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COSMOPOLITAN AND PANTROPICAL SPECIES OF THERIDIID SPIDERS (Araneae: Theridiidae)

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Abstract: As a result of study of American theridiid spiders and examination of collections from other parts of the world 16 species are believed cosmopolitan or pantropical. The 16 species are briefly redescribed with their diagnostic features and genitalia illustrated.

A large number of theridiid spiders are cosmopolitan or pantropical. Although these species were described and illustrated in my revisions of American theridiid spiders, it seems desirable to gather the information together. Not only did I not recognize at the time I described them (often under an American name) that many of the species may be widespread, but the need to combine the information has also been demonstrated by the discovery of some species redescribed under new names. The synonymies and descriptions given in the original papers are not included; only the main diagnostic features will be repeated. Several of the commonest species will be pictured in color in a forthcoming book (Levi & Levi 1968) illustrating the features of spider families. Descriptions and a key to genera of the family Theridiidae have been published in a previous paper (Levi & Levi 1962).

Unlike many insect groups, spiders are not well known. Only the spider fauna of northern and central Europe can be said to be well described, and possibly also that of southern New England in the United States. However, spider studies in Europe in the past have been limited by political borders and most revisionary studies by necessity are limited to a continent. Thus faunal studies of far off places, especially island groups, are neglected. Often when descriptions are written, the common occurrence of the spiders on other continents is not recognized. A few spiders are well known to be cosmopolitan and pantropical, such as the jumping spiders *Plexippus paykullii* (Audouin) and *Hasarius adansonii* (Audouin). But it would be difficult for those not knowing these spiders to find illustrations. The tiny *Ostearius melanopygius* (O. P.-Cambridge) (Linyphiidae: Micryphantinae) which was first described from New Zealand, Great Britain, and the Mediterranean is now known from northern Europe. It seems to be common in New England although there is not a single record in American literature.

Of the several theridiid spiders known to be cosmopolitan or pantropical, most have not previously been recognized as such. It has been impossible for this summary to look over

large collections from India, Australia or the Pacific Islands. However, all theridiid spiders accumulated at the Museum of Comparative Zoology during the last 10 years have been examined and all spiders described here are expected to be in the Pacific. I am certain that other species will be found that are worldwide in distribution.

The theridiid generic revisions and this paper have been supported in part by Public Health Research Grant AI-01944 from the National Institute of Allergy and Infectious Diseases. I would like also to thank Dr P. Benoit of Tervuren for the loan of theridiid spiders from St. Helena I., South Atlantic.

Paratheridula pernicios (Keyserling) Figs. 1-4.

Theridion perniciosum Keyserling, 1886, Die Spinnen Amerikas, Theridiidae, **2**: 233, pl. 10, fig. 288, ♀, ♂ (Syntypes from Blumenau, Brazil in Polish Acad. Sci., examined).

Mysmena quadrimaculata Banks, 1896, Trans. Amer. Ent. Soc. **23**: 66 (Holotype ♀, from Florida in MCZ, examined).

Paratheridula quadrimaculata: Levi, 1957, Trans. Amer. Microscop. Soc. **74**: 106, fig. 1-6.

Carapace yellowish with narrow black margin, sternum yellow, eye region dark. Dorsum of abdomen with 3-6 black patches between white pigment spots (fig. 2), sides and venter gray. ♀, total length 1.4-2.2 mm; 1st patella and tibia, 0.88 mm, 4th, 0.83 mm. ♂, total length 1.5 mm; 1st patella and tibia, 1.00 mm, 4th, 0.79 mm.

Female epigynum almost always covered with a secretion which has to be removed. There are two circles separated by a variable distance (fig. 4). Male palpus a simple structure (fig. 1).

It is not certain that this species is pantropical. However, it is very widespread in the Americas from the southern United States to the southern parts of South America. It does not seem to have close relatives in America, and may have been overlooked elsewhere as it is very inconspicuous and lives on the ground.

Theridula gonygaster (Simon) Figs. 5-8.

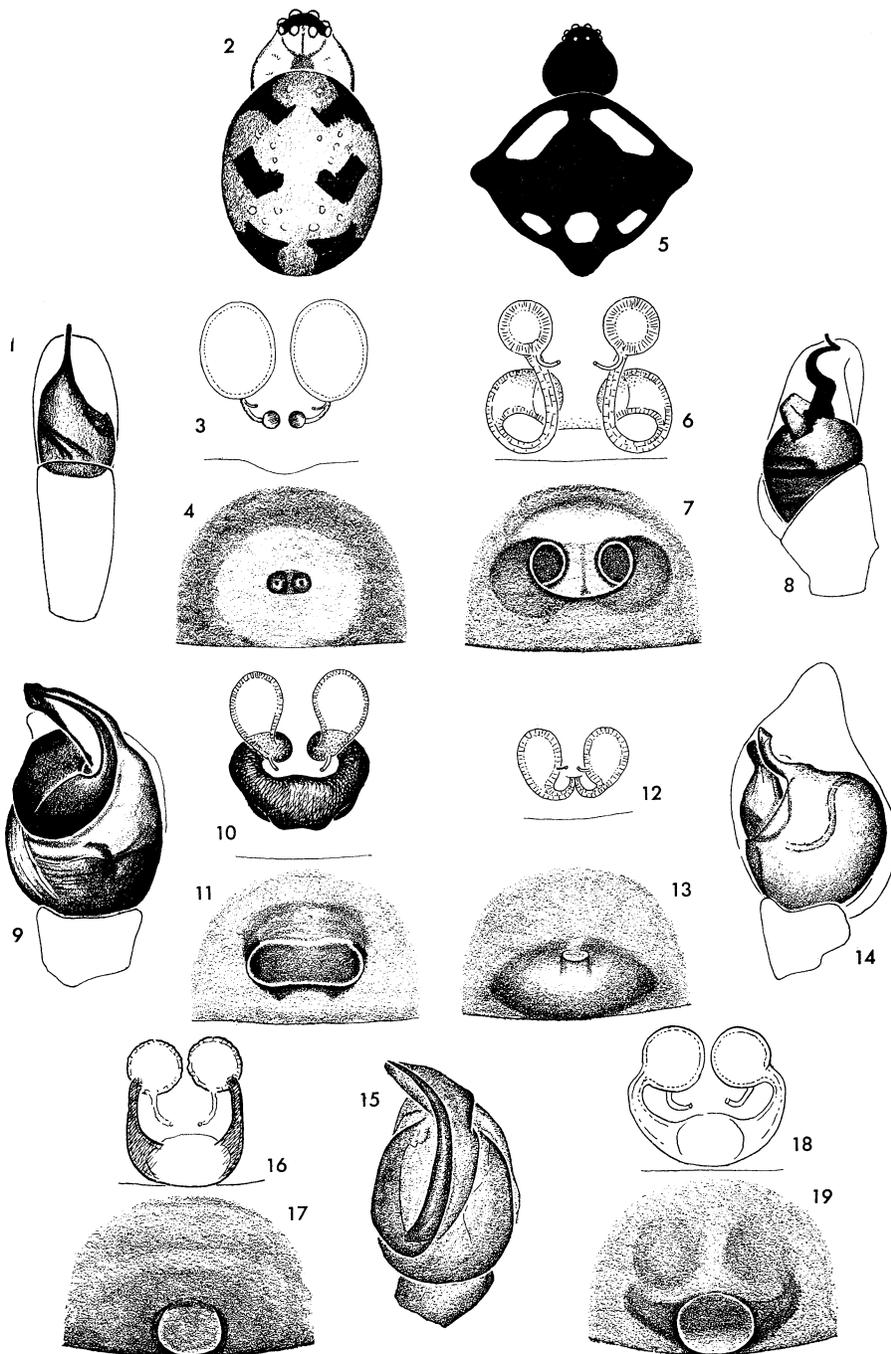
Theridion gonygaster Simon, 1881, Les Arachnides France **5**: 109 (Lectotype ♂, desig. by Levi 1954, probably from Corsica, in Muséum Nat'l d'Hist. Nat., Paris, examined).

Theridula gonygaster: Levi, 1954, Trans. Amer. Microscop. Soc. **73**: 340, figs. 18-22.

Carapace black, sternum usually black, coxae yellow-white, legs black. Abdomen black with a variable number of dorsal white spots (fig. 5). ♀, total length, 1.7-2.5 mm; 1st patella and tibia, 1.0 mm, 4th, 0.9 mm. ♂, total length 1.7 mm; 1st patella and tibia, 1.3 mm, 4th, 0.9 mm.

Epigynum (fig. 7) with 2 large distinct openings separated by their diameter, their posterior borders join. Palpus (fig. 8) with embolus corkscrew-shaped. Abdomen, as in other

Figs. 1-19. 1-4. *Paratheridula pernicios* (Keyserling): 1, left ♂ palpus; 2, ♀ dorsal view, without appendages; 3, ♀ genitalia, dorsal view; 4, epigynum. 5-8. *Theridula gonygaster* (Simon): 5, ♀; 6, ♀ genitalia, dorsal view; 7, epigynum; 8, palpus. 9-11. *Achaearanea tepidariorum* (C. L. Koch): 9, palpus; 10, ♀ genitalia, dorsal view; 11, epigynum. 12-14. *A. acoreensis* (Berland): 12, ♀ genitalia, dorsal view; 13, epigynum; 14, palpus. 15-19. *A. tessellata* (Keyserling): 15, palpus; 16, 18, ♀ genitalia, dorsal view; 17, 19, epigynum.



Theridula, wider than long (fig. 5).

This species is known from the Mediterranean region and tropical America. It is probably widespread. A number of similar species are found in the Americas, but the origin of *T. gonygaster* is uncertain.

***Euryopsis taczanowskii* Keyserling** Figs. 37-41.

Euryopsis taczanowskii Keyserling, 1886, Die Spinnen Amerikas, Theridiidae 2: 47, pl. 12, fig. 160 (Holotype ♀, from Tumbes, Peru in the Polish Acad. Sci., examined).

E. nigripes Banks, 1929, Bull. Mus. Comp. Zool. 69: 86, figs. 47, 60 (Holotype ♀, from Panama Canal Zone, in MCZ).—Levi, 1954, Amer. Mus. Novit. 1666: 24, figs. 38-52.

Carapace grayish yellow to black, legs mostly black except for proximal parts of femora which are yellow-white. Dorsum of abdomen with a black triangle on silver background, sometimes with a black Y on silver. Eyes almost equal in size. Anterior median eyes 1-2 diameters apart, their radius from laterals. Posteromedian eyes 1.5-3.0 diameters apart, 1.0-1.5 from laterals. ♀, total length 2.9 mm; 1st patella and tibia, 0.9 mm, 4th, 0.9 mm. ♂, total length 2.0 mm; 1st patella and tibia, 0.8 mm, 4th, 0.8 mm.

Diagnosis. Palpus (fig. 37) distinct, epigynum (fig. 41) like that of similar species. Eye region wide (fig. 38, 39) compared to other *Euryopsis* species. The female is best recognized by the eyes and internal genitalia (fig. 40).

This species occurs from Utah to southern Brazil in the Americas. The northernmost and most isolated record in the United States is from Pepperell, Middlesex County, Massachusetts on plants near house, August 1966. A male from New Guinea examined may belong to this species. It may also occur in Ceylon; juveniles from there have been examined.

***Achaearanea tepidariorum* (C. L. Koch), House Spider** (in U. S. and Canada)

Figs. 9-11.

Theridium tepidariorum C. L. Koch, 1841, Die Arachniden 8: 75, figs. 646, 648 (Type locality: greenhouses of the botanical gardens at the University of Erlangen, Germany).

Achaearanea tepidariorum: Levi, 1955, Amer. Mus. Novit. 1718: 32, figs. 69-70, 83-84.

Carapace and sternum yellow to brown, legs yellow to brown with darker rings. Abdomen gray with black and white pigment, a white spot behind highest point, surrounded anteriorly by black with dark line running down sides and black chevrons behind with lines running down sides. Venter with 2 light patches enclosing a darker area. ♂ darker than ♀. ♀, total length 5 to 8 mm, of one 6.5 mm; 1st patella and tibia, 4.8 mm, 4th, 3.6 mm. ♂, total length 4 mm; 1st patella and tibia, 4.4 mm, 4th, 2.8 mm.

Epigynum (fig. 11) a transverse oval, with lateral and posterior lips. Internal genitalia (fig. 10) may have to be examined in case of doubt. Palpus (fig. 9) with embolus wide at base, tapering to a fine tip.

Although first described from a greenhouse in Germany, this common American house spider is widespread. Judging by the numerous similar relatives in South America, it probably has come from there, carried around the world by man with plants. In South America it has at times been found unassociated with man. It is common on St. Helena I.

Achaearanea acoreensis (Berland) Figs. 12-14.

Theridion acoreensis Berland, 1932, Ann. Soc. Ent. France **101**: 74, figs. 1, 2♀ (Holotype ♀, from Azores in Muséum Nat'l d'Hist. Nat., Paris).

Achaearanea geochares Levi, 1955, Amer. Mus. Novit. **1718**: 20 (Holotype ♂ from Monterey, Calif., in AMNH).

Carapace yellow to brown or black. Sternum brown. Coxae white, other leg segments banded. Abdomen with black and white, similar to most members of genus. ♀, total length 2.2-3.0 mm; 1st patella and tibia 1.8 mm, 4th 1.3 mm. ♂ total length 1.7-2.4 mm; 1st patella and tibia, 2.1 mm, 4th, 1.1 mm.

Epigynum with a swollen area, with openings anterior (fig. 13). Embolus is to one side of palpus; curved against it is the conductor.

A cosmopolitan species first described from the Azores, common in some parts of California. Specimens have been collected in New Zealand. They are found on St. Helena I.

Achaearanea tessellata (Keyserling) Figs. 15-19.

Theridion tessellatum Keyserling, 1884, Die Spinnen Amerikas, Theridiidae **1**: 48, pl. 2, fig. 27♀ (Holotype ♀, from Nancho, Peru, in Polish Acad. Sci., Warsaw, examined).

Achaearanea terex Levi, 1959, Bull. Mus. Comp. Zool. **121**: 74, fig. 52♂.

A. tessellata: Levi, 1959, *Ibid.* 76, figs. 70-71, ♀.

A. picadoi: Levi, 1959, *Ibid.* 76, figs. 57-60, ♀.

Female carapace yellowish brown, sternum, legs brown. Dorsum of abdomen with a lanceolate brown mark enclosed by a white line from which 2-3 white lines extend down each side, separating brown areas. Venter brown. ♀, total length 4.0 to 4.5 mm; 1st patella and tibia, 2.0 mm, 4th, 1.9 mm. ♂, total length 1.3 mm; 1st patella and tibia, 0.7 mm, 4th, 0.5 mm.

Internal female genitalia diagnostic (figs. 16, 18); epigynum with only oval depression (figs. 17, 19). Palpus (fig. 15) unlike that of other species.

Very similar specimens to the ones collected from the Americas have been found in New Guinea and in Pakistan. It is, however, uncertain whether they are the same species.

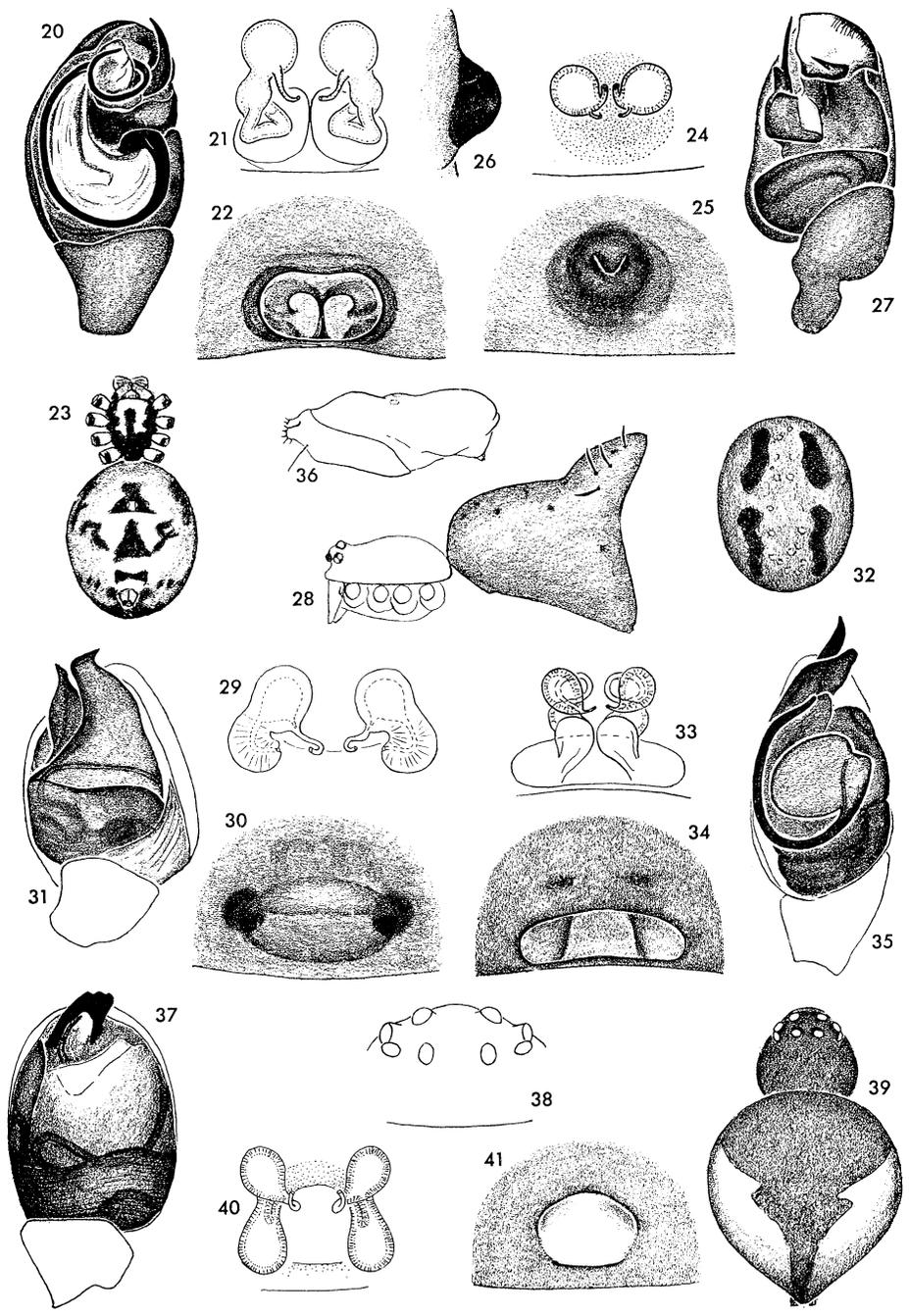
Theridion rufipes Lucas Figs. 24-27.

Theridion rufipes Lucas, 1849, Exploration scientifique de l'Algérie, Zool. **2**(1): 263 (Type locality: Oran, Algiers).—Levi, 1957, Bull. Amer. Mus. Nat. Hist. **112**: 56, figs. 188-193.

Carapace, sternum, legs rich yellow. Abdomen gray with indistinct darker or lighter markings on dorsum. ♀, total length, 4.2-5.3 mm; 1st patella and tibia, 3.5 mm; 4th, 2.8 mm. ♂, total length, 2.8-3.7 mm; 1st patella and tibia, 2.9 mm, 4th, 1.8 mm.

Epigynum (figs. 25, 26) with a black hump in center. The hump, although diagnostic, is of variable shape. Openings may be anterior or on top. Conductor (fig. 27) of palpus with a mesally directed spine.

This is one of the commonest pantropical species. In Florida and South America it is



found in houses in the corners of rooms, tightly appressed to the wall, with its cobweb extending out. In America, where it usually lives in association with man, no close relatives are known, and it is quite certainly introduced.

Theridion adamsoni Berland Figs. 20-23.

Theridion adamsoni Berland, 1935, Bull. B. P. Bishop Mus. **113**: 102, figs. 6-9 (♀ syntypes from Tahiti, in BISHOP, examined).

Theridion hobbsi Gertsch & Archer, 1942, Amer. Mus. Novit. **1171**: 5, fig. 6 (Holotype ♀, from Gainesville, Florida, in AMNH).—Levi, 1957, Bull. Amer. Mus. Nat. Hist. **112**: 62, figs. 198, 199, 209, 213, 214.

Carapace whitish with a black mark in center and a black line around border. Sternum yellow-white, with gray sides. Whitish leg segments with black rings broken dorsally. Dorsum of abdomen with an indistinct median white band, bordered laterally and anteriorly by some black spots; venter with a semicircular black mark on each side. ♀, total length 2.3-3.8 mm; 1st patella-tibia, 2.3 mm, 4th, 1.4 mm. ♂, total length 2.0-2.8 mm; 1st patella, and tibia, 2.0 mm, 4th, 1.0 mm.

Epigynum (fig. 22) with 2 openings on sides of septum lying within large depression. Long coiled embolus (fig. 20) of palpus diagnostic.

This species is not very common. Found in Florida and collected in Africa (Ghana), and on houses in South America, it is common on various Pacific Islands. It has no close relatives in America and is probably introduced.

Coleosoma floridanum Banks Figs. 32-36.

Coleosoma floridana Banks, 1900, Canad. Ent. **32**: 98 (♂ syntypes from Florida, in MCZ, examined).—Levi, 1959, Breviora, Mus. Comp. Zool. **110**: 6, figs. 12-17.

Female cephalothorax including legs yellowish. Abdomen colorless with 2 dorsal longitudinal black stripes (which may be broken into 4 black patches, and which enclose some white pigment). ♂ darker than ♀, abdomen with blackish pigment, constricted with ventral scutum on anterior 1/2 and anterior, dorsal stridulating knobs. ♀, total length 2.2 mm, 1st patella and tibia, 1.1 mm, 4th, 1.1 mm. ♂, total length 1.8 mm; 1st patella and tibia, 1.1 mm; 4th, 0.9 mm.

Epigynum (fig. 34) transparent, very lightly sclerotized and indistinct. Male easier to recognize by shape of its abdomen (fig. 36) than by its palpus (fig. 35).

The females of the spider are commonly found in packages arriving from the tropics. Relatives in America indicate that it may be native to American tropics. Also it is found unassociated with man in Florida, where I have found females under stones. Males run on the ground and are ant mimics (J. Beatty, pers. comm.). It has been described also

Figs. 20-41. 20-23. *Theridion adamsoni* Berland: 20, left ♂ palpus; 21, ♀ genitalia, dorsal view; 22, epigynum; 23, ♀, ventral view. 24-27. *T. rufipes* Lucas: 24, ♀ genitalia, dorsal view; 25, epigynum; 26, epigynum, lateral view; 27, palpus. 28-31. *Chryso pulcherrima* (Mello-Leitão): 28, ♀; 29, ♀ genitalia, dorsal view; 30, epigynum; 31, palpus. 32-36. *Coleosoma floridanum* Banks: 32, ♀ abdomen, dorsal view; 33, ♀ genitalia, dorsal view; 34, epigynum; 35, palpus; 36, abdomen of ♂, lateral view. 37-41. *Euryopsis taczanowskii* Keyserling: 37, palpus; 38, ♀ eyes, frontal view; 39, ♀; 40, ♀ genitalia, dorsal view; 41, epigynum.

under various names. Specimens have been examined from Ghana, Togo, India, New Hebrides.

Chryso pulcherrima (Mello-Leitão) Figs. 28-31.

Argyrodes pulcherrimus Mello-Leitão, 1917, Broteria **15**: 86, figs. 7, 8, ♀ (Holotype ♀, fragments from Rio de Janeiro in Museu Nacional, Rio de Janeiro, examined).

Meotipa clementinae Petrunkevitch, 1930, Trans. Connecticut Acad. Sci. **30**: 212, fig. 61 (Holotype ♀, from Puerto Rico, in Peabody Mus., Yale Univ.).

Chryso clementinae: Levi, 1962, Psyche **69**: 231, figs. 71-75.

Color white, with some scattered black spots on venter of legs and some tiny black spots on dorsum of abdomen. ♀, total length, 2.3 mm; 1st patella and tibia, 2.3 mm, 4th, 1.5 mm. ♂, total length, 2.0 mm; 1st patella and tibia, 3.4 mm, 4th, 2.0 mm.

Abdomen pointed behind, may be armed with long feather-shaped spines. Epigynum (fig. 30) with 2 circular spots, more than their diameter apart, and between them with a depression. Palpus (fig. 31) with a wide conductor.

This widespread pantropical species is almost certainly introduced into the Americas. No close relatives are known from this hemisphere, but it seems widespread. It has been reported from West Africa. It is also believed to occur in the Pacific.

Enoplognatha ovata (Clerck) Figs. 42-45.

Araneus ovatus Clerck, 1757, Svenska Spindlar, p. 58. (Type locality: Sweden).

Enoplognatha ovata: Levi, 1957, Bull. Amer. Mus. Nat. Hist. **112**: 7, figs. 1-10.

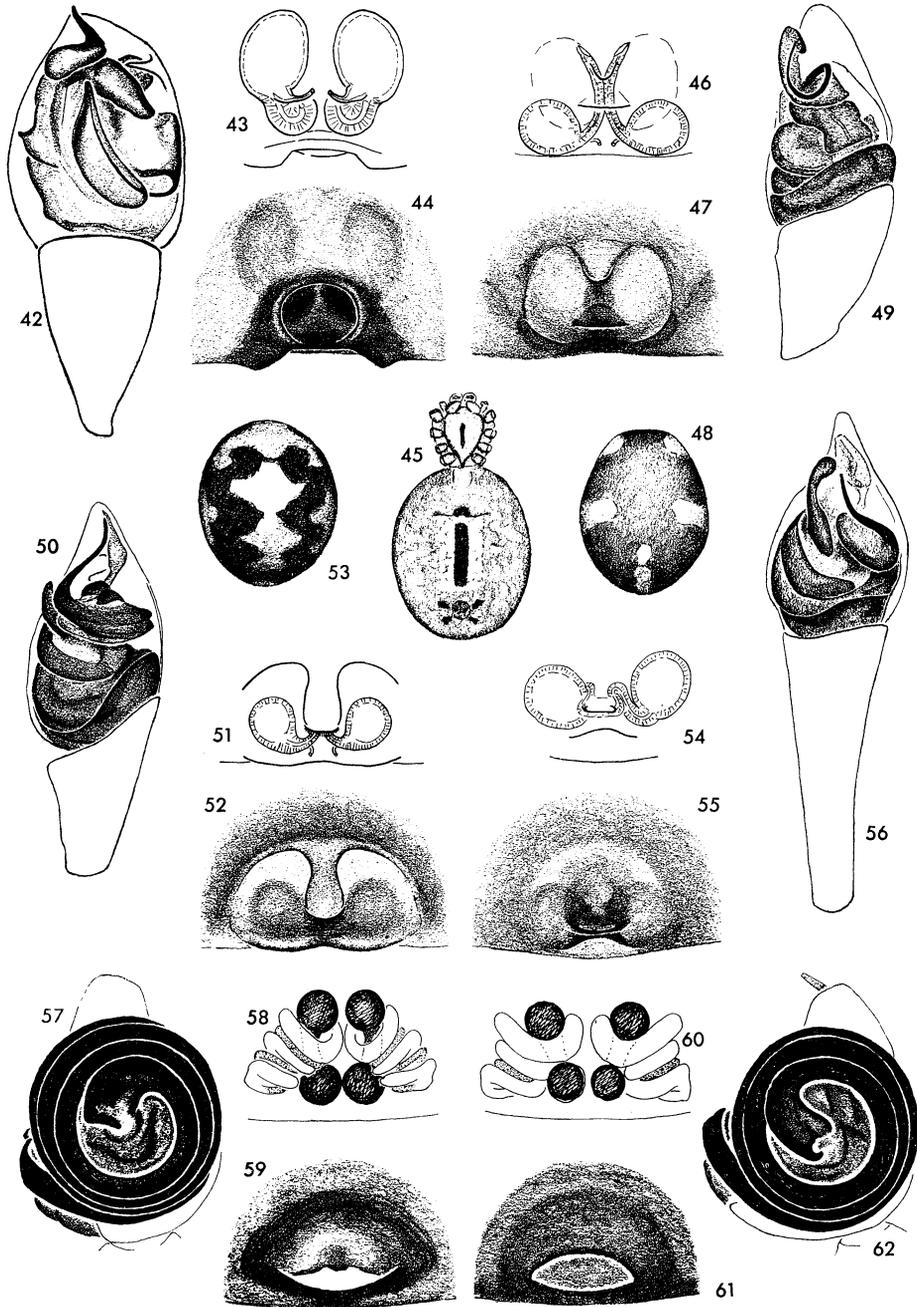
Other synonyms are *Theridion ovata* (Clerck), *T. redimitum* (Clerck), and *T. lineatum* (Clerck).

Color yellow-white. Dorsum of abdomen with median red to violet bands, very variable, venter with a median longitudinal black band, a white band on each side (fig. 45). ♀, total length, 4.3-6.8 mm; 1st patella and tibia, 4.2 mm; 4th, 3.4 mm. ♂, total length, 3.5-5.2 mm; 1st patella and tibia, 5.0 mm; 4th, 4.0 mm.

Unlike *Steatoda*, *Enoplognatha* has a tooth on the posterior margin of the chelicerae. The species can be distinguished from others by the ventral black stripe (fig. 45), the distal sclerite of the palpus (fig. 42), and the epigynum (fig. 44).

Widespread in Eurasia, there are colonies in various places in North America. I have seen specimens marked as coming from Chile, but the locality may have been mislabelled. There is wide variation in genitalia and it has been suspected that there may be several species, but recent observations (V. Seligy, pers. comm.) on Ontario specimens indicate

Figs. 42-62. 42-45. *Enoplognatha ovata* (Clerck). 42, left ♂ palpus; 43, ♀ genitalia, dorsal view; 44, epigynum; 45, ♀, ventral view. 46-49. *Steatoda erigoniformis* (O. P.-Cambridge): 46, ♀ genitalia, dorsal view; 47, epigynum; 48, ♀ abdomen, dorsal view; 49, palpus. 50-52. *S. grossa* (C. L. Koch): 50, palpus; 51, ♀ genitalia, dorsal view; 52, epigynum. 53-56. *S. triangulosa* (Walckenaer): 53, ♀ abdomen, dorsal view; 54, ♀ genitalia, dorsal view; 55, epigynum; 56, palpus. 57-59. *Latrodectus geometricus* C. L. Koch. 57, palpus; 58, ♀ genitalia, dorsal view; 59, epigynum. 60-62. *L. mactans* (Fabricius): 60, ♀ genitalia, dorsal view; 61, epigynum; 62, palpus.



that it is one species.

Genus *Steatoda* Sundevall

The genera *Steatoda*, *Lithyphantes* and *Teutana* have been separated in the past by characteristic eye size and arrangement, a character unfortunately variable within populations of various *Steatoda* species. As a result, males and females of *Steatoda* were often described and placed in different genera. The similar genitalia are further reason for combining the species in one genus. *Steatoda paykulliana*, formerly placed in *Lithyphantes*, is very close to *S. grossa* and *S. castanea*, formerly placed in *Teutana* (Maretić, Levi & Levi 1964). *Steatoda grossa* has an epigynum like that of many common *Steatoda* species. In addition most members have similar coloration, purplish brown pigment (which is not alcohol soluble) on the abdomen, a white line around the anterior margin and sometimes an additional dorsal pattern. As can be expected, the behavior and habits, particularly of sympatric species, differ. The chelicerae of *Steatoda* are armed with one or more teeth, a character which separates members of the genus from the widows, *Latrodectus*, which lack a tooth.

Steatoda erigoniformis (O. P.-Cambridge) Figs. 46-49.

Theridion erigoniforme O. P.-Cambridge, 1872, Proc. Zool. Soc. Lond. 284 (♀, ♂ syntypes from Jordan, in Hope Dept. Ent. at Oxford, examined).

Lithyphantes septemmaculatus Keyserling, 1884, Die Spinnen Amerikas, Theridiidae 2: 141, pl. 6, fig. 88, ♀ (Syntypes from "Denver in Columbia" coll. by Marx, in USNM; the locality, like many of those of Marx, is in error).

Steatoda septemmaculata: Levi, 1957, Bull. Mus. Comp. Zool. 117: 402, figs. 70-73, ♀, ♂.

Carapace, sternum, and legs orange. Abdomen (fig. 48) purplish black with 7 white spots on dorsum, 2 of them above spinnerets. ♀, total length 2.5-3.2 mm; 1st patella and tibia, 1.00 mm, 4th, 1.0 mm. ♂, total length 1.8-3.4 mm; 1st patella and tibia, 1.3 mm, 4th, 1.4 mm. Both epigynum and palpus (figs. 47, 49) diagnostic.

This species described from the Near East is common in the West Indies and has been found in Japan. It lives under stones.

Steatoda grossa (C. L. Koch) Figs. 50-52.

Theridion grossum C. L. Koch, 1838, Die Arachniden 4: 112, fig. 321, ♀ (Types from Peloponnesus Peninsula, Greece).

Steatoda grossa: Levi, 1957, Bull. Mus. Comp. Zool. 117: 404, figs. 74, 83-85.

Carapace, sternum, and legs dark orange. Abdomen purple-black, sometimes with an indistinct line around anterior margin and several indistinct light patches on dorsum. Total length of ♀♀, 7.5 to 11 mm. One from California measured 8.6 mm, 1st patella and tibia, 5.6 mm, 4th, 4.5 mm. ♂, total length 4-7.5 mm; total length of one from California, 6.5 mm, 1st patella and tibia 5.5 mm, 4th, 4.7 mm.

Epigynum (fig. 52) quite similar to that of a number of other species of *Steatoda*, but border around depression usually incomplete on each side (fig. 51).

This species, probably Eurasian, is widespread in America, being common along the entire Pacific coast of North America from Washington to south-central Chile. It is also

found around the Caribbean and is abundant on St. Helena I. It has been found in different habitats, mostly among stone piles. It has previously been placed in *Teutana*, *Lithyphantes* and *Asagena*.

Steatoda triangulosa (Walckenaer) Figs. 53-56.

Aranea triangulosa Walckenaer, 1802, Faune Parisienne 2: 207 (Type locality: near Paris).

Teutana triangulosa: Braun, 1956, Z. Wiss. Zool. 159: 255.

Steatoda triangulosa: Levi, 1957, Bull. Mus. Comp. Zool. 117: 407, figs. 75, 76, 80-82, ♀, ♂.

Carapace, sternum orange-yellow. Legs yellow. Abdomen purplish brown with white spots on dorsum (fig. 53). ♀♀, total length 3.6-5.9 mm. 1♀, total length 5.1 mm, 1st patella-tibia, 3.8 mm, 4th, 2.7 mm. ♂♂ total length 3.5-4.7 mm. 1♂, total length 4.7 mm; 1st patella and tibia, 3.7 mm, 4th, 2.7 mm.

Epigynum a rather indistinct structure, a shallow depression with a posterior lip (fig. 55). Depression may be filled with secretions which have to be removed to study the structure.

This species is probably native to Eurasia. In America it is abundant locally, thriving under conditions of abundant food supply and has even become a pest in carpet beetle cultures used by vertebrate zoologists to clean skulls. Careful studies of its life history have been made by Braun. Many behavior observations, however, judging from similar observations in *Latrodectus*, probably pertain to the species and cannot be generalized as "subgeneric characters."

Latrodectus geometricus C. L. Koch, Brown Widow Figs. 57-59.

Latrodectus geometricus C. L. Koch, 1841, Die Arachniden 8: 117, pl. 284, fig. 684, ♀ (Type specimens from Colombia).—Levi, 1959, Trans. Amer. Microscop. Soc. 78: 21, figs. 8-10, 25-28, 37, 39-50, 80-83, ♀, ♂.—McCrone, J. D. & K. J. Stone, 1965, Arthropods of Florida 2: (colored illustrations).

The color of this species is brown, rarely gray, with streaks. Living specimens have a ventral red hourglass mark (the red dissolves in alcohol and becomes white). ♀, total length 10 mm; 1st patella and tibia, 7.8 mm, 4th, 6.5 mm. ♂, total length 4 mm; 1st patella and tibia, 4.5 mm; 4th, 3.8 mm.

Epigynum (fig. 59) with a posterior lip drawn up on each side. The 4 coils of the ♂ palpus (fig. 57) separate the species from those of *L. mactans* and relatives, which have 3 or less coils of the embolus.

This species of widow, which is poisonous to mammals but rarely if ever bites man, is widespread in tropical America, but always associated with man, on porches, opuntia cacti in gardens, where it makes its webs. It probably has been carried all over the world by man. It is common in Hawaii and is found in New Guinea and probably other areas in the Pacific.

Latrodectus mactans (Fabricius), Black Widow Figs. 60-62.

Aranea mactans Fabricius, 1775, Systema Entomologiae p. 432 (♀ type from America (pre-

sumably the West Indies or SE U.S.), lost).

Latrodectus mactans: Levi, 1959, Trans. Amer. Microscop. Soc. **78**: 24, figs. 1, 5-7, 19-21, 38, 53, 67, 72-79, ♀, ♂. Maps 2-5.—McCrone & Stone, 1965, Arthropods of Florida **2**: (colored illustrations).

Adult ♀♀ black with a red ventral hourglass or similar mark on abdomen, and a red spot or line on dorsum above spinnerets. Immatures and ♂♂ may be brightly colored, and marked with red, white, grays and black. Even those coming from the same egg-sac may be quite variable. A ♀ from Texas measured 11 mm total length; 1st patella and tibia, 7.5 mm; 4th, 6.5 mm. A ♂, 4 mm total length; 1st patella and tibia, 3.8 mm; 4th, 2.7 mm.

The black widow, though widespread, has geographic races recognized by coloration and spination of the abdomen. Whether the European Mediterranean species is a geographic race or a different species is not certain, but for simplicity it is assumed to be a subspecies. There are some sibling species in the United States and Canada [*L. variolus* Walckenaer)], several in South America, one in Israel [*L. revivensis* Shulov], but it is common throughout the dryer warm parts of Eurasia and Africa, in Australia, New Zealand and on Pacific islands. The sibling species differ more in habits and behavior than in superficial characteristics of dead specimens examined in alcohol.

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