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## NOTES ON AMERICAN SPIDERS OF THE FAMILY DICTYNIDAE

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In the following pages are given diagnoses of a number of new species of American Dictynidae and discussions of several of our better known genera. *Scotolathys* is considered to be a synonym of *Lathys*. A list of our species to be placed in *Lathys* in the broader sense is given, and three new names are proposed for those that become homonyms. The American species now placed in *Mallos* are reviewed. *Dictyna arundinacea* Linnaeus, a common European species, is reported from Colorado and Ontario in North America. The types of the new species are deposited in the collection of the American Museum of Natural History.

### LATHYS SIMON

*Lethia* MENGE, 1869, Preussische Spinnen, vol. 3, p. 249 (name preoccupied by Hübner in Lepidoptera in 1816) (*Lethia varia* Menge, genotype).

*Lathys* SIMON, 1884, Bull. Soc. Zool. France, vol. 9, p. 321, footnote (new name for *Lethia* Menge) (*Lethia varia* Menge = *Ciniflo humilis* Blackwall, genotype). SIMON, 1892, Histoire naturelle des araignées, vol. 1, pp. 231-237, 240. SIMON, 1914, Les arachnides de France, vol. 6, pt. 1, pp. 34, 44-47, 61-62.

*Scotolathys* SIMON, 1884, Bull. Soc. Zool. France, vol. 9, p. 321 (*Scotolathys simplex* Simon, genotype). SIMON, 1892, Histoire naturelle des araignées, vol. 1, pp. 231, 233, 235, 243. SIMON, 1914, Les arachnides de France, vol. 6, pt. 1, pp. 34, 47, 62. DE DALMAS, 1916, Ann. Soc. Ent. France, vol. 85, pp. 251-255. BRYANT, 1943, Psyche, vol. 50, pp. 83-86. KASTON, 1945, Amer. Mus. Novitates, no. 1292, pp. 3, 4.

*Neophanes* MARX, 1891, Proc. Ent. Soc. Washington, vol. 2, p. 33 (*Neophanes pallidus* Marx, genotype).

*Prodalía* MARX, 1891, Proc. Ent. Soc. Washington, vol. 2, p. 34 (*Prodalía foxi* Marx, genotype).

*Dictyolathys* BANKS, 1900, Proc. Acad. Nat. Sci. Philadelphia, p. 534 (*Dictyolathys maculata* Banks, genotype). BRYANT, 1943, Psyche, vol. 50, pp. 83-86.

The generic name *Lathys* of Simon has long been used for a group of eight-eyed

dictynids which are closely allied to *Dictyna* but differ from that genus in a number of characters. The eyes of the first row are rather close together and lie in a straight line. The anterior median eyes are very much smaller than the lateral eyes, the ratio in size in the average species being about one to three. The large posterior eyes are set in a gently procurved row, are subequidistantly spaced, or the median are nearer the lateral eyes. The median ocular quadrangle is about as broad as long but is greatly narrowed in front, the anterior median eyes being about one-third as large as the posterior eyes. In *Dictyna* the anterior median eyes are much smaller than the anterior lateral eyes, and the posterior eye row is straight or lightly recurved. The clypeus in *Lathys* is not, or scarcely, so wide as the diameter of the front eyes, whereas in *Dictyna* it is often very much wider. The species of *Lathys* are usually of smaller size and have the maxillae much shorter and straighter, as contrasted with the longer and more inclined maxillae of *Dictyna*.

The genitalia of the American species of *Lathys* are of the same general type as is found in *Dictyna*. The broad patella has the apical or lateral margins modified into rounded or angled carinae, but in no case is a prominent spur present as in some European species. The tibia is broader than long and is remarkable not for its apophyses, which when present are rather insignificant spurs, but for a striking modification of the prolateral and dorsal surface into a groove or depression which receives the embolic division of the palpus. This groove is analogous to the tutaculum of the Thomisidae and to similar specializations in other groups of spiders. In dorsal view the embolic division is visible as a straight or coiled spur lying on the tibia. This spur

has been described by various authors as a process of the tibia, as was noted by Emerton in 1894 (Trans. Connecticut Acad. Arts and Sci., vol. 9, p. 411). The bulb of the palpus is suboval in shape and shows no prominent processes on its surface. The embolic division originates from the bulb at the base as a broad, triangular plate which narrows and twists around the modified cymbium and tibia on the retrolateral side, and ends as a twisted and pointed spine. The embolus is an intimate part of this division, is sheathed by the twisted conductor or fused with it into a single unit. In this connection it can be noted that in *Dictyna* the embolus is always discretely separate from the conductor, although the distal portion may almost lose its identity in the complicated folds of the conductor. The details of the palpus are remarkably constant throughout the series of species now placed in this genus.

The epigynum of the female is a sclerotized plate which may be flat or convex, is often lightly grooved or depressed, and presents two separate atribursal orifices. The character of these orifices and the details of the tubules and receptacles visible through the integument are important in the differentiation of the species. In *dixiana* there is a well-marked atrium in which the orifices lie. In *albata* the orifices are two rather large, separate, round openings on the flat surface. In *maculina* and related species the openings are inconspicuous and are set in a very slightly depressed atrium.

The status of the genus *Scotolathys* has been discussed by Comte de Dalmas, E. Bryant, B. J. Kaston, and others listed in the synonymies above. The genotype, *Scotolathys simplex* Simon, comes from Algiers, and the eyes and other features are well shown by Simon in his "Histoire naturelle des araignées." *Scotolathys* differs from *Lathys* only in the loss of the anterior median eyes, though vestiges are retained in some of the species, such as *heterophthalma* and *delicatula*, already admitted to the former genus. As a consequence of this loss of eyes and the shifting together of the two triads, there is an exaggeration of the procurvature of the posterior

row. Although no material of this group from Europe or Africa has been available for study, there seems no reason to believe that the American species are not fully congeneric. The discovery of males of *simplex*, *heterophthalma*, *simplicior*, and other exotic species will doubtless disclose that the palpi are similar in pattern to those of the species of *Lathys*. In this paper *Scotolathys* is considered a synonym of *Lathys*. As a consequence three names applied to American species must be changed because they have already been used within the wider limits of the genus *Lathys*.

The various American species of *Lathys* illustrate in a very graphic manner the stages in reduction in size and final loss of the anterior median eyes and the gradual approximation of the triads of eyes. At one extreme we have *Lathys albata* (= *palpada* Emerton) which has an eye formula similar in a general way to species of *Dictyna*. The front eyes (fig. 11) are rather widely separated, the median being a full diameter apart, and the median eyes are not strikingly reduced in size. The posterior row is weakly procurved, and the eyes are well separated by a full diameter. In *dixiana*, which is similar in size and general appearance to *albata*, we find the anterior median eyes reduced in size (fig. 12), and the posterior eyes nearer together, separated by a little less than the full diameter. Much the same formula is to be found in *Lathys coralynae* Gertsch and Davis of Mexico. A further change is evident when we study the eye formula of *foxi* (fig. 13). The plainly evident median eyes are now only slightly separated and even nearer the large lateral eyes. The procurvature of the posterior row is accentuated by the nearness of the eyes. In *delicatula* of Texas (fig. 14) we find a changeable condition as regards the median eyes in that they may be present or absent in examples from the same series. About half the specimens show only six eyes, but in the remainder the tiny median eyes are clearly evident. They are quite variable in size from well-formed eyes with a light cornea to mere pigmental vestiges. Not infrequently only one is present, the other

side being completely without indication of the missing one of the pair.

In such species as *maculina* (= *maculata* Banks), *pallida*, and *albida* (= *alba* Chamberlin and Ivie) the six-eyed condition has been fully attained. The two triads of eyes (fig. 15) are close together, and the procurvature of the posterior row of eyes is quite striking. Among the scores of examples of *maculina* here in this collection I have been unable to find a single one that shows the anterior median eyes. In this connection, it is necessary to mention the conclusions of Bryant on this matter in her paper entitled "Notes on *Dictyolathys maculata* Banks." In this paper the genus *Dictyolathys* of Banks, previously regarded by Simon and others as a synonym of *Scotolathys* Simon, is revived for the species *Dictyolathys maculata* Banks. The prime reason for the resurrection of this name is the presumed presence of the anterior median eyes in such a position that they form a procurved row. I have come to the conclusion that these eye-like spots are only light reflections on the convex ocular tubercles. Whenever the median eyes are present in *Lathys* they are set between the lateral eyes in a straight row. The eyes figured by Bryant are far up the sides of the ocular tubercles and nearly on the corneas of the eyes themselves, a position rarely if ever attained by migrant spider eyes. If it were admitted that these were eyes in the position indicated, even this condition would not be weighty enough to merit removal of *maculata* from *Lathys*.

The spider described from Palo Alto, California, as *Dictyolathys californica* by Banks does not belong in the genus *Lathys*. In many ways this spider seems to resemble the complex of species grouped around *Amaurobius*. The male palpus is quite different from the type found in *Dictyna* and related genera.

The American species that are now assigned to *Lathys* are listed in the following pages. Most of the records of distribution of the various species are new.

#### ***Lathys alberta*, new name**

Figure 11

*Lathys pallida* EMERTON, 1894, Trans. Connecticut Acad. Arts and Sci., vol. 9, p. 410, pl. 1,

fig. 5-5d (name preoccupied by *Neophanes pallidus* Marx).

RECORDS: *Alberta*: Rocky Mountains, near Laggan, two male cotypes (Thomas E. Bean collection) (Emerton, 1894). Banff, female (N. B. Sanson) in Canadian National Collection.

#### ***Lathys dixiana* Ivie and Barrows**

Figure 12

*Lathys dixiana* IVIE AND BARROWS, 1935, Bull. Univ. Utah, vol. 26, p. 3, pl. 1, figs. 6, 7. CHAMBERLIN AND IVIE, 1944, Bull. Univ. Utah, vol. 35, p. 124.

RECORDS: *Louisiana*: Kisatchie National Forest, Grant Parish, June, 1941, female (Jones and Archer). *Georgia*: Three miles southeast of Savannah, April 15 and May 3, 1943, four females (W. Ivie). *Florida*: Gainesville, February, 1933, female holotype and paratypes (W. M. Barrows).

#### ***Lathys coralynae* Gertsch and Davis**

*Lathys coralynae* GERTSCH AND DAVIS, 1942, Amer. Mus. Novitates, no. 1158, p. 10, fig. 44.

RECORDS: *San Luis Potosi*: Twenty miles east of Ciudad del Maiz, March 23, 1940 (A. M. Davis).

#### ***Lathys foxi* Marx**

Figure 13

*Prodalina foxi* MARX, 1891, Proc. Ent. Soc. Washington, vol. 2, p. 34, pl. 1, fig. 5a-5d.

*Dictyna foxi* BANKS, 1892, Proc. Acad. Nat. Sci. Philadelphia, p. 28, pl. 1, fig. 78.

*Lathys foxi* SIMON, 1892, Histoire naturelle des araignées, vol. 1, p. 240. CHAMBERLIN AND IVIE, 1944, Bull. Univ. Utah, vol. 35, p. 125.

RECORDS: *New Jersey*: High Point State Park, Sussex County, June 19, 1945, male, two females (C. and M. Goodnight). *New York*: Cornwall, May 30, 1913, males and females (J. H. Emerton). *Tennessee*: The type specimen, a female, was "collected by Dr. Fox in Tennessee" (Marx). *Georgia*: Savannah Beach, May 4, 1943, four females (W. Ivie). North of Sylvania, April 10, 1943, female (W. Ivie).

#### ***Lathys delicatula* Gertsch and Mulaik**

Figure 14

*Scotolathys delicatulus* GERTSCH AND MULAİK, 1936, Amer. Mus. Novitates, no. 851, p. 4, fig. 4. GERTSCH AND MULAİK, 1940, Bull. Amer. Mus. Nat. Hist., vol. 77, p. 326.

RECORD: *Texas*: Laguna Madre, 25 miles southeast of Harlingen, in nest of *Neotoma micropus* Baird, male, female and immature specimens, August 17 and 22, 1945 (D. E. Hardy and V. L. Wooley).

This is a very common species in southern Texas. A list of Texas records was given by Gertsch and Mulaik in 1940.

### *Lathys maculina*, new name

Figure 15

*Dictyolathys maculata* BANKS, 1900, Proc. Acad. Nat. Sci. Philadelphia, p. 534 (name preoccupied by *Lathys maculata* Keyserling, 1890, of Australia). PETRUNKEVITCH, 1911, Bull. Amer. Mus. Nat. Hist., vol. 29, p. 112. BRYANT, 1943, Psyche, vol. 50, p. 85, fig. 1A, 1B.

*Scotolathys maculatus* EMERTON, 1913, Bull. Amer. Mus. Nat. Hist., vol. 32, p. 257, pl. 48, figs. 5-56. GERTSCH AND MULAİK, 1940, Bull. Amer. Mus. Nat. Hist., vol. 77, p. 326.

*Scotolathys maculata* BISHOP AND CROSBY, 1926, Jour. Elisha Mitchell Soc., vol. 41, p. 173. CHAMBERLIN AND IVIE, 1944, Bull. Univ. Utah, vol. 35, p. 126.

RECORDS: *Alabama*: Mobile, female type (Banks collection). *Georgia*: Savannah Beach, May 4, 1943, female (W. Ivie). North of Sylvania, April 10, 1943, males and females (W. Ivie). Billy's Island, Okfenokee Swamp, June 4, 1912, male and females (Bishop and Crosby). Adela, June 15, 1935, female (W. J. Gertsch). *North Carolina*: Raleigh, January 23, 1941, two females (Wray). Pine area, just in state on route 501, June 18, 1941, female (C. and M. Goodnight). *New Jersey*: Lakehurst, May 1, 1912, two males in Museum of Comparative Zoölogy (J. H. Emerton); *idem*, one female in the American Museum of Natural History (J. H. Emerton). Lakehurst, April 17, 1910, male and female. *Texas*: Houston, Harris County, June 11, 1937, female (S. Mulaik). *Florida*: Sebring, March 7, 1939, male (F. E. Lutz). Gainesville, January 6, 1939, male and female; *idem*, February 10, 1942, males and females (W. Ivie). Newman's Lake, west of Gainesville, June 13, 1935, many females (W. J. Gertsch); March 19, 1938, males and females (W. J. Gertsch).

### *Lathys immaculata* Chamberlin and Ivie

*Scotolathys maculata immaculata* CHAMBERLIN AND IVIE, 1944, Bull. Univ. Utah, vol. 35, p. 126.

RECORDS: *Maryland*: Lanham, March 12, 1942, male and female (M. H. Muma). *Georgia*: Demorest, April 26, 1943, male and female types (W. Ivie).

Inasmuch as *immaculata* occurs in the same regions as *maculina*, it seems unreasonable to regard it as a subspecies. For the present I list it as a species in the belief that additional material will make it possible to prove its claim to such status. It seems to be constantly a little smaller, and is strikingly distinct in the unmarked dorsum of the abdomen.

### *Lathys pallida* Marx

*Neophanes pallidus* MARX, 1891, Proc. Ent. Soc. Washington, vol. 2, p. 34, pl. 1, fig. 4a-4f. BANKS, 1892, Proc. Acad. Nat. Sci. Philadelphia, p. 29, pl. 3, figs 86, 87.

*Scotolathys pallidus* SIMON, 1892, Histoire naturelle des araignées, vol. 1, p. 243. EMERTON, 1909, Trans. Connecticut Acad. Arts and Sci., vol. 14, p. 213, pl. 8, fig. 2-2d.

RECORDS: *New York*: Long Island (Marx). Cold Spring Harbor, Long Island, April 18, 1909, male. *Pennsylvania*: Hawk Mountain, near Kempsville, November 4, 1945, female (C. and M. Goodnight). *Connecticut*: New Haven and vicinity (J. H. Emerton). *District of Columbia*: (Marx). *Ontario*: St. Thomas, one male. *New Hampshire*: Lake Ossipee, August, 1936, female (S. Mulaik). Fitzwilliam, Three-mile Island, and Lake Winnepesaukee (J. H. Emerton). No specific locality (Marx). *Tennessee*: No specific locality (Marx).

### *Lathys albida*, new name

*Scotolathys alba* CHAMBERLIN AND IVIE, 1944, Bull. Univ. Utah, vol. 35, p. 126, figs. 178, 179. (Name preoccupied by *Lathys alba* Keyserling, 1890, Die Arach. des Austr., Suppl., p. 250, pl. 23, fig. 2-2c.)

RECORDS: *Florida*: Newman's Lake, near Gainesville, March 19, 1938, female (W. J. Gertsch). West of Newman's Lake, February 12, 1942, male, three females (W. Ivie). *Georgia*: Athens, February 25, 1944, female (V. F. Shelford). North of Sylvania, April 10, 1943, females (W. Ivie). Three miles southeast of Savannah, April 4, 1943, female holotype and male allotype (W. Ivie).

**Lathys pinea** Chamberlin and Ivie

*Lathys pinea* CHAMBERLIN AND IVIE, 1944. Bull. Univ. Utah, vol. 35, p. 125, fig. 182.

RECORD: *Georgia*: Three miles south-east of Savannah, May 3, 1943, female holotype and paratype (W. Ivie); April 4, 1943, female paratype (W. Ivie).

**MALLOS O. P.—CAMBRIDGE**

*Mallos* O. P.—CAMBRIDGE, 1902, Biologia Centrali-Americana, Arachnida, vol. 1, p. 308 (*Mallos niveus* Cambridge, genotype).

*Dictynina* BANKS, 1904, Proc. California Acad. Sci., ser. 3, vol. 3, p. 342 (*Dictynina pallida* Banks, genotype).

*Ergatis* SIMON, 1914 (not Blackwall), Les arachnides de France, vol. 6, pt. 1, pp. 49–50 (subgenus of *Dictyna*).

*Dictynoides* CHAMBERLIN, 1919, Ann. Ent. Soc. Amer., vol. 12, p. 243 (*Dictynoides arizonensis* Chamberlin, genotype).

The generic name *Mallos* is used here for a group of spiders which have for the most part been referred to *Dictyna* or to genera enumerated in the synonymy above. In all the known species, except *trivittatus* and *grandis*, the carapace is bordered by a rather broad, pale white or yellowish stripe or band. The integument of this stripe is membranous and through it may be seen granules of white or yellow material. The cribellum is usually divided longitudinally by a fine carina. This condition may be perfectly evident, but it is often difficult of verification or seemingly not true in specimens of the same series. The chelicerae of the males are much less strikingly modified than in species of *Dictyna*, the inner margins being little or not at all excavated, nearly contiguous, and the base is supplied with an inconspicuous spur or angle on the outside just below the clypeal rim. The male palpi are similar throughout the group, and present differences from *Dictyna* which are quite significant. The tibia is relatively short and broad and is never armed with a dorsal spur or process, but may present weakly developed angles or carinae. The female epigynum is rather uniform in conformation and ordinarily consists of a pair of oval depressions or openings separated by a ridge of variable width.

The few European species of *Mallos* differ somewhat from those from the Americas,

where the more numerous species make up a very natural group. It is quite possible that this genus, and *Thallumetus* and *Lathys*, will ultimately be referred to *Dictyna* and maintained only as subgenera or groups. Simon placed the European species in *Dictyna* but maintained the group as a subgenus for which he used Blackwall's name *Ergatis*. I have rejected this name as a pure synonym of *Dictyna*.

The generic name *Ergatis* was proposed by Blackwall in 1841 for the group of cribellate spiders that we now know familiarly under the name of *Dictyna*. Listed in *Ergatis* were *benigna* Walckenaer (= *Theridion benignum* Walckenaer), *latens* Koch, and *viridissima* Walckenaer (= *Drassus viridissimus* Walckenaer). Inasmuch as no genotype was indicated by Blackwall, the selection of one of these species for that role has been left to subsequent workers. The author knows of no precise designation of such a genotype until 1928 when Petrunkevitch in his "Systema araneorum" (Trans. Connecticut Acad. Arts and Sci., vol. 29, p. 220) listed the type of *Ergatis* Blackwall as *E. benigna* Blackwall. Other workers have consistently used *Ergatis* in exactly this sense, but seemingly have not consummated such a fixation. The action of Simon in 1914 ("Les arachnides de France," vol. 6, pt. 1, p. 63) in reserving *Ergatis* for a subgenus under *Dictyna*, which included *viridissima* and *flavescens* of Walckenaer and *hortensis* and *puella* of Simon, is not regarded as being an explicit fixing of the genotype with this group, though this action precedes that of Petrunkevitch.

Four new species of *Mallos* are described in the following pages, and records of several of the known American species are given.

**Mallos arizonensis** Chamberlin

*Dictynoides arizonensis* CHAMBERLIN, 1919, Ann. Ent. Soc. Amer., vol. 12, p. 244, fig. 1.

*Mallos arizonensis* GERTSCH, 1942, Amer. Mus. Novitates, no. 1158, p. 17.

RECORDS: *Arizona*: Atascosa Mountains, October 10, 1937, three females (R. H. Crandall). Mt. Lemmon, Santa Catalina Mountains, September 5, 1939

three males (R. H. Crandall). Ruby, October 11, 1937, one female (R. H. Crandall). Tucson, one female. White House Canyon, Santa Rita Mountains, October 15, 1936, three females (O. Bryant). Miller Canyon, Huachuca Mountains, November 17, 1910, female type (W. M. Wheeler). *Queretaro*: San Juan del Rio, October 2, 1940, one female (H. Wagner).

With the exception of one record from the State of Queretaro in Mexico, all the above specimens come from the mountains of Arizona.

**Mallos kraussi**, new species

Figure 1

FEMALE: Total length, 5.60 mm.

	LENGTH	WIDTH
Carapace	2.20 mm.	1.80 mm.
Front	0.50	0.95
Sternum	1.50	1.14
Labium	0.50	0.46
Maxillae	0.75	0.36
Abdomen	3.75	2.50

Carapace light brown, darker on the sides of the head, the margins of the pars thoracica with the usual broad pale band with creamy white granules. Clothing of the carapace white hairs, which are sparse on the sides but which concentrate on the middle to form three fine white lines running back from the eyes. Sternum dark brown, the margins yellow, clothed with inconspicuous black hairs. Labium dark brown, the maxillae dusky, clothed with fine black hairs. Chelicerae light yellowish brown. Legs pale yellow, with very faint dusky rings most noticeable on the last pair, clothed with fine, inconspicuous black hairs. Abdomen white or nearly so, the dorsum with a covering of procumbent black hairs which are concentrated to form a pattern as follows: a large black spot at middle, paired black chevrons at sides in caudal half. Sides of the abdomen mostly creamy white with snow-white hairs; venter with a broad brown band as wide as the sternum which runs from base to and including the spinnerets.

Structure typical, in very close agreement with *arizonensis* Chamberlin. Clypeus equal in height to one and one-half

diameters of an anterior median eye. First eye row straight, the median eyes separated by their full diameter, as far from the somewhat larger lateral eyes. Second row moderately recurved, the median separated by one and one-half diameters, as far from the subequal lateral eyes. Median quadrangle as broad as long, slightly narrowed in front (31/35), the eyes subequal. Chelicerae normal. Legs without true spines, of average length. First leg: femur, 2.70 mm.; patella, 0.85 mm.; tibia, 2.30 mm.; metatarsus, 1.94 mm.; and tarsus, 1.05 mm. long. Tibia and patella of fourth leg, 2.40 mm. long.

Abdomen suboval, as high as broad. Epigynum as illustrated in figure 1.

TYPE LOCALITY: Female holotype from Cuernavaca, Morelos, Mexico, September, 1945 (N. L. H. Krauss); four female paratypes, November, 1945 (N. L. H. Krauss).

This pretty species is very similar in general appearance to *Mallos arizonensis* Chamberlin. However, it is more strongly marked, having a conspicuous brown band on the venter and a dark sternum. The greater size of the atriobursal orifices, which open into rather small black vessels easily seen through the integument, makes its separation easy.

**Mallos bryanti**, new species

Figures 2 and 3

MALE: Total length, 3.60 mm.

	LENGTH	WIDTH
Carapace	2.00 mm.	1.60 mm.
Front	0.45	0.90
Sternum	1.20	0.90
Labium	0.48	0.30
Maxillae	0.70	0.38
Abdomen	2.65	1.70

Carapace dark brown, lighter on the head, the pars thoracica with radiating darker lines and with a wide pale marginal stripe. Carapace clothed with fine white hairs which are very numerous on the pars cephalica. Chelicerae dark brown; sternum, labium, and maxilla yellowish brown, sparsely clothed with light hairs. Legs rather uniform light yellowish brown, without darker annulae, clothed as usual rather thickly with white hairs. Abdomen mostly white above, reticulated in gray, marked

rather indistinctly, a small black spot just in front of the middle and with indistinct bars on the sides. The venter with a median dusky band from base to the spinnerets, which is flanked by extensive yellow patches. Clothing of abdomen an even covering of white inconspicuous hairs, those on the darker pattern being correspondingly darker.

Carapace longer than broad, convex, the pars cephalica of moderate height. Clypeus projecting forward, equal in height to twice the diameter of an anterior median eye. Eyes of the first row essentially straight, the dark median separated by their full diameter, nearly as far from the subequal lateral eye. Posterior row of eyes weakly procurved, the median separated by a little more than the full diameter, as far from the subequal lateral eye. Median ocular quadrangle as broad as long, slightly narrowed in front (33/30), the eyes subequal in size. Chelicerae two and one-half times as long as broad, moderately excavated on the inner margins as seen from in front; as seen from the side subconical in form, not at all curved. Sternum longer than broad, bluntly rounded between the posterior coxae, which are separated by two-thirds their width. Legs relatively long, not armed with true spines. First leg: femur, 2.80 mm.; patella, 0.80 mm.; tibia, 2.70 mm.; metatarsus, 2.20 mm.; tarsus, 1.00 mm. long.

Palpus as illustrated in figure 2.

FEMALE: Total length, 5.50 mm.

	LENGTH	WIDTH
Carapace	2.70 mm.	1.50 mm.
Front	0.30	0.70
Sternum	1.10	0.85
Labium	0.35	0.35
Maxillae	0.50	0.27
Abdomen	3.25	2.20

Color pattern and structure essentially as in the male. Posterior row of eyes very slightly recurved, median ocular quadrangle slightly broader than long. Legs normal for the group. First leg: femur, 1.95 mm.; patella, 0.65 mm.; tibia, 1.60 mm.; metatarsus, 1.55 mm.; tarsus, 0.8 mm. long.

Epigynum as illustrated in figure 3.

TYPE LOCALITY: Male holotype, female

allotype, and male and female paratypes from the Santa Rita Mountains, Arizona, September and October, 1936 (Owen Bryant). Female paratype from Tucson, Arizona (Owen Bryant).

This interesting species is easily differentiated from *Mallos niveus* Cambridge by the larger size, different color pattern, and especially by pronounced differences in the genitalia which are illustrated in the figures.

### *Mallos niveus* O. P.-Cambridge

*Mallos niveus* O. P.-CAMBRIDGE, 1902, *Biologia Centrali-Americana, Arachnida*, vol. 1, p. 308, pl. 35, fig. 1. F. P.-CAMBRIDGE, 1902, *op. cit.*, vol. 2, p. 353, pl. 33, figs. 20, 21. GERTSCH, 1942, *Amer. Mus. Novitates*, no. 1158, p. 17.

RECORDS: *Utah*: Zion National Park, July 4, 1931, four females (W. J. Gertsch). Richfield, August, 1930, one female (W. J. Gertsch). Ophir, May 13, 1936, one female. Salt Lake City, May, female (W. J. Gertsch). Mt. Olympus, Hughes Canyon, May 20, 1937, males, female (W. Ivie). *Colorado*: Boulder, October 10, 1934, one male (H. G. Rodeck). *Arizona*: Santa Rita Mountains, 6000 feet, October 15, 1937, two males, female (O. Bryant). Madera Canyon, Santa Rita Mountains, June 24, 1939, female (A. M. and L. I. Davis); *idem*, 5200 feet, May 18, 1941, one female (H. S. Ellsworth).

This is a very common species in Mexico. Specimens from the United States are somewhat darker and show minor differences in the genitalia, but these deviations in an extremely variable species do not seem to be even of subspecific importance.

### *Mallos pallidus* Banks

Figure 8

*Dictynina pallida* BANKS, 1904, *Proc. California Acad. Sci.*, ser. 3, vol. 3, p. 342, pl. 39, fig. 22.

RECORDS: *California*: Mt. Shasta, two female cotypes (Lembert). Riverton, July 10, 1940, males and females (W. M. Pearce). Bishop, Inyo County, July 26, 1941, females (W. M. Pearce). Montgomery Canyon, Mono County, July 13, 1941, male, females (W. M. Pearce). Yosemite National Park, July, 1930, female (Ernst Mayr). Transition life zone, Yosemite National Park, July 7, 1939, male and fe-

male (A. M. and L. I. Davis). *Arizona*: Scottsdale, two females (Britcher).

**Mallos eutypus** Chamberlin and Gertsch

*Dictyna eutypa* CHAMBERLIN AND GERTSCH, 1929, Jour. Ent. Zool. Pomona College, vol. 21, p. 101, pl. 1, fig. 2.

RECORDS: *Utah*: Bluff, San Juan County, April 16, 1928, female holotype (Chamberlin). St. George, July, 1930, male (E. W. Davis). Monroe Canyon, July 7, 1930, male (W. J. Gertsch). Richfield, June 23, 1930, male (W. J. Gertsch). *Arizona*: Summerhaven, Santa Catalina Mountains, June 25, 1939, female (A. M. and L. I. Davis). Phantom Ranch, Grand Canyon, July 26, 1934, females (F. E. Lutz). Scottsdale, January 16, 1903, males and females (Britcher). *California*: River-ton, July 10, 1940, females (W. M. Pearce). Montgomery Canyon, Mono County, July 13, 1941, female (W. M. Pearce). *Nevada*: Las Vegas, February-June, 1945, male (D. J. Zinn).

**Mallos margaretae**, new species

Figure 4

FEMALE: Total length, 2.50 mm.

	LENGTH	WIDTH
Carapace	1.15 mm.	0.95 mm.
Front	0.22	0.50
Sternum	0.73	0.56
Labium	0.20	0.23
Maxillae	0.33	0.17
Abdomen	2.40	1.60

Carapace yellowish brown, the sides of the head a little darker, the pars thoracica dusky and with the usual white marginal seam; clothing of the carapace a rather sparse covering of long white hairs, the clypeal margin with a fringe of white hairs. Chelicerae and the under side of the carapace light yellowish brown. Legs unmarked except for a narrow black ring at the distal end of the metatarsi, clothed rather sparsely with inconspicuous hairs. Abdomen for the most part whitish above, marked with an obscure dusky pattern, leaving small white patches; the sides of the abdomen and the venter mostly white.

Structure in very close agreement with *niveus* Cambridge. Clypeus equal in height to diameter of the anterior median

eye. Posterior row of eyes slightly re-curved, the median eyes separated by about one and one-half diameters, about as far from the subequal lateral eye. Median ocular quadrangle slightly broader than long (33/30), narrowed in front (33/27), the eyes subequal in size. Chelicerae twice as long as broad, unmodified, normal for the genus. Sternum longer than broad, pointed between the posterior coxae, which are separated by about one-half their width. Legs relatively slender and without spines as usual.

First leg: femur, 1.35 mm.; patella, 0.45 mm.; tibia, 1.05 mm.; metatarsus, 0.80 mm.; and tarsus, 0.54 mm. long. Fourth tibia, 0.87 mm. long.

Abdomen suboval as seen from above, nearly as high as broad, covered rather sparsely with inconspicuous hairs. Epigynum as illustrated in figure 4.

TYPE LOCALITY: Female holotype from El Volcan, Chiriqui, Republic of Panama, February 26, 1936 (W. J. Gertsch).

This species is characterized by the epigynum, the openings of which are very widely separated. On a line between the orifices are clearly visible through the integument two round receptacles which appear as dark bodies.

**Mallos apanus**, new species

Figures 5 and 6

FEMALE: Total length, 3.00 mm.

	LENGTH	WIDTH
Carapace	1.05 mm.	0.86 mm.
Front	0.21	0.42
Sternum	0.65	0.50
Labium	0.15	0.20
Maxillae	0.30	0.15
Abdomen	2.00	1.30

Coloration as in *margaretae* except as follows: metatarsi without distal dark ring. Abdomen in the poorly preserved specimen dusky above and marked with a few small white spots; sides of the abdomen and the venter white, with gray reticulations.

Carapace longer than broad, of moderate height, the clypeus equal in height to scarcely a full diameter of the anterior median eye. First row of eyes straight as seen from in front, the dark median separated by slightly more than the full diam-



eter, scarcely half as far from the somewhat larger lateral eyes. Posterior row of eyes moderately recurved, the median separated by the full diameter, a little nearer the subequal lateral eye. Median ocular quadrangle broader than long (30/26), narrowed in front (30/28), the front eyes a little smaller. Chelicerae normal. Sternum longer than broad, bluntly pointed between the posterior coxae which are separated by two-thirds the width. Legs rather slender and without true spines.

First leg: femur, 1.30 mm.; patella, 0.35 mm.; tibia, 1.06 mm.; metatarsus, 0.86 mm.; and tarsus, 0.54 mm. long. Fourth tibia, 0.90 mm. long.

Abdomen suboval, pointed behind, nearly as high as broad. Epigynum as illustrated in figure 6.

MALE: Total length, 1.95 mm.

	LENGTH	WIDTH
Carapace	0.90 mm.	0.75 mm.
Front	0.20	0.10
Sternum	0.60	0.46
Labium	0.19	0.16
Maxillae	0.27	0.15
Abdomen	1.20	0.65

Coloration as in female.

Abdomen slender, twice as long as broad. Structure of carapace essentially as in the female. Chelicerae essentially as in female, unmodified. Legs proportionately longer, unspined as usual.

First leg: femur, 1.20 mm.; patella, 0.30 mm.; tibia, 1.00 mm.; metatarsus, 0.80 mm.; and tarsus, 0.48 mm. long. Fourth tibia, 0.73 mm. long.

Palpus as illustrated in figure 5.

TYPE LOCALITY: Male holotype and female allotype from Apa, Paraguay, January and February, 1909.

This pretty species is closely allied to *Mallos margaretae* with which it agrees in general structure and coloration. The openings of the epigynum are much less widely separated, and the seminal receptacles are proportionately larger.

#### *Mallos trivitattus* Banks

*Lethia trivitata* BANKS, 1901, Proc. Acad. Nat. Sci. Philadelphia, p. 577, pl. 33, figs. 9, 10. BANKS, 1902, Proc. U. S. Natl. Mus., vol. 25, p. 213.

*Lathys trivitata* PETRUNKEVITCH, 1911, Bull. Amer. Mus. Nat. Hist., vol. 29, p. 112.

*Dictyna trivitata* GERTSCH, 1935, Amer. Mus. Novitates, no. 792, p. 15.

RECORDS: *New Mexico*: Albuquerque, female and male cotypes (Soltau). Cloudcroft, July, 1934, male (S. Mulaik). Camp Mary White, Otero County, August 9-12, 1935, males and females (S. Mulaik). *Colorado*: Piedra Camp, 6500 feet, July 21, 1941, female (C. and M. Goodnight). Williams Fork, near Marshall, 7500 feet, male and females (W. Van Riper). Ouray, July 14, 1919, male (F. E. Lutz). *Utah*: Richfield, August, 1930, male and female (W. J. Gertsch). *Arizona*: Williams, July, female (E. A. Schwarz and H. Barber). Seventeen miles northeast of White-river, White Mountains, July 8-10, 1940, emales (J. M. Gertsch); *idem*, males and females (W. J. Gertsch and L. Hook). Bear Wallow, Santa Catalina Mountains, July 12-15, 1940, males and females (W. J. Gertsch and L. Hook). Aspen Spring, San Francisco Mountains, August 10, 1934, female (E. L. Bell). Graham Mountain, 9600 feet, September 5-25, 1937, female (O. Bryant). Santa Rita Mountains, female (O. Bryant). *California*: South Fork of Bishop Creek, Inyo County, August 17, 1941, males and females (W. M. Pearce).

This and the following species far exceed the other members of the genus in size. They are left in *Mallos* with some hesitation because the carapace is all brown and completely lacks the normal white side bands. The cribellum is divided by a narrow carina or at least shows faint indications of such a division. The genitalia of both males and females conform to the general pattern for *Mallos* but also deviate enough from the typical forms to entitle them perhaps to special group status in the genus.

#### *Mallos grandis* O. P.-Cambridge

*Dictyna grandis* O. P.-CAMBRIDGE, 1896, Biologia Centrali-Americana, Arachnida, vol. 1, p. 172, pl. 21, fig. 4. F. P.-CAMBRIDGE, 1902, *op. cit.*, vol. 2, p. 359, pl. 33, fig. 22.

RECORDS: *Vera Cruz*: Orizaba (H. H. Smith). Orizaba, June 28, 1944, male, two females (L. Irby Davis). *Guerrero*: Chil-

pancingo, types (H. H. Smith). Amula (F. P.-Cambridge).

#### THALLUMETUS SIMON

*Thallumetus* SIMON, 1892, Histoire naturelle des araignées, vol. 1, p. 241. SIMON, 1892, Ann. Soc. Ent. France, vol. 61, p. 434. (Genotype, *Thallumetus salax* Simon.)

The following species is placed in the present genus chiefly on the basis of the slight procurvature of the posterior eye row. Without the male, this disposition must remain somewhat uncertain. It is probable that *Thallumetus* deserves only subgeneric ranking under *Dictyna*.

#### *Thallumetus dulcineus*, new species

Figure 7

FEMALE: Total length, 1.15 mm.

	LENGTH	WIDTH
Carapace	0.50 mm.	0.45 mm.
Front	0.08	0.25
Sternum	0.33	0.30
Labium	0.12	0.10
Maxillae	0.15	0.10
Abdomen	0.80	0.60

Carapace yellow, slightly dusky on the sides of the head, the eyes narrowly ringed with brown, the covering a few inconspicuous hairs, most of them concentrated on the pars cephalica. Under side of carapace and mouth parts concolorous, sparsely set with inconspicuous hairs. Legs pale yellow, unmarked, clothed evenly and sparsely with rows of long, dark hairs. Abdomen gray, the dorsum with a pattern of white flecks which show through the integument, the venter pale, the whole abdomen evenly set with dark hairs.

Carapace about as broad as long, convex, the clypeus projecting forward, equal in height to the diameter of the anterior median eye. First row of eyes as seen from the front in a straight line, the median eyes separated by one-fourth the diameter, almost touching the laterals which are much larger in the ratio 4/7. Posterior eye row slightly recurved, the suboval median separated by the small diameter, a little nearer the slightly smaller lateral eyes. Median ocular quadrangle as broad as long, narrowed in front (15/11), the front eyes considerably smaller. Chelicerae normal, scarcely twice as long as broad, only

slightly emarginated on the inner sides. Sternum about as long as broad, rather broadly truncated between the posterior coxae which are separated by their length. Legs of moderate length, without true spines.

Abdomen oval, about as high as broad. Spinnerets not widely separated, essentially normal in position. Epigynum as illustrated in figure 7.

TYPE LOCALITY: Female holotype from El Volcan, Chiriqui, Republic of Panama, February 20, 1936 (W. J. Gertsch).

This tiny species is distinct from other known forms in size, except *T. parvulus* Bryant from the Virgin Islands. In *parvulus* the basal pair of spinnerets are widely separated by two diameters, whereas in the present species the spinnerets are normal. The anterior median eyes in *dulcineus* are scarcely separated, whereas in *parvulus* they are separated by a full diameter.

#### DICTYNA SUNDEVALL

*Dictyna* SUNDEVALL, 1833, Consp. Arachn., p. 16 (*D. arundinacea* Linnaeus, genotype).

This is a very large genus with more than 75 species already known from the United States, and many others still to be described. Diagnoses of several new species are given in the following pages. In addition, various records of known species are given because they are thought to be of especial interest.

Up to the present time only one American species has been regarded as being identical with a European form. Simon in 1892 ("Histoire naturelle des araignées," vol. 1, p. 235) listed *philoteichus* McCook as a synonym of *Dictyna civica* Lucas, a common European spider. *Dictyna philoteichus* McCook is quite obviously the same as *sublata* Hentz (= *volupis* Keyserling) and belongs in a section of the genus remote from *civica*. It is quite possible that Simon misidentified *philoteichus* and that his American record for *civica* should be referred to another species. For the present it seems advisable to consider Simon's record as spurious.

A few years ago Gertsch and Ivie described a species of *Dictyna* from Electra Lake, Colorado, which was named *voluta*.

A comparison of this American material with examples of *arundinacea* from Switzerland has shown that *voluta* is a synonym. The very slight differences between American and European material make it undesirable to maintain *voluta* separate even as a subspecies. *Dictyna arundinacea* Linnaeus is quite rare in North America, but it is possible that more critical study of boreal material will disclose that it has been confused with better known species of the *volucripes* group. Examples of both sexes have been taken recently at Fort Albany in Ontario. At this point it is perhaps desirable to note that *Dictyna uncinata* Thorell, another species widely distributed from Europe to Siberia as seems to be the case for *arundinacea*, is quite distinct from any species so far recorded from North America. The distribution of two other species, *Dictyna major* Menge and *D. borealis* Cambridge, is such that we can expect with confidence that they will be found in North America. Both are known from boreal Europe and from Greenland.

#### *Dictyna arundinacea* Linnaeus

*Aranea arundinacea* LINNAEUS, 1758, Systema naturae, ed. 10, p. 620.

*Dictyna voluta* GERTSCH AND IVIE, 1936, Amer. Mus. Novitates, no. 858, p. 10, fig. 28.

RECORDS: *Ontario*: Fort Albany, June 26, 1942, males and females (F. A. Urquhart). *Colorado*: Electra Lake, June 28, 1919, male (F. E. Lutz); July 1, 1919, male holotype, female allotype, and paratypes of *voluta* (F. E. Lutz).

#### *Dictyna minuta* Emerton

*Dictyna minuta* EMERTON, 1888, Trans. Connecticut Acad. Arts and Sci., vol. 7, p. 447, pl. 9, fig. 5-5a.

RECORDS: *Minnesota*: Lake Minnetonka, June 4, 1932, male (W. J. Gertsch). Leech Lake, Walker, July 2, 1935, male (D. Denning). *Illinois*: Joliet, June 13, 1940, male (W. J. Gertsch). *Iowa*: Sioux City, males (C. N. Ainslie). *New Jersey*: Ramsey, June, 1941, female (W. J. Gertsch). *New York*: Bear Mountain, June 2, 1940, male (W. J. Gertsch). *Ontario*: Highland Creek, June 7, 1941, female (S. Harrod). Pottageville, York County, July 19, 1938, females. Toronto,

May 16, 1942, female (S. Harrod). Iron Bridge, July 22, 1936, female (E. W. Spieth). *Utah*: Salt Lake City, September, 1930, male (W. J. Gertsch). *Saskatchewan*: Saskatoon, female. *British Columbia*: Vernon, August, 1931, female (H. B. Leech). Kelowna, September, 1931, females (H. B. Leech). Penticton, September, 1931, females (N. B. Leech). Salmon Arm, May 25, 1938 (N. B. Leech).

#### *Dictyna oregona*, new species

Figures 9 and 10

MALE: Total length, 2.30 mm.

	LENGTH	WIDTH
Carapace	1.10 mm.	0.92 mm.
Front	0.25	0.50
Sternum	0.63	0.60
Labium	0.23	0.23
Maxillae	0.30	0.15
Abdomen	1.35	0.90

Carapace dark brown, the pars cephalica marked with black radiating lines and margined with a narrow black seam. Chelicerae dark brown. Sternum brown, darker on the margins and with an indistinct median darker stripe. Legs yellowish brown, faintly annulate in black. Abdomen yellow, the dorsum with an inverted T-shaped black marking which is followed by several dark chevrons, the sides mostly black, the center yellow, with a median dusky longitudinal stripe.

Carapace essentially typical for the genus. The pars cephalica of moderate height, convex, the head portion moderately well developed. Clypeus equal in height to twice the diameter of an anterior median eye. First row of eyes essentially straight, the dark median separated by scarcely a diameter, less than half as far from the subequal lateral eyes. Posterior row of eyes moderately recurved, the median separated by one diameter, as far from the subequal lateral eyes. Median ocular quadrangle broader than long (19/16), narrowed in front in about the same ratio, the eyes subequal in size. Chelicerae as seen from in front of moderate length, deeply emarginated on the inner side to form an oval opening, the outer margins correspondingly strongly angled. Chelicerae as seen from the side not bent, subconical in shape.

Sternum as broad as long, bluntly pointed between the posterior coxae which are separated by their width. Legs of average length for males of the genus, completely unspined. First leg: femur, 1.20 mm.; patella, 0.35 mm.; tibia, 1.00 mm.; metatarsus, 0.86 mm.; and tarsus, 0.50 mm. long.

Palpus as illustrated in figures 9 and 10.

TYPE LOCALITY: Male holotype from Rogue River Valley, Oregon, 1300 feet, April, 1934 (Fred Lawrence).

This interesting species is easily recognized by the details of the palpus. The conductor is especially large and looped at the distal end, and the embolus is very robust as illustrated in the figure. This species can scarcely be confused with *Dictyna olympiana* Chamberlin, which has the terminal portion of the conductor and the embolus differently developed.

#### *Dictyna guanica*, new species

*Dictyna parietalis* PETRUNKEVITCH, 1930, Trans Connecticut Acad. Arts and Sci., vol. 30, p. 163, figs. 1, 2, 3 (not *parietalis* Cambridge).

This small species has been carefully described by Dr. Alexander Petrunkevitch under the specific name given to a Mexican species by Cambridge. *D. parietalis* agrees rather closely in general appearance with *guanica* but has the legs annulated in black. The epigyna are of the same general type, but the septum between the openings in *guanica* is much broader.

*Dictyna parietalis* is known to occur in Mexico and has been reported from parts of South America. Up to the present time I have not seen authentic specimens from Puerto Rico.

TYPE LOCALITY: Female holotype from Guanica, Puerto Rico, June 17, 1915 (A. Mutchler).

#### *Dictyna rita*, new species

Figures 28, 29, and 30

MALE: Total length, 1.70 mm.

	LENGTH	WIDTH
Carapace	0.90 mm.	0.65 mm.
Front	0.16	0.35
Sternum	0.42	0.39
Labium	0.20	0.18
Maxillae	0.30	0.15
Abdomen	0.90	0.60

Carapace yellowish brown, darker on the sides, the pars thoracica marked with radiating darker lines, the eyes narrowly ringed with black; clothing a sparse covering of long white hairs, most of them on the head. Chelicerae light yellowish brown. Sternum and labium brownish; the maxillae paler. Legs pale yellowish brown, showing inconspicuous darker rings. Abdomen yellowish brown, clothed evenly with light hairs, the dorsum with a narrow dark line at base, and with broken chevrons in the caudal half, the venter pale.

Carapace much longer than broad, the pars cephalica conspicuously elevated, convex, produced forward. Clypeus nearly horizontal, with a conspicuous groove below the eyes, equal in height to twice the diameter of an anterior median eye. Eyes of the first row essentially straight, the dark median separated by scarcely the diameter, nearly as far from the larger lateral eyes. Posterior row of eyes gently recurved, the oval median separated by their long diameter, as far from the subequal lateral eyes. Median ocular quadrangle as broad as long and as wide in front as behind, the eyes subequal in size. Chelicerae as seen from in front longer than usual in the genus, being nearly four times as long as wide, with a rounded spur at the base, emarginated on the inner side and moderately angled on the outer side; chelicerae as seen from the side moderately bent in front and rounded on the posterior side. Sternum slightly longer than broad, bluntly rounded between the posterior coxae which are separated by their width. Legs normal for the genus, without true spines. First leg: femur, 0.76 mm.; patella, 0.21 mm.; tibia, 0.70 mm.; metatarsus, 0.56 mm.; and tarsus, 0.33 mm. long. Tibia and patella of the fourth leg, 0.64 mm. long.

Palpus as illustrated in figures 29 and 30.

FEMALE: Total length, 2.00 mm.

	LENGTH	WIDTH
Carapace	0.85 mm.	0.65 mm.
Front	0.22	0.35
Sternum	0.50	0.44
Labium	0.15	0.18
Maxillae	0.22	0.12
Abdomen	1.35	1.10

Carapace dark brown, the head covered with very long white hairs. Legs pale yellowish brown, marked with wide reddish brown rings. Abdomen dusky yellow, with a darker pattern of bands or chevrons which are broken in the middle, leaving an irregular, pale, median, dorsal stripe. Sides of the abdomen and the venter mostly dusky, but varied with small pale spots.

Structure essentially as in most females of the genus. Clypeus vertical, equal in height to scarcely more than the diameter of the anterior median eye. Posterior row of eyes gently recurved, the median separated by a full diameter, about as far from the subequal lateral eye. Chelicerae normal, only twice as long as broad, weakly emarginated on the inner side. Legs of average length. First leg: femur, 0.75 mm.; patella, 0.23 mm.; tibia, 0.63 mm.; metatarsus, 0.50 mm.; and tarsus, 0.33 mm. long. Tibia and patella of the fourth leg, 0.75 mm. long.

Epigynum as illustrated in figure 28.

**TYPE LOCALITY:** Male holotype, female allotype and paratype from Madera Canyon, Santa Rita Mountains, Arizona, July 16, 1940 (W. J. Gertsch).

This interesting *Dictyna* is easily separated from other known species by reference to the palpus, which is figured. The patella and tibia and the shape of the conductor of the palpus are quite distinct from any described form. The very long, curved chelicerae and the shape of the head in the male are features not matched in any species known to me.

### *Dictyna meditata* Gertsch

*Dictyna meditata* GERTSCH, 1936, Amer. Mus. Novitates, no. 852, p. 5, fig. 8.

*Dictyna flavipedes* BRYANT, 1940, Bull. Mus. Comp. Zool., vol. 86, p. 299, figs. 59-61.

**RECORDS:** *Cuba:* Guane, September 24-26, 1915, male and females. *Jamaica:* Strawberry Hill, February 25, 1911, female. *Panama:* Barro Colorado Island, Canal Zone, November, 1939, male (G. C. Wood). *Costa Rica:* Males and females without specific locality data. *Honduras:* Tela, April 1, 1917, female (F. J. Dyer). La Ceiba, December 19, 1916, females (F. J. Dyer). *Mexico:* Twenty-four miles south

of Valles, San Luis Potosi, April 12, 1941, female (A. M. Davis).

### *Dictyna uintana* Chamberlin

*Dictyna uintana* CHAMBERLIN, 1919, Ann. Ent. Soc. Amer., vol. 12, p. 240, pl. 14, figs. 3, 4, 5.

**RECORDS:** *Wyoming:* Jackson, July 13-17, 1920, male (F. E. Lutz). *Colorado:* Breckenridge, June 29, 1934, female (C. H. Moss). Pingree Park, August 21, 1935, male (G. F. Knowlton). Pagosa Springs, June 21-23, 1919, females (F. E. Lutz). *Utah:* Fish Lake, Sevier County, June 22, 1930, male (W. J. Gertsch). Richfield, May 25, 1930, male and female (W. J. Gertsch). Clear Creek Canyon, south of Elsinore, June 15, 1930, male and females (W. J. Gertsch). Salt Lake City, males and females (W. J. Gertsch). *Idaho:* Montpelier, September, 1930, female (W. J. Gertsch). Carey, May 15, 1933, male (D. E. Fox). *Oregon:* Diamond Lake, 5200 feet, July 15, 1935, male (F. Lawrence).

### *Dictyna sancta*, new species

Figures 21 and 22

**MALE:** Total length, 2.35 mm.

	LENGTH	WIDTH
Carapace	1.15 mm.	0.86 mm.
Front	0.30	1.15
Sternum	0.66	0.60
Labium	0.25	0.22
Maxillae	0.40	0.15
Abdomen	1.40	0.98

Coloration in close agreement with that of *Dictyna vincens* Chamberlin and species of the *volucripes* group. Carapace dark brown, darkest on the sides of the head, clothed rather sparsely with long white hairs. Chelicerae dark brown; sternum and maxillae light brown; labium somewhat darker. Legs pale yellowish brown, unmarked, rather sparsely clothed with inconspicuous pale hairs. Abdomen yellow above, marked at the base with the usual elongate maculation and very faintly marked in the caudal half with broken chevrons. Venter of the abdomen pale but with an indistinct median longitudinal dusky stripe.

Structure essentially as in *vincens*. Pars

cephalica rather strongly elevated, convex, the clypeus sloping forward, equal in height to twice the diameter of an anterior median eye. First row of eyes straight, the median separated by a little more than the diameter, scarcely half as far from the large lateral eyes. Posterior eye row moderately recurved, the median separated by one and one-third diameters, about as far from the subequal lateral eyes. Median ocular quadrangle broader than long (22/18) slightly narrowed in front (22/20), the eyes subequal. Chelicerae strongly bowed as seen from the side, armed at base in front with a rounded carina and only moderately excavated on the inner sides as seen from in front. Sternum slightly longer than broad, bluntly rounded between the posterior coxae which are separated by nearly their width. Legs of moderate length, without true spines. First leg: femur, 1.10 mm.; patella, 0.35 mm.; tibia, 0.87 mm.; metatarsus, 0.76 mm.; and tarsus, 0.45 mm. long. Tibia and patella of the fourth leg, 0.90 mm. long.

Palpus as illustrated in figures 21 and 22.

FEMALE: Total length, 4.00 mm.

	LENGTH	WIDTH
Carapace	1.40 mm.	1.06 mm.
Front	0.35	0.60
Sternum	0.80	0.70
Labium	0.25	0.30
Maxillae	0.42	0.20
Abdomen	2.50	2.10

Coloration essentially as in the male.

Structure normal for the group. Carapace of moderate height, convex, the clypeus subvertical and equal in height to scarcely more than the diameter of an anterior median eye. Eyes of the posterior row essentially straight. Chelicerae normal, twice as long as broad, with a weak carina at the base as seen from in front and very weakly excavated on the inner margins. Legs normal, of average length, clothed with inconspicuous hairs. First leg: femur, 1.15 mm.; patella, 0.42 mm.; tibia, 0.90 mm.; metatarsus, 0.86 mm.; and tarsus, 0.50 mm. long. Tibia and patella of the fourth leg, 1.10 mm. long. Abdomen enlarged as usual, suboval, about as high as broad.

TYPE LOCALITY: Male holotype and fe-

male allotype from The Garden of the Gods, Colorado Springs, Colorado, June 24, 1940 (W. J. Gertsch and L. Hook).

This species belongs to the group which includes *Dictyna vincens* Chamberlin. It may be differentiated from that species chiefly by differences in the genitalia. The males are easily separated by the details of the conductor, the terminal portion of which in *sancta* is more sharply angled and proportionately shorter. The females are closely allied, but the color pattern in *vincens* is usually more strongly marked, and the epigynum in that species has the openings closer together.

### *Dictyna stulta* Gertsch and Mulaik

*Dictyna stulta* GERTSCH AND MULAİK, 1936, Amer. Mus. Novitates, no. 851, p. 7, fig. 9.

RECORDS: *Utah*: North Ogden Canyon, October 9, 1937, male (D. M. Hammond). Aspen Grove Camp, Mount Timpanogos, Utah County, 6800 feet, July 29, 1940, male and female.

### *Dictyna personata* Gertsch and Mulaik

*Dictyna personata* GERTSCH AND MULAİK, 1936, Amer. Mus. Novitates, no. 851, p. 9, fig. 3.

RECORDS: *Nevada*: Las Vegas, May, 1944, male (D. J. Zinn). *Utah*: Two miles east of Glenwood, Sevier County, June 30, 1940, male (W. J. Gertsch and L. Hook).

### *Dictyna bicornis* Emerton

*Dictyna bicornis* EMERTON, 1915, Trans. Connecticut Acad. Arts and Sci., vol. 20, p. 141, text figs.

RECORDS: *Minnesota*: Stillwater, May 6, 1933, male (C. E. Michel). Minneapolis, June 1, 1931, male and females (W. J. Gertsch). Lake Pepin, April 25, 1931, males (W. J. Gertsch). *Wisconsin*: St. Croix Falls, May, 1932, female (W. J. Gertsch). *Iowa*: Sioux City, females (C. N. Ainslie). *Idaho*: Adelaide, September, 1931, females (D. E. Fox). *Utah*: Salt Lake City, April 15, female (W. J. Gertsch).

### *Dictyna suwaneana*, new species

Figures 25, 26, and 27

MALE: Total length, 1.50 mm.

	LENGTH	WIDTH
Carapace	0.75 mm.	0.57 mm.
Front	0.18	0.32
Sternum	0.42	0.36
Labium	0.14	0.14
Maxillae	0.21	0.12
Abdomen	0.86	0.70

Carapace reddish brown, the pars thoracica lightly marked with radiating dusky lines, the eyes narrowly ringed in black. Clothing of the carapace a rather sparse covering of long white hairs. Sternum and mouth parts brown. Legs pale yellowish brown, evenly clothed with darker hairs, without true spines. Abdomen gray to white, the dorsum with an indistinct series of spots or chevrons in the caudal half and a median darker maculation in the front half.

Structure typical, in very close agreement with *savanna* Chamberlin and Ivie. Clypeus equal in height to one and one-half diameters of an anterior median eye. First eye row essentially straight, equal in size, the median separated by the radius, slightly nearer the lateral eye. Posterior row of eyes moderately recurved, median separated by their diameter as far from the subequal lateral eyes. Median ocular quadrangle as broad as long and as wide in front as behind, the eyes subequal in size. Chelicerae as seen from the side moderately recurved, the inner margins in frontal view moderately excavated. Sternum slightly longer than broad, truncated between the posterior coxae, which are separated by their length.

Legs of moderate length, unspined as usual. First leg: femur, 0.62 mm.; patella, 0.20 mm.; tibia, 0.55 mm.; metatarsus, 0.45 mm.; tarsus, 0.27 mm. Tibia and patella of the fourth leg, 0.50 mm. long.

Palpus as illustrated in figures 25 and 26.

FEMALE: Total length, 1.70 mm.

	LENGTH	WIDTH
Carapace	0.68 mm.	0.55 mm.
Front	0.15	0.30
Sternum	0.40	0.35
Labium	0.12	0.13
Maxillae	0.20	0.10
Abdomen	1.60	0.80

Coloration and structure in very close agreement with the male. Chelicerae normal.

First leg: femur, 0.58 mm.; patella, 0.17 mm.; tibia, 0.42 mm.; metatarsus, 0.40 mm.; tarsus, 0.25 mm. Tibia and patella of the fourth leg, 0.50 mm.

Epigynum as illustrated in figure 27.

TYPE LOCALITY: Male holotype, female allotype, and male and female paratypes from Englewood, Florida, April 1, 1938 (W. J. Gertsch).

RECORDS: Many paratypes from the following localities: *Florida*: Winter Park, March 21, 1938 (W. J. Gertsch). Five miles south of Clara, April 11, 1938 (W. J. Gertsch). North of Olney, Osceola County, March 27 (W. J. Gertsch). Ten miles south of Zephyrhills, April 7, 1938 (W. J. Gertsch). Indian Town, March 28, 1938 (W. J. Gertsch). *Georgia*: Near Waycross, April 21, 1938 (W. J. Gertsch).

#### *Dictyna angulata* Emerton

*Dictyna angulata* EMERTON, 1915, Trans. Connecticut Acad. Arts and Sci., vol. 20, p. 40, text figures.

RECORD: *New Jersey*: Ramsey, June 5, 1938, male and female (W. J. Gertsch).

#### *Dictyna savanna* Chamberlin and Ivie

Figure 16

*Dictyna savanna* CHAMBERLIN AND IVIE, 1944, Bull. Univ. Utah, vol. 35, p. 121, figs. 161-169.

RECORDS: *Georgia*: Near Waycross, April 21, 1938, males and females (W. J. Gertsch). *Louisiana*: Kisatchie National Forest, Grant Parish, June, 1941 (W. Jones and A. F. Archer). *Florida*: Okeechobee, March 26, 1938, male and females (W. J. Gertsch). Indian Town, March 28, 1938, males and females (W. J. Gertsch). West of Arcadia, March 30, 1938, female (W. J. Gertsch). Sebring, March 7, 1939, male (F. E. Lutz). Winter Park, March 21, 1938, male and female (W. J. Gertsch). Near Trilby, April 8, 1938, female (W. J. Gertsch). Near Ona, March 31, 1938, female (W. J. Gertsch). Five miles south of Clara, April 11, 1938, male and females (W. J. Gertsch). Miakka River State Park, near Sarasota, April 6, 1938, male and female (W. J. Gertsch).

**Dictyna nebraska**, new species

Figures 17 and 18

MALE: Total length, 3.30 mm.

	LENGTH	WIDTH
Carapace	1.56 mm.	1.06 mm.
Front	0.36	0.62
Sternum	0.84	0.70
Labium	0.33	0.26
Maxillae	0.50	0.22
Abdomen	1.80	1.15

Carapace reddish brown, the pars thoracica a little darker, clothed very sparsely with fine white hairs. Chelicerae, labium, and maxilla light yellowish brown. Sternum very pale yellowish brown, clothed with a few inconspicuous black hairs. Legs pale yellowish brown without markings, clothed evenly with inconspicuous black hairs. Abdomen reddish brown, without strongly marked dorsal pattern; the venter pale.

Carapace much longer than broad, the pars cephalica of moderate height, but strongly produced forward to make the head a very conspicuous element. Clypeus equal in height to nearly three times the anterior median eye. First row of eyes essentially straight, the dark median separated by nearly two diameters, scarcely a diameter from the larger lateral eyes. Second row of eyes moderately recurved, the median eyes separated by one and one-half times their diameter, about as far from the subequal lateral eyes. Median ocular quadrangle slightly broader than long (23/20), slightly more narrow behind than in front, the eyes subequal in size. Chelicerae as seen from in front with a heavy rounded spur at the base, moderately excavated on the inner margins, the outer margins gently rounded. As seen from the side chelicerae strongly bowed in front and correspondingly angled behind. The sternum longer than broad, bluntly produced between the posterior coxae which are separated by nearly their width. Legs normal for the genus, of average length without true spines. First leg: femur, 1.35 mm.; patella, 0.43 mm.; tibia, 1.13 mm.; metatarsus, 0.90 mm.; and tarsus, 0.53 mm. long. Palpus as illustrated in figures 17 and 18 and distinguished from other known species by the peculiar spur at the base of the tarsus.

TYPE LOCALITY: Male holotype from Weeping Water River, east of Lincoln, Nebraska, 1941 (M. J. Harbaugh).

This interesting spider may be distinguished from other American species by the following characters: The head is very strongly produced forward, more strongly so than in any species known to me. The chelicerae are very strongly bent as seen from the side. The male palpus is similar in many respects to that of *Dictyna bostoniensis* Emerton, but in that species the principal tibial apophysis is distal in position. *Dictyna nebraska* is much larger than *bostoniensis*, but is similar to that species in general color pattern.

**Dictyna lina**, new species

Figure 24

MALE: Total length, 2.35 mm.

	LENGTH	WIDTH
Carapace	1.10 mm.	0.93 mm.
Front	0.27	0.44
Sternum	0.70	0.62
Labium	0.25	0.25
Maxillae	0.35	0.17
Abdomen	1.35	1.00

Carapace yellowish brown, marked with radiating darker lines on the thoracic portion, with a narrow black seam, the eyes narrowly ringed with black; clothing of the carapace sparse, consisting of white hairs, most of them on the head. Chelicerae dark brown. Sternum yellowish brown, margined with black; labium dark brown; the maxillae yellowish brown. Legs light yellowish brown, without markings, clothed evenly but sparsely with inconspicuous hairs. Abdomen pale yellow above, marked with an indistinct dusky pattern of chevrons and spots, the venter a little paler.

Structure of carapace typical for the genus. Pars cephalica moderately elevated as seen from the front, highest just behind the eyes. Clypeus equal in height to twice the diameter of an anterior median eye. First row of eyes straight as seen from in front, the dark median separated by scarcely their diameter, about half as far from the larger lateral eyes. Posterior row of eyes very weakly recurved, the round median separated by about the diameter, as far



from the subequal lateral eyes. Median ocular quadrangle broader than long (20/17), narrowed in front in the same ratio, the front eyes a little smaller. Chelicerae as seen from in front deeply excavated on the inner margin, forming a nearly circular opening, the outer margins strongly angled. Sternum a little longer than broad, bluntly rounded between the posterior coxae which are separated by their width. Legs of moderate length, completely lacking true spines. First leg: femur, 1.16 mm.; patella, 0.34 mm.; tibia, 0.97 mm.; metatarsus, 0.84 mm.; and tarsus, 0.50 mm. long. Palpus as illustrated in figure 24.

TYPE LOCALITY: Male holotype and paratype from near the Ranger Station on Mt. Lemmon, Santa Catalina Mountains, Arizona, July 12-15, 1940 (W. J. Gertsch and L. Hook).

This interesting species is closely allied to *Dictyna completa* Chamberlin and Gertsch with which it agrees in many respects of coloration and structure. It may be distinguished by the chelicerae which are more strongly angled and modified, and by the details of the palpus. The conductor is more robust than in *completa*, and the embolus is correspondingly thicker. The dorsal pattern on the abdomen in *lina* is relatively obscure, whereas in *completa* the darker pattern is sharply defined against a very pale background.

### *Dictyna hardyi*, new species

Figures 19 and 20

MALE: Total length, 1.20 mm.

	LENGTH	WIDTH
Carapace	0.53 mm.	0.42 mm.
Front	0.12	0.23
Sternum	0.34	0.30
Labium	0.11	0.11
Maxillae	0.17	0.09
Abdomen	0.70	0.55

Carapace pale yellow, somewhat dusky on the pars cephalica, sparsely clothed with black bristles, the eye tubercles black. Chelicerae and mouth parts pale yellowish brown. Sternum and appendages dull yellowish, without contrasting markings, clothed evenly with darker hairs. Ab-

domen gray, without evident pattern, evenly set with dark hairs.

Structure in close agreement with *D. formidabilis* Gertsch and Ivie. Carapace moderately elevated, convex, highest well behind the eyes. Clypeus equal in height to the diameter of an anterior median eye. First row of eyes essentially straight, the black median separated by their radius, half as far from the somewhat larger lateral eyes. Second row moderately recurved, the median separated by scarcely their diameter, about as far from the subequal lateral eyes. Chelicerae modified as usual in the genus, the base with a small spur on the outer side, the sides moderately bowed, the excavation between a long oval. Sternum slightly longer than broad, truncated between the posterior coxae which are separated by their length. Legs of average length for the genus, without spines. First leg: femur, 0.40 mm.; patella, 0.15 mm.; tibia, 0.35 mm.; metatarsus, 0.26 mm.; and tarsus, 0.20 mm. long. Tibia and patella of the fourth leg, 0.43 mm. long.

Palpus as illustrated in figure 20.

FEMALE: Total length, 1.20 mm. long.

Coloration and structure in very close agreement with the male.

Chelicerae normal, unmodified as usual in this sex. Epigynum as illustrated in figure 19.

TYPE LOCALITY: Male holotype, female allotype, and male paratype from a nest of *Neotoma micropus*, at Laguna Madre, 25 miles southeast of Harlingen, Texas, August 22, 1945 (D. E. Hardy and V. L. Wooley). Male and female paratypes from Sacaton, Arizona, November 16, 1934 (F. S. Stickney), in the United States National Museum.

This tiny species, which is smaller than most known species except possibly *micro* Chamberlin and Ivie, is closely allied to *Dictyna formidabilis* Gertsch and Ivie (= *armata* Banks). It is easily separated by the size difference, the lack of dorsal pattern on the abdomen, and especially by the details of the genitalia. The tibia of the male palpus is armed with a long spur similar to that of *formidabilis*, but the conductor of the embolus is much shorter and is distinctive in form.

**Dictyna pallida** Keyserling

*Dictyna pallida* KEYSERLING, 1887, Verhandl. Zool.-Bot. Gesellsch. Wien, vol. 37, p. 472, pl. 6, fig. 33.

Keyserling described this species on the basis of specimens from "der Umgegend von Washington und des Fort Monroe," which were sent to him by Marx. In the United States National Museum are four females labeled *Dictyna pallidula* Ksl. by Marx which undoubtedly represent the same material studied by Keyserling and which are herein considered as the cotypes of his *pallida*. Two of them come from Chesapeake Bay and bear the label "Coll. Marx No. 17," and I have labeled and here designate one of them as the lectotype. The remaining two cotypes are labeled as the others but come from the District of Columbia.

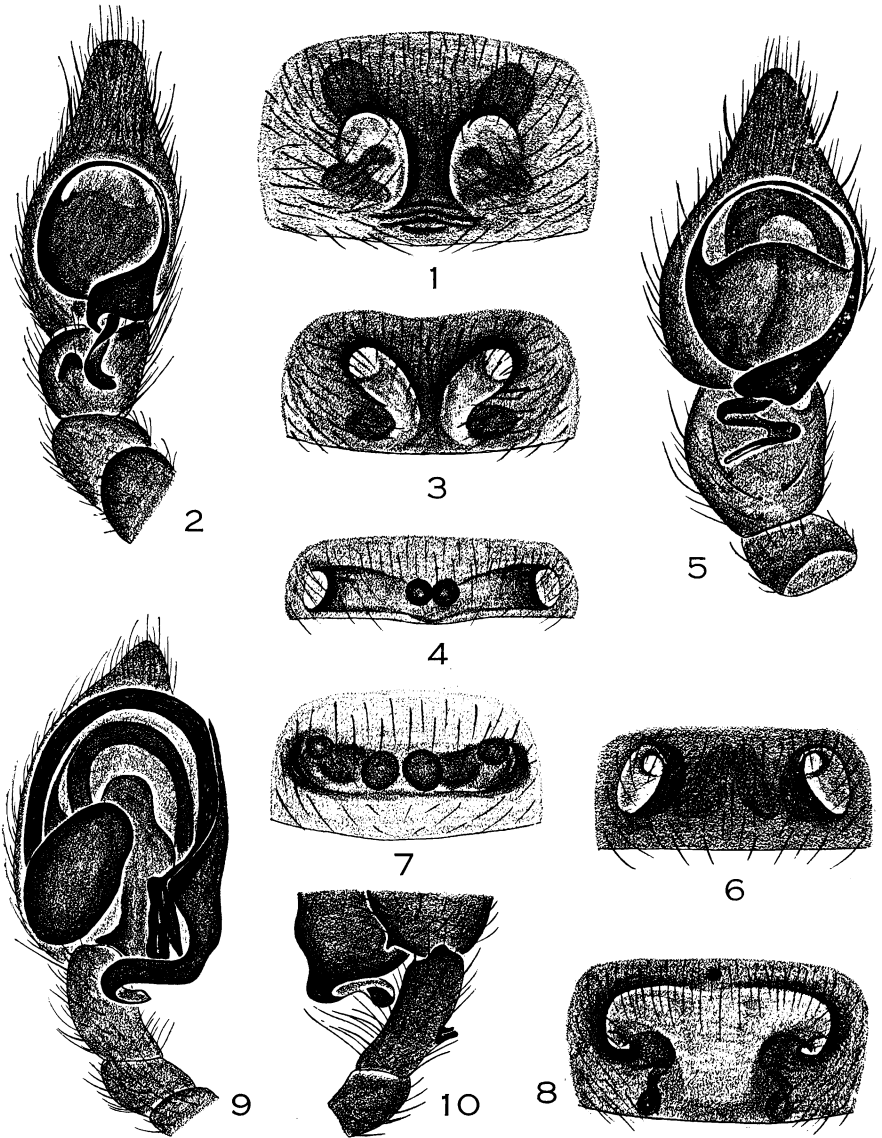
**Dictyna keyserlingi** Marx

*Dictyna borealis* KEYSERLING, 1887, Verhandl. Zool.-Bot. Gesellsch. Wien, vol. 37, p. 473, pl. 6, fig. 34. (Not *Dictyna borealis* O. P.-Cambridge, 1872.)

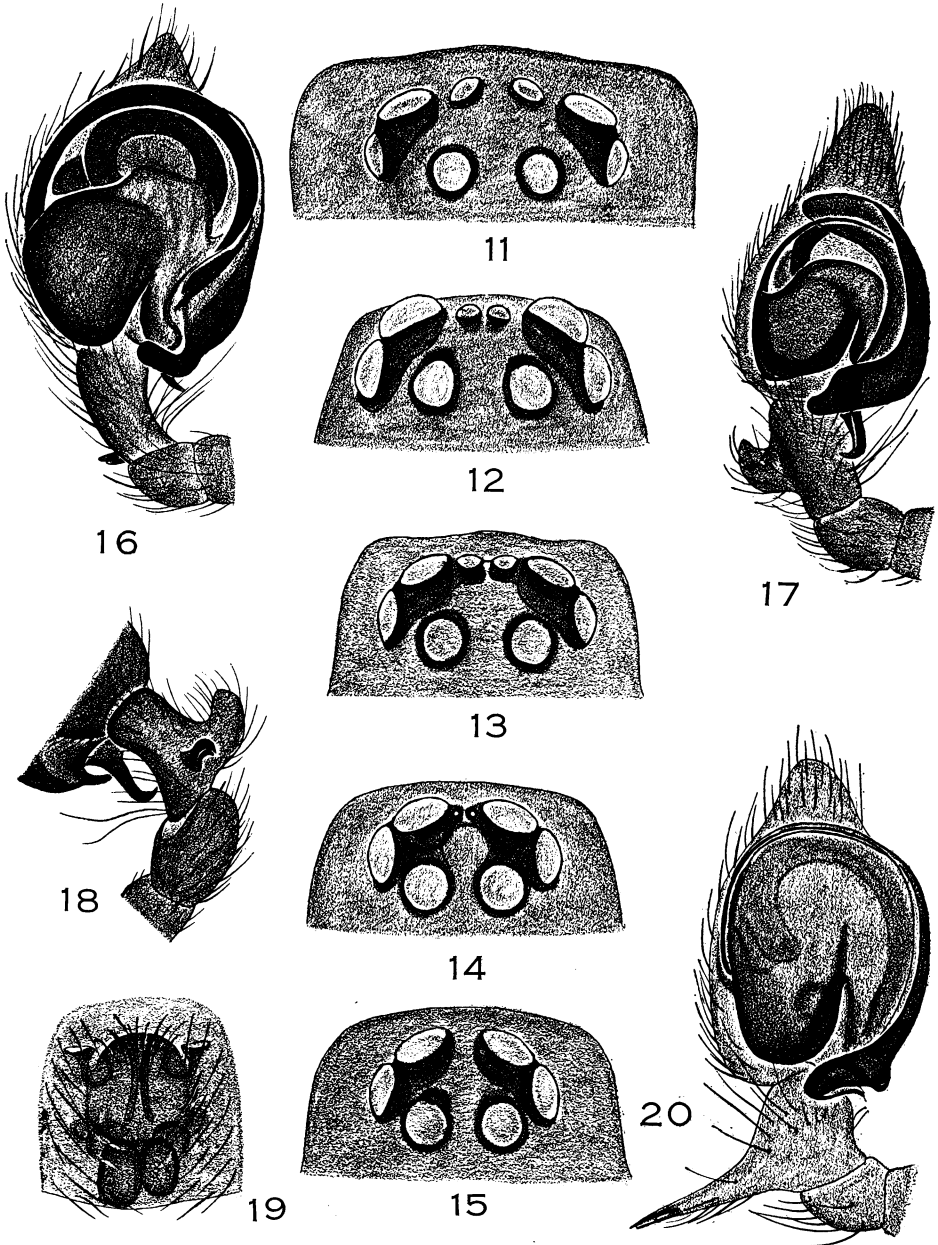
*Dictyna keyserlingii* MARX, 1891, Proc. Ent. Soc. Washington, vol. 2, p. 190. (New name for *D. borealis* Keyserling.)

*Dictyna keyserlingi* BANKS, 1910, Bull. U. S. Natl. Mus., no. 72, p. 17. (New name for *D. borealis* Keyserling.)

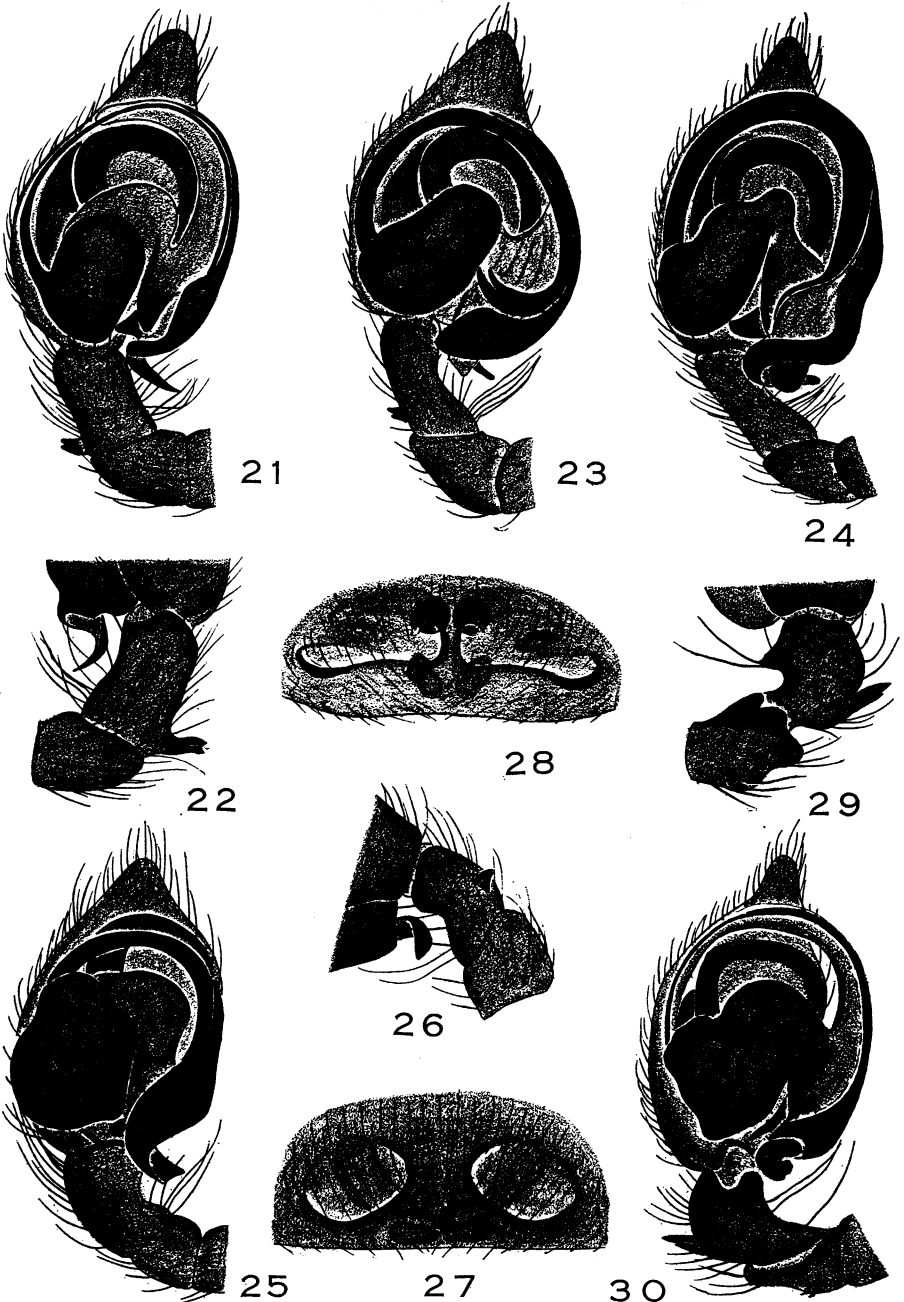
Both Marx and Banks noted that *borealis* was preoccupied in *Dictyna* and changed the name to *keyserlingi*, but Marx's designation was made before that of Banks. In the United States National Museum are two males from Sitka, Alaska, labeled *Dictyna borealis* Ksl. in the handwriting of Marx and bearing the label "Coll. Marx No. 22," which I regard as the cotypes of Keyserling's species. One of them I have designated as the lectotype.



- Fig. 1. *Mallos kraussi*, new species, epigynum.  
 Fig. 2. *Mallos bryanti*, new species, left male palpus, ventral view.  
 Fig. 3. *Idem*, epigynum.  
 Fig. 4. *Mallos margaretae*, new species, epigynum.  
 Fig. 5. *Mallos apanus*, new species, left male palpus, ventral view.  
 Fig. 6. *Idem*, epigynum.  
 Fig. 7. *Thallumetus dulcineus*, new species, epigynum.  
 Fig. 8. *Mallos pallidus* Banks, epigynum.  
 Fig. 9. *Dictyna oregona*, new species, left male palpus, ventral view.  
 Fig. 10. *Idem*, base of left male palpus, subdorsal view.



- Fig. 11. *Lathys alberta*, new name, eyes of female, dorsal view.  
 Fig. 12. *Lathys dixiana* Ivie and Barrows, eyes of female, dorsal view.  
 Fig. 13. *Lathys foxi* Marx, eyes of female, dorsal view.  
 Fig. 14. *Lathys delicatula* Gertsch and Mulaik, eyes of female, dorsal view.  
 Fig. 15. *Lathys maculina*, new name, eyes of female, dorsal view.  
 Fig. 16. *Dictyna savanna* Chamberlin and Ivie, left male palpus, ventral view.  
 Fig. 17. *Dictyna nebraska*, new species, left male palpus, ventral view.  
 Fig. 18. *Idem*, base of left male palpus, subdorsal view.  
 Fig. 19. *Dictyna hardyi*, new species, epigynum.  
 Fig. 20. *Idem*, left male palpus, ventral view.



- Fig. 21. *Dictyna sancta*, new species, left male palpus, ventral view.  
 Fig. 22. Idem, base of left male palpus, retrolateral view.  
 Fig. 23. *Dictyna vintana* Chamberlin, left male palpus, ventral view.  
 Fig. 24. *Dictyna lina*, new species, left male palpus, ventral view.  
 Fig. 25. *Dictyna suwaneae*, new species, left male palpus, ventral view.  
 Fig. 26. Idem, base of left male palpus, retrolateral view.  
 Fig. 27. Idem, epigynum.  
 Fig. 28. *Dictyna rita*, new species, epigynum.  
 Fig. 29. Idem, base of left male palpus, retrolateral view.  
 Fig. 30. Idem, left male palpus, ventral view.

