occidentalis*. The carapace of *P. pachypalpus* has five pairs of dorsal setae whereas that of *P. occidentalis* has four pairs. The eighth abdominal tergum of the former has 10 setae, but there are only six in the latter. Other minor setational differences occur.

Distribution.–Known only from the type locality.

Agastoschizomus Rowland

Agastoschizomus Rowland 1971a:13. Type: *Agastoschizomus lucifer* Rowland 1971 (monotypy); Rowland 1973b:202; Rowland 1975b:5.

Description.–Carapace about 2 to 3 mm in length. Mesopeltidial plates separated by 1/10 their greatest dimension; greatest length to greatest width ratio of metapelitdial plates about 1:1. Abdominal sterna IV to VII about three times wider than long. Pedipalpal claw longer than dorsal length of trasus-basitarsus, ratio of about 1.1:1; tarsal-basitarsal spurs about 1/2 dorsal length of tarsus-basitarsus. Femur IV about five times longer than deep.

Distribution.–San Luis Potosí, México.

Agastoschizomus lucifer Rowland
(Figs. 3, 7)

Agastoschizomus lucifer Rowland 1971a:13-17; Reddell and Mitchell 1971:145; Dumitresco 1973:282; Rowland 1973a:10; Rowland 1973b:197, 202; Rowland 1973c:136; Reddell 1973:33, 38; Reddell and Elliott 1973:171; Brignoli 1974:150; Rowland 1975b:6,8,9,10, Rowland and Reddell 1977:81-82.

Description.—Male. Color brownish. Carapace with two pairs of dorsal and three apical setae. Eyespots absent. Metapeltidium divided medially into two plates by a very narrow suture. Anterior sternum with nine entire setae. Abdominal terga I to V with two setae, terga VI to VII with four setae, terga VIII to IX with six setae. Vestigial stigmata darker than sterna. Flagellum long, cylindrical, apically modified. Pedipalpal trochanter not produced distally; femur and patella bearing several stout spines; tibia without mesal, subapical spur. Tarsal-basitarsal spurs about 2/3, claw about 7/6 length of tarsus-basitarsus. Tarsal-basitarsal segments of leg I of the following approximate proportions: 60-19-18-16-21-56. Other leg segment measurements given in Table 2.

Female. Flagellum with five articles.

Fig. 7.—Map showing distribution of the protoschizomids: 1, *Protoschizomus occidentalis*; 2, *P. pachypalpus*; 3, *Agastoschizomus lucifer*; 4, *A. huitzmolotitlensis*.

Type data.—Holotype male taken in Sótano de la Tinaja, 10 km NNE Ciudad Valles, San Luis Potosí, México, 9 April 1966 (J. Fish, D. McKenzie); allotype female and paratype female taken in Sótano de Yerbaniz, 22.5 km N Ciudad Valles, San Luis Potosí, México, 28 March 1970 (W. Elliott); paratype male taken in Sótano de Yerbaniz, 8 January 1971 (W. Elliott). All specimens deposited in the AMNH.

Comparisons.—See under *A. huitzmolotitlensis.*

Remarks.—See under *A. huitzmolotitlensis.*

Distribution.—Three caves in the southern Sierra de El Abra north of Valles, San Luis Potosí, México.

Additional records.—See Rowland and Reddell (1977) for other records.

Agastoschizomus huitzmolotitlensis Rowland
(Figs. 4, 7)

Agastoschizomus huitzmolotitlensis Rowland 1975b:6, 8-10; Rowland and Reddell 1977:81-82.

Schizomus sp.: Reddell 1967:106; Reddell, 1971:28 [Sótano de Huitzmolotitla record only].

Description.—Male. Color brownish. Carapace with one pair of dorsal and three apical setae. Eyespots absent. Metapeltidium undivided, slightly emarginate posteriorly. Anterior sternum with 11 entire setae. Abdominal terga I to IV with two setae, terga V to VII with four setae, terga VIII with 10 setae, and terga IX with six setae. Vestigial stigmata slightly darker than sterna. Flagellum long, cylindrical, bearing 18 major setae, apically modified. Pedipalpal trochanter not produced distally; femur and patella bearing several stout spines; tibia without mesal, subapical spur. Tarsal-basitarsal spurs about 2/3, claw about 7/6 length of tarsus-basitarsus. Tarsal-basitarsal segments of leg I of the following approximate proportions: 45-13-14-14-15-13-43. Other leg measurements given in Table 2.

Female unknown.

Type data.—Holotype male taken in Sótano de Huitzmolotitla, 2 km SW Tlamaya, and approximately 10 km N Xilitla, San Luis Potosí, México, 24 January 1964 (Terry Raines, Tommy Phillips), in mud room 9000 ft. from entrance (AMNH).

Comparisons.—*A. huitzmolotitlensis* is somewhat smaller and displays more advanced troglobitic facies than *A. lucifer*. The male flagellum in particular is relatively much narrower basally in *A. huitzmolotitlensis*. The presence of 2 pair of dorsal carapacial setae in *A. lucifer* as opposed to 1 pair in *A. huitzmolotitlensis* also separates the two species. They are also readily separable on the basis of the setation of the abdominal terga.

Distribution.—Known only from the type locality.

Remarks.—The two species of the genus *Agastoschizomus* are remarkable troglobites and are by far the largest species in the order. Their pronounced morphological similarities indicate that they are derived from an immediate common ancestor morphologically very similar to both. The extreme size and pedipalpal configurations common to these species and to their hypothetical ancestor are probably not due entirely to adaptations to cave environments.

Schizomidae Hansen and Sörensen

Tartarides Cambridge 1872:410 (nom. obl.).
Schizonotidae Thorell 1888:358 [nom. correct. Pocock 1893 (ex Schizonotoidae Thorell 1888, nom. imperf.)] (name based on junior homonym).
Hubbardiidae Cook 1899:429 (nom. obl.) (name based on junior subjective synonym).
Schizomidae Hansen and Sörensen 1905:4 [nom. correct. Gravely 1915 (ex Schizomoidae Hansen and Sörensen 1905, nom. imperf.)].
Schizomidae Chamberlin 1922:11 (jun. prim. hom.).

Table 1.--Comparisons of the New World species groups of the genus Schizomus. See the Introduction for explanation of characters.

CHARACTER	dumitrescoae	simonis	brasiliensis	mexicanus	pecki	goodnightorum	briggsi
DORSAL SETAE	2-3	2-3	3-4	2-3	2-3	3-4	3-4
METAPELTIDIUM	entire	entire	split or entire	entire	entire	entire	split or entire
COLOR	brown or green	brown or green	brown or green	brown or green	brown	brown	brown or green
SPERMATHECAE	M < L	M < L	M = L	M > L	M > L	M > L	multiple
ART. FEM. FLAGELLUM	4	4	3	3	3	3	4
CARAPACE LENGTH	.96-1.37	1.07-1.34	.91-1.48	.98-1.37	1.31-1.74	.89-1.42	1.18-1.52
ABDOMINAL ELONGATION	none	present	none	none	none	present	none or present
ABDOMINAL PROCESS	present	present	present	absent	absent	absent	present
PEDIPALPAL DIMORPHISM	slight to strong	none	slight to strong	none to strong	none	none	none to strong
SHAPE MALE FLAGELLUM	bulbous	long	bulbous	bulbous	bulbous	long	long or bulbous

Description.—Carapace with or without eyespots, mesopeltidia small, separated by about 1/2 to 2/3 their greatest dimension; metapeltidium entire or divided. Abdomen with seven pairs of dorsoventral muscles. Flagellum segmented or unsegmented in females. Cheliceral serrula present, a row of closely situated setae also present at base of fixed digit (brush). Three or five to nine teeth present on fixed digit, basal one arising gradually from ventral surface of basal segment. Ratio of pedipalpal claw length to tarsal-basitarsal length from about 1:4 to 1:1.2; tarsal-basitarsal spurs asymmetrically placed, medium to short, about 1/4 to 1/5 dorsal length of tarsus-basitarsus; "true spines" present or absent. Trochanter IV about 1.4 or 2.2 times longer than wide, femur IV from about 2.6 to 4.1 times longer than deep.

Distribution.—Present in all tropical and certain subtropical and temperate areas.

Schizominae Hansen and Sörensen

Schizomidae Hansen and Sörensen 1905:4.

Schizominae Rowland 1973a:200 [nom. transl. Rowland 1973a (ex Schizomidae Hansen and Sörensen 1905)]; Rowland 1975:11.

Description.—Carapace with or without eyespots; mesopeltidia divided by about equal to their greatest dimension; metapeltidium entire or divided. Flagellum unsegmented in females. Fixed digit of chelicerae with five to nine teeth. Ratio of pedipalpal claw to tarsal-basitarsal length about 1:4 to 1:1.2; tarsal-basitarsal spurs asymmetrically placed, short, about 1/5 dorsal length of tarsus-basitarsus; "true spines" absent. Trochanter IV about 1.4 times longer than wide, femur IV about 2.6 times longer than deep.

Distribution.—Same as for the family.

Schizomus Cook

Nyctalops Cambridge 1872:410 (jun. hom.). Type: *N. crassicaudata* (sub. des., Cook 1899).

Schizonotus Thorell 1888:358 (jun. hom) [nom. subst. pro *Nyctalops* (non *Nyctalops* Wagler 1832)]; Kraepelin 1897:50; Kraepelin 1899:233.

Tripeltis Thorell 1889:554 (jun. hom.). Type: *T. grassil* (orig. des.).

Trithyreus Kraepelin 1899:234 [nom. subst. pro *Tripeltis* (non *Tripeltis* Cope 1886)] in part.

Triplomus Cook 1899:250 (jun. obj. syn.) [nom. subst. pro *Tripeltis* (non *Tripeltis* Cope 1886)].

Hubbardia Cook 1899:250 (jun. subj. syn.). Type: *H. pentapeltis* Cook (monotypy).

Artacarus Cook 1899:254 (jun. subj. syn.). Type: *A. liberiensis* Cook (monotypy).

Schizomus Cook 1899:249 [nom. subst. pro *Schizonotus* (non *Schizonotus* Ratzeburg 1852)].

Stenochrus Chamberlin 1922:11 (jun. subj. syn.). Type: *S. portoricensis* Chamberlin (monotypy).

Heteroschizomus Rowland 1973:1 (jun. subj. syn.). Type: *H. goodnightorum* Rowland (monotypy).

Description.–Same as that for the subfamily.
Distribution.–Same as that for the family.

DUMITRESCOAE GROUP

Description.–Members of this group are characterized by moderate to large size (0.96-1.37 mm carapacial length). The color varies from brown to green. The eyespots vary from irregular to triangular and indistinct to well defined. The carapace may have two to four pairs of dorsal and two apical setae. The arrangement of the setae may be variable and the middle pair may be smaller than the others. The abdomen shows no elongation of posterior segments. The pygidial segments are very shallow. The males of most species have a well-developed posterodorsal abdominal process, which is usually truncate, but may vary within the species from truncate to round. The flagellum, with two exceptions, bears a central to subapical median depression. Several species have bilateral projections arising from above and beside this depression. In some species the flagellum is robust and globose, but is usually small. The female flagellum is moderate to

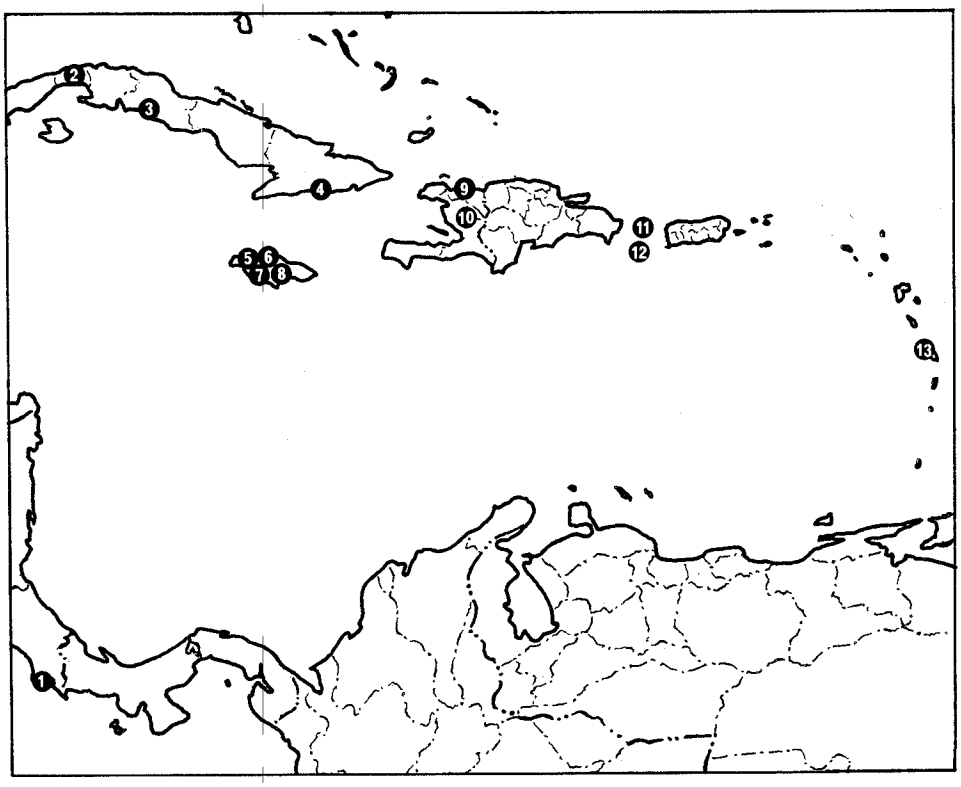


Fig. 8.–Map showing distribution of schizomids of the *dumitrescoae* group: 1, *Schizomus dumitrescoae*; 2, *S. decui*; 3, *S. biconourus*; 4, *S. gladiger*; 5, *S. cousinensis*; 6, *S. primibiconourus*; 7, *S. peckorum*; 8, *S. viridis*; 9, *S. brevipatellatus*; 10, *S. longipalpus*; 11, *S. desecheo*; 12, *S. monensis*; 13, *S. insignis*.

long (0.19-0.36 mm), and composed of four articles. The spermathecae are characterized by elongation of the laterals and reduction of the medians. In a few species the lateral spermathecae are very large and terminate in a spherical, sclerotized bulb. In other species the median spermathecae are reduced. The pedipalps are always sexually dimorphic. Males of certain species have highly variable pedipalps. The trochanter is usually in some way elaborated; and the femur, patella, and tibia are usually elongate, but the tibia has no spur apposible to the tarsus-basitarsus.

Distribution.–Central America: Costa Rica. Antilles: Cuba, Jamaica, Haiti, Puerto Rico, Martinique.

Remarks.–Species which probably belongs in this group, but which we have not seen, are *Schizomus negreai* Dumitresco, and *S. digitiger* Dumitresco. On the basis of the descriptions *S. negreai* appears to be most closely related to *S. biconourus*, another Cuban species; while *S. digitiger* appears to be most similar to *S. longipalpus* from Haiti. It has also not been possible to examine *S. dispar* Hansen, which may also belong in this group. It is known only by females and details of its anatomy are inadequately described. It was collected in Martinique and may be a close relative of *S. insignis*. See Table 3 for characters used in separating the species of the *dumitrescoae* group.

Subordinate taxa.–*Dumitrescoae* complex: *S. dumitrescoae, S. decui; primibiconourus* complex: *S. cousinensis, S. primibiconourus, S. longipalpus, S. brevipatellatus*; *viridis* complex: *S. gladiger, S. monensis, S. desecheo, S. biconourus, S. insignis, S. peckorum, S. viridis*.

Table 2.–Measurements (mm) of species of the family Protoschizomidae: 1, one male, *Protoschizomus pachypalpus*; 2, one female, *P. pachypalpus*; 3, one male, *P. occidentalis*; 4, four males, *Agastoschizomus lucifer*; 5, four females, *A. lucifer*; 6, one male, *A. huitzmolotitlensis*. Except as otherwise noted all measurements are of lengths.

	1	2	3	4	5	6
Carapace	1.24	1.16	1.16	2.29-2.41	2.84-3.21	1.84
Flagellum						
Length	0.61	0.46	0.53	1.37-1.40	1.26-1.43	0.98
Width	0.28	-	0.25	0.41-0.42	-	0.26
Leg I						
Femur	0.97	0.79	1.02	3.36-3.51	3.48-3.76	2.53
Patella	0.80	0.71	0.80	3.99-4.14	3.80-4.16	3.11
Tibia	0.71	0.69	0.74	3.24-3.38	2.90-3.30	2.50
Tarsus-basitarsus	1.05	0.80	0.99	1.97-2.10	2.04-2.16	1.54
Leg II						
Femur	1.06	0.70	1.07	2.46-2.66	2.46-3.01	1.83
Patella	0.44	0.39	0.48	1.32-1.40	1.38-1.56	1.05
Tibia	0.34	0.34	0.38	1.69-1.86	1.75-1.97	1.35
Basitarsus	0.52	0.44	0.54	1.18-1.30	1.25-1.33	0.87
Leg III						
Femur	0.95	0.80	0.98	2.41-2.62	2.54-2.90	1.88
Patella	0.53	0.44	0.48	1.13-1.20	1.11-1.43	0.96
Tibia	0.37	0.36	0.36	1.68-1.72	1.74-1.92	1.24
Basitarsus	0.77	0.66	0.70	1.41-1.45	1.51-1.54	1.04
Leg IV						
Femur	0.89	0.81	0.83	3.18-3.34	3.32-3.62	2.24
Patella	0.38	0.30	0.35	1.51-1.54	1.57-1.77	1.15
Tibia	0.43	0.35	0.41	2.61-2.68	2.62-2.86	1.90
Basitarsus	0.63	0.49	-	1.75-1.83	1.75-2.10	1.42

Table 3.--Comparisons of the members of the dumitrescoae group. See the Introduction for explanation of characters.

CHARACTER	decui	dumitres-coae	cousin-ensis	primi-bicon-ourus	longi-palpus	brevi-patel-latus	gladiger	monensis	desecheo	bicon-ourus	insignis	peckorum	viridis
DORSAL SETAE	2	2M-4F	2M-3F	2	2	2	3	3	3	3	3	3	3
STERNAL SETAE	13	10	11	11	13	13	12	11	10	12	11	13	13
COLOR	brown	brown	brown	brown	brown	brown	green	green	green	green	green	green	green
MALE PEDIPALP	long thin	long thin	long thin	long robust	long robust	long thin	short robust	short robust	short robust	short robust	long thin	short robust	long robust
ABDOMINAL PROCESS	slight	slight	slight	slight	slight	slight	round	truncate	truncate	pointed	truncate	truncate	round truncate
EYESPOTS	indis-tinct	indis-tinct	indis-tinct	oval	angular	indis-tinct	oval to angular	indis-tinct	angular	oval to angular	short broad	oval to angular	angular
SPERMA-THECAE	?	L 2X M	L 2X M	?	?	?	L 2X M	L 1.5X M	?	L ±= M	L 4X M	L 5X M	L 2-3X M
CARAPACE LENGTH	1.10	.96	1.08	1.03	1.29	1.36	.96	1.16	1.16	1.00	1.00	1.26	1.37
LENGTH FEM. FLAGELLUM	?	.30	.30	?	?	?	.23	.33	?	.23	.19	.34	.36
PIT MALE FLAGELLUM	single median	single median	double median	single median	single median	double lateral	single median	vague	vague	single median	single median	single median	single median

Schizomus dumitrescoae, new species
(Figs. 8-9, 27, 49, 63-64)

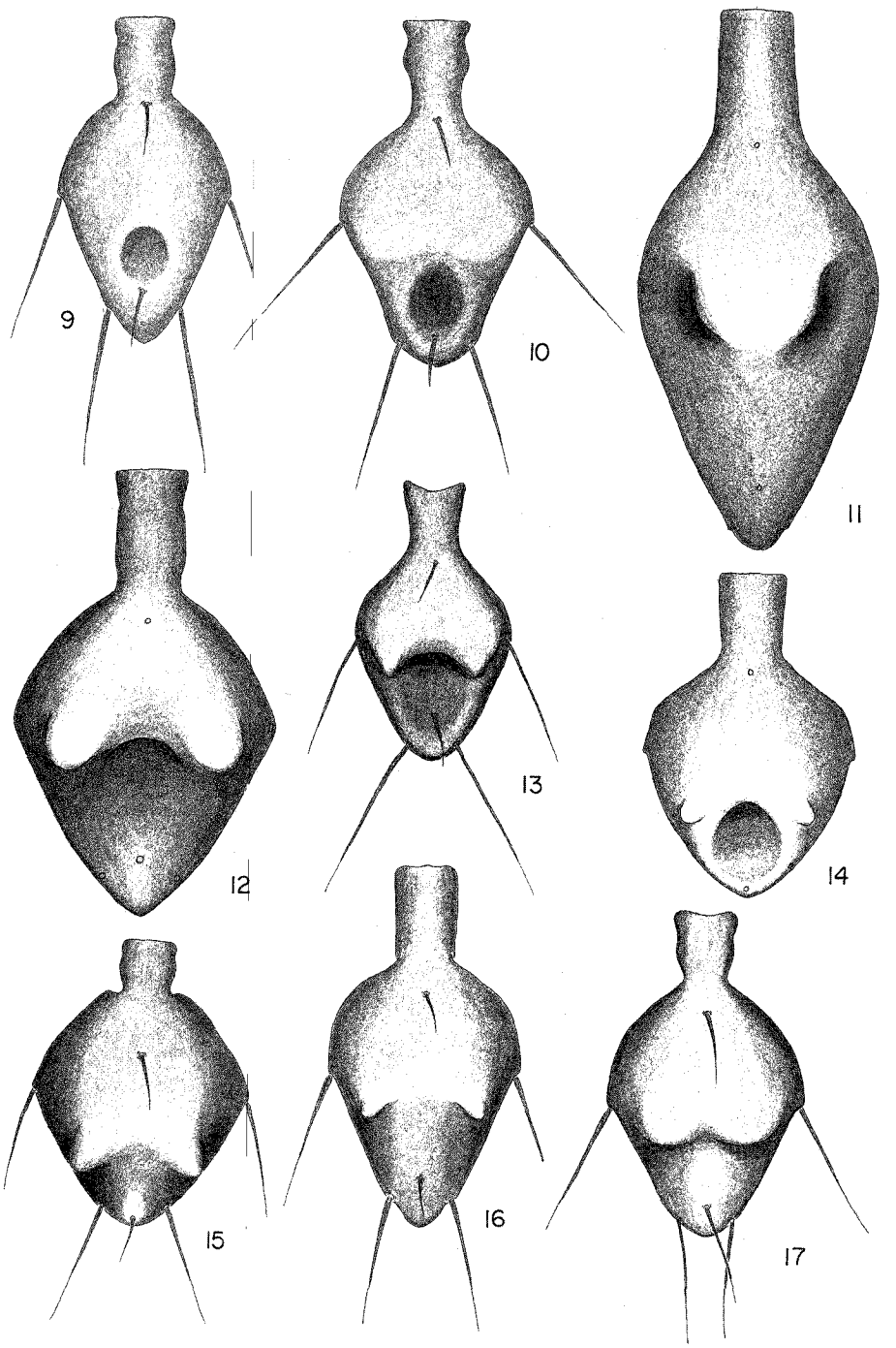
Description.—Male. Color brownish. Carapace with two pairs of dorsal and two apical setae. Eyespots indistinct, oblong, with irregular margins. Anterior sternum with 10 entire setae. Abdominal terga I-VII with two setae, terga VIII-IX with four setae, segment XII with slight evidence of posterodorsal process. Vestigial stigmata hardly distinct in color from sterna. Flagellum lanceolate, dorsally compressed, with a single median depression subapically. Pedipalpal trochanter much elongate, but not produced distally; femur, patella, and tibia all elongate, no segments with additional armature. Tarsal-basitarsal spurs about 1/10, claw about 1/3 length of tarsus-basitarsus. Tarsal-basitarsal segments of leg I of the following approximate proportions: 31-5-6-6-8-8-16. Other leg segment measurements given in Table 4.

Female. Carapace with four pairs of dorsal setae. Flagellum with four sections. Pedipalps not elongate. Lateral spermathecae about twice as long as medians, very long, recurved, the tips with enlarged, sclerotized bulbs, medians very weak, with no areas of heavy sclerotization.

Type data.—Holotype male, allotype female, and paratype male taken at Coto, Costa Rica, 5 July 1957 (E. Dixon); paratype male, female, and two immatures taken at Coto, Costa Rica, 4 September 1957 (E. Dixon); paratype female and two immatures taken at Golfito, Costa Rica, 27 August 1957 (E. Dixon). All specimens deposited in the AMNH.

Table 4.—Measurements (mm) of five species of the *dumitrescoae* group: 1, one male, *Schizomus decui*; 2, three males, *S. dumitrescoae*; 3, two females, *S. dumitrescoae*; 4, two males, *S. cousinensis*; 5, two females, *S. cousinensis*; 6, three males, *S. primibiconourus*; 7, three males, *S. longipalpus*. Except as otherwise noted all measurements are of lengths.

	1	2	3	4	5	6	7
Carapace	1.10	0.93-0.98	0.95-0.98	0.92-1.18	1.06-1.08	1.01-1.07	1.24-1.35
Flagellum							
Length	1.13	0.33-0.34	0.30	0.36-0.37	0.30-0.30	0.33-0.34	0.44-0.47
Width	0.20	0.17-0.19	-	0.19-0.22	-	0.22-0.26	0.26-0.27
Leg I							
Femur	1.23	0.79-0.89	0.77-0.82	0.97-1.26	0.90-0.94	1.01-1.04	1.50-1.56
Patella	1.49	0.59-0.68	0.61-0.62	1.16-1.56	1.11-1.13	1.28-1.38	1.87-1.96
Tibia	1.10	0.54-0.58	0.51-0.58	0.84-1.10	0.80-0.82	0.98-1.03	1.36-1.39
Tarsus-basitarsus	0.82	0.82-0.89	0.82-0.86	0.77-0.90	0.71-0.72	0.80-0.83	1.03-1.12
Leg II							
Femur	0.76	0.98-1.09	0.87-0.93	0.68-0.85	0.66-0.68	0.69-0.72	1.04-1.10
Patella	0.43	0.34-0.39	0.35-0.36	0.40-0.52	0.39-0.40	0.36-0.38	0.62-0.63
Tibia	0.50	0.25-0.27	0.25-0.26	0.43-0.53	0.39-0.42	0.39-0.40	0.68-0.72
Basitarsus	0.45	0.37-0.44	0.39-0.41	0.38-0.50	0.38-0.39	0.41-0.47	0.61-0.65
Leg III							
Femur	0.65	0.69-0.80	0.65-0.69	0.38-0.74	0.57-0.60	0.58-0.65	0.84-0.91
Patella	0.30	0.33-0.39	0.35-0.36	0.25-0.35	0.25-0.28	0.30-0.38	0.43-0.44
Tibia	0.34	0.27-0.30	0.25-0.26	0.30-0.39	0.29-0.31	0.31-0.33	0.46-0.49
Basitarsus	0.39	0.54-0.60	0.55-0.59	0.36-0.53	0.36-0.39	0.39-0.46	0.58-0.63
Leg IV							
Femur	1.05	0.65-0.68	0.64-0.64	0.91-1.11	0.91-0.97	1.00-1.06	1.27-1.39
Patella	0.48	0.32-0.38	0.35-0.36	0.42-0.56	0.43-0.45	0.39-0.44	0.65-0.65
Tibia	0.76	0.32-0.39	0.36-0.36	0.61-0.74	0.60-0.64	0.62-0.69	0.82-0.93
Basitarsus	0.65	0.50-0.54	0.50-0.52	0.54-0.71	0.54-0.54	0.56-0.62	0.84-0.86



Figs. 9-17.–Dorsal views of male flagella of the *dumitrescoae* group: 9, *Schizomus dumitrescoae*; 10, *S. decui*; 11, *S. brevipatellatus*; 12, *S. longipalpus*; 13, *S. cousinensis*; 14, *S. primibiconourus*; 15, *S. gladiger*; 16, *S. desecheo*; 17, *S. monenis*.

Comparisons.–See under *S. decui*.

Distribution.–This species is known from Coto and Golfito, Costa Rica.

Etymology.–This species is named after Margareta Dumitresco of the Institut de Spéologie "Emile Racovitza", Roumanie, in recognition of her contributions to the study of the Schizomida.

Remarks.–*S. dumitrescoae* is unusual in having a different number of dorsal carapacial setae in males and females. The fact that males and females have been collected together on two occasions, however, supports the assumption that they actually represent sexes of the same species.

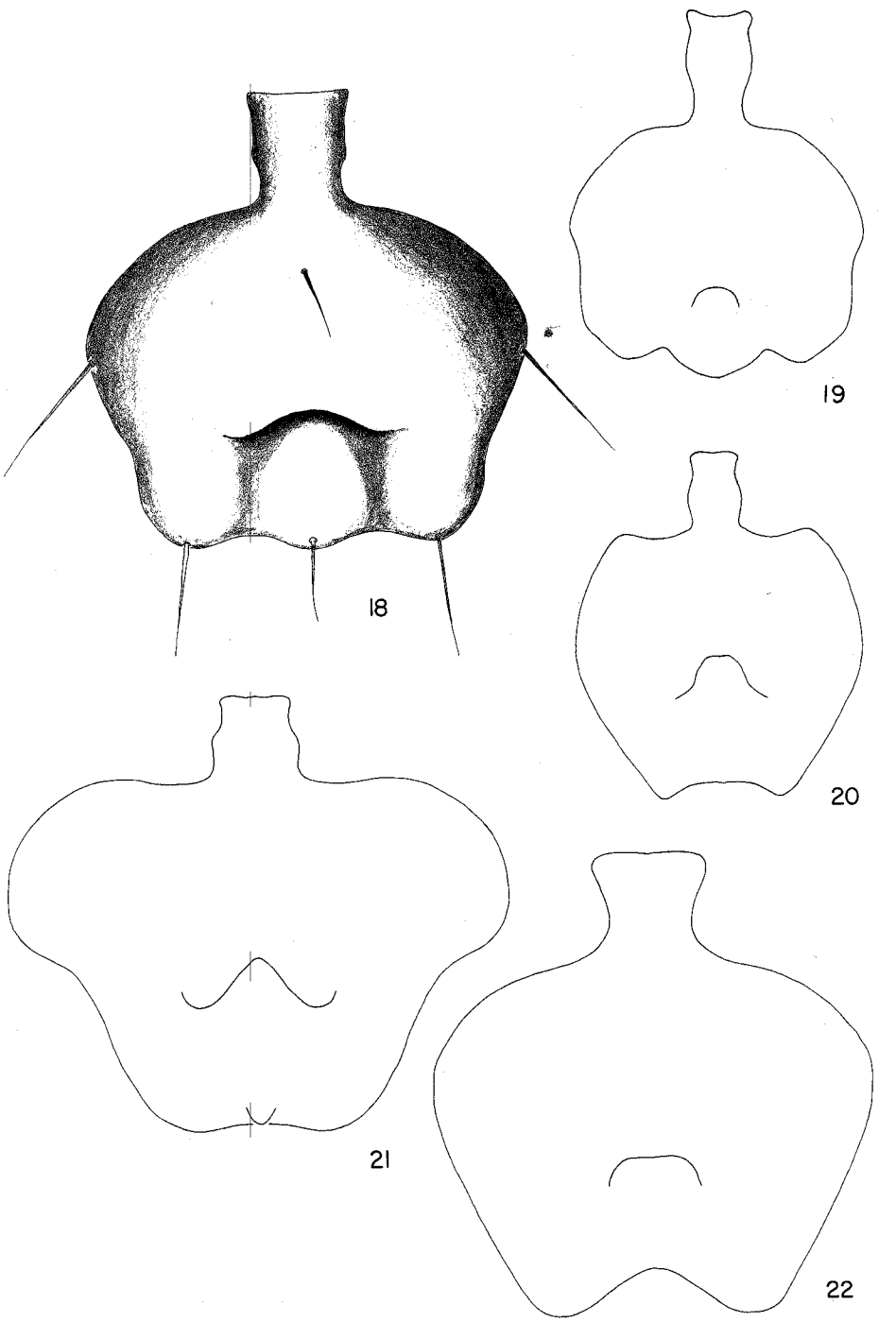
Schizomus decui Dumitresco
(Figs. 8, 10, 26, 47)

Schizomus decui Dumitresco, 1977:147, 151-153, 154, 155, 156, 157, figs. 4-5.

Description.–Male. Color brownish. Carapace with two pairs of dorsal and two apical setae. Eyespots indistinct, oblong with irregular margins. Anterior sternum with 13 entire setae. Abdominal terga I-VII with two setae, terga VIII-IX with four setae, segment XII with slight posterodorsal process. Vestigial stigmata slightly darker than sterna. Flagellum lanceolate, dorsally compressed, with a single median depression subapically. Pedipalpal trochanter much elongate, not produced distally; femur, patella, and tibia all elongate, no

Table 5.–Measurements (mm) of five species of the *dumitrescoae* group: 1, one male, *S. brevipatellatus*; 2, two males, *S. gladiger*; 3, two females, *S. gladiger*; 4, one male, *S. monensis*; 5, two females, *S. monensis*; 6, one male, *S. desecheo*; 7, two males, *S. biconourus*; 8, one female, *S. biconourus*. Except as otherwise noted all measurements are of lengths.

	1	2	3	4	5	6	7	8
Carapace	1.36	0.92-0.93	0.99-1.01	1.16	1.22-1.28	1.16	0.96-1.04	0.96
Flagellum								
Length	0.55	0.30-0.31	0.23-0.23	0.43	0.33-0.33	0.39	0.34-0.35	0.23
Width	0.27	0.23-0.23	-	0.26	-	0.20	0.33-0.36	-
Leg I								
Femur	1.60	0.89-0.92	0.85-0.87	1.32	1.28-1.33	1.10	0.94-1.00	0.80
Patella	2.11	1.09-1.15	1.02-1.03	1.66	1.59-1.65	1.28	1.16-1.24	0.96
Tibia	1.59	0.79-0.84	0.75-0.77	1.26	1.21-1.24	1.01	0.88-0.93	0.75
Tarsus-basitarsus	1.12	0.66-0.67	0.66-0.68	0.97	0.90-0.92	0.82	0.72-0.72	0.66
Leg II								
Femur	1.21	0.61-0.65	0.62-0.67	0.86	0.86-0.89	0.77	0.64-0.70	0.57
Patella	0.66	0.33-0.36	0.34-0.36	0.48	0.49-0.51	0.41	0.38-0.40	0.33
Tibia	0.82	0.38-0.41	0.36-0.38	0.55	0.56-0.57	0.49	0.38-0.43	0.33
Basitarsus	0.67	0.33-0.37	0.32-0.33	0.53	0.54-0.54	0.42	0.36-0.37	0.31
Leg III								
Femur	1.03	0.52-0.53	0.54-0.54	0.73	0.77-0.77	0.66	0.55-0.56	0.44
Patella	0.48	0.24-0.26	0.26-0.26	0.35	0.36-0.37	0.31	0.26-0.27	0.23
Tibia	0.57	0.27-0.28	0.26-0.29	0.44	0.46-0.47	0.39	0.30-0.31	0.26
Basitarsus	0.69	0.35-0.36	0.35-0.35	0.55	0.52-0.54	0.44	0.36-0.40	0.31
Leg IV								
Femur	0.77	0.85-0.89	0.87-0.88	1.21	1.23-1.26	1.07	0.87-0.93	0.82
Patella	0.34	0.38-0.40	0.38-0.41	0.53	0.53-0.55	0.47	0.39-0.48	0.37
Tibia	1.09	0.55-0.61	0.58-0.58	0.81	0.86-0.88	0.75	0.54-0.61	0.55
Basitarsus	0.96	0.49-0.50	0.50-0.51	0.72	0.77-0.79	0.62	0.50-0.55	0.47



Figs. 18-22.–Dorsal views of male flagella of *S. viridis* from various localities: 18, the type locality; 19, Pedro Great Cave, Clarendon Parish; 20, Jackson Bay Cave, Clarendon Parish; 21, Cave River Cave, St. Ann Parish; 22, Thatchfield Light Hole, St. Ann Parish.

segments with additional armature, though single enlarged setae apposes the tarsus-basitarsus. Tarsal-basitarsal spurs about 1/10, claw about 1/4 length of tarsus-basitarsus. Tarsal-basitarsal segments of leg I of the following approximate proportions: 39-6-8-7-8-9-22. Other leg segment measurements given in Table 4.

Female. We have not seen the female of this species, but it is described by Dumitresco (1977).

Type locality.—Cueva La Pluma, Provincia de Matanzas, Cúba.

Specimen examined.—One male taken at San Antonio de los Baños, Habana, Cúba, 4 June 1972 (Luis F. de Armas) (IZACC).

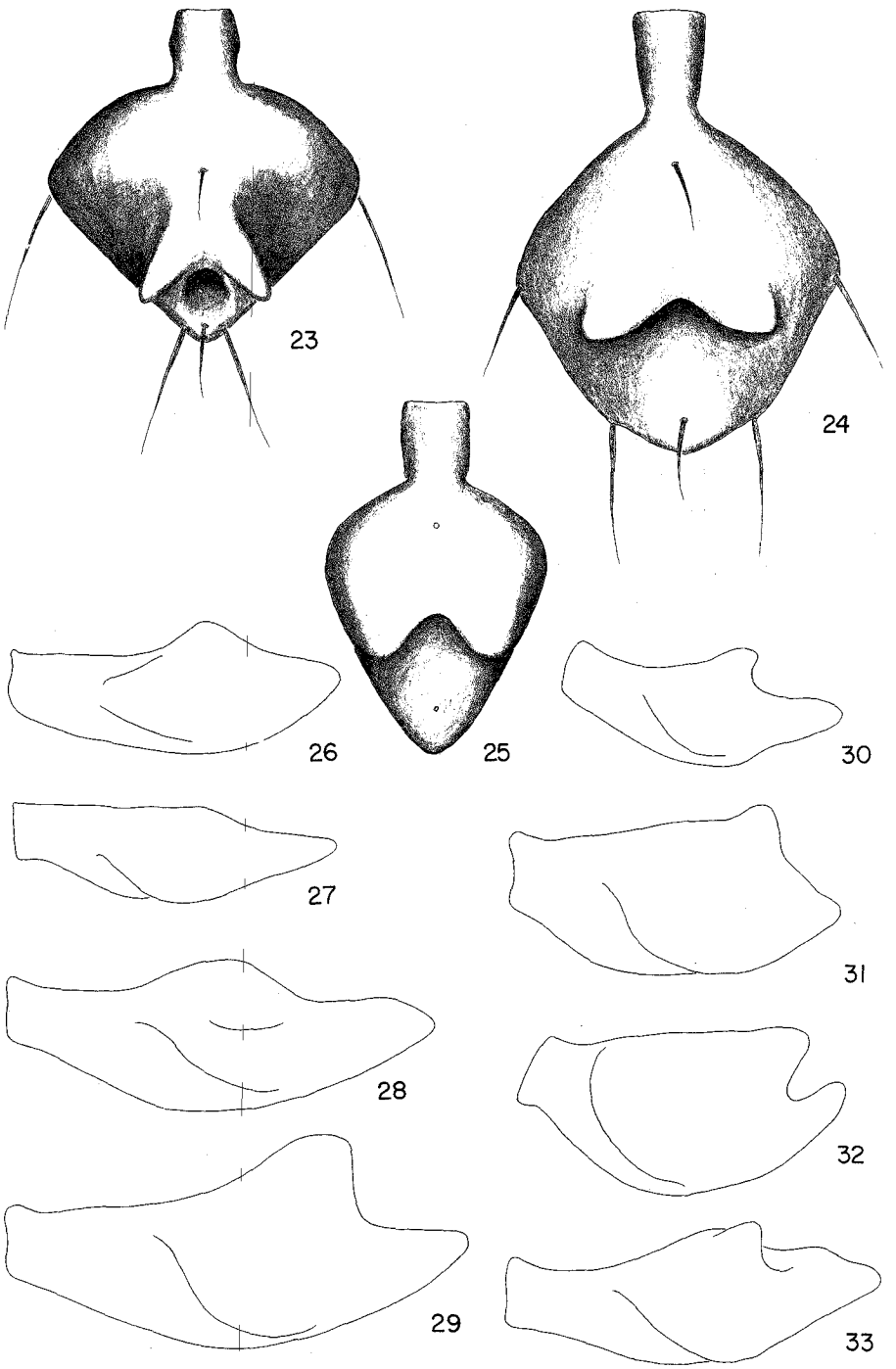
Comparisons.—*S. decui* is larger and has proportionately longer pedipalps and first legs than *S. dumitrescoae* its closest relative. The variability in pedipalp length in other species, however, and lack of adequate sample size of either of these species make diagnosis on the basis of pedipalp length questionable. The greater development of basolateral elevations on the flagellum of *S. decui* is probably more reliable. *S. dumitrescoae* lacks the large tibial seta on the pedipalps which apposes the tarsus-basitarsus in *S. decui*.

Distribution.—Known only from Cueva La Pluma, Matanzas, and San Antonio de los Banños, Habana, Cuba.

Remarks.—Although we have not seen the type specimens of this species, there is little doubt but that the specimen from San Antonio de los Baños is conspecific with *S. decui*. The shape of the male flagellum and pedipalps of the specimen examined agrees very closely with the drawings of these structures in Dumitresco (1977).

Table 6.—Measurements (mm) of three species of the *dumitrescoae* group: 1, one male, *S. insignis*; 2, one female, *S. insignis*; 3, two males, *S. peckorum*; 4, three females, *S. peckorum*; 5, three males, *S. viridis*; 6, three females, *S. viridis*. Except as otherwise noted all measurements are of lengths.

	1	2	3	4	5	6
Carapace	1.01	1.00	1.24-1.31	1.22-1.28	1.31-1.35	1.38-1.42
Flagellum						
Length	0.37	0.19	0.46-0.49	0.33-0.37	0.43-0.47	0.35-0.36
Width	0.23	-	0.35-0.37	-	0.40-0.44	-
Leg I						
Femur	1.03	0.86	1.34-1.54	1.24-1.35	1.25-1.38	1.20-1.24
Patella	1.26	1.06	1.75-1.86	1.45-1.62	1.52-1.69	1.36-1.48
Tibia	0.87	0.75	1.19-1.35	1.07-1.13	1.10-1.21	1.03-1.07
Tarsus-basitarsus	0.71	0.66	0.97-1.09	0.83-0.87	0.99-1.00	0.88-0.93
Leg II						
Femur	0.71	0.65	0.93-1.07	0.89-0.94	0.92-0.93	0.92-0.96
Patella	0.40	0.37	0.51-0.57	0.45-0.51	0.51-0.56	0.53-0.55
Tibia	0.44	0.37	0.58-0.66	0.52-0.58	0.55-0.56	0.54-0.56
Basitarsus	0.40	0.33	0.64-0.68	0.51-0.57	0.51-0.61	0.50-0.54
Leg III						
Femur	0.62	0.55	0.77-0.89	0.76-0.82	0.78-0.86	0.79-0.85
Patella	0.28	0.26	0.36-0.42	0.36-0.38	0.35-0.41	0.33-0.39
Tibia	0.26	0.25	0.43-0.44	0.40-0.43	0.40-0.46	0.39-0.44
Basitarsus	0.40	0.37	0.58-0.65	0.52-0.55	0.54-0.59	0.51-0.52
Leg IV						
Femur	0.96	0.93	1.30-1.43	1.00-1.24	1.27-1.34	1.27-1.31
Patella	0.44	0.41	1.09-1.28	0.54-0.56	0.58-0.63	0.58-0.62
Tibia	0.64	0.51	0.82-0.97	0.76-0.85	0.82-0.87	0.80-0.86
Basitarsus	0.59	0.54	0.75-0.87	0.71-0.74	0.75-0.79	0.73-0.75



Figs. 23-33.–Male flagella of the *dumitrescoae* group: 23-25, dorsal view: 23, *S. biconourus*; 24, *S. peckorum*; 25, *S. insignis*; 26-33, lateral views: 26, *S. decui*; 27, *S. dumitrescoae*; 28, *S. brevipatellatus*; 29, *S. longipalpus*, 30, *S. cousinensis*; 31, *S. primibiconourus*; 32, *S. gladiger*; 33, *S. desecheo*.

Schizomus cousinensis, new species
(Figs. 8, 13, 30, 68)

Description.—Male. Color brownish. Carapace with two pairs of dorsal and two apical setae. Eyespots indistinct. Anterior sternum with 11 bifid setae. Abdominal terga I-VII with two setae, terga VIII-IX with four setae, segment XII with slightly rounded posterodorsal process. Vestigial stigmata darker than sterna. Flagellum spade shaped, with a pair of subdistal depressions flanked by two small, but well-defined elevations. Pedipalpal trochanter not produced distally, but it and other palpal segments elongate, but without armature. Tarsal-basitarsal spurs about 1/6, claw about 1/4 length of tarsus-basitarsus. Tarsal-basitarsal segments of leg I of the following approximate proportions: 35-7-8-6-8-8-18. Other leg measurements given in Table 4.

Female. Carapace with three pairs of dorsal setae. Flagellum with four sections. Pedipalps not elongate. Lateral spermathecae twice length of medians. Laterals terminate in large, highly sclerotized bulbs.

Type data.—Holotype male and allotype female taken in Cousin's Cove Cave No. 1, Cousin's Cove, Hanover Parish, Jamaica, 31 August 1974 (S. Peck) (AMNH). Paratype male and female with same data (TTU).

Comparisons.—See under *S. primibiconourus*.

Distribution.—Known only from the type locality.

Etymology.—The specific name is an adjectival form taken from Cousin's Cove Cave, meaning belonging to.

Remarks.—See under *S. primibiconourus*.

Variations.—The holotype possesses extremely long pedipalps, but those of the male paratype are short and very much like those of the allotype and female paratype.

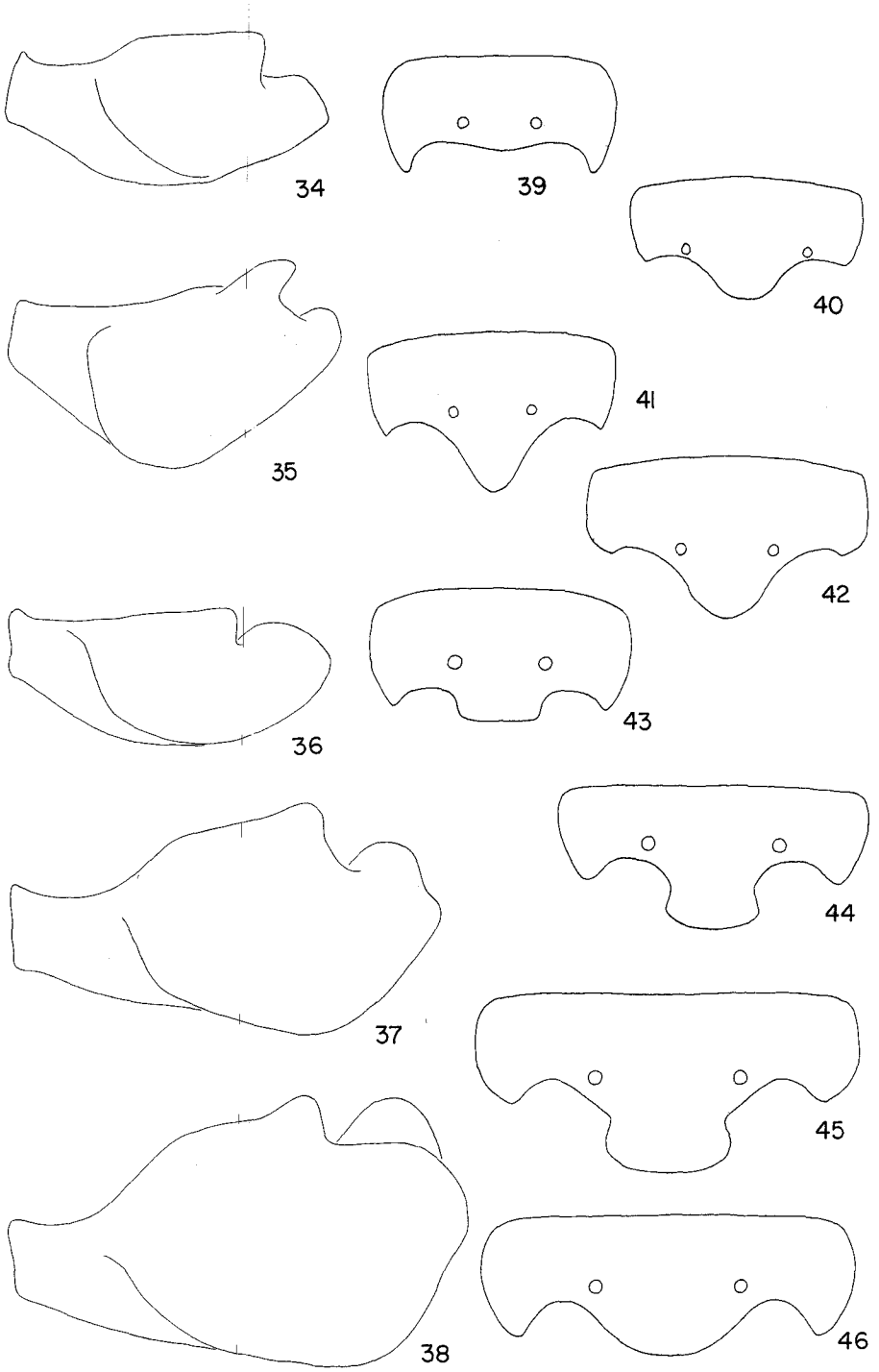
Schizomus primibiconourus, new species
(Figs. 8, 14, 31, 39, 52)

Description.—Male. Color brownish. Carapace with two pairs of dorsal and two apical setae. Eyespots indistinct. Anterior sternum with 11 bifid setae. Abdominal terga I-VII with two setae, terga VIII-IX with four setae, segment XII with slight emargination of posterodorsal process. Vestigial stigmata darker than sterna. Flagellum spade shaped, with distal depression flanked by two small, but well-developed elevations. Pedipalpal trochanter slightly produced apically, not elongate, other segments slightly elongate, but without armature. Tarsal-basitarsal spurs about 1/5, claw about 1/3 length of tarsus-basitarsus. Tarsal-basitarsal segments of leg I of the following approximate proportions: 43-7-8-11-9-10-19. Other leg segment measurements given in Table 4.

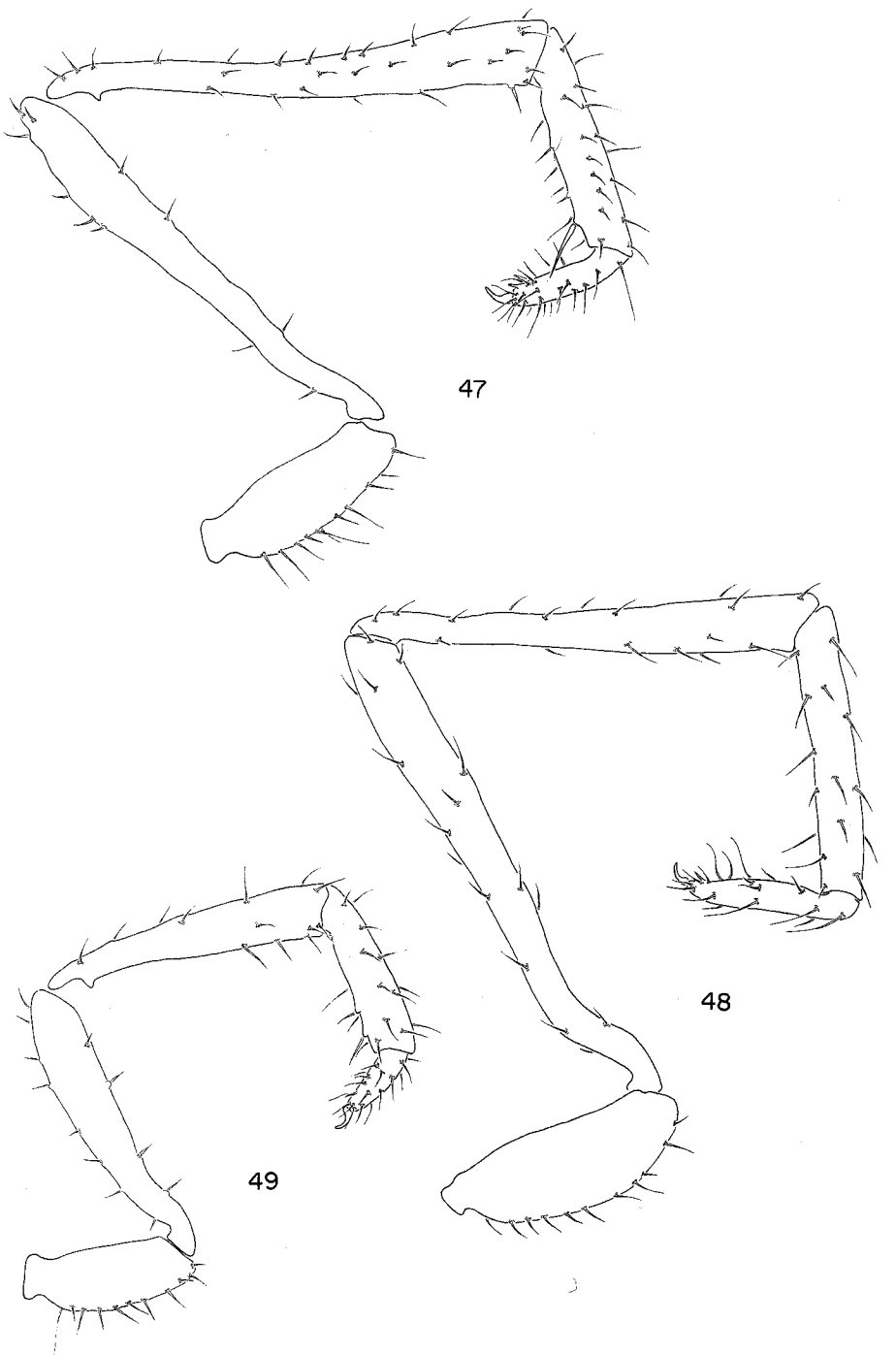
Female unknown.

Type data.—Holotype male taken in Oxford Cave, Auchtembeddie, Manchester Parish, Jamaica, 4-8 April 1968 (S. Peck and A. Fiske) (AMNH). Paratype male taken with the holotype (TTU). Paratype male taken in St. Claire Cave, 1.5 mi. SW Ewarton, St. Catherine Parish, Jamaica, 7 April 1968 (S. Peck and A. Fiske) (AMNH).

Comparisons.—This species may most readily be distinguished from its closest relative, *S. cousinensis*, by the shape of the male flagellum. *S. primibiconourus* has a single flagellar depression, whereas *S. cousinensis* has a pair of depressions. The development of the elevations lateral to the depressions distinguishes *S. primibiconourus* from *S. decui* and *S. dumitrescoae*.



Figs. 34-46.–Parts of male schizomids of the *dumitrescoae* group: 34-38, lateral views of flagella: 34, *S. monensis*; 35, *S. biconourus*; 36, *S. insignis*; 37, *S. peckorum*; 38, *S. viridis*; 39-46, dorsal views of posterodorsal abdominal process: 39, *S. primibiconourus*; 40, *S. gladiger*; 41, 42, *S. biconourus*; 43, *S. insignis*; 44, *S. peckorum* 45, 46, *S. viridis*.



Figs. 47-49.–Lateral views of male right pedipalp of the *dumitrescoae* group: 47, *S. decui*; 48, *S. insignis*; 49, *S. dumitrescoae*.

Distribution.–This species is known only from Oxford Cave, Manchester Parish, and St. Claire Cave, St. Catherine Parish, Jamaica.

Etymology.–The specific name is from the Latin *primi-* meaning first, *bi* meaning two, the Greek *cono-* meaning cone and *urus* meaning tail. This name describes the primitive condition of the pair of cone-shaped elevations on the flagellum of the male.

Remarks.–While this species and *S. cousinensis* are cladistically closer to *S. longipalpus* and *S. brevipatellatus* they more strongly resemble members of the *dumitrescoae* complex. This is accounted for by the remarkable variation in size and pedipalpal characters in *S. longipalpus* and *S. brevipatellatus*.

The middle pair of dorsal carapacial setae are apparently in a transition state in *S. primibiconourus*. Most species in the *dumitrescoae* group show a reduction in size of this pair.

Variation.–The holotype has a very small seta present on the right side where the middle pair of dorsal carapacial setae occur in other species. A paratype has one on the left side.

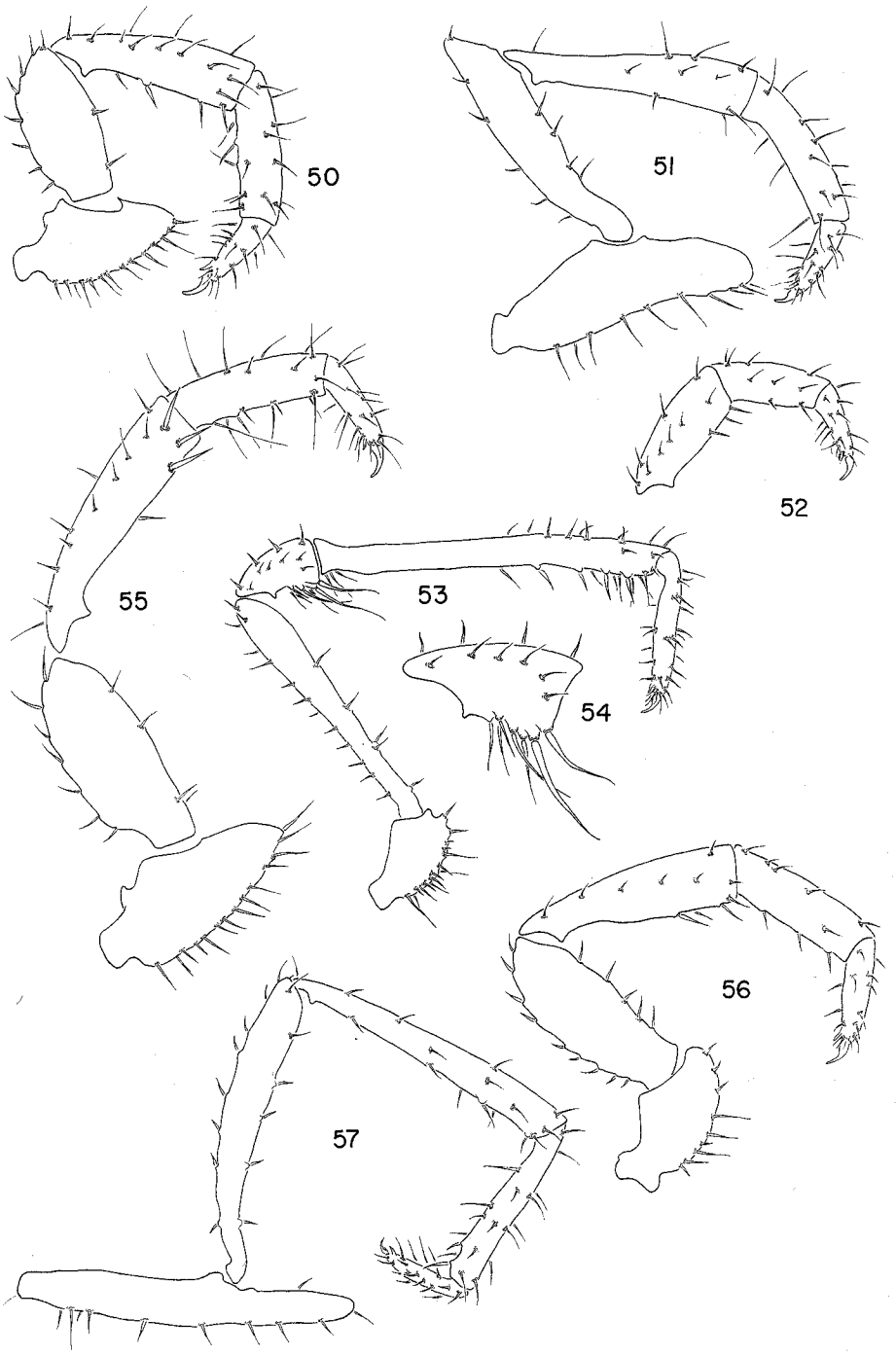
Schizomus longipalpus, new species
(Figs. 8, 12, 29, 57)

Description.–Male. Color brownish. Carapace with two pairs of dorsal and two apical setae. Eyespots vaguely triangular, irregular, but with distinct borders. Anterior sternum with 13 bifid setae. Abdominal terga I-VII with two setae, terga VIII-IX with four setae, segment XII with slight development of posterodersal process. Vestigial stigmata darker than sterna. Flagellum spade shaped, with distomedian depression flanked basolaterally by distinct elevations. Pedipalpal trochanter extremely long and extremely produced distally. Other segments elongate, but unarmed, tibia with a large seta apposible to tarsus-basitarsus. Tarsal-basitarsal spurs about 1/10, claw about 1/4 length of tarsus-basitarsus. Tarsal-basitarsal segments of leg I of the following approximate proportions: 59-10-13-12-13-13-24. Other leg segment measurements given in Table 4.

Female unknown.

Type data.–Holotype male taken at La Vestite, Haiti (6-7000 ft.), 23 September 1916 (Darlington); two paratype males taken at Furey, Haiti, during 1912-1913 (W. M. Mann). All specimens in MCZ.

Comparisons.–*S. longipalpus* is similar in the development of the male pedipalps to other species of the group, except in the extreme elongation of the trochanter, both proximally and distally. Its closest relatives are *S. primibiconourus* and *S. brevipatellatus*. *S. longipalpus* is much larger than *S. primibiconourus*, which also has only slightly elongated palpal segments and a better-developed median flagellar pit, but smaller lateral elevations. *S. brevipatellatus* is somewhat larger than *S. longipalpus* and the flagellum lacks the median pit. The extreme elongation of the pedipalps in the latter two species are probably not homologous developments. The trochanter of *S. longipalpus* is extremely long, but the other segments are not out of the ordinary for the group. The elongation of the pedipalps in *S. brevipatellatus* is achieved by attenuation of the femur and tibia, with the patella being extremely short. The shape of the pedipalps of *S. longipalpus* is very similar to that of *S. digitiger* Dumitresco from Cuba. The shape of the male flagella is also very similar in these two species. They may, however, be readily separated by the presence of two pairs of dorsal carapacial setae in *S. longipalpus* as opposed to three pairs in *S. digitiger*.



Figs. 50-57.–Lateral views of male right pedipalp of the *dumitrescoae* group: 50, *S. biconourus*; 51, *S. gladiger*; 52, *S. primibiconourus*, trochanter and femur omitted; 53, *S. brevipatellatus*; 54, *S. brevipatellatus*, patella only; 55, *S. biconourus*; 56, *S. desecheo*; 57, *S. longipalpus*.

Distribution.–This species is known only from La Vestite and Furey, Haiti.

Etymology.–The specific name comes from the Latin *longi-* meaning long, and palp.

Remarks.–As in *S. brevipatellatus* the remarkable development of the pedipalps may be related to some unusual food source. The great extension of the trochanter in effect sets the apposible parts of the pedipalps some distance from the body proper.

Schizomus brevipatellatus, new species
(Figs. 8, 11, 28, 53-54)

Description.–Male. Color brownish. Carapace with two pairs of dorsal and two apical setae. Eyespots present, but indistinct. Anterior sternum with 13 bifid setae. Abdominal tergum I with two setae, tergum II with four setae, terga III-VI with two setae, terga VII-IX with six setae, segment XII with slight development of posterodorsal process. Vestigial stigmata much darker than sterna. Flagellum lanceolate, slightly dorsally compressed, with a median swelling flanked by lateral pits. Pedipalpal trochanter slightly produced distally, but short; patella short; other segments extremely long, but unarmed. Tarsal-basitarsal spurs about 1/10, claw about 1/5 length of tarsus-basitarsus. Tarsal-basitarsal segments of leg I of the following approximate proportions: 55-9-11-11-14-14-30. Other leg measurements given in Table 5.

Female unknown.

Type data.–Holotype male taken at Cape Haitien, Haiti, January 1913 (W. M. Mann) (MCZ).

Comparisons.–See under *S. longipalpus*.

Distribution.–Known only from the type locality.

Etymology.–The specific name comes from the Latin *brevi-* meaning short, and patella.

Remarks.–The form of the pedipalps is unique among the schizomids. The patella is extremely shortened, and apparently the joint connecting it with the tibia is inflexible. This unique structure probably reflects a novel function of the pedipalp, at least in so far as the apposition of articles. It may be that they serve to allow the males of this species to utilize a food source which is necessarily held away from the body, such as ants or other relatively defensive arthropods.

The flagellum of *S. brevipatellatus* departs greatly from those of the remainder of the group. While this species is similar in other respects to *S. longipalpus* it is probable that the highly modified pedipalps occurred independently in the two species, since the elongation is accomplished in radically different ways in the two species.

Schizomus gladiger Dumitresco
(Figs. 8, 15, 32, 40, 51, 66)

Schizomus gladiger Dumitresco, 1977:147, 150, 153-155, 157, fig. 6.

Description.–Male. Color greenish. Carapace with three pairs of evenly spaced dorsal and two apical setae. Eyespots round to distinctly triangular, well defined. Anterior sternum with 12 bifid setae. Abdominal terga I-VII with two setae, terga VIII-IX with four setae, segment XII with rounded posterodorsal process. Vestigial stigmata slightly

darker than sterna. Flagellum triangular, with slight apical depression flanked basolaterally and distally by elevations. Pedipalpal trochanter greatly enlarged and produced distally; femur elongate and produced beyond insertion of patella; patella, tibia, and tarsus-basitarsus elongate. Tarsal-basitarsal spurs about 1/8, claw about 1/3 length of tarsus-basitarsus. Tarsal-basitarsal segments of leg I of the following approximate proportions: 30-6-6-6-7-8-19. Other leg segment measurements given in Table 5.

Female. No posterodorsal abdominal process. Flagellum with four articles. Pedipalps not elongate. Lateral spermathecae about twice as long as medians, both with terminal sclerotized bulbs.

Type locality.—Cueva de Banega, vallée de la riviére Río Mogote, á 2 km de la localité Matias, Provincia de Oriente, Cuba.

Specimens examined.—Two males, two females, and one immature taken at El Marra, Santiago, Cuba, 22 May 1972 (Luis F. de Armas) (IZACC).

Comparisons.—Although this species is most similar in several respects to *S. desecheo* and *S. monensis*, the median flagellar depression is better developed than in the latter two species. The development of the femur of the male pedipalp is unique in being produced beyond its insertion with the patella. *S. gladiger* is distinguished from the males of other Cuban species by the reduction of the median apical depression. This depression is well developed in *S. decui* and *S. biconourus*. Males of *S. rowlandi* Dumitresco and *S. orghidani* Dumitresco apparently lack both the depression and the dorsal elevations.

Distribution.—Known only from Cueva de Banega and El Marra, Cuba.

Remarks.—The articulation of the femur-patellar joint of the pedipalp in male schizomids is probably usually flexible through nearly 180°. The modification of this joint in *S. gladiger* is such that flexure much past a right angle is impossible. Although we have not seen the type specimen of *S. gladiger* the illustrations by Dumitresco (1977) and the geographic proximity of the two collections leave little doubt but that the specimens examined belong to this species.

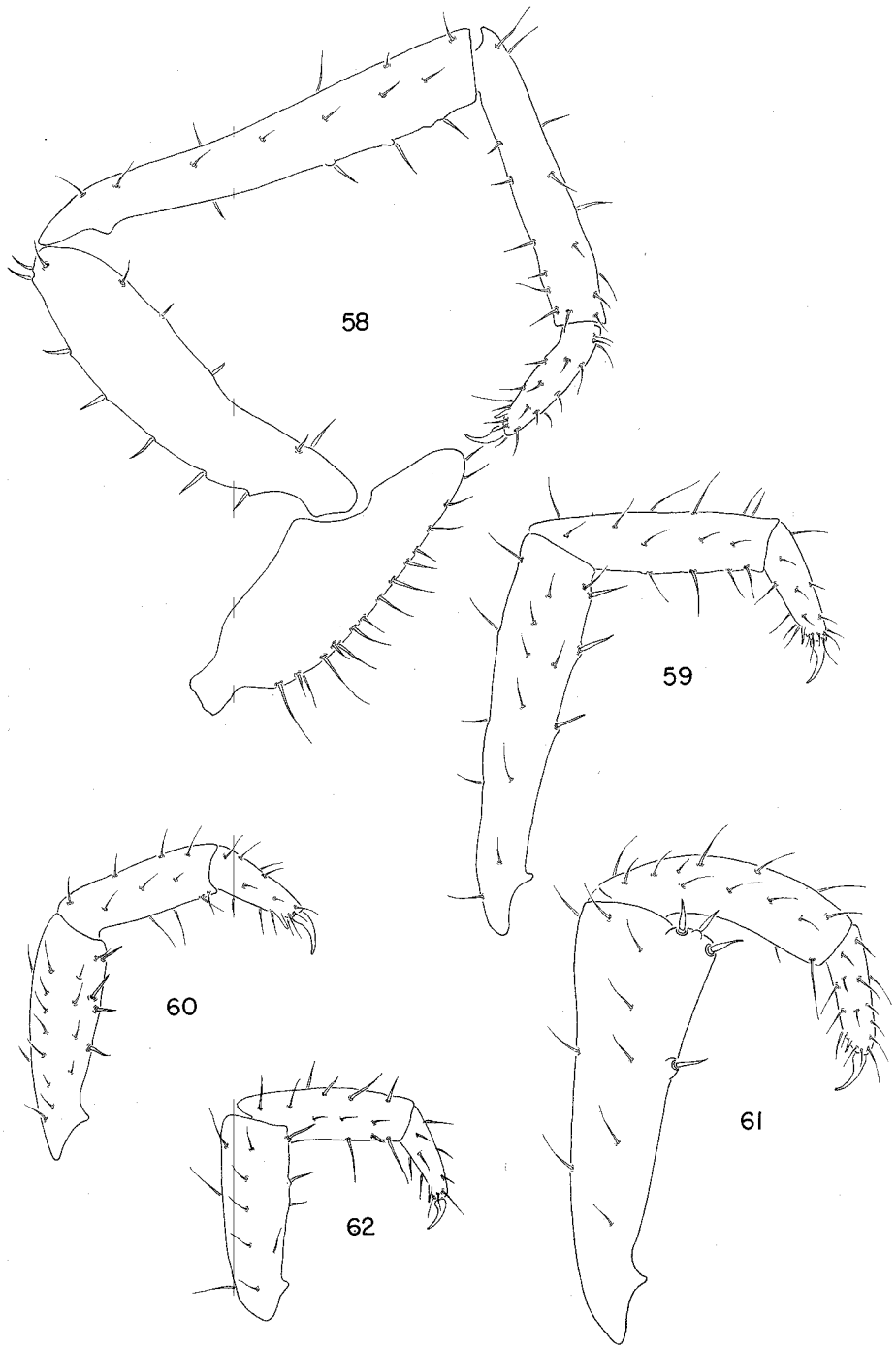
Variation.—The eyespots of this species may vary from round to triangular. So few specimens are available, however, that the typical condition, if one exists, cannot be ascertained.

Schizomus monensis, new species
(Figs. 8, 17, 34, 67)

Description.—Male. Color greenish. Carapace with three pairs of dorsal and two apical setae. Eyespots indistinct. Anterior sternum with 11 bifid setae. Abdominal terga I-VII with two setae, terga VIII-IX with four setae, segment XII with well-developed, truncate posterodorsal process. Vestigial stigmata darker than sterna. Flagellum spade shaped, thick, with two mediolateral and distal vague elevations, median pit vague or absent. Pedipalpal trochanter produced distally; no segments elongate. Tarsal-basitarsal spurs about 1/6, claw about 1/3 length of tarsus-basitarsus. Tarsal-basitarsal segments of leg I of the following approximate proportions: 37-6-7-7-8-10-19. Other leg segment measurements given in Table 5.

Female. Flagellum with four articles. Lateral spermathecae about one and one-half times as long as medians, laterals terminate in large sclerotized blubs.

Type data.—Holotype male and allotype female taken in Cueva del Agua, Mona Island, Puerto Rico, 3 June 1974 (S. Peck); paratype male, four females, and one immature



Figs. 58-62.–Male right pedipalp of the *dumitrescoae* group: 58-60, lateral views of *S. viridis*; 61, mesal view of *S. viridis*; 62, lateral view of *S. peckorum*.

taken in Cueva Dona Gena, Mona Island, 5 June 1974 (S. Peck); paratype female taken in Cueva Negro, Mona Island, 3 June 1974 (S. Peck). All specimens deposited in the AMNH.

Comparisons.–Males of this species can be distinguished from those of its closest relative, *S. desecheo*, by the much thicker flagellum and the less distinct eyespots. The middle pair of dorsal carapacial setae are smaller in *S. monensis* than in *S. desecheo*. Otherwise the species are very similar. For additional comparisons refer to *S. gladiger*.

Distribution.–This species is known from three caves on Mona Island, Puerto Rico.

Etymology.–The specific name is an adjectival form taken from Mona Island, meaning belonging to.

Variation.–The female allotype has four pairs of dorsal carapacial setae, whereas the other female paratypes have three pairs.

Schizomus desecheo, new species
(Figs. 8, 16, 33, 56)

Description.–Male. Color greenish. Carapace with three pairs of dorsal and two apical setae. Eyespots distinct, angular. Anterior sternum with 10 bifid setae. Abdominal terga I-VII with two setae, terga VIII-IX with four setae, segment XII with well-developed, truncate posterodorsal process. Vestigial stigmata distinctly darker than sterna. Flagellum lanceolate, somewhat dorsally compressed with two mediolateral distinct elevations, median pit vague or absent. Pedipalpal trochanter slightly elongate, not produced distally, all other segments only slightly elongate. Tarsal-basitarsal spurs about 1/7, claw about 1/3 length of tarsus-basitarsus. Tarsal-basitarsal segments of leg I of the following approximate proportions: 38-8-8-9-9-10-23. Other leg segment measurements given in Table 5.

Female unknown.

Type data.–Holotype male and paratype immature taken on Desecheo Island, Puerto Rico, 29 March 1961 (J. R. Gorham) (MCZ).

Comparisons.–See under *S. monensis* and *S. gladiger*.

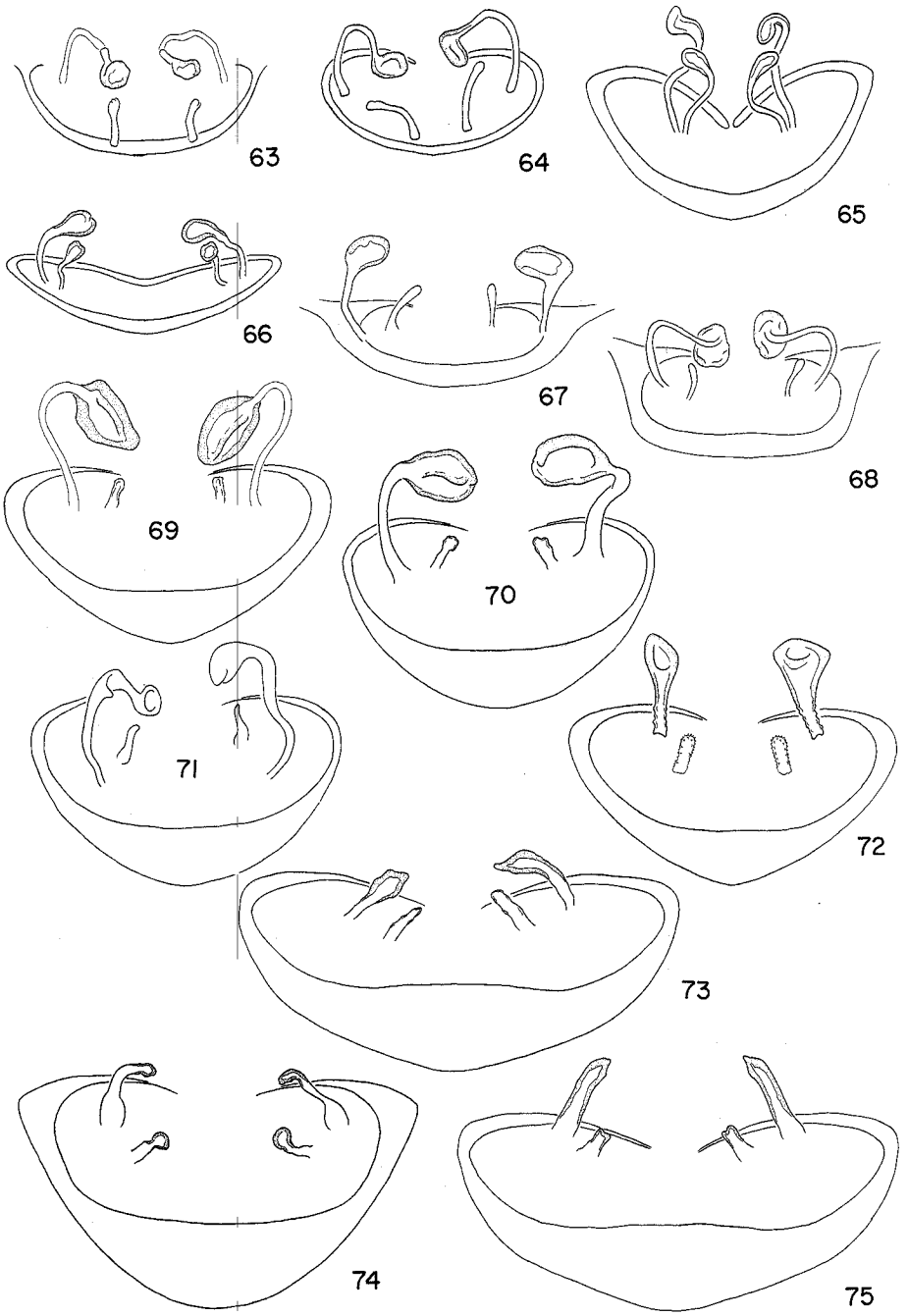
Distribution.–Known only from the type locality.

Etymology.–The specific name refers to Desecheo Island and is used as a noun in apposition.

Schizomus biconourus, new species
(Figs. 8, 23, 35, 41-42, 50, 55, 65)

Description.–Male. Color greenish. Carapace with three pairs of dorsal and two apical setae; the dorsals in a tight basal group. Eyespots ovoid. Anterior sternum with 12 bifid setae. Abdominal terga I-VII with two setae, terga VIII-IX with four setae, segment XII with well-developed, truncate posterodorsal process. Vestigial stigmata lighter than sterna. Flagellum triangular, with distal depression flanked by pair of well-developed elevations. Pedipalpal trochanter produced distally, armed with a dorsal spur; other segments elongate, but unarmed. Tarsal-basitarsal spurs about 1/8, claw about 1/3 length of tarsus-basitarsus. Tarsal-basitarsal segments of leg I of the following approximate proportions: 34-6-7-8-7-10-21. Other leg segment measurements given in Table 5.

Female. Dorsal carapacial setae not grouped tightly. Flagellum with four articles. Pedipalps not elongate or armed. Lateral spermathecae somewhat longer than the medians, the origins closely situated and lobes slightly overlapping in ventral view. Apex of lateral and median spermathecae expanded into slightly sclerotized bulbs.



Figs. 63-75.–Female spermathecae of the *dumitrescoae* group: 63, 64, *S. dumitrescoae*; 65, *S. biconourus*; 66, *S. gladiger*; 67, *S. monensis*; 68, *S. cousinensis*; 69, 70, *S. peckorum*; 71, *S. insignis*; 72-75, *S. viridis* from various localities: 72, Pedro Great Cave, Clarendon Parish; 73, the type locality; 74, Abby Cave, Manchester Parish; 75, St. Claire Cave, St. Catherine Parish.

Type data.—Holotype male and allotype female taken at Cienfuegos, Soledad, Cuba, 3 September 1972 (Luis F. de Armas) (IZACC); male paratype taken in Soledad, Cuba, 31 July 1933 (J. A. Weber) (MCZ).

Comparisons.—The elevations proximal to the distal flagellar depressions in the males are highly developed in *S. biconourus*. Another Cuban species, *S. negreai* Dumitresco, which we have not seen, seems to possess a lesser, but nonetheless distinct, development of these elevations. Illustrations of *S. negreai* show the flagellum to be much less triangular in shape than in *S. biconourus*. The spermathecae of the two species are apparently very similar.

Distribution.—This species is known only from Soledad, Cuba.

Etymology.—The specific name is from the Latin *bi* meaning two, the Greek *con-* meaning cone and *urus* meaning tail. This name describes the morphology of the flagellum of the male of this species.

Schizomus insignis Hansen
(Figs. 8, 25, 36, 43, 48, 71)

Schizomus insignis Hansen (in Hansen and Sörensen) 1905:11, 26, 39, 47-49, 50, 74; Mello-Leitão 1931:18; Giltay 1935:6; Takashima 1943:93; Remy 1961:506.

Description.—Male. Color greenish. Carapace with three pairs of dorsal and two apical setae. Eyespots oval, but indistinct. Anterior sternum with 11 entire setae. Abdominal terga I-VII with two setae, terga VIII-IX with four setae, segment XII with well-developed, truncate posterodorsal process. Vestigial stigmata almost indistinguishable from sterna. Flagellum spade shaped, with two lateral and a median process separated by a median pit. Pedipalpal trochanter greatly elongate, but not produced distally; other segments elongate and unarmed. Tarsal-basitarsal spurs about 1/10, claw about 1/6 length of tarsus-basitarsus. Tarsal-basitarsal segments of leg I of the following proportions: 36-7-8-8-7-11-18. Other leg segment measurements given in Table 6.

Female. Flagellum with four articles. Pedipalps not elongate. Lateral spermathecae about four times longer than medians. Laterals terminate in highly sclerotized bulbs.

Type data.—Male and immature cotypes taken in Martinique by E. Simon (UZM, examined); female cotype taken in Martinique by E. Simon (MNHN, examined).

Comparisons.—*S. insignis* is about the size of and has similar pedipalps to those of *S. dumitrescoae* and *S. decui*. The latter species are more primitive, however, and lack the greenish color, the pedipalpal trochanter spur, and the median pair of dorsal setae.

Distribution.—Known only from Martinique, Lesser Antilles.

Remarks.—The eyespots are rather hard to see since the types are now quite bleached. Hansen (in Hansen and Sörensen, 1905) describes them as "moderately large, short but broad, whitish." How they compare to other species of the *dumitrescoae* groups is uncertain.

***Schizomus peckorum*, new species**
(Figs. 8, 24, 37, 44, 62, 69-70)

Description.—Male. Color greenish. Carapace with three pairs of dorsal and two apical setae, the median dorsals very reduced. Eyespots oval, well defined. Anterior sternum

with 13 bifid setae. Abdominal terga I-VII with two setae, terga VIII-IX with four setae, segment XII with well-developed, truncate posterodorsal process. Vestigial stigmata darker than sterna. Flagellum nearly globose, with two lateral and one median processes separated by median pit. Pedipalpal trochanter produced distally; other segments slightly elongate, but unarmed. Tarsal-basitarsal spurs about 1/7, claw about 1/3 length of tarsus-basitarsus. Tarsal-basitarsal segments of leg I of the following approximate proportions: 50-8-11-10-11-12-23. Other leg segment measurements given in Table 6.

Female. Flagellum with four articles. Pedipalps not elongate. Lateral spermathecae about five times length of medians, laterals with extreme development of sclerotized bulbs.

Type data.–Holotype male, allotype female, and paratype female taken in Windsor Great Cave, Windsor, 10 mi. S Falmouth, Trelawney Parish, Jamaica, 5 April 1968 (S. Peck and A. Fiske) (AMNH); paratype male and five paratype females taken in Mosley Hall Cave, near Guys Hill, St. Ann Parish, Jamaica, 27 December 1972 (S. and J. Peck) (TTU).

Comparisons.–*S. peckorum* is most similar to *S. viridis* in several respects. *S. peckorum* males, however, have a smaller flagellum, with better-defined elevations. The spermathecae of *S. peckorum* have much larger sclerotized terminal bulbs. In *S. viridis* the laterals have small bulbs and the medians are only slightly shorter.

Distribution.–Known only from two caves in Trelawney and St. Ann Parishes, Jamaica.

Etymology.–The specific name is a patronym given for Drs. Stewart and Jarmila Peck, collectors of this species.

Schizomus viridis, new species
(Figs. 8, 18-22, 38, 45-46, 58-61, 72-75)

Description.–Male. Color green. Carapace with three pairs of dorsal and two apical setae, the median dorsal pair extremely reduced. Eyespots triangular and well defined. Anterior sternum with 13 bifid setae. Abdominal terga I-VII with two setae, terga VIII-IX with four setae, segment XII with well-developed, round to truncate posterodorsal process. Vestigial stigmata darker than sterna. Flagellum globose, with two lateral and a median poorly-defined process, median pit present, but vague. Pedipalpal trochanter produced distally, the other segments elongate. Tarsal-basitarsal spurs about 1/7, claw about 1/3 length of tarsus-basitarsus. Tarsal-basitarsal segments of leg I of the following approximate proportions: 52-8-11-11-10-12-23. Other leg segment measurements given in Table 6.

Female. Flagellum with four articles. Pedipalps not elongate. Lateral spermathecae two or three times longer than medians, the apex of the medians and laterals with small sclerotized bulbs.

Type data.–Holotype male, allotype female, and paratype male, three females, and six immatures taken in Abbey Cave, 2.5 mi. SW Mandeville, Manchester Parish, Jamaica, 24 December 1973 (S. and J. Peck) (AMNH).

Comparisons.–See under *S. peckorum*.

Distribution.–This species is known from St. Ann, St. Catherine, St. Claire, Clarendon, St. Elizabeth, Manchester, and Trelawney Parishes, Jamaica.

Etymology.–The specific name is from the Latin *viridi-* meaning green.

Remarks.–This species is the most highly advanced *dumitrescoae* group member and the most widely distributed species in Jamaica. It inhabits both cave and epigean habitats and has been collected with *S. portoricensis* (Chamberlin), *S. primibiconourus*, and an underscribed species of *Schizomus*.

Variation.–There seems to be substantial geographic variation in the male flagellum and pedipalps and in the female spermathecae of this species, and this species may include several geographical isolates.

Additional records.–Jamaica: St. Ann Parish; Chesterfield Cave, 27 March 1973 (R. Norton, R. Zimmerman), 1 male (TTU), Ken Connell Hole, 8 mi. S Claremont, 19 August 1974 (S. Peck), 1 female, 5 immatures (MCZ), Douglas Castle, Brambribo Cave, 18 August 1974 (S. Peck), 1 male, 1 immature male (AMNH), Douglas Castle, Falling Cave, 18 August 1974 (S. Peck), 1 male, 2 immatures (TTU), Hutchinson Hole Cave, 27 March 1973 (R. Norton, R. Zimmerman), 3 males, 1 female, 5 immatures (AMNH), Thatchfield Light Hole, 28 March 1973 (R. Norton, R. Zimmerman), 7 males, 6 females, 5 immatures (TTU), Thatchfield great Cave, 24 October 1973 (R. Norton), 2 females (AMNH), Cave River Cave, Aenon Town, 2 September 1974 (S. Peck), 4 males, 2 females, 12 immatures (TTU), Mt. Plenty Cave, Goshen, 20 August 1974 (S. Peck), 1 male, 4 females, 4 immatures (AMNH), Goshen (1500 ft.), 25 December 1973 (S. and J. Peck), 1 female (AMNH): St. Catherine Parish; Swansea Cave, 4 November 1973 (R. Norton), 3 males, 1 female, 2 immatures (TTU), St. Claire Cave, 1.5 mi. SW Ewarton, 7 April 1968 (S. Peck, A. Fiske), 1 male, 7 females, 5 immatures (TTU); Clarendon Parish; Jackson Bay Cave, 15 August 1974 (S. Peck), 1 female, 1 immature (AMNH), Jackson Bay Cave, Jackson Bay, 2 August 1974 (S. Peck), 1 male, 1 female, 1 immature (AMNH), Pedro Great Cave, Pedro River, 17 August 1974 (S. Peck), 4 males, 3 females, 2 immatures (MCZ), Pedro Great Cave, Pedro River, 20 December 1972 (S. and J. Peck), 3 males, 1 female, 1 immature (AMNH): St. Elizabeth Parish; Wallingford Sink Cave, Wallingford, 27 August 1974 (S. Peck), 1 male, 3 females, 1 immature (TTU), Peru Cave, 5 mi. ENE Santa Cruz, 23 December 1972 (S. and J. Peck), 1 female (TTU): Trelawney Parish; Drip Cave, 1.5 mi. SSE Stewart Town, 2 April 1968 (S. Peck, A. Fiske), 3 males, 1 female, 2 immatures (MCZ), Windsor Great Cave, 29 March 1973 (R. Norton), 1 immature (AMNH).

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