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# A New Genus of Theridiid Spiders, in which the Male Develops Only One Palpus

By RALPH V. CHAMBERLIN AND WILTON IVIE

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The discovery of the male of *Theridion fordum* Keyserling, reveals characteristics for that species which set it off as generically different from *Theridion* proper. The erection of a new genus is thus found necessary for this species; and several other species which are closely related to it naturally follow in this separation. It is quite apparent that *mixtum* Cambridge, *oblivium* Cambridge, *passivum* Keyserling, and *minor* n. sp. are congeneric with *fordum*. *Theridion migrans* Keyserling probably belongs here also, and possibly *morulum* Cambridge, *rostratum* Cambridge, and *purum* Cambridge.

The extremely small size of the male as compared to the female (see Plate I) has undoubtedly led to its being overlooked in collecting. At present the male is known for *fordum* only, but it is reasonable to assume that the males in the other species are in general similar. This conclusion is strengthened by the fact that the females of some of the species are quite common and conspicuous in the regions where they occur, yet males have not as yet been collected. The males appear as baby spiders in the web of the female; as many as a dozen or more males may often be found in a single web. Usually, however, only two or three are present, and these may still be found in the web after the eggs are laid, and sometimes even after the young have hatched.

Even more remarkable than the great difference in the size of the sexes is the fact that the male develops only one palpus (in *fordum* at least.) This is sometimes the right and sometimes the left, each side being about equally represented in a series of specimens.

Considering the development of only one palpus in the male, the question arises as to whether or not polyandry is customary with these spiders. Normally each palpus of a male spider fills only one seminal receptacle in the female. In these species, both sides of the epigyna are fully developed. It is questionable if the same palpus would be used to fill both receptacles. The fact that the palpi are about equally distributed on each of the two sides in the males would indicate that two males may be required to fertilize a single female. Only further observation can fully determine this.

At just what time in the development of the male that the palpus is lost remains yet to be ascertained. The baby spiders have both palpi normal. That one palpus is not broken off at time of copulation is evident. Many specimens of males show that one palpus is invariably present, but never more than one. Sometimes a dozen or more males may be found in the web of a single female—certainly all of them could

not have lost a palpus in copulation, and then only one palpus. Furthermore, a few males collected prior to the last molt show only one palpus present. Thus it may be concluded that the palpus is *lost* at the time of the penultimate molt or earlier.

The only parallel occurrence of such a phenomenon is to be found in the family Symphytognathidae, where the female of *Symphytognatha globosa* Hickman loses both palpi sometime before maturity. (Petrunkwitch, Trans. Conn. Acad. Sci., 1933, Vol. 31, p. 309.)

The palpus is so large in comparison with the size of the spider, that two of them would be extremely unwieldy. The one palpus assumes a central position in front of the spider so as not to overbalance the one side.

#### Genus TIDARREN Chamberlin & Ivie, new

Closely related to *Theridion*. The female is very much larger than the male, being a hundred or more times the bulk of the latter.

*Female*: Cephalothorax a little longer than wide, somewhat heart-shaped; the base broadly and shallowly concave; sides rounded; head narrow, being less than half the width of the thoracic part; clypeus much rounded across front, and protruding. Cephalic and thoracic parts of about equal elevation; posterior slope steep. Eyes on a slight prominence, the eye area occupying nearly the full width of the head. Anterior median eyes protruding over the base of clypeus. Eye rows of nearly equal length, the posterior row being very slightly the longer; both rows slightly procurved, or nearly straight. Eyes subequal, the anterior medians being slightly larger than the others. Anterior median eyes somewhat less than a diameter apart, and slightly nearer the side eyes than to each other. Posterior eyes about equidistant, being about a diameter apart. Median ocular area about square. Lateral eyes on each side contiguous and raised on a small tubercle. Clypeus high and convex. Median depression of thorax broad and shallow.

Chelicerae vertical; rather slender; without a distinct furrow and without teeth. Endites more than twice as long as wide, and more than twice the length of the labium; convergent beyond labium; reach to tip of chelicerae or slightly beyond. Labium rounded, wider than long. Sternum somewhat triangular; longer than wide; blunt point separating hind coxae by less than a diameter of one of them; widest at anterior end; anterior corners not rounded off.

Legs fairly robust; of moderate length; order of length 1, 4, 2, 3; without spines. Comb of serrated bristles on hind tarsus well developed; claws of hind feet (and of the others to a lesser extent) turned so that they are more on the ectal side of the tip than on the top side. Third claw large, being nearly as large as the paired claws. Palpi small, with a fairly large toothed claw on the tip.

Abdomen high and rounded, coming to a point below at the spinnerets; slightly longer than wide, and decidedly higher than long. More or less of a rounded tubercle often present on the mid-dorsal line at, or just back of, the highest point. Spinnerets ventral; small, closely compact and contiguous; front pair largest, apical segment very short; posterior pair each with a very short apical segment, bearing two large flattened tubules located end to end, the outer tubule being larger than the inner. Median spinnerets small and much flattened laterally.

Epigynum small, usually more or less conical with two small openings.

*Male:* General structure similar to that of the female, with the following notable exceptions: Cephalic part of cephalothorax wider in front than behind. Clypeus more vertical; anterior eyes more protuding; head more elevated. Endites more strongly convergent distally. Hind coxae more widely separated. Only one palpus developed in the adult; either the right or the left. Palpal organs very large in comparison to the size of the spider. Endite and trochanter of missing palpus present, the endite being normal, the trochanter vestigial. Legs and abdomen much as in female, except the latter is proportionately smaller. The legs have an enlarged seta at the distal end of the patella above, and two similar setae on the upper side of the tibia, which somewhat resemble long weak spines.

#### Genotype: *Theridion fordum* Keyserling

Tropical America seems to be the center of distribution of this genus. The more common species are widespread in their distribution. At least two of them occur in the southern United States.

#### *Tidarren fordum* Keyserling

*Theridion fordum* Keyserling, Spinnen Amerikas, Theridiidae, 1884, Vol. II, p. 382, pl. i, f. 9.

*Theridion fordum* Banks, Proc. Calif. Acad. Sci., 1898, Vol. I, p. 236.

*Steatoda forda* F. Cambridge, Biol. Centr. Amer., 1902, Vol. II, p. 382, pl. 36, f. 7.

*Theridion fordum* Comstock, Spider Book, 1912, p. 346, f. 344.

*Theridion fordum* Bishop and Crosby, Elisha Mitchell, Sci. Soc., 1926, Vol. 41, p. 182.

General structure as given for the genus. Structures which may be considered as specific are as follows:

*Female:* Both eye rows slightly procurved. Anterior median eyes slightly larger than the others, which are about equal. Posterior eyes equidistant, being a full diameter apart. Anterior median eyes about two-thirds diameter apart and about a radius from the side eyes. Median ocular area about square. Posterior median eyes a full diameter or slightly more from the anterior median eyes.

Tubercle on abdomen very reduced or absent in most specimens; occasionally distinct. Epigynum with a large bulbous base on the top of which is a small beak-like projection. Epigynum small, yet relatively large for the genus.

*Male*: Eye rows procurved. Anterior median eyes much larger than the others, which are about equal. Rows of about equal length. Eyes of posterior row about equidistant, a little less than a diameter apart, less than a fourth a diameter from the side eyes. Clypeus nearly vertical, width about twice the diameter of an anterior median eye. Anterior median eyes protruding over clypeus. Median ocular area slightly wider in front than behind, slightly wider than long.

Femur and patella of palpus of normal size and shape; tibia broadly flattened against the bulb and apparently supporting it. Palpal organ large. The cymbium is mesad of the bulb and is produced mesally into a stout apophysis, which is broadly concave on the ventral side (when the palpus is in its normal position). The tip of the apophysis is provided with several short black teeth, and usually one or two rows of small teeth partly transverse the concave surface. Bulb large; embolus a small spiral coil on the ectal side, the basal part of which appears as a dark snail-like coil thru the integument of the dorsal side. Only one palpus developed in the adult.

*Color*.—*Female*: Carapace pale yellowish, with sides of thoracic part broadly margined with dusky-black; also a broad median band of dusky, including entire eye area in front and narrowing posteriorly, and with a pair of laterally extending points at the median depression. Chelicerae yellowish with touches of dusky at tips and at base in front. Sternum pale yellowish with eight centrally-directed streaks of dusky black coming in from the margins (see Plate II, f.5). Labium and endites dusky yellow. Legs light yellowish, with black markings, consisting of: blotches and specks on the trochanter; more or less complete basal and subapical rings on the femur, with the middle region thickly dotted, or the latter may be concentrated more or less into a broad middle ring; basal and apical rings on the patellae; small basal and broad apical rings on tibiae and metatarsi, and with middle region spotted as on femur. Tarsus unmarked. All annuli may be more or less broken up into spots and blotches. Palpi light yellowish, with joints more or less shaded.

Abdomen with background of light grayish-yellow; finely reticulate in preserved specimens. A more or less distinct runcinate folium on

basal half, of black bordered with white. A median white line extending from the "hump" to the spinnerets. Often one or two white lines extending obliquely from the folium down the sides, these being more or less bordered with black. Also one or two black or dusky streaks extending obliquely from each side of the white median line. Sides more or less spotted, streaked or blotched with black and brown. Two black spots on each side of spinnerets; between these and in front of the anterior one are white spots. Venter with median area white marked with black. Epigastric plates pale yellowish. Epigynum black. Spinnerets dusky yellow.

Melanism often occurs in the female, in which case the abdomen is nearly black, only the outline of the folium and the white lines being discernible (see Plate II, f.7). Often associated with this, but not always, are heavier black markings on the legs and cephalothorax. More often specimens are pale in color, in which case the black markings of all parts may be faded to brown, be reduced, or largely absent.

*Male*: Cephalothorax, chelicerae, sternum, labium and endites as in female, except markings usually more diffuse. Legs light dusky brown, with coxae, trochanters and tarsi paler, usually with indistinct markings as in female, but these are often so diffused as to be indistinguishable. Abdomen light yellowish-gray with a broad more or less diffused median dorsal band of dusky. Sides and venter more or less shaded with dusky. Pale specimens with dark markings and shadings reduced or faded. Palpus light yellowish, with a few structures in palpal organ darkened.

#### Measurements:

#### FEMALE

Length: 7 mm.

Cephalothorax: length 2.4, width 2.1, head 0.8 mm.

Abdomen: length 5.2, width 5.0 mm.

Chelicerae: length .9 mm.

Legs:	I	II	III	IV	<i>Palpus</i>
Trochanter .....	.4	.3	.2	.4	.1
Femur .....	4.7	3.0	2.3	3.8	.6
Patella .....	1.2	1.0	1.0	1.2	.4
Tibia .....	3.0	1.8	1.4	2.2	.4
Metatarsus .....	4.3	2.8	1.8	3.1	.....
Tarsus .....	1.4	1.0	1.0	1.1	.8
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
TOTAL .....	15.7	10.5	8.2	12.5	2.3

## MALE

Length: 1.4 mm.

Cephalothorax: length .67, width .60, head .37 mm.

Abdomen: length .80, width .67 mm.

Chelicerae: length .27 mm.

Legs:	I	II	III	IV
Coxa .....	.16	.14	.11	.16
Trochanter .....	.11	.10	.07	.10
Femur .....	1.00	.74	.53	.77
Patella .....	.27	.27	.20	.25
Tibia .....	.67	.41	.30	.48
Metatarsus .....	.80	.46	.33	.53
Tarsus .....	.50	.42	.33	.40
TOTAL .....	3.51	2.54	1.87	2.69

**Type locality.**—Santa Fe de Bogota, Columbia.

**Distribution.**—Tropical South America; Central America; Southern United States.

**Known localities in the United States.**—Southern California; Florida; Alabama; Texas (widespread); North Carolina.

This species is very similar in general appearance, size, and habits to *Theridion tepidariorum*. Usually *fordum* has a slightly more of a yellowish tint. This spider is to be found about buildings, under cliffs, about the trunks of trees, and under bridges, often in company with *tepidariorum*. It has an irregular web, much like that of *tepidariorum*, which is equipped with an inverted, basket-like retreat made of fragments of leaves and other materials, and lined with silk and which is very effective in concealing the spider. When inactive, the female curls up in this retreat, which is usually hung near the center or top of the web. Immature males have small webs of their own; the mature males live as commensals in the webs of the females.

In California males and females were common in the fore part of July (1931); the eggs were being laid by August 1, and the males were becoming more scarce. In the same locality, a few females, with cocoons of eggs and young in different stages of maturity in their webs, were found in the latter part of December (1932). Males and females were found in Florida and Texas in August (1933); they were especially common under bridges in Texas, where they were in company with *Latrodectus mactans*, *Teutana triangulosa*, and *Loxosceles rufescens*. (For further details of habits, see discussion preceding generic description.)

**Tidarren mixtum** Cambridge

(Plate III, ff. 26-27)

*Theridion mixtum* O. P. Cambridge, Biol. Centra. Americana, Vol. I, p. 206, pl. 24, f. 11.*Steatoda mixta* F. Cambridge, Ibid., Vol. II, p. 383, pl. 36, f. 8.*Theridium mixtum* Banks, Proc. Washington Acad. Sci., 1902, Vol. IV, p. 59.

*Female*: Very similar to *fordum* in shape and color, being slightly smaller in size, and with a more pronounced tubercle on the upper part of the abdomen. The color of the specimens at hand are darker on the average than that of *fordum*. The principle difference is in the epigynum, which is much smaller than in *fordum*, more conical and without the large bulbous base. According to Banks' remarks on this species from the Galapagos Islands, it is apparent that melanism occurs, as in *fordum*. The specimens at hand are from Panama and are all normal in coloration.

The male is unknown or unrecognized.

*Measurements*:

## FEMALE

Length: 5 mm.

Cephalothorax: length 2.0, width 1.6, head .7 mm.

Abdomen: length 3.4, width 3.0, height 4.4 mm.

Chelicerae: .7 mm.

Legs:	I	II	III	IV	Palpus
Coxa .....	.6	.5	.4	.6	.....
Trochanter .....	.3	.3	.3	.3	.1
Femur .....	4.0	2.6	1.7	3.2	.6
Patella .....	.7	.7	.6	.8	.3
Tibia .....	2.6	1.6	1.0	2.0	.3
Metatarsus .....	3.5	2.3	1.4	2.5	.....
Tarsus .....	1.3	1.0	.8	1.0	.6
TOTAL .....	13.0	9.0	6.2	10.4	1.9

Type locality.—Chiacam, Guatemala.

Distribution.—Central America; Galapagos Islands.

Known localities.—Guatemala; Costa Rica; Panama; Mexico (Vera Cruz; Tabasco); Galapagos Islands.

**Tidarren minor** Chamberlin and Ivie, new species

(Plate II, f. 10; Plate III, ff. 24-25)

*Female*: Structure and color essentially typical. Color quite similar to that of *fordum*, except the legs and abdomen are typically more heavily marked with black. In dark specimens, the black is more widespread and more or less blots out much of the ground color of the abdomen, legs, and sternum. The streaks on the sternum are typically broken up into dots. General aspect usually quite different from that of *fordum*. Epigynum similar to that of *mixtum*, but the openings are closer together.

*Measurements*:

## FEMALE

Length: 4.3 mm.

Cephalothorax: length 1.5, width 1.3, head .5 mm.

Abdomen: length 3.2, width 2.7 mm.

Chelicerae: .6 mm.

Legs:	I	II	III	IV	Palpus
Coxa .....	.7	.6	.5	.7	.....
Coxa .....	.40	.37	.33	.50	.....
Trochanter .....	.14	.12	.10	.14	.10
Femur .....	2.50	1.60	1.20	2.00	.33
Patella .....	.67	.53	.53	.74	.20
Tibia .....	1.50	.93	.60	1.07	.20
Metatarsus .....	2.00	1.20	.86	1.53	.....
Tarsus .....	.80	.65	.60	.67	.43
TOTAL .....	8.01	5.40	4.22	6.65	1.26

*Type*.—Female from Tallahassee, Florida (August, 1933, W. Ivie).

Female paratypes from Everglades west of Miami, Florida (Aug., 1933, W. Ivie); Los Angeles, California (1931, R. V. Chamberlin); Newport, California (July, 1931, W. Ivie).

A much smaller species than *fordum* or *mixtum*. Habits unknown, except that females were found on the under sides of rocks along the highway west of Miami, Florida.

**Tidarren oblivium** Cambridge

*Theridion oblivium* O. P. Cambridge, Biol. Centr. Amer., 1896, Vol. I, p. 207, pl. 24, f. 13.

*Steatoda oblivia* F. Cambridge, *Ibid.*, Vol. II, p. 383, pl. 36, f. 9.

*Type locality*.—Costa Rica.

**Tidarren passivum** Keyserling

*Theridion passivum* Keyserling, Spinnen Amerikas, Brasil. Spin., 1891, Vol. III, p. 195, pl. vii, f. 141.

**Type locality.**—Fazenda Calvario, Brazil.

**Tidarren migrans** Keyserling

*Theridion migrans* Keyserling, Spinnen Amerikas, Theridiidae, 1884, Vol. II, p. 18, pl. i, f. 6.

**Type locality.**—Amable Maria and Pamamarca, Peru.

Also known from Brazil.

The following species may also belong in this genus:

*Theridion morulum* Cambridge.

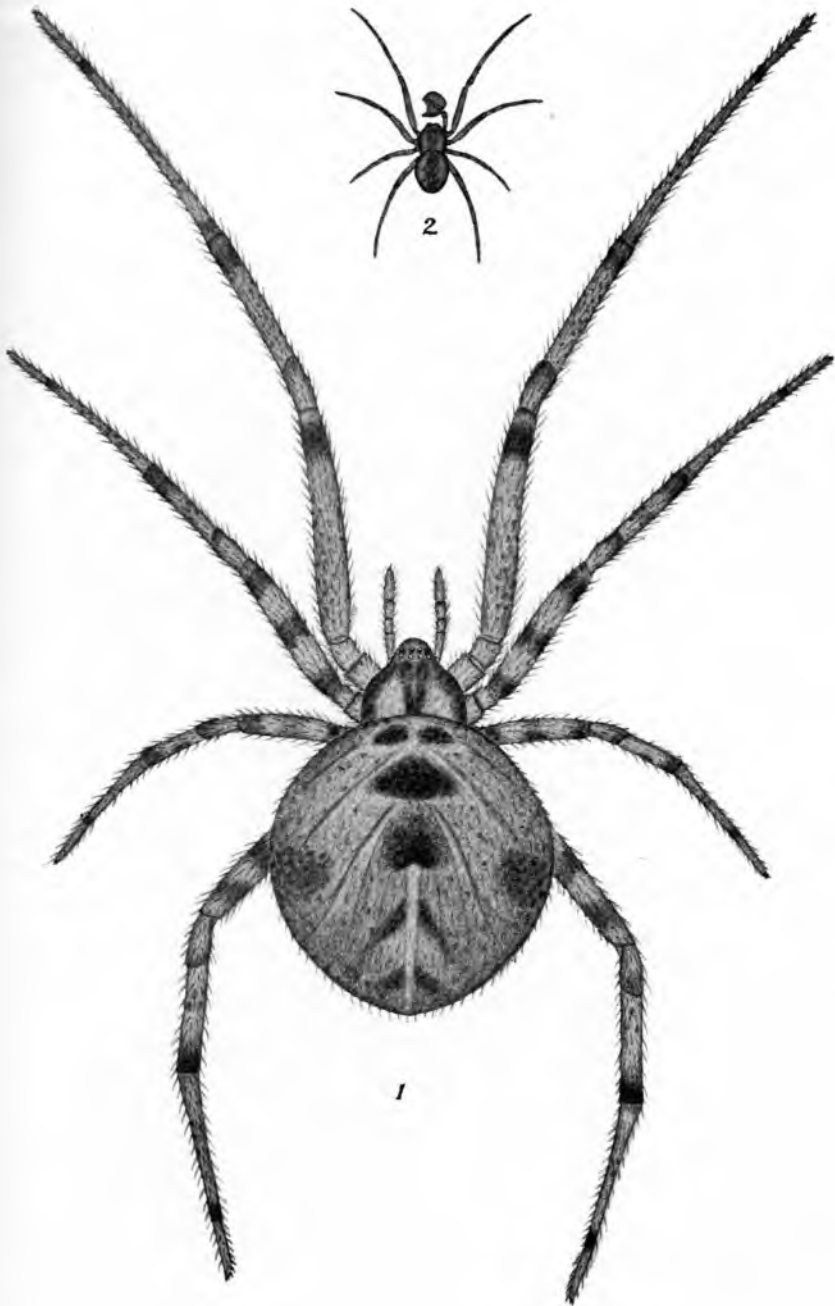
*Theridion rostratum* Cambridge.

*Theridion purum* Cambridge.

## Plate I

Fig. 1. *Tidarren fordum* Keyserling. Female.

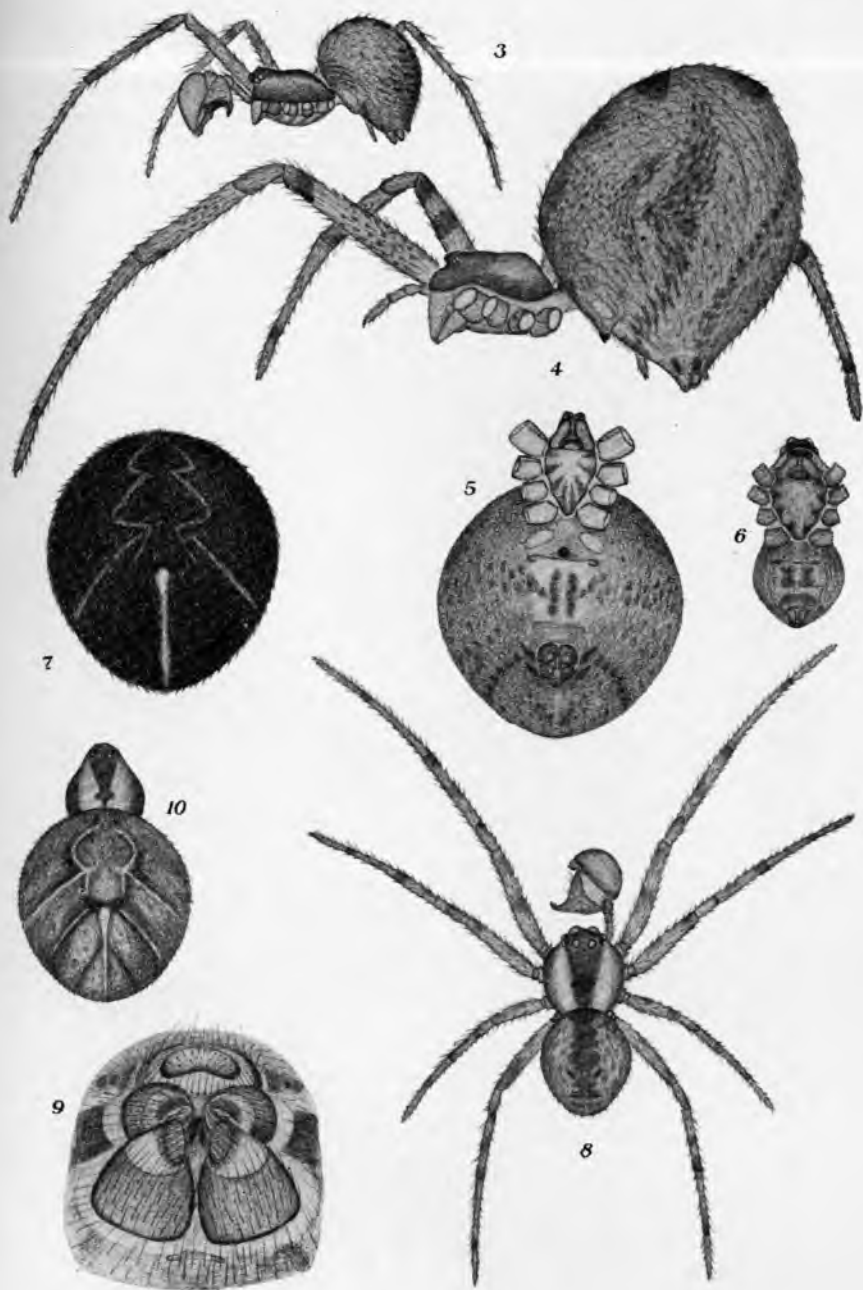
Fig. 2. Male. Drawn to same scale as female.



## Plate II

- Fig. 3. *Tidarren fordum* Keyserling. Male, lateral view. Enlarged 3 diameters from fig. 2.
- Fig. 4. Female, lateral view.
- Fig. 5. Female, ventral view.
- Fig. 6. Male, ventral view.
- Fig. 7. Dorsal view of the abdomen of a dark female.
- Fig. 8. Male, dorsal view. Enlarged 3 diameters from fig. 2.
- Fig. 9. Spinnerets of female.
- Fig. 10. *Tidarren minor* n. sp. Dorsal view of female. Same scale as figs. 1 and 2.

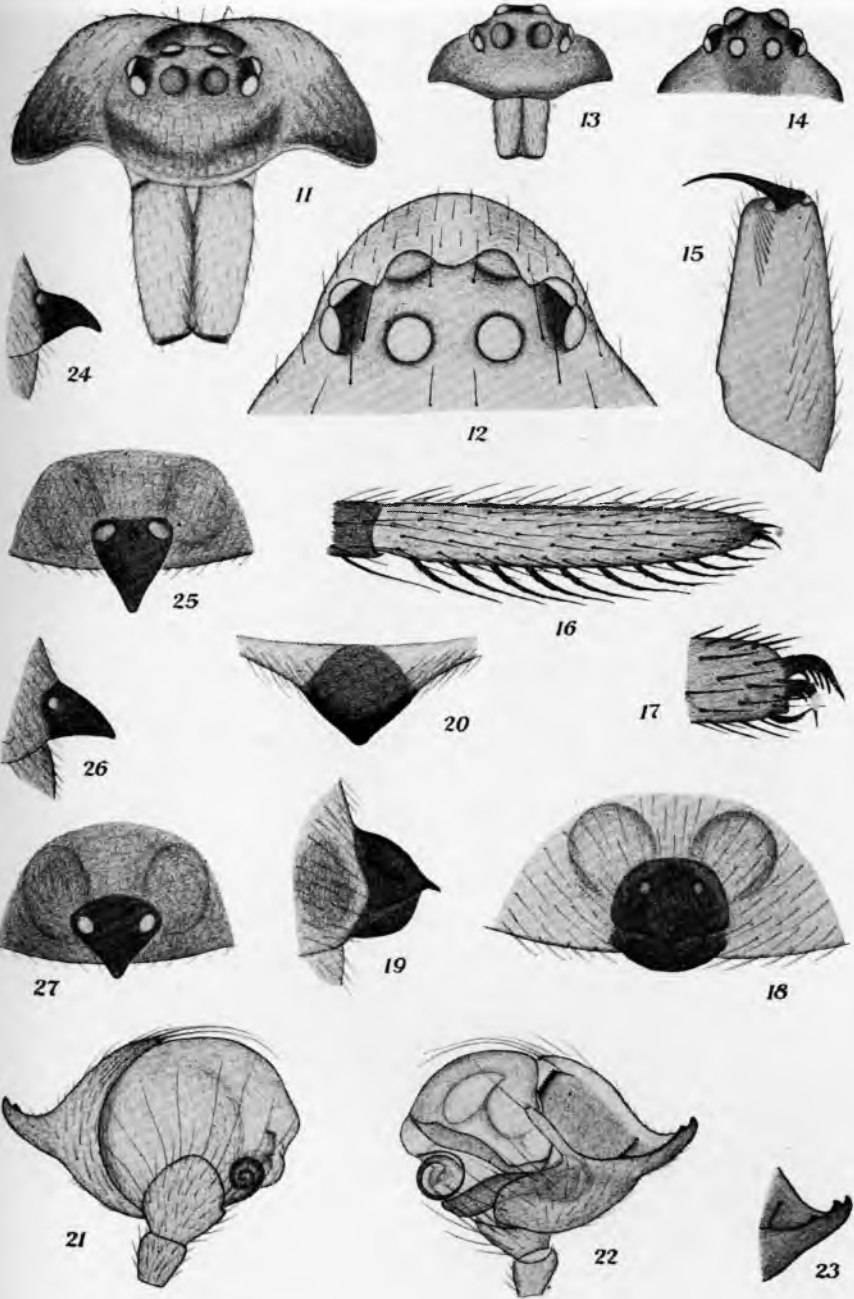
(Figs. 2, 3, and 8 show the palpus of the male partially expanded, as is common in preserved specimens.)



## Plate III

- Fig. 11. *Tidarren fordum* Keyserling. Front of female.  
Fig. 12. Eyes of female.  
Fig. 13. Front of male.  
Fig. 14. Eyes of male.  
Fig. 15. Chelicera of female, under side.  
Fig. 16. Hind tarsus of female, ectal view.  
Fig. 17. Foot of third leg of female, lateral view.  
Fig. 18. Epigynum, ventral view.  
Fig. 19. Epigynum, lateral view.  
Fig. 20. Epigynum, posterior view.  
Fig. 21. Palpus, dorso-anterior view.  
Fig. 22. Palpus, ventro-posterior view.  
Fig. 23. Tip of apophysis of cymbium from another specimen  
Fig. 24. *Tidarren minor* n. sp. Epigynum, lateral view.  
Fig. 25. Epigynum, antero-ventral view.  
Fig. 26. *Tidarren mixtum* Cambridge. Epigynum, lateral view.  
Fig. 27. Epigynum, antero-ventral view.

(Figs. 24-27 are twice the magnification of figs. 18-20.)



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