

# American Museum Novitates

---

PUBLISHED BY THE AMERICAN MUSEUM OF NATURAL HISTORY  
CENTRAL PARK WEST AT 79TH STREET, NEW YORK 24, N.Y.

---

NUMBER 1912

OCTOBER 6, 1958

---

## The Spider Family Hypochilidae

BY WILLIS J. GERTSCH<sup>1</sup>

The relict spiders of the family Hypochilidae are aristocrats of the Suborder Araneomorphae. Their line can be traced back to Paleozoic times when their surroundings were humid jungles of strange plants destined to become our present coal deposits. Contemporaneous with them and ancestral to them were placid ground types that moved gropingly over the forest floor, the primitive paleoliphistiids of the Suborder Mygalomorphae. From these prototypes the hypochiloids had already departed sharply by adopting innovations that would divert them more and more from the conservative line at an accelerated rate. The obvious key to their success was the retention of the anterior median spinnerets as active spinning elements. These were gradually transformed to a special type of spinning organ, the cribellum, which was used in conjunction with a carding device of curved setae on the hind metatarsi, the calamistrum. This new invention produced the hackled band of the cribellate spiders. Once ingrained in the habits of the paleocribellates, the use of silk more and more led to a dependence on this material. It was a principal step towards higher spider status and demanded lighter body weight, better eyesight, and much greater activity. It made possible exploitation of new insect food sources in a wealth of new habitats, many of them well above the ground level. And it resulted in the dissemination of this successful pioneer stock over all the land areas of the world.

It is perhaps not surprising that a few representatives of these emergent true spiders should have survived in only slightly changed form even to the present day. The classic family Hypochilidae and a re-

---

<sup>1</sup> Curator, Department of Insects and Spiders, the American Museum of Natural History.

cently described derivative branch, the Gradungulidae, still represent the group and give us insight into the intermediate stages linking them to the past. The living hypochiloids occupy a unique position at the beginning of the series of true spiders, the Suborder Araneomorphae. They parallel the position of the family Liphistiidae in its relationship to the atypoid and ctenizoid mygalomorph spiders.

The principal features that mark the hypochiloids as primitive and closely relate them to the Mygalomorphae are the following: They retain typically two pairs of book lungs as respiratory organs, whereas in all other true spiders one pair at most is present. The chelicerae are diaxial in position but less completely so than in most higher spiders. In the family Hypochilidae the venom glands are still limited to the chelicerae. The heart retains a greater number of ostia (four pairs) than are found in any other araneomorphs. The dorsoventral abdominal musculature of *Hypochilus* and the derivative *Austrochilus*, perhaps of all members of the group, is patterned after that of *Liphistius*, with five pairs represented. The nervous system has 11 neuromeres in the thoracic ganglionic mass, two more than in conventional true spiders.

The habitus of the living Hypochilidae scarcely sets them apart from various generalized and perhaps not so distantly related spiders of other groups. All are sedentary types, with oval or elongate bodies and quite long, thin legs. Because of their yellowish, speckled, slender bodies the species of *Hypochilus* show close resemblance to species of genus *Pholcus*. The other genera have heavier bodies and resemble various metines of the family Argiopidae. They are reputed to live in dark and humid situations. Caves and mines are favored locations for some. *Hypochilus* is found on overhanging rock faces in deep gullies, often along streams. The walls of wooden structures, the undercut bases of large trees, and the spaces under bridges in favorable areas offer suitable habitats.

The webs of the hypochilids exhibit much the same pattern in all the genera. In its typical expression the web consists of a heavy mesh of sticky, hackled-band threads, guyed by numerous dry lines to adjacent substrata, which leads to a more or less sheltered recess for the spider. That of *Hypochilus thorelli*, which has been well described and illustrated by J. H. Comstock in "The spider book," takes the form of a more or less deep lampshade. Against the spacious roof of this normally quite symmetrical web, which may be located in horizontal, vertical, or angled positions, the spider presses its body closely to the substratum. Most often the spider hangs with back somewhat

downward and has its long legs spread to touch the sides of the mesh. The new species of *Hypochilus* from the Sierra Nevada Mountains of California spins the same type of web and places it in the same way as does the eastern species. The webs of the other hypochilids are seemingly somewhat less uniform in design. The Tasmanian *Hickmania* spins a large, horizontal, sheet mesh, as much as 4 feet long and 2 feet wide, which leads into a dark recess occupied by the spider. The Chilean representative of the family (*Austrochilus*) suspends a large mesh funnel, sometimes a yard square, supported by many threads, which leads to a crevice or into the recesses of a bromeliad.

The Hypochilidae live in four widely separated land areas of the world. In North America occurs the type genus *Hypochilus*, with a species (*thorelli*) from our southeastern mountains and a second one (*petrunkevitchi*) from the Sequoia and Kings Canyon National Park areas of California. A second genus from the Northern Hemisphere is *Ectatosticta*, with a single species (*davidi*) from China. In the Southern Hemisphere occur two other genera and species. The first of these was long known as *Ectatosticta troglodytes* but it is assigned in the present paper to the new genus *Hickmania*. The discovery of a South American species of the group essentially completes the typical distribution pattern for this and many similar relict types. *Austrochilus manni* occurs in south Chile and presents interesting departures from the norm for the family.

This paper is concerned largely with the systematics of these five species of the family Hypochilidae. It quickly became clear that each of the four genera was deserving of special status in keeping with the great age and long isolation of each center. The biseriate calamistrum perhaps suggests that the northern *Hypochilus* and *Ectatosticta* are allied in some way more substantially than is indicated by their quite distinct appearance. It may also suggest that the southern *Hickmania* and *Austrochilus*, with uniseriate calamistra, are derivative types from the north.

*Austrochilus* is of particular interest, inasmuch as it has diverged most sharply from the norm of the family by changing the hind pair of book lungs into tracheal tubes. By some standards this might entitle it to full family status, but the numerous points of similarity prompted me to broaden the family limits to include it in the Hypochilidae. The caudal position of the posterior pair of respiratory orifices is noteworthy. The male palpus has become more complicated, but its pattern is still primitive, and the female genitalia still are of the haplogyne type without external openings.

The special status and significant importance of the superfamily Hypochiloidea have been further strengthened by the discovery of a second family. The family Gradungulidae was based on two species from New Zealand and Queensland, Australia (Forster, 1955, pp. 277–285). With a superficial resemblance to the clubionids and lycosids, *Gradungula* is a vagrant that has lost the cribellum and calamistrum and hunts actively on the forest floor. It retains two pairs of book lungs and still has four pairs of ostia in the heart. The tarsal claws of the first two pairs of legs are strangely modified and enlarged, and the unpaired claw is present. In addition to the loss of the cribellum and calamistrum, *Gradungula* shows various advances over the hypochilids. The poison glands are endocephalic. The male palpus is more specialized, with the bulb ventral in position, and the female has developed an epigynum.

At this time I would like to acknowledge with sincere thanks the cooperation of the following individuals and institutions in making study material available: Dr. Louis Fage, of the Muséum National d'Histoire Naturelle, Paris, France, for a loan of a female of the rare *Ectatosticta davidi*; Dr. Raymond W. Forster, Otago Museum, Dunedin, New Zealand; Dr. Guillermo Mann and Dr. Hildegard Zapfe of the University of Chile, Santiago, Chile; Dr. Allan F. Archer, Union University, Jackson, Tennessee; and Mr. Richard Hoffmann, Virginia Polytechnic Institute, Blacksburg, Virginia. To Dr. V. V. Hickman of the University of Tasmania, Hobart, Tasmania, I offer special thanks for sending as a gift a fine male and a female of the hypochilid from Tasmania and literature dealing with the species.

The illustrations were completed by Miss Marjorie Statham from pencil outlines prepared by the author.

#### SUPERFAMILY HYPOCHILOIDEA

Hypochiloidea LAMEERE, 1933, *Precis de zoologie*, vol. 3, p. 267. BONNET, 1957, *Bibliographia araneorum*, vol. 2, pt. 3, p. 2256.

Hypochilomorphae PETRUNKEVITCH, 1933, *Trans. Connecticut Acad. Arts Sci.*, vol. 30, p. 361.

Paleocribellatae GERHARDT AND KASTNER, 1938, *In* Kukenthal and Krumbach, *Handbuch der Zoologie*, Berlin, vol. 3, p. 636.

Araneomorph spiders with abdomen entire in the adult. Chelicerae incompletely diaxial. Maxillary lobes well developed. Maxillary glands unicellular, with ducts opening on a sieve. Respiratory organs consisting of four book lungs in all genera but *Austrochilus* in which the caudal pair are tracheae. Heart with four pairs of ostia. Thoracic

ganglionic mass composed of five thoracic and seven abdominal neuromeres. Each coxal gland with a single outlet. Poison gland endochelical. Six spinnerets present. Cribellum and calamistrum present in the Hypochilidae, absent in the Gradungulidae.

#### FAMILY HYPOCHILIDAE

Hypochilidae MARX, 1888, Ent. Amer., vol. 4, p. 161. SIMON, 1892, Histoire naturelle des araignées, vol. 1, pp. 201-204. BONNET, 1957, Bibliographia araneorum, vol. 2, pt. 3, p. 2256.

Hypochiloid spiders with the labium free or immovably soldered to the sternum. Chelicerae without lateral condyle and with both margins of the furrow toothed. Eyes eight, heterogeneous, in two rows. Thoracic groove longitudinal. Tarsi with three claws and well-developed spurious claws; paired claws similar and pectinate in a single series and the unpaired claw strongly curved. Tarsal scopulae and claw tufts lacking. Cribellum entire. Bulb of male palpus terminal. Female genital organ of the haplogyne type, with two seminal receptacles on each side.

TYPE OF THE FAMILY: *Hypochilus thorelli* Marx.

The male and female genitalia in this family present many generalized features. In the female the genitalia are of the haplogyne type, without an external epigynum, and the seminal receptacles empty directly into the vagina. A notable feature is the presence of two distinctly separated seminal receptacles on each side. This is the same number found in the Liphistiidae, Atypidae, and other families of the superfamily Atypoidea. In all other spiders the primary number seems to be two, with a single receptacle on each side. Derivation of the Hypochilidae from one of the ancient atypoid groups is supported by this fact. The male palpi are of similarly generalized design and comparable in rank with those organs in the Filistatidae and generalized haplogyne spiders. The tarsus is essentially cylindrical, little changed from its segmental character, but it is prolonged into a long thin finger or shorted toothed spur beyond the alveolar portion. The bulb is subapical in attachment. A conductor of the embolus is present in *Hypochilus* and *Austrochilus*, but it has been lost in the other genera. It seems plausible that the embolus and conductor were primitive features derived from the atypoid forebears, because they are still discrete elements in the superfamily Atypoidea.

#### KEY TO THE GENERA OF THE FAMILY HYPOCHILIDAE

1. Calamistrum biseriate, situated at base of metatarsus; posterior eye row recurved ..... 2

- Calamistrum uniseriate, situated at middle of fourth metatarsus; posterior eye row straight or slightly procurved.....3
2. Sternum with six sigilla; labium longer than broad, soldered to the sternum; rostrum hidden (China).....*Ectatosticta* Simon  
Sternum without sigilla; labium broader than long, reflected ventrad, flexible; rostrum conspicuous (United States).....*Hypochilus* Marx
3. Labium soldered to sternum; posterior pair of respiratory organs book lungs, the orifices larger, situated a short distance in front of spinnerets (Tasmania).....*Hickmania*, new genus  
Labium free; posterior pair of respiratory organs tracheae, the small orifices immediately in front of spinnerets (Chile).....  
.....*Austrochilus* Gertsch and Zapfe

#### GENUS *HYPOCHILUS* MARX

*Hypochilus* MARX, 1888, Ent. Amer., vol. 4, no. 8, p. 161. SIMON, 1892, Histoire naturelle des araignées, vol. 1, p. 204. COMSTOCK, "1912" [1913], The spider book, p. 259; 1940, *op. cit.*, rev. ed., p. 258.

Carapace much longer than broad, the convex, moderately elevated pars cephalica only half as broad as the greatest width, the low, flattened, grooved pars thoracica rebordered at the side margins, the median groove an indistinct longitudinal groove. Anterior eye row moderately procurved, the dark median eyes smaller and nearer each other than the laterals (*petrunkevitchi*) or subequal in size to the laterals and nearly subequidistantly spaced (*thorelli*). Posterior eye row moderately recurved, the median eyes widely separated, nearly touching the lateral eyes. Median ocular quadrangle much wider than long, much narrower in front. Clypeus narrow, equal to about the radius of a median eye. Sternum without sigilla. Labium soldered to the sternum, much wider than long, curved ventrad, exposing the conspicuous rostrum. Chelicerae stout, the upper margin with five stout teeth, the lower margin with one or two small basal teeth and one or two opposite the innermost one of the upper row. Legs very long, thin, without true spines; the first femur three or four times as long as the carapace in the females, five or six times as long in the males. Calamistrum biseriate, occupying one-fourth of the length of the metatarsus at the base. Abdomen an elongate oval, of moderate height. Posterior book lungs situated about midway between genital groove and spinnerets. Embolus and conductor of male palpus discrete, the former a thin spine, largely enclosed by the latter. Tarsus of male palpus with a conical spur, armed with thin spines, situated on retrolateral side. Bulb of palpus attached at apex of tarsus.

GENOTYPE: *Hypochilus thorelli* Marx.

*Hypochilus thorelli* Marx

Figures 1-4, 6, 8, 9, 11-14, 16, 18

*Hypochilus thorelli* MARX, 1888, Ent. Amer., vol. 4, no. 8, p. 161; 1889, Proc. Ent. Soc. Washington, vol. 1, pp. 167, 178; 1890, Proc. U. S. Natl. Mus., vol. 12, p. 503 (catalogue). SIMON, 1892, Histoire naturelle des araignées, vol. 1, p. 204, figs. 147, 150. BANKS, 1910, Bull. U. S. Natl. Mus., no. 72, p. 4 (catalogue). COMSTOCK, "1912" (1913), The spider book, pp. 258-262; 1940, *op. cit.*, rev. ed., pp. 256-261. BISHOP AND CROSBY, 1926, Jour. Elisha Mitchell Sci. Soc., vol. 41, p. 169. PETRUNKEVITCH, 1932, Jour. New York Ent. Soc., vol. 40, pp. 19-23. BRIMLEY, 1938, Insects of North Carolina, p. 468 (list). CHAMBERLIN AND IVIE, 1944, Bull. Univ. Utah, biol. ser. vol. 8, no. 5, p. 32. ROEWER, 1954, Katalog der Araneae, vol. 2, pt. B, p. 1278 (*thorellii*). BONNET, 1957, Bibliographia araneorum, vol. 2, pt. 3, p. 2256.

Coloration the same in both sexes. Dorsal aspect of cephalothorax and abdomen as illustrated in figures 3 and 12. Base color of carapace varying from dull white to quite bright yellow, with a distinct dusky or black pattern. Side margins of the carapace with a narrow black seam, the dorsum largely filled behind by a pattern of leaf-like lateral extensions from the median line, the posterior edge of the head marked by a V-shaped black triangle. All eyes narrowly ringed with black, the eyes of the lateral triads whitish in color, the anterior median eyes dark and lying on a bluish patch. Clypeus black on the margin. Sternum yellowish, bordered with black patches opposite the coxae. Labium and maxillae yellowish, without markings. Chelicerae yellowish, with a black patch at base, the fang dark brown. Coxae yellowish, with an apical black spot below. Trochanters with lateral black smudges. Legs dull to bright yellowish, boldly marked as follows: All femora with numerous small, rounded, or oval dark brown or blackish spots, which are sometimes concentrated to form indistinct, incomplete dark rings, the several on the first two femora most distinct. Patellae spotted with black on the sides and below. Tibiae with fewer dark spots and those largely on the lower surface but with a distinct apical brown ring. Metatarsi pale except for a distinct apical brown ring and with an indistinct basal brown ring on the hind metatarsi. Tibiae without contrasting markings but dusker in apical half. Palpi yellowish, with distinct brown rings.

Abdomen dull yellowish in base color, the dorsum with a more or less distinct brownish or purplish pattern of reticulated lines through which the lighter color shows as many small spots. Venter mostly unmarked, with small black smudges at the bases of and on the spinnerets and occasional duskiess on the lung patches.

FEMALE FROM CHEROKEE COUNTY, ALABAMA: Total length, 15.45

mm. Carapace, 5.75 mm. long, 4.20 mm. wide, the pars cephalica 2.25 mm. wide at center of posterior median eyes.

Eye rows of about equal width. Posterior row 1.75 mm. wide, moderately recurved as shown in figure 4, the eyes oval in shape and subequal in size, the medians wide, separated by somewhat more than twice the long diameter (0.35 mm./0.75 mm.) almost touching the lateral eyes. First eye row moderately procurved as seen from in front, the dark median eyes separated by the radius, about as far from the lateral eyes which are larger (0.36 mm./0.30 mm.). Median ocular quadrangle broader than long (1.20 mm./0.65 mm.), narrowed in front in about the same ratio (0.70 mm.). Clypeus narrow, about equal in height to the radius of the anterior median eye, which lies a full diameter above the margin. Lateral eye triads on moderately elevated, connate tubercles. Anterior median eyes on a single, moderately elevated, medially somewhat divided tubercle.

Carapace (fig. 3) much longer than broad, the suboval, flattened pars thoracica broadly emarginated behind, the rounded and elevated pars cephalica rounded at clypeus and narrowed in front to about half of the greatest width of the carapace. Median groove a shallow, longitudinal depression from which shallow grooves radiate to the rebordered side margins. Carapace in lateral view (fig. 6) very flat, presenting behind a deep lateral fold. Clothing of the carapace a few inconspicuous, erect hairs, the pars cephalica more liberally supplied with a series behind the eyes and on the clypeal margin which are more conspicuous and setiform. Sternum, 3.10 mm. long, 2.10 mm. wide, suboval in shape, truncated in front at the labium where the width is 1.5 mm., indented at the juncture of the coxae, and forming a rounded lobe behind to separate the posterior coxae by about half of their greatest width. Sternum smooth, without obvious sigilla, clothed with erect hairs and setae. Labium much broader than long (1.10 mm./0.40 mm.), flexible but soldered to the sternum, turned ventrad to form a right angle with the sternum and largely exposing the buccal cavity (see figs. 1 and 6). Maxillae longer than broad (1.6 mm./0.8 mm.) in ventral view, but broader from the lateral aspect, to which position they have migrated to leave the space between them broadly U-shaped. Chelicera (fig. 2) stout, convex, the brown fang of moderate length, the margins toothed and at base beyond the last tooth presenting a deep groove. Upper margin of furrow with five large teeth, the lower margin with two small teeth at base of fang and two or three denticles opposite the innermost tooth of upper row.

Legs long and slender, thinly and quite evenly covered with black

hairs and a very few longer setae. First femur 1 mm. wide at base, about 0.6 mm. wide at center, more than three times the length of the carapace. Legs becoming increasingly thinner from femora to tarsi, and these latter are thin (about 0.4 mm.) and pliable, curved, and marked with numerous transverse striations. Calamistrum (fig. 11) bi-seriate, occupying the basal fourth of fourth metatarsus and consisting of two rows of thin, curved setae, with about 30 in each series. Metatarsus flattened above and wider adjacent to calamistrum.

	I	II	III	IV
Femur	20.00 mm.	14.50 mm.	11.15 mm.	13.50 mm.
Patella	2.60	2.30	1.90	2.00
Tibia	19.00	13.60	10.00	12.75
Metatarsus	12.35	9.45	8.25	10.00
Tarsus	5.25	4.35	4.00	4.50
Total	59.20 mm.	44.20 mm.	35.30 mm.	42.75 mm.

Palpus thin, with the single curved tarsal claw armed at base with about six thin teeth. Paired claws of first tarsus similar, only gently curved at end, essentially straight, armed with a series of 12 to 15 thin teeth from base out to nearly two-thirds of the length of the claw. Unpaired claw sharply curved to nearly a right angle, with a single tooth at base. Several spurious claws set below and at sides of true claws. Other claws and tarsi similarly armed.

Abdomen (9.70 mm. long, 5.65 mm. wide, about 4.50 mm. at highest point) much longer than broad, suboval, distinctly narrower in front, quite broadly rounded behind. Juncture of abdomen to carapace quite broad. Clothing of carapace a thin, inconspicuous cover of pale hairs and with a thick patch of longer hairs in front of genital groove. Posterior book lungs situated about midway between genital groove and spinnerets, the openings marked by a broad transverse groove. Details of abdomen as shown in figures 3 and 12. Cribellum (fig. 9) a thick lobe, with large, suboval, undivided spinning field, the sides set with fine hairs. Anterior lateral spinnerets largest, bisegmented, the basal segment nearly twice as long as broad, the apical segment a conical cap. Median spinnerets short, one-segmented. Posterior lateral spinnerets bisegmented, the basal segment about as broad as long, the apical segment a somewhat thinner cone of nearly equal length.

Epigynum (figs. 14, 16) internal, consisting of a short sleeve and two rounded receptacles on each side.

MALE: Total length, 10.10 mm. Carapace, 4.35 mm. long, 3.50 mm. wide. Abdomen 5.75 mm. long, 2.75 mm. wide.

Coloration and structure in close agreement with those of the female. Anterior median eyes almost equal in size to the laterals. Legs proportionately much longer than in the female. Third leg: femur, 13.15 mm.; patella, 1.75 mm.; tibia, 12.90 mm.; metatarsus, 10.75 mm.; and tarsus, 4.20 mm.; total, 42.75 mm. Fourth leg: femur, 15.85 mm.; patella, 1.75 mm.; tibia, 15.35 mm.; metatarsus, 14.00 mm.; and tarsus, 5.85 mm.; total, 52.80 mm. Second leg: femur, 17.10 mm.; patella, 2.00 mm.; and tibia, 16.70 mm.; other segments missing. Fourth leg more than 12 times as long as carapace. First leg about 20 times as long as carapace as indicated by Marx's measurements (carapace, 4.0 mm.; first leg: femur, 24.5 mm.; patella, 2.4 mm.; tibia, 24.0 mm.; metatarsus, 20.4 mm.; and tarsus, 8.0 mm.; total, 79.3 mm.).

Palpus as illustrated in figures 13 and 18. Tibia with basal thickening, narrowed to the apex. Tarsus twice as long as broad, narrowly joined to the tibia, with a subapical fovea over which projects a rounded lobe, and a prominent conical ventral process bearing three or four sharp flattened spines. Bulb attached in subapical fovea but lying at a right angle to the length of the tarsus. Embolus forming a basal coil and then continuing as a thin spine supported along its entire length by a transparent conductor.

TYPE LOCALITY: Male and female cotypes from the vicinity of Lookout Mountain, Tennessee. Most of these specimens and others from the Marx collection are presumed to be in the United States National Museum.

DISTRIBUTION: Mountains of southeastern United States from Virginia to Georgia and Alabama.

RECORDS: *Virginia*: Mountain Lake, June 24, 1946 (H. K. Wallace), immature. *North Carolina*: Nantahala (L. H. Gillies), females. North edge of Avery County, May 15, 1949 (R. D. Barnes), immature. Mount Mitchell Road, 4500 feet, October 21, 1923, immature. Grandfather Mountain, near summit, October 12, 1933, immature. *Tennessee*: East of Spencer, August 11, 1951, male, females and immature. Sides of Mt. Leconte, Great Smoky Mountains, September 6, 1928 (W. M. Barrows), males; June 13, 1939 (D. C. Lowrie), females. Great Smoky Mountain National Park, July 8-15, 1933 (W. J. Gertsch), females, immature. Deep Creek, Bryson City, July 8, 1933 (W. J. Gertsch), females, immature. Sparta, July 15, 1933 (W. J. Gertsch), females, immature. Lookout Mountain, September, 1888 (L. M. Underwood), females. Knoxville, July 15 (Cartwright), females. *Alabama*: Mary's Gulf,

Cherokee County, September 13, 1949 (A. F. Archer), male, females. Gallant, June, 1911 (H. H. Smith), females, immature. *Georgia*: Tallulah Falls, July 20, 1904 (J. C. Bradley), females; August, 1867 (L. M. Underwood), male. *Kentucky*: Pine Mountain, Bell County, 2200 feet, August 12, 1919 (Funkhouser), females.

### **Hypochilus petrunkevitchi, new species**

Figures 5, 7, 15, 17, 21

Coloration the same in both sexes, very similar to that of *thorelli*, being somewhat paler than in that species and rarely bright yellowish and boldly marked with black or brown. Carapace whitish to pale yellow, with a dusky to brownish pattern as in *thorelli*. Sternum dusky all over, without conspicuous blackish pattern around border. Legs with fewer spots but these larger and forming quite distinct, brownish rings, the first femur having six incomplete ones, the first tibia with three, and the first metatarsus with a single one at apex. Posterior femora with fewer rings. Legs clothed with whitish hairs. Abdomen as in *thorelli*, but the grayish dorsum has a more diffuse covering of purplish reticulations, the paler color often dominating the pattern.

FEMALE FROM KINGS RIVER CANYON, CALIFORNIA: Total length, 9.85 mm. Carapace, 3.85 mm. long, 3.00 mm. wide, 1.50 mm. wide at the second eye row.

Eyes as illustrated in figures 5 and 7, the general pattern as in *thorelli* but presenting important differences. Lateral triads on low connate tubercles, the eyes subequal in size. First eye row moderately procurved, the median eyes very much smaller (0.15 mm./0.23 mm.), separated by somewhat more than their radius and about a full diameter from the lateral eyes. Median ocular quadrangle much broader than long (0.83 mm./0.35 mm.), narrowed in front by about the same ratio (0.38 mm.), the front eyes much smaller. Clypeus very narrow but nearly equal to the diameter of the anterior median eye.

	I	II	III	IV
Femur	11.55 mm.	8.80 mm.	7.20 mm.	8.60 mm.
Patella	1.65	1.50	1.35	1.35
Tibia	11.50	8.30	6.15	7.65
Metatarsus	7.30	5.80	4.85	6.65
Tarsus	3.50	2.70	2.25	3.00
Total	35.50 mm.	27.10 mm.	21.80 mm.	27.25 mm.

Structure in close agreement with that of *thorelli*. Sternum, 2.10 mm. long, 1.65 mm. wide. Chelicera with the teeth on lower margin pro-

portionately stouter. Legs long, slender, but shorter than in *thorelli*. First femur three times as long as the carapace. Calamistrum essentially as in *thorelli* but somewhat shorter, with about 20 bristles in each series.

Abdomen (6.00 mm. long, 3.85 mm. wide, about 3.50 mm. high in posterior third) similar to that of *thorelli*. Epigynum (fig. 21) internal, with two pairs of receptacles at the ends of convoluted tubes.

MALE: Total length, 10.50 mm. Carapace, 4.00 mm. long, 2.80 mm. wide. Abdomen, 5.50 mm. long, 3.10 mm. wide. Coloration and structure in close agreement with those of the female. Legs proportionately very much longer. First femur five times as long as the carapace; first leg 16 times as long as the carapace. Tarsi very thin, broadly curved, pliable.

	I	II	III	IV
Femur	21.50 mm.	14.80 mm.	11.25 mm.	13.50 mm.
Patella	2.00	1.75	1.50	1.50
Tibia	20.85	14.25	10.60	12.60
Metatarsus	16.75	11.75	9.00	12.50
Tarsus	5.50	3.80	3.25	4.40
Total	66.60 mm.	46.35 mm.	35.60 mm.	44.50 mm.

Palpus (figs. 15 and 17) similar to that of *thorelli* but differing as follows: embolus forming a much broader basal loop and lying in a broader conductor, the distal portion of embolus very thin; tibia thicker at base; tarsus proportionately longer and the ventral spur directed apically; and spines on tarsal spur longer and finer.

TYPE LOCALITY: Cedar Grove, Kings Canyon, Fresno County, California; male holotype, female allotype, and paratypes taken August 8, 1936 (W. J. and J. W. Gertsch). Additional females and immature specimens were taken at the same locality on July 16, 1952, by W. J. Gertsch and on July 5, 1956, by W. J. Gertsch and V. Roth.

OTHER RECORDS: *California*: Near Ash Mountain Entrance, Sequoia National Park, 3700 feet, July 5, 1956 (W. J. Gertsch), females and immature. Lightning Cave, Tulare County, June 30, 1952 (A. Lange), one penultimate male and two immatures from roof and walls in twilight zone.

#### GENUS *ECTATOSTICTA* SIMON

*Hypochilus* SIMON, 1888, Ann. Soc. Ent. France, ser. 6, vol. 8, p. ccviii.

*Ectatosticta* SIMON, 1892, Histoire naturelle des araignées, vol. 1, p. 204.

Carapace much longer than broad, the rather low, convex pars cephalica rounded in front and narrowed to two-thirds of the greatest

width, the median groove a deep, rounded pit. Anterior eye row essentially straight, the median eyes small and much nearer each other than the large side eyes. Posterior eye row recurved, the eyes subequal, the medians nearer the laterals than each other. Median quadrangle much broader than long, narrowed in front, the front eyes much smaller. Sternum with three pairs of conspicuous sigilla opposite the first, second, and third coxae. Labium free, somewhat broader than long, rounded apically, half as long as the parallel maxillae. Chelicerae stout, the upper margin with eight stout teeth, the lower with a broken series of nine denticles. Legs very long, thin, spinose, the first femur longer than twice the length of the carapace. Calamistrum biseriate, occupying one-sixth of the length of metatarsus, and situated in basal half of the segment. Abdomen suboval. Posterior book lungs situated about midway between genital groove and spinnerets. Embolus and conductor of male palpus presumably fused to a single element. Tarsus of palpus with a toothed, dorsal spur. Bulb of palpus attached near apex of tarsus.

GENOTYPE: *Hypochilus davidi* Simon.

*Ectatosticta davidi* Simon

Figures 10, 19, 22-31

*Hypochilus davidi* SIMON, 1888, Ann. Soc. Ent. France, ser. 6, vol. 8, p. ccviii.

*Ectatosticta davidi* SIMON, 1892, Histoire naturelle des araignées, vol. 1, pp. 202-204, figs. 143-146, 148, 149. BONNET, 1956, Bibliographia araneorum, vol. 2, pt. 2, p. 1647.

Coloration similar in both sexes. Dorsal aspect of the cephalothorax and abdomen as illustrated in figures 25 and 29. Carapace yellowish brown, the margins of the pars cephalica with a linear black seam, the sides with faint dusky shadings and darker reticulations just above the margins; the pars cephalica darker brown in front and with three faint dusky lines running forward from the median groove. Sternum reddish brown, with dusky shading; labium and maxillae clearer reddish brown; chelicerae bright reddish brown, the fang darker. Legs bright yellowish brown, the coxae somewhat dusky, the apical segments of the first two pairs of legs bright reddish brown.

Abdomen dusky, purplish brown, the dorsum with a pattern of large pale maculations at base, several series of small pale spots which run back and down on the sides, and many transverse and lateral pale lines. Venter concolorous, the book lungs pale patches.

FEMALE FROM INKIAPHOU, CHINA: Total length, 18 mm. Carapace,

7.50 mm. long, 5.10 mm. wide, 3.00 mm. wide at second eye row.

Eye relations as illustrated in figures 22 and 31. Posterior eye row moderately recurved, the oval median eyes separated by more than the long diameter (40/53), much less than the long diameter from the equal lateral eye (40/27). As seen from above, the first eye row is weakly recurved (essentially straight as seen from the front), the small median eyes separated by two-thirds their diameter, much farther from the lateral eyes (40/26), which are considerably larger in the ratio of 40/25. Median ocular quadrangle much broader than long (74/120), narrowed in front in about the same ratio (71/120), the anterior median much smaller, in the ratio of 25/40. Clypeus equal in height to two diameters of an anterior median eye. Lateral eyes of each side subcontiguous on connate tubercles.

Carapace much longer than broad, narrowed in front to three-fifths of the greatest width, the pars cephalica low, convex, the median groove a deep rounded pit, the pars thoracica higher and convex. Clothing of the carapace short black hairs and erect setae, the pars cephalica with two series which run forward from the median groove towards the side eyes and two short rows behind the median eyes. Sternum (7.50 mm. long, 2.80 mm. wide) with six conspicuous sigilla, a pair opposite the first, second, and third coxae, the last being the largest and round. Labium (1.10 mm. long, 1.30 mm. wide near apex, 1.60 mm. wide at base, including basal triangular pieces) free, some what broader than long, apically broadly rounded, sparsely clothed with black hairs. Maxilla (2.60 mm. long, 1.50 mm. wide in apical third) much longer than broad, sparsely clothed with black hairs, the white inner margin with a thick brush of yellowish hairs. Chelicerae stout, convex, the fang of moderate length, the upper margin of the furrow with eight stout, subequal teeth, the lower margin with nine tiny teeth, of which two are near the base and the others in a series well below the base.

	I	II	III	IV
Femur	17.50 mm.	15.60 mm.	12.30 mm.	15.10 mm.
Patella	3.25	2.65	2.30	2.50
Tibia	18.50	16.00	11.65	14.25
Metatarsus	14.30	12.60	9.50	12.35
Tarsus	7.70	6.75	4.50	5.20
Total	61.25 mm.	53.60 mm.	40.25 mm.	49.40 mm.

Legs thin and very long, evenly covered with fine black hairs, which are more numerous on apical segments, and set with rows of weak

spines. Palpus thin, with thin spines, the terminal claw long, scarcely at all curved and smooth. Paired claws of first tarsus (fig. 19) moderately curved, set with nine thin teeth in basal half; the unpaired claw a bent hook with a large ventral tooth; the accessory claws of this leg four or five in number, of which two are quite robust.

Spines of first leg: femur, six or seven dorsal, prolateral, and retrolateral in a linear series, the last one in each series apical; tibia, two dorsal, five prolateral, six retrolateral, 5-5 ventral, no apicals; metatarsus, one dorsal, five prolateral and retrolateral, six ventral pairs, the last apical. Second leg essentially as the first but the posterior pairs of legs with fewer spines.

Abdomen (11.00 mm. long, 9.00 mm. wide, and 9.50 mm. high) longer than broad, suboval as seen from above, as high as wide, broadly rounded in lateral view, dropping off precipitously in front, more rounded behind. Posterior book lungs about midway between genital furrow and spinnerets. Cribellum (fig. 28) a thick, fleshy, transverse lobe, basally set with thin hairs, the apical spinning field a transverse oval nearly three times as wide as long, which is smooth and undivided. Front spinnerets two-segmented, the apical segment a short, rounded cone set with many fine spinning tubules. Hind spinnerets like the first but somewhat less robust. Median spinnerets one-segmented, the apex with about 12 heavy spigots.

MALE: Total length, 9 mm.

Eyes larger and less separated than in the female, the four median eyes subcontiguous. Legs very long and slender, the metatarsi and tarsi filiform.

Male palpus as illustrated in figures 26 and 27. Femur cylindrical, longer than the entire body; patella short; tibia slender, shorter than the femur and distinctly attenuated at the apex; tarsus long and very slender, armed at apex with a small conical process set with setae. Apical division of palpus ovate, pyriform, the apex with two minute grooves.

TYPE LOCALITY: Male and female cotypes from the mountains north of Peking, Hopeh, China (A. David), in the Muséum National d'Histoire Naturelle in Paris.

This large, long-legged spider from the central region of China has the general appearance of the argiopids of the genus *Meta*. The presence of conspicuous sigilla on the sternum is a feature scarcely known outside the Mygalomorphae.

## HICKMANIA, NEW GENUS

Carapace much longer than broad, low and moderately convex, the median groove a deep, rounded pit, the pars cephalica about half as wide as the greatest width of the carapace. Clypeus higher than the median ocular quadrangle in the female, produced into a ventrally projecting lobe. Anterior eye row straight, the median eyes smaller and nearer together than their distance from the lateral eyes. Posterior eye row in a straight or very slightly procurved line, the median eyes somewhat nearer together than their distance from the larger lateral eyes. Median ocular quadrangle only slightly broader than long, moderately narrowed in front, the anterior median eyes much smaller. Sternum longer than broad, without evident sigilla. Labium soldered to sternum, longer than broad. Chelicerae stout, the upper margin with five stout teeth, the lower with a small patch of inconspicuous denticles. Legs very long, thin, spinose, the first femur about three times as long as the carapace in the female, longer in the male. Calamistrum uniseriate, situated at middle of the metatarsus. Abdomen suboval. Posterior book lungs nearer the spinnerets than the genital groove. Bulb of male palpus without evident conductor, which may be part of the embolus. Tarsus of palpus with apical portion an elongate process.

GENOTYPE: *Ectatosticta troglodytes* Higgins and Petterd.

*Hickmania troglodytes* Higgins and Petterd

Figures 20, 32-40, 44

*Theridion troglodytes* HIGGINS AND PETTERD, 1883, Proc. Roy. Soc. Tasmania, p. 191.

*Ectatosticta australis* SIMON, 1902, Bull. Soc. Ent. France, p. 240.

*Ectatosticta troglodytes* RAINBOW, 1904, Rec. Australian Mus., vol. 5, p. 327, pl. 41, figs. 1-4; 1912, *ibid.*, vol. 9, p. 124 (catalogue). PULLEINE, 1924, Tasmanian Field Nat. Club Easter Camp, p. 16. HICKMAN, 1928, Proc. Roy. Soc. Tasmania, for 1927, p. 169, figs. 6, 7, pl. 24. ROEWER, 1954, Katalog der Araneae, vol. 2, pt. B, p. 1278. BONNET, 1956, Bibliographia araneorum, vol. 2, pt. 2, p. 1647.

Dorsal aspect of the cephalothorax and abdomen as illustrated in figure 35. Coloration essentially the same in both sexes. Carapace bright orange to reddish brown, darkest in the head region, the eye tubercles black, the median eyes narrowly ringed with black, with faint shadings on the pars thoracica and in the median groove. Carapace clothed rather thickly with black hairs. Labium and maxillae dark reddish brown, the sternum and coxae paler brown, the clothing fine

black hairs. Legs dark reddish brown, darkest apically, clothed with black and whitish hairs and armed with black spines.

Abdomen dusky brown, the dorsum uniform and without distinct pattern, the venter somewhat paler, transversely lined with dusky and the lung patches whitish. Abdomen clothed with a rather thick coat of fine black hairs. Spinnerets brown.

FEMALE FROM MT. WELLINGTON, TASMANIA: Total length, 19.20 mm. Carapace, 9.35 mm. long, 6.10 mm. wide, 3.50 mm. wide at second eye row.

Eye relations as illustrated in figures 36 and 39. Posterior eye row in a straight line, the broadly oval median eyes set obliquely, separated by the long diameter, slightly farther from the laterals (34/37), which are larger in the ratio of 40/34. Anterior eye row in a straight line, the median eyes separated by two-thirds of their diameter (17/23), two diameters from the laterals (23/43), which are larger in the ratio of 35/23. Median ocular quadrangle slightly broader than long (45/43), narrowed in front (45/33), the front eyes much smaller. Clypeus produced forward into a pointed median process, marked with transverse grooves, the height exceeding that of the median quadrangle.

	I	II	III	IV
Femur	24.50 mm.	19.30 mm.	15.50 mm.	18.30 mm.
Patella	3.70	3.30	3.25	3.30
Tibia	25.25	19.00	13.50	15.80
Metatarsus	19.50	15.00	12.80	15.75
Tarsus	8.60	6.70	5.00	6.10
Total	81.55 mm.	63.30 mm.	50.05 mm.	59.25 mm.

Carapace much longer than broad, the pars thoracica suboval, rounded behind and emarginated above the pedicel, the pars cephalica produced in front at the clypeus and narrowed at the second eye row to about half of the greatest width of the carapace. Median groove a deep, rounded pit. In lateral view (fig. 32) the carapace is seen to be of moderate height and convexity. Clothing of the carapace fine black hairs. Sternum (5.10 mm. long, 2.75 mm. wide) without obvious sigilla, joined firmly to the labium where it is marked by transverse striae, rounded on the sides, pointed behind at the contiguous hind coxae. Labium, 1.50 mm. long, 1.35 mm. wide at base, but the limits between it and sternum are obscure. Maxillae 3.10 mm. long, 1.70 mm. wide, broadly rounded at apex. Details of mouth parts as shown in figure 38. Chelicera (fig. 33) stout, convex, the stout fang of moderate length, the upper margin with five stout teeth, the lower margin with a patch of small denticles opposite the innermost upper tooth.

Legs long and thin, evenly covered with soft grayish hairs and set with rows of stout black spines. First femur not fully three times as long as the carapace. Paired claws of first tarsus gently curved, armed with a series of 11 fine teeth; unpaired claw a rounded hook, with one large tooth at base; spurious claws well developed on sides and ventral surface of tarsal apex.

Spines of first leg: femur, two dorsal at base, seven prolateral and retrolateral in apical half; tibia, five prolateral, six retrolateral, five or six ventral; metatarsus, three prolateral and retrolateral, four ventral pairs of which the apical pair is weak. Posterior legs essentially as the first. Middle third of fourth metatarsus widened at center, dorso-ventrally flattened, the sharp edge on the retrolateral side bearing the uniseriate calamistrum, which consists of 60 or 70 curved bristles, the apical ones longer. (See fig. 44.)

Abdomen, 9.75 mm. long, 6.65 mm. wide, suboval in shape, as high as broad, clothed rather thickly with fine black and gray hairs. Posterior book lungs nearer the spinnerets than the genital groove. Cribellum a transversely developed, thin lobe, with a narrow, entire spinning field, the whole in this specimen hidden by a thick fold. Front spinnerets robust, the basal segment as broad as long, capped with a rounded, inconspicuous, apical segment. Hind spinnerets thinner, the basal segment about as broad as long, the apical segment conical, longer than the basal. Details of under side of abdomen as shown in figure 40.

Epigynum (fig. 20) internal, the pouch very broad and shallow, the two pairs of receptacles thin convoluted tubes.

MALE FROM CASCADES, TASMANIA: Total length, 13.00 mm. Carapace, 6.60 mm. long, 4.50 mm. wide. Abdomen, 6.00 mm. long, 4.75 mm. wide.

	I	II	III	IV
Femur	21.25 mm.	16.00 mm.	12.75 mm.	15.45 mm.
Patella	2.85	2.55	2.25	2.35
Tibia	21.75	16.75	11.50	14.00
Metatarsus	20.75	13.35	12.00	14.75
Tarsus	8.00	6.35	4.65	5.80
Total	74.60 mm.	55.00 mm.	43.15 mm.	52.35 mm.

Coloration and structure in close agreement with those of the female. Clypeus lower than the height of the median quadrangle, and the median lobe less developed. Legs proportionately much longer than in the female. First femur more than three times as long as the

carapace. First leg more than 12 times as long as the carapace. Second metatarsus curled in apical half. Fourth metatarsus cylindrical, the calamistrum not so strongly developed as in the female.

Palpus as illustrated in figures 34 and 37. Tibia somewhat thickened at apex and clothed there with a patch of black hairs. Tarsus basally thick, with rounded alveolus below, apically drawn out into a long, finger-like process. Bulb attached just beyond base of tarsus but lying in horizontal relationship to the segment. Embolus a thick, apically barbed spine, without evident conductor associated with it.

TYPE LOCALITIES: Male and female cotypes of *Theridion troglodytes* from Mole Creek Caves, Cludleigh District, Tasmania, in the Tasmanian Museum, Hobart. Immature type of *Ectatosticta australis* Simon from unspecified locality in Tasmania, in the Muséum National d'Histoire Naturelle, Paris.

DISTRIBUTION: Known only from Tasmania but of quite widespread range; fairly common in caves and mines but also found in dark, mesic situations outside.

#### GENUS *AUSTROCHILUS* GERTSCH AND ZAPFE

*Austrochilus* GERTSCH AND ZAPFE, 1953, Invest. Zool. Chilenas, vol. 1, fasc. 10, p. 10; 1955, in Zapfe, Trab. Lab. Zool., Univ. Chile, no. 2, pp. 47-50.

Carapace much longer than broad, with the low, convex pars cephalica narrowed in front to half of the greatest width and the median groove a deep oval pit. Anterior eye row weakly recurved, the very small median eyes nearer each other than the lateral eyes. Posterior eye row weakly procurved, the equal eyes about equally spaced. Median ocular quadrangle slightly broader than long, greatly narrowed in front, the anterior median much smaller. Clypeus produced into a rounded lobe, as high as the median ocular quadrangle. Sternum without sigilla. Labium soldered to sternum but juncture marked by transverse groove. Chelicerae of moderate thickness, lacking lateral condyle and stridulating organs, the upper margin with five stout teeth, the lower margin with a series of denticles. Legs long, thin, spinose, the first femur less than twice the length of the carapace. Calamistrum uniseriate, occupying the center third of the metatarsus. Embolus and conductor of palpus separate and conspicuously developed structures. Abdomen suboval. Posterior pair of respiratory organs tracheae that open through spiracles, situated immediately in front of the spinnerets.

GENOTYPE: *Austrochilus manni* Gertsch and Zapfe.

*Austrochilus manni* Gertsch and Zapfe

Figures 41-43, 45-50

*Austrochilus manni* GERTSCH AND ZAPFE, 1955, in Zapfe, Trab. Lab. Zool., Univ. Chile, no. 2, pp. 47-50.

MALE: Total length, 10.65 mm. Carapace, 5.80 mm. long, 4.20 mm. wide, 2.00 mm. wide at center of posterior eyes.

Dorsal aspect of cephalothorax and abdomen as illustrated in figure 48. Carapace dull yellow, each side with a broad, dentate, dusky brown band, the midline with a rather narrow stripe of similar color about as wide as the span of the posterior median eyes, which encloses behind the eyes three darker streaks and a conspicuous V-shaped maculation in front of the median groove. Eye tubercles and enclosed area dark brown and the sides of the pars cephalica dusky brown. Chelicerae reddish brown; labium and maxillae dusky brown; sternum dusky brown, with indistinct pattern of darker markings. Coxae dull yellow, with dusky patches. Legs mostly dull yellow, the femora with four more or less distinct blackish rings, the apical one narrow and inconspicuous; patellae brown, dusky on the sides; metatarsi dull yellow, with three distinct dusky rings of which the apical one is broad, tarsi and metatarsi of first two pairs of legs uniform reddish brown, of last two pairs dull yellow, with indistinct dusky rings.

Abdomen dusky purplish brown, the dorsum (fig. 48) with a pattern of pale spots, the venter (fig. 50) concolorous except for the white patches marking the book lungs.

Posterior eye row very weakly procurved, the oval median eyes separated by about two-thirds of the long diameter (25/38), as far from the equal lateral eyes. As seen from above the first row is weakly recurved (weakly procurved as viewed from the front, the centers of the small median eyes being well above a line through the centers of the lateral eyes), the median eyes separated by one-third of their diameter, almost their full diameter from the lateral eyes, which are much larger in the ratio of 40/24. Lateral eyes of each side equal in size, close together on a connate tubercle. Median ocular quadrangle scarcely broader than long (35/33), greatly narrowed in front (35/20), the front eyes much smaller (24/40).

Carapace (figs. 46, 48, 49) much longer than broad, a long oval, narrowed in front to scarcely half of the greatest width, the pars cephalica low and convex, the pars thoracica only a little higher well behind the eyes. Clothing of the carapace inconspicuous subprocumbent white and black hair, without erect bristles or spines, the clypeus

with a thin patch of whitish hairs. Median groove a deep oval pit set far back on the carapace. Clypeus subvertical, produced into a rounded lobe, as high as the median quadrangle. Sternum without evident sigilla, sparsely set with erect black bristles; sternum broader than long (3.25 mm. long, 2.00 mm. wide), produced behind to a sharp point between the scarcely separated posterior coxae. Labium somewhat broader than long (0.75 mm. long, 0.90 mm. wide), apically narrowed, soldered to the sternum but the transverse juncture marked by a distinct groove. Maxillae longer than broad (1.75 mm. long, 0.85 mm. wide), about as broad at base as at apex which is rounded on outer side and bluntly angled on inner edge. Chelicerae (fig. 46) rather thin, narrowed apically, the claw curved, of moderate length, the upper margin of the furrow with five stout, subequal, separated teeth, the lower margin with two tiny teeth and a patch of nearly subequal denticles opposite the distal teeth of the upper margin.

Legs and palpi thin and long, with fine, inconspicuous, dusky or whitish covering hairs and set with rows of strong black spines. Paired claws of first tarsus moderately curved, set with 11 or 12 thin teeth, the basal ones much smaller; the unpaired claw a strongly bent hook with a thin tooth below; accessory claws three or four which are flanked by enlarged bristles. Posterior claws essentially like those of the first pair.

	I	II	III	IV
Femur	9.65 mm.	7.60 mm.	6.35 mm.	8.50 mm.
Patella	2.17	2.00	1.65	1.70
Tibia	10.50	7.35	5.60	7.75
Metatarsus	11.70	8.90	6.70	8.70
Tarsus	5.20	3.65	2.80	3.75
Total	39.22 mm.	29.50 mm.	23.10 mm.	30.40 mm.

Spines of first leg: femur, one dorsal, one submedian, and one apical, four pro lateral, eight retrolateral; tibia, three or four pro lateral and retrolateral, 1-1-1-2 ventral, no apicals; metatarsus, three or four pro lateral, the last apical, and four or five ventral, the last two an apical pair. Posterior legs essentially as the first.

Abdomen (5.50 mm. long, 3.35 mm. wide) longer than broad, an elongate oval as seen from above, of moderate height, being about as high as broad. Posterior lung patches immediately in front of spinnerets. Cribellum a thick transverse lobe set with fine black hairs, the apical spinning field five times as broad as long, smooth and undivided. Front spinnerets two-segmented, the robust basal segment

scarcely longer than breadth at base, much thinner in lateral view, the apical segment an inconspicuous cone. Hind spinnerets smaller, the rounded basal segment one and one-half as long as broad, the apical segment conical, half as long. Median spinnerets one-segmented, of moderate size.

**FEMALE:** Total length, 9.00 mm. Carapace, 4.40 mm. long, 3.15 mm. wide. Coloration and structure in close agreement with those of the male. Color pattern somewhat duller in the immature specimens at hand and the legs paler, with less conspicuous dark rings.

Carapace proportionately broader than in the male. Median ocular quadrangle as broad as long. Sternum longer than broad (2.25 mm. long, 1.75 mm. wide). Labium 0.60 mm. long, 0.75 mm. wide. Maxillae 1.20 mm. long, 0.75 mm. wide. Legs proportionately shorter than in the male but spination about the same.

	I	II	III	IV
Femur	6.80 mm.	6.90 mm.	4.45 mm.	5.90 mm.
Patella	1.60	1.65	1.20	1.30
Tibia	7.55	5.25	3.60	5.35
Metatarsus	6.50	5.10	3.80	5.00
Tarsus	3.50	2.50	2.10	2.50
Total	25.95 mm.	21.40 mm.	15.15 mm.	20.05 mm.

Calamistrum (fig. 45) a single line of about 50 curved setae set on a thin carina, situated at middle of, and occupying three-tenths of the length of, the metatarsus, which is flattened adjacent to the setae.

**TYPE LOCALITY:** Jorgen (Los Vilos), Coquimbo Province, Chile; male holotype in the American Museum of Natural History.

**DISTRIBUTION:** Southern Chile from Coquimbo Province to Aysén Province.

#### BIBLIOGRAPHY

The following papers deal extensively with the Hypochilidae and reflect the key importance of the group in the spider system. The reader is referred to Bonnet's "Bibliographia araneorum" for a quite full resumé of the literature dealing with this family.

COMSTOCK, J. H.

"1912" (1913). The spider book. New York, pp. 257-261, figs. 229-234.

BONNET, P.

1957. Bibliographia araneorum. Toulouse, vol. 2, pt. 3, p. 2256.

FORSTER, R. W.

1955. A new family of spiders of the Suborder Hypochilomorphae. Pacific Sci., vol. 9, no. 3, pp. 277-285, figs. 1a-1h, 2a-2g.

## GERHARDT, U., AND A. KASTNER

1938. Ordnung der Arachnida: Araneae=Echte Spinnen=Webspinnen. In Kükenthal, W., and T. Krumbach, Handbuch der Zoologie. Berlin, vol. 3, pp. 636, 637.

## HICKMAN, V. V.

1928. Studies in Tasmanian spiders. Part II. Papers Proc. Roy. Soc. Tasmania, for 1927, pp. 169-172, pl. 24, figs. 6, 7.

## KASTNER, A.

1952. Die Mundwerkzeuge der Spinnen, ihr Bau, ihre Funktion und ihre Bedeutung für das System. Zool. Jahrb., vol. 72, pp. 101-146 (Hypochilidae, p. 132 *passim*).

## MARX, G.

1888. On a new and interesting spider. Ent. Amer., vol. 4, no. 8, pp. 160-162, figs. 1-13.  
1889. On the importance of the structural characters of *Hypochilus* in the classification of spiders. Proc. Ent. Soc. Washington, vol. 1, pp. 178-180.

## MILLOT, J.

1933. Notes complémentaires sur l'anatomie des liphistiides et hypochilides à propos d'un travail récent de A. Petrunkevitch. Bull. Soc. Zool. France, vol. 58, pp. 217-235, figs. 1-9.

## PETRUNKEVITCH, A.

1923. On families of spiders. Ann. New York Acad. Sci., vol. 29, pp. 145-180, pl. 1, 2.  
1928. Systema araneorum. Trans. Connecticut Acad. Arts Sci., vol. 29, pp. 1-270.  
1932. Collecting Hypochilus. Jour. New York Ent. Soc., vol. 40, pp. 19-23.  
1933. An inquiry into the natural classification of spiders, based on a study of their internal anatomy. Trans. Connecticut Acad. Arts Sci., vol. 31, pp. 303-389, pls. 1-13.  
1939. Catalogue of American spiders. *Ibid.*, vol. 33, pp. 133-338.  
1942. A study of amber spiders. *Ibid.*, vol. 34, pp. 121-464, pls. 1-69.  
1952. Macroevolution and the fossil record of Arachnida. Amer. Sci., vol. 40, no. 1, pp. 99-122, figs. 1-12.

## RAINBOW, W. J.

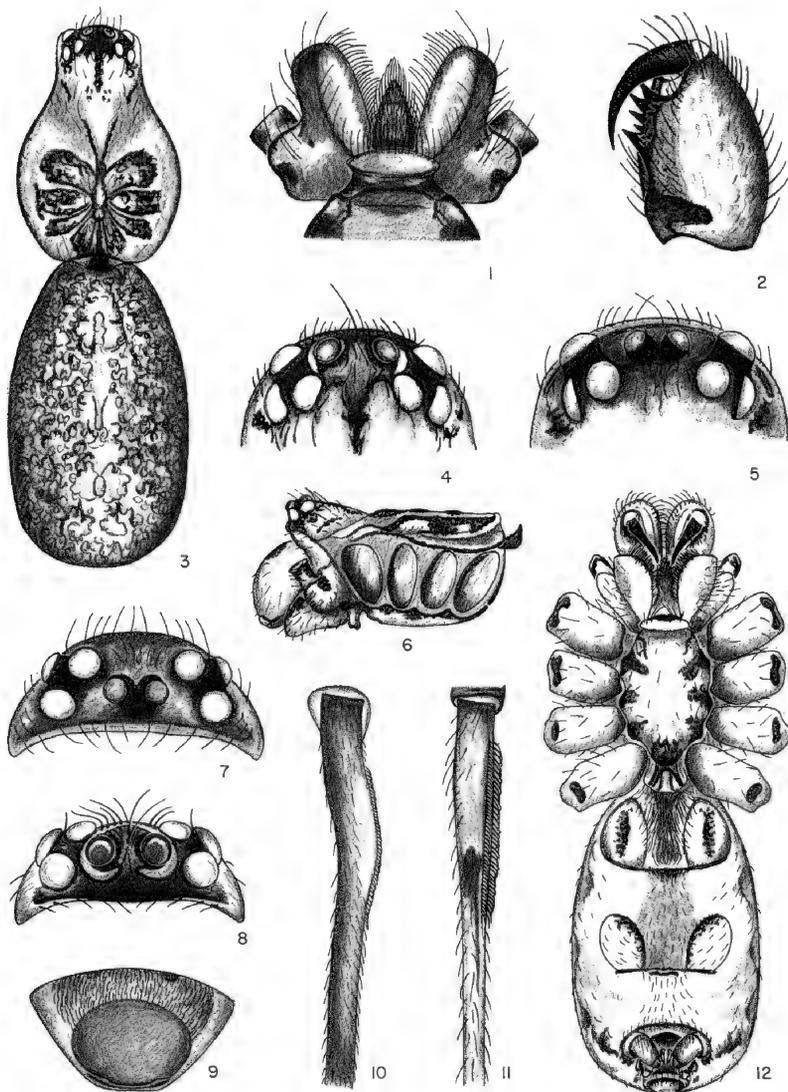
1904. Studies in Australian Araneidae, no. 3. Rec. Australian Mus., vol. 5, pp. 326-336, 3 figs., pl. 46.  
1907. Notes on the architecture, nesting habits, and life histories of Australian Araneidae, based on specimens in the Australian Museum. *Ibid.*, vol. 6, pp. 330-338, 2 figs.

## SIMON, E.

1892. Histoire naturelle des araignées. Paris, vol. 1, pt. 1, pp. 1-256, figs. 1-215 (Hypochilidae, pp. 201-204).

## ZAPFE, H.

1955. Filogenia y función en *Austrochilus manni* Gertsch and Zapfe. Trab. Lab. Zool., Univ. Chile, no. 2, pp. 1-53, numerous figs.



FIGS. 1-4. *Hypochilus thorelli* Marx. 1. Labium and maxillae, ventral view. 2. Left chelicera, ventral view. 3. Carapace and abdomen of female, dorsal view. 4. Eyes of female, dorsal view.

FIG. 5. *Hypochilus petrunkevitchi*, new species, eyes of female, dorsal view.

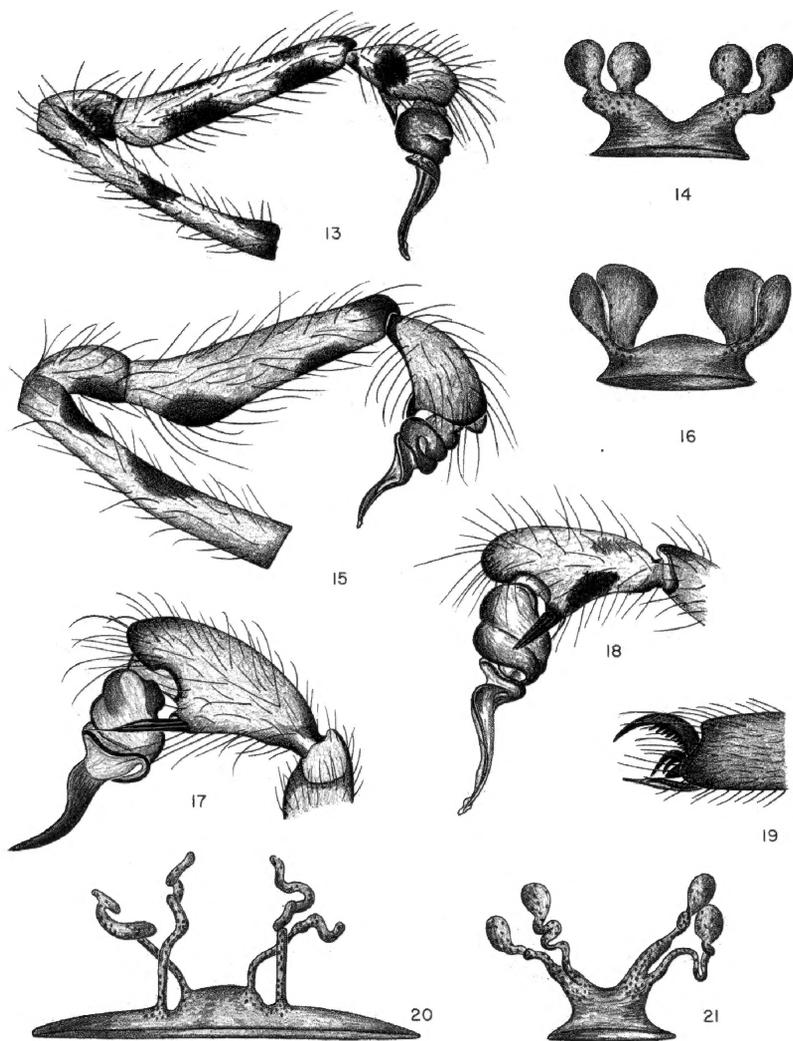
FIG. 6. *Hypochilus thorelli* Marx, cephalothorax of female, lateral view.

FIG. 7. *Hypochilus petrunkevitchi*, new species, eyes of female, frontal view.

FIGS. 8, 9. *Hypochilus thorelli* Marx. 8. Eyes of female, frontal view. 9. Cribellum of female, ventral view.

FIG. 10. *Ectatosticta davidi* Simon, base of fourth metatarsus, showing calamistrum.

FIGS. 11, 12. *Hypochilus thorelli* Marx. 11. Base of fourth metatarsus, showing calamistrum. 12. Cephalothorax and abdomen of female, ventral view.



FIGS. 13, 14. *Hypochilus thorelli* Marx. 13. Left male palp, retrolateral view. 14. Epigynum.

FIG. 15. *Hypochilus petrunkevitchi*, new species, left male palp, retrolateral view.

FIG. 16. *Hypochilus thorelli* Marx, epigynum of another specimen.

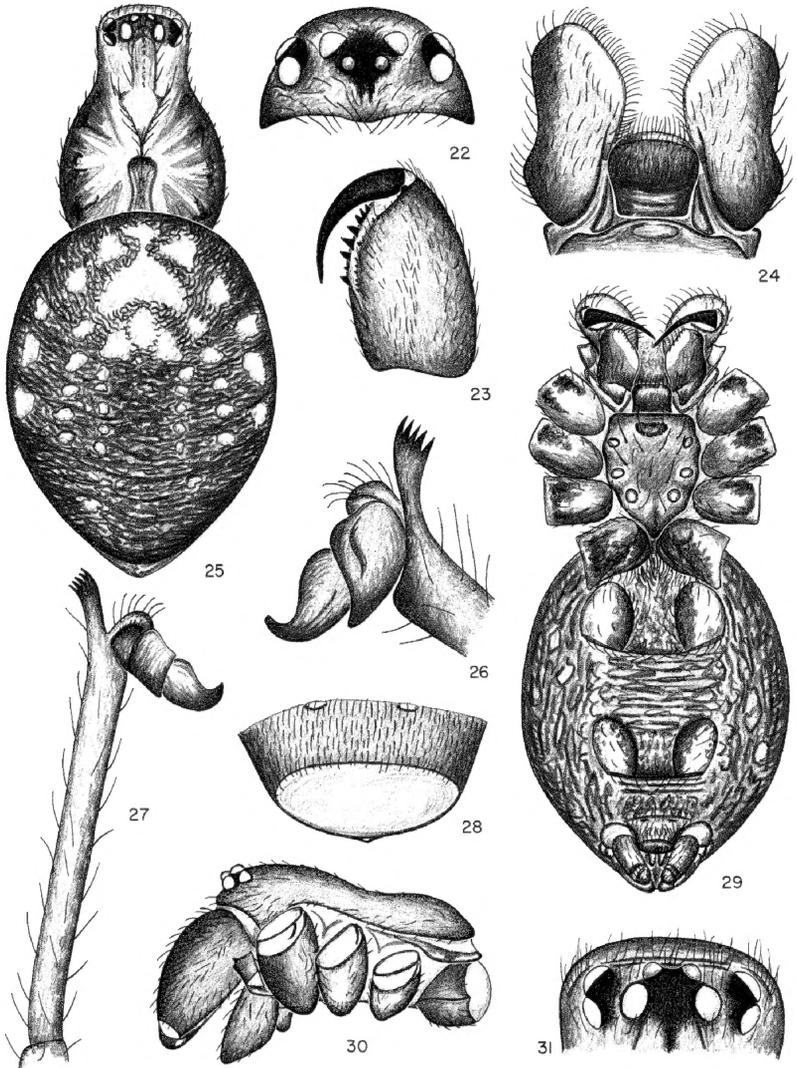
FIG. 17. *Hypochilus petrunkevitchi*, new species, tarsus of male palp, prolateral view.

FIG. 18. *Hypochilus thorelli* Marx, tarsus of male palp, prolateral view.

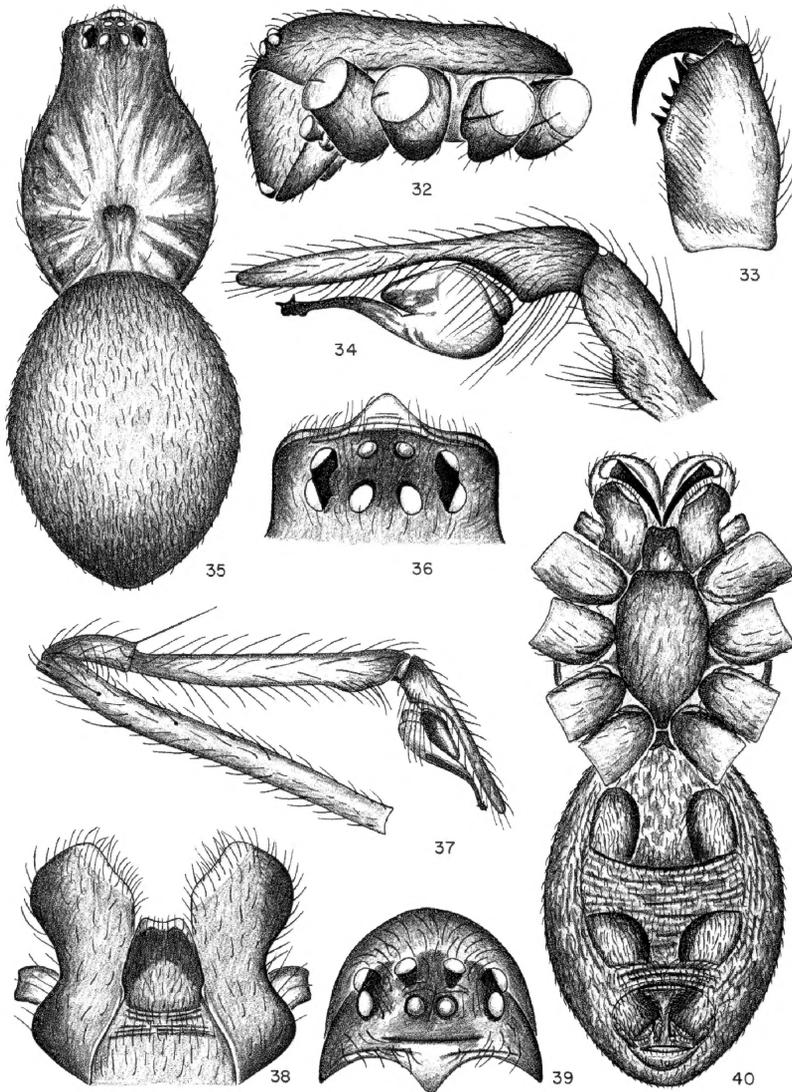
FIG. 19. *Ectatosticta davidi* Simon, claws of first tarsus.

FIG. 20. *Hickmania troglodytes* Higgins and Petterd, epigynum.

FIG. 21. *Hypochilus petrunkevitchi*, new species, epigynum.



FIGS. 22-31. *Ectatosticta davidi* Simon. 22. Eyes of female, frontal view. 23. Left chelicera of female, retrolateral view. 24. Labium and maxillae of female. 25. Cephalothorax and abdomen of female, dorsal view. 26. Apex of tarsus of male palpus, retrolateral view (after Simon). 27. Tarsus of male palpus, proximal view (after Simon). 28. Cribellum of female, ventral view. 29. Cephalothorax and abdomen of female, ventral view. 30. Cephalothorax of female, lateral view. 31. Eyes of female, dorsal view.



FIGS. 32-40. *Hickmania troglodytes* Higgins and Petterd. 32. Carapace of female, lateral view. 33. Left chelicera of female, retrolateral view. 34. Left male palpus, prolateral view. 35. Carapace and abdomen of female, dorsal view. 36. Eyes of female, dorsal view. 37. Left male palpus, retrolateral view. 38. Labium and maxillae of female. 39. Eyes of female, frontal view. 40. Cephalothorax and abdomen of female, ventral view.

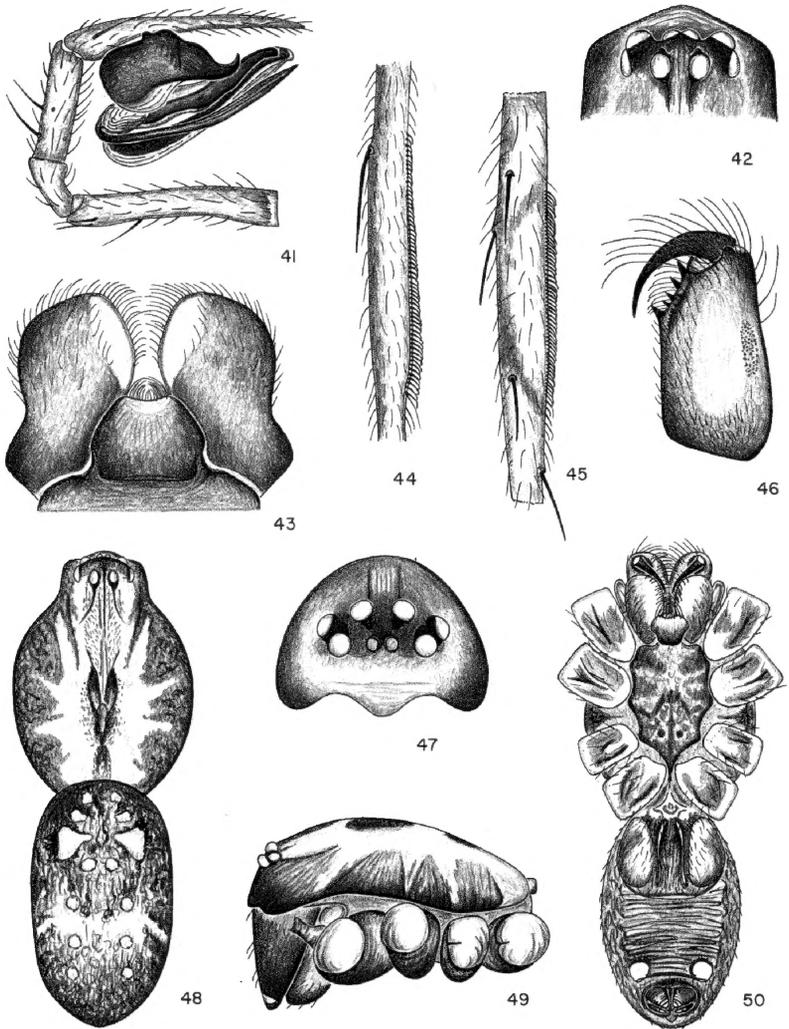


FIG. 41-43. *Austrochilus manni* Gertsch and Zapfe. 41. Left male palpus, retrolateral view. 42. Eyes of female, dorsal view. 43. Labium and maxillae of female, ventral view.

FIG. 44. *Hickmania troglodytes* Higgins and Petterd, middle of fourth metatarsus with calamistrum.

FIGS. 45-50. *Austrochilus manni* Gertsch and Zapfe. 45. Middle of fourth metatarsus with calamistrum. 46. Left chelicera of female, prolateral view. 47. Eyes of female, frontal view. 48. Carapace and abdomen of female, dorsal view. 49. Cephalothorax of female, lateral view. 50. Cephalothorax and abdomen of female, ventral view.