

## KEYS TO THE GENERA OF ARANEID ORBWEAVERS (ARANEAE, ARANEIDAE) OF THE AMERICAS<sup>1</sup>

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**ABSTRACT.** This paper contains keys to the 65 genera of araneid spiders known from the Americas. These genera hold approximately fifteen hundred species found in the Americas. The key to females uses mostly artificial characters; the key to males uses diagnostic characters. There are four new synonyms and two new placements.

**Keywords:** Arachnida, Araneidae, taxonomy, keys

A challenge of taxonomy is to overcome the difficulties of determining common invertebrate animals. Correct determination is essential for most biological research. This key is intended to help specialists and nonspecialists determine genera of araneid orb weavers.

Simon (1895), who established many of the genera and groups of araneid genera, unfortunately did not provide complete keys to his groupings. A key to North American genera is found in Roth (1994). Keys to European genera are found in Heimer & Nentwig (1991) and Roberts (1995). There is a key to the subfamilies of African Araneidae by Dippenaar-Schoeman & Jocqué (1997). I have circulated a rough, unpublished key to genera of American species, to help curators search out loan specimens for my revisionary studies between 1983 and 1989. A key to Eurasian, African and Australian araneid genera is planned.

The 1,500 American species of the Araneidae are listed in several catalogs of spiders. Those described to 1938 are listed in Bonnet (1955–1959) and Roewer (1942). These catalogs have been updated, following Roewer's style, by Brignoli (1983) and Platnick (1989, 1993, 1997, 2001). The groups included in the Araneidae are controversial (Scharff & Coddington 1997). Here we consider the Araneidae in the limited sense, with the Tetragnathidae including *Nephila* and *Meta*, and the

Theridiosomatidae and Anapidae as separate families.

The Araneidae are ecribellate, entelegyne, three-clawed spiders, having eight eyes in two rows. The lateral eyes are usually adjacent and some distance from the medians; the four medians form a trapezoid (Figs. 28, 54). The posterior median and lateral eyes have a canoe-shaped tapetum, slender in posterior median eyes, with rhabdoms in parallel rows toward the median side (Homann 1950; Levi 1983, fig. 10). The height of the clypeus is usually less than two diameters of the anterior median eyes (Fig. 54). The labium is wider than long to square, distal edge swollen. The endites are only slightly longer than wide (Fig. 201). The abdomen is globose, overhanging the carapace (Figs. 8, 9) and with a colulus. Aggregate silk glands produce viscid silk. Legs usually have macrosetae, but lack trichobothria on femora and tarsi. Small to large size, 1–25 mm total length.

The female epigynum ventrally has a copulatory structure, often with a scape or lobe (Fig. 76). The openings are posterior (Fig. 77); or rarely, secondarily moved ventrally (Fig. 52). The posterior has three plates with the opening in the slits between the plates (Figs. 11, 77, 117). The male palpus is rotated within the cymbium, showing most sclerites to the side of the cymbium (Fig. 186), and with a radix (R in Figs. 191, 192), a median apophysis (M in Fig. 191, 192), and a paracymbium that is fused to the cymbium (P in Fig. 228). Most Araneidae build an orb web with viscid tangential threads.

**Diagnosis.**—Araneids differ from all other

<sup>1</sup> Dedicated to the late B.J. Kaston and V.R. Roth, whose efforts made it possible for non-taxonomists to determine North American spider genera and species.

Table 1.—Authors of American araneid genera: literature citations and index to figures. Figure numbers below 184 are for females, above 185 for males.

	References to revisions	Illustrations in this paper
<i>Acacesia</i> Simon 1895	Glueck 1994	24, 287–290
<i>Acanthepeira</i> Marx 1883	Levi 1976	60, 61, 220, 221
<i>Actinosoma</i> Holmberg 1895	Levi 1995b	63–65, 255, 256
<i>Aculepeira</i> Chamberlin & Ivie 1942	Levi 1977b, 1991a	128–131, 199
<i>Alloyclosa</i> Levi 1999	Levi 1999	58, 59, 273, 274
<i>Alpaida</i> O.P.-Cambridge 1889	Levi 1988	72–77, 175–184, 189, 190, 260–262, 291, 292
<i>Amazonopeira</i> Levi 1989	Levi 1989, 1994	142, 143, 198, 309
<i>Araneus</i> Clerck 1757	Levi 1971b, 1973, 1975b, 1991a	91, 92, 152–157, 205–207, 307
<i>Argiope</i> Audouin 1826	Levi 1968	3, 237, 238
<i>Araniella</i> Chamberlin & Ivie 1942	Levi 1974b	147, 148, 185, 186
<i>Aspidolastus</i> Simon 1887	(not revised)	36, 37, 213, 214
<i>Bertrana</i> Keyserling 1884	Levi 1989, 1994	167–170, 303, 304
<i>Carepalxis</i> L. Koch 1872	Levi 1992a	53, 54
<i>Cercidia</i> Thorell 1869	Levi 1975a	7, 194
<i>Chaetacis</i> Simon 1895	Levi 1985	32, 47, 222, 223
<i>Colphepeira</i> Archer 1941	Levi 1978	69, 70, 316
<i>Cyclosa</i> Menge 1866	Levi 1977a, 1999	78–85, 263–265
<i>Cyrtophora</i> Simon 1864	Levi 1997b	56, 57, 275, 276
<i>Dubiepeira</i> Levi 1991	Levi 1991a	135–138, 195
<i>Edricus</i> O.P.-Cambridge 1890	Levi 1991b	35, 229, 230
<i>Enacrosoma</i> Mello-Leitão 1932	Levi 1996	55, 253, 254
<i>Encyosaccus</i> Simon 1895	Levi 1996	31, 247, 248
<i>Epeiroides</i> Keyserling 1885	Levi 1989	95, 96, 281–283
<i>Eriophora</i> Simon 1863	Levi 1971a	112–114, 192
<i>Eustala</i> Simon 1895	Levi 1977a	13–15, 208–210
<i>Gasteracantha</i> Sundevall 1833	Levi 1978, 1996	33, 34, 251, 252
<i>Gea</i> C.L. Koch 1843	Levi 1968	1, 241, 242
<i>Hingsstepeira</i> Levi 1995	Levi 1995b	97–99, 293, 294
<i>Hypognatha</i> Guérin-Méneville 1840	Levi 1996	29, 30, 217–219
<i>Hypsosinga</i> Ausserer 1871	Dondale et al. (in press)	102, 103, 203
<i>Kaira</i> O.P.-Cambridge 1889	Levi 1972, 1975b	
	Levi 1977b, 1993d	8–12, 93, 94, 313

Table 1.—Continued.

	References to revisions	Illustrations in this paper
<i>Kapogea</i> Levi 1997	Levi 1997b	6, 299, 300
<i>Larinia</i> Simon 1874	Harrod et al. 1991	149–151, 204
<i>Larinioides</i> di Caporiacco 1934	Levi, 1974b	132–134, 187, 188
<i>Lewisipeira</i> Levi 1993	Levi 1993c	139–141, 305, 306
<i>Madrepeira</i> Levi 1995	Levi 1995b	126, 127, 197
<i>Mangora</i> O.P.-Cambridge 1889	Levi 1975a	2, 317
<i>Manogea</i> Levi 1997	Levi 1997b	5, 297, 298
<i>Mastophora</i> Holmberg 1876	Levi (in press)	25–27, 314, 315
<i>Mecynogea</i> Simon 1903	Levi 1997b	4, 239, 240
<i>Metazygia</i> FP.-Cambridge 1903	Levi 1995a	16–18, 158–163, 211, 212, 308
<i>Metepeira</i> FP.-Cambridge 1903	Piel 2001	120–122, 196
<i>Micrepeira</i> Schenkel 1953	Levi 1995b	164–166, 310
<i>Micrathena</i> Sundevall 1833	Levi 1985	44–46, 224–228
<i>Molinaranea</i> Mello-Leitão 1940	Levi 2001	123–125, 296
<i>Neoscona</i> Simon 1864	Berman et al. 1971, Levi 1993a	108–111, 193
<i>Nicolepeira</i> Levi 2000	Levi 2001	48, 49, 104, 105, 216, 266, 267, 279, 280
<i>Ocrepeira</i> Marx 1883	Levi 1976, 1993b	115–119, 295
<i>Parawixia</i> FP.-Cambridge 1904	Levi 1992b	86, 87, 191, 231, 232, 270–272
<i>Pozonia</i> Schenkel 1953	Levi 1993b	22, 23, 284–286
<i>Pronous</i> Keyserling 1881	Levi 1995b	42, 43, 243, 244
<i>Rubrepeira</i> Levi 1992	Levi 1992a	71
<i>Scoloderus</i> Simon 1887	Levi 1976, Traw 1996	38, 39, 235, 236
<i>Singa</i> C.L. Koch 1863	Levi 1972, 1975b	100, 101, 201, 202
<i>Spilasma</i> Simon 1895	Levi 1995b	19, 301, 302
<i>Spinepeira</i> Levi 1995	Levi 1995b	62
<i>Taczanowskia</i> Keyserling 1880	Levi 1997a	20, 21, 277, 278
<i>Tatepeira</i> Levi 1995	Levi 1995b	144–146, 200
<i>Testudinaria</i> Taczanowski, 1879	Levi (in press)	28, 311, 312
<i>Verrucosa</i> McCook, 1888	Levi 1976	88–90, 257–259
<i>Wagneriana</i> FP.-Cambridge 1904	Levi 1976, 1991b	66–68, 268, 269
<i>Wittica</i> O.P.-Cambridge 1895	Levi 1986a	51, 52, 245, 246
<i>Wixia</i> O.P.-Cambridge 1882	Levi 1993b	40, 41, 233, 234
<i>Xylethrus</i> Simon 1895	Levi 1996	50, 249, 250
<i>Zygiella</i> FP.-Cambridge 1902	Dondale et al. (in press)	106, 107, 171–174, 215
	Levi 1974a, 2001	

families by having (with the exception of *Cyclosoa*, *Zygiella*) a modified canoe-shaped tapetum in the posterior median eyes (Levi 1983, fig. 10; Coddington 1986). Palpi of araneid males differ from those of theridiids, tetragnathids and linyphiids by having the palpal bulb rotated (Fig. 191; Coddington 1986), the paracymbium attached to the cymbium (P in Fig. 228), and the presence of a radix (R) and median apophysis (M in Fig. 191). Larger size males may have a tooth on the endite and a hook on the distal margin of the first coxa (Fig. 201), not found in related families.

Araneid females differ from theridiids by having a colulus, lacking the comb-shaped setae on the fourth legs, and having the labium with a distal swelling. They differ from linyphiids by having the clypeus usually not higher than two diameters of the anterior median eyes (Fig. 54), often having a condyle on the outside base of the chelicerae (Fig. 36), and having the epigynal openings on the posterior face of the epigynum (Figs. 116, 117, 136, 137). Araneid females differ from tetragnathids by sometimes having a scape on the epigynum (Fig. 129), having a condyle on the outside base of the chelicerae, having a square to wider than long labium, endites only slightly longer than wide (as in male, Fig. 201) and always lack trichobothria on the fourth femur, while tetragnathids lack the condyle, have a longer than wide labium, longer endites, and may have trichobothria on the fourth femur.

Of the 65 genera of Araneidae found in the Americas, the males of two (*Rubrepeira*, *Spinepeira*) are not known. For one genus, *Carepalxis*, only males of the Australian species are known. Ten genera are monotypic (*Actinosoma*, *Allocyclosoa*, *Aspidolasius*, *Colphepeira*, *Encyosaccus*, *Epeiroides*, *Madrepeira*, *Rubrepeira*, *Wixia*, *Spinepeira*), and in one genus, *Spinepeira*, the female is known from only one specimen.

Although they are listed in the catalogs in the family Araneidae, several genera are not included in the keys because they are synonyms or misplaced. They are listed in the appendix.

**Use of Keys.**—There are four keys here, two for females, and two for males. The first of each is a speed key, a shortcut to the detailed second key, and will guide the user to a number at the start of a couplet of the second key. The numbers in parenthesis at the start of a couplet denote the originating couplet.

Keys are supposed to have “all or nothing” characters, but it is difficult to find such characters that are easily visible and are diagnostic for females as well as for males. As a result a specimen may key out to the correct genus in more than one couplet. Because males have more characters important in diagnosis, the male key is more accurate. The males of many species are minute, less than 3 mm. The male key uses genital characters for which a microscope with a magnification of 100–150 x is needed, as well as good reflected lighting, and a black, non-reflective background, and the specimens must be kept completely submerged in ethanol. The male palpus may have to be amputated in order to view its structure (but should always be kept in a smaller vial in the same vial with the remaining specimen). This is an artificial key. Characters that unite groups here may or may not be synapomorphies.

## METHODS

**Conventions used for keys.**—All illustrations of palpi are left ones. Authors of generic names and references are cited in Table 1. Definitions used are: A “spine” is a pointed, cone-shaped, immovable protrusion, while a “macroseta” is a large, often movable seta. Other terms used can be identified by the cited illustrations: base of epigynum, swelling, tubercles, scape, lobe, keel, hump, and ridge.

**Abbreviations:** A = terminal apophysis; AME = anterior median eye; C = conductor; ca. = about; E = embolus; LE = lateral eyes; max. = maximum size; M = median apophysis; P = paracymbium; PE = posterior eyes; PLE = posterior lateral eyes; PM = parame-dian apophysis; PME = posterior median eyes; R = radix; sp. = species; Y = cymbium.

## KEYS FOR FEMALES

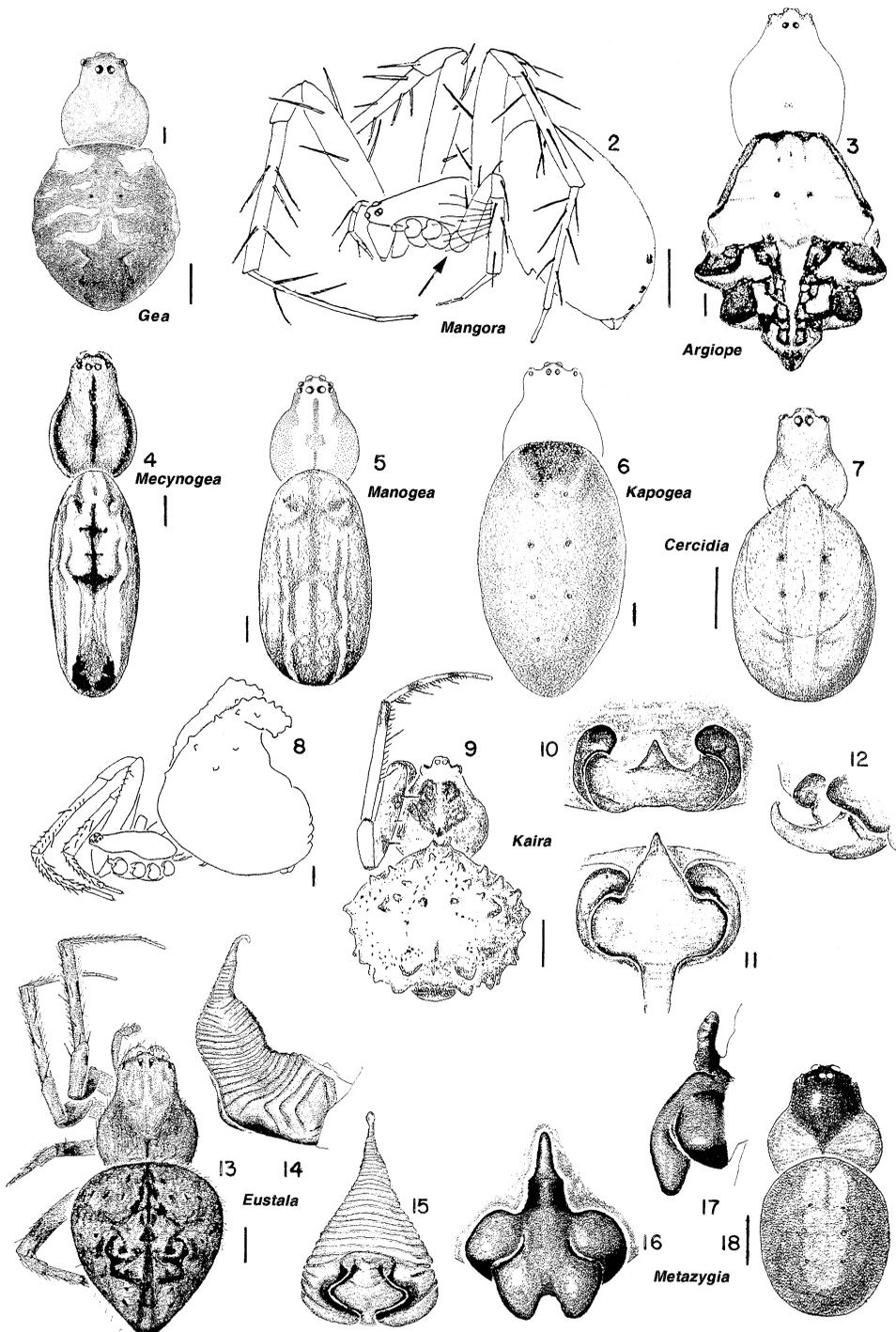
## SPEED KEY FOR FEMALES

- 1 Third tibia with anterior, feathery trichobothria (Fig. 2). Go to 1 in key for females, or if not to 2 below.
- 2(1) Posterior eye row procurved (lateral eyes anterior to medians, Fig. 1) or straight (Fig. 6). Go to 2 in key, or if not to 10 below.
- 10(2) Epigynum with scape projecting anteriorly (Figs. 14, 15). Go to 10 in key, or if not to 13 below.
- 13(10) Cephalic width less than half width of thoracic region (Fig. 19). Go to 13 in key, or if not to 18 below.
- 18(13) Carapace with cephalic region as wide as thoracic (Figs. 30, 31, 34, 37), with tubercles (Figs. 25, 27), bulges, spines or extensions (Figs. 32, 35–37). Go to 18 in key, or if not to 34 below.
- 34(18) Abdomen with more than one pair of humps or tubercles, with extra tubercles, spines, sclerites or extending posteriorly (Figs. 44, 48, 51). Go to 34 in key, or if not to 55 below.
- 55(34) Abdomen wider than long (Figs. 88, 91, 93, 96). Go to 55 in key, or if not to 59 below.
- 59(55) Abdomen cylindrical (Figs. 97, 100). Go to 59 in key, or if not to 62 below.
- 62(59) Epigynum flat, without scape, lobe or ridge (Figs. 102, 105, 106). Go to 62 in key, or if not to 66 below.
- 66(62) Epigynum with scape (Figs. 109, 113, 122). Go to 66 in key, or if not to 86 below.
- 86(66) Epigynum with ridge or lobe (Figs. 159, 163, 172, 176). Go to 86 in key.

## KEY FOR FEMALES.

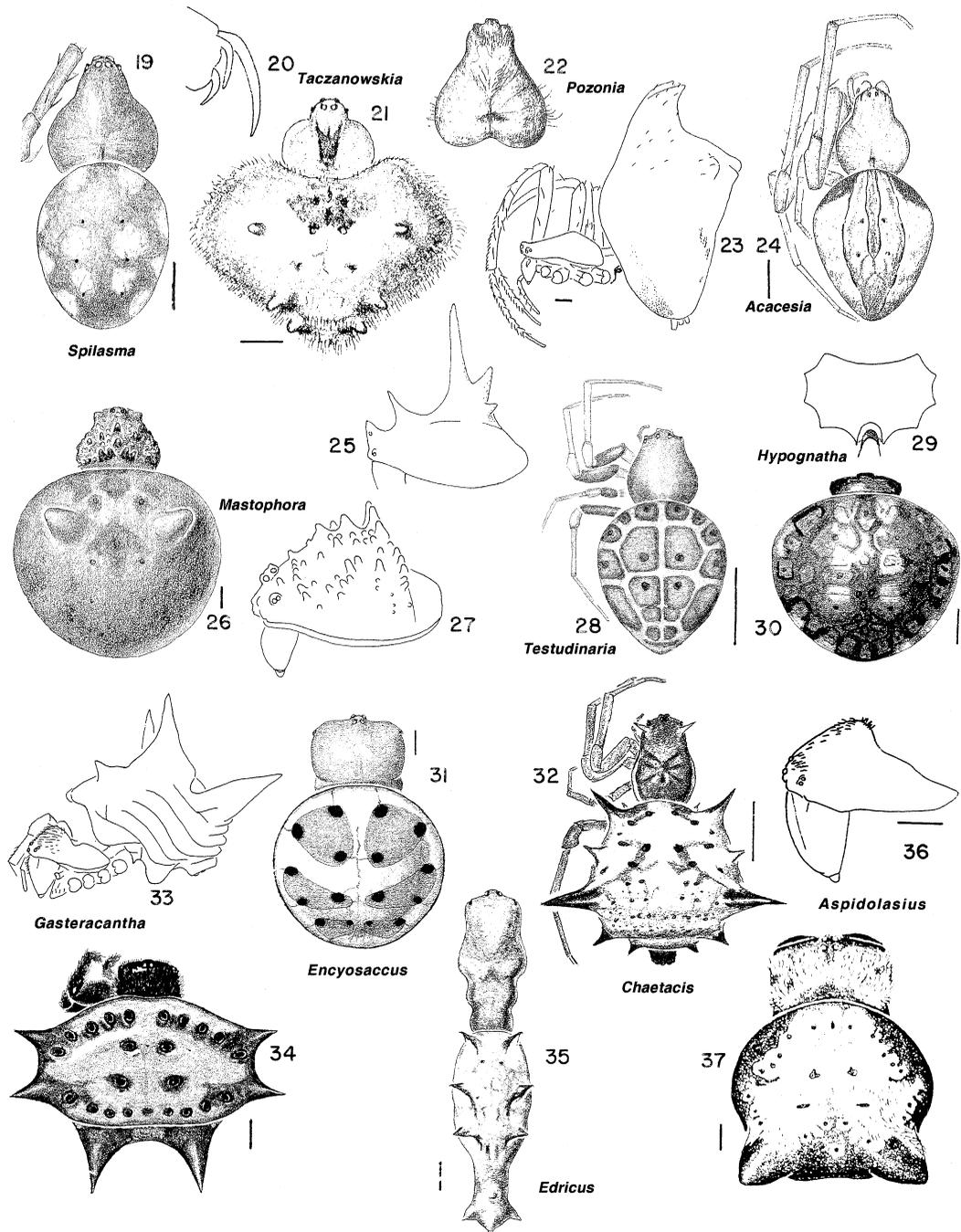
- 1 Third tibia with anteriorly facing, feathery trichobothria; high thoracic region of carapace (arrow Fig. 2); max. ca. 13 mm; ca. 20 sp., E Canada to Argentina, W Indies . . . . . *Mangora*  
 — Third tibia without trichobothria (Figs. 13, 45) . . . . . 2
- 2(1) PE row procurved (LE anterior to ME, Figs. 1, 3) or straight (Figs. 5, 6) when viewed from above . . . . . 3  
 — PE row recurved, LE posterior to ME, or straight (Figs. 9, 13, 18) . . . . . 10
- 3(2) Abdomen oval with scutum, anteriorly pointed, and bearing a line of about 8 macrosetae (Fig. 7); max. 5 mm; holarctic, or introduced to NE U. S. . . . . *Cercidia prominens*  
 — Abdomen otherwise (Figs. 3–6) . . . . . 4
- 4(3) PE row procurved (Figs. 1, 3, 4) . . . . . 5  
 — PE row straight (Figs. 5, 6) . . . . . 8
- 5(4) Carapace with median black line and black sides of thoracic region (Figs. 4, 5); abdomen cylindrical (Fig. 4, 5); web horizontal . . . . . 6  
 — Carapace without black line; abdomen oval to shield-shaped (Figs. 1, 3); web vertical . . . . . 7
- 6(5) Abdomen with distinctive dorsal, white bands and with dark w-shaped mark in middle (Fig. 4); epigynum sclerotized; max. 12 mm; 9 sp., SE U. S. to Chile, Argentina, W Indies . . . . . *Mecynogea*  
 — Abdomen with white bands but without w-shaped mark (Fig. 5); epigynum weakly sclerotized; max. 8 mm; 3 sp., Mexico to Venezuela . . . . . *Manogea*
- 7(5) PME closer to each other than to LE (Fig. 3); max. 26 mm; 6 sp., Canada to Chile, W. Indies . . . . . *Argiope*  
 — PE equally spaced (Fig. 1); max. 6 mm; U. S. to Argentina, introduced from SW Pacific? . . . . . *Gea heptagon*
- 8(4) PME closer to each other than to LE (Fig. 6); lateral eyes separated by their diameter; abdomen shield-shaped (Fig. 6); web horizontal; max. 25 mm; 4 sp., Mexico to Argentina, W Indies. . . . . *Kapogea*  
 — PE equally spaced (Fig. 5); lateral eyes touching; abdomen oval to cylindrical (Fig. 5) . . . . . 9

- 9(8) Carapace with median dusky line; sides of thoracic region dusky; abdomen cylindrical to oval (Fig. 5); web horizontal; max. 15 mm; Panama to N Argentina . . . *Manoega porracea*  
 — Carapace with median duskiness, sides of thorax yellowish (Fig. 171); abdomen oval (Fig. 171); vertical web, with viscid spirals missing in sectors below retreat; max. 9 mm; 5 sp., Alaska to U. S., introduced in Argentina, Chile . . . (in part) *Zygiella*
- 10(2) Epigynum with scape projecting anteriorly from its base (Figs. 10–12, 14–17) . . . . . 11  
 — Epigynum otherwise (Figs. 49, 52, 61, 70) . . . . . 13
- 11(10) Scape usually annulated (Figs. 14, 15); PME face dorsolaterally (Fig. 13); abdomen often with humps and triangular (Fig. 13), venter often with median white line; ; max. 15 mm; ca. 100 sp., Canada to Argentina, W Indies . . . . . *Eustala*  
 — Scape smooth (Figs. 10–12, 16); PME face dorsally (Figs. 9, 18); abdomen otherwise; . . . . . 12
- 12(11) Scape sclerotized, blunt (Figs. 16, 17); abdomen oval, widest in middle without humps; carapace glabrous with black cephalic region, PME adjacent, (Fig. 18); max. 12 mm; 88 sp., SE U. S. to Argentina, W Indies . . . . . (a few) *Metazygia*  
 — Scape pointed, not sclerotized (Figs. 10–12); abdomen with humps, tubercles (Figs. 8, 9); carapace setose; PME separated by their diameter; distal ends of first legs with setae and macrosetae (Figs. 8, 9); max. 14 mm; 14 sp., E U. S. to N Argentina, W Indies. . . . . (a few) *Kaira*
- 13(10) Cephalic width less than half width of thoracic region (Figs. 19, 21, 22, 24, 85) . . . 14  
 — Width of cephalic region one half or more of width of thoracic region (Figs. 26, 28, 30, 44) . . . . . 18
- 14(13) Abdomen wider than long, with tubercles (Fig. 21); tarsal claw, of first and second leg, spear-like, elongated (Fig. 20); max. 6 mm; 4 sp., Colombia to S Brazil . . *Taczanowskia*  
 — Abdomen longer than wide (Figs. 19, 23, 24, 85); tarsal claws of equal length . . . . . 15
- 15(14) Abdomen much longer than wide, with two anterior tubercles, and attached to pedicel at its posterior half (Fig. 23); max. 14 mm; 3 sp., S Mexico to S Brazil, W Indies . . . . . *Pozonia*  
 — Abdomen without anterior, dorsal tubercles, usually attached to pedicel in middle or anterior half (Figs. 19, 24, 85) . . . . . 16
- 16(15) Abdomen pointed, extended and beyond spinnerets into a tail (Fig. 85); PME adjacent; max. 12 mm; 51 sp., Alaska to S Argentina, W Indies (some) . . . . . *Cyclosa*  
 — Abdomen without posterior extension, oval; PME separated (Figs. 19, 24) . . . . . 17
- 17(16) Abdomen with six pairs of dorsal, white patches on red (Fig. 19); max. 9 mm; 3 sp., Honduras to Rio de Janeiro State, Brazil . . . . . *Spilasma*  
 — Abdomen with two pairs of parallel black lines, their anterior and posterior end approaching midline (Fig. 24); 8 sp., E U. S. to N Argentina, W Indies . . . . . (in part) *Acacesia*
- 18(13) Carapace modified: with cephalic region as wide as thoracic, with tubercles (Figs. 25–27), spines (Fig. 32), macrosetae (Fig. 66), elongated (Fig. 35) or carapace bulging (Figs. 34–41) . . . . . 19  
 — Carapace without these modifications (Figs. 55, 56, 71) . . . . . 34
- 19(18) Carapace elongated, posteriorly drawn out (Fig. 35); max. 18 mm; 2 sp., Mexico to Ecuador . . . . . *Edricus*  
 — Carapace without posterior elongation (Fig. 26, 32) . . . . . 20
- 20(19) Cephalic region as wide or wider than thoracic (Figs. 30, 31, 34, 37) . . . . . 21  
 — Cephalic region narrower than thoracic (Figs. 28, 39) . . . . . 24
- 21(20) Abdomen entire, round or oval, glossy without spines or bulges (Figs. 30, 31) . . . . . 22  
 — Abdomen with spines or bulges, wider than long (Figs. 33, 34, 37) . . . . . 23
- 22(21) Sternum with a posterior median notch holding projection from abdomen (Fig. 29); abdomen with pattern of tortoise-like scutes (Fig. 30); max. 8 mm; 35 sp., Mexico to N Argentina . . . . . *Hypognatha*  
 — Sternum without notch; abdomen orange with six or more discrete, black patches (Fig. 31); max. 10 mm; upper Amazon . . . . . *Encyosaccus sexmaculatus*



Figures 1–18.—Females: 1. *Gea heptagon* (Hentz 1850), dorsal. 2. *Mangora maculata* (Keyserling 1865), lateral. 3. *Argiope argentata* (Fabricius 1775), dorsal. 4. *Mecynogea lemniscata* (Walckenaer 1841), 9dorsal. 5. *Manogea porracea* (C.L. Koch 1839), dorsal. 6. *Kapogea sellata* (Simon 1895), dorsal. Fig. 7. *Cercidia prominens* (Westring 1851), dorsal. 8, 10–12. *Kaira altiventer* O. P.-Cambridge 1889; 8. lateral; 10–12. Epigynum; 10. Ventral; 11. Posterior; 12. Lateral. 9. *Kaira shinguita* Levi 1993, dorsal. 13–15. *Eustala anastera* (Walckenaer 1841); 13, Dorsal; 14, 15. Epigynum; 14. Lateral; 15. Ventral. 16–18. *Metazygia yobena* Levi 1995; 16, 17. Epigynum; 16. Ventral; 17. Lateral; 18. Dorsal. Scale lines = 1mm.

- 23(21) Abdomen with two or three pairs of large spines (Figs. 33, 34); max. 8 mm; SE U. S. to Argentina, W Indies . . . . . *Gasteracantha cancriformis*  
 — Abdomen with two posterior bulges; (Fig. 37); max. 11 mm; Venezuela to Bolivia . . . . . *Aspidolasius branicki*
- 24(20) Carapace with denticles around border and spines near lateral eyes (Fig. 32); max. 6 mm; 9 sp., S Mexico to Paraguay . . . . . *Chaetacis*  
 — Carapace without denticles, without spines near lateral eyes (Figs. 31, 36) . . . . . 25
- 25(24) Carapace high and with many tubercles (Figs. 25–27); abdomen wider than long; ca. 16 mm; 45 sp., NE U. S. to Argentina . . . . . *Mastophora*  
 — Carapace with at most only two tubercles, two macrosetae; abdomen various shapes (Figs. 46, 66) . . . . . 26
- 26(25) Center of thoracic region with two macrosetae (Fig. 66); abdomen longer than wide with 4 to 6 pairs of tubercles and posterior median tubercles (Fig. 66); max. 16 mm; 39 sp., SE U. S. to Argentina, W Indies . . . . . (in part) *Wagneriana*  
 — Carapace without macrosetae. . . . . 27
- 27(26) Fourth femur longer than first (Fig. 45); Carapace with dimples, light rims and/or thoracic region swollen (Fig. 46); book lung covers usually with stridulating grooves (Fig. 47); abdomen with paired spines (Figs. 44, 45); max. 13 mm; 104 sp., S Canada to Argentina, W Indies . . . . . (in part) *Micrathena*  
 — Fourth femur shorter or equal to first (Fig. 78); book lung covers without stridulating surface . . . . . 28
- 28(27) Abdomen attached to prosoma at its middle or posterior (Figs. 38, 41) . . . . . 29  
 — Abdomen attached at its anterior end to pedicel . . . . . 30
- 29(28) Height of clypeus 3–4 diameters of the anterior median eye (Fig. 40) and abdomen projecting anteriorly above carapace (Fig. 41); max. 8 mm; Guyanas to Bolivia . . . . . *Wixia abdominalis*  
 — Height of clypeus at most two and one-half diameters (Fig. 38); abdomen not projecting anteriorly (Fig. 39); max. 5 mm; 5 sp., Florida to N Argentina, W Indies . . . . . *Scoloderus*
- 30(28) Thoracic region much higher than cephalic (Figs. 46, 82); abdomen often with tubercles (Fig. 85), elongated and pointed behind spinnerets (Fig. 79, 80); max. 12 mm; 51 sp., Alaska to S Argentina, W Indies . . . . . (some) *Cyclosa*  
 — Cephalic region with swellings or whole carapace swollen (Figs. 50, 53, 54); abdomen never extending far posteriorly beyond spinnerets . . . . . 31
- 31(30) Carapace with a pair of bulges (Figs. 50, 53, 54) . . . . . 32  
 — Carapace domed . . . . . 34
- 32(31) Abdomen with dorsal, round, sclerotized discs and small spines (Fig. 50); max. 13 mm; 5 sp., Mexico to S Brazil, Jamaica . . . . . *Xylethrus*  
 — Abdomen with tubercles and bulges (Figs. 53, 86) . . . . . 33
- 33(32) PME facing dorsolaterally (Figs. 53, 54); abdomen with anterior median swelling (Fig. 53); max. 16 mm; 3 sp., Baja California to N Argentina, Jamaica . . . . . *Carepalxis*  
 — PME facing dorsally (Fig. 86); abdomen without anterior median swelling (Fig. 86); max. 27 mm; 27 sp, Baja California to Argentina, W Indies . . . . . (a few) *Parawixia*
- 34(18, 31) Abdomen with more than one pair of humps or tubercles; with extra tubercles, spines, sclerites or elongated posteriorly (Figs. 43, 48, 51, 55, 56, 63) . . . . . 35  
 — Abdomen spherical, oval, sometimes wider than long, with at most one pair of humps or tubercles (Figs. 91, 96, 100, 111, 115, 119), and rarely a median anterior hump or median posterior one (Figs. 112, 131) . . . . . 55
- 35(34) Abdomen with asymmetrical tubercles often on symmetrical protrusions, light colored (Figs. 8, 9) and distal articles of first to third legs with dense line of setae and macrosetae (Fig. 8, 9); max. 14 mm; 14 sp., E U. S. to N Argentina, W Indies . . . . . (most) *Kaira*  
 — All tubercles symmetrical, and legs without dense setae (Figs. 55) . . . . . 36
- 36(35) Abdomen wider than long, rectangular, with three to six pairs of pointed, sometimes

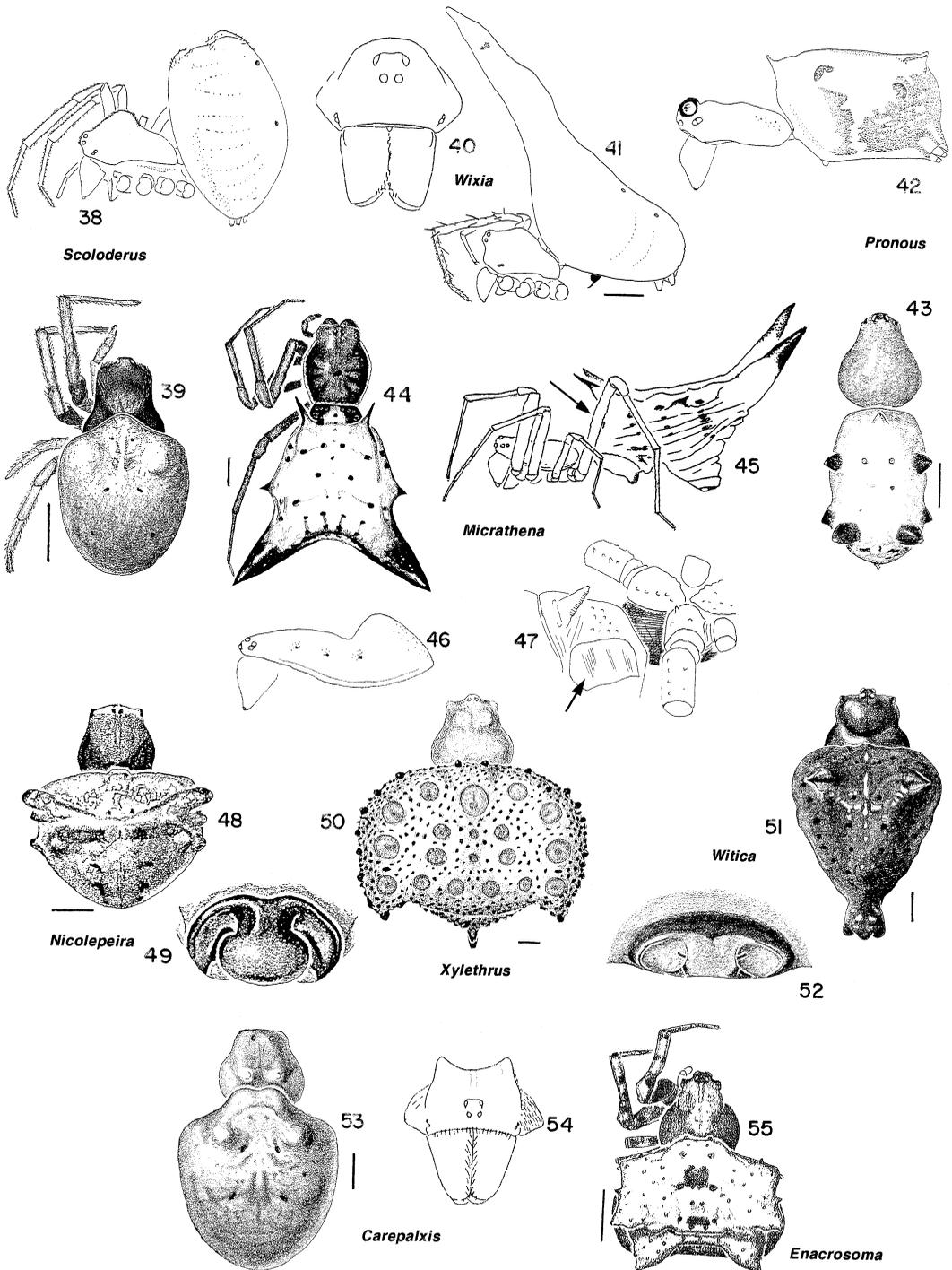


Figures 19–37.—Females: 19. *Spilasma duodecimguttata* (Keyserling 1880), dorsal. 20, 21. *Taczanowskia sextuberculata* (Keyserling 1892). 20. Leg claws; 21. dorsal. 22, 23. *Pozonia nigroventris* (Bryant 1936). 22. Carapace; 23. Lateral. 24. *Acacesia hamata* (Hentz 1847), dorsal. 25. *Mastophora leucacantha* (Simon 1895), carapace, lateral (after Simon). 26, 27. *M. gasteracanthoides* (Nicolet 1849). 26. Dorsal; 27. Carapace and chelicera, lateral. 28. *Testudinaria* sp., dorsal. 29. *Hypognatha mozamba* Levi 1996, sternum. 30. *H. cryptocephala* Mello-Leitão 1947, dorsal. 31. *Encyosaccus sexmaculatus* Simon 1895, dorsal. 32. *Chaetacis cornuta* (Taczanowski 1873), dorsal. 33, 34. *Gasteracantha cancriformis* (Linné 1767). 33. Lateral; 34. Dorsal. 35. *Edricus productus* O. P. -Cambridge 1890, dorsal. 36, 37. *Aspidolasius branicki* (Taczanowski 1879). 36. Carapace and chelicera, lateral; 37. Dorsal. Scale lines = 1mm.

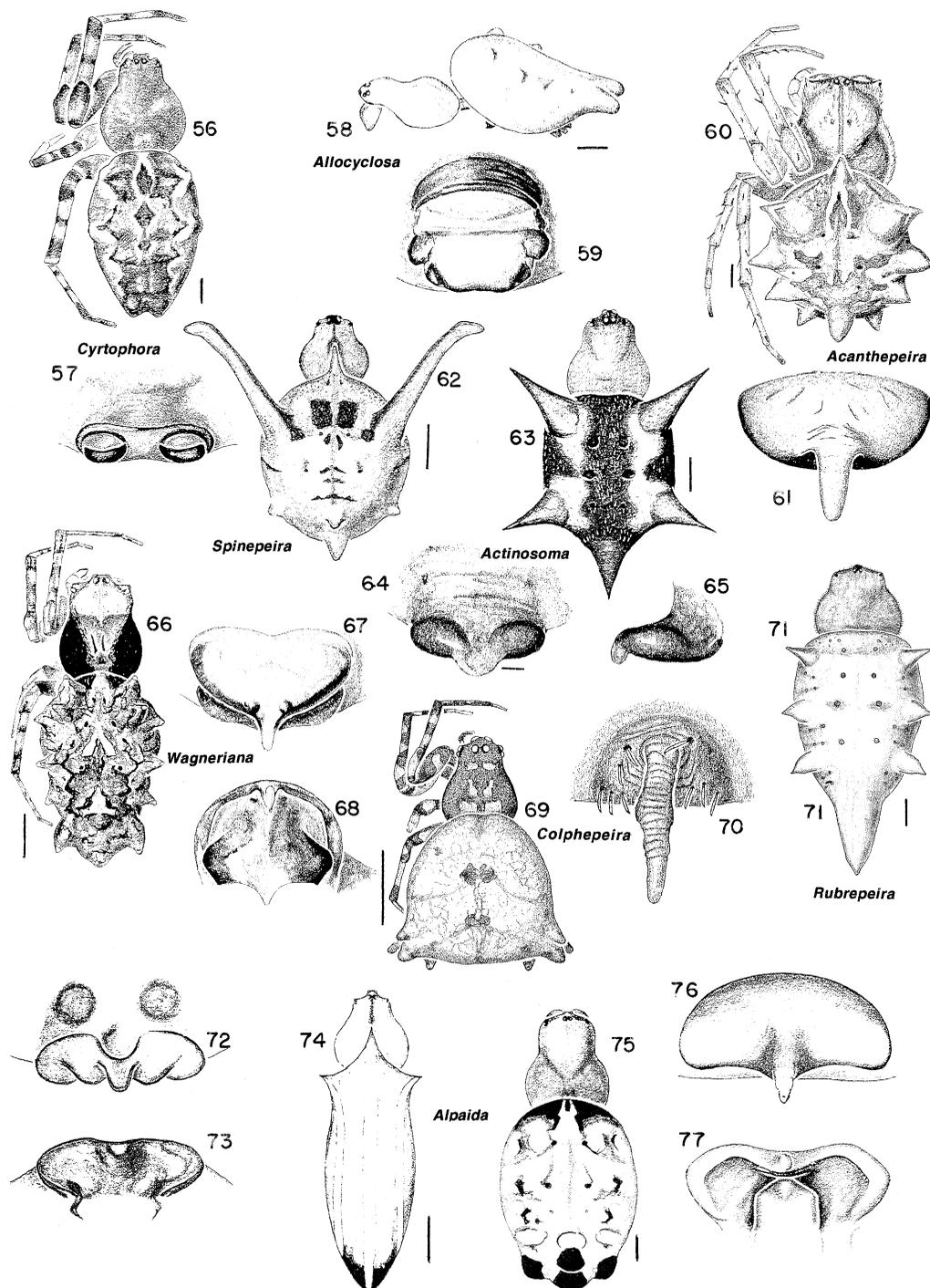
	bulging, tubercles (Fig. 55); max. 5 mm; 6 sp., Mexico to São Paulo State, Brazil .....	<i>Enacrosoma</i>
—	Abdomen longer than wide; trapezoidal if wider than long .....	37
37(36)	Abdomen dorsally with tortoise sclerites (Fig. 28); max. 4 mm; 9 sp.; Panama to N Argentina .....	(in part) <i>Testudinaria</i>
—	Abdomen otherwise .....	38
38(37)	Fourth femur longer than first (Fig. 45) .....	39
—	Fourth femur subequal or shorter than first .....	41
39(38)	Venter of abdomen with large, median bulge (Fig. 33), abdomen wider than long, with two or three pairs of large spines (Fig. 34); max. 8 mm; SE U. S. to Argentina, W Indies .....	<i>Gasteracantha cancriformis</i>
—	Abdomen without ventral bulge .....	40
40(39)	PME diameter 2–3 times that of AME, black ringed (Figs. 42, 43) and abdomen longer than wide, orange with black patches on 3 pairs of tubercles (Fig. 43); web above leaf litter; max. 5 mm; 14 sp., Mexico to N Argentina .....	<i>Pronous</i>
—	PME only slightly larger than others, abdomen with paired, pointed spines (Figs. 44, 45); booklung covers usually with microscopic stridulating grooves (Fig. 47); carapace often with pairs of dimples, light thoracic rim, or domed (Fig. 46); max. 13 mm; 104 sp., S Canada to Argentina, W Indies .....	(in part) <i>Micrathena</i>
41(38)	Epigynum flat, without scape or projecting ridge or lobe (Figs. 49, 52, 57, 59) ....	42
—	Epigynum with scape (Figs. 61, 70), projecting ridge or lobe (Figs. 64, 76) ....	45
42(41)	Chile (Fig. 48); max. 7 mm; 3 sp. ....	(in part) <i>Nicolepeira</i>
—	Subtropical, tropical America .....	43
43(42)	Posterior of abdomen with a neck and four-knobbed tail (Fig. 51); max. 12 mm; 2 sp., Mexico to Guyanas, Peru, W Indies .....	<i>Witica</i>
—	Abdomen with dorsal tubercles and posterior notch; social (Figs. 56, 58) .....	44
44(43)	LE separated (Fig. 56); 10 to 12 mm; introduced .....	<i>Cyrtophora citricola</i>
—	LE touching (Fig. 58); max. 9 mm, Florida, Baja California to Panama, W Indies .....	<i>Allocyclosa bifurca</i>
45(41)	Abdomen with anterior, median, usually spine-shaped, tubercle (Figs. 60, 62) ..	46
—	Abdomen without anterior median projecting tubercle (Figs. 63, 71) .....	47
46(45)	Abdomen surrounded by about 15 tubercles (Fig. 60); max. 16 mm; 4 sp., Canada to C America, W Indies .....	<i>Acanthepeira</i>
—	Abdomen with a pair of long, dorsal projections, longer than abdomen, and anterior and posterior median tubercles (Fig. 62); max. 6 mm; Amazonian Peru .....	<i>Spinepeira schlingeri</i>
47(45)	Epigynum with a transverse ridge, often with a posterior, median, lobe (Figs. 64, 65, 67, 68, 72, 73, 76, 77) .....	48
—	Epigynum with scape (Figs. 70, 83, 84, 87, 89, 113, 116) .....	52
48(47)	Abdomen with five large spines (Fig. 63); web above water; max. 10 mm; Ecuador, Amazon area to Argentina .....	<i>Actinosoma pentacanthum</i>
—	Abdomen otherwise (Figs. 66, 71, 74, 75, 119) .....	49
49(48)	Abdomen flat, with three pairs of pointed tubercles, and elongated beyond spin- nerets (Fig. 71); max. 20 mm; 1 sp., Venezuela, Ecuador to Espírito Santa, Brazil .....	<i>Rubrepeira rubronigra</i>
—	Abdomen otherwise (Figs. 66, 74, 75, 119) .....	50
50(49)	Carapace and abdomen glossy; black oval rings on median side of PME (Figs. 74, 75); abdomen basically oval, brightly colored, glabrous (Figs. 74, 75), with paired	

→

Figures 38–55.—Females: 38, 39. *Scoloderus nigriceps* O. P.-Cambridge 1895. 38. Lateral; 39 Dorsal. 40, 41. *Wixia abdominalis* O. P.-Cambridge 1882. 40. Eyes, clypeus and chelicerae; 41. Lateral. 42. *Pronous wixoides* (Chamberlin and Ivie 1936), lateral. 43. *Pronous intus* Levi 1995, dorsal. 44, 45. *Mi-*



*crathena sagittata* (Walckenaer 1841). 44. Dorsal; 45. Lateral. 46. *Micrathena* sp., carapace and chelicera. 47. *Chaetacia aureola* (C. L. Koch 1836), booklung cover, epigynum and third and fourth coxae, subventral. 48, 49. *Nicolepeira flavifrons* (Nicolet 1849). 48. Dorsal; 49. Epigynum. 50. *Xylethrus superbus* Simon. 1895, Dorsal. 51, 52. *Witica crassicauda* (Keyserling 1865). 51. Dorsal; 52. Epigynum. 53, 54. *Carepalxis salobrensis* Simon 1895. 53. Dorsal; 54. Eyes, clypeus and chelicerae. 55. *Enacrosoma anomalum* (Taczanowski 1873), dorsal. Scale lines = 1 mm.

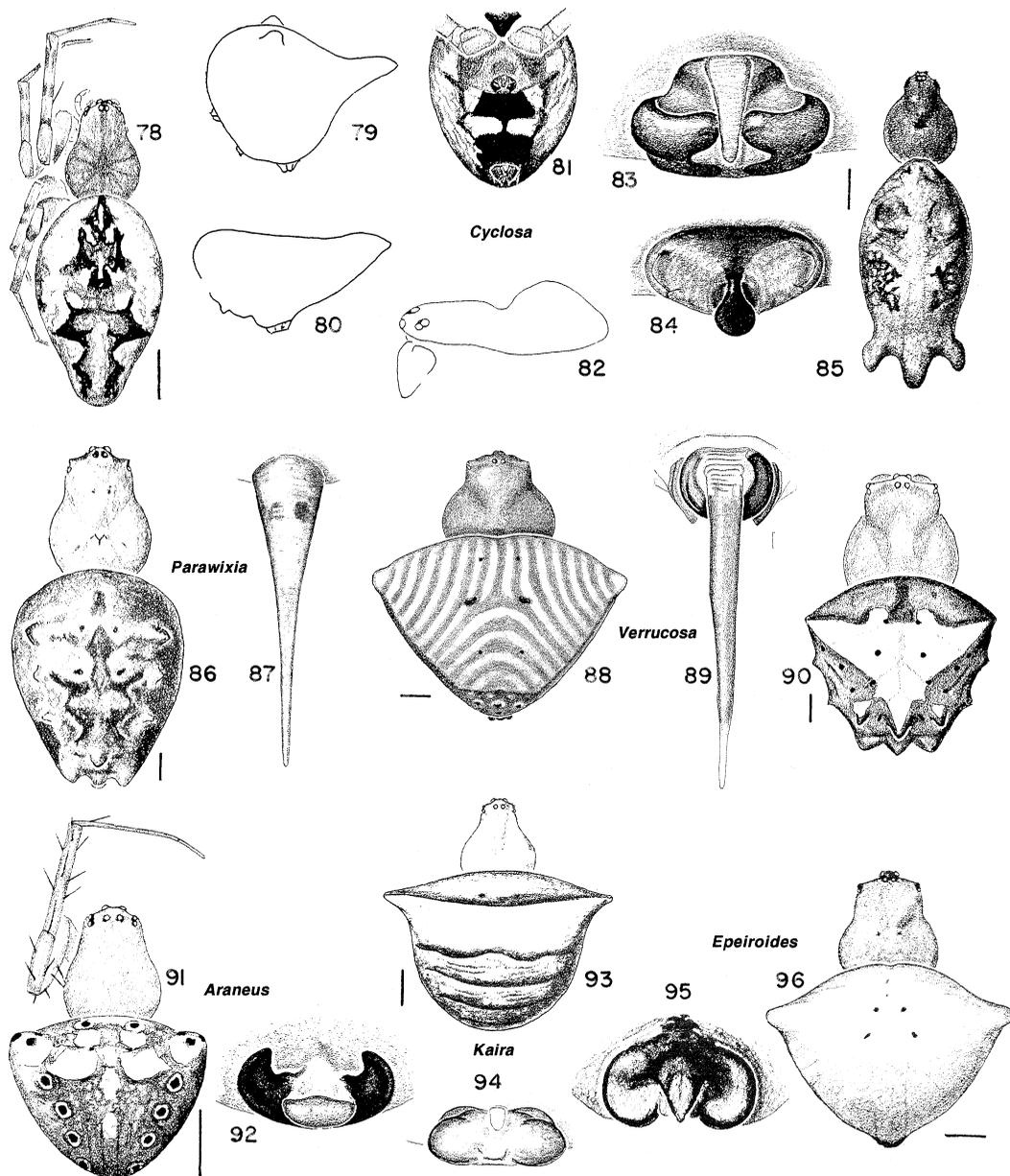


Figures 56–77.—Females: 56, 57. *Cyrtophora citricola* (Forskål 1775). 56. Dorsal; 57. Epigynum. 58, 59. *Allo cyclosa bifurca* (McCook 1887). 58. Sublateral; 59. Epigynum. 60, 61. *Acanthepeira stellata* (Walckenaer 1805). 60. Dorsal. 61. Epigynum. 62. *Spinepeira schlingeri* Levi 1955, dorsal. 63–65. *Actinosoma pentacanthum* (Holmberg 1883). 63. Dorsal; 64, 65. Epigynum; 64. Ventral; 65. Lateral. 66. *Wagneriana*, composite, dorsal. 67, 68. *W. maseta* Levi 1991. 67, 68. Epigynum; 67. Ventral; 68. Posterior. 69, 70. *Colphepeira catawba* (Banks 1911). 69. Dorsal; 70. Epigynum. 71. *Rubrepeira rubronigra* (Mello-

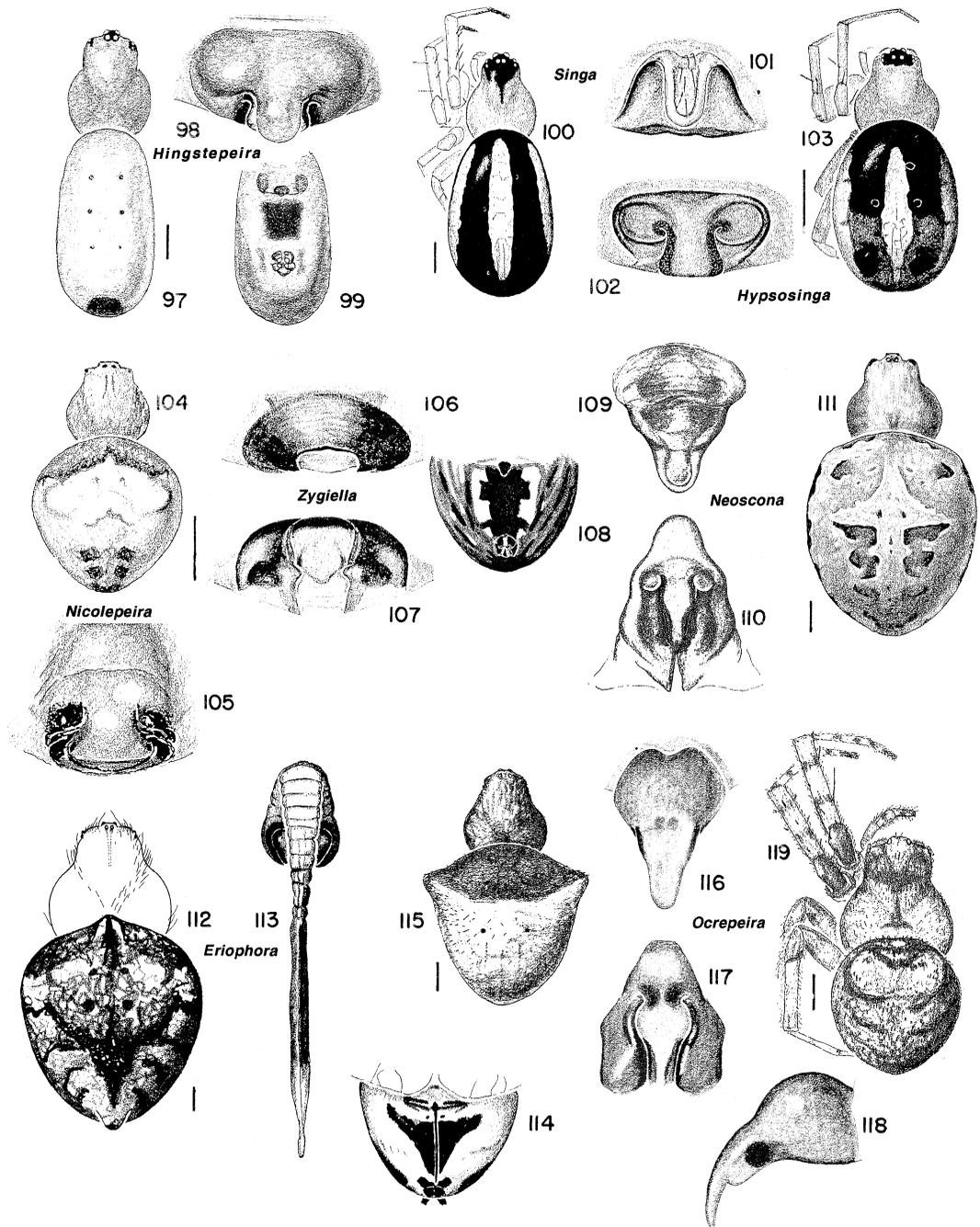
- anterior spines or lateral lobes, max. 18 mm; 134 sp., S Mexico to Argentina, W Indies . . . . . (in part) *Alpaida*
- Carapace and abdomen setose . . . . . 51
- 51(50) Abdomen rounded posteriorly (Fig. 119); max. 12 mm; 67 sp., E U. S. to Chile, W Indies . . . . . (a few) *Ocrepeira*
- Abdomen with posterior median tubercle(s) (Fig. 66); abdomen longer than wide, rectangular, with 4–6 pairs of lateral tubercles, cephalic region pale, thorax dark (Fig. 66); max. 16 mm; 39 sp., SE U. S. to Argentina, W Indies . . . . . (in part) *Wagneriana*
- 52(47) Abdomen longer than wide, pointed, elongated beyond spinnerets (Figs. 79, 80) and scape not extending far, if at all, beyond base of epigynum (Figs. 83, 84); orb decorated with line of debris; max. 12 mm; 51 sp., Alaska to S Argentina, W Indies . . . . . (in part) *Cyclosa*
- Abdomen without pointed, posterior tail (Figs. 69, 86, 88, 90) and usually scape greatly extended posteriorly beyond base (Figs. 70, 87, 89) . . . . . 53
- 53(52) Four tubercles on each of a pair of posterior bulges on subspherical abdomen (Fig. 69); web on base of trees; max. 4 mm; SE U. S. . . . . *Colphepeira catawba*
- Abdomen otherwise (Figs. 86, 88, 90); total length usually more than 5 mm . . . . . 54
- 54(53) Carapace, abdomen glossy; abdomen trapezoidal, narrowest behind (Figs. 88, 90), black-topped tubercles posteriorly and on sides (Figs. 88, 90); max. ca. 15 mm; ca. 15 sp., E U. S. to Argentina, W Indies . . . . . (most) *Verrucosa*
- Carapace, abdomen setose; abdomen longer than wide, round to trapezoidal with two to six pairs of brown tubercles on sides and posterior median tubercles (Fig. 86); max. 27 mm; 26 sp., Baja California to Argentina, W Indies . . . . . (most) *Parawixia*
- 55(34) Abdomen wider than long (Figs. 88, 91, 93, 96) . . . . . 56
- Abdomen as wide as long or longer than wide (Figs. 97, 100, 103, 104, 111) . . . . . 59
- 56(55) Scape with distal end rounded and with lip (Fig. 92); ca. 165 sp., Alaska to Chile, W Indies . . . . . (a few) *Araneus*
- Scape otherwise (Figs. 89, 94, 95) . . . . . 57
- 57(56) Scape pointed, straight and long (Fig. 89); abdomen glossy, dorsally with pattern of lines (Fig. 88); max. ca. 15 mm; SE Brazil . . . . . *Verrucosa zebra*
- Scape short, not extending beyond base (Figs. 94, 95); abdomen with lateral tubercles (Figs. 93, 96) . . . . . 58
- 58(57) Legs with black lines; sclerotized epigynum (Fig. 95), lateral plates surround median plate in posterior view; max. 8 mm; Costa Rica to Bahia, Brazil . . . . . *Epeiroides bahiensis*
- Legs without black lines; weakly sclerotized epigynum (Fig. 94), median plate overhangs laterals in posterior view; abdomen with transverse lines (Fig. 93); max. 14 mm; 14 sp., E U. S. to Argentina, W Indies . . . . . (a few) *Kaira*
- 59(55) Abdomen cylindrical, widest in posterior half (Figs. 97, 100) . . . . . 60
- Abdomen oval, spherical (Figs. 103, 104, 171) . . . . . 62
- 60(59) Temperate; abdomen dorsally with three white lines separated by two longitudinal black bands; black cephalic region (Fig. 100); max. 11 mm; 2 sp., E Canada, U. S. . . . . *Singa*
- Tropical; abdomen otherwise . . . . . 61
- 61(60) Posterior of abdomen with black patch (Fig. 97) or longitudinal lines; scape spherical or with ridge, max. 8 mm; 4 sp., Guyanas to C Amazon area. . . . . *Hingstepeira*

←

Leitão 1939), dorsal. 72–74. *Alpaida trispinosa* (Keyserling 1892). 72, 73. Epigynum; 72. Ventral; 73. Posterior. 74. Dorsal. 75–77. *Alpaida truncata* (Keyserling 1865). 75. Dorsal; 76, 77. Epigynum; 76. Ventral; 77. Posterior. Scale lines = 1 mm.

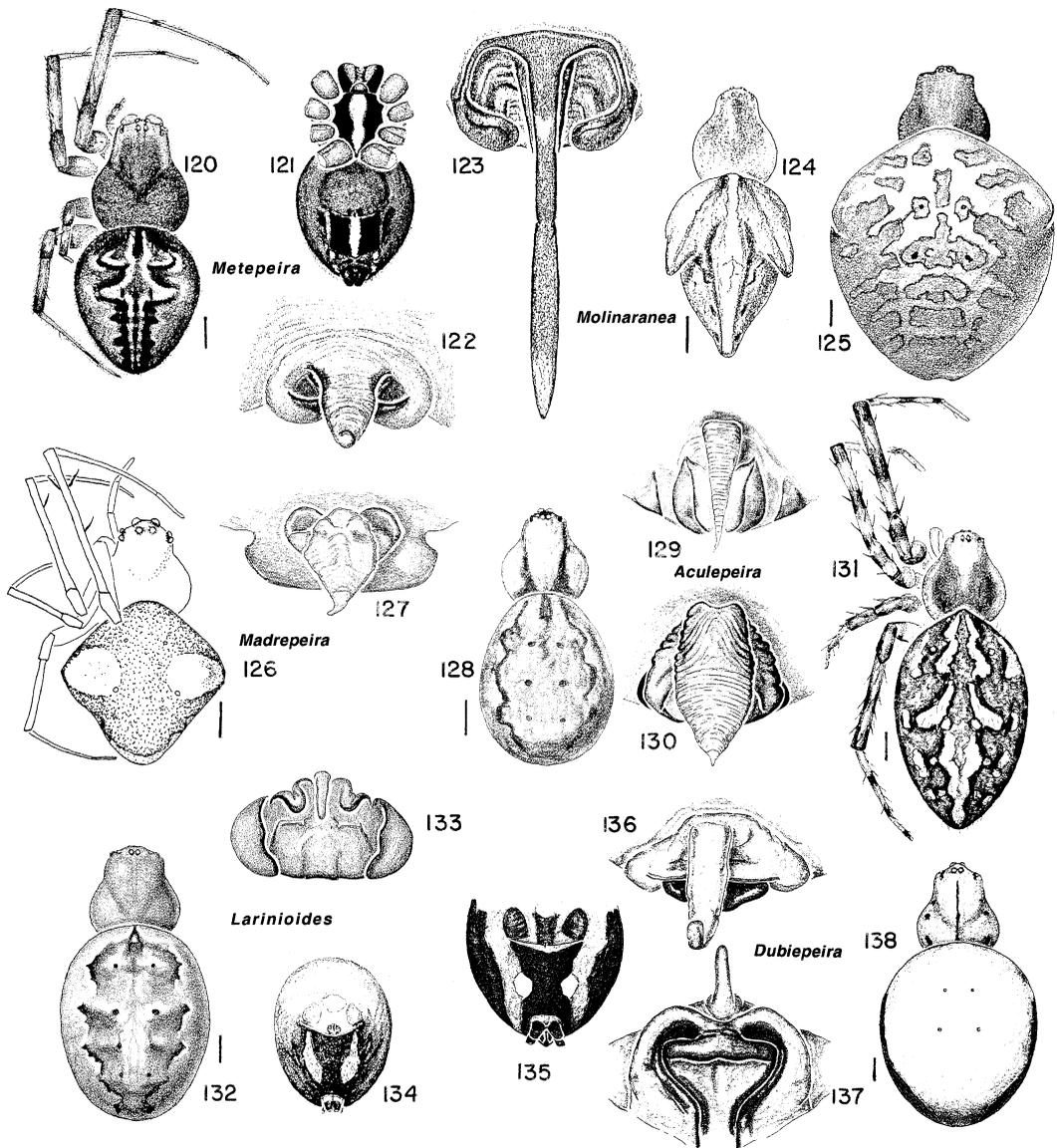


Figures 78–96.—Females: 78, 81, 83. *Cyclosa conica* (Pallas 1772). 78. Dorsal; 81. Abdomen, ventral; 83. Epigynum. 79. *C. monteverde* Levi 1999, abdomen, lateral. 80. *C. pedropalo* Levi 1999, abdomen, lateral. 82. *Cyclosa* sp., carapace and chelicera, lateral. 84, 85. *Cyclosa bifurcata* (Keyserling 1841). 84. Epigynum; 85. Dorsal. 86, 87. *Parawixia kochi* (Taczanowski 1873). 86. Dorsal; 87. Epigynum. 88. *Verrucosa zebra* (Keyserling 1892), Dorsal. 89, 90. *V. arenata* (Walckenaer 1841). 89. Epigynum; 90. Dorsal. 91, 92. *Araneus partitus* (Walckenaer 1841). 91. Dorsal; 92. Epigynum. 93, 94. *Kaira sexta* (Chamberlin 1916). 93. Dorsal; 94. Epigynum. 95, 96. *Epeiroides bahiensis* Keyserling 1885. 95. Epigynum, 96. Dorsal. Scale lines = 1 mm.



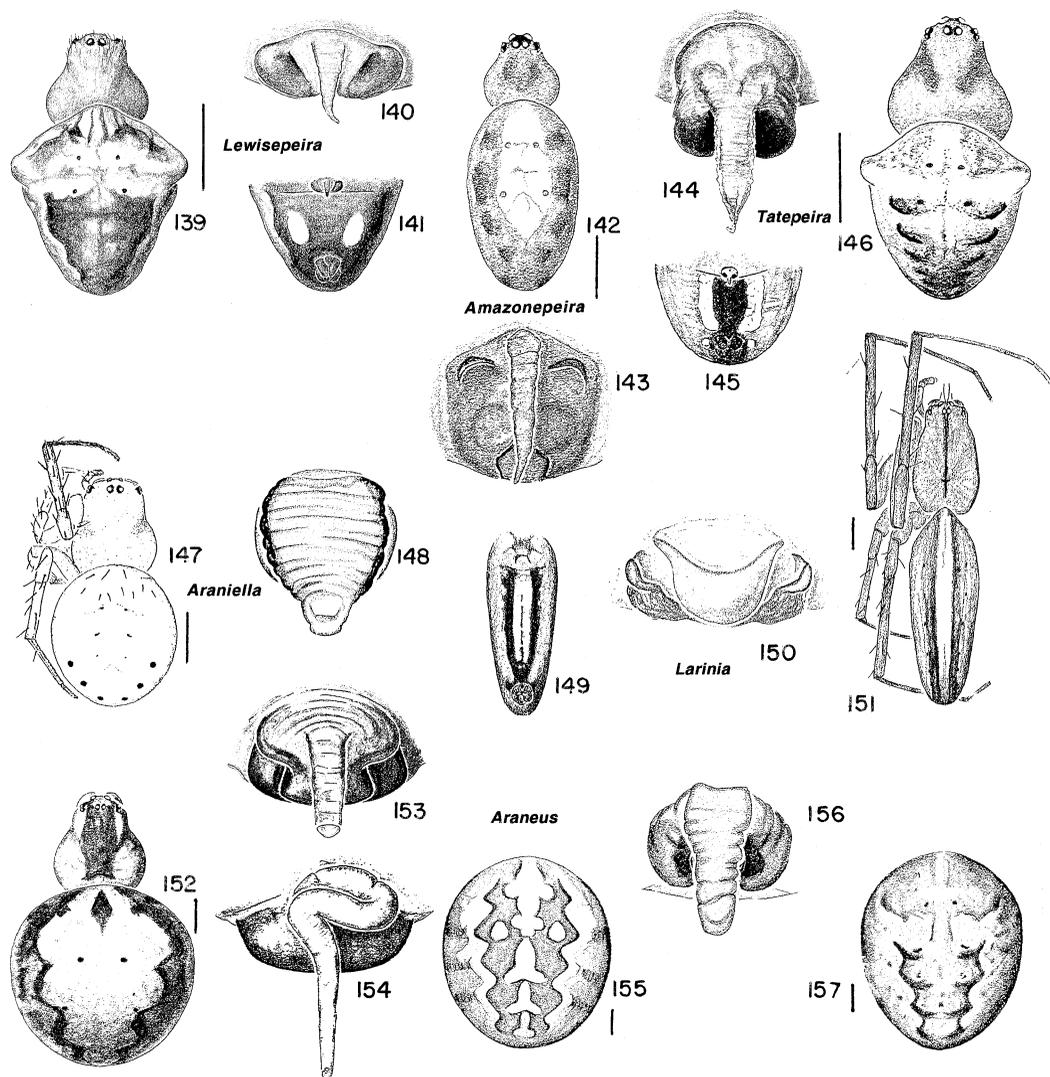
Figures 97–118.—Females. 97–99. *Hingstepeira folisecens* (Hingston 1932). 97. Dorsal; 98. Epigynum; 99. Abdomen, ventral. 100–101. *Singa keyserlingi* McCook 1893. 100. Dorsal; 101. Epigynum. 102. 103. *Hypsosinga pygmaea* (Sundeval 1831). 102. Epigynum, 103. Dorsal. 104, 105. *Nicolepeira transversalis* (Nicolet 1849). 104. Dorsal; 105. Epigynum. 106, 107. *Zygiella dispar* (Kulczynski 1885), epigynum. 106. Ventral; 107. Dorsal. 108–111. *Neoscona nautica* (L. Koch 1875). 108. Abdomen, ventral; 109, 110. Epigynum; 109. Ventral; 110. Posterior; 111. Dorsal. 112, 113. *Eriophora edax* (Blackwall 1863). 112. Dorsal; 113. Epigynum. 114. *E. fuliginea* (C.L. Koch 1843), abdomen, ventral. 115. *Ocrepeira subrufa* (F. P. -Cambridge 1904), dorsal. 116–118. *O. lurida* (Mello-Leitão 1943), epigynum. 116. Ventral; 117. Posterior; 118. Lateral. 119. *O. georgia* (Levi 1976), dorsal. Scale lines = 1 mm.

- Abdomen with folium (Fig. 158); epigynum otherwise; max. 11 mm; Mexico to Bolivia . . . . . (most) *Metazygia*
- 62(59) Epigynum flat, with depressions (Figs. 102, 105–107) . . . . . 63
- Epigynum with scape, projecting lobe or ridge (Figs. 113, 116, 123, 159, 168–170), (rarely scape or lobe is torn off) . . . . . 66
- 63(62) Chile; abdomen with humps, as long as wide (Fig. 104); max. 6 mm. . . . . *Nicolepeira transversalis*
- Tropical or nearctic; abdomen without humps (Figs. 28, 103, 171) . . . . . 64
- 64(63) Tropical, abdomen flattened, shield shaped (Fig. 28); max. 4 mm; 9 sp.; Panama to N Argentina . . . . . (in part) *Testudinaria*
- Nearctic, abdomen oval . . . . . 65
- 65(64) Epigynum usually with septum (Fig. 102); median eye region black; abdomen usually dark, dorsally with black folium or bands (Fig. 103); max. 5 mm; 5 sp., Alaska to S U. S. . . . . *Hypsosinga*
- Epigynum without septum; eye region light or in gray carapace band, abdomen light with folium (Fig. 171); max. 9 mm; 5 sp., Alaska to U. S. . . . . (in part) *Zygiella*
- 66(62) Epigynum with scape, often with annuli, usually annulated if shorter than wide (Figs. 109, 113, 116, 122, 123) . . . . . 67
- Epigynum with lobe or projecting ridge or keel, without annuli (Figs. 159–161, 165, 166, 168–170, 172–174) . . . . . 86
- 67(66) Base of epigynum indistinct, tapering into a smooth scape (Figs. 109, 113, 116–118) . . . . . 68
- Base distinct, scape set off from base (Figs. 122, 123, 129, 136) . . . . . 72
- 68(67) Scape of epigynum projecting anteriorly, turned back on itself; base is first annulus of scape or is minute (Fig. 113); venter of spherical abdomen with discrete, trapezoidal to triangular black patch (Fig. 114); max. 30 mm; 4 sp., S U. S. to Rio de Janeiro State, Brazil . . . . . (in part) *Eriophora*
- Scape not turned on itself (Figs. 109, 110, 116–118) . . . . . 69
- 69(68) Scape smooth, rounded, usually with lip (Figs. 109, 110); max. 20 mm; 10 sp., Canada to Argentina, W Indies . . . . . *Neoscona*
- Scape otherwise . . . . . 70
- 70(69) PME facing dorsolaterally (Figs. 24, 115, 119) . . . . . 71
- PME face dorsally; scape long, annulated, pointed (Fig. 87); abdomen spherical; larger than 15 mm, max. 27 mm; social; cerrado savanna of Brazil, Paraguay, Argentina . . . . . *Parawixia bistriata*
- 71(70) Abdomen without humps, light colored with distinct pattern of two parallel lines and an outer pair forming a diamond (Fig. 24), attached at anterior end; max. 9 mm; 8 sp., E U. S. to N Argentina, W Indies . . . . . (in part) *Acacesia*
- Abdomen with distinct humps and attached near its middle (Fig. 115, 119); max. 12 mm; 67 sp., E U. S. to Chile, W Indies . . . . . (in part) *Ocrepeira*
- 72(67) Base with a depression on each side of scape (Fig. 123), scape usually extends beyond base by a distance of width of base or more (Fig. 123), venter of abdomen with paired white spots or longitudinal lines; max. 18 mm; 7 sp.; Chile, Argentina . . . . . (in part) *Molinaranea*
- Base without depressions, scape not as long (Figs. 122, 129, 133, 136) or if with depressions not found in Chile, Argentina but in tropics . . . . . 73
- 73(72) Tip of scape pointed (Figs. 122, 127, 129, 133, 140, 144), rarely with a knob at distal end of scape . . . . . 74
- Tip of scape rounded (Figs. 148, 150, 153, 156) . . . . . 84
- 74(73) Abdomen oval with ventral, median, longitudinal, white line (Fig. 121) and dorsal folium (Fig. 120); tarsi and metatarsi longer than patellae and tibiae (Fig. 120); epigynum with scape barely extending beyond base (Fig. 122); many social; max. 12 mm; 41 sp., U. S. to S. Chile, W Indies . . . . . *Metepeira*
- Abdomen, if with ventral white line, with dorsal folium as in Figs. 128, 131 . . . . . 75



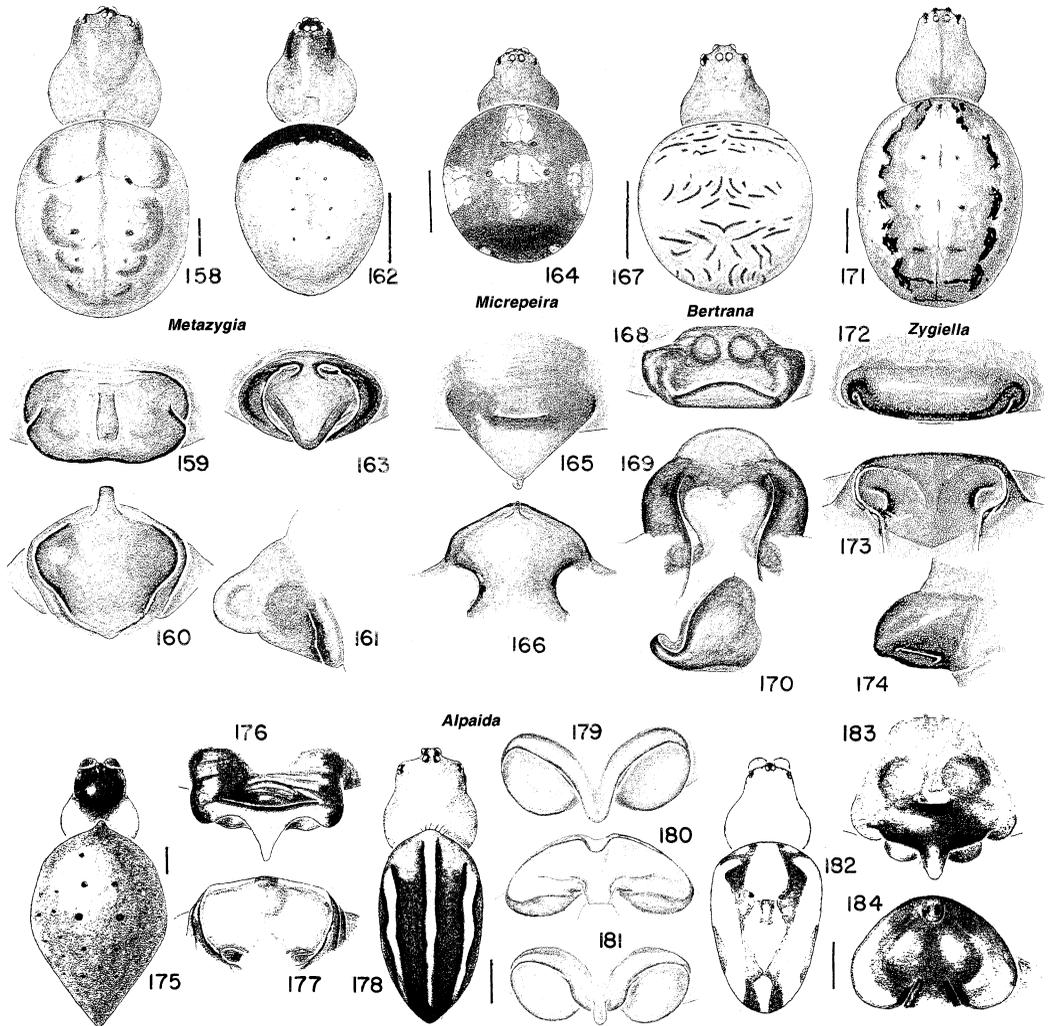
Figures 120–138.—Females: 120–122. *Metepeira labyrinthea* (Hentz 1847). 120. Dorsal; 121. Ventral; 122. Epigynum. 123, 125. *Molinaranea magellanica* (Walckenaer 1847). 123. Epigynum; 125. Dorsal. 124. *Molinaranea phaethontis* (Simon 1896), dorsal. 126, 127. *Madrepeira amazonica* Levi 1995. 126. Dorsal; 127. Epigynum. 128, 129. *Aculepeira travassosi* (Soares & Camargo 1948). 128. Dorsal; 129. Epigynum. 130, 131. *A. packardi* (Thorell 1875). 130. Epigynum. 131. Dorsal. 132–134. *Larinioides cornutus* (Clerck 1757). 132. Dorsal; 133. Epigynum; 134. Abdomen, ventral. 135–138. *Dubiepeira dubitata* (Soares & Camargo 1948). 135. Abdomen, ventral; 136, 137. Epigynum; 136. Ventral; 137. Posterior; 138. Dorsal. Scale lines = 1 mm.

75(74)	Nearctic .....	76
—	Neotropical .....	77
76(75)	Abdomen oval, dorsoventrally flattened (Fig. 132), venter with pair of white comma-shaped patches (Fig. 134); scape sometimes tipped by flat knob (Fig. 133); max. 14 mm; 3 sp., Alaska to U. S. ....	<i>Larinioides</i>



Figures 139–157.—Females: 139–141. *Lewisipeira farri* (Archer 1958). 139. Dorsal; 140. Epigynum; 141. Abdomen, ventral. 142, 143. *Amazonepeira beno* Levi, 1994. 142. Dorsal; 143. Epigynum.. 144–146. *Tatepeira tatarendensis* (Tullgren 1905); 144. Epigynum; 145. Abdomen, ventral; 146. Dorsal. 147, 148. *Araniella displicata* (Hentz 1847). 147. Dorsal; 148. Epigynum. 149–151, *Larinia directa* (Hentz 1847). 149. Abdomen, ventral; 150. Epigynum; 151. Dorsal. 152, 153. *Araneus corporosus* (Keyserling 1892). 152. Dorsal; 153. Epigynum. 154. *Araneus guttatus* (Keyserling 1865), epigynum. 155. *Araneus marmoreus* (Clerck 1757), abdomen, dorsal. 156, 157. *Araneus nordmanni* (Thorell 1870). 156. Epigynum; 157. Abdomen, dorsal. Scale lines = 1mm.

- Abdomen (Fig. 131) elongate, venter with median white line; max. 17 mm; 13 sp., Alaska to Mexico . . . . . (in part) *Aculepeira*
- 77(75) Abdomen diamond-shaped, with two light patches; legs spindly (Fig. 126); max. 6 mm; Amazon to Bolivia, Bahia, Brazil . . . . . *Madrepeira amazonica*
- Abdomen triangular to round (Fig. 138), legs normal thickness . . . . . 78
- 78(77) Abdomen subtriangular, almost as wide as long and PME facing forward (Fig. 139); pair of ventral white spots (Fig. 141); scape extending posteriorly a distance less



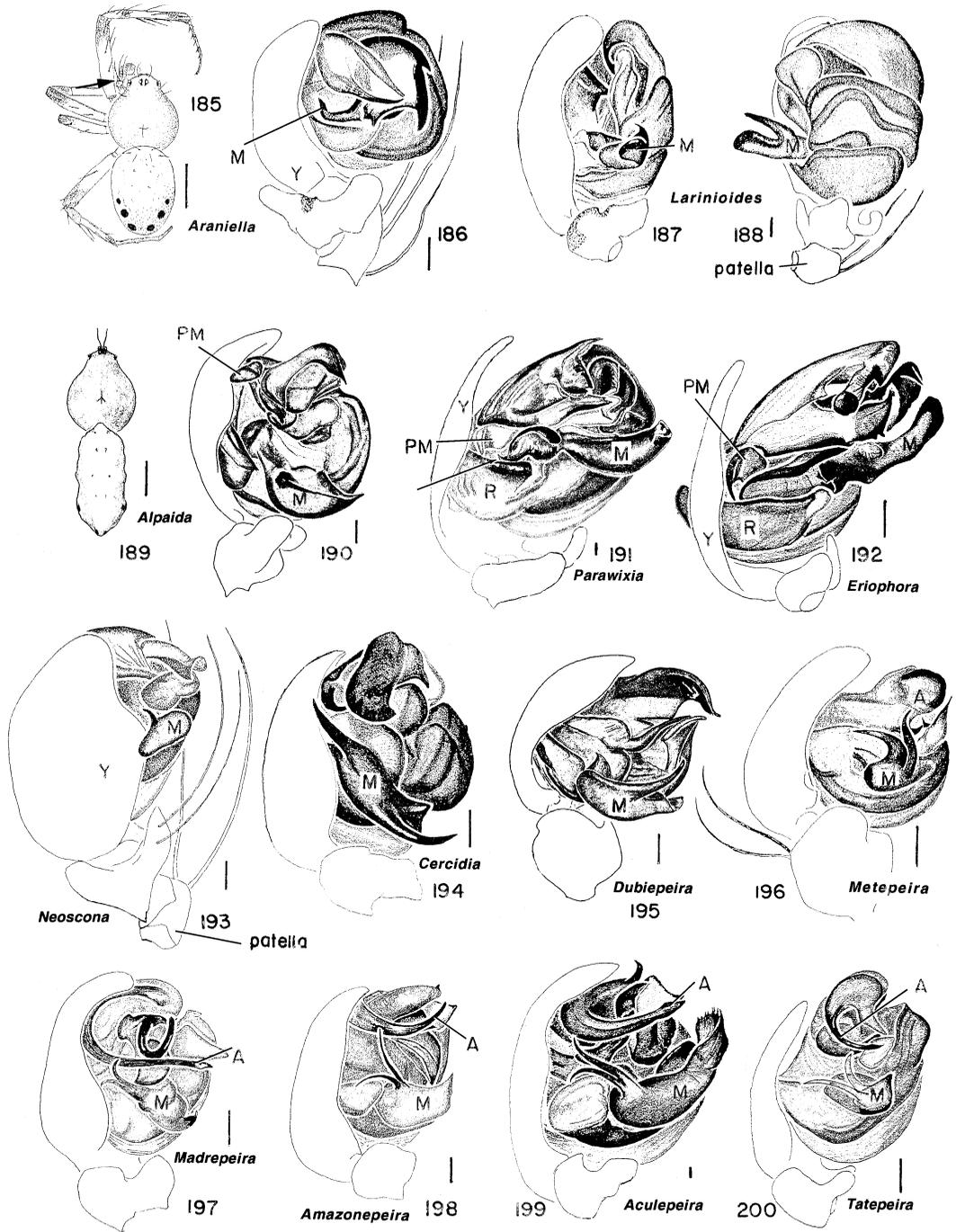
Figures 158–184.—Females: 158–161. *Metazygia wittfeldae* (McCook 1894). 158. Dorsal; 159–161. Epigynum; 159. Ventral; 160. Posterior; 161. Lateral. 162. 163. *M. genaro* Levi 1995. 162. Dorsal; 163. Epigynum. 164–166. *Micropeira fowleri* Levi 1995. 164. Dorsal; 165, 166. Epigynum; 165, Ventral; 166. Posterior. 167–170. *Bertrana striolata* Keyserling 1884. 167, Dorsal; 168–170. Epigynum; 168. Ventral; 169. Posterior; 170. Lateral. 171–174. *Zygiella x-notata* (Clerck 1757). 171. Dorsal; 172–174. Epigynum; 172. Ventral; 173. Posterior; 174. Lateral. 175–177. *Alpaيدا acuta* (Keyserling 1865). 175. Dorsal; 176, 177. Epigynum; 176. Ventral; 177. Posterior. 178–181. *A. leucogramma* (White 1841). 178. Dorsal; 179–181. Epigynum. 179. Ventral; 180. Posterior; 181. Ventral. 182–184. *A. championi* (O. P.-Cambridge 1889). 182. Dorsal; 183, 184. Epigynum; 183. Ventral; 184. Posterior. Scale lines = 1mm.

- than base length (Fig. 140) max.; 7 mm; 4 sp., Mexico, C America, W Indies . . . *Lewisipeira*
- Abdomen otherwise; PME facing dorsally . . . . . 79
- 79(78) Scape of epigynum twisted at proximal end (Fig. 154); max 16 mm; ca 4 sp.; tropical . . . . . (in part) *Araneus*
- Scape of epigynum straight . . . . . 80
- 80(79) Venter of base of epigynum soft (Fig. 136), posterior sclerotized (Fig. 137); abdomen oval, no humps, with discrete, black marks (Figs. 135, 138); max. 15 mm; 5 sp., Guyanas to N Argentina . . . . . *Dubiepeira*

- Venter and posterior of epigynum sclerotized (Figs. 83, 84, 144) . . . . . 81
- 81(80) Abdomen spherical to elongate (Figs. 79, 80); carapace light; PME adjacent (Fig. 78); orb decorated with line of debris; max. 5mm; 51 sp., Amazon . . . . . (a few sp.) *Cyclosa*
- Abdomen otherwise; PME separated by about their diameter . . . . . 82
- 82(81) Abdomen narrow, length one and three-quarters its width (Fig. 142); eye area often black (Fig. 142); base of epigynum flat with little sculpturing (Fig. 143); max. 5 mm; 5 sp., Amazon area . . . . . *Amazonopeira*
- Abdomen wider, eye region light (Figs. 128, 146) and base of epigynum sculptured (Figs. 129, 144) . . . . . 83
- 83(82) Abdomen oval in outline, slightly flattened, sometimes with slight humps (Fig. 128); epigynum (Fig. 129); max. 17 mm; 13 sp., South America . . . . . (in part) *Aculepeira*
- Abdomen with distinct dorsal or lateral humps (Fig. 146); max. 14 mm; 4 sp., Honduras to S Brazil . . . . . *Tatepeira*
- 84(73) Two or three pairs of round black spots dorsally on posterior of round yellow to green abdomen (Fig. 147); max. 8 mm; 2 sp., Alaska to S U. S. . . . . *Araniella*
- Abdomen without pairs of black, round spots (Figs. 151, 152, 155, 157) . . . . . 85
- 85(84) Abdomen elongate, often with anterior median hump (Fig. 151), venter with median, white streak (Fig. 149); max. 12 mm; 11 sp., S Canada to Argentina, W Indies . . . . . *Larinia*
- Abdomen spherical or oval (Figs. 152, 155, 157), without median hump, and without ventral white streak; max. 28 mm; ca. 165 sp., Alaska to Chile, W Indies . . . . . (most) *Araneus*
- 86(66) PME almost touching (Figs. 158, 162); carapace glossy; max. 12 mm; 88 sp., S U. S. to Argentina . . . . . (most) *Metazygia*
- PME more than one-half their diameter apart (Figs. 164, 167, 171, 178) . . . . . 87
- 87(86) Epigynal ridge with a minute, transparent scape at its tip (Fig. 165); abdomen spherical with contrasting pattern (Fig. 164); max. 7 mm; 7 sp., Costa Rica to Mato Grosso . . . . . *Micrepeira*
- Lobe without minute scape on tip (Figs. 168, 172, 176) . . . . . 88
- 88(87) PME facing dorsolaterally (Fig. 119) and abdomen attached one third from its anterior end (Fig. 119); max. 12 mm; 67 sp., E U. S. to Chile, W Indies . . . . . (a few) *Ocrepeira*
- PME facing dorsally; abdomen attached at its anterior end (Figs. 167, 171, 178) . . . . . 89
- 89(88) Abdomen spherical, as wide as long (Fig. 167); max. 4 mm; 13 sp., Costa Rica to S Brazil . . . . . *Bertrana*
- Abdomen oval to elongate (Figs. 171, 175, 178, 182) . . . . . 90
- 90(89) Epigynum ridge usually with secondary median, smaller lobe on its edge (Figs. 176, 177, 179–181, 183, 184); carapace yellow, posterior median eyes bordered by black sickle on its mesal side (Figs. 175, 178, 182); body glossy; max. 18 mm; 134 sp., S Mexico to Argentina, W Indies . . . . . (most) *Alpaida*
- Epigynum ridge without secondary smaller lobe bearing two posterior depressions (Figs. 172–174); max. 8 mm; Alaska to U. S., introduced in Argentina, Chile . . . . . *Zygiella x-notata*

## KEYS TO MALES

Males of American *Carepalxis*, *Spinepeira* and *Rubrepeira* are unknown. The male of *Carepalxis* may have a branched second tibia and swellings on the carapace, as do males from Australia. Presumably the male of *Spinepeira* has the posterior median eyes facing sideways.



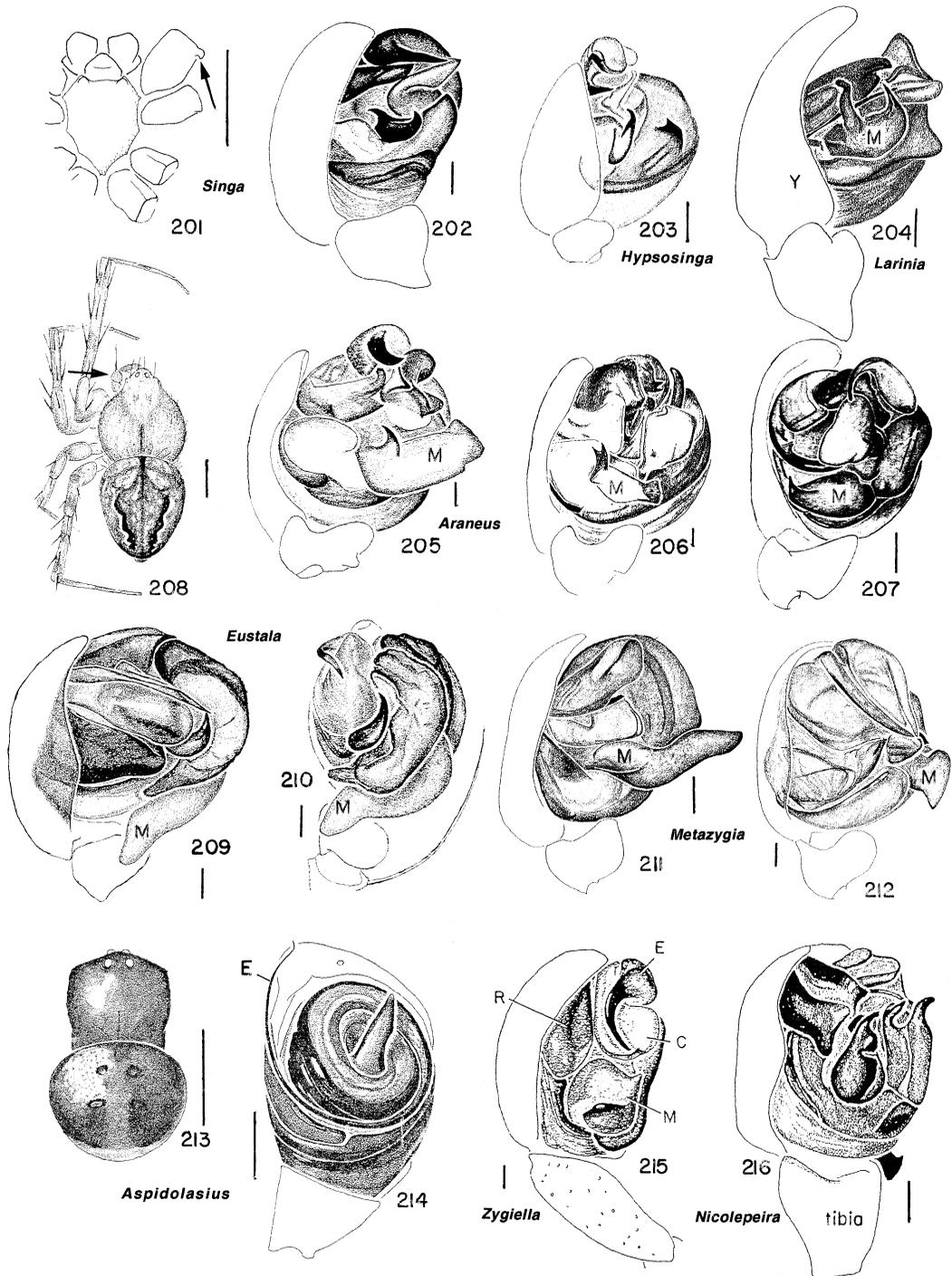
Figures 185–200.—Males: 185, 186. *Araniella displicata* (Hentz 1847). 185. Dorsal; 186. Palpus. 187,188. *Larinioides cornutus* (Clerck 1757), Palpus; 187. Mesal; 188. Ventral. 189, 190. *Alpaيدا almada* Levi 1988. 189. Dorsal; 190. Palpus. 191. *Parawixia bistrata* (Rengger 1836), palpus. 192. *Eriophora fuliginea* (C.L. Koch 1843), Palpus. 193. *Neoscona arabesca* (Walckenaer 1841), palpus. 194. *Cercidia prominens* (Westring 1851), palpus. 195. *Dubiepeira dubitata* (Soares & Camargo 1949), palpus. 196. *Metepeira labyrinthea* (Hentz 1847), palpus. 197. *Madrepeira amazonica* Levi 1995, palpus. 198. *Amazonepeira masaka* Levi 1994, palpus. 199. *Aculepeira packardi* (Thorell 1875), palpus. 200. *Tatepeira tatarendensis* (Tullgren 1905), palpus. Scale lines = 1mm; palpi, 0.1 mm.

## SPEED KEY FOR MALES

- 1 Palpal patella with two or more long macrosetae (Figs. 185, 188). Go to 1 in key for males, or if not to 19 below.
- 19(1) Third tibia with anterior feathery trichobothria (as in female, Fig. 2). Go to 19 in key, or if not to 20 below.
- 20(19) Median apophysis soft, white, worm-shaped (Fig. 209, 211). Go to 20 in main key, or if not to 22 below.
- 22(20) Palpal tibia cone-shaped, as long or longer than wide (Figs. 214–216). Go to 22 in key, or if not to 25 below.
- 25(22) Carapace with projections (Fig. 217), pairs of dimples (Fig. 224), tubercles (as in female, Figs. 25, 27), bulges (Fig. 231), spines or denticles (Fig. 222), or elongated (Fig. 229). Go to 25 in key, or if not to 34 below.
- 34(25) Posterior row of eyes procurved (Figs. 237, 241). Go to 34 in key, or if not to 38 below.
- 38(34) Abdomen modified with dorsal sclerotized areas (Figs. 225, 226, 245), more than two tubercles (Fig. 251, 253), or elongated (Figs. 263, 264). Go to 38 key, or if not to 56 below.
- 56(38) Abdomen oval with posterior notch (Fig. 275). Go to 56 in key, or if not to 58 below.
- 58(56) Abdomen wider than long (Figs. 277, 279). Go to 58 in key, or if not to 61 below.
- 61(58) Paramedian apophysis present (Fig. 286) or fourth coxae with short macroseta (Figs. 285, 288). Go to 61 in key, or if not to 69 below.
- 69(61) Without PM; fourth coxae never with macroseta. Go to 69 in key.

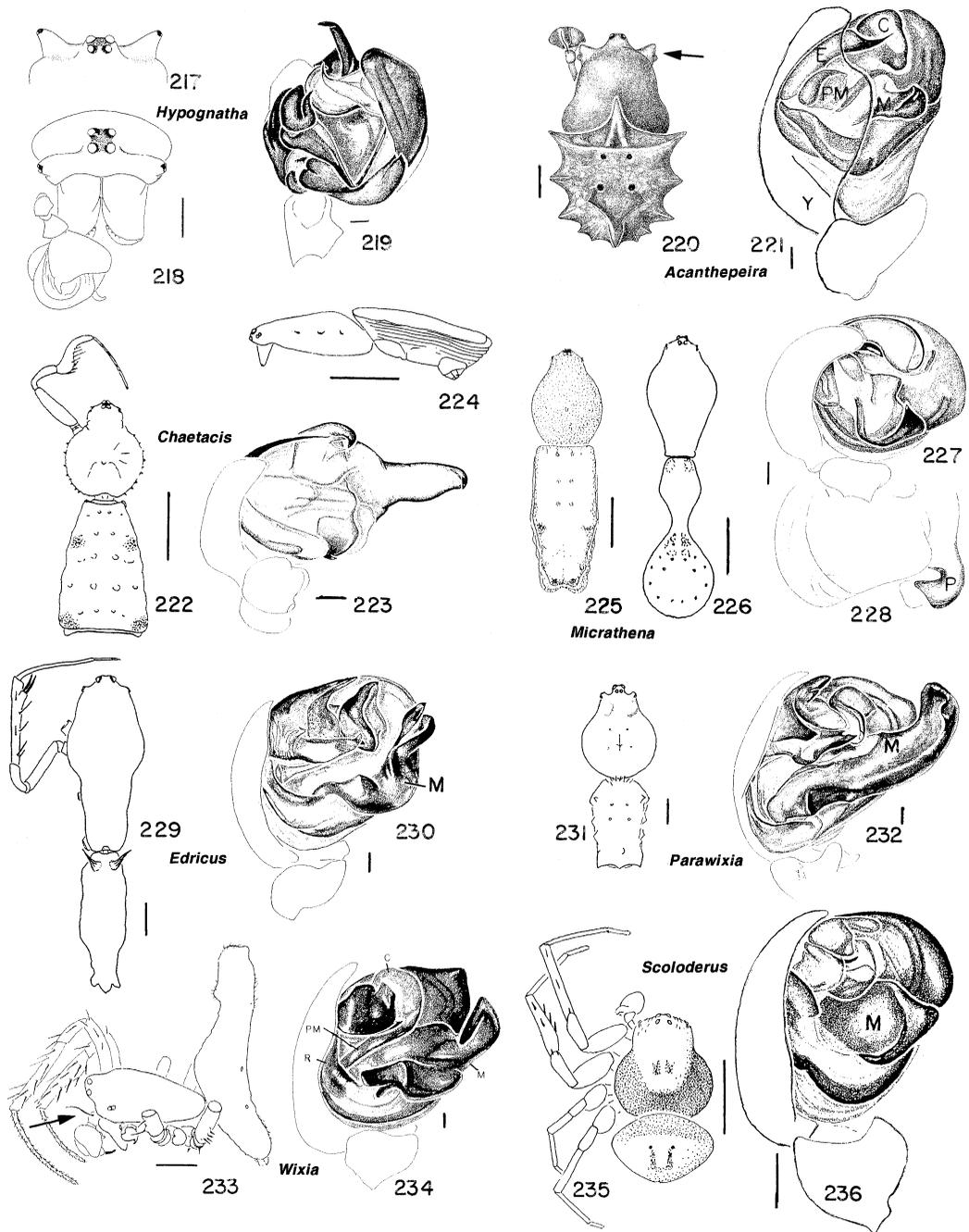
## KEY FOR MALES

1. Palpal patella with two or more long macrosetae (Figs. 185, 186, 188, 193), one may be stronger than other . . . . . 2
- Palpal patella with one macroseta or none (Figs. 208, 233) . . . . . 19
- 2(1) Palpal patella with three or more macrosetae, rarely only two, two distally, one proximally and M pointing toward Y (Fig. 186); abdomen yellow to green with 2 or 3 pairs of round, black spots (Figs. 185); max. 5 mm; 2 sp., Alaska to U. S. . . . . *Araniella*
- Palpal patella with two macrosetae (Figs. 188, 193); M and abdomen otherwise . . . . . 3
- 3(2) M split into two parallel, projecting branches (Figs. 187, 188); abdomen, oval, flattened (as in female, Fig. 132); max. 5 mm; 3 sp.; Alaska to U. S. . . . . *Larinioides*
- M otherwise . . . . . 4
- 4(3) Abdomen with undulating sides (Fig. 189); carapace yellow with black eye region; palpus (Fig. 190); max. 11 mm; Panama to Brazil . . . . . (a few) *Alpaida*
- Abdomen with sides evenly rounded . . . . . 5
- 5(4) Prominent PM next to R and Y (Figs. 191, 192); M elongate, without spines (Figs. 191, 192); subtropical . . . . . 6
- Without PM (Figs. 193–200) . . . . . 7
- 6(5) Ventral abdominal markings indistinct; proximal end of M with small tooth facing PM (Fig. 191); max. 19 mm; S Brazil, Paraguay, N Argentina . . . . . *Parawixia bistriata*
- With discrete, trapezoidal black patch on abdomen venter (as in female, Fig. 114); proximal end of M without tooth (Fig. 192); max. 16 mm; 4 sp., S U. S. to Rio de Janeiro State, Brazil, W Indies . . . . . *Eriophora*
- 7(5) Patellar macrosetae of unequal thickness and M as wide as long, almost round, touching Y (Fig. 304); abdomen spherical, oval (Fig. 303); max. 3 mm; 13 sp., Costa Rica to S Brazil . . . . . (in part) *Bertrana*
- Patellar macrosetae subequal or N of Costa Rica . . . . . 8
- 8(7) M in middle of palpus with tooth touching or overhanging Y (Fig. 193); two long patellar setae (Fig. 193); max. 15 mm; 10 sp., Canada to Argentina, W Indies . . . . . *Neoscona*
- M otherwise, . . . . . 9
- 9(8) Abdomen orange, with scutum, pointed anteriorly (as in female, Fig. 7); M drawn out



Figures 201–216.—Males: 201, 202. *Singa eugeni* Levi 1972. 201. Sternum and left coxae; 202. Palpus. 203. *Hypsosinga rubens* (Hentz 1847), palpus. 204. *Larinia directa* (Hentz 1847), palpus. 205. *Araneus diadematus* (Clerck 1757), palpus. 206. *A. bogotensis* (Keyserling 1864), palpus. 207. *A. detrimentosus* (O. P.-Cambridge 1889), palpus. 208–210. *Eustala anastera* (Walckenaer 1841); 208, dorsal. 209, 210. Palpus; 209. Mesal; 210. Ventral. 211. *Metazygia nigrocincta* (F. P.-Cambridge 1904), palpus. 212. *M. wittfeldae* (McCook 1894), palpus. 213, 214. *Aspidolasius branicki* (Taczanowski 1879). 213. Dorsal; 214. Palpus. 215. *Zygiella x-notata* (Clerck 1757), palpus. 216. *Nicolepeira transversalis* (Nicolet 1849), palpus. Scale lines = 1 mm; palpi, 0.1 mm.

- into point at each end (Fig. 194); max. 4 mm; holarctic, or introduced to NE U. S. . . . .  
 . . . . . *Cercidia prominens*
- Abdomen and M otherwise . . . . . 10
- 10(9) M with one narrow branch (Fig. 195); abdomen with discrete black patches and bands  
 (as in female, Fig. 138); max. 7 mm; 5 sp., Guyanas to N Argentina . . . . . *Dubiepeira*
- M otherwise . . . . . 11
- 11(10) M with two flagellate projections on shared base (Figs. 196–200) . . . . . 12
- M without paired, flagellate projections (Figs. 203–207) . . . . . 16
- 12(11) A asymmetrical, circular (Fig. 196); abdomen short, oval, with median ventral white  
 line (as in female, Figs. 120, 121); max. 8 mm; 41 sp., many social; U. S. to S Chile,  
 W Indies . . . . . *Metepeira*
- A rod-shaped (Figs. 197–200) . . . . . 13
- 13(12) Abdomen with humps (as in female, Fig. 126, 146) . . . . . 14
- Abdomen oval, without humps (as in female, Figs. 128, 142) . . . . . 15
- 14(13) Abdomen diamond-shaped (as in female, Fig. 126); legs thin; A dividing palpus (Fig.  
 197); max. 4 mm; 1 sp., Amazon to Bolivia, Bahia, Brazil . . . . . *Madrepeira amazonica*
- Abdomen with prominent humps, slightly longer than wide (as in female Fig. 146); A  
 terminal (Fig. 200); max. 4 mm; 4 sp., Honduras to S Brazil . . . . . *Tatepeira*
- 15(13) Abdomen narrowly oval, length about 1.6 times its width (as in female Fig. 142); palpus  
 (Fig. 198); max 3.5 mm; eye region black; 5 sp., Amazon area . . (in part) *Amazonepeira*
- Abdomen wider, length about 1.3 times its width; (as in female Fig. 128, 131); palpus  
 (Fig. 199); 3.5 to 6 mm; N Am. abdomen with ventral, median white line; max. 9 mm;  
 13 sp., Alaska to Argentina . . . . . *Aculepeira*
- 16(11) ME region usually black on glossy carapace; glossy abdomen with two longitudinal  
 black bands or four dark patches; carapace glossy (as in female Figs. 100, 103); ho-  
 larctic . . . . . 17
- ME region light (as in female Figs. 151, 152) on setose carapace; abdomen setose (as  
 in female Fig. 151, 152) . . . . . 18
- 17(16) First coxa with hook (Fig. 201); macrosetae of unequal thickness; palpus (Fig. 202);  
 max. 6 mm; 2 sp., E Canada, U. S. . . . . *Singa*
- First coxa without hook; palpus (Fig. 203); max. 4 mm; 5 sp., Alaska to S U. S. . . . .  
 . . . . . *Hypsosinga*
- 18(16) Metatarsi and tarsi longer than patellae and tibiae; abdomen elongated, often with an-  
 terior median tubercle and median ventral white streak (as in female, Fig. 149, 151);  
 M with two projections, each turned toward Y (Fig. 204); max. 7 mm; 11 sp., S Canada  
 to Argentina, W. Indies. . . . . *Larinia*
- Metatarsi and tarsi shorter than patellae and tibiae; abdomen rounded anteriorly, oval  
 to round, often with humps; M with teeth or points (Figs. 205–207); max. 10 mm; ca.  
 165 sp., Alaska to Chile, W Indies . . . . . (most) *Araneus*
- 19(1) Third tibia with anterior feathery trichobothria thoracic region usually high, with slop-  
 ing cephalic region (as in female Fig. 2); palpus (Fig. 317); max. ca. 8 mm; ca. 20 sp.,  
 E Canada to Argentina, W Indies . . . . . *Mangora*
- Third tibia without feathery trichobothria (Figs. 185, 208) . . . . . 20
- 20(19) Median apophysis soft, white, worm-shaped (Figs. 209–212) . . . . . 21
- M sclerotized with edge or spines (Figs. 206, 207, 215) . . . . . 22
- 21(20) M in longitudinal position on side of palpus (Figs. 209, 210); PME separated by more  
 than their diameter (Fig. 208); max. ca. 9 mm; ca. 100 sp., Canada to Argentina, W  
 Indies . . . . . *Eustala*
- M in transverse position (Figs. 211, 212); PME separated by less than their diameter  
 (as in female, Fig. 18); max. 8 mm; 88 sp., S U. S. to Argentina, W Indies . . . . .  
 . . . . . (in part) *Metazygia*
- 22(20) Palpal tibia cone-shaped, as long or longer than wide (Figs. 214–216) . . . . . 23
- Palpal tibia bowl-shaped, as wide as long or shorter, distal margin indented, asymmet-  
 rical (Figs. 205, 211, 221) . . . . . 25

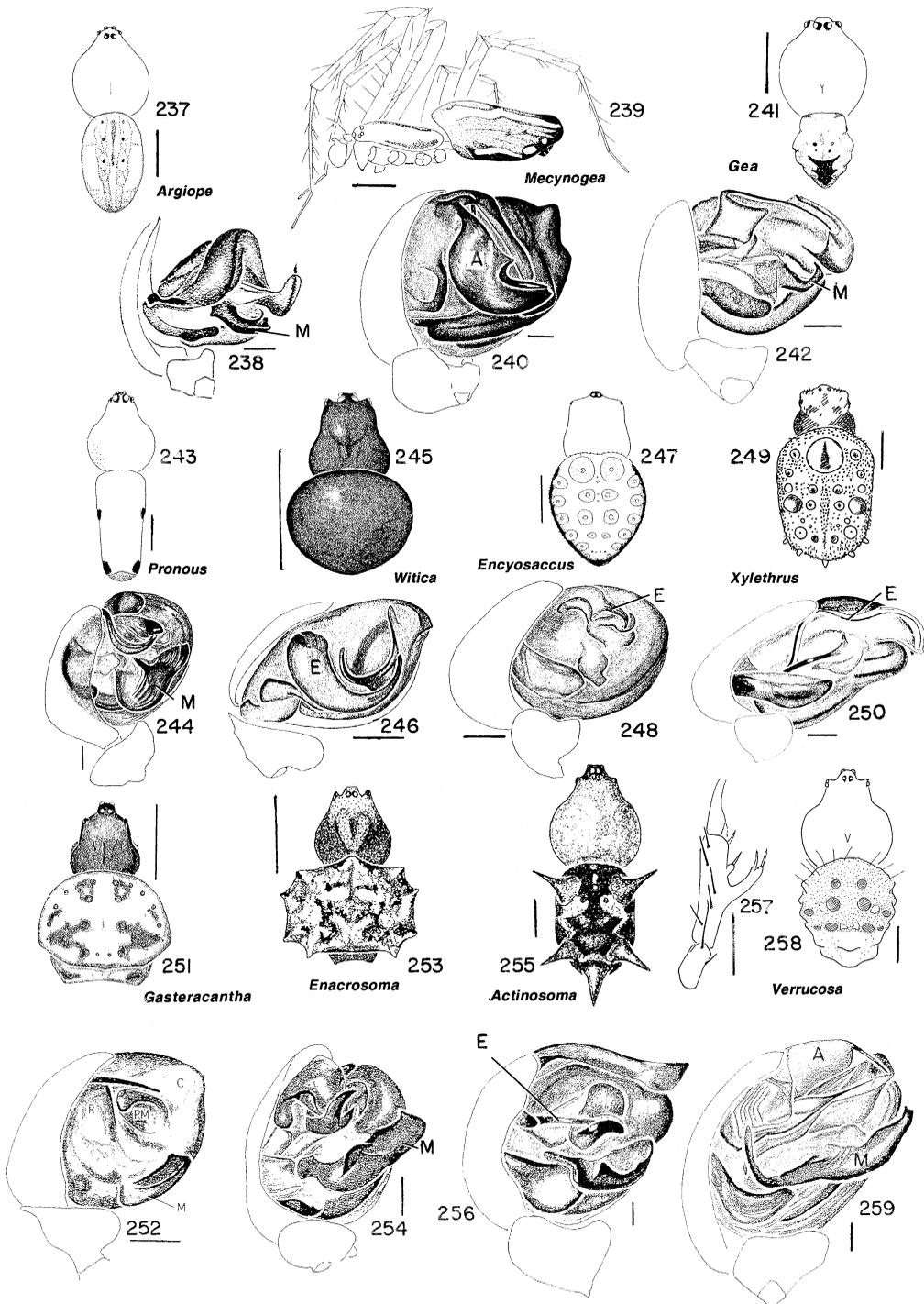


Figures 217–236.—Males: 217–219. *Hypognatha cryptocephala* Mello-Leitão 1947. 217. Eyes, dorsal; 218. Eyes, clypeus, chelicerae and right palpus; 219. Palpus.. 220, 221. *Acanthepeira stellata* (Walckenaer 1805). 220. Dorsal; 221. Palpus. 222, 223. *Chaetacis picta* (C.L. Koch 1836). 222. Dorsal; 223. Palpus. 224. *Micrathena* sp., lateral. 225, 227, 228. *M. pupa* Simon 1897. 225. Dorsal; 227, 228. Palpus; 227. Mesal; 228. Lateral. 226. *M. vigorsi* (Perty 1833), dorsal. 229, 230. *Edricus productus* O. P.-Cambridge 1896. 229. Dorsal; 230. Palpus.. 231, 232. *Parawixia matiapa* Levi 1992. 231. Dorsal; 232. Palpus.. 233, 234. *Wixia abdominalis* (O. P.-Cambridge 1882). 233. Lateral; 234. Palpus.. 235, 236. *Scoloderus nigriceps* (O. P.-Cambridge 1895). 235. Dorsal; 236. Palpus. Scale lines = 1 mm; palpi, 0.1 mm.

- 23(22) Carapace bulging (Fig. 213); abdomen with glossy scute (Fig. 213); palpus (Fig. 214); max. 3 mm; Venezuela to Bolivia . . . . . *Aspidolasius branicki*  
 — Carapace normal shape; abdomen soft . . . . . 24
- 24(23) Abdomen oval, longer than wide, without humps (as in female, Fig. 171); palpus (Fig. 215); max. 6 mm; 5 sp., Alaska to U. S., introduced in Argentina, Chile . . . . .  
 . . . . . (in part) *Zygiella*  
 — Abdomen as wide as long with humps (as in female, Fig. 104); palpus (Fig. 216); max. 3 mm; Chile . . . . . *Nicolepeira transversalis*
- 25(22) Carapace with projections (Fig. 217), pairs of dimples (Fig. 224), tubercles (as in female, Figs. 25, 27), bulges (Fig. 231), spines or denticles (Fig. 222), or elongated (Fig. 229) . . . . . 26  
 — Carapace not so modified (Figs. 237, 243, 247, 255) . . . . . 34
- 26(25) Clypeus with anterior projections (Figs. 217, 218); sternum with posterior notch holding extension from genital area (as in female, Fig. 29); abdomen with turtle-like scutes (as in female, Fig. 30); palpus (Fig. 219); max. 5 mm; 35 sp., Mexico to N Argentina . . . . . *Hypognatha*  
 — Carapace, sternum and abdomen otherwise . . . . . 27
- 27(26) Carapace with denticles around sides and spines or denticles on each side in LE region (Fig. 222); palpus (Fig. 223); max. 4 mm; 9 sp., S Mexico to Paraguay . . . . . *Chaetacis*  
 — Carapace otherwise . . . . . 28
- 28(27) Carapace with pairs of dimples (Fig. 224), often with a thoracic bulge; abdomen dorsally flattened, rectangular, barrel or violin-shaped, with thin scutum (Figs. 224–226); modified P (Fig. 228); lung covers usually have a stridulating area (as in female, Fig. 47); max. 8 mm; 104 sp., S Canada to Argentina, W Indies . . . . . (in part) *Micrathena*  
 — Carapace without pairs of dimples; abdomen otherwise; without stridulating area on lung covers . . . . . 29
- 29(28) LE on side of projection (Fig. 220); abdomen surrounded by large spines, including anterior, median spine (Fig. 220); palpal sclerites partly covered by large Y (Fig. 221); max. 11 mm; 4 sp., Canada to C America, W Indies . . . . . *Acanthepeira*  
 — LE not on sides of projection; abdomen usually without anterior, median spine; palpus otherwise . . . . . 30
- 30(29) Carapace elongated posteriorly (Fig. 229); palpus with large M (Fig. 230); max. 10 mm; 2 sp., Mexico to Ecuador . . . . . *Edricus*  
 — Carapace with normal outline (Figs. 231, 233, 235) . . . . . 31
- 31(30) Carapace posteriorly with two branched tubercles (Fig. 315); palpus (Fig. 314); max. 2 mm; 45 sp., NE U. S. to Argentina . . . . . *Mastophora*  
 — Carapace with bulges or swellings (Figs. 231, 233, 235) . . . . . 32
- 32(31) Carapace with two bulges (Fig. 231); PME facing dorsally (Fig. 231); abdomen attached on its anterior end (Fig. 231); M longer than wide, projecting (Fig. 232); max. 19 mm; 27 sp., Baja California to Argentina, W Indies . . . . . (in part) *Parawixia*  
 — Carapace with one bulge; PME facing dorsolaterally (Fig. 235); abdomen attached near its middle or posterior end (Figs. 233, 235); . . . . . 33
- 33(32) Abdomen length more than 3 times its width, attached on its posterior third, held vertically (Fig. 233); clypeus high (Fig. 233); M complex (Fig. 234); max. 6 mm; Guyanas to Bolivia . . . . . *Wixia abdominalis*  
 — Abdomen as wide as long, attached near middle (Fig. 235); M wide, flat (Fig. 236); max. 3 mm; 5 sp., Florida to N Argentina, W Indies . . . . . *Scoloderus*

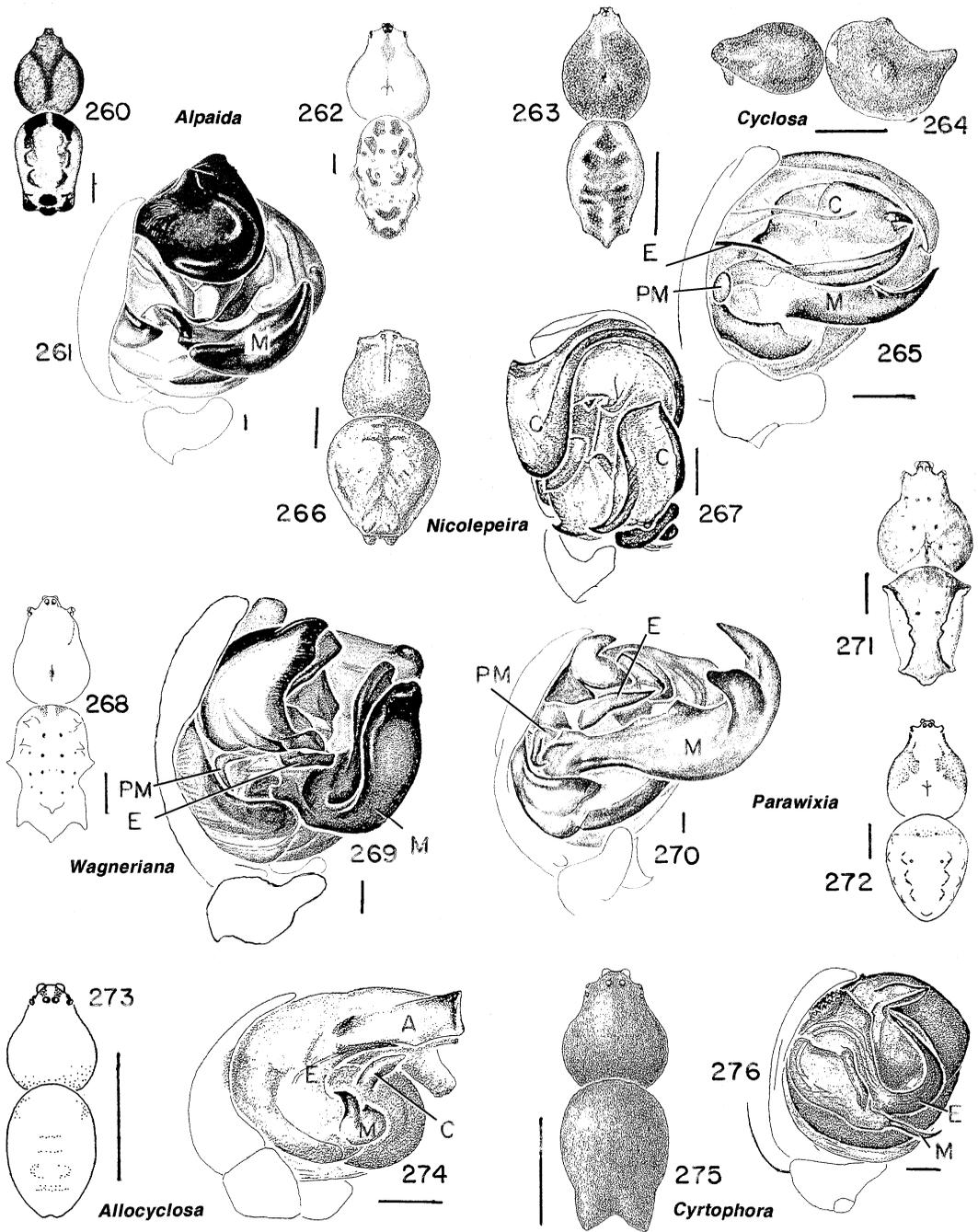
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Figures 237–259.—Males: 237. *Argiope argentata* (Fabricius 1775), dorsal. 238. *A. savignyi* Levi, 1968. Palpus. 239, 240. *Mecynogea lemniscata* (Walckenaer 1841). 239. Lateral; 240. Palpus. 241, 242. *Gea heptagon* (Hentz 1850). 241. Dorsal; 242. Palpus. 243. *Pronous intus* Levi 1995, dorsal. 244. *P. felipe*



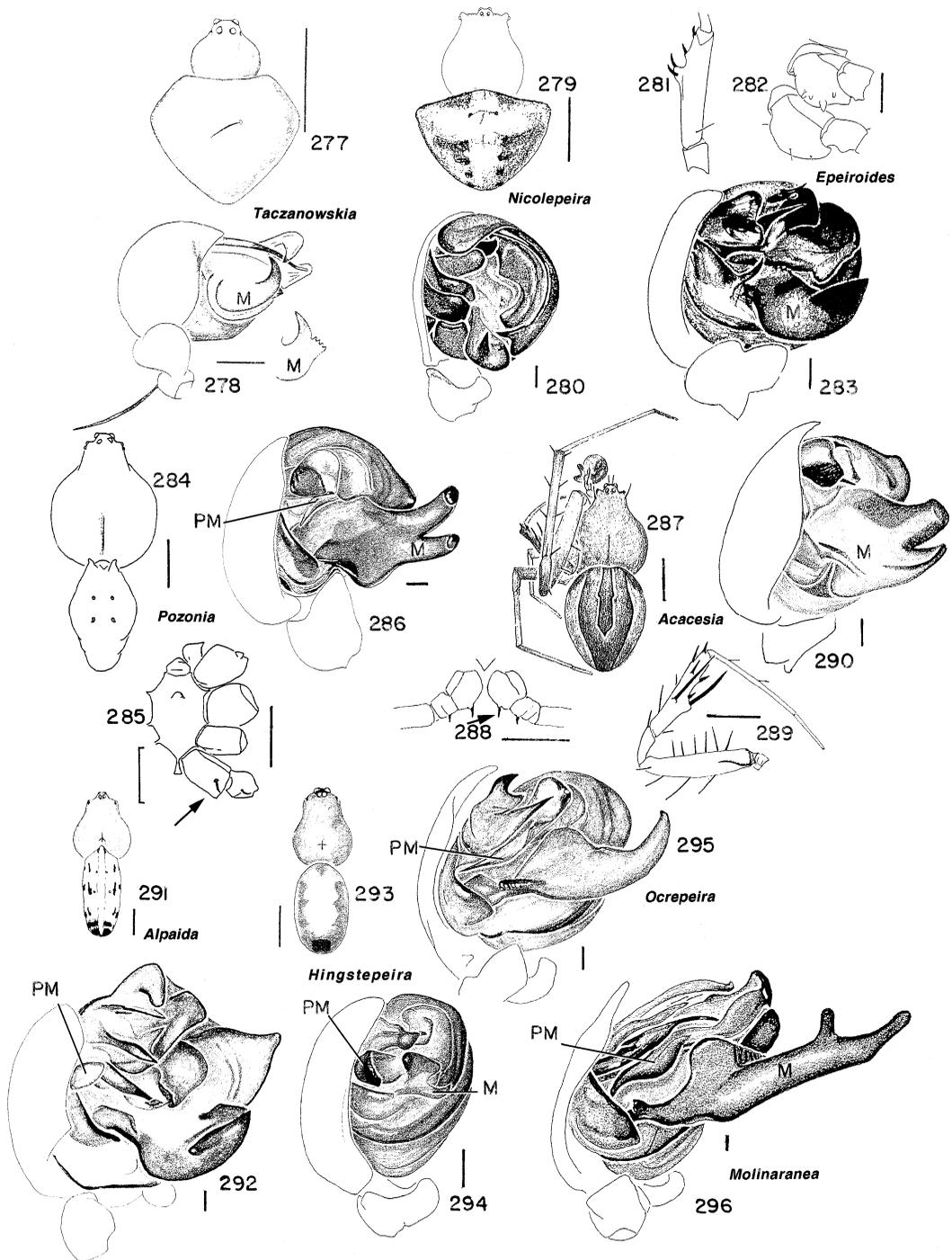
Levi 1995, palpus. 245, 246. *Witica crassicauda* (Keyserling 1865). 245. Dorsal; 246. Palpus.. 247, 248. *Encyosaccus sexmaculatus* Simon 1895. 247. Dorsal; 248. Palpus. 249, 250. *Xylethrus scrupeus* Simon 1895. 249. Dorsal; 250. Palpus. 251, 252. *Gasteracantha cancriformis* (Linné 1767). 251. Dorsal; 252. Palpus. 253, 254. *Enacrosoma frenca* Levi 1996. 253. Dorsal; 254. Palpus. 255, 256. *Actinosoma pentacanthum* (Walckenaer 1841). 255. Dorsal; 256. Palpus. 257–259. *Verrucosa arenata* (Walckenaer 1841). 257. Left tibia; 258. Dorsal; 259. Palpus. Scale lines = 1 mm; palpi = 0.1 mm.

- 34(25) Posterior row of eyes procurved (Figs. 237, 241); lateral eyes anterior of medians in dorsal view ..... 35  
 — Posterior eye row straight or recurved, as viewed from above (Figs. 243, 245, 247, 258) ..... 38
- 35(34) Carapace with median dark line and thoracic region with dark sides (Fig. 239) .... 36  
 — Carapace without line (Figs. 237, 241) ..... 37
- 36(35) Abdomen pattern with median, dorsal black mark (Fig. 239); A biforked (Fig. 240); max. 8 mm; 9 sp., SE U. S. to Chile, W Indies ..... *Mecynogea*  
 — Abdomen without median black marks (Fig. 297); A not biforked (Fig. 298); max. 5 mm; 3 sp., Mexico to N Argentina ..... (in part) *Manogea*
- 37(35) Distance between PME less than distance to PLE (Fig. 237); M with spur (Fig. 238); max. 8 mm; 6 sp., Canada to Chile, W Indies ..... *Argiope*  
 — Distance between PE equal (Fig. 241); M without spur (Fig. 242); max. 4 mm; U. S. to Argentina, introduced from SW Pacific? ..... *Gea heptagon*
- 38(34) Abdomen modified with dorsal sclerotized areas (Figs. 243, 245), more than two tubercles (Fig. 251, 253) or posteriorly elongated (Figs. 263, 264) ..... 39  
 — Abdomen, oval, spherical, tubular, with at most 2 humps and an anterior median or posterior median bulge or a posterior notch (Figs. 275, 277, 284, 287) ..... 56
- 39(38) PME twice diameter AME and facing dorsolaterally (Fig. 243) and abdomen orange, soft, rectangular with pairs of black tubercles (Fig. 243); M with median spine pointing at Y (Fig. 244); max. 5 mm; 14 sp., Mexico to Argentina ..... *Pronous*  
 — PME diameter subequal with other eyes; abdomen and palpus otherwise ..... 40
- 40(39) Abdomen shield-shaped with sclerotized, tortoise pattern, or slightly sclerotized (Fig. 311, or as in female, Fig. 28); palp without radix (Fig. 312); max. 3.5mm; ca. 9 sp., Panama to N Argentina ..... (in part) *Testudinaria*  
 — Abdomen otherwise ..... 41
- 41(40) Abdomen subspherical covered by glossy scutum (Figs. 213, 245) ..... 42  
 — Abdomen otherwise ..... 43
- 42(41) Abdomen completely covered by glossy scutum (Figs. 245); comma-shaped E (Fig. 246); max. 2 mm; 2 sp., Mexico to Guyanas, Peru, W. Indies ..... *Witica*  
 — Abdomen only partly covered by scutum (Fig. 213); E coiled (Fig. 214); max. 3 mm; Venezuela to Bolivia ..... *Aspidolasius branicki*
- 43(41) Abdomen dorsally with pairs of sclerotized round disks, some large (other than paired muscle sclerites), but without tubercles on side of abdomen (Figs. 247, 249) ..... 44  
 — Abdomen without sclerotized disks, or with disks and tubercles on sides (Figs. 251, 253, 255, 258) ..... 45
- 44(43) Abdomen shield-shaped (Fig. 247); E short (Fig. 248); max. 4 mm; upper Amazon ..  
 ..... *Encyosaccus sexmaculatus*  
 — Abdomen square to rectangular with denticles around edge (Fig. 249); E long, filiform (Fig. 250); max. 5 mm; 5 sp., Mexico to S Brazil, Jamaica ..... *Xylethrus*
- 45(43) Abdomen with five spines (Fig. 255); E straight rod (Fig. 256); max. 7 mm; Amazon area to Argentina ..... *Actinosoma pentacanthum*  
 — Abdomen otherwise ..... 46
- 46(45) ME region projecting (Fig. 251); abdomen a half-circle in front, truncate behind (Fig. 251); PM circular and in center (Fig. 25); max. 3 mm; SE U. S. to Argentina, W Indies ..... *Gasteracantha cancriformis*  
 — ME region normal, slightly prolonged; abdomen otherwise (Figs. 253, 258); palp otherwise ..... 47
- 47(46) Abdomen short, anteriorly semispherical with posterior tubercles on humps (as in female Fig. 69); palpus (Fig. 316); max. 3 mm; SE U. S. .... *Colphepeira catawba*  
 — Abdomen otherwise ..... 48
- 48(47) Carapace glossy, dorsal area of abdomen or whole abdomen glossy ..... 49  
 — Carapace, abdomen soft or setose ..... 51
- 49(48) Abdomen dorsally flattened (Fig. 224), thin scutum; pleats on sides (Fig. 224), rect-



Figures 260–279.—Males: 260, 261. *Alpaida truncata* (Keyserling 1865). 260. Dorsal; 261. Palpus. 262. *A. alticeps* (Keyserling 1880), dorsal. 263. *Cyclosa berlandi* Levi 1999, dorsal. 264, 265. *C. turbinata* (Walckenaer 1841). 264. Dorsolateral; 265. Palpus. 266, 267. *Nicolepeira bicaudata* (Nicolet 1849). 266. Dorsal; 267. Palpus. Figs. 268, 269. *Wagneriana tauricornis* (O. P.-Cambridge 1889). 268. Dorsal; 269. Palpus. 270. *Parawixia nesophila* Chamberlin & Ivie 1936, palpus. 271. *P. hypocrita* (O. P.-Cambridge 1889), dorsal. 272. *P. porvenir* Levi 1992, dorsal. 273, 274. *Allocyclosa bifurca* (McCook 1887). 273. Dorsal; 274. Palpus. 275, 276. *Cyrtophora citricola* (Forskål 1775). 275. Dorsal; 276. Palpus. Scale lines = 1 mm; palpi = 0.1 mm.

- angular, trapezoid, barrel, violin-shaped, rarely with spines (Figs. 224–226); booklung covers usually a stridulating area (as in female, Fig. 47); palpus (Figs. 227–228); max. 8 mm; 104 sp., S Canada to Argentina, W Indies . . . . . (in part) *Micrathena*
- Abdomen otherwise (Figs. 258, 260, 262); lung covers never with stridulating area 50
- 50(49) Abdomen trapezoidal narrower behind, sides and posterior with dark-capped, white tubercles (Fig. 258); second tibia with spur (Fig. 257); M with long, proximal projection pointing toward A (Fig. 259); max. ca. 10 mm; ca. 15 sp., E U. S. to Argentina, W Indies . . . . . *Verrucosa*
- Abdomen oval, glossy with some lateral or posterior tubercles or anterior teeth (Figs. 260, 262); M without proximal projection (Fig. 261); max. 11 mm; 134 sp., S Mexico to Argentina, W Indies . . . . . (a few) *Alpaida*
- 51(48) Abdomen wider than long, rectangular (Fig. 253); M rectangular, distally truncate (Fig. 254); max. 3 mm; 6 sp., Mexico to São Paulo State, Brazil . . . . . *Enacrosoma*
- Abdomen as long as wide or longer than wide . . . . . 52
- 52(51) Abdomen elongate, pointed, overhanging spinnerets (Figs. 264); tubercles, if present, dorsal or posterior (Fig. 264) and large oval C, with gutter holding filiform E above M; PM straight with pocket at end, (Fig. 265); max. 5 mm; 51 sp., Alaska to S Argentina, W Indies . . . . . (in part) *Cyclosa*
- Abdomen not pointed and overhanging spinnerets, or with paired lateral tubercles (Figs. 266, 268, 271, 272); and palpus otherwise (Figs. 267, 269, 270) . . . . . 53
- 53(52) PM present (Figs. 269, 270) . . . . . 55
- Without PM (Figs. 267, 313) . . . . . 54
- 54(53) Carapace and abdomen with little dark pigment; without four posterior-facing tubercles, M with row of denticles and two flagellum-shaped projections from joint base (Fig. 313); C small; total length; max. 3 mm; 14 sp., E U. S. to N Argentina, W Indies . . . . . (in part) *Kaira*
- Abdomen pigmented, with two to four posterior facing tubercles (Fig. 266); M otherwise; C very large (Fig. 267); max. 5 mm; Chile . . . . . *Nicolepeira bicaudata*
- 55(53) Abdomen rectangular with paired tubercles and posterior median tubercle (Fig. 268); E knife-shaped, M projecting low, toward 4h in left palpus (Fig. 269); cephalic area pale, thoracic area dark, glossy; max. 11 mm; 39 sp., SE U. S. to Argentina, W Indies . . . . . *Wagneriana*
- Abdomen round to trapezoidal with paired tubercles (Figs. 271, 272); E bullet-shaped (Fig. 270); M projecting distally at 3 o'clock of left palpus (Fig. 270); sides of carapace setose; max. 19 mm; 27 sp., Baja California to Argentina, W Indies . . . . . (in part) *Parawixia*
- 56(38) Abdomen oval with posterior notch (Figs. 273, 275); social sp., male uncommon . . 57
- Abdomen without posterior notch (Figs. 277, 284, 29 . . . . . 58
- 57(56) Light-colored (Fig. 273); palpus (Fig. 274); max. 2 mm; Florida, Baja California to Panama, W Indies . . . . . *Allocyclosa bifurca*
- Dark-colored (Fig. 275); palpus (Fig. 276); max. 3 mm; tropical, introduced . . . . . *Cyrtophora citricola*
- 58(56) Abdomen wider than long (Figs. 277, 279) . . . . . 59
- Abdomen longer than wide (Figs. 284, 293) . . . . . 61
- 59(58) Third coxa with tubercles (Fig. 282); second tibia branching (Fig. 281), palpus with median apophysis having a keel (Fig. 283); max. 5 mm; Costa Rica to Bahia, Brazil . . . . . *Epeiroides bahiensis*
- Third coxa without tubercles . . . . . 60
- 60(59) Tropical; one tarsal claw longer than other (as in female, Fig. 20); M with one spine (Fig. 278); max. 2 mm; 4 sp., Colombia to S Brazil . . . . . *Taczanowskia*
- Temperate South America; tarsal claws equal in length; palpus (Fig. 280); max. 5 mm; Chile. . . . . *Nicolepeira flavifrons*
- 61(58) Paramedian apophysis present (Fig. 286, 292, 296), or fourth coxa with short macroseta (Figs. 285, 288) . . . . . 62

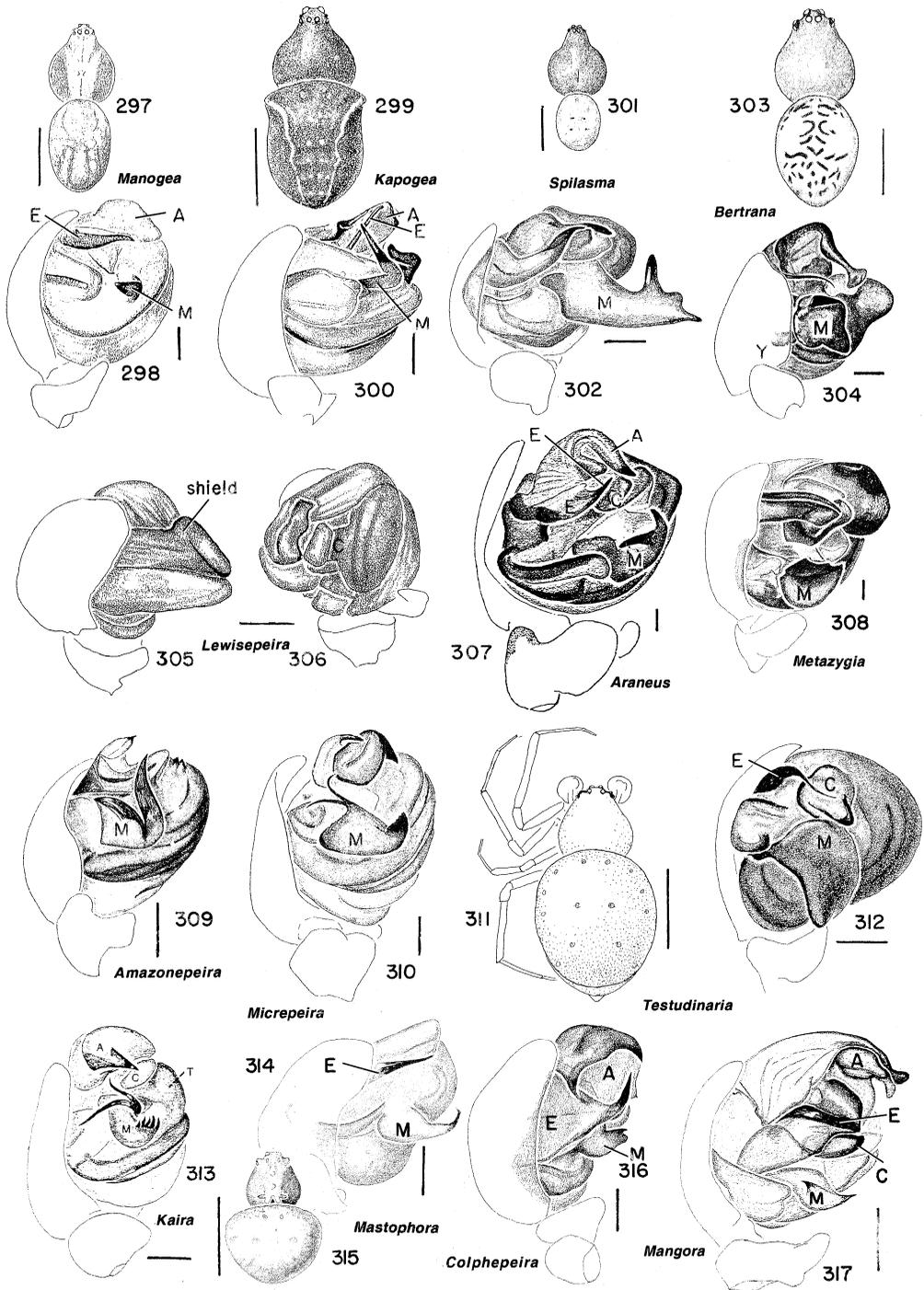


Figures 277–296.—Males: 277, 278. *Taczanowskia striata* Keyserling 1880. 277. Dorsal; 278. Palpus. 279, 280. *Nicolepeira flavifrons* (Nicolet 1849). 279. Dorsal; 280. Palpus. 281–283. *Epeiroides bahiensis* Keyserling 1885; 281, left second tibia. 282. Third and fourth left coxae; 283. Palpus. 284–286. *Pozonia nigroventris* (Bryant 1936). 284. Dorsal; 285. Sternum and left coxae; 286. Palpus. 287–290. *Acacesia hamata* (Hentz 1847). 287. Dorsal; 288. Fourth coxae and trochanters; 289. Left second leg; 290. Palpus. 291, 292. *Alpaيدا grayi* (Blackwall 1863). 291. Dorsal; 292. Palpus. 293, 294. *Hingstepeira folisecens* (Hingston 1932). 293. Dorsal; 294. Palpus. 295. *Ocrepeira covillei* Levi, 1993, palpus. 296. *Molinaranea magellanica* (Walckenaer 1847), palpus. Scale lines = 1 mm; palpi = 0.1 mm.

—	Without PM or PM not visible; fourth coxae never with macroseta. . . . .	69
62(61)	Sternum with median tubercle (Fig. 285); M biforked (Fig. 286); abdomen with anterior tubercles (Fig. 284); max. 7 mm; 3 sp., S Mexico to S Brazil, W Indies . . . . .	<i>Pozonia</i>
—	Sternum otherwise . . . . .	63
63(62)	PME face dorsolaterally (Figs. 287, as in female Fig. 119) . . . . .	64
—	PME face dorsally (Figs. 291, 293) . . . . .	65
64(63)	Abdomen dorsally with two pairs of black, longitudinal, lines approaching each other at ends, without or with lateral humps (Fig. 287); second tibia branched (Fig. 289); M biforked (Fig. 290); max. 7 mm; 8 sp., E U. S. to N Argentina, W Indies . . . . .	<i>Acacesia</i>
—	Abdomen without lines, pair of humps as in female (as in female, Fig. 119); PM usually pointed (Fig. 295); max. 9 mm; 67 sp., E U. S. to Chile, W Indies . . . (in part)	<i>Ocrepeira</i>
65(63)	Abdomen oval, with distinct black patch posteriorly (Fig. 293) and on venter; small M (Fig. 294); max. 5 mm; 4 sp., Guyanas to C Amazon area . . . . .	<i>Hingstepeira</i>
—	Abdomen and palpus otherwise . . . . .	66
66(65)	Abdomen usually overhanging spinnerets (Figs. 263, 264, as in female, Figs. 79, 80); narrow head, PME adjacent (Fig. 263); large C carrying filiform E in a gutter close to M (Fig. 265); max. 5 mm; 51 sp., Alaska to S Argentina, W Indies . . . (in part)	<i>Cyclosa</i>
—	Abdomen and palpus otherwise . . . . .	67
67(66)	Carapace, abdomen glossy (Fig. 260, 291); ME area often black on yellow carapace; PM with enlargement at end (Figs. 292); max. 11 mm; 134 sp., S Mexico to Argentina, W Indies . . . . .	(in part) <i>Alpaida</i>
—	Carapace, abdomen setose . . . . .	68
68(67)	Temperate South America; PM conical, pointed (Fig. 296); M biforked (Fig. 296); max. 10 mm; 7 sp. . . . .	<i>Molinaranaea</i>
—	Cerrado savanna, S Brazil, Paraguay; PM round, M distally truncate (Fig. 191); max. 19 mm . . . . .	<i>Parawixia bistriata</i>
69(61)	Palpus with sclerites small, E supported by A, M a small pointed projection (Figs. 298, 300); PME straight (Figs. 297, 299) . . . . .	70
—	Palpus with sclerites large; M otherwise (Figs. 302, 304, 307, 308); PME recurved . . . . .	71
70(69)	Abdomen oval, widest anteriorly, often with thin, white, longitudinal lines (Fig. 299); palpus (Fig. 300); max. 4 mm; 4 sp., Mexico to Argentina, W Indies . . . . .	<i>Kapogea</i>
—	Abdomen oval, widest in middle, with longitudinal, light bands (Fig. 297); palpus (Fig. 298); max. 5 mm; 3 sp., Mexico to N Argentina . . . . .	(in part) <i>Manogea</i>
71(69)	Abdomen reddish with white patches (Fig. 301); M projecting, T-shaped, (Fig. 302); max. 4 mm; 3 sp., Honduras to Rio de Janeiro State, Brazil . . . . .	<i>Spilasma</i>
—	Abdomen and M otherwise . . . . .	72
72(71)	Mesal side of palpus covered by a shield (Figs. 305, 306); max. 5 mm; 4 sp., Mexico, C Amer., W Indies. . . . .	<i>Lewisipeira</i>
—	Palpus without shield . . . . .	73
73(72)	M with two flagellum-shaped projections from a joint base (Figs. 310, 313); less than 3 mm . . . . .	74
—	M without or only one such spines (Figs. 307, 308, 312); most more than 4 mm total length . . . . .	75
74(73)	Abdomen spherical (as in female, Fig. 164); M with spine or with only indistinct teeth (Fig. 310); max. 3 mm; 7 sp., Costa Rica to Mato Grosso . . . . .	<i>Micrepeira</i>
—	Abdomen oval to shield-shaped; M with a row of long, sharp teeth (Fig. 313); total length; max. 3 mm; 14 sp., E U. S. to N Argentina, W Indies . . . . .	<i>Kaira</i>

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Figures 297–313.—Males: 297, 298. *Manogea porracea* (C.L. Koch 1839). 297. Dorsal; 298. Palpus. 299, 300. *Kapogea alayoi* (Archer 1958). 299. Dorsal; 300. Palpus. 301, 302. *Spilasma duodecimguttata* (Keyserling 1880). 301. Dorsal; 302. Palpus. 303, 304. *Bertrana striolata* Keyserling 1884. 303, dorsal.



304. Palpus. 305, 306. *Lewisipeira farri* (Archer 1958), palpus. 305. Mesal; 306. Ventral. 307. *Araneus gemma* (McCook 1888), palpus. 308. *Metazygia laticeps* (O.P.-Cambridge 1889), palpus. 309. *Amazonpeira herrera* Levi 1989, palpus. 310. *Micropeira hoeferi* Levi 1995, palpus. 311, 312. *Testudinaria* sp. 311. Dorsal; 312. Palpus. 313. *Kaira alba* (Hentz 1850), palpus. 314, 315. *Mastophora gasteracanthoides* (Nicolet 1849). 314. Palpus; 315. Male. 316. *Colphepeira catawba* Banks 1911, palpus. 317. *Mangora fascialata* Franganillo 1936, palpus. Scale lines = 1 mm; palpi = 0.1 mm.

- 75(73) M distally with one wide S-shaped, curved projection; eye region black (Fig. 309), abdomen narrowly oval (as in female, Fig. 142); max. 4 mm; Amazon area . . . . . *Amazonpeira herrera*  
 — M otherwise . . . . . 76
- 76(75) PME less than their diameter apart; carapace and abdomen glossy, abdomen oval without humps, widest in middle, slightly flattened (as in female, Figs. 158, 162); M without teeth, rarely with spines (Figs. 308); max. 8 mm; 88 sp., S U. S. to Argentina, W Indies . . . . . (in part) *Metazygia*  
 — PME their diameter or more apart; . . . . . 77
- 77(76) Abdomen shield-shaped, flattened to oval; legs thin (Fig. 311); M without teeth or spines, radix lacking (Fig. 312); max. 3.5 mm; 9 sp., Panama to N Argentina . . . . . (in part) *Testudinaria*  
 — Abdomen otherwise; M with or without spines . . . . . 78
- 78(77) Abdomen usually with humps; M with two recurved spines (Fig. 307); max. 10 mm; North American . . . . . (a few) *Araneus*  
 — Abdomen without humps; M otherwise . . . . . 79
- 79(78) Costa Rica to S Brazil; abdomen spherical (Fig. 303); max 3 mm; 13 sp., . . . . . *Bertrana*  
 — Alaska to US; abdomen oval; max. 7 mm; 5 sp. . . . . (in part) *Zygiella*

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- Agatostichus* Simon 1895: 885, is a synonym of *Mastophora* Holmberg 1876 (Levi, in press).
- Cardimia* Mello-Leitão 1939: 61, with the type species by monotypy, *C. eximia* Mello-Leitão 1939, (fig. 7) in the Museu Nacional, Rio de Janeiro, not examined. *Cardimia eximia* belongs to *Azilia* Keyserling 1882 and in the family Tetragnathidae. NEW SYNONYMY and NEW PLACEMENT.
- Epeirella* Mello-Leitão 1941: 149, with the type species by monotypy, *Epeirella tucumana* Mello-Leitão 1941 (pl. 7, fig. 31) in the Museu de la Plata, examined. *Epeirella tucumana* is an immature *Eriophora* Simon 1864 probably *E. edax* (Blackwall 1863). The immature specimen has dorsal abdominal pattern of broken black lines (as recently illustrated for immature *E. fuliginea* (C. L. Koch 1843) by Graf & Nentwig, 2001, fig. 1) and ventrally a horizontal black rectangle. *Epeirella* is a synonym of *Eriophora*. NEW SYNONYMY.
- Heterognatha* Nicolet 1849: 471, with the type species *H. chilensis* Nicolet 1849. *Heterognatha chilensis* has a lanceolate abdomen, lacks a male radix in the palpus, lacks araneid eye structure as in *Testudinaria*. Its placement is not known (Levi, in press).
- Melychiopharis*, Simon 1895: 907, figs. 972, 973, female, with the type species by monotypy, *M. cynips* Simon 1895. Males are located in the São Paulo and Porto Alegre, Brazil museums. The males place this species in the Theridiidae. NEW PLACEMENT.
- Nanduti* Mello-Leitão 1945: 241, with the type species by monotypy, *N. roseus* Mello-Leitão 1895 is a synonym of *Testudinaria*. NEW SYNONYMY.
- Spintharidius* Simon 1893: 327, contains three species. The type species, designated by Bonnet, 1958: 4121, is *M. rhomboidalis* Simon 1893. There are no illustrations and all specimens of this species are lost from the Museum National d'Histoire Naturelle, Paris. *Alpaida* O. P. –Cambridge 1889 might be a synonym of *Spintharidius*, but this is uncertain.
- Ursa* Simon 1895: 250, contains four species, one in America, all described from females. The type species designated by Bonnet, 1959: 4782 is *U. pulchra* Simon 1895 from Brazil, in the Museum National d'Histoire Naturelle, Paris, examined. It will be illustrated in Levi (in press).

The as yet unrevised genus *Mangora* O. P.–Cambridge 1889 may have to be subdivided when all species are known.

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#### APPENDIX 1.

The following genera are listed in catalogs as Araneidae (Platnick 1998) but are misplaced or synonyms.