

SPIDER FAUNA OF SIKKIM

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(With 49 text-figures)

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I—INTRODUCTION

This paper deals with the spiders (Arachnida: Araneae) from East Sikkim, West Sikkim and northern parts of West Bengal (between lat. 27°5' and 20°9' long. 87°56' and 90°5'), covering an area of about 7,428 square kilometres. These areas are largely covered by evergreen mountain forests. The study is based on the collections made by me as a member of the Indo-Swiss Zoological Expedition, 1959.

In the course of my investigations of above mentioned material of spiders, I have had numerous opportunities of comparing most of the species identified by me with the type specimens of several species in the collection of the Zoological Survey of India. I have recorded here a number of known species, not reported since they were first described nearly half a century ago. I have also revised the descriptions of a number of known species, which are at present very imperfectly and often inaccurately characterized. In addition to descriptions, I have added, as far as possible, keys, notes on affinities, synonymies, distribution and main characters of the families and genera.

Altogether sixty-five species, contained in thirty-three genera, distributed in the families Uloboridae, Homalonychidae, Theridiidae, Linyphiidae, Argiopidae, Thomisidae, Agelenidae, Hahniidae, Pisau-

ridae, Lycosidae and Oxyopidae are dealt with in this paper. Of these, 44 species are new to science.

II — SYSTEMATIC ACCOUNT

All types are deposited in the National Zoological Collections, Zoological Survey of India, Calcutta. The figures, which illustrate this paper were all prepared with the help of camera lucida.

Key to the families of Sikkim spiders

1. Eyes eight	...	...	...	2
Eyes six	...	...	...	<i>Scytodidae*</i>
2. Cribellum and calamistrum present	...	...	...	<i>Uloboridae</i>
Cribellum and calamistrum absent	...	...	...	3
3. Palpal tarsus with claw in female	...	...	...	4
Palpal tarsus without claw in female	...	...	...	<i>Pholcidae*</i>
4. Eyes heterogenous	...	...	...	<i>Linyphiidae</i>
Eyes homogenous	...	...	...	5
5. Tarsi bear three claws	...	...	...	6
Tarsi bear two claws	...	...	...	13
6. Tibiae and metatarsi without a pro-row of spines	...	...	...	<i>Argiopidae</i>
Tibiae and metatarsi with pro-row of spines	...	...	...	7
7. Trachial spiracle advanced far in front of spinners	...	...	...	<i>Hahniidae</i>
Trachial spiracle immediately in front of spinners	...	...	...	8
8. Chelicera without a lateral condyle	...	...	...	<i>Hersillidae*</i>
Chelicera with a distinct lateral condyle	...	...	...	9
9. Trochanters without notch	...	...	...	<i>Agelenidae</i>
Trochanters deeply notched	...	...	...	10
10. All trochanters not deeply notched.	...	...	...
Only fourth trochanters deeply notched	...	...	...	<i>Oxyopidae</i>
All trochanters deeply notched	...	...	...	11
11. Fourth tarsi with a ventral row of serrated bristles	...	...	...	<i>Theridiidae</i>
Fourth tarsi without ventral row of serrated bristles	...	...	...	12
12. Paired claws with numerous teeth	...	...	...
Median claw with two or three teeth	...	...	...	<i>Pisauridae</i>
Paired claws with few teeth.	...	...	...
Median claw with one or no tooth	...	...	...	<i>Lycosidae</i>
13. Tarsal claw smooth	...	...	...	<i>Homalonychidae</i>
Tarsal claws toothed	...	...	...	<i>Thomisidae</i>

Family I. ULOBORIDAE

Characters.—Eyes dark in colour, the lateral eyes on each side farther apart from the median eyes; and the posterior median eyes moderate in size. Chelicerae moderately robust, nearly parallel-sided. Anterior legs longest. Femora with dorsal trichobothria; tarsi with three foot-claws. Metatarsus IV, bearing the calamistrum, somewhat curved, at least along its dorsal edge. Anal tubercle well developed in *Uloborus* Latreille but less conspicuous in *Hyptiotes* Walckenaer, and close to posterior spinners.

Genus 1. *Uloborus* Latreille

1806. *Uloborus* Latreille, *Gen. Crust. Ins., etc.*, 1, p. 109

1850. *Phillyra* Hentz, *Bost. J. H. H.*, 6, p. 25.

1874. *Uloborus*: Simon, *Ar. Fr.*, p. 244.

1895. *Uloborus*: Simon, *Hist. Nat. Araignees*, Paris, 1, p. 214.

1940. *Uloborus*: Comstock, *The Spider Book*, New York, p. 262.

Characters.—Anal tubercle prominent in the female, diminished in the male. Legs I pair much longer and stronger than the rest. Male tibia of I with six to seven dorsal spines, almost in the form of teeth.

*Not dealt with in this paper

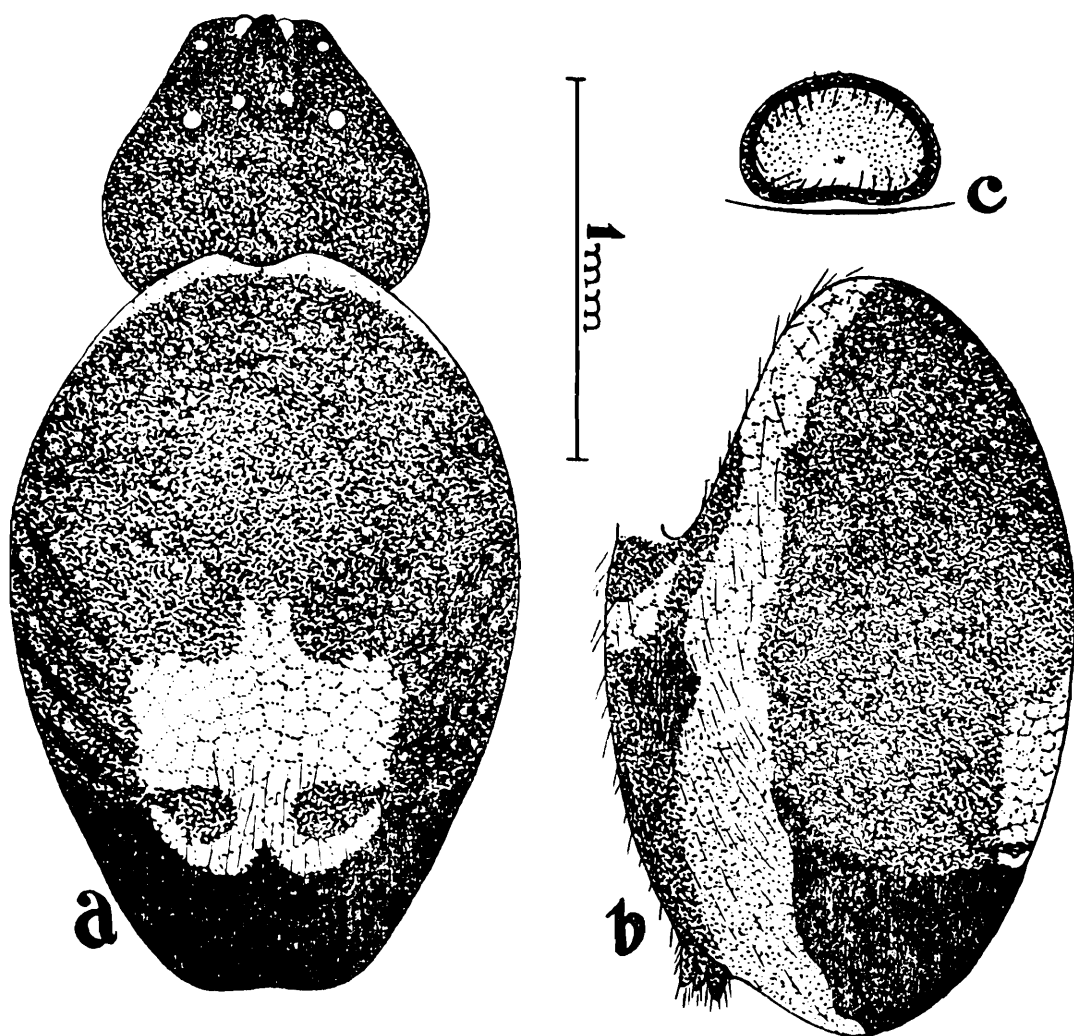
Type-species.—*Uloborus walckenaerius* Latreille.

Distribution.—Europe, Africa, Madagascar, Asia, Malaysia, America.

1. *Uloborus krishnae* sp. n.

General.—Cephalothorax and abdomen deep-brown to black, legs brownish-green. Total length 3.70 mm. Carapace 1.40 mm. long, 1.40 mm. wide; abdomen 2.50 mm. long, 2.50 mm. wide.

Cephalothorax.—Nearly as long as wide, moderately convex, clothed with fine pubescence, cephalic region slightly high. Eyes pearly white, both rows recurved but posterior row longer than anterior, anterior median eyes larger than others, but posterior lateral eye larger than posterior medians. Sternum oval, pointed behind, deep-brown colour, clothed with fine hairs. Legs with transverse deep-brown or black bands, I and IV legs longer than II and III pairs, clothed with hairs; upper side of metatarsi of IV provided with distinct calamistrum.



TEXT-FIG. 1. *Ulobornus krishnae* sp. n. (a) Dorsal view of female, legs omitted. (b) Lateral view of female, legs omitted. (c) Epigyne.

Abdomen.—Slightly longer than wide, broad in front and narrowing behind, clothed with fine pubescence. A conspicuous white patch mid-dorsally just behind the middle half and a similar white patch encircles the entire lateral margins of abdomen, as in text-fig. 1, a, b. Ventral side light brown to deep brown in colour. Epigyne as in text-fig. 1, c.

Holotype one female in spirit.

Type-locality.—Legship, West Sikkim, 2.10.1959. Coll. B. K. Tikader.

This species resembles *Uloborus walckenaerius* Latreille from Europe but it is separated as follows: (i) Cephalothorax uniform deep brown but in *U. walckenaerius* cephalothorax brown with lighter median and lateral longitudinal bands. (ii) Abdomen deep brown and dorsally just behind the middle with a conspicuous white patch but in *U. walckenaerius* abdomen whitish with a darker grey-green median and two lateral longitudinal stripes. (iii) Epigyne structurally different.

Family II. HOMALONYCHIDAE

Characters.—The genus *Homalonychus*, formerly regarded as belonging to the Zorariidae, has been placed recently in a family of its own. Tarsal claws two, similar and smooth, completely lacking denticles. The tarsi provided with a brush of terminal tenent hairs and a pair of spurious claws. The eight eyes placed in two rows of four each, the last row very strongly recurved, and much wider than the first row.

Genus 2. *Homalonychus* Marx

1891. *Homalonychus* Marx, *Proceed. Ent. Soc.*, Wash., 2(1), p.2.

1895. *Homalonychus*: Simon, *Hist. Nat. Araignees*, 1, p. 413.

1940. *Homalonychus*: Comstock, *The Spider Book*, New York, p. 338.

Characters.—The generic characters are the same as those given above for family. This genus is being recorded here for the first time from India.

Type-species.—*Homalonychus selenopoides* Marx.

Distribution.—America, India.

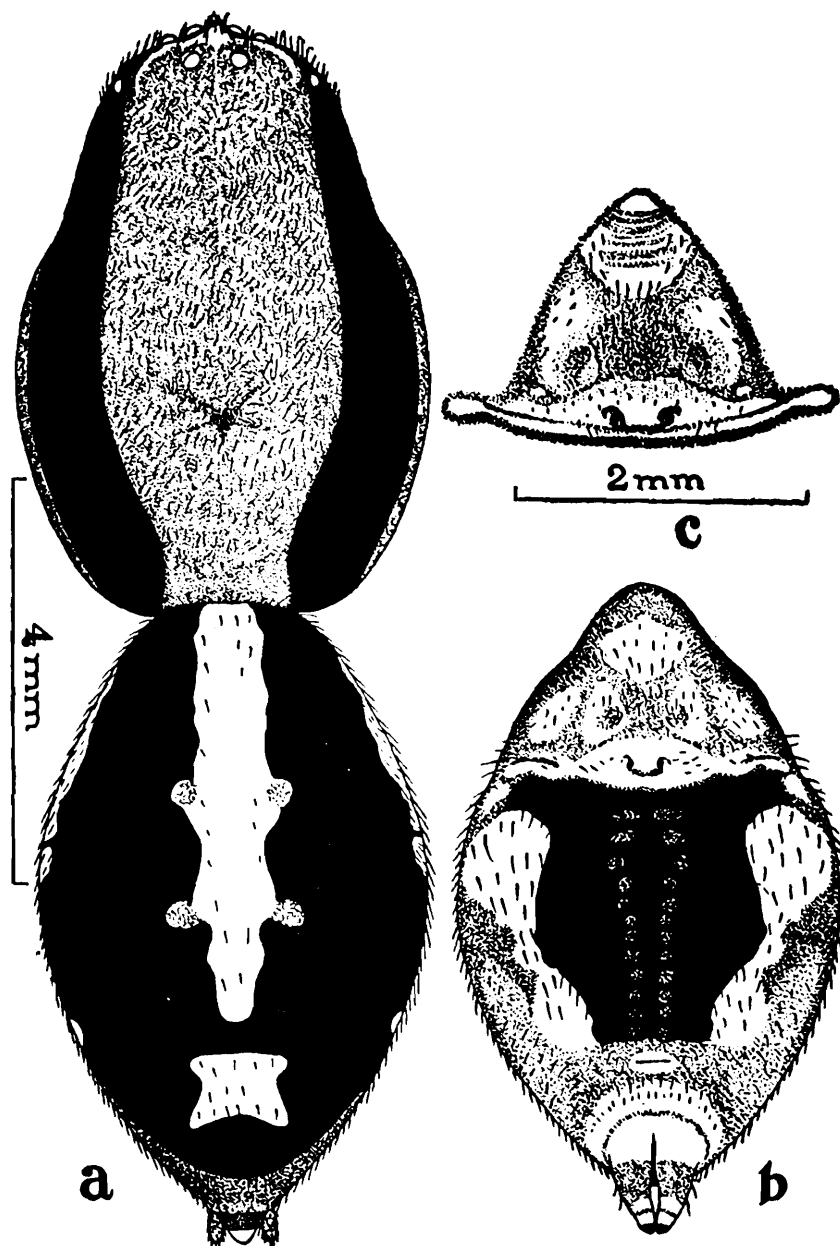
2. *Homalonychus joyaus* sp. n.

General.—Cephalothorax and abdomen black, legs brownish-green. Total length 14.50 mm. Carapace 7.40 mm. long, 5.50 mm. wide; abdomen 8.00 mm. long, 5.20 mm. wide.

Cephalothorax.—Longer than wide, slightly convex, narrowing in front; mid-dorsal provided with a broad longitudinal brown patch and this portion clothed with fine grey hairs; lateral margins of thorax also provided longitudinal brown patch, centre of the thorax with a deep foveal impression. Eyes dark, posterior row strongly recurved and much wider than anterior row; anterior row short and procurved and middle eyes slightly larger than laterals. Clypeus high. Chelicerae without tooth on the margin. Sternum broad, clothed with spiny hairs, and posterior coxae widely separated. Legs strong and robust, clothed with thick hairs. Tarsal claw two, similar in size and without denticle. The tarsi provided with a brush of terminal tenent hairs. I and II pairs of legs longer than III and IV.

Abdomen.—Longer than wide, clothed with thick hairs. Mid-dorsal provided with a longitudinal white line extending from base to end, as in text-fig. 2, a and clothed with thick grey hairs; anterior lateral margin also provided with longitudinal similar white line. Ventral side black but lateral sides provided with longitudinal white line. Epigyne as in text-fig. 2, c. Male similar colour like female.

Holotype, one female. *Paratypes*, four females. *Allotype*, one immature male.



TEXT-FIG. 2. *Homalonychus joyaus* sp. n. (a) Dorsal view of female, legs omitted. (b) Ventral view of abdomen. (c) Epigyne.

Type-locality.—Bank of Great Rangit river, West Sikkim, 20.9.1959. Coll. B. K. Tikader.

This species resembles *Homalonychus selenopoides* Marx from America but it is separated as follows: (i) Cephalothorax black and mid-dorsally with a broad longitudinal brown patch but in *H. selenopoides* cephalothorax brown with black patches. (ii) Abdomen black with a conspicuous white line extending from base to end of abdomen but in *H. selenopoides* abdomen brown with black patches. (iii) Epigyne also structurally different.

Family III. THERIDIIDAE

Characters.—Cephalothorax variable in profile; sometimes flat, cephalic region sometimes elevated. Clypeus variable in width; usually wider than in Argiopidae. Eyes heterogenous, generally anterior medians dark, the rest light. Abdomen variable in shape. Males and many females, possess a stridulating organ, but in some genera this organ poorly developed and difficult to see. Chelicerae usually vertical and not very large. Legs bearing bristles and hairs, but few spines. Female palp with a claw. Tibia and patella of male palp with no apophysis; paracymbium absent and palpal organs relatively simple.

Key to Indian genera of *Theridiidae*

- | | | | | |
|---|-----|-----|-----|---------------------------|
| 1. Colulus absent | ... | ... | ... | 2 |
| Colulus present or colulus replaced by two setae | ... | ... | ... | <i>Argyrodes</i> Simon |
| 2. Lower margin of furrow of the chelicerae with a very small tooth | ... | ... | ... | <i>Theridion</i> Walck. |
| Lower margin of furrow of the chelicerae without teeth | ... | ... | ... | 3 |
| 3. Male palpus without conductor, no median apophysis | ... | ... | ... | <i>Theridula</i> Emerton |
| Male palpus with conductor, with median apophysis | .. | .. | .. | 4 |
| 4. Median apophysis broadly attached to tegulum or to embolus, never separate sclerite; abdomen usually higher than long often with dark patches on sides, sometimes with a posterior dorsal tubercle | ... | ... | ... | <i>Achaearanea</i> Strand |

Genus 3. *Theridion* Walckenaer

1805. *Theridion* Walckenaer, *Tabl. Araneides*, p. 72.

1895. *Theridion*: Simon, *Hist. Nat. Araignees*, 1, p. 550.

1963. *Theridion*: Levi, *Bull. Mus. Comp. Zool.*, Harvard, 129(10), pp. 483-592.

Characters.—Eyes anterior medians equal or smaller than posterior medians and usually a little wider apart, and lateral eyes contiguous. Abdomen globular in females usually bearing a distinct pattern. Chelicerae usually weak; some males have them large and divergent. Legs relatively long and thin.

Type-species.—*Theridion lunatum* Clerck.

Distribution.—Europe, Africa, Asia, Australia and America.

3. *Theridion manjithar* sp. n.

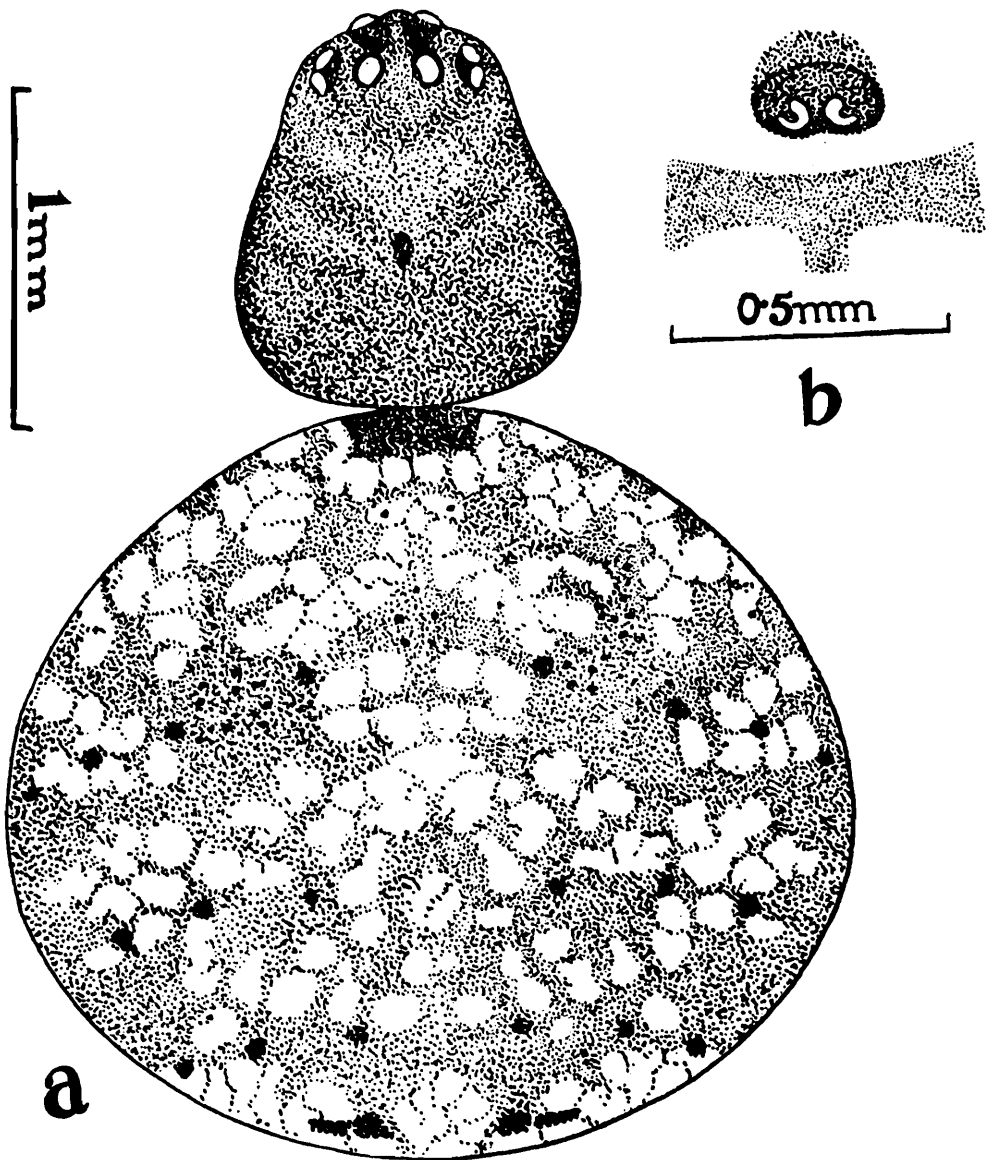
General.—Cephalothorax and legs light brownish-green, abdomen dirty white with black spots. Total length 3.50 mm. Carapace 1.20 mm. long, 1.00 mm. wide; abdomen 2.20 mm. long, 2.50 mm. wide.

Cephalothorax.—Slightly longer than wide, convex, moderately narrowing in front, clothed with fine hairs. Eyes pearly white, lateral eyes contiguous, ocular quad longer than wide. Sternum heart-shaped, pointed behind. Legs stout and strong, clothed with hairs, banded with deep brown transverse band. Tarsi of IV pair of legs with distinct comb like setae.

Abdomen.—Round, slightly wider than long, broadest just behind the middle. Dorsal side beautifully coloured with admixture of irregular white and black spots, as in text-fig. 3, a. Ventral side almost similar to dorsal side, only black spots less conspicuous. Epigyne as in text-fig. 3, b.

Holotype one female in spirit.

Type-locality.—Manjithar, West Sikkim 29.9.1959. Coll. B. K. Tikader.



TEXT-FIG. 3. *Theridion manjithar* sp. n. (a) Dorsal view of female, legs omitted. (b) Epigyne.

This species resembles *Theridion lunatum* (Clerck) from Europe but it is separated as follows: (i) Cephalothorax brownish-green but in *T. lunatum* cephalothorax yellow to red-brown. (ii) Abdomen dirty chalk-white and beautifully coloured with admixture of irregular white and black spots but in *T. lunatum* abdomen totally black. (iii) The structure of epigyne is also quite different.

Genus 4. *Argyroides* Simon

1864. *Argyroides* Simon, *Hist. Nat. Araignees*, 1, p. 253.
 1869. *Ariamnes* Thorell, *Nova Act. Reg. Sci.*, Uppsala, 3(7), p. 37.
 1872. *Rhomphaea* Koch, *Die. Ara. Austr.*, p. 289.
 1962. *Argyroides* : Exline and Levi, *Bull. Mus. Comp. Zool.*, Harvard, 127(2), p. 78.

Characters.—Cephalothorax flat, posterior portion low, a transverse thoracic depression generally present. Ocular region and clypeus high. Males with ocular region, or clypeus, or both modified with projections, hump, an open groove or seam below eyes, or with clypeus projection

ventrally, or projecting and bearing a groove. Abdomen variable in shape with uneven coloration, often with silvery patches or all silvery. Legs long and thin, I leg longest, IV leg second in length, III leg always very short.

Argyroides may live in host webs without constructing any web of their own, but often they add fine lines between the spirals of an orb-web, and occasionally they live independently, making their own small theridiid webs. *Argyroides* species hang in the web upside-down with the front pairs of legs folded. They are usually inconspicuous, resembling seed, pieces of bark, or lichen accidentally attached to the web. When disturbed they jump, usually sideways, and drop, leaving a line attached to the resting place.

Type-species.—*Argyroides argyroides* Walckenaer.

Distribution.—Europe, Africa, Asia, Australia and America.

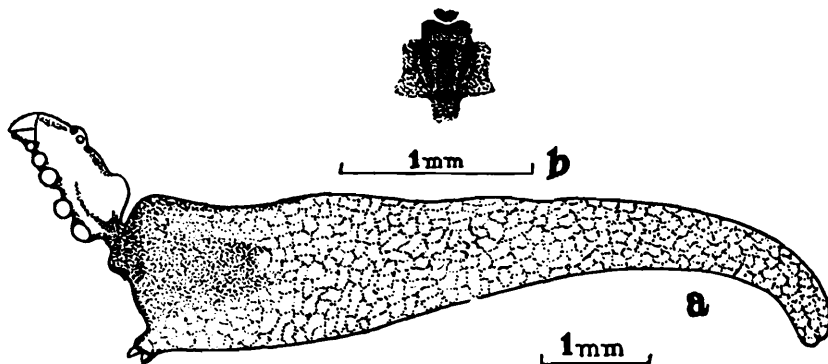
Key to Indian species of *Argyroides* Simon

- | | |
|---|------------------------------|
| 1. Abdomen very long worm—like, extensively prolonged beyond the spinners | <i>A. ambalikae</i> sp. n. |
| Abdomen not very long, nearly as long as wide, not extensively prolonged beyond the spinners | 2 |
| 2. Posterior end of abdomen with a triangular shaped projection | <i>A. projeles</i> sp. n. |
| Posterior end of abdomen without triangular shaped projection | 3 |
| 3. Posterior end of abdomen with a prominent tubercle, and a conspicuous white patch | <i>A. gazingensis</i> sp. n. |
| Posterior end of abdomen without tubercle, but with a conspicuous black patch | <i>A. gazedes</i> sp. n. |

4. *Argyroides ambalikae* sp. n.

General.—Cephalothorax and legs light green, abdomen silver-white, Total length 8.00 mm. Carapace 1.00 mm. long, 0.50 mm. wide; abdomen 5.50 mm. long, 1.00 mm. wide.

Cephalothorax.—Longer than wide, convex, middle portion high and ocular area also slightly raised. Eyes pearly white except anterior medians, middle eyes of both rows prominent but lateral eyes very small and contiguous. Sternum heart-shaped, longer than wide, posteriorly pointed. Legs long and very slender.



TEXT-FIG. 4. *Argyroides ambalikae* sp. n. (a) Lateral view of female, legs omitted. (b) Epigyne.

Abdomen.—Long, remarkably slender and extensively prolonged far beyond the spinners, as in text-fig. 4, a. Abdomen provided with silvery white patches. Epigyne as in text-fig. 4, b.

Holotype one female. *Paratypes*, two females in spirit.

Type-locality.—Legship, West Sikkim, India, 2.10.1959. Coll. B. K. Tikader.

This species resembles *Argyrodes fictilium* (Hentz) from America but it is separated as follows: (i) Cephalothorax light green but in *A. fictilium* cephalothorax pale yellow. (ii) Abdomen long and silvery-white but in *A. fictilium* abdomen with a mid-dorsal longitudinal dark band. (iii) Epigyne structure also different.

5. *Argyrodes gazedes* sp. n.

General.—Cephalothorax light brown, legs deep brown and abdomen greenish with silver-white. Total length 3.50 mm. Carapace 1.40 mm. long, 1.10 mm. wide; abdomen 2.50 mm. long, 2.50 mm. wide.

Cephalothorax.—Longer than wide, cephalic region high, provided with transverse furrow extending across the middle of the cephalothorax. Eyes pearly white, lateral eyes small and contiguous, anterior medians larger than posterior medians; ocular area situated on the elevated region of cephalothorax. Sternum heart-shaped, pointed behind. Legs long and slender.

Abdomen.—Nearly as long as wide, clothed with fine hairs, abdomen extends posteriorly beyond the spinners. Posterior end of abdomen with a conspicuous black mark. Ventral side uniform in colour but anterior and posterior side of spinners provided with two black dots. Epigyne as in text-fig. 5, b. The head of male bears two horns and two median pairs of eyes borne by the hinder horn, as in text-fig. 5, c. Legs of male longer and slender than female.

Holotype one female. *Paratypes*, two females and *Allotypes*, three males in spirit.

Type-locality.—Legship, West Sikkim, 2.10.1959. Coll. B. K. Tikader.

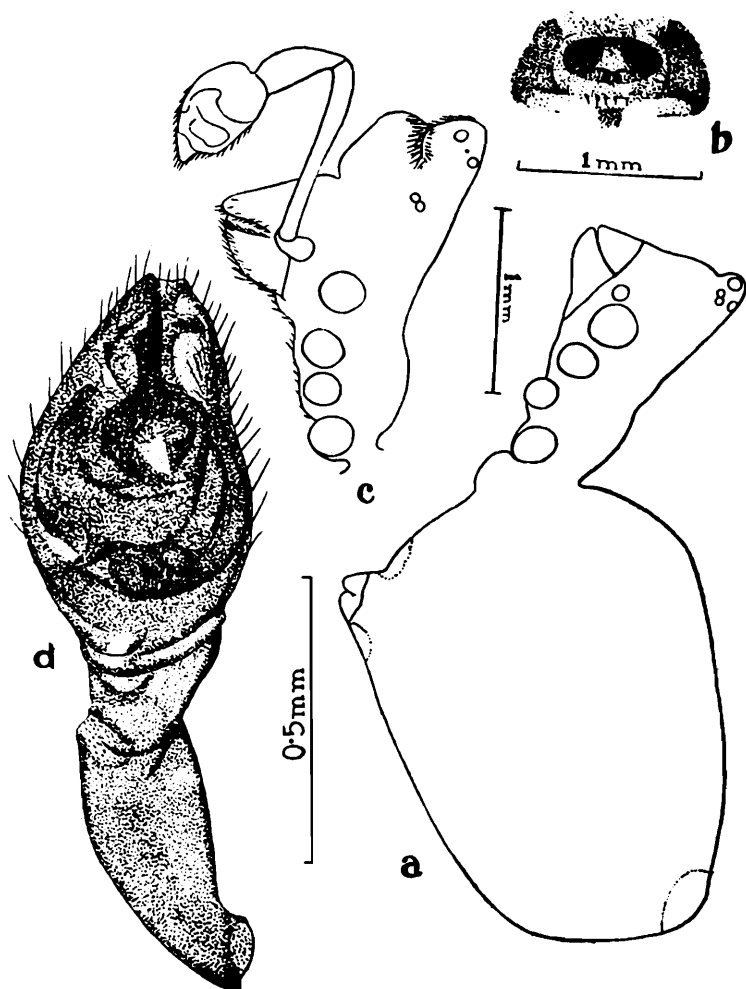
This species resembles *Argyrodes cyrtophore* Tikader from India but it is separated as follows: (i) Cephalothorax light brown but in *A. cyrtophore* cephalothorax black. (ii) Carapace of male bears two horns and two median pairs of eyes borne by the hinder horn but in *A. cyrtophore* carapace of male bears single horn. (iii) Posterior end of abdomen with a conspicuous black spot but in *A. cyrtophore* no such spot on the abdomen.

6. *Argyrodes gazingensis* sp. n.

General.—Cephalothorax, abdomen and legs reddish-brown. Total length 3.10 mm. Carapace 1.00 mm. long, 0.50 mm. wide; abdomen 2.50 mm. long, 2.00 mm. wide.

Cephalothorax.—Longer than wide, convex, cephalic region high provided with transverse furrow extending across the middle of cephalothorax. Eyes pearly white, lateral eyes not very small and contiguous, anterior medians larger than posterior medians; ocular area projecting

forward. Clypeus rounded, ventrally with deep groove under eyes. Sternum heart-shaped, pointed behind. Legs long and slender.



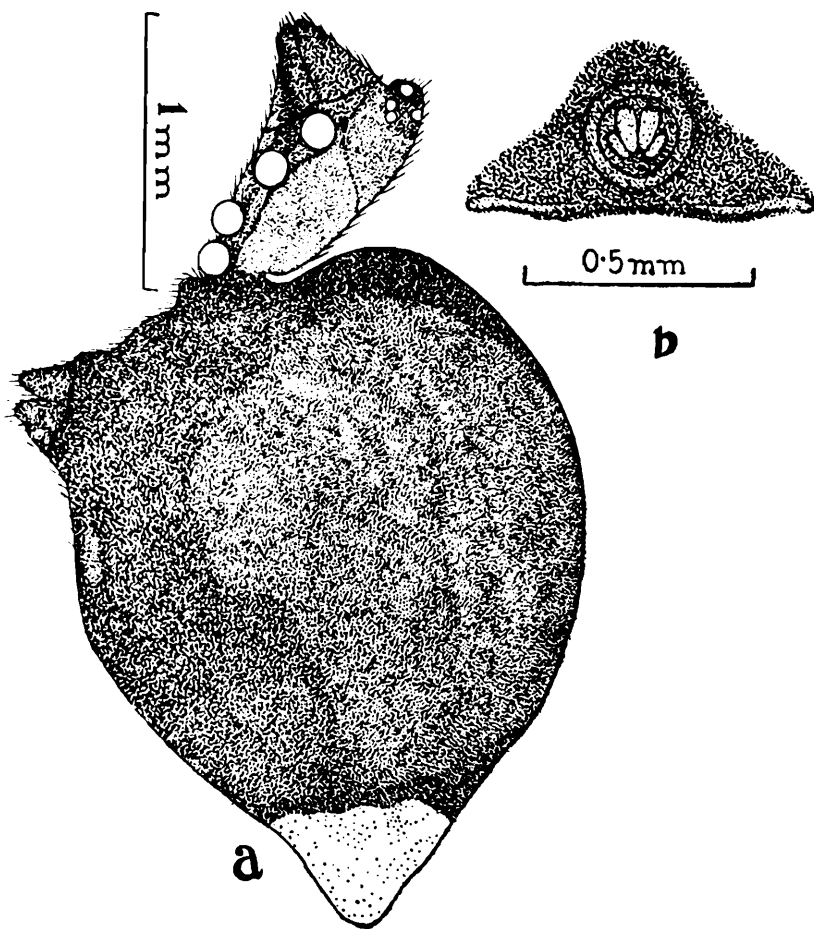
TEXT-FIG. 5. *Argyrodes gazedes* sp. n. (a) Lateral view of female, legs omitted. (b) Epigyne. (c) Lateral view of head of male. (d) Male palp.

Abdomen.—Wider than long, clothed with fine hairs; strongly overlapping the posterior region of cephalothorax in front, broadest in the middle, abdomen extended behind spinners, posterior end elevated and provided with a conspicuous white patch as in text-fig. 6, a. Epigyne as in text-fig. 6, b.

Holotype one female in spirit.

Type-locality.—Gazing, West Sikkim, 28.9.1959. Coll. B. K. Tikader.

This species resembles the foregoing species i.e. *Argyrodes gazedes* sp. n. but it is separated as follows: (i) Abdomen reddish-brown but in *A. gazedes* abdomen greenish with silvery white. (ii) Posterior end of abdomen elevated and provided with conspicuous white patch but in *A. gazedes* posterior end of abdomen provided with a conspicuous black spot. (iii) Epigyne structurally different.



TEXT-FIG. 6. *Argyrodes gazingensis* sp. n. (a) Lateral view of female, legs omitted. (b) Epigyne.

7. *Argyrodes projeles* sp. n.

General.—Cephalothorax deep brown, abdomen silver-white and legs light brownish-green. Total length 7.00 mm. Carapace 2.00 mm. long, 1.30 mm. wide; abdomen 4.80 mm. long, 2.50 mm. wide.

Cephalothorax.—Longer than wide, convex, cephalic region very high, provided with transverse furrow extending across the middle of cephalothorax. Eyes white, lateral eyes small and contiguous, anterior medians larger than posterior medians, ocular area situated on the elevated region of cephalothorax. Sternum heart-shaped, pointed behind. Legs long and slender.

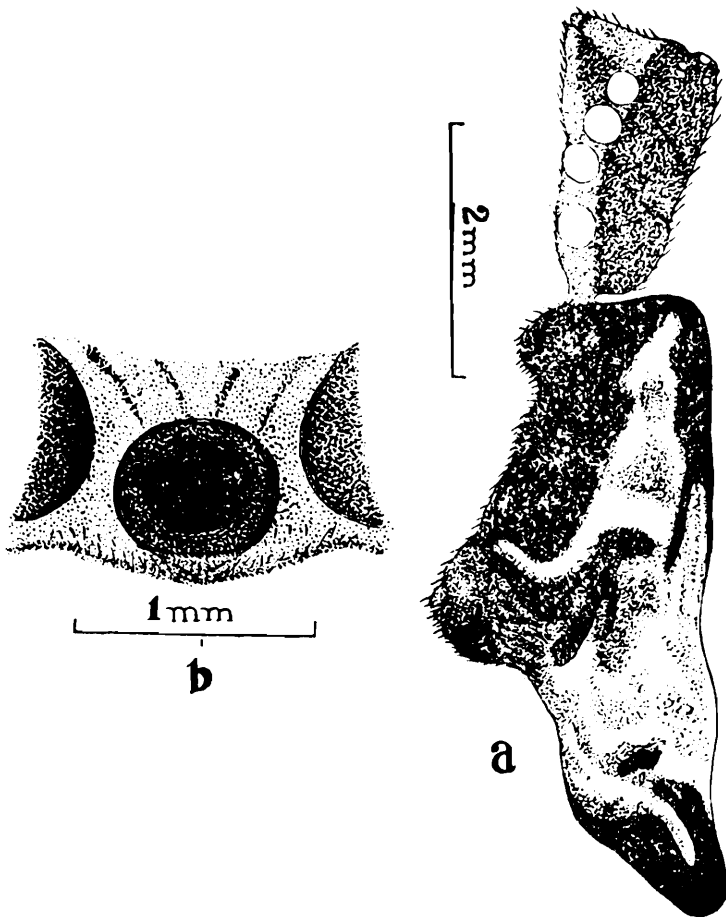
Abdomen.—Longer than wide, clothed with fine hairs; abdomen greatly extends posteriorly beyond the spinners, triangular when seen from the side. Lateral side of abdomen provided with irregular conspicuous black patches. Epigyne as in text-fig. 7, b.

Holotype one female in spirit.

Type-locality.—Legship, West Sikkim, 2.10.1959. Coll. B. K. Tikader.

This species was collected from the web of *Nephila clavata* Koch. It resembles *Argyrodes rossi* Exlin and Levi from America but it is separated as follows: (i) Abdomen high, no postero-lateral humps and lateral sides of abdomen with conspicuous black markings but in

A. rossi abdomen high with small postero-lateral humps and a conspicuous posterior protuberance. (ii) Anterior median eyes larger than the posterior medians but in *A. rossi* both median eyes nearly equal in size. (iii) Epigyne also structurally different.



TEXT-FIG. 7. *Argyrodes projeles* sp. n. (a) Lateral view of female, legs, omitted. (b) Epigyne.

Cenus 5. *Theridula* Emerton

1882. *Theridula* Emerton, *Trans. Conn. Acad.*, 6, p. 25.

1895. *Theridula* : Simon, *Hist. Nat. Araignees*, 1, p. 551.

1940. *Theridula* : Comstock, *The Spider Book*, New York, pp. 369.

1962. *Theridula* : Levi and Levi, *Bull. Mus. Comp. Zool.*, Harvard, 127(1), p. 42.

Characters.—The anterior row of eyes procurved. Abdomen in female at least wider than long, with a hump on each side in the middle of its length; the tibia of the palp of the male enormously developed, concave on the inner side, and overlaps the tarsus half its length. Chelicerae with two teeth on anterior margin and without tooth on posterior margin. Palp very simple, conductor, median apophysis, radix absent. Haematodocha fastens both ends of tegulum to the cymbium.

This genus is being recorded here for the first time from India.

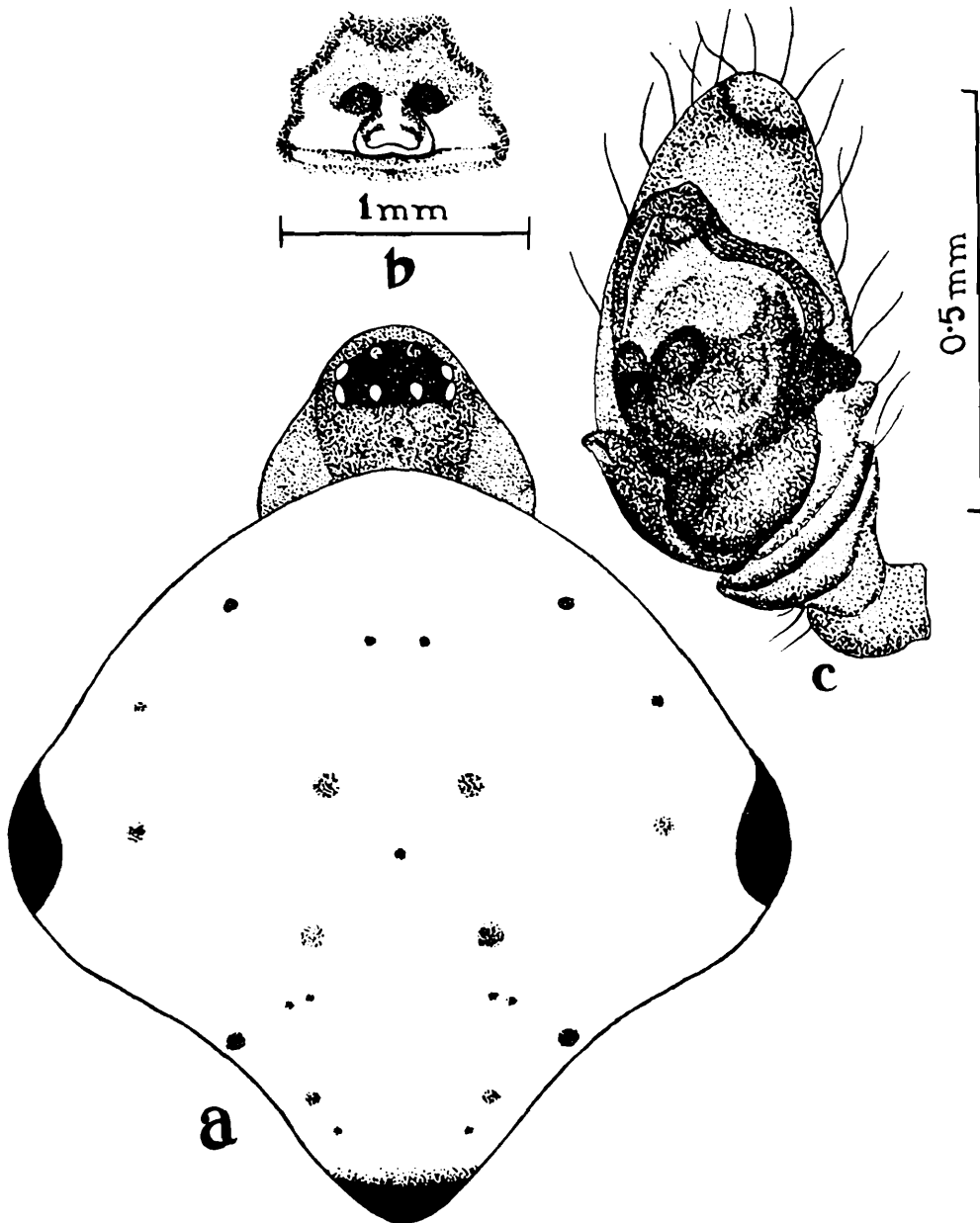
Type-species.—*Theridula opulenta* Walckenaer.

Distribution.—Africa, Asia and America.

8. *Theridula angula* sp. n.

General.—Cephalothorax and legs reddish-yellow, abdomen yellow. Total length 3.80 mm. Carapace 1.00 mm. long, 1.20 mm. wide; abdomen 3.00 mm. long, 3.00 mm. wide.

Cephalothorax.—Slightly wider than long, clothed with fine pubescence, cephalic region elevated and thoracic region flat. Eyes pearly white except anterior medians, ocular area covered with a conspicuous



TEXT-FIG. 8. *Theridula angula* sp. n. (a) Dorsal view of female, legs omitted. (b) Epigyne. (c) Male palp.

deep-brown patch. Anterior row slightly recurved, and posterior row almost straight, lateral eyes contiguous. Sternum heart-shaped. Legs long and slender, clothed with hairs and spines. All legs from anterior end to tip of the tarsi provided with conspicuous deep reddish-brown colour.

Abdomen.—Nearly as long as wide, rhomboidal, broadest near the middle; strongly overlapping the posterior region of cephalothorax in front, lateral corners elevated, lateral corners and posterior end of abdomen provided with conspicuous black spot. Epigyne as in text-fig. 8, b. Male coloured like female but legs longer and smaller in size. Male palp as in text-fig. 8, c.

Holotype one female. *Paratypes*, ten females. *Allotypes*, seven males in spirit.

Type-locality.—Bank of Great Rangit river, West Sikkim, 20.9.1959. Coll. B. K. Tikader.

This species resembles *Theridula opulenta* Walckenaer from America but it is separated as follows: (i) Cephalothorax with reddish-yellow and ocular area covered with a conspicuous deep-brown patch but in *T. opulenta* cephalothorax uniformly deep-brown. (ii) Abdomen yellow and black spots on posterior end as well as lateral elevated portion of each side but in *T. opulenta* abdomen yellowish grey with a greenish white spot in the middle and a black spot on a slight elevated portion of each side. (iii) Epigyne and male palp also structurally different.

Genus 6. *Achaearana* Strand

1929. *Achaearana* Strand, *Acta Univ. Latviensis*, 20, p. 11.

1963. *Achaearana*: Levi, *Bull. Mus. Comp. Zool.*, Harvard, 129(3), p. 190.

Characters.—The median apophysis of the palp broadly attached to the tegulum or attached to the embolus, with which it may form one sclerite. The radix absent. The cymbium often extends beyond the alveolus. *Theridion* differs by having median apophysis and embolus as separate sclerites and radix usually present. Unlike *Theridion* the abdomen of many species higher than long, often with a hump, rarely longer than high.

Type-species.—*Achaearana trapezoidalis* (Taczanowski).

Distribution.—America and India.

9. *Achaearana budana* sp. n.

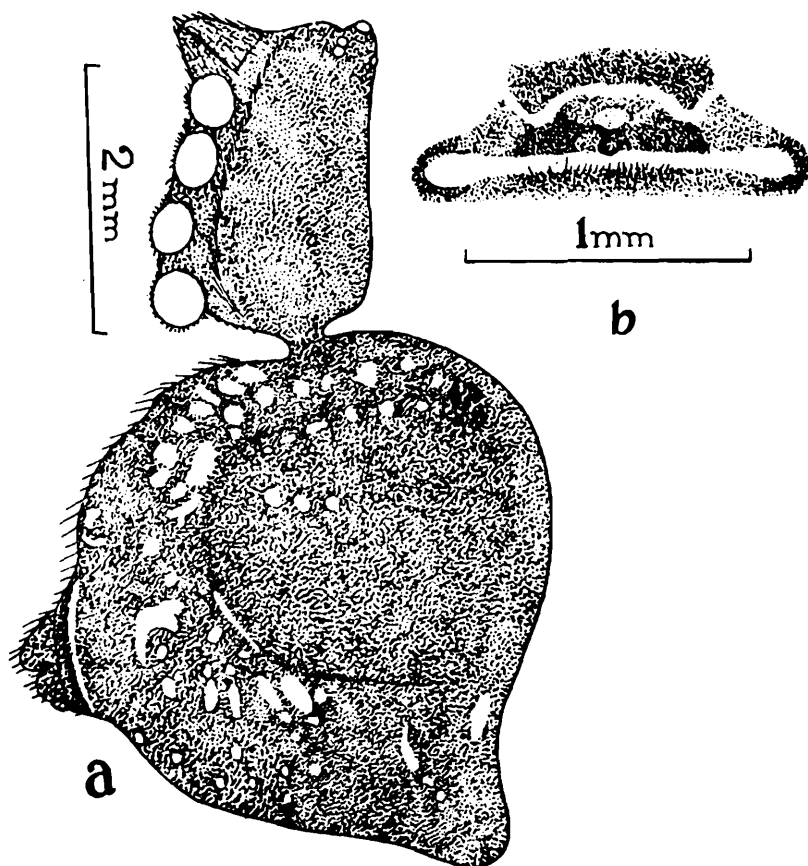
General.—Cephalothorax and legs light brown, abdomen dark-brown. Total length 6.80 mm. Carapace 2.10 mm. long, 2.00 mm. wide; abdomen 4.10 mm. long, 4.00 mm. wide.

Cephalothorax.—Longer than wide, convex, clothed with fine hairs. Eyes pearly white, lateral eyes contiguous, ocular quad longer than wide. Sternum heart-shaped, longer than wide. Clypeus rounded, ventrally with a deep groove just below the anterior row of eyes. Legs robust and clothed with thick hairs, banded with deep brown bands. Tarsi of IV pairs of legs with distinct comb like setae.

Abdomen.—Globular, slightly overlapping the posterior region of cephalothorax in front. Spinners just behind the middle of the abdomen, posterior end with a conspicuously elevated knob having a posterior white mark, lateral abdominal sides provided with inconspicuous irregular green patches. Epigyne as in text-fig. 9, b.

Holotype one female. *Paratypes* two females in spirit.

Type-locality.—Bank of Great Rangit river, West Sikkim, 20.9.1959.
Coll. B. K. Tikader.



TEXT-FIG. 9. *Achaearanea budana* sp. n. (a) Lateral view of female, legs omitted. (b) Epigyne.

This species resembles *Achaearanea hirta* (Taczanowski) from America but it is separated as follows: (i) Abdomen dark-brown with lateral irregular green patches and posterior end elevated but in *A. hirta* abdomen marked with black, white and red-brown and posterior end pointed. (ii) The total length of female 6.80 to 7.20 mm. but in *A. hirta* the total length of female 1.90 to 2.90 mm. (iii) The structure of epigyne is quite different.

10. *Achaearanea durgae* sp. n.

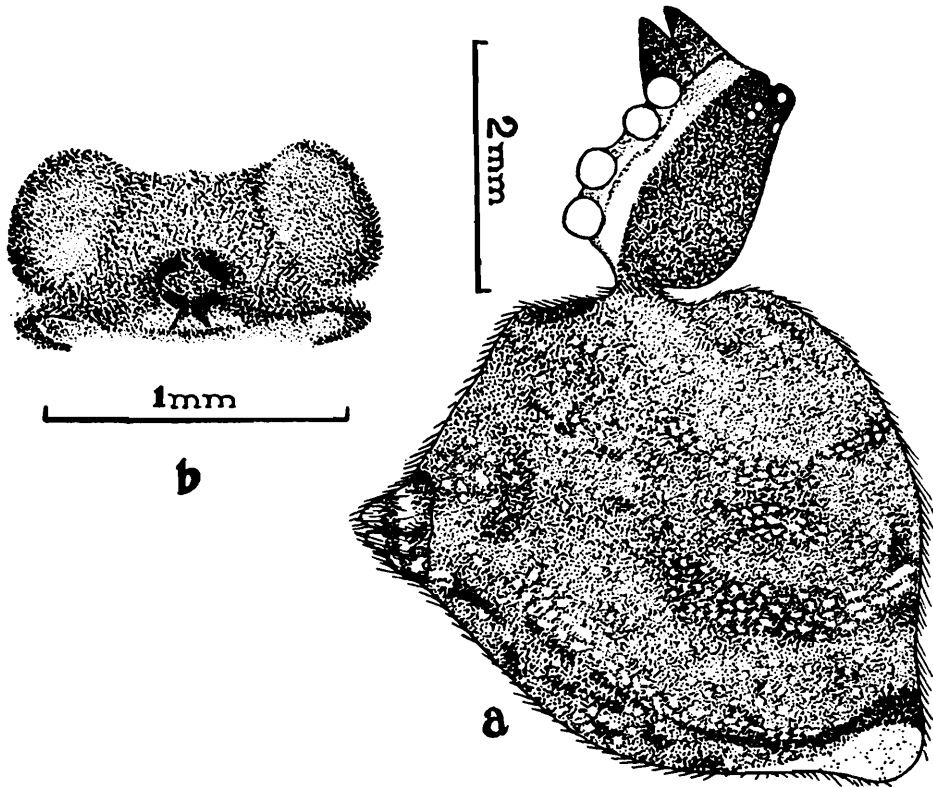
General.—Cephalothorax and abdomen greenish-brown, legs light green. Total length 5.50 mm. Carapace 2.00 mm. long, 1.50 mm. wide; abdomen 4.20 mm. long, 4.10 mm. wide.

Cephalothorax.—Slightly longer than wide, convex, narrowing in front; clothed with fine hairs. Eyes pearly white except anterior medians, lateral eyes contiguous, ocular quad longer than wide. Clypeus round and deep groove under eyes. Sternum heart-shaped, longer than wide, pointed behind, clothed with fine hairs. Legs robust, clothed with thick hairs. Tarsi of IV pairs of legs with distinct comb-like setae.

Abdomen.—Globular nearly as long as wide, clothed with fine hairs, slightly overlapping the posterior region of cephalothorax in front. Spinners behind the middle of the abdomen with an elevated knob having posteriorly a yellowish-white mark. Abdomen provided with irregular white patches. Epigyne as in text-fig. 10, b.

Holotype one female in spirit.

Type-locality.—Legship, West Sikkim, 2.10.1959. Coll. B. K. Tikader.



TEXT-FIG. 10. *Achaearanea durgae* sp. n. (a) Lateral view of female, legs omitted. (b) Epigyne.

This species resembles the foregoing species, i.e., *Achaearanea budana* sp. n. but it is separated as follows: (i) Abdomen greenish-brown and end moderately elevated posteriorly with a knob having yellowish-white mark but in *A. budana* abdomen dark brown with posterior dorsal end more elevated, with white mark. (ii) Epigyne also different.

Family IV. LINYPHIIDAE

Characters.—Cephalothorax widely variable in proportions. In the sub-family Erigoninae the male head often raised into a lobe or bears cornicules or other protuberances, or sulci (grooves) running backwards from the posterior eyes, or holes in the sides. In the sub-family Linyphiinae there are no such lobes etc., but the head occasionally raised anteriorly. Clypeus variable in width, but generally wider than in Argiopidae. Eyes two rows, heterogeneous, with anterior medians slightly darker. Abdomen usually without pattern dorsally, but some Linyphiinae species with well-defined patterns. Sternum heart shaped, but may be relatively wide or narrow; pointed or truncated posteriorly. Legs may relatively short and stout, as in most Erigoninae, but in Linyphiinae legs relatively long and thin.

Key to Indian genera of *Linyphiidae*

1. Posterior eyes not closely set. Median ocular area not longer than wide *Linyphia* Latreille
 Posterior eyes closely set. Median ocular area longer than wide 2
2. Eyes fairly large *Lepthyphantes* Menge
 Eyes fairly small *Lafulla* Simon

Genus 7. *Linyphia* Latreille

1804. *Linyphia* Latreille, *Nouv. Dict. Hist. Nat.*, 24, p. 134.

1884. *Linyphia* : Simon, *Ar. Fr.*, 5, p. 262.

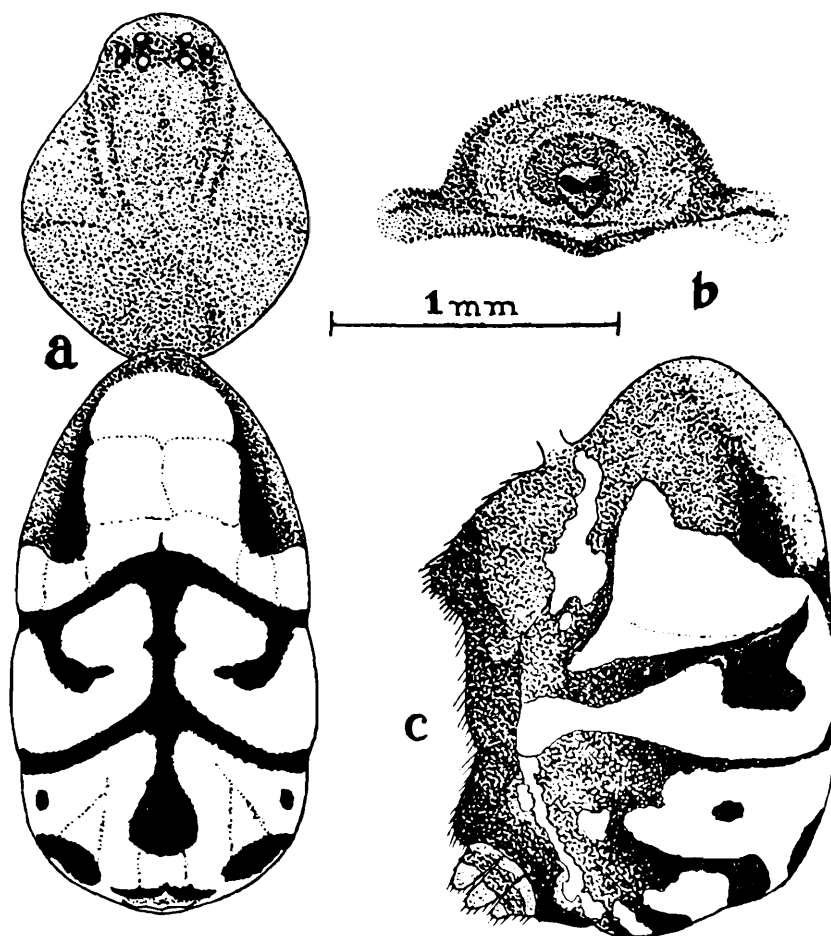
Characters.—Eyes fairly small, widely spaced; on large black spots. Abdomen with a dorsal pattern. Legs usually long, metatarsi almost twice as long as tarsi. Male palp paracymbium very slender and conspicuous.

Type-species.—*Linyphia triangularis* Clerck.

Distribution.—Europe, Africa, Asia, Australia and America.

11. *Linyphia urbasae* sp. n.

General.—Cephalothorax brown, abdomen chalk-white and legs green. Total length 3.10 mm. Carapace 1.20 mm. long, 1.00 mm. wide; abdomen 2.00 mm. long, 1.10 mm. wide.



TEXT-FIG. 11. *Linyphia urbasae* sp. n. (a) Dorsal view of female, legs omitted. (b) Epigyne. (c) Lateral view of abdomen of female.

Cephalothorax.—Longer than wide, convex, middle broadest and narrowing in front, cephalic region slightly raised. Eyes pearly white, anterior row recurved, posterior row straight lateral eyes small, contiguous, and the base of all eyes encircled by black patches. Sternum heart-shaped, longer than wide and pointed behind. Legs long, clothed with fine hairs and spines.

Abdomen.—Longer than wide, ventral side clothed with thick hairs. Dorsal side conspicuously marked by a longitudinal and two transverse black bars, as in text-figs. 11, a, c. Ventral side dark in colour. Epigyne as in text-fig. 11, b.

Holotype one female in spirit.

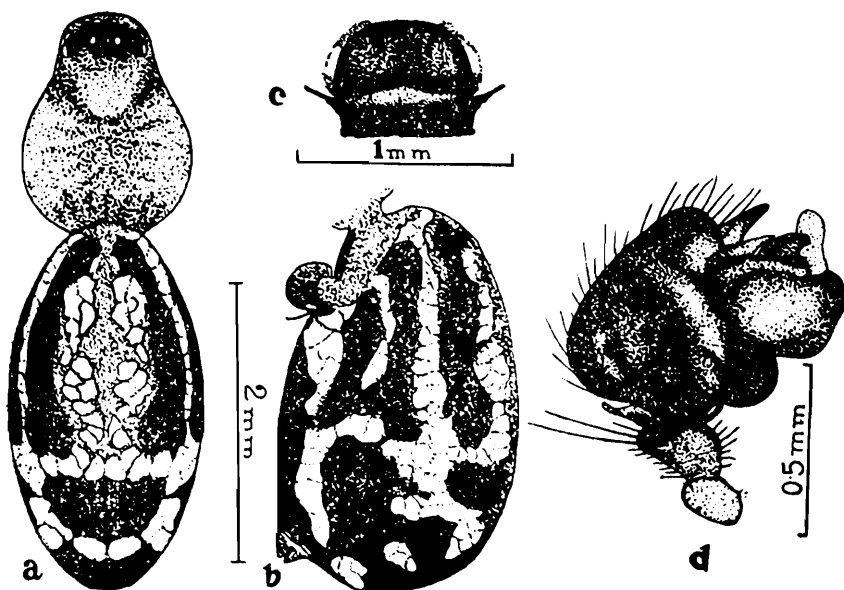
Type-locality.—Bank of Great Rangit river, West Sikkim, 20.9.1959. Coll. B. K. Tikader.

This species resembles *Linyphia clathrata* Sundevall from America but it is separated as follows: (i) Cephalothorax uniformly brown but in *L. clathrata* cephalothorax brown to dark-brown with faint darker striae. (ii) Abdomen chalk-white and dorsal side conspicuously marked with a longitudinal and two transverse black bars but in *L. clathrata* abdomen pale brown, thickly spotted with white and marked with brownish-black bars. (iii) Epigyne also differs.

12. *Linyphia sikkimensis* sp. n.

General.—Cephalothorax and legs brownish-green, abdomen chalk-white. Total length 4.10 mm. Carapace 1.60 mm. long, 1.20 mm. wide: abdomen 2.60 mm. long, 1.50 mm. wide.

Cephalothorax.—Longer than wide, flat, broadest in the middle and narrowing in front, cephalic region slightly raised. Eyes pearly white, anterior row recurved, posterior row straight, lateral eyes small and contiguous, all eyes encircled by black patches. Ocular area provided with deep brown patches; ocular quad longer than wide. Sternum black, heart-shaped. Legs long, clothed with fine hairs.



TEXT-FIG. 12. *Linyphia sikkimensis* sp. n. (a) Dorsal view of female, legs omitted. (b) Lateral view of abdomen of female. (c) Epigyne. (d) Male palp.

Abdomen.—Longer than wide, broadest behind the middle. Anterior half of dorsal side provided with two longitudinal broad black lines extending from base to just behind the middle and posteriorly with two broad transverse black patches. Lateral sides also provided with black bands as in text-fig. 13, a. Ventral side black. Epigyne as in text-fig. 12, c. Male longer than female, legs long, male palp as in text-fig. 12, d.

Holotype one female. *Paratypes*, twelve females. *Allotypes*, three males in spirit.

Type-locality.—Gazing, West Sikkim, 11.10.1959. Coll. B. K. Tikader.

This species resembles the foregoing species i.e. *Linyphia urbasae* sp. n. but it is separated as follows : (i) Anterior half of abdomen provided with two longitudinal broad black lines extending from base to just behind the middle and posteriorly two transverse broad black patches but in *L. urbasae* abdomen conspicuously marked with a longitudinal and two transverse black bars. (ii) Epigyne is also different.

Genus 8. *Labulla* Simon

1884. *Labulla* Simon, *Ar. Fr.*, 5, p. 261.

1953. *Labulla* : Locket and Millidge, *British Spiders*, London, 2, p., 375.

Characters.—Eyes large, all approximately equal in size. Abdomen with dorsal pattern. Legs long, metatarsus IV without a trichobothrium, femora each with a long spine dorsally.

Type-species.—*Labulla thoracica* Wider.

Distribution.—Europe, Asia and America.

13. *Labulla nepula* sp. n.

General.—Cephalothorax and legs brown, abdomen dirty white. Total length 6.50 mm. Carapace 2.50 mm. long, 2.00 mm. wide ; abdomen 4.40 mm. long, 2.50 mm. wide.

Cephalothorax.—Longer than wide, flat, cephalic region slightly high, broadest on the middle, middle and lateral sides provided with longitudinal deep broad lines. Eyes pearly white ; anterior eyes large, equal in size and slightly recurved line. Ocular quad longer than wide and about as wide in front as behind. Posterior row straight ; lateral eyes small and contiguous. Sternum heart-shaped, deep brown, pointed behind. Legs long, clothed with fine long hairs and spines.

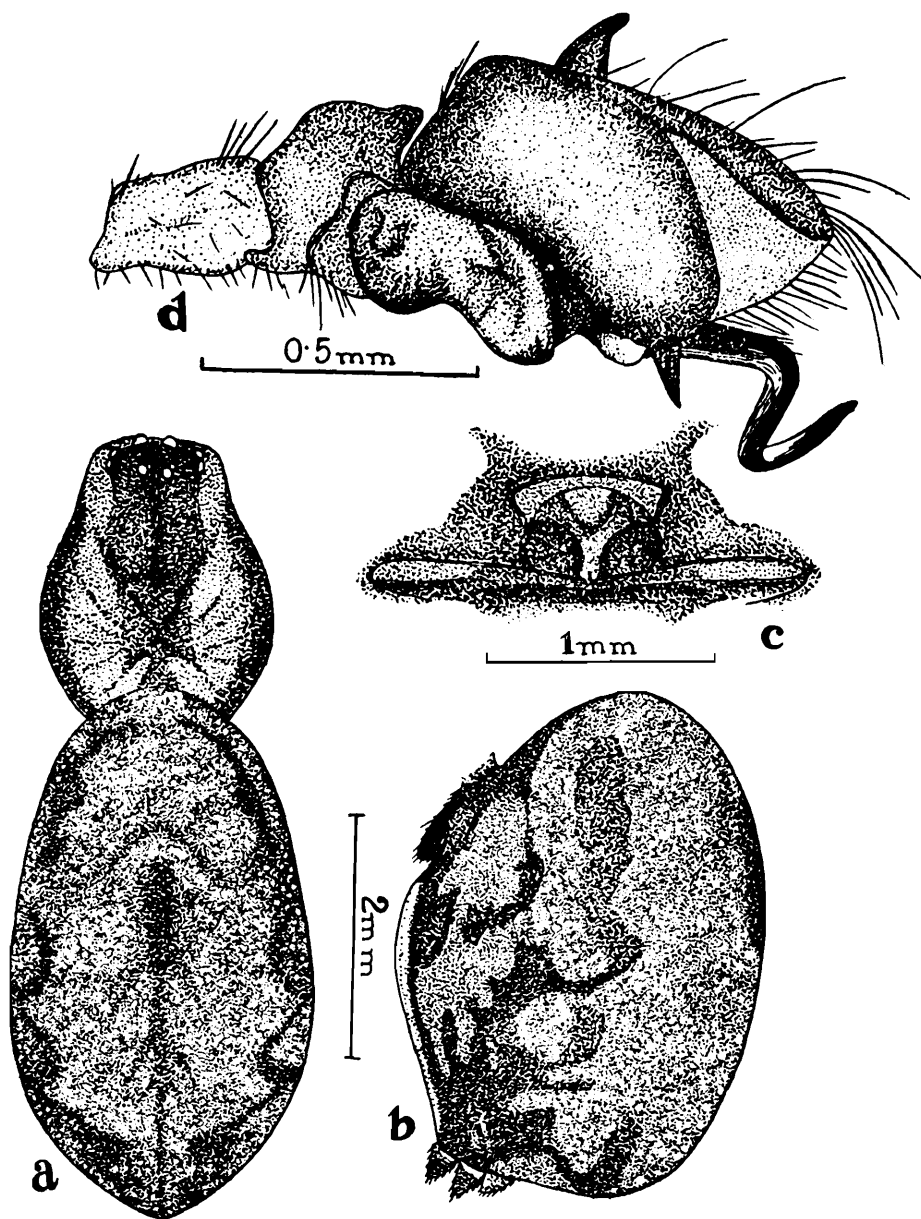
Abdomen.—Longer than wide, nearly egg-shaped, dorsally provided with minute white dots mixed with deep brown patches as in text-fig. 13, a. Ventral side darker than dorsal side. Epigyne as in text-fig. 13, c. Male longer in size, legs very long, male palp as in text-fig. 13, d.

Holotype one female. *Paratype* one female. *Allotype* one male in spirit.

Type-locality.—Bank of Great Rangit river, West Sikkim, 20.9.1959. Coll. B. K. Tikader.

This species resembles *Labulla thoracica* (Wider) from Europe but it is separated as follows : (i) Cephalic region clothed with fine hairs but in *L. thoracica* cephalic region with numerous slender spines directed

forward. (ii) Eyes of anterior medians larger than posterior median but in *L. thoracica* anterior and posterior medians equal in size. (iii) Epigyne and male palp different.



TEXT-FIG. 13. *Labulla nepula* sp. n. (a) Dorsal view of female, legs omitted. (b) Lateral view of abdomen of female. (c) Epigyne. (d) Male palp.

Genus 9. *Lephtyphantes* Menge

1866. *Lephtyphantes* Menge, *Preuss. Spinn.*, 1, p. 95.

1895. *Lephtyphantes*: Simon, *Hist. Nat. Araig.*, 1, p. 705.

Characters.—Cephalothorax narrowed anteriorly. Eyes fairly large, with black spots. Anterior median eyes smaller than posterior medians. Clypeus slightly concave. Abdomen with or without dorsal pattern.

Type-species.—*Lephtyphantes nebulosus* Sundevall.

Distribution.—Europe, Africa, Asia, Australia and America.

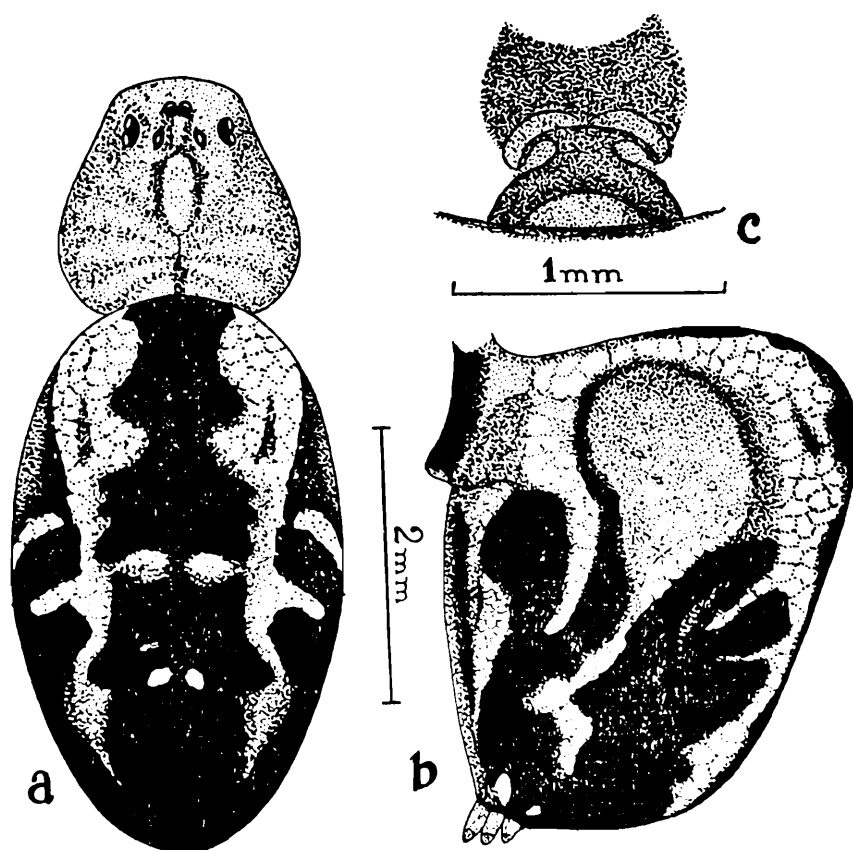
Key to Indian species of *Lepthyphantes* Menge

Abdomen nearly triangular when viewed laterally	...	2
Abdomen not triangular when viewed laterally	...	<i>L. rudrai</i> sp. n.
Anterior portion of abdomen high	...	<i>L. bhudbari</i> sp. n.
Posterior portion of abdomen high	...	<i>L. lingsoka</i> sp. n.

14. *Lepthyphantes bhudbari* sp. n.

General.—Cephalothorax and legs brownish green, abdomen brownish white. Total length 5.50 mm. Carapace 1.80 mm. long, 1.80 mm. wide; abdomen 4.00 mm. long, 2.50 mm. wide.

Cephalothorax.—As long as wide, flat, cephalic region slightly raised, finely pubescent. Middle and two lateral sides provided with longitudinal deep-brown patches. Eyes not pearly white but base of all eyes encircled by black patches; anterior row strongly recurved, posterior row straight; lateral and anterior median eyes contiguous. Anterior median eyes smaller than others. Sternum triangular, black or deep brown, pointed behind, clothed with hairs. Legs strong, clothed with fine hairs and spines.



TEXT-FIG. 14. *Lepthyphantes bhudbari* sp. n. (a) Dorsal view of female, legs omitted. (b) Lateral view of abdomen of female. (c) Epigyne.

Abdomen.—Egg-shaped when viewed dorsally but nearly triangular when viewed laterally, mid-dorsally with a longitudinal broad black bar extending from base to end of abdomen and lateral sides provided with irregular chalk-white patches. Ventral side deep-brown or black. Epigyne as in text-fig. 14, c.

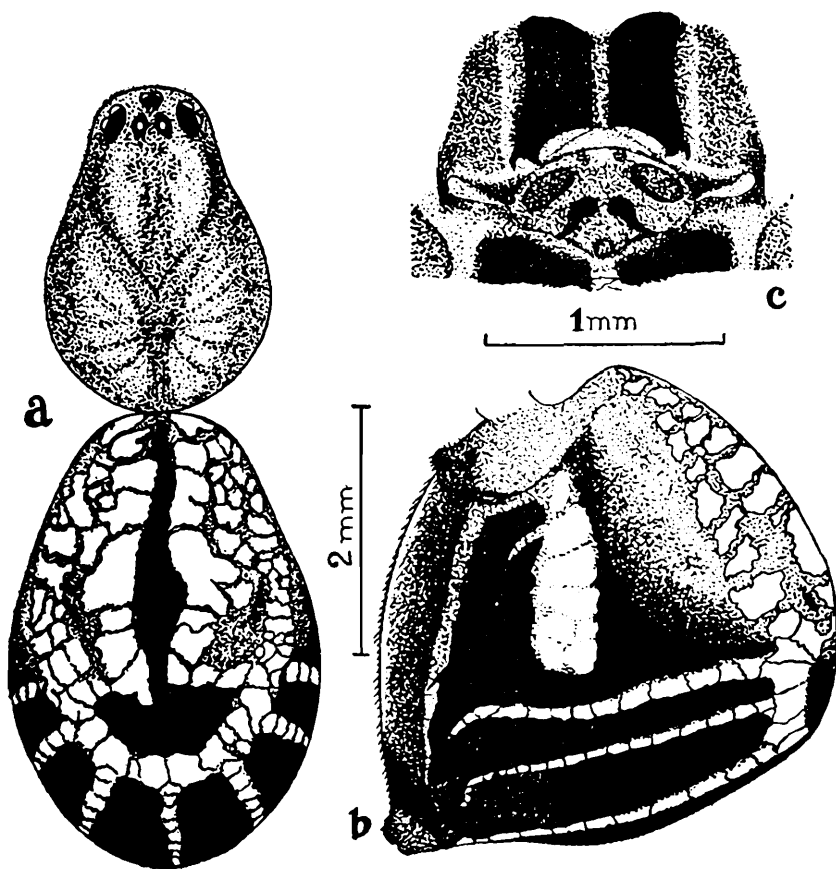
Holotype one female. *Paratypes* nine females in spirit.

Type-locality.—Bhudbari, Dist. Darjeeling, West Bengal, India, 15.9.1959, Coll. B. K. Tikader.

This species resembles *Lepthyphantes leprosus* (Ohlert) from America but it is separated as follows: (i) Total length 4 to 5.50 mm. but in *L. leprosus* total length 2 to 3 mm. (ii) Abdomen provided with irregular chalk-white lateral patches and mid-dorsally with a longitudinal broad black bar extending from base to end of abdomen but in *L. leprosus* abdomen no such markings. (iii) Epigyne different.

15. *Lepthyphantes lingsoka* sp. n.

General.—Cephalothorax brown, legs brownish-green, abdomen dirty-white. Total length 6.50 mm. Carapace 2.50 mm. long, 1.90 mm. wide; abdomen 3.80 mm. long, 2.50 mm. wide.



TEXT-FIG. 15. *Lepthyphantes lingsoka* sp. n. (a) Dorsal view of female, legs omitted. (b) Lateral view of abdomen of female. (c) Epigyne.

Cephalothorax.—Longer than wide, flat, clothed with fine pubescence, centrally depressed, narrowing in front, cephalic region slightly raised. Eyes pearly white, bases encircled by black patch, anterior row strongly recurved, posterior row straight, lateral and anterior median eyes contiguous. Sternum triangular, narrowed behind, densely clothed with black hairs. Legs strong, clothed with hairs and spines.

Abdomen.—Egg-shaped when viewed dorsally but triangular laterally, dorsal side decorated by irregular chalk-white and black patches as in text-figs. 15, a, b.

Holotype one female. *Paratypes* four females in spirit.

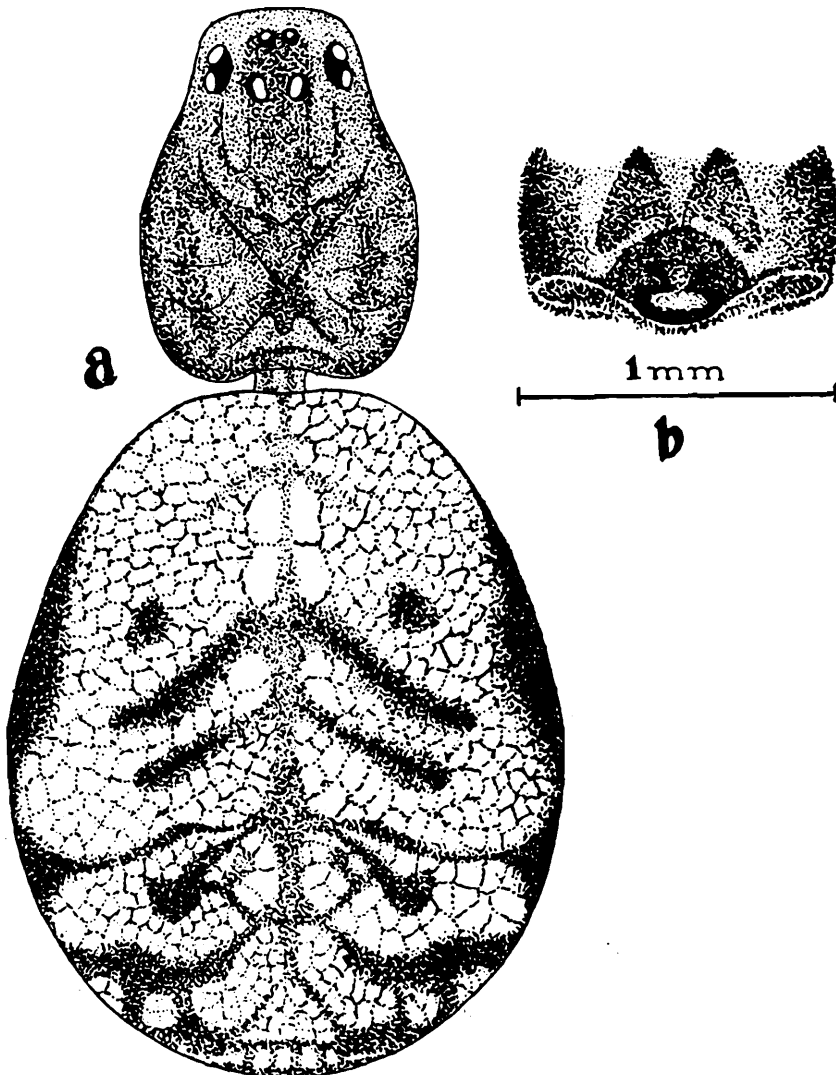
Type-locality.—Lingsoka, Dist. Darjeeling, West Bengal, India.
9.9.1959. Coll. B. K. Tikader.

This species resembles the foregoing species i.e. *Lepthyphantes bhudbari* sp. n. but it is separated as follows: (i) Cephalothorax longer than wide, narrowing in front but in *L. bhudbari* cephalothorax nearly as long as wide and middle and lateral sides provided with longitudinal deep-brown patches. (ii) Posterior end of abdomen provided with radiating white lines extending from centre to near the spinners but in *L. bhudbari* posterior end of abdomen without such line. (iii) Epigyne also structurally different.

16. *Lepthyphantes rudrai* sp. n.

General.—Cephalothorax brown, abdomen dirty chalk-white and legs green. Total length 3.40 mm. Carapace 1.10 mm. long, 0.80 mm. wide; abdomen 2.10 mm. long, 1.80 mm. wide.

Cephalothorax.—Longer than wide, flat, finely pubescent, centre depressed, narrow in front, cephalic region slightly raised. Eyes pearly white, surrounded by black patches, anterior row strongly recurved, posterior row straight, lateral and anterior medians contiguous but anterior medians smaller than others. Sternum triangular,



TEXT-FIG. 16. *Lepthyphantes rudrai* sp. n. (a) Dorsal view of female, legs omitted. (b) Epigyne.

pointed behind, deep brown in colour. Legs long and slender, clothed with hairs, anterior end of tibiae and patella provided with faint brown transverse bands.

Abdomen.—Longer than wide, nearly oval, abdomen provided with chalk-white minute patches; with a longitudinal dark brown band mid-dorsally and similar lateral dark-brown bars. Ventral side deep brown with two broad longitudinal white lines extending from base to near the spinners. Epigyne as in text-fig. 16, b.

Holotype one female in spirit.

Type-locality.—Bank of Great Rangit river, West Sikkim, India, 20.9.1959.

This species resembles *Lepthyphantes nebulosus* (Sundevall) from America but it is separated as follows: (i) Cephalothorax brown but in *L. nebulosus* cephalothorax yellow-brown, with median dark line, anteriorly bifurcated. (ii) Abdomen provided with chalk-white minute patches and mid-dorsal with a longitudinal dark-brown band with similar lateral bars arising from longitudinal bar but in *L. nebulosus* abdomen greyish with transverse black bars. (iii) Epigyne structurally different.

Family V ARGIOPIDAE

Characters.—Cephalothorax usually flat, thoracic region oval or nearly circular, separated from head by an oblique depression. Eyes not very different in size. Medians may form either a square or a trapezium; laterals close to one another and often projecting. Clypeus narrower than the ocular area. Sternum heart-shaped or triangular, coxa IV being nearly contiguous. Legs furnished with numerous spines, with three tarsal claws. This is the only family of spiders that spins true orb-webs.

Key to the Indian genera of *Argiopidae*

- | | | | | | |
|--|-----|-----|-----|-----|----------------------------|
| 1. Abdomen hard | ... | ... | ... | ... | 2 |
| Abdomen soft | ... | ... | ... | ... | 3 |
| 2. Spinners encircled by a horny ring. Abdomen armed with six marginal spines | ... | ... | ... | ... | <i>Gasteracantha</i> Sund. |
| Spinners not encircled by horny ring. Abdomen high in front irregularly tuberculated on the dorsum | ... | ... | ... | ... | <i>Caerostris</i> Thorell |
| 3. Eyes of posterior line strongly procurved | ... | ... | ... | ... | 4 |
| Eyes of posterior line not or scarcely procurved | ... | ... | ... | ... | 5 |
| 4. Abdomen colourful mainly transverse bands above | ... | ... | ... | ... | <i>Argiope</i> Savigny |
| Abdomen nearly triangular not so much colourful | ... | ... | ... | ... | <i>Araneus</i> Clerck |
| 5. Abdomen produced beyond the spinners into pointed tail | 6 | | | | |
| Abdomen not produced beyond the spinners into a tail | ... | ... | ... | ... | 7 |
| 6. Pointed tail of abdomen without branch and worm like spine | ... | ... | ... | ... | <i>Eucta</i> Simon |
| Pointed tail of abdomen with branches | ... | ... | ... | ... | <i>Arachnura</i> Vinson |
| 7. Abdomen silvery in colour | ... | ... | ... | ... | 8 |
| Abdomen not silvery in colour | ... | ... | ... | ... | 9 |
| 8. Head and thorax separated by a deep cervical groove in the female | ... | ... | ... | ... | <i>Cyclosa</i> Menge |
| Head and thorax not separated by cervical groove in the female | ... | ... | ... | ... | <i>Leucauge</i> White |
| 9. Abdomen with paired tubercles | ... | ... | ... | ... | <i>Cyrtophora</i> Simon |
| Abdomen without paired tubercles | ... | ... | ... | ... | 10 |
| 10. Large spider | ... | ... | ... | ... | <i>Nephila</i> Leach |
| Small spider | ... | ... | ... | ... | <i>Singa</i> Koch |

Genus 10. *Argiope* Savigny

1825. *Argiope* Savigny, *In Aud. and Sav. Egypte Hist. Nat.*, 12, p. 121.
 1892. *Argiope* : Simon, *Histoire Naturelle des Araignees*, 1, p. 769.
 1900. *Argiope* : Pocock, *Fauna Brit. India*, Arach., p. 220.
 1935. *Argiope* : Dayal, *Bull. Zool. Punjab Univ.*, 1, p. 189.

Characters.—Cephalothorax flat, clothed with metallic white pubescence; ocular quadrangle much longer than wide. Eyes of posterior row very strongly procurved, laterals contiguous. Abdomen usually longer than wide, varying in shape, posterior half wider than anterior. Legs stout, armed with hairs and spines. Males relatively very small.

Type-species.—*Argiope lobata* Pallas.

Distribution.—Europe, Africa, Asia, Australia and America.

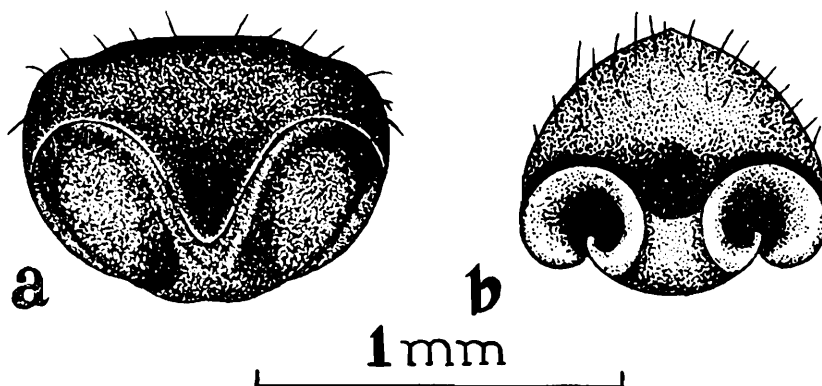
Key to Indian species of *Argiope* Savigny

- | | | | | |
|---|-----|-----|-----|------------------------------|
| 1. Abdomen pentagonal | ... | ... | ... | 2 |
| Abdomen not pentagonal | ... | ... | ... | <i>A. aemula</i> (Walck.) |
| 2. Legs yellow and strongly banded with black | ... | ... | ... | <i>A. pulchella</i> Thorell |
| Legs black and without band | ... | ... | ... | <i>A. sikkimensis</i> sp. n. |

17. *Argiope pulchella* Thorell

1881. *Argiope pulchella* Thorell, *Ann. Mus. Genova*, 17, p. 74.
 1900. *Argiope pulchella* : Pocock, *Fauna Brit. India*, Arach., p. 221.
 1921. *Argiope pulchella* : Gravely, *Rec. Indian Mus.*, Calcutta, 22, p. 12.
 1951. *Argiope pulchella* : Sinha, *Rec. Indian Mus.*, Calcutta, 49, p. 73.

Specimens examined.—10 ♀, Rhenock, East Sikkim, 7.9.1959. 2 ♀, Samabiyong, East Sikkim, 13.9.1959. 1 ♀, Lingsoka, East Sikkim, 9.9.1959. Coll. B. K. Tikader.



TEXT-FIG. 17. *Argiope pulchella* Thorell (a) Epigyne. *Argiope aemula* (Walck.) (b) Epigyne.

General.—Cephalothorax and legs deep reddish-brown, abdomen yellow. Total length 15.00 mm. Carapace 5.00 mm. long, 4.00 mm. wide; abdomen 9.00 mm. long, 8.00 mm. wide.

Cephalothorax.—Slightly longer than wide, narrowing in front, clothed with silky white hairs. Eyes pearly white, lateral eyes contiguous and situated on the elevated stock. Sternum yellow or yellowish white. Legs sometimes yellow and strongly banded with black, sometimes more uniformly dark, palp yellow.

Abdomen.—Pentagonal, truncate in front, broadest behind the middle. Abdomen yellow or whitish above, ornamented with a large triangular olive-black patch behind, a transverse bar of the same colour in front, and two close-set narrow lines forming together a stripe in the anterior half; the dark patches relieved by small white spots. Ventral surface blackish, spotted, with a pair of yellow stripes running on each side from the epigastric fold. Epigyne as in text-fig. 17, a.

Distribution.—India: Andaman and Laccadiv Islands, West Bengal, Madhya Pradesh, Assam, Poona; Sikkim; Ceylon; Burma; Singapore.

18. *Argiope sikkimensis* sp. n.

General.—Cephalothorax brown, abdomen yellowish-brown, legs deep brown or black. Total length 22.00 mm. Carapace 9.00 mm. long, 8.00 mm. wide; abdomen 14.00 mm. long, 12.00 mm. wide.

Cephalothorax.—Slightly longer than wide, flat, cephalic region narrowing in front and slightly high, clothed with fine grey pubescence. Eyes pearly white, lateral eyes contiguous and situated on the elevated portion of cephalothorax, base of posterior median eyes encircled by a black ring. Ocular quad longer than wide and narrowing in front. Sternum black, heart-shaped, pointed behind, clothed with hairs; middle of sternum provided with a longitudinal yellow broad band. Padipalp yellowish white. Legs robust and clothed with hairs and spines; legs formula 1 2 3 4 and measurements of legs as below:

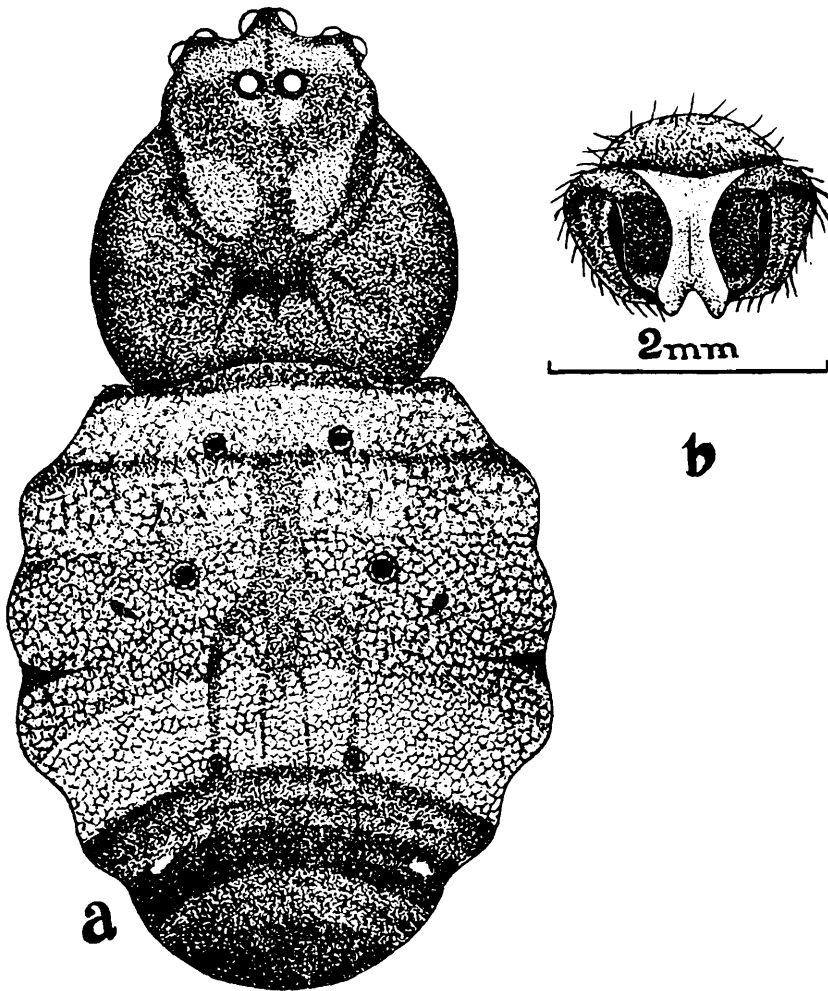
	I (mm.)	II (mm.)	III (mm.)	IV (mm.)
Femur	13.00	13.00	9.00	13.00
Patella	4.00	4.00	3.00	4.00
Tibia	10.00	10.00	5.00	9.00
Metatarsus	14.00	14.00	7.00	12.00
Tarsus	3.00	3.00	2.50	2.50
Total	44.00	44.00	26.50	40.50

Abdomen.—Longer than wide, clothed with small spines. Dorsum provided with six conspicuous sigella, arranged longitudinally in two rows, abdomen with transverse broad bands of deep brown, pale and yellow colour as in text-fig. 18, a. Ventral side deep brown but lateral sides provided with two longitudinal yellow broad bands extending from epigastric fold to near the spinners. Epigyne as in text-fig. 18, b.

Holotype one female. *Paratypes*, four females in spirit.

Type-locality.—Rongli, East Sikkim, 5.9.1959. Coll. B. K. Tikader.

This species appears to come close to *Argiope kalimpongensis* Sinha from Kalimpong but it is separated as follows: (i) The tip of median piece of vulva is bifurcate but in *A. kalimpongensis* the tip of median piece of vulva is round. (ii) The female padipalp yellowish-white but in *A. kalimpongensis* padipalp yellow and the apical segment brownish with black hairs. (iii) Abdomen dorsum provided with six conspicuous sigella, arranged longitudinally in two rows, but in *A. kalimpongensis* no such sigella on the abdomen.

19. *Argiope aemula* (Walck.)1837. *Epeira aemula* Walck., *Ins. Apt.*, 2, p. 118.1900. *Argiope aemula* : Pocock, *Fauna Brit. India*, Arach., p. 223.*Specimen examined*.—1 ♀, Darjeeling, West Bengal, India, 19.10.59
Coll. B. K. Tikader.*General*.—Cephalothorax and legs deep brown, abdomen brownish-white. Total length 20.00 mm. Carapace 8.00 mm. long, 6.00 mm. wide; abdomen 14.00 mm. long, 11.00 mm. wide.

TEXT-FIG. 18. *Argiope sikkimensis* sp. n. (a) Dorsal view of female, legs omitted. (b) Epigyne.

Cephalothorax.—Slightly longer than wide, narrowing in front, clothed with thick silky white hairs. Eyes pearly white, lateral eyes contiguous. Sternum heart-shaped, middle with yellowish white markings and sides with black. Legs deep brown with yellow bands, palp yellow.

Abdomen.—Longer than wide, oval, truncate in front, sides evenly and lightly rounded. Dorsal side with black stripe and posterior black patch, broken up into series of transverse black lines by intervening broader pale bands. Ventral surface blackish with a pair of yellow stripes running on each side from the epigastric fold. Epigyne as in text-fig. 17, b.

Distribution.—India : Poona, Trivandram, Nilgiri, Gujarat, West Bengal, Nicobar Island. Ceylon; Burma; Austro-Malaysia.

Genus 11. *Araneus* Clerck

1757. *Araneus* Clerck, *Syenska Spindlar.*, p. 22.
 1895. *Araneus* : Simon, *Hist. Nat. Araign.*, 1, p. 829.
 1900. *Araneus* : Pocock, *Fauna Brit. India*, Arach., p. 223.

Characters.—Carapace convex; eyes of posterior line slightly or strongly recurved; quadrangle a little longer than wide; lateral eyes separated or in contact. Legs strong; protarsi shorter than tibiae and patella. Female with distinct vulva. Male with complicated palp.

Type-species.—*Araneus angulatus* Clerck.

Distribution.—Europe, Africa, Asia, Australia and America.

20. *Araneus dehaanii* (Doleschall)

1859. *Epeira dehaanii* Doleschall, *Verh. Nat. Vereen Nederland India*, 5, p. 33.
 1900. *Araneus dehaanii* : Pocock, *Fauna Brit. India*, Arach., p. 225.
 1951. *Aranaeus dehaanii* : Sinha, *Rec. Indian Mus.*, Calcutta, 49, p. 84.

Specimens examined.—5 ♀, Nayabazar, West Sikkim, 17.10.1959.
 Coll. B. K. Tikader.

General.—Cephalothorax and legs reddish, abdomen brown. Total length 22.00 mm. Carapace 9.00 mm. long, 5.50 mm. wide; abdomen 14.00 mm. long, 12.00 mm. wide.

Cephalothorax.—Longer than wide, clothed with thick fine white hairs, anterior lateral border of carapace provided with a spine like tubercle on each side above the lateral eyes. Eyes pearly white, four median eyes situated on the elevated middle portion of carapace and anterior medians larger than the posterior; lateral eyes small and situated near the base of anterior lateral spine. Legs long and strong, clothed with white hairs and spines.

Abdomen.—Triangular, broad, with large sharp shoulder-points in front, pointed behind, and ending in three prominences set in a vertical series. Epigyne vulva small, with very stout scape.

Distribution.—India: Kanara, Cochin, Mysore, Darjeeling and Kalimpong in West Bengal, Assam. Ceylon; Sikkim; Malay Peninsula and Austro-Malaysia.

Genus 12. *Arachnura* Vinson

1863. *Arxhnue* Vinson, *Aran. Reun.*, etc. p. 287.
 1863. *Hapaloctrota* : Keyserting, *Sitz. Isis. Z. Dresden*, p. 82.
 1872. *Epeira* Koch, *Ar. Austr.*, p. 120.
 1892. *Arachnura* : Simon, *Hist. Nat. Araign.*, 1, p. 777.

Characters.—Cephalothorax long, cephalic region narrow. Abdomen long, narrowing behind like a tail, and anteriorly with large sharp shoulder-pointed.

Type-species.—*Arachnura scorpionides* Vinson.

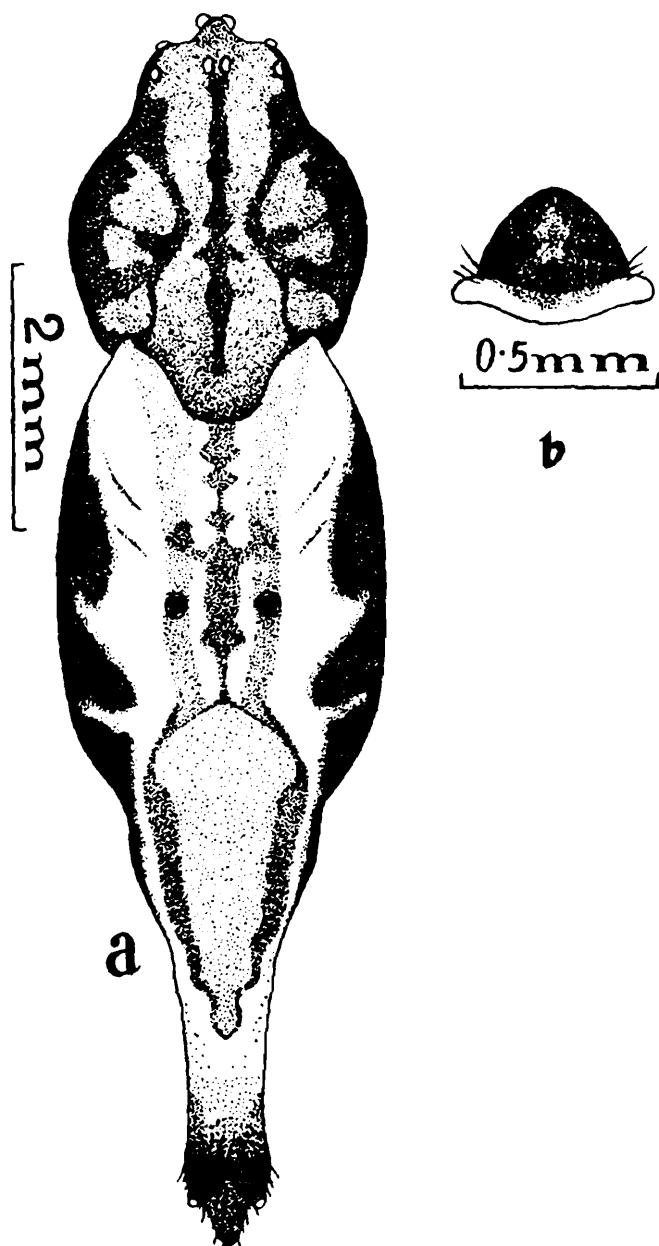
Distribution.—Asia: India; Malaysia; Africa; Australia.

21. *Arachnura angura* sp. n.

General.—Cephalothorax and legs green, abdomen brown. Total length 9.20 mm. Carapace 3.00 mm. long, 2.10 mm. wide; abdomen 7.00 mm. long, 2.20 mm. wide.

Cephalothorax.—Longer than wide, cephalic region narrow in front and slightly high, lateral sides provided with longitudinal deep brown

patches and mid-dorsally with a conspicuous longitudinal deep brown line extending from posterior median eyes to base of the thorax. Eyes pearly white, anterior row recurved and anterior median eyes larger than laterals and situated on the elevated knob; posterior row straight, lateral eyes not contiguous. Sternum heart-shaped, clothed with hairs. Legs long and strong, I and II pairs longer than III and IV, clothed with hairs and few spines.



TEXT-FIG 19. *Arachnura angura* sp. n. (a) Dorsal view of female, legs omitted.
(b) Epigyne.

Abdomen.—Long, narrowing behind like a tail, and anteriorly with large sharp shoulder-points; mid-dorsally with a longitudinal white patch extending from base to end of abdomen. Anterior half of abdomen on the dorsal side provided with a pair of conspicuous sigella. Near the end of tail provided with two elevated knobs on the dorsal side. Ventral side deep brown, clothed with hairs. Epigyne as in text-fig. 19, b.

Holotype one female. *Paratypes*, two females in spirit.

Type-locality.—Gazing, West Sikkim, 11.10.1959. Coll. B. K. Tikader.

This species resembles *Arachnura melanura* Simon from Africa but it is separated as follows : (i) Cephalothorax lateral sides provided with longitudinal deep brown patches and mid-dorsally with a longitudinal deep brown line extending from posterior median eyes to base of thorax but in *A. melanura* cephalothorax no such longitudinal brown patch or line. (ii) Abdomen mid-dorsally with a longitudinal white patch extending from base to end of abdomen but in *A. melanura* abdomen uniform brown colour. (iii) Epigyne also different.

Genus 13. *Cyrtophora* Simon

1864. *Cyrtophora* Simon, *Hist. Nat. Araign.*, p. 261.
 1895. *Cyrtophora* : McCook, *Amer. Spiders*, 3, p. 235.
 1895. *Cyrtophora* : Simon, *Hist. Nat. Araign.*, 1, p. 775.
 1900. *Araneus* : Pocock, *Fauna Brit. India, Arach.*, p. 226.

Characters.—Cephalothorax short, cephalic region long and high ; eyes in three groups, the laterals widely separated. Ocular quad a little longer than wide. Legs I, II, IV, III and stout, scantily armed. Abdomen conical, tuberculated, nearly perpendicular to plane of cephalothorax.

The spiders of this genus remain hanging downwards from the apex of the inverted bowl-shaped web. The genus is remarkable for its architectural mechanism of orb webbing.

Type-species.—*Cyrtophora citricola* Forskal.

Distribution.—Africa, Asia, Australia and America.

22 *Cyrtophora moluccensis* (Doleschall)

1875. *Epeira moluccensis* Doleschall, *Nat. Tijdschr. Nederland Indie*, 13, p. 41.
 1900. *Araneus moluccensis* Pocock, *Fauna Brit. India, Arach.*, p. 226.
 1962. *Cyrtophora moluccensis* Tikader, *J. Linn. Soc. London*, 44(300), p. 562.

Specimens examined.—5 ♀, Kalimpong, Dist. Darjeeling, 6.9.1959. 15 ♀, Darjeeling, West Bengal, 12.10.1959. 6 ♀, Rongli, East Sikkim, 1.9.1959. Coll. B. K. Tikader.

General.—Cephalothorax and legs blackish, abdomen yellowish-white. Total length 20.00 mm. Carapace 9.00 mm. long, 7.00 mm. wide; abdomen 14.50 mm. long, 8.50 mm. wide.

Cephalothorax.—Longer than wide, clothed with grey pubescence, with prominent cephalic groove, cephalic region slightly high. Eyes of the posterior line nearly much longer than wide. Clypeus moderate. Sternum triangular, pointed behind, black with an incomplete median longitudinal white line. Legs long and strong, armed with slender spines, coxae yellowish.

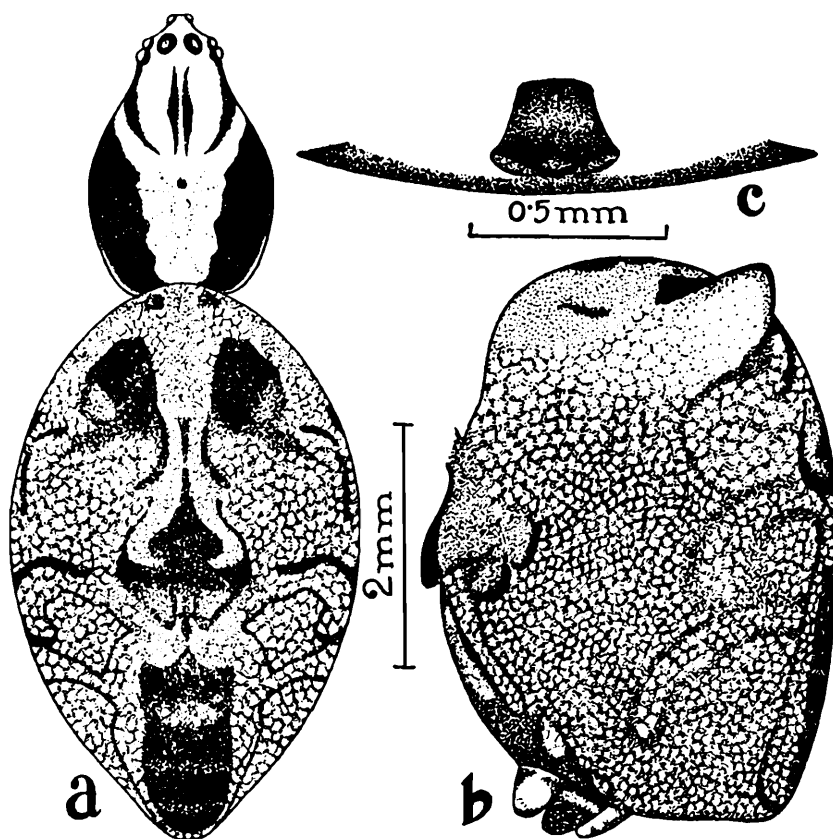
Abdomen.—Oval, clothed with whitish pubescence ; two distinct shoulder prominence on the dorsum, and three pairs of sigella behind the shoulder prominences.

Distribution.—India : Trivandrum, Nilgiri Hills, Madhya Pradesh, Kalimpong, Darjeeling ; Ceylon ; Sikkim ; Burma : Tharrawaddy, Rangoon, Moulmein ; Austro-Malaysia.

23. *Cyrtophora bidenta* sp. n.

General.—Cephalothorax and legs light green, abdomen yellowish-brown. Total length 6.60 mm. Carapace 2.20 mm. long, 1.40 mm. wide; abdomen 4.50 mm. long, 2.90 mm. wide.

Cephalothorax.—Longer than wide, clothed with fine grey pubescence; cephalic region high and narrowing in front, with two lateral longitudinal black broad bands extending from ocular area to base of thorax. Eyes pearly white, anterior row recurved and posterior row straight, lateral eyes contiguous, base of the posterior median eyes encircled by black patch. Clypeus narrow. Sternum heart-shaped, black, pointed behind. Legs long, clothed with hairs and spines with some brown spots.



TEXT-FIG. 20. *Cyrtophora bidenta* sp. n. (a) Dorsal view of female, legs omitted. (b) Lateral view of abdomen of female. (c) Epigyne.

Abdomen.—Oblong rounded at the base, clothed with fine grey pubescence, the anterior portion with one pair of pointed tubercles and inner side of these tubercles with black colour, mid-dorsally with a longitudinal discontinuous black patch extending from base of tubercles to end of abdomen as in text-fig. 20, a, b. Dorsal and lateral sides of abdomen ornamented by irregular white and brown pigments. Ventral side deep brown with a pair of longitudinal white dotted lines extending from epigastric fold to the base of spinners. Epigyne as in text-fig. 20, c.

Holotype one female. *Paratype*, one female in spirit.

Type-locality.—Bank of Great Rangit river, West Sikkim, 20.9.1959. Coll. B. K. Tikader.

This species resembles *Cyrtophora cicatrosa*, (Stoliczka) from India but it is separated as follows: (i) Anterior portion of abdomen provided with a pair of pointed tubercles but in *C. cicatrosa* anterior portion of abdomen provided with two pairs of pointed tubercles. (ii) Legs provided with some brown dots but in *C. cicatrosa* legs I and II with a pair of black longitudinal stripes on the dorsal side of femora. (iii) Epigyne also differs.

Genus 14. *Caerostris* Thorell1868. *Caerostris* Thorell, *K. Sy. Freg. Resa, etc. Zool.*, p. 3.1838. *Casteracantha* Koch, *Uebers Arach. Syst.*, p. 18.1892. *Caerostris* Simon, *Hist. Nat. Araign.*, 1, p. 831.

Characters.—Cephalothorax wide and narrowing in front and cephalic region high and projecting upward. Abdomen wide and upper side ornamented with conspicuous tubercles.

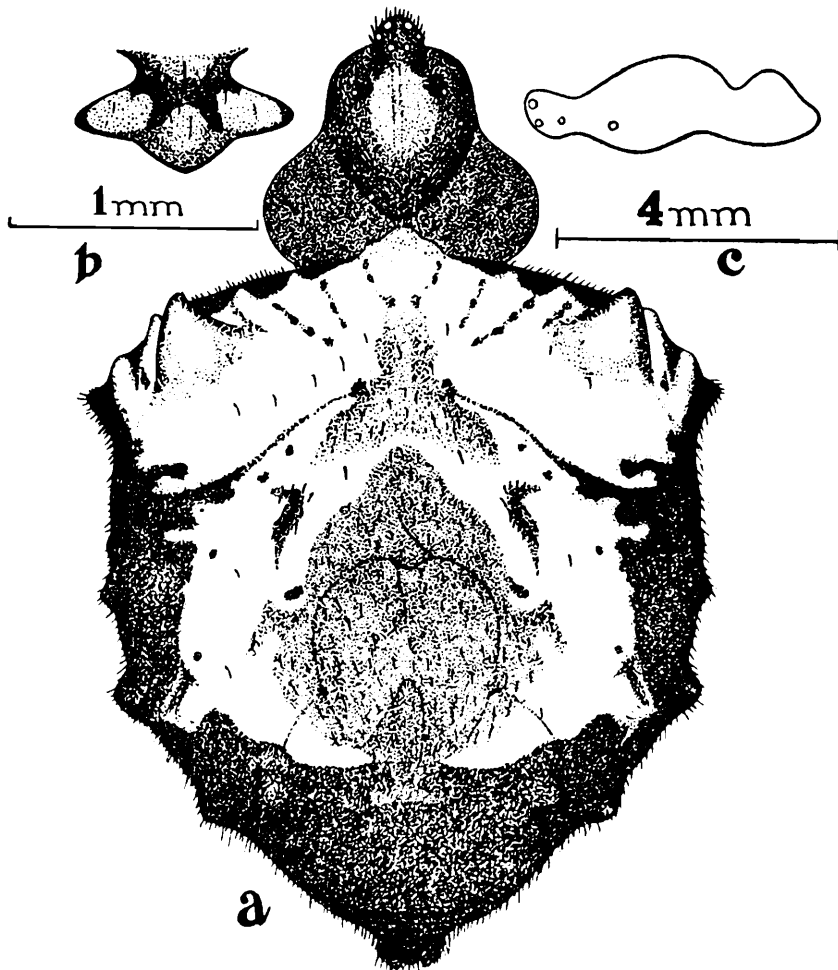
Type-species.—*Caerostris mitralis* Vinson.

Distribution.—Asia : India, Malaysia; Africa : Madagascar.

24. *Caerostris bhabanii* sp. n.

General.—Cephalothorax reddish-brown, legs and abdomen deep brown. Total length 14.00 mm. Carapace 3.80 mm. long, 3.50 mm. wide; abdomen 10.00 mm. long, 8.20 mm. wide.

Cephalothorax.—Slightly longer than wide, very much narrowing in front, clothed with fine hairs; cephalic region raised and pointed in front, and both the median eyes situated on the pointed head. Eyes small and pearly white, lateral eyes not contiguous and situated far away from each other; ocular quad longer than wide. Sternum heart-shaped pointed behind, clothed with hairs and spines also provided with transverse light bands.



TEXT-FIG. 21. *Caerostris bhabanii* sp. n. (a) Dorsal view of female, legs omitted. (b) Epigyne. (c) Lateral view of cephalothorax of female.

Abdomen.—Longer than wide, clothed with small and fine hairs, mid-dorsally with a conspicuous large white patch and posterior portion of this patch again provided with a small reddish patch. Anterior lateral border raised in front into a pair of large pointed protuberances and lateral sides of abdomen provided with four pairs of small tubercles, arranged longitudinally. Ventral side deep to light brown in colour. Epigyne as in text-fig. 21, b.

Holotype one female in spirit.

Type-locality.—Nayabazar, West Sikkim, 17.10.1959. Coll. B. K. Tikader.

This species resembles *Caerostria sexcuspidata* Fabr. from Malaysia but it is separated as follows: (i) Anterior abdominal tubercle pointed and posteriorly followed by four pairs of small tubercles and mid-dorsally with a conspicuous white patch but in *C. sexcuspidata* anterior abdominal tubercle very long and blunt and no other tubercles or white patch. (ii) Ocular quad longer than wide but in *C. sexcuspidata* ocular quad wider than long. (iii) Epigyne also differs.

Genus 15. *Singa* Koch

1836. *Singa* Koch, *Ar.*, 3, p. 42.

1837. *Singa* : Koch, *Uebers. Arachn. Syst.*, p. 1.

1940. *Singa* : Comstock, *The Spider Book*, New York, p. 475.

Characters.—The spiders of this genus differ from those in the genus *Araneus*, Clerck in having a shiny surface, on the abdomen and clothed with few hairs, always oval in shape. Legs relatively short without ventral femoral spines, almost always present in *Araneus*, Clerck. The males have no protuberances on coxae I and II. The male palpal organs are all rather similar.

Type-species.—*Singa hamata* Koch.

Distribution.—Europe, Asia, and America.

25. *Singa chota* sp. n.

General.—Cephalothorax and legs light green, abdomen shiny-white. Total length 3.90 mm. Carapace 1.60 mm. long, 1.20 mm. wide; abdomen 2.40 mm. long, 1.50 mm. wide.

Cephalothorax.—Longer than wide, cephalic region slightly narrow and high, provided with conspicuous reddish brown colour. Eyes pearly white, posterior row straight, anterior row recurved, posterior median eyes close to each other than to the posterior lateral eyes, lateral eyes almost contiguous. Ocular quad longer than wide and narrowing behind. Sternum heart-shaped, pointed behind, deep brown colour. Legs long and strong, clothed with hairs and few spines.

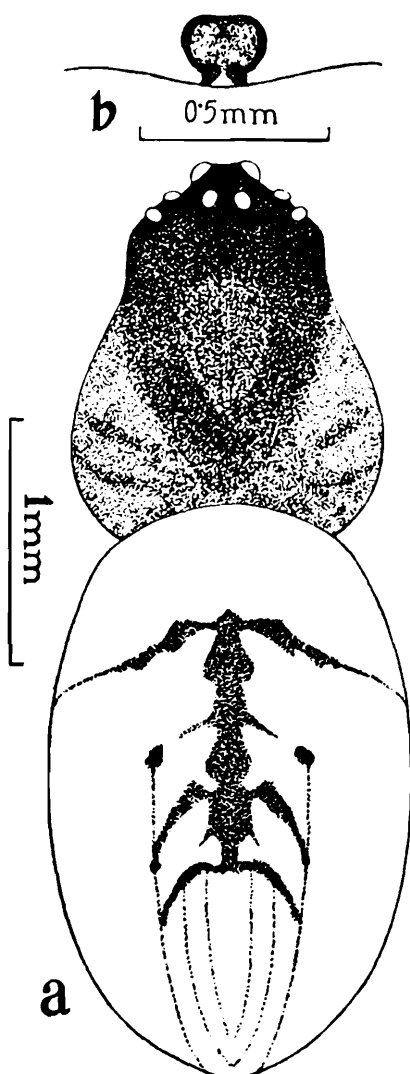
Abdomen.—Elliptical in outline. Dorsal side with shiny white, provided with a longitudinal brown cracked line or lines as in text-fig. 22, a. Ventral side brown. Epigyne as in text-fig. 22, b.

Holotype one female. *Paratypes*, nine females in spirit.

Type-locality.—Bank of Great Rangit river, West Sikkim, 20.9.1959. Coll. B. K. Tikader.

This species resembles *Singa albovittata* (Westring) from America but it is separated as follows: (i) Thoracic region light green and

cephalic region reddish-brown but in *S. albovittata* thoracic region dark-brown and cephalic region lighter. (ii) Abdomen shiny-white and



TEXT-FIG. 22. *Singa chota* sp. n. (a) Dorsal view of female, legs omitted.
(b) Epigyne.

mid-dorsally with a longitudinal brown cracked line but in *S. albovittata* abdomen light brown and margin banded with deep brown. (iii) Epigyne also different.

Genus 16. *Cyclosa* Menge

1866. *Cyclosa* Menge, *Preuss. Spinn.*, 1, p. 73.

1895. *Cyclosa* : Simon, *Hist. Nat. Araignees*, 1, p. 783.

Characters.—Eyes subequal, the posterior medians almost in contact; the median ocular area wider in front than behind; both rows of eyes recurved; the head and thorax separated by a deep cervical groove.

Type-species.—*Cyclosa conica* Pallas.

Distribution.—Europe, Africa, Asia, Australia and America.

26. *Cyclosa insulana* (Costa)

1834. *Epeira insulana* Costa, *Cenni. Zool. etc.*, p. 65.

1894. *Epeira insulana* Workman, *Malaysian Spiders*, Belfast, 36.

1921. *Cyclosa insulana* Gravely, *Rec. Indian Mus.*, Calcutta, 22, p. 413.

Specimens examined.—10 ♀, Nayabazar, West Sikkim, 23.9.1959. 20 ♀, Legship, West Sikkim, 11.10.1959. Coll. B. K. Tikader.

General.—Cephalothorax and legs yellowish-green, dorsal surface of abdomen beautifully coloured with admixture of silvery-white, brown and yellow. Total length 7.00 mm. Carapace 2.00 mm. long, 1.50 mm. wide; abdomen 5.50 mm. long, 3.00 mm. wide.

Cephalothorax.—Longer than wide, depressed but cephalic region high, lateral sides provided with deep brown band. Eyes white, posterior medians and both lateral eyes contiguous. Legs banded with dark or deep brown transverse band. Sternum heart-shaped with light colour.

Abdomen.—Longer than wide, anterior end pointed with a short horn like projection, two pairs of lateral tubercles or projection on the posterior half of the abdomen and posterior end produced like a short tail and slightly bent downward. Ventral side with numerous deep brown spots.

Distribution.—India : Poona, West Bengal, Shillong. Nepal. Sikkim ; Ceylon and Burma.

Genus 17. *Eucta* Simon

1881. *Eucta* Simon, *Ar. Fr.*, 5, p. 5.

1895. *Eucta* : Thorell, *Spiders of Burma*, p. 146.

1921. *Eucta* : Gravely, *Rec. Indian Mus.*, Calcutta, 22, p. 446.

Characters.—The genus *Eucta* abundant near water, differs from *Tetragnatha* Latreille in having the abdomen produced beyond the spinners into a pointed tail.

Type-species.—*Eucta gallica* Simon.

Distribution.—Europe; Africa; Asia: Japan, India, Malaysia, America.

27. *Eucta javana* Thorell

1895. *Eucta javana* Thorell, *Spiders of Burma*, p. 146.

1921. *Eucta javana* : Gravely, *Rec. Indian Mus.*, Calcutta, 22, p. 447.

Specimens examined.—5 ♀ Rothak near Nayabazar, West Sikkim, 8.10.1959. 10 ♀, Legship, West Sikkim, 11.10.1959. Coll. B. K. Tikader.

Cephalothorax.—Long and flat, cephalic region slightly high, with prominent cephalic groove. Anterior row of eyes straight, posterior row strongly recurved. Clypeus narrow. In female the first tooth on either side of the fang-groove situated at the base of the fang; in the ventral row second tooth situated far from the first tooth; second dorsal tooth opposite the third ventral, third opposite the fourth on ventral side and so on. Each row consists of about six to eight teeth, but usually one or two lesser in the dorsal row than ventral. In the well developed specimen in addition to these teeth a conical denticle also present at about the middle of the dorsal surface on the inner side. Legs long, slender, clothed with hairs and scanty spines, I pair of legs very long and stout.

Abdomen.—Very long, pointed behind, slightly overlapping the posterior region of cephalothorax in front, anterior extremity slightly depressed; abdomen produced beyond the spinners into a pointed tail.

Distribution.—India: Western Ghats, Travancore, Bangalore, Mysore, Ootacamund, Nilgiri Hills, Chilka Lake, Madras, Orissa, Bihar, Birbhum, Calcutta and Darjeeling, West Bengal, Shillong, Sikkim.

Genus 18. *Gasteracantha* Sundevall

1833. *Gasteracantha* Sundevall, *Consp. Arachn.*, p. 14.

1895. *Gasteracantha*: Simon, *Hist. Nat. Arachn.*, 1, p. 845.

1900. *Gasteracantha*: Pocock, *Fauna Brit. India. Arach.*, p. 231.

Characters.—Carapace with thoracic portion low, cephalic portion elevated; ocular quadrangle narrower in front. Abdomen large, subquadrate, transversely oblong, or narrowed laterally; integument horny, impressed with large sigilla and armed on each side with an anterior, a median and a posterior spines; spinners encircled by a horny ring.

Type-species.—*Gasteracantha cancriformis* Linnaeus.

Distribution.—All tropical countries of the world.

Key to Indian species of *Gasteracantha* Sundevall

- | | | |
|---|-----|--------------------------------|
| 1. Ventral tubercle present in front of spinners | ... | 2 |
| Ventral tubercle absent in front of spinners | ... | <i>G. hasseltii</i> Koch |
| 2. Anterior and median spines widely separated | ... | 3 |
| Anterior and median spines not widely separated | ... | <i>G. diadesmia</i> Thorell |
| 3. Posterior spines abruptly narrowed at apex | ... | 4 |
| Posterior spines not abruptly narrowed at the apex | ... | <i>G. leucomelaena</i> (Dole.) |
| 4. Median spines prominent and narrowed at the apex | ... | <i>G. unguifera</i> Simon |
| Median spines minute and simple | ... | <i>G. brevispina</i> (Dole.) |

28. *Gasteracantha unguifera* Simon

1889. *Gasteracantha unguifera* Simon, *J. Asiat. Soc. Bengal*, 58, p. 336.

1900. *Gasteracantha unguifera*: Pocock, *Fauna Brit. India, Arach.*, p. 234.

Specimens examined.—20 ♀, Legship, West Sikkim, 16.9.1959. 30 ♀, Gazing, West Sikkim, 20.9.1959. 10 ♀, Nayabazar, West Sikkim, 23.9.1959. Coll. B. K. Tikader.

General.—Cephalothorax and legs reddish-brown, abdomen light to dark and variable in colour. Total length 6.00 mm. Carapace 2.00 mm. long, 1.50 mm. wide; abdomen 5.00 mm. long, 9.00 mm. wide.

Cephalothorax.—Slightly longer than wide, broad in front, clothed with grey hairs. Cephalic region flat but thoracic region abruptly down behind. Sternum heart-shaped, brown with yellow patch. Legs clothed with grey hairs.

Abdomen.—Nearly twice as long as wide, strongly concave dorsally, anterior border rather strongly convex, anterior spines small acuminate; median spines much large with the basal portion exceedingly stout and distally expanded, then abruptly narrowed, the terminal portion normally slender and rising from the middle of the expanded end of the basal portion; posterior spines also with basal portion stout, but not so abruptly narrowed as in the case of the median spines.

Distribution.—India: Himalayas, Jaunsar, Thadyar, Sikkim.

29. *Gasteracantha brevispina* (Doleschall)

1857. *Plectana brevispina* Doleschall, *Nat. Tij. Nederland Indie*, 13, p. 423.

1900. *Gasteracantha brevispina* Pocock, *Fauna Brit. India, Arach.*, p. 235.

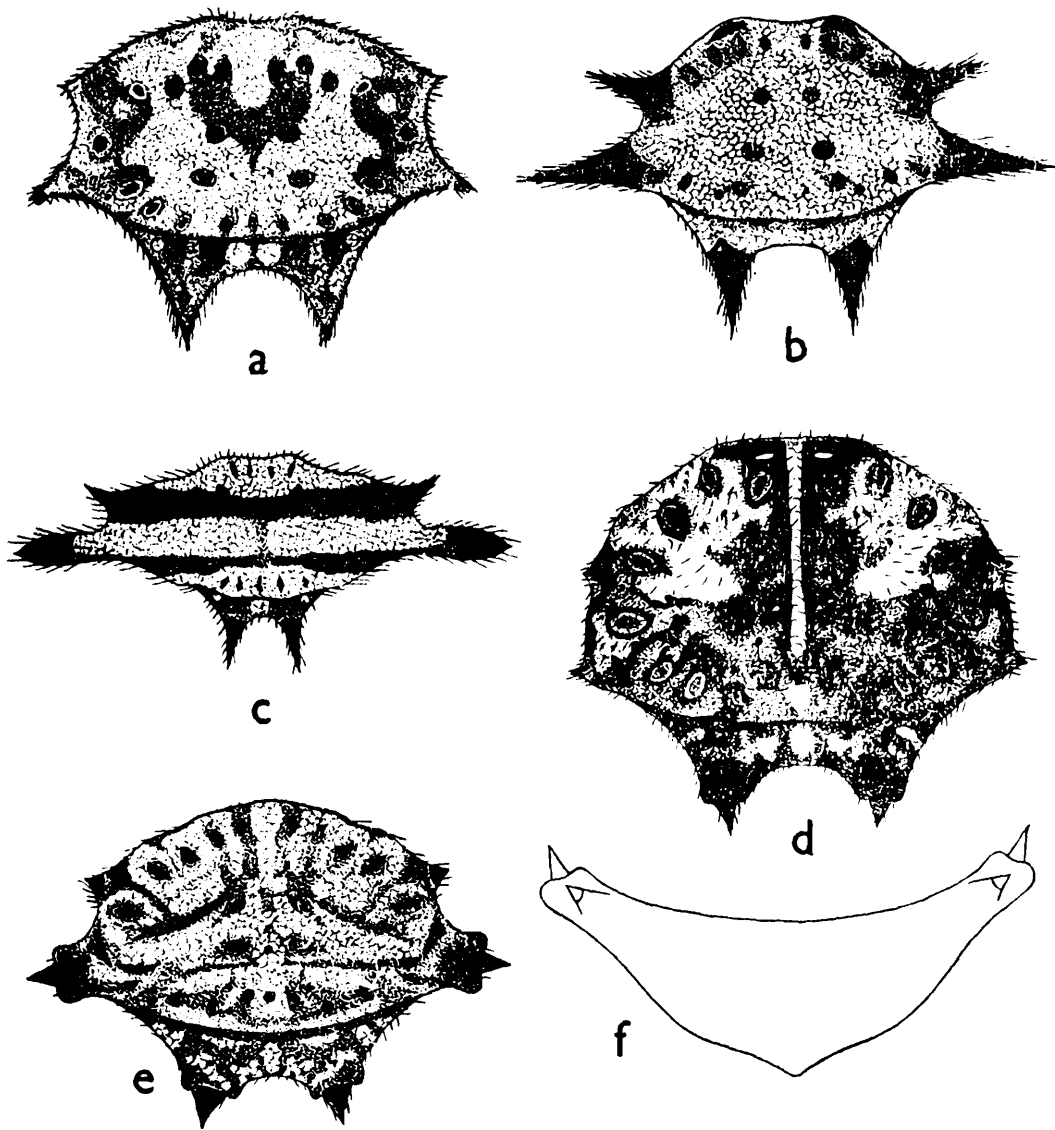
1921. *Gasteracantha brevispina*: Gravely, *Rec. Indian Mus.*, Calcutta, 22, p. 416.

1951. *Gasteracantha brevispina*: Sinha, *Rec. Indian Mus.*, Calcutta, 49, p. 83.

Specimens examined.—2 ♀ .Kalimpong, West Bengal, 17.9.1959. 10 ♀ Darjeeling, West Bengal, India, 20.9.1959. Coll. B. K. Tikader.

General.—Cephalothorax, legs and abdomen reddish-brown. Total length 9.00 mm. Carapace 2.00 mm. long, 1.50 mm. wide ; abdomen 8.00 mm. long, 10.00 mm. wide.

Cephalothorax.—Slightly longer than wide, broad in front, clothed with grey hairs. Cephalic region flat but thoracic region abruptly down behind. Sternum heart-shaped, deep brown but middle with a reddish patch. Legs clothed with grey hairs.



TEXT-FIG. 23. *Gasteracantha leucomelaena* (Dol.) (a) Dorsal view of abdomen. *Gasteracantha hasseltii* Koch (b) Dorsal view of abdomen. *Gasteracantha diadestia* Thorell (c) Dorsal view of abdomen. *Gasteracantha brevispina* (Dol.) (d) Dorsal view of abdomen. *Gasteracantha unguifera* Simon (e) Dorsal view of abdomen. (f) Profile view of abdomen.

Abdomen.—A little wider than long, very variable in colour sometimes black, sometimes yellow predominating ; usually with a large triangular black patch on each side and a pair of large yellow ocelliform

spots near the middle ; anterior and lateral spines very short but posterior spines very stout at the base and abruptly narrowed at the apex. Ventral side light to deep brown.

Distribution.—India : Madras, Dehra Dun, Poona, Bombay, Andaman and Nicobar Islands, Darjeeling. Calcutta, Bihar, Shillong, Orissa ; East Pakistan ; Burma ; Sikkim ; Ceylon ; Austro-Malaysia ; Japan.

30. *Gasteracantha leucomelaena* (Doleschall)

1859. *Plectana leucomelaena* Doleschall, *Verh. Nat. Vereen. Nederland Indie* 5(5), p. 42.

1887. *Gasteracantha leucomelaena* Thorell, *Ann. Mus. Genova*, 25, p. 232.

1900. *Gasteracantha leucomelaena* : Pocock, *Fauna Brit. India, Arach.*, p. 235.

Specimens examined.—1 ♀, Nayabazar, West Sikkim, 17.10.1959. 5 ♀, Gazing, West Sikkim, India, 12.10.1959. Coll. B. K. Tikader.

General.—Cephalothorax and legs yellowish-brown, abdomen whitish or yellow. Total length 7.00 mm. Carapace 2.00 mm. long, 1.50 mm. wide ; abdomen 6.00 mm. long, 8.00 mm. wide.

Cephalothorax.—Slightly longer than wide, broad in front, clothed with grey hairs. Cephalic region flat but thoracic region abruptly down behind. Sternum heart-shaped, yellow, with posterior end black or deep brown spot. Legs clothed with brown hairs and with black or deep brown bands.

Abdomen.—Nearly one third wider than long ; upper side of abdomen with median black V-shaped mark and a large black patch at base of spines, the patches sometimes uniting with the ends of the arms and with the stem of the V to form transverse bars of black. The spines small, acuminate, the median and posterior spines subequal and much larger than the anterior spines. Ventral side deep brown with yellow spots.

Distribution.—India : Calcutta, Darjeeling, Kalimpong, Bihar, Assam, Andaman and Nicobar Islands. Bhutan, Sikkim, Burma, Malaysia and Japan.

31. *Gasteracantha diadesmia* Thorell

1887. *Gasteracantha diadesmia* Thorell, *Ann. Mus. Genova*, 25, p. 225.

1900. *Gasteracantha diadesmia*; Pocock, *Fauna Brit. India, Arach.*, p. 234.

Specimens examined.—2 ♀, Legship, West Sikkim, 13.9.1959. 5 ♀, Rishi, West Sikkim, 29.9.1959. 8 ♀, Kalimpong, West Bengal, 17.9.1959. 5 ♀, Nayabazar, West Sikkim, 17.10.1959. Coll. B. K. Tikader.

General.—Cephalothorax and legs black, abdomen yellow. Total length 9.00 mm. Carapace 4.00 mm. long, 3.00 mm. wide ; abdomen 9.00 mm. long, 19 mm. wide.

Cephalothorax.—Slightly longer than wide, broad in front, clothed with grey hairs. Cephalic region flat but thoracic region abruptly down behind. Sternum heart-shaped, black with yellow spots. Legs clothed with grey hairs.

Abdomen.—Nearly twice as wide as long, concave, three conspicuous transverse black bands on the dorsum, first band situated near the anterior spines, second band in between median and posterior spines and third band near the posterior spines. Anterior and posterior spines with pointed end but median spines not thin and evenly attenuate, but

thicker and with its anterior border distinctly swollen. Ventral side black with yellow spots.

Distribution.—India : Kalimpong, West Bengal. Sikkim ; Burma : Tharrawaddy, Tounghoo, Rangoon. Thailand.

32. *Gasteracantha hasseltii* Koch

1838. *Gasteracantha hasseltii* Koch *Arachnida*, 4, p. 29.

1900. *Gasteracantha hasseltii* Pocock, *Fauna Brit. India*, Arach., p. 233.

1921. *Gasteracantha hasseltii* Gravely, *Rec. Indian Mus.*, Calcutta, 22, p. 416.

1951. *Gasteracantha hasseltii* Sinha, *Rec. Indian Mus.*, Calcutta, 49(1), p. 82.

Specimens examined.—10 ♀, Bank of Great Rangit river, West Sikkim, 20.9.1959. 2 ♀, Nayabazar, West Sikkim, 17.10.1959. Coll. B. K. Tikader.

General.—Cephalothorax black, legs yellowish-green, abdomen whitish-yellow. Total length 6.00 mm. Carapace 2.00 mm. long, 1.50 mm. wide ; abdomen 5.00 mm. long, 10.00 mm. wide.

Cephalothorax.—Slightly longer than wide, broad in front, clothed with black hairs. Cephalic region flat but thoracic region abruptly down behind. Sternum heart-shaped, yellow. Legs clothed with brown hairs and provided with brown spots.

Abdomen.—Nearly twice as long as wide (including spines). All spines black and pointed ; median spines typically attenuate, not very long, their length hardly exceeding half the width of the abdomen, as in text-fig. 23, f.

Distribution.—India : Assam, Kalimpong and Darjeeling. Burma : Tharrawaddy, Rangoon. Sikkim.

Genus 19. *Leucauge* White

1841. *Leucauge* White, *Ann. Mag. Nat. Hist.*, 7, p. 473.

1884. *Argyropeira* Emerton, *Trans. Conn. Acad. Art., Sci.*, 6, p. 331.

1900. *Argyropeira* : Pocock, *Fauna Brit. India*, Arach., p. 215.

1921. *Leucauge* : Gravely, *Rec. Indian Mus.*, Calcutta, 22, p. 450.

1935. *Leucauge* : Dayal, *Bull. Zool. Punjab Univ.*, 1, p. 157.

Characters.—Cephalothorax truncate in front, legs long and slender, especially the first two pairs ; the posterior femora with fringe of long hairs. Abdomen twice as long as wide, blunt at both ends and ornamented with bands or spots of silvery pigment.

Type-species.—*Leucauge hortorum* (Hentz).

Distribution.—Europe, Africa, Asia and America.

Key to Indian species of *Leucauge* White

- | | | |
|---|--------|---------------------------------|
| 1. Anterior end of abdomen conically elevated | ... | 2 |
| Anterior end of abdomen not conically elevated | ... | 3 |
| 2. Posterior end of abdomen strongly conically produced | ... | <i>L. decorata</i> (Blackwall) |
| Posterior end of abdomen moderately conically produced | ... | <i>L. celebesiana</i> (Walcke.) |
| 3. Tibia of IV legs plumose | ... .. | <i>L. tessellata</i> (Thorell) |
| Tibia of IV legs not plumose | ... .. | <i>L. pondae</i> sp. n. |

33. *Leucauge decorata* (Blackwall)

1864. *Tetragnatha decorata* Blackwall, *Ann. Mag. Nat. Hist.*, 14, p. 36.

1869. *Nephila angustata* Stoliczka, *J. Asia. Soc. Bengal*, 38, p. 241.

1900. *Argyropeira celebesiana* Pocock, *Fauna Brit. India*, Arach., p. 216.

1921. *Leucauge decorata* : Gravely, *Rec. Indian Mus.*, Calcutta, 22, p. 454.

1962. *Leucauge decorata* : Tikader, *J. Linn. Soc. London*, 44(300), p. 564.

Specimens examined.—5 ♀, Rhenock, East Sikkim, 7.9.1959. 10 ♀, Chongton, Dist. Darjeeling, West Bengal, 16.4.1957. Coll. B. K. Tikader.

General.—Cephalothorax brown, legs brownish-green, abdomen silvery-white. Total length 8.30 mm. Carapace 2.20 mm. long, 1.80 mm. wide; abdomen 6.10 mm. long, 2.80 mm. wide.

Cephalothorax.—Longer than wide, flat, a deep groove in the middle; ocular quad longer than wide, lateral eyes contiguous. Clypeus narrow. Sternum deep brown, triangular, pointed behind. Legs clothed with long hairs and scanty spines; anterior half of tibiae-deep brown.

Abdomen.—Nearly oval in shape, but narrowing behind, strongly overlapping the posterior region of cephalothorax in front. Anterior extremity of abdomen low but furnished with two shoulder prominences, posterior end of abdomen produced into a conical caudal process; dorsal surface decorated like *L. celebesiana* (Walck.) but has some yellow tint on the silvery colour.

Distribution.—India: Bangalore, Mysore, Coonoor, Nilgiri Hills, Madras, Barkul, Dehra Dun, Katihar, Sirpur, Darjeeling, Calcutta. Sikkim; Ceylon.

34. *Leucauge celebesiana* (Walckenaer)

1837. *Tetragnatha celebesiana* Walckenaer, *Ins. Apt.*, 2, p. 222.

1921. *Leucauge celebesiana*: Gravely, *Rec. Indian Mus.*, Calcutta, 22, p. 450.

1962. *Leucauge celebesiana*: Tikader, *J. Linn. Soc. London*, 44(300), p. 564.

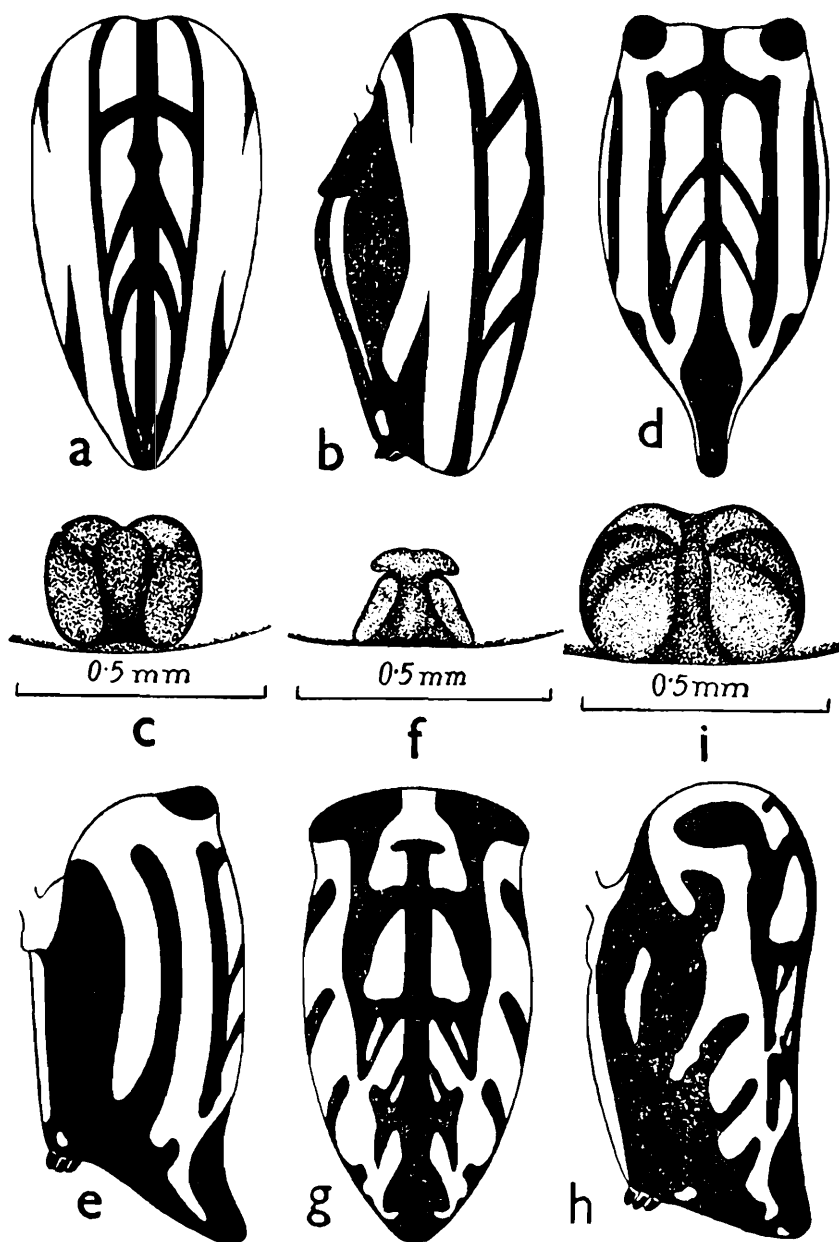
Specimens examined.—50 ♀, and 10 ♂, Chongtong, Dist. Darjeeling, West Bengal, 16.4.1957. 2 ♀, and 1 ♂, Ramtang, Sikkim, 14.10.1959. 4 ♀ and 1 ♂, Tingling, Sikkim, 28.9.1959. 5 ♀, and 1 ♂, Samabiyong, Sikkim, 14.9.1959. 2 ♀, Gangtok, Sikkim, 19.8.1959. 7 ♀, and 1 ♂, Bhudbari, Sikkim, 15.9.1959. 3 ♀, Rongli, Sikkim, 31.8.1959. Coll. B. K. Tikader.

General.—Cephalothorax brownish, legs brownish-green, abdomen silvery-white. Total length 9.40 mm. Carapace 2.10 mm. long, 1.70 mm. wide; abdomen 6.40 mm. long, 3.00 mm. wide.

Cephalothorax.—Longer than wide, flat, relatively broader in front, with a deep groove on the middle. Lateral eyes contiguous and nearer to the medians than in *L. bengalensis* Gravely ocular quad longer than wide, anterior medians slightly smaller than posterior medians. Clypeus narrow. Sternum deep brown, pointed behind. Legs clothed with long hairs and scanty spines.

Abdomen.—Nearly oval in shape, slightly overlapping the posterior region of cephalothorax in front; anterior extremity slightly low, on the dorsum three longitudinal black lines from base to tip of abdomen and another three pairs of black transverse line from the longitudinal middle line to lateral sides. Ventral surface deep brown with two longitudinal silvery-white lines from epigynal fold to base of spinners.

Distribution.—India: Ootacamund, Poona, Calcutta, Darjeeling, Kalimpong, Gapaldhara, Ghaumti, Kurseong, Shillong, Cherrapunji, Khasi Hills, Assam. Sikkim; Ceylon; Burma: Tharrawaddy, Rangoon, Celebes.



TEXT-FIG. 24. *Leucauge celebesiana* (Walck.) (a) Dorsal view of abdomen. (b) Lateral view of abdomen. (c) Epigyne. *Leucauge decoraia* (Blackwall) (d) Dorsal view of abdomen. (e) Lateral view of abdomen. (f) Epigyne. *Leucauge tessellata* (Thorell) (g) Dorsal view of abdomen. (h) Lateral view of abdomen. (i) Epigyne.

35. *Leucauge tessellata* (Thorell)

1887. *Argyropeira tessellata* Thorell, *Ann. Mus. Civ. Genova*, 25, p. 135.
 1900. *Argyropeira tessellata* : Pocock, *Fauna Brit. India*, Arach., p. 216.
 1921. *Leucauge tessellata* : Gravely, *Rec. Indian Mus.*, Calcutta, 22, p. 455.
 1962. *Leucauge tessellata* : Tikader, *J. Linn. Soc. London*, 44(300), p. 566.

Specimens examined.—25 ♀, Kalimpong, Dist. Darjeeling, 17.9.1959. 1 ♀, Samabiyong, Sikkim, 14.9.1959. 1 ♀, Rongli, East Sikkim, 5.9.1959. Coll. B. K. Tikader.

General.—Cephalothorax and legs light brown, abdomen silvery-white, with blackish tint. Total length 8.30 mm. Carapace 3.70 mm. long, 2.70 mm. wide; abdomen 5.00 mm. long, 3.00 mm. wide.

Cephalothorax.—Longer than wide, clothed with hairs, lateral eyes contiguous, ocular quad longer than wide, anterior median eyes slightly smaller than the posterior medians. Clypeus narrow. Sternum

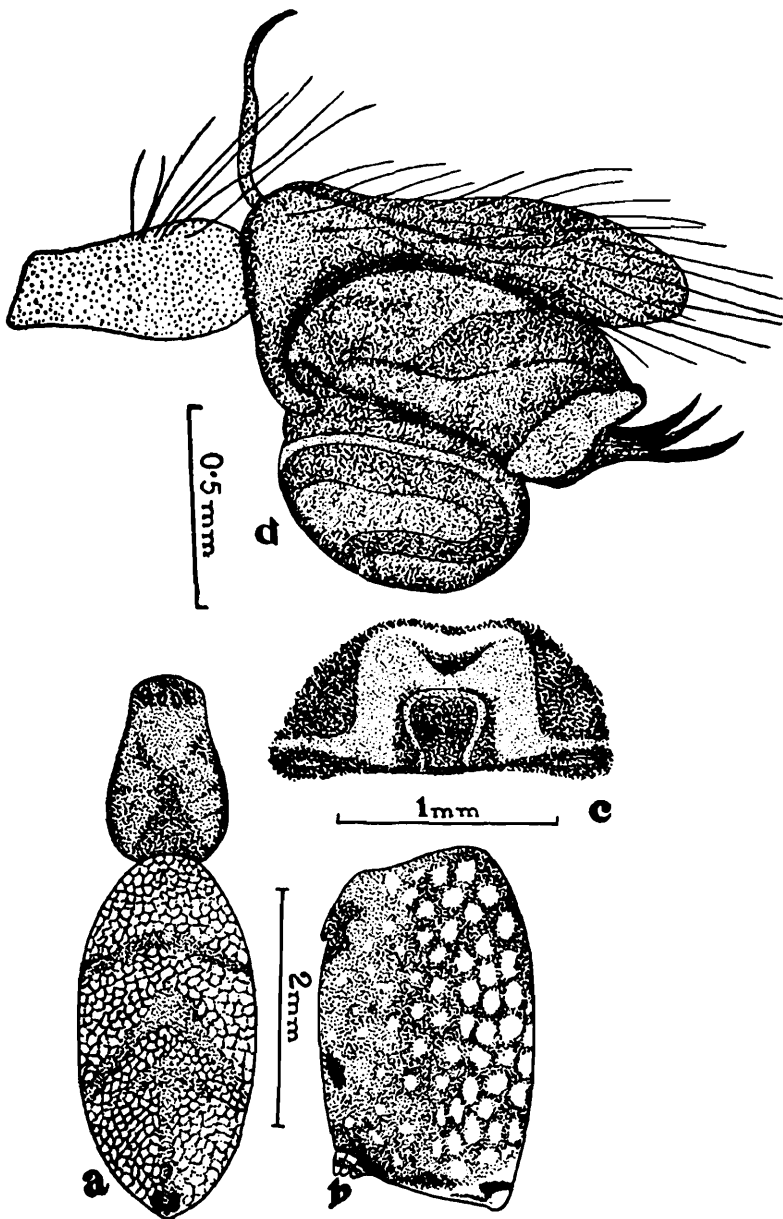
triangular, pale brown, clothed with hairs. Legs long, stout, clothed with hairs, distal two third of the tibiae of the IV legs deep brown and this portion provided with scopulae.

Abdomen.—Oval, the anterior extremity of abdomen rounded, not elevated, and antero-laterally with deep brown patches; on the mid-dorsal three longitudinal deep brown lines and these three lines transversely cut by four lines. Ventral surface dark, with a pair of clearly defined longitudinal silvery bands.

Distribution.—India: Cochin, Gopaladhara, Kalimpong, Sonarpur, Assam. Sikkim; Bhutan; Burma.

36. *Leucauge pondae* sp. n.

General.—Cephalothorax light brown, legs green, abdomen silvery-white. Total length 4.60 mm. Carapace 1.60 mm. long, 1.00 mm. wide; abdomen 3.00 mm. long, 1.50 mm. wide.



TEXT-FIG. 25. *Leucauge pondae* sp. n. (a) Dorsal view of female, legs omitted. (b) Lateral view of abdomen. (c) Epigyne. (d) Male palp.

Cephalothorax.—Longer than wide, flat, finely pubescent. Eyes pearly white, bases surrounded by black patches. Lateral eyes contiguous, median eyes close, anterior median eyes slightly smaller than the posterior. Ocular quad longer than wide and narrowing in front. Clypeus narrow. Sternum triangular, pointed behind. Legs slender, clothed with fine long hairs. Base of femora of IV legs provided with fringes of hairs posteriorly.

Abdomen.—Nearly oval, extreme posterior end with a pair of transverse black spots. Ventral side uniformly light brown with two black spots in front of spinners. Epigyne as in text-fig. 25, c. Male palp as in text-fig. 25, d. Male long, legs slender and abdomen less silvery than the female.

Holotype one female. *Paratypes*, three females and *Allotype*, one male in spirit.

Type-locality.—Bank of Great Rangit river, West Sikkim, 20.9.1959. Coll. B. K. Tikader.

This species resembles *Leucauge culta* (Cambridge) from India but it is separated as follows: (i) Posterior extremity of abdomen with a pair of black transversely arranged spots but in *L. culta* posterior extremity of abdomen with a black spot and additionally three pairs of black spots in front of it and anterior most pair smaller than the rest. (ii) Epigyne and male palp also structurally different.

Genus 20. *Nephila* Leach

1815. *Nephila* Leach, *Zool. Misc.*, 2, p. 133.

1900. *Nephila* Pocock : *Fauna Brit. India*, Arach., p. 217.

1951. *Nephila* : Sinha : *Rec. Indian Mus.*, Calcutta, 40, p. 68.

Characters.—Cephalic region convex and moderately high, generally armed posteriorly with two tubercles; ocular quad nearly square. Legs very long, clothed with spines, metatarsi longer than tibiae and patella. Vulva not well developed. Male very small, with simple palp.

Type-species.—*Nephila maculata* (Fabr).

Distribution.—All tropical countries of the world.

37. *Nephila maculata* (Fabricius)

1793. *Aranea maculata* Fabricius, *Ent. Syst.*, 2, p. 425.

1900. *Nephila maculata* : Pocock, *Fauna Brit. India*, Arach., p. 217.

1923. *Nephila maculata* : Gravely, *J. Bombay nat. Hist. Soc.*, 28, p. 1046.

1962. *Nephila maculata* : Tikader, *J. Linn. Soc. London*, 44(300), p. 567.

Specimens examined.—5 ♀, Kalimpong, 17.9.1959. 10 ♀, Gazing West Sikkim, 11.10.1959. 5 ♀, Rongli, East Sikkim, 5.9.1959. Coll. B. K. Tikader.

General.—Cephalothorax and legs black, abdomen olive-brown. Total length 30.00 mm. Carapace 10.50 mm. long, 8.00 mm. wide; abdomen 22.00 mm. long, 6.50 mm. wide.

Cephalothorax.—Longer than wide, clothed with silky-greyish-yellow pubescence, relatively broad in front; a deep groove in the middle and with a pair of sharp tubercles in front. Ocular quad square and slightly high. Clypeus narrow. Sternum dark, triangular, pointed behind. Legs very long, clothed with hairs and spines; coxae of legs and first half of palp yellow.

Distribution.—India: Tinevelly, Trivandrum, Ootacamand, Mysore, Kanara, Poona, Dehra Dun, Madhya Pradesh, Darjeeling, Assam, Nicobar Island. Sikkim. Ceylon; Burma; China and Australia.

38. *Nephila clavata* Koch

1877. *Nephila clavata* Koch, *Verh. Z.b. Ges. Wien.*, 27, p. 741.

1900. *Nephila clavata*: Pocock, *Fauna Brit. India*, Arach., p. 218.

1951. *Nephila clavata*: Sinha, *Rec. Indian Mus.*, Calcutta, 40, p. 69.

Specimens examined.—20 ♀, Gazing, West Sikkim, 11.10.1959. Coll. B. K. Tikader.

General.—Cephalothorax and legs deep brown, abdomen yellow. Total length 23.00 mm. Carapace 8.00 mm. long, 5.00 mm. wide; abdomen 16.00 mm. long, 9.00 mm. wide.

Cephalothorax.—Longer than wide, clothed with grey pubescence, carapace with yellow patch behind the cephalic region and yellow border and carapace without tubercles. Sternum dark, triangular, pointed behind with a conspicuous median yellow band. Legs long, clothed with hairs and yellow bands.

Abdomen.—Very long, slightly overlapping the posterior region of cephalothorax in front. Dorsally with transverse indistinct fuscous stripes. Ventral side black, varied with yellow lines and spots, with a pink band behind which laterally spreads on to the sides of the abdomen.

Distribution.—India: Darjeeling, Shillong. Bhutan; Sikkim; Burma, Japan, China and Formosa.

Family VI. THOMISIDAE

Characters.—The typical members of this family have a peculiarly crab-like appearance. Carapace and abdomen usually short and broad; but somewhat elongate in *Tibellus* Simon and *Thanatus* Koch. Eyes small, particularly the posterior usually circled with black, both rows being recurved. First two pairs of legs long and stout and frequently move sideways as done by a crab; the legs less obviously laterigrade in the genera *Philodromus* Walck. and *Thanatus* Koch and not at all in *Tibellus* Simon. The members of the genus *Oxyptila* Simon the integument furnished with some characteristic clavate setae, but in the other genera the hairs are normal.

Key to Indian genera of *Thomisidae*

- | | | | |
|---|-----|-----|---------------------------|
| 1. Lateral eyes on strong conical tubercle | ... | ... | <i>Thomisus</i> Walck. |
| Lateral eyes on shallow tubercles | ... | ... | 2 |
| 2. Abdomen truncated behind | ... | ... | <i>Pistius</i> Simon |
| Abdomen not truncated behind | ... | ... | 3 |
| 3. Median ocular trapezium longer than broad | ... | ... | <i>Platythomisus</i> Dol. |
| Median ocular trapezium square or broader than long | ... | ... | <i>Xysticus</i> Koch |

Genus 21. *Thomisus* Walckenaer

1805. *Thomisus* Walckenaer, *Tabl. Aran.*, p. 28.

1870. *Thomisus*: Thorell, *On European Spiders*, p. 170.

1895. *Thomisus*: Simon, *Hist. Nat. Araignees*, 1, p. 1023.

1935. *Thomisus*: Dyal, *Bull. Zool. Punjab Univ.*, 1, p. 200.

Characters.—Cephalothorax truncated in front, with the upper fore-corners strongly and conically protuberant and divergent, bearing

the lateral eyes. Eyes very small. Abdomen narrow and truncated in front, enlarging to a considerable width behind, where at either corner of the dorsal side a short blunt conical protuberance. Legs long, I and II much longer than III and IV

Type-species.—*Thomisus albus* Gmelin.

Distribution.—Europe, Africa, Asia, Australia and America.

39. *Thomisus sikkimensis* Tikader

1962. *Thomisus sikkimensis* Tikader, *J. Linn. Soc. London*, 44(300), p. 569.

Specimen examined.—1 ♀, Rishi, West Sikkim. 24.9.1959. Coll. B. K. Tikader.

General.—Cephalothorax and legs brownish-green; ocular area yellowish-brown, with small chalk-white patches. Abdomen chalk-white. Total length 9.20 mm. Carapace 4.60 mm. long, 4.60 mm. wide; abdomen 5.00 mm. long, 6.20 mm. wide.

Cephalothorax.—Broadest posteriorly, slightly narrowing in front, as long as wide. Antero-lateral sides with conspicuous longitudinal black bars. Ocular area encircled by a yellowish-brown triangle. Eyes black, posterior median eyes somewhat smaller than anterior medians. Clypeus long, subrectangular. Legs long and stout, I and II legs longer than III and IV legs. I and II legs with conspicuous black spots on trochanter, basally and apically below on femur, a black transverse band apically on patella and tibia. Tibia of I apically with two pairs of ventral spines and metatarsi with five pairs of stout ventral spines; III and IV pairs of legs unspotted and without spines.

Abdomen.—Pentagonal, slightly overlapping the posterior region of cephalothorax in front, broadest just behind the middle; a black transverse incomplete line on the broadest region and two black spots just in front of the transverse line sublaterally with broad black patch; posterior end with conspicuous transverse muscular corrugation.

Distribution.—Rishi, West Sikkim.

40. *Thomisus rishus* sp. n.

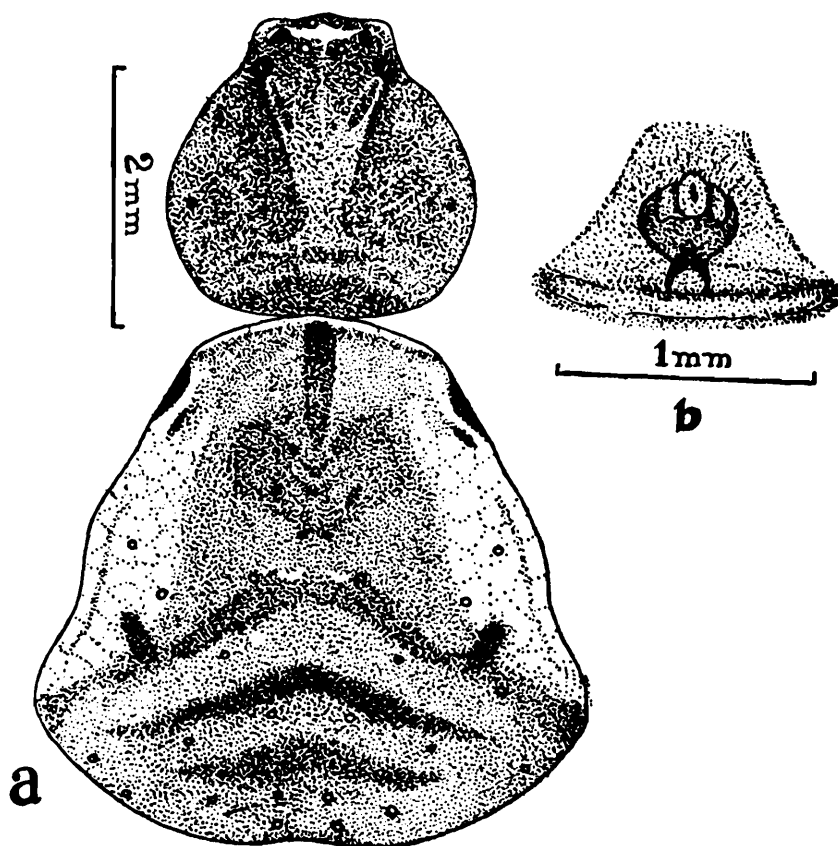
General.—Cephalothorax and legs deep-brown, abdomen dirty chalk-white. Total length 6.50 mm. Carapace 2.30 mm. long, 2.20 mm. wide; abdomen 4.00 mm. long, 4.20 mm. wide.

Cephalothorax.—Nearly as long as wide, convex, narrowing in front. Eyes black and tuberculate, both rows recurved but posterior row more recurved than the anterior row. Lateral eyes larger than others. Ocular quad nearly as long as wide, a transverse muscular elevated ridge passing through the middle of ocular area. Clypeus long, subrectangular. Legs long and stout, I and II longer than III and IV. Tibiae and metatarsi of I and II provided with five and seven pairs of ventral spines respectively, III and IV legs without spine.

Abdomen.—Nearly pentagonal, broadest behind the middle; minute brownish dots scattered irregularly all over the dorsum; posterior end with inconspicuous transverse muscular corrugation. Epigyne as in text-fig. 26, b.

Holotype one female in spirit.

Type-locality.—Rishi, West Sikkim, 25.9.1959. Coll. B. K. Tikader.



TEXT-FIG. 26. *Thomisus rishus* sp. n. (a) Dorsal view of female, legs omitted.
(b) Epigyne.

This species resembles *Thomisus onustus* Walckenaer from Europe but it is separated as follows: (i) Carapace centrally light brown or deep brown but in *T. onustus* carapace centrally whitish-yellow. (ii) Cephalothorax almost uniformly deep brown but in *T. onustus* lateral sides of cephalothorax provided with deep brown longitudinal patches. (iii) Epigyne also structurally different.

Genus 22. *Platythomisus* Dolesch.

1859. *Platythomisus* Dolesch., *Tweede Bijdr., etc.*, p. 50.

1845. *Thomisus* Koch, *Ar.*, 12, p. 18.

1895. *Platythomisus*: Simon, *Hist. Nat. Araignees*, 1, p. 1017.

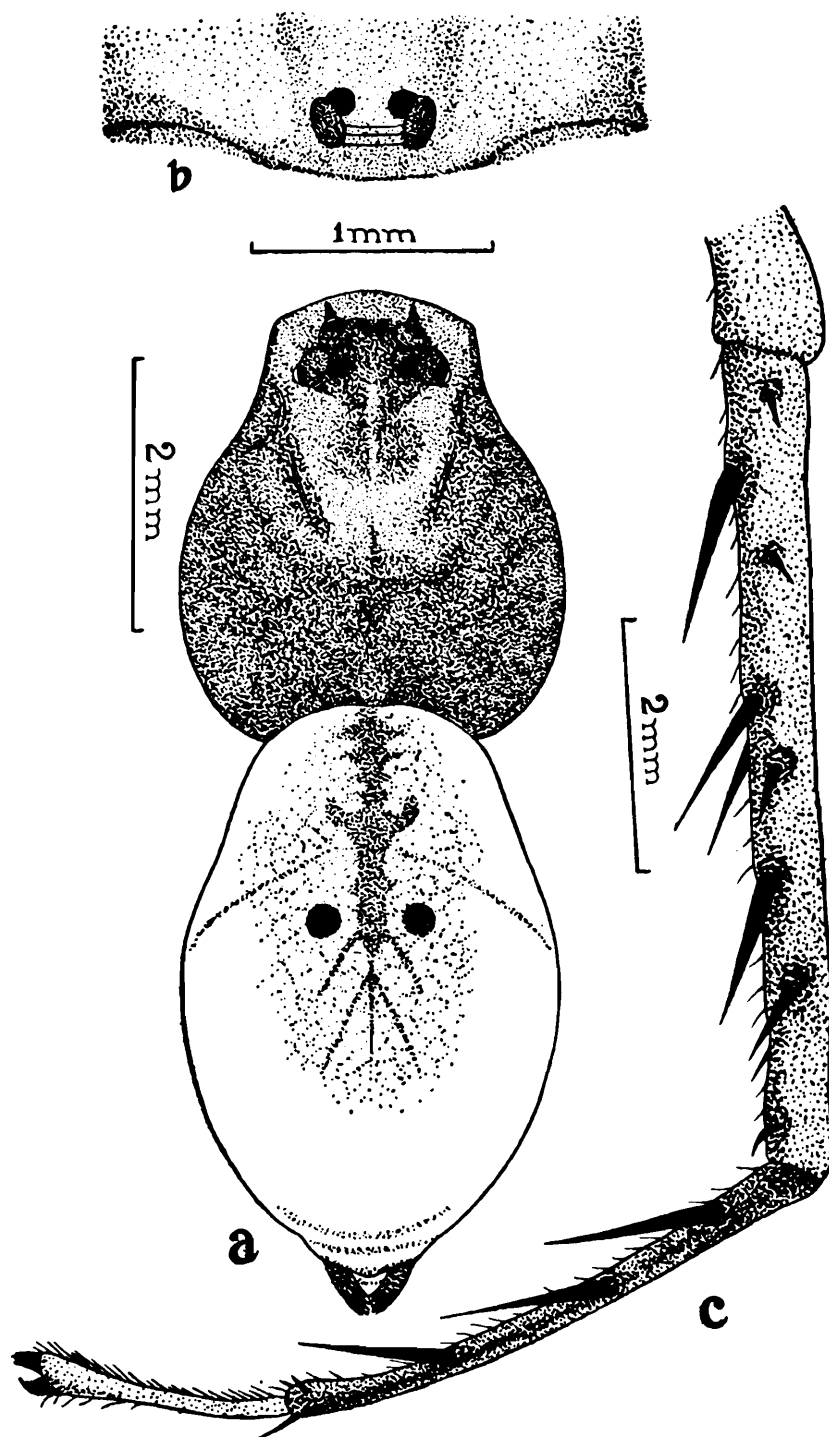
Characters.—Cephalothorax longer than wide, convex, cephalic region slightly high. Eyes black and tuberculated; both rows of eyes nearly straight. Ocular quad longer than wide and narrowing in front. Legs long and stout, I and II longer than III and IV; all legs provided with hairs and spines. Tibiae and metatarsi of I and II provided with conspicuous ventral spines.

Type-species.—*Platythomisus octomaculatus* (Koch).

Distribution.—Africa and Asia. This genus is being recorded here for the first time from Sikkim.

41. *Platythomisus bazarus* sp. n.

General.—Cephalothorax and legs light brownish-green, abdomen dirty chalk-white. Total length 7.10 mm. Carapace 3.20 mm. long, 2.80 mm. wide; abdomen 4.00 mm. long, 2.80 mm. wide.



TEXT-FIG. 27. *Platythomisus bazarus* sp. n. (a) Dorsal view of female, legs omitted. (b) Epigyne. (c) Distal end of I leg.

Cephalothorax.—Longer than wide, cephalic region high. Eyes black with prominent tubercles, both rows straight but posterior row longer, lateral eyes larger; tubercles of two laterals and posterior median eyes contiguous. Ocular quad longer than wide and narrowing in front. Sternum heart-shaped. Legs long and stout, I and II longer than III and IV; all legs provided with hairs and conspicuous spines. Tibiae and metatarsi of I and II provided with five and three pairs of ventral robust spines respectively. Tarsal scopulae weakly developed and claw tufts prominent.

Abdomen.—Longer than wide, posterior half wide and end tapering, irregular chalk-white small patches all over the dorsum. Mid-dorsally a longitudinal deep brown bar extending from base to behind the

middle and two conspicuous reddish-brown dot-like depression near the middle, as in text-fig. 27, a. Epigyne as in text-fig. 27, b.

Holotype one female in spirit.

Type-locality.—Nayabazar, West Sikkim, 23.9.1959. Coll. B. K. Tikader.

This species resembles *Platythomisus octomaculatus* (Koch) from Africa but it is separated as follows: (i) Abdomen dorsally provided with two conspicuous reddish-brown dot-like depressions near the middle but in *P. octomaculatus* abdomen dorsally provided with seven conspicuous black spots. (ii) Cephalothorax light brownish-green but in *P. octomaculatus* cephalothorax brown with two conspicuous black spots on the thorax. (iii) Epigyne also structurally different.

Genus 23. *Xysticus* Koch

1835. *Xysticus* Koch, *H. Schaeff. Deutschl. Ins.*, p. 35.

1892. *Xysticus*: Simon, *Hist. Nat. Araignees*, 1, p. 1035.

1940. *Xysticus*: Comstock, *The Spider Book*, New York, p. 545.

1951. *Xysticus*: Locket and Millidge, *British Spiders, Ray Soc.*, London, 1, pp. 172.

Characters.—Cephalothorax rather square-fronted, clothed with simple, isolated hairs and spines, rarely blunt, but never clavate. Posterior eyes nearly equidistant, medians smaller than laterals; the anterior medians usually a little further from each other than from the anterior laterals. The lateral eyes situated in low subconfluent tubercles. The tibiae and metatarsi of the anterior legs usually furnished with more than three pairs of inferior spines. Tarsal claws furnished with five or six isolated teeth. Abdomen much wider behind than in front, usually bearing a dentated band on its dorsal surface. These spiders live under stone and leaves or under loose bark; a few live on low plants and bushes.

Type-species.—*Xysticus brevipes* Hahn.

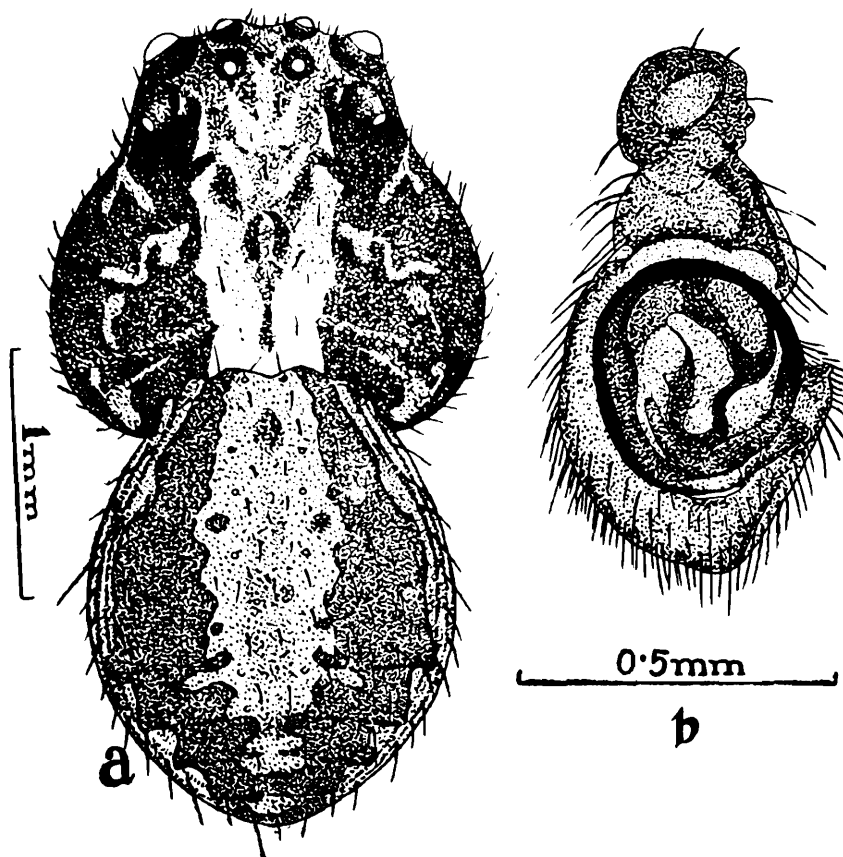
Distribution.—All tropical countries of the world.

42. *Xysticus sikkimus* sp. n.

General.—Cephalothorax, legs and abdomen dark brown. Total length 3.10 mm. Carapace 1.60 mm. long, 1.70 mm. wide; abdomen 1.80 mm. long, 1.50 mm. wide.

Cephalothorax.—Nearly as long as wide, densely and conspicuously spined, middle of cephalothorax provided with a broad longitudinal light patch from ocular area to base of thorax. Eyes round, black, lateral eyes large and ringed with contiguous brown tubercles, ocular quad wider than long, medians almost equal in size. Sternum broadly oval, slightly pointed behind, dark in colour. Legs strong and spined, I and II longer than III and IV; I and II legs from base to patella provided with deep brown and remaining portion pale in colour. Tibiae and metatarsi of I and II with three and four pairs of ventral spines respectively.

Abdomen.—Shortly ovate, wider behind, clothed with numerous spines, mid-dorsally with a longitudinal broad light patch, extending from base to end of abdomen. Ventral side deep brown or black. Male palp as in text-fig. 28, b.



TEXT-FIG. 28. *Xysticus sikkimus* sp. n. (a) Dorsal view of male, legs omitted. (b) Male palp.

Holotype one male in spirit.

Type-locality.—Satmila (near Gangtok) East Sikkim, 23.8.1959. Coll. B. K. Tikader.

This species resembles *Xysticus sujatai* Tikader from Shillong, India, but it is separated as follows: (i) Cephalothorax mid-dorsally with a longitudinal broad light patch but in *X. sujatai* lateral margin of cephalothorax with two dark brown bands extending from both the lateral eyes to nearly the base of thorax. (ii) Abdomen mid-dorsally with a longitudinal broad light patch, extending from base to end of abdomen but in *X. sujatai* abdomen dorsally with paired transverse white lines. (iii) Male palp also structurally different.

Genus 24. *Pistius* Simon

1875. *Pistius* Simon, *Ar. Fr.*, 2, p. 257.

1951. *Pistius*: Locket and Millidge, *British Spiders*, Ray Soc., London, 1, pp. 175

Characters.—Carapace armed with a few only very short fine spines. Eyes small, medians forming practically a square; lateral eyes on the shallow tubercle, anterior eyes subequal. Abdomen much wider and truncated behind, particularly in the female.

Type-species.—*Pistius truncatus* (Pallas).

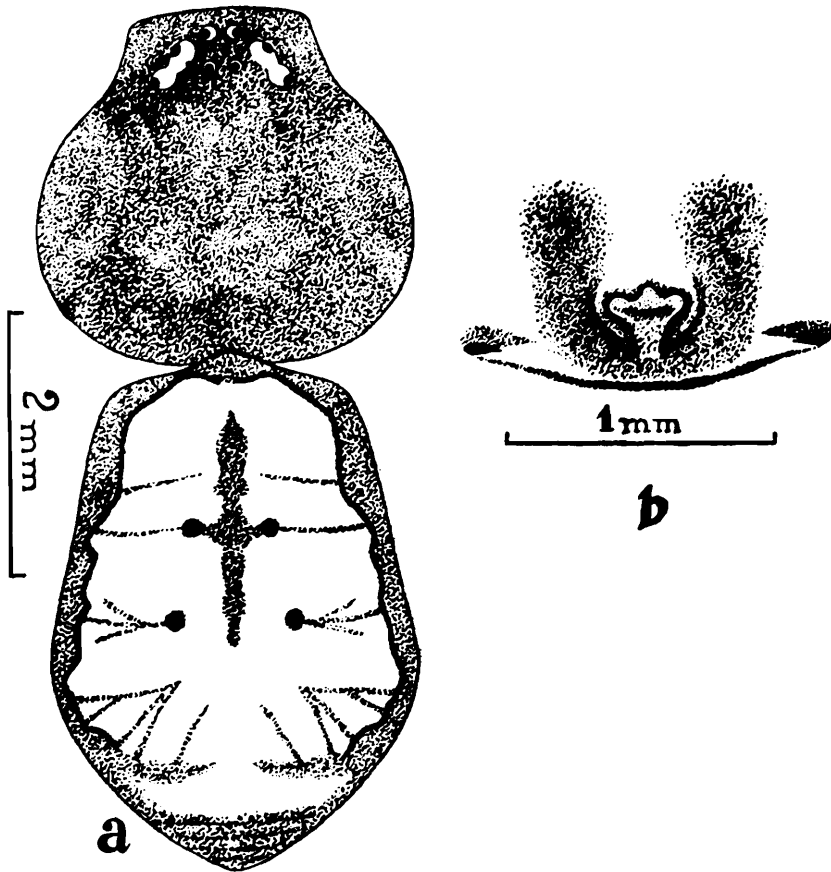
Distribution.—Europe and Asia.

43. *Pistius kalimpus* sp. n.

General.—Cephalothorax and legs green, abdomen chalk-white.

Total length 6.50 mm. Carapace 2.80 mm. long, 2.90 mm. wide; abdomen 4.00 mm. long, 2.90 mm. wide.

Cephalothorax.—Nearly as long as wide, convex, oval in outline, somewhat narrow in front. Eyes black, posterior medians slightly closer than anterior medians; the median ocular area longer than wide, lateral eyes large and provided with contiguous white tubercles; the eyes of anterior row equidistant, subequal, recurved, the posterior row less recurved than the anterior row. Clypeus high and obtuse, margin provided with small hairs. Sternum oval, pointed behind. Legs I and II much longer than III and IV; tibiae and metatarsi I and II armed ventrally with four and six pairs of spines respectively.



TEXT-FIG. 29. *Pistius kalimpus* sp. n. (a) Dorsal view of female, legs omitted. (b) Epigyne.

Abdomen.—Longer than wide, dorsally with chalk-white patches and mixed with some yellow tint on it, lateral and front sides of these patches encircled by a conspicuous black line. Ventral side uniform pale colour. Epigyne as in text-fig. 29, b.

Holotype one female in spirit.

Type-locality.—Kalimpong, Dist. Darjeeling, West Bengal, India. 17.9.1959. Coll. B. K. Tikader.

This species resembles *Pistius sreepanchamii* Tikader from Shillong, India but it is separated as follows: (i) Cephalothorax uniform green in colour but in *P. sreepanchamii* cephalothorax whitish mottled deep green and all dots centrally with a small spine. (ii) Tibiae and metatarsi I and II armed ventrally with four and six pairs of spines respectively

but in *P. sreepanchamii* tibiae and metatarsi I and II armed ventrally with three and eight pairs of spines respectively. (iii) Epigyne also differs.

Family VII. AGELENIDAE

Characters.—Cephalothorax oval attenuated in front with a longitudinal fovea. Eyes not very different in size. Abdomen oval, a transverse slit near the spinners usually very difficult to see. The eyes may be either silvery-white or dark or both types may be present; usually the anterior median eyes silvery-white, the others dark; the eyes in two rows. The posterior spinners very long.

Genus 25. *Agelena* Walckenaer

1805. *Agelena* Walckenaer, *Tabl. Aran.*, p. 51.
 1897. *Agelena* : Simon, *Hist. Nat. Araignees*, 2, p. 258.
 1940. *Agelena* : Comstock, *The Spider Book*, New York, p. 600.
 1953. *Agelena* : Locket and Millidge, *British Spiders, Ray Soc.*, London, 2, p. 6.

Characters.—Cephalothorax rather long, the cephalic region narrowed. Eyes nearly equal in size, both rows strongly procurved, so that the posterior lateral and the anterior median form a nearly straight line. Anterior spinners clearly separated, posterior much longer and provided with two segments; the apical segment longer than the basal and tapering.

Type-species.—*Agelena labyrinthica* Clerk.

Distribution.—Europe, Africa, Asia and America.

44. *Agelena satmila* sp. n.

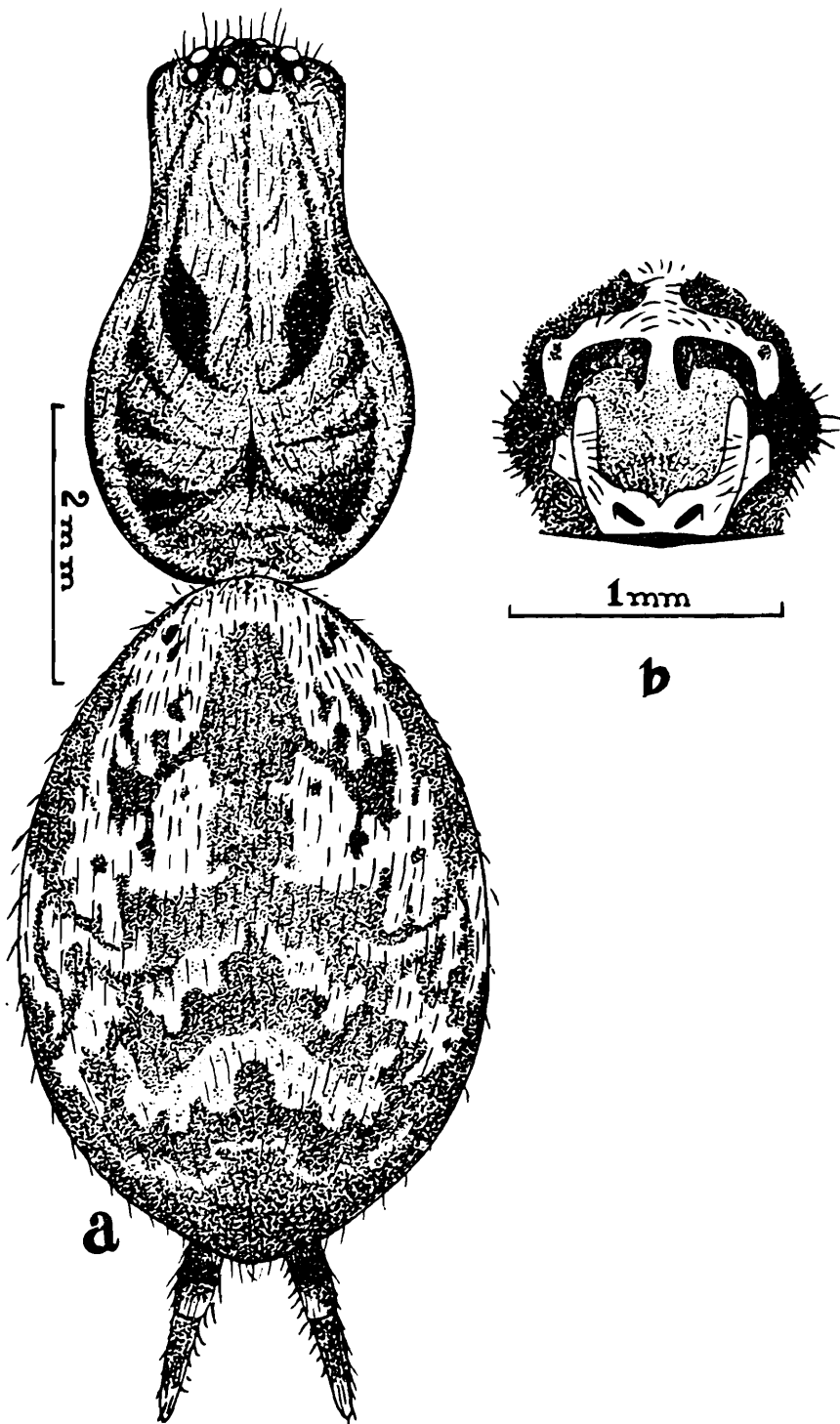
General.—Cephalothorax, leg and abdomen brownish-green. Total length 8.90 mm. Carapace 4.00 mm. long, 2.40 mm. wide; abdomen 5.00 mm. long, 3.50 mm. wide.

Cephalothorax.—Rather long, clothed with hairs, cephalic region narrow and conspicuously high, thoracic region convex, with a sharp fovea and radiating striae. Eyes pearly white, both rows procurved (as seen from above and from in front). Anterior median eyes smaller than laterals and posterior median eyes larger than laterals. Clypeus narrow and vertical. Sternum oval, pointed behind, clothed with hairs. Legs long and stout, moderately densely clothed with long hairs and spines; all femora provided with conspicuous transverse deep brown bands.

Abdomen.—Nearly egg-shaped, clothed with hairs, dorsum provided with deep brown patches and they form like chevrons. Anterior spinners distinctly separated, posterior spinners much longer than others and two segmented, the apical segment longer than the basal and tapering. Epigyne as in text-fig. 30, b.

Holotype one female. *Paratypes*, two females in spirit.

Type-locality.—Satmila (near Gangtok) East Sikkim, 23.8.1959. Coll. B. K. Tikader.



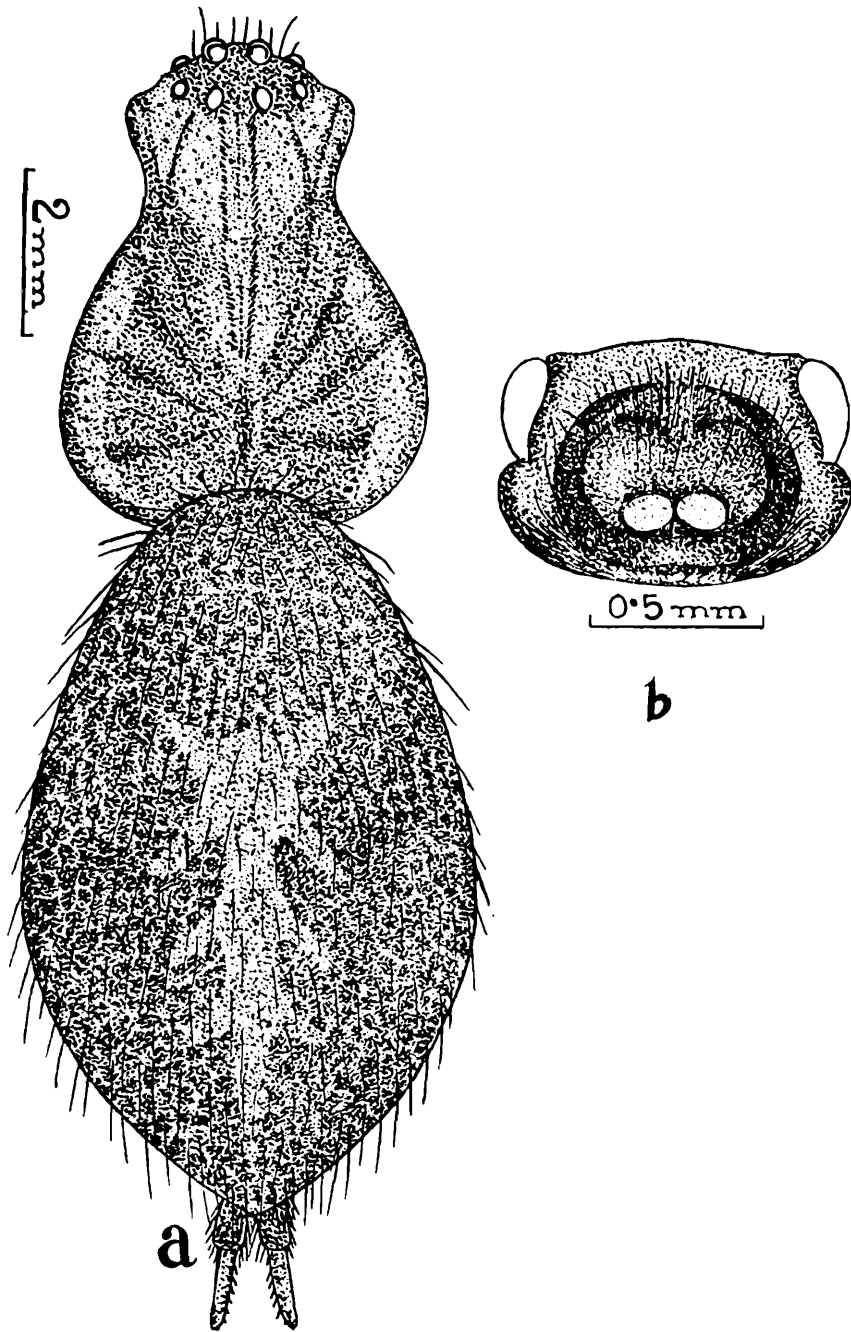
TEXT-FIG. 30. *Agelena satmila* sp. n. (a) Dorsal view of female, legs omitted. (b) Epigyne.

This species resembles *Agelena gautami* Tikader from Shillong, India but it is separated as follows: (i) Anterior median eyes smaller than laterals but in *A. gautami* anterior median eyes slightly larger than laterals. (ii) Abdomen provided with deep brown chevrons and clothed with fine hairs but in *A. gautami* abdomen uniform dark brown and densely clothed with hairs. (iii) Epigyne also structurally different.

45. *Agelena barunae* sp. n.

General.—Cephalothorax light brown, legs green, abdomen dark

brown. Total length 15.00 mm. Carapace 6.50 mm. long, 4.20 mm. wide ; abdomen 9.00 mm. long, 5.50 mm. wide.



TEXT-FIG. 31. *Agelena barunae* sp. n. (a) Dorsal view of female, legs omitted. (b) Epigyne.

Cephalothorax.—Longer than wide, cephalic region narrow and conspicuously high ; thoracic region flat, clothed with fine hairs and provided with a fovea like depression on the middle of thorax. Eyes white, nearly equal in size but anterior median slightly larger than others ; both rows procurved (as seen from front). Clypeus high and vertical. Sternum oval, pointed behind, clothed with hairs. Legs long and stout, moderately clothed with long hairs and spines.

Abdomen.—Broadly elliptical, dark brown, densely clothed with brown and grey hairs. Ventral side lighter than dorsal but middle

provided with a broad longitudinal brown line extending from epigastric fold to spinners. Anterior spinners separated and posterior spinners much longer than others and two segmented, the apical segment longer than the basal and tapering. Epigyne as in text-fig. 31, b.

Holotype one female in spirit.

Type-locality.—Bank of Great Rangit river, West Sikkim, 20.9.1959. Coll. B. K. Tikader.

This species resembles the foregoing species i.e. *Agelena satmila*, sp. n. but is separated as follows: (i) Anterior median eyes larger than laterals but in *A. satmila* anterior median eyes smaller than laterals. (ii) Abdomen dark brown, dorsally clothed with brown and grey hairs but in *A. satmila* abdomen provided with deep brown chevrons and clothed with fine hairs. (iii) Epigyne also structurally different.

Genus 26. *Tegenaria* Latreille

1804. *Tegenaria* Latreille, *Nouv. Dict. Hist. Nat.*, 24, p. 134.

1875. *Tegenaria* : Simon, *Ar. Fr.*, 2, p. 54.

1897. *Tegenaria* : Simon, *Hist. Nat. Araignees*, 2, p. 259.

1940. *Tegenaria* : Comstock, *The Spider Book*, New York, p. 607.

1953. *Tegenaria* : Iocket and Millidge, *British Spiders, Ray Soc.*, London, 2, p. 8.

Characters.—Cephalothorax as in *Agelena* Walck. Eyes anterior row procurved (viewed in front); eyes equal or the medians smaller than the laterals. Posterior row a little longer, slightly procurved. The chelicerae usually but slightly convex; and the lower margin of the furrow of the chelicerae usually armed with four to six teeth, rarely with only three.

Type-species.—*Tegenaria domestica* Clerck.

Distribution.—Europe, Africa, Asia and America.

46. *Tegenaria chhanguensis* sp. n.

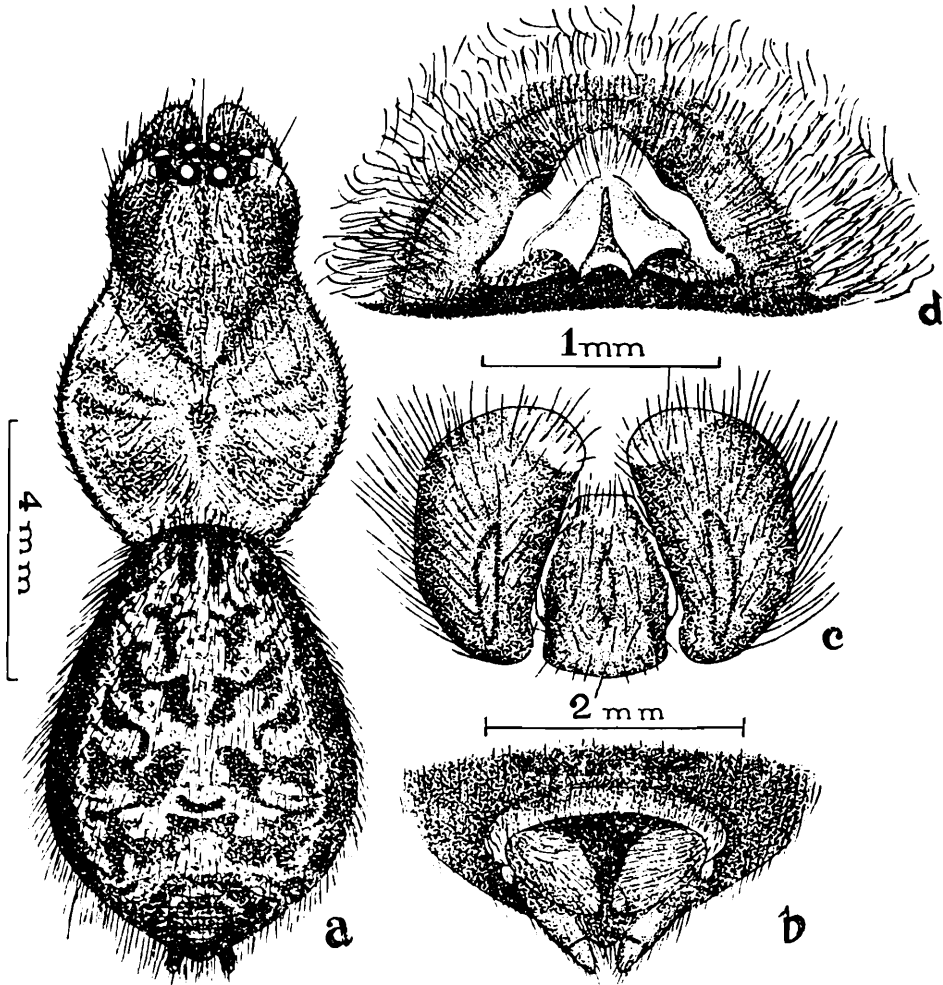
General.—Cephalothorax and legs greenish-brown, abdomen whitish-brown. Total length 12.20 mm. Carapace 6.00 mm. long, 4.80 mm. wide; abdomen 6.80 mm. long, 5.00 mm. wide.

Cephalothorax.—Longer than wide, relatively broad in front, convex, clothed with fine and stiff hairs; cephalic region high, thoracic region with a deep fovea and radiating striae. Eyes pearly white, anterior row viewed in front, very slightly procurved, medians slightly smaller than laterals. Posterior row longer than anterior row and slightly recurved, median eyes slightly closer to each other than to adjacent laterals. Clypeus narrow. Sternum oval, pointed behind, clothed with spiny hairs. Maxillae and labium as in text-fig. 32, c. Chelicerae deep brown, strong, inner margin without tooth but outer margin provided with a large tooth. Legs robust, clothed with hairs and spines; tibiae and metatarsi of I and II with two and three pairs of ventral spines respectively.

Abdomen.—Longer than wide, clothed with thick hairs, narrowing in front, slightly overlapping the posterior region of cephalothorax in front, dorsum provided with a queer design of dark brown patches. Epigyne and spinners as in text-fig. 32, d and b.

Holotype one female in spirit.

Type-locality.—Chhangu (near Changu lake) East Sikkim, 26.8.1959. Coll. B. K. Tikader.



TEXT-FIG. 32. *Tegenaria chhanguensis* sp. n. (a) Dorsal view of female, legs omitted. (b) Spinners. (c) Labium and Maxillae. (d) Epigyne.

This species resembles *Tegenaria lunakensis* Tikader from Nepal but it is separated as follows : (i) Inner margin of chelicerae without tooth but in *T lunakensis* inner margin with two teeth. (ii) Epigyne complicated with a median piece but in *T lunakensis* epigyne simple with a elliptical genital pore. (iii) Abdomen clothed with thick long hairs but in *T lunakensis* abdomen clothed with fine pubescence.

Family VIII. HAHNIIDAE

The family was formerly placed as a subfamily of the *Agelenidae*, but is sharply distinguished from the agelenids and other related spiders by the arrangement of the spinners in a single transverse row. The longer hind spinners occupy the end of the row and the other four spinners situated in between them.

Genus 27. *Hahnia* Koch

1841. *Hahnia* Koch, *Ar.*, 8, p. 61.

1897. *Hahnia* : Simon, *Hist. Nat. Araig.*, 2, p. 274.

1940. *Hahnia* : Comstock, *Spider Book*, New York, p. 614.

1953. *Hahnia* : Locket and Millidge, *British Spiders, Ray Society*, London, 2, p. 27

Characters.—Cephalothorax oval, narrowed in front; foveal streak usually clear. Anterior median eyes much smaller than the anterior laterals. Abdomen with or without a pattern. Spinners in a transverse row. Sternum heart-shaped, broadly truncate between coxae IV. Labium wider than long. Legs stout and robust with a few spines.

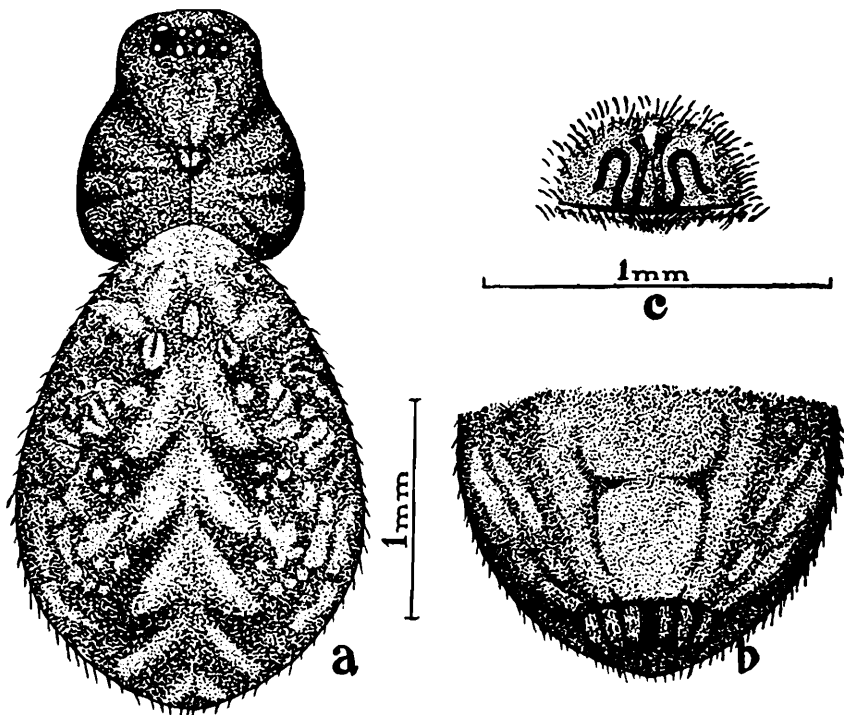
Type-species.—*Hahnia pusilla* Koch.

Distribution.—Europe; Asia: India; Japan; America.

47. *Hahnia mridulae* sp. n.

General.—Cephalothorax deep brown, abdomen light brown and legs brownish-green. Total length 3.20 mm. Carapace 1.20 mm. long, 0.90 mm. wide; abdomen 2.20 mm. long, 1.50 mm. wide.

Cephalothorax.—Longer than wide, slightly narrowing in front, convex and cephalic region high, thoracic region flat with a dark fovea and radiating striae. Clypeus moderate. Eyes pearly white, both rows of eyes straight and anterior median eyes smaller than the others; posterior row slightly longer than anterior, row and posterior median eyes larger than others. Ocular area provided with black patches. Sternum heart-shaped, pointed behind. Labium wider than long. Legs stout, clothed with stiff hairs and few spines.



TEXT-FIG. 33. *Hahnia mridulae* sp. n. (a) Dorsal view of female, legs omitted. (b) Ventral view of abdomen with spinners. (c) Epigyne.

Abdomen.—Egg-shaped, clothed with fine hairs, overlapping the posterior region of cephalothorax in front, mid-dorsally with a row of inverted V-shaped white chevrons (with the apex of the V pointed

forward) remaining portion with white dots. Epigyne and spinners as in text-fig. 33, b and c.

Holotype one female in spirit.

Type-locality.—Churong, North Sikkim, 9.10.1959. Coll. B. K. Tikader.

This species resembles *Hahnia alini* Tikader from Nepal but it is separated as follows: (i) Cephalothorax deep brown but in *H. alini* cephalothorax dark reddish-brown. (ii) Ocular area provided with black patches but in *H. alini* ocular area without black patches. (iii) Epigyne structurally different.

Family IX. PISAURIDAE

Characters.—The spiders of this family are intermediate in structure between the Lycosidae and the Agelenidae. They are distinguished from the former family by four obvious characters. Second row of eyes much shorter than the third row; the distance between the posterior eyes being more than double the distance of each eye from the corresponding eye in the second row. Foot claws larger than in Lycosidae, and two claws, bearing many teeth. The females carry their egg-cocoons in their chelicerae and not attached to the spinners, as do the Lycosidae.

Genus 28. *Pisaura* Simon

1885. *Pisaura* Simon, *Ann. Soc. Ent.*, France, p. 354.

1940. *Pisaura*: Comstock, *The Spider Book*, New York, p. 615.

1951. *Pisaura*: Locket and Millidge, *British Spiders, Ray Soc.*, London, 1, p. 292.

Characters.—The median ocular area a little longer than wide, lower margin of the furrow of the chelicerae armed with three teeth. Abdomen tapering behind and covered with a dense pubescence.

Type-species.—*Pisaura mirabilis* (Clerck).

Distribution.—Europe, Africa, Asia.

48. *Pisaura gitae* sp. n.

General.—Cephalothorax and abdomen light to deep brown, legs green. Total length 9.20 mm. Carapace 3.90 mm. long, 3.00 mm. wide; abdomen 5.50 mm. long, 3.00 mm. wide.

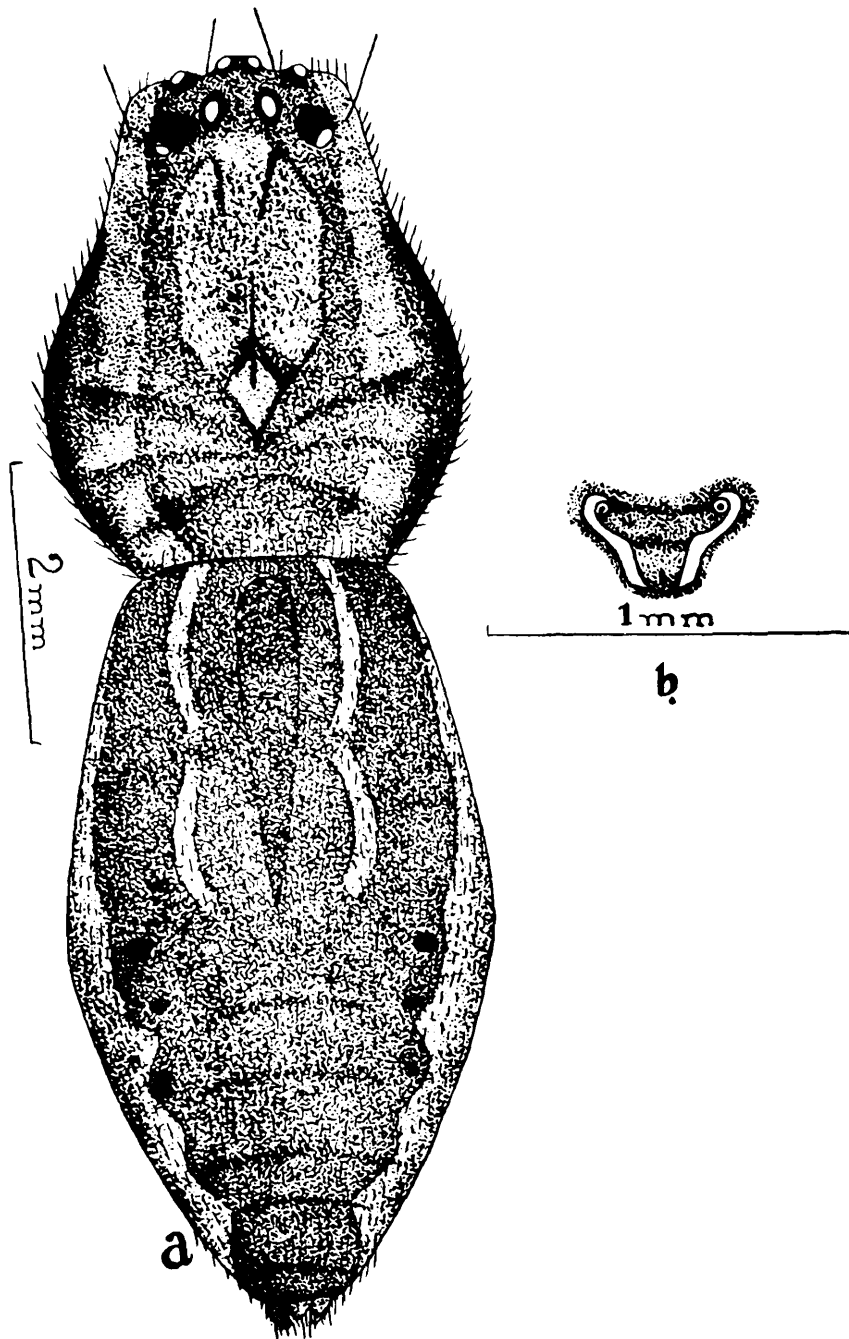
Cephalothorax.—Longer than wide, convex, cephalic region slightly high, clothed with thick fine hairs, middle and lateral margins provided with longitudinal brown patches. Eyes anterior row slightly short, recurved and almost similar in size. Posterior row of eyes more recurved than anterior row and nearly equal in size and base of each eye encircled with black patch. Ocular quad longer than wide and narrowing in front. The lower margin of furrow of the chelicerae armed with three teeth. Sternum heart-shaped, pointed behind, clothed with hairs. Legs long and strong, clothed with hairs and spines.

Abdomen.—Longer than wide, clothed with thick hairs, anterior half of abdomen with two longitudinal white lines and both lateral margins provided with broad longitudinal white lines extending from base to end of abdomen. Ventral side pale in colour, clothed with fine hairs. Epigyne as in text-fig. 34, b.

Holotype one female. *Paratypes*, four females in spirit.

Type-locality.—*Holotype* from Darjeeling, West Bengal, India

19.10.1959. *Paratype* from Nayabazar, West Sikkim, 23.9.1959. Coll. B. K. Tikader.



TEXT-FIG. 34. *Pisaura gitae* sp. n. (a) Dorsal view of female, legs omitted. (b) Epigyne.

This species resembles *Pisaura mirabilis* (Clerck) from Europe but it is separated as follows: (i) Cephalothorax light to deep brown but in *P. mirabilis* cephalothorax red-brown, with a narrow longitudinal yellowish stripe reaching up to front of head. (ii) Epigyne also structurally different.

Genus 29. *Tinus* Cambridge

1901. *Tinus* Cambridge, *Biol. Centr. Amer. Ar.*, 2, p. 310.

1940. *Tinus*: Comstock, *The Spider Book*, New York, p. 631.

Characters.—The lower margin of the furrow of the chelicerae armed with three teeth. The first row of eyes slightly procurved, the

median eyes larger than the lateral and closer to them. The posterior row of eyes recurved, the eyes equal in size, somewhat larger than those of the anterior row. The median ocular quadrangle wider behind than in front.

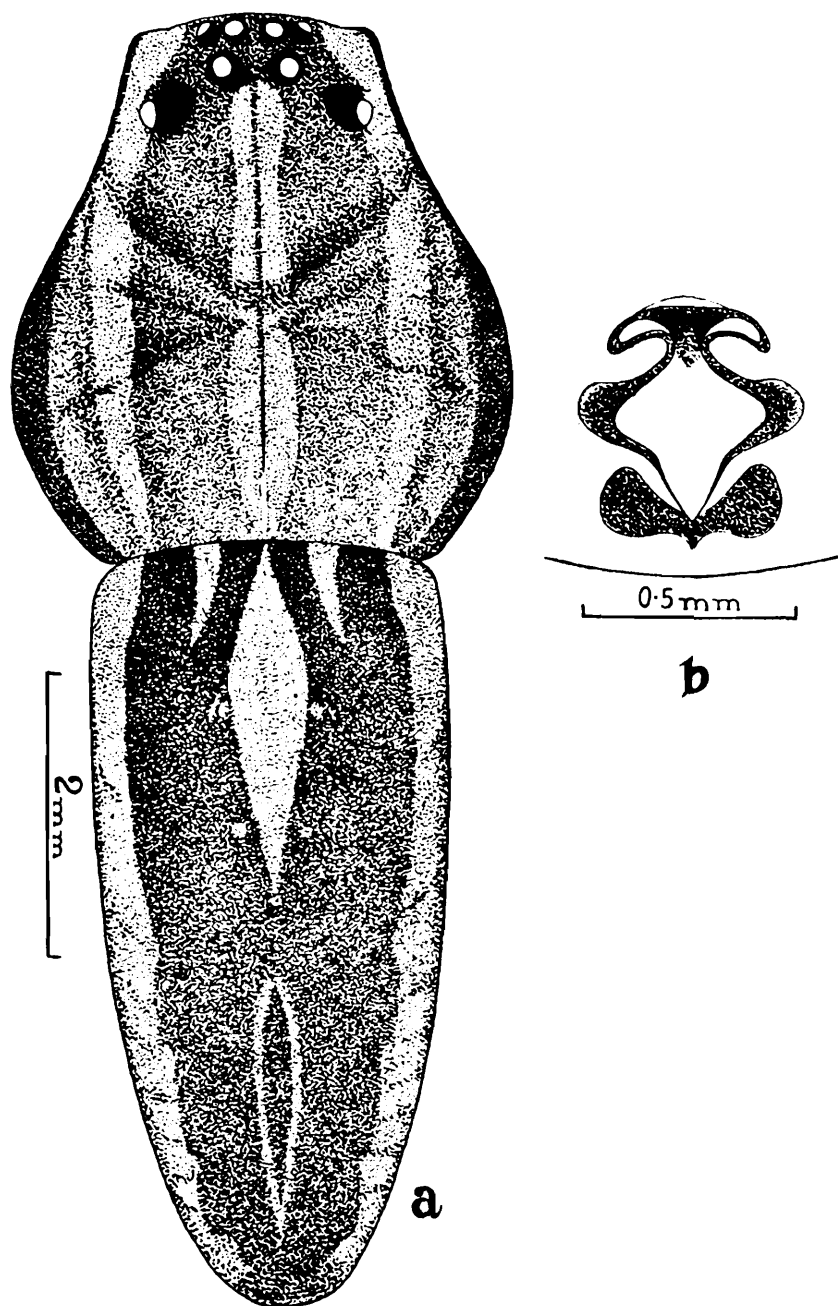
Type-species.—*Tinus nigrinus* Cambridge.

Distribution.—America and Asia : India.

49. *Tinus sikkimus* sp. n.

General.—Cephalothorax brown, legs green and abdomen deep brown. Total length 9 or 10 mm. Carapace 3.90 mm. long, 3.50 mm. wide; abdomen 5.50 mm. long, 2.50 mm. wide.

Cephalothorax.—Slightly longer than wide, convex, cephalic region



TEXT-FIG. 35. *Tinus sikkimus* sp. n. (a) Dorsal view of female, legs omitted. (b) Epigyne.

slightly high, narrowing in front, middle with a broad longitudinal brown patch and centre provided with a conspicuous fovea. Eyes

anterior row short, slightly procurved, the middle eyes large and little close to the lateral. Posterior row strongly recurved and nearly equal in size, somewhat larger than the anterior row. The median ocular quadrangle broader behind than in front. The lower margin of furrow of the chelicerae armed with three teeth. Sternum heart-shaped, pointed behind, pale in colour, clothed with hairs; near the base of corresponding coxa provided with deep brown patch. Legs very long and strong, clothed with hairs and spines.

Abdomen.—Longer than wide, lateral sides provided with a longitudinal whitish band and middle on the anterior half of abdomen with a lance-shaped light brown patch as in text-fig. 35, b.

Holotype one female (legs broken). *Paratypes*, two females in spirit.

Type-locality.—Rothak, near Nayabazar, West Sikkim, 24.9.1959. Coll. B. K. Tikader.

This species resembles *Tinus peregrinus* Cambridge from America but it is separated as follows: (i) Legs green, clothed with hairs but in *T. peregrinus* legs reddish-brown, with indistinct darker bands on the femora. (ii) Abdomen lateral sides with longitudinal whitish bands but in *T. peregrinus* abdomen marked with a dull brown band and margin provided with narrow light lines; (iii) Epigyne also different.

Family X. LYCOSIDAE

Characters.—Cephalothorax high, narrowing in front; eyes of anterior row small, forming straight or slightly curved line, eyes of posterior row strongly recurved. Legs spiny, III legs shorter than the others, tarsi with three claws and claw-tufts absent. Abdomen oval or elongated, spinners forming a compact group, generally subequal in length.

These spiders, commonly called the hunting or wolf spiders, are very fast runners. They catch their prey on foot. Only a few genera of this family, such as *Hippasa* Simon spin a tubular retreat, which expands externally into a broad sheet. Other members of the family dig a tubular tunnel in the ground.

Genus 30. *Hippasa* Simon

1885. *Hippasa* Simon, *Bull. Soc. Zool.*, France, 10, p. 31.
 1898. *Hippasa*: Simon, *Hist. Nat. Araign.*, 2, p. 326.
 1900. *Hippasa*: Pocock, *Fauna Brit. India*, Arach., p. 249.
 1935. *Hippasa*: Dyal, *Bull. Zool. Punjab Univ.*, 1, 142.

Characters.—Anterior row of eyes wider than posterior row, posterior eyes more widely separated. Posterior spinners conspicuously longer than the anterior. These spiders spin a silken thread, which expands into a sheet-like snare.

Type-species.—*Hippasa agelenoides* Simon.

Distribution.—Africa, Madagascar; Asia; Arabia, India, Malaysia.

50. *Hippasa pantherina* Pocock

1899. *Hippasa pantherina* Pocock, *J. Bombay nat. Hist. Soc.*, 12, p. 752.
 1924. *Hippasa pantherina*: Gravely, *Rec. Indian Mus.*, Calcutta, 26(6), p. 594.
 Africa; Madagascar; Asia; Arabia; India; Malaysia.

Specimens examined.—7 ♀, Nayabazar, West Sikkim, 23.9.1959. 7 ♀, Bank of Great Rangit river, West Sikkim, India. 25.9.1959. Coll. B. K. Tikader.

General.—Cephalothorax and legs brownish-green, abdomen whitish-brown. Total length 16.50 mm. Carapace 7.00 mm. long, 5.50 mm. wide; abdomen 10.00 mm. long, 4.00 mm. wide.

Cephalothorax.—Longer than wide, convex cephalic region row slightly high, clothed with short thick black hairs. Eyes anterior short and straight and almost equal in size; second and third row of eyes nearly equal in size and bases encircled by black patch. Sternum heart-shaped, pointed behind, middle provided with a conspicuous longitudinal black line, clothed with hairs. Legs long and strong, clothed with hairs and spines.

Abdomen.—Longer than wide, pointed behind, dorsum provided with irregular black or deep brown dots and also provided with whitish chevrons. Ventral side more light colour than dorsal and provided with irregular black or deep brown dots.

Distribution.—India : Barkuda Island, Chilka Lake, Orissa, Madras, Trivandrum, Travancore, Trichur, Cochin, Krusadai Island, Gulf of Manaar, Bangalore, East Khandesh, Western India, Poona, Darjeeling, Sikkim.

Genus 31. *Lycosa* Latreille

1804. *Lycosa* Latreille, *Nouv. Dict. d'Hist. Nat.*, 25, p. 135.

1898. *Lycosa* : Simon, *Hist. Nat. Araign.*, 2, p. 345.

1900. *Lycosa* : Pocock, *Fauna Brit. India*, Arach., p. 252.

1924. *Lycosa* : Gravely, *Rec. Indian Mus.*, Calcutta, 26, p. 588.

1935. *Lycosa* : Dyal, *Bull. Zool. Punjab Univ.*, 1, p. 134.

Characters.—Cephalic region high, four posterior eyes very large and arranged in a quadrangle, and little wider behind than in front; eyes of anterior row small and straight. Legs with short spines, tibia II with three pairs of ventral spines.

Type-species.—*Lycosa tarentula* Rossi.

Distribution.—All over the world.

Key to the Indian species of *Lycosa* Latreille

1. Area occupied by posterior eyes nearly square ... 2
Area occupied by posterior eyes broader behind than in front ... 4
2. Anterior portion of median piece of vulva hidden beneath the anterior chitinized margin of the cavity ... *L. kupupa* sp. n.
Anterior portion of median piece of vulva exposed throughout ... 3
3. Longitudinal portion of median piece of vulva broad.
Anterior row of eyes straight ... *L. kempi* Gravely
Longitudinal portion of median piece of vulva narrow.
Anterior row of eyes recurved ... *L. tista* sp. n.
4. Anterior portion of median piece of vulva hidden beneath the anterior chitinized margin of the cavity ... 5
Anterior portion of median piece of vulva exposed throughout ... *L. rothaka* sp. n.
5. Ocular area without deep brown or black ... 6
Ocular area with deep brown or black ... *L. carmichaeli* Gravely
6. Anterior row of eyes straight. Longitudinal portion of median piece of vulva narrow, T-shaped ... *L. shyamae* sp. n.
Anterior row of eyes recurved. Longitudinal portion of median piece of vulva narrow and dumb-bell-shaped ... *L. rhenockensis* sp. n.

51. *Lycosa carmichaeli* Gravely

1924. *Lycosa carmichaeli* Gravely, *Rec. Indian Mus.*, Calcutta, 26, p. 604.

Specimens examined.—1 ♀, and 1 ♂, Manjithar, West Sikkim, 22.9.1959. Coll. B. K. Tikader.

General.—Cephalothorax brown, legs green, abdomen dark brown. Total length 15.00 mm. Carapace 8.00 mm. long, 5.00 mm. wide; abdomen 8.00 mm. long, 5.00 mm. wide.

Cephalothorax.—Longer than wide, cephalic region raised and clothed with hairs; centre provided with a fovea. Eyes black, first row short and straight, medians larger than laterals; second row of eyes larger than others. Ocular area deep brown. Legs long and strong, clothed with hairs and spines; III and IV pairs longer than I and II.

Abdomen.—Longer than wide, clothed with mouse hairs. Ventral side pale. Cavity of vulva widely expanded in front, its floor raised in the middle line behind forming the stem of the T-shaped median piece. Cleft of vulva narrow behind, with more or less circular expansion in front.

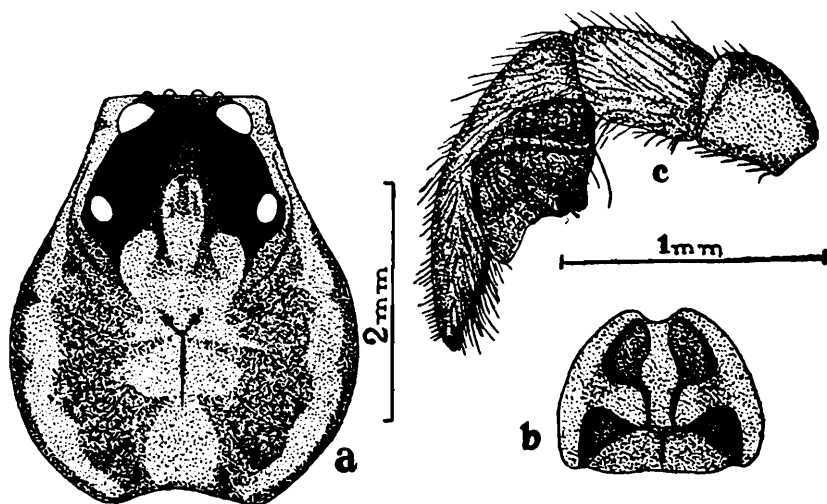
Distribution.—India: Kathgodam, Western Himalaya; Darjeeling; Assam. Bhutan and Sikkim.

52. *Lycosa rothaka* sp. n.

General.—Cephalothorax and legs light to deep brownish-green, abdomen pale blackish. Total length 9.20 mm. Carapace 3.40 mm. long, 3.00 mm. wide; abdomen 6.00 mm. long, 3.00 mm. wide.

Cephalothorax.—Longer than wide, convex, cephalic region slightly high and narrowing in front; ocular area with a conspicuous black patch, mid-dorsally with a longitudinal broad light patch extending from ocular area to base of cephalothorax, centre provided with distinct fovea. Eyes anterior row short and straight, anterior medians larger than laterals. Second row of eyes larger and situated closer together than the third row. Sternum oval, light pale colour with fine hairs. Legs long and strong, clothed with hairs and spines.

Abdomen.—Longer than wide, clothed with fine hairs, broadest behind the middle, dorsally provided with a dirty-white chevrons. Ventral side uniform light pale colour. Epigyne as in text-fig. 36, b. Anterior portion of median piece of vulva exposed throughout. Cleft of vulva more or less parallel-sided or ill-defined. Male similar in colour as female but smaller in size. Male palp as in text-fig. 36, c.



TEXT-FIG. 36. *Lycosa rothaka* sp. n.: (a) Dorsal view of cephalothorax of female. (b) Epigyne. (c) Male palp.

Holotype one female. *Paratype*, one female and *Allotype*, one male in spirit.

Type-locality.—Rothak near Nayabazar, West Sikkim, 24.9.1959. Coll. B. K. Tikader.

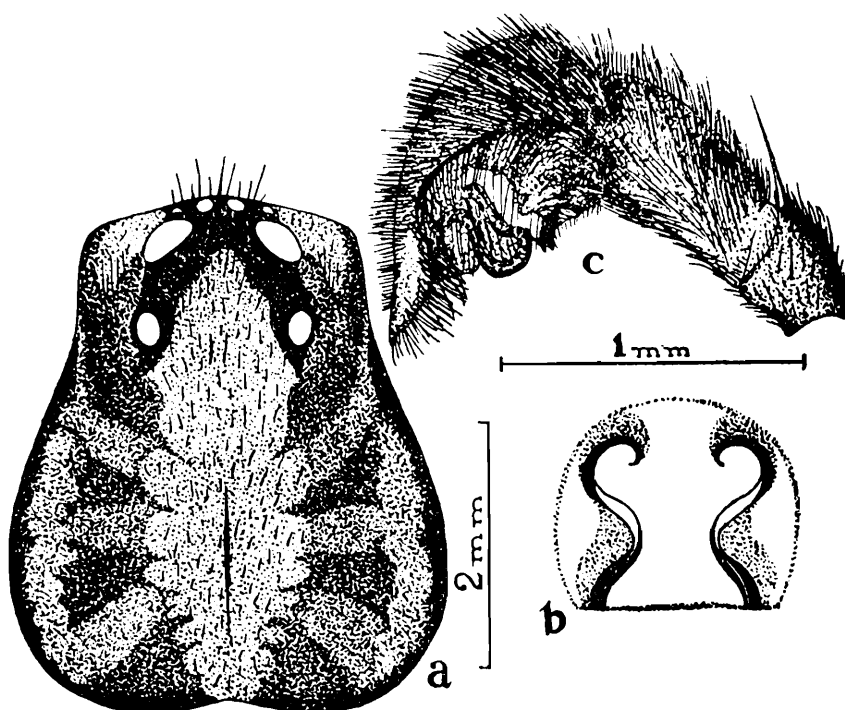
This species resembles *Lycosa kemp* Gravely from Darjeeling, India, but it is separated as follows: (i) Ocular area with conspicuous black patch but in *L. kemp* ocular area without black patch. (ii) Epigyne and male palp also structurally different.

53. *Lycosa kemp* Gravely

1924. *Lycosa kemp* Gravely, *Rec. Indian Mus.*, Calcutta, 26(6), p. 602.

Specimens examined.—1 ♀, and 1 ♂, Sambiyong, Dist. Darjeeling, West Bengal. 14.9.1959. 1 ♀, Rishi, West Sikkim, 25.9.1959. Coll. B. K. Tikader.

General.—Cephalothorax and abdomen light to deep greyish black, legs brownish-green. Total length 13.50 mm. Carapace 5.50 mm. long, 5.00 mm. wide; abdomen 8.50 mm. long, 5.50 mm. wide.



TEXT-FIG. 37. *Lycosa kemp* Gravely (a) Dorsal view of cephalothorax of female. (b) Epigyne. (c) Male palp.

Cephalothorax.—Longer than wide, convex, clothed with fine hairs, mid-dorsally with a conspicuous longitudinal broad light line, extending from the base of second row of eyes to base of thorax; centre provided with distinct fovea. Eyes anterior row short and straight, anterior medians larger than anterior laterals. Second row of eyes fairly large and slightly closer together than the third row. Sternum oval, pointed behind, clothed with hairs. Legs long and strong, clothed with hairs and spines.

Abdomen.—Longer than wide, nearly egg-shaped, clothed with thick fine hairs; broadest behind the middle. Ventral side pale in colour. Epigyne as in text-fig. 37, b. Anterior portion of median piece of vulva exposed throughout and longitudinal portion of median piece of

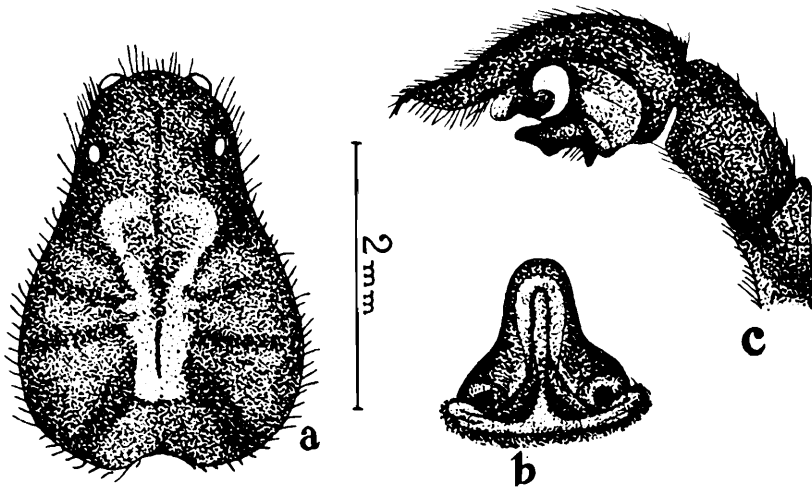
vulva broad. Male similar colour as female but smaller in size. Male palp as in text-fig. 37, c.

Distribution.—India : Assam (Type-locality), Darjeeling. Bhutan ; Sikkim.

54. *Lycosa kupupa* sp. n.

General.—Cephalothorax and legs deep brown, abdomen less brown than cephalothorax. Total length 7.70 mm. Carapace 3.60 mm. long, 3.00 mm. wide; abdomen 4.20 mm. long, 2.90 mm. wide.

Cephalothorax.—Longer than wide, convex, clothed with fine hairs, slightly high and narrowing in front, middle provided with a conspicuous broad longitudinal light patch and centre provided with a longitudinal sharp blackish line. Eyes anterior row short and slightly procurved, space of two anterior middle eyes wider than the laterals. Second row of eyes larger and closer together than third row. Area occupied by posterior row of eyes nearly square. Sternum heart-shaped, pointed behind, dark and clothed with hairs. Legs strong and long but IV legs conspicuously longer than others, legs provided with irregular bands or patches of deep brown and light brown colour, clothed with hairs and spines.



TEXT-FIG. 38. *Lycosa kupupa* sp. n. (a) Dorsal view of cephalothorax of female. (b) Epigyne. (c) Male palp.

Abdomen.—Longer than wide, clothed with thick hairs, variable in colour, some with light brown chevrons and some without chevron, broadest behind the middle. Ventral side more light colour than dorsal side. Epigyne as in text-fig. 38, b. Anterior portion of median piece of vulva hidden beneath the anterior chitinized margin of the cavity. Male similar with female but abdomen smaller than female, male palp as in text-fig. 38, c.

Holotype one female. *Paratypes*, thirteen females and *Allotypes*, five males in spirit.

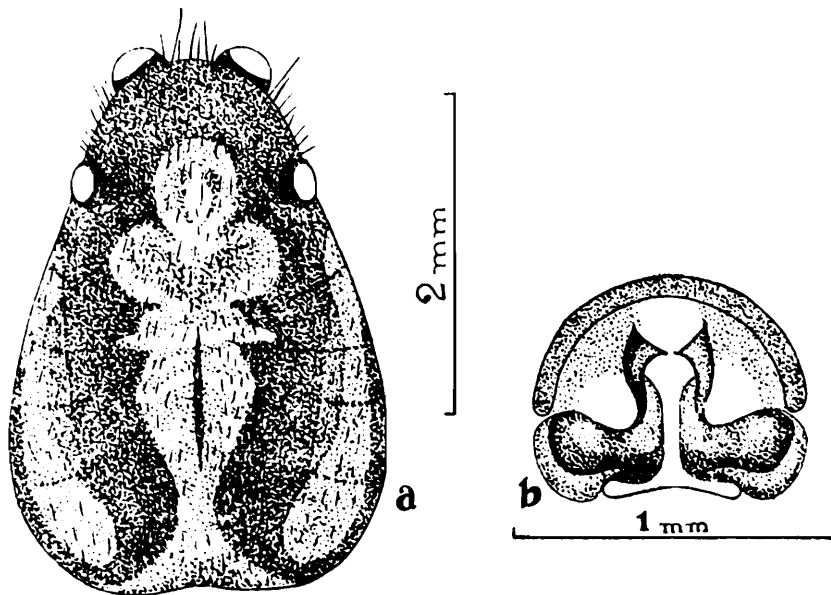
Type-locality.—Kupup, East Sikkim, 28.8.1959. Coll. B. K. Tikader.

This species is closely related to *Lycosa nigrotibialis* (Simon) from India but it differs as follows: (i) Average length 7-8 mm. but in *L. nigrotibialis* average length 20 mm. long. (ii) Ventral side of abdomen light colour than dorsal but in *L. nigrotibialis* ventral side uniform dark black. (iii) Epigyne and male palp also different.

55. *Lycosa shyamae* sp. n.

General.—Cephalothorax, legs and abdomen light to deep brown. Total length 9.50 mm. Carapace 5.00 mm. long, 4.00 mm. wide; abdomen 4.50 mm. long, 2.50 mm. wide.

Cephalothorax.—Longer than wide, convex, clothed with hairs, cephalic region slightly high and narrowing in front. Ocular area deep brown and provided with some long spines, mid-dorsally with a cross longitudinal broad patch and centre provided with a sharp fovea as in text-fig. 39, a. Eyes anterior row short and straight, placed in equal distance. Second row of eyes larger and situated much closer together than the third row. Sternum oval, slightly pointed behind, light colour clothed with hairs. Legs long and stout, clothed with hairs and spines, provided with transverse deep brown irregular bands.



TEXT-FIG. 39. *Lycosa shyamae* sp. n. (a) Dorsal view of cephalothorax of female. (b) Epigyne.

Abdomen.—Longer than wide, clothed with thick hairs, mid-dorsally with a longitudinal broad patch. Ventral side light colour and provided with thick hairs. Epigyne as in text-fig. 39, b. Longitudinal portion of median piece of vulva narrow and T-shaped.

Holotype one female. *Paratypes*, four females in spirit.

Type-locality.—Samabiyong, Dist. Darjeeling, West Bengal, India. 14.9.1959. Coll. B. K. Tikader.

This species is closely related to the foregoing species i.e. *Lycosa kupupa* sp. n. but it differs as follows: (i) Cephalothorax with cross longitudinal broad light patch with a sharp fovea but in *L. kupupa* cephalothorax with a heart-shaped broad light patch. (iii) Epigyne structurally different.

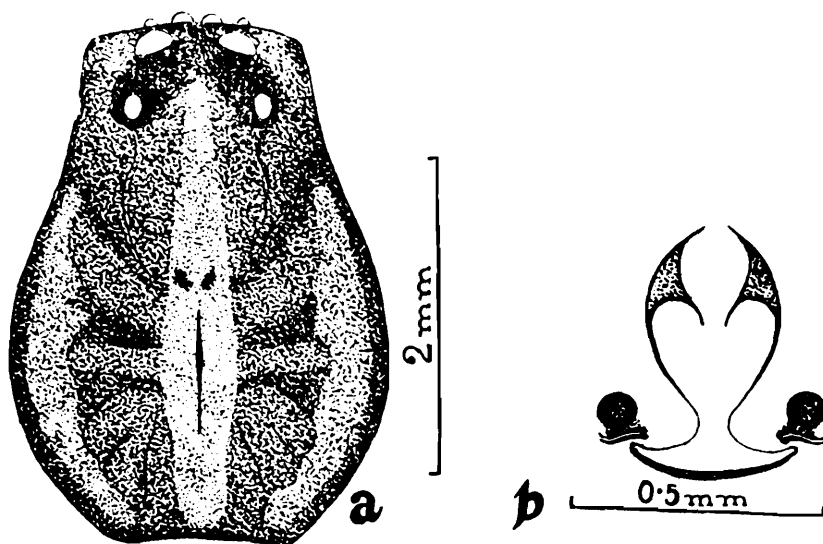
56. *Lycosa tista* sp. n.

General.—Cephalothorax and legs brownish-green, abdomen dark-brown. Total length 9.00 mm. Carapace 5.00 mm. long, 2.40 mm. wide; abdomen 4.00 mm. long, 3.00 mm. wide.

Cephalothorax.—Longer than wide, convex, clothed with fine hairs, ocular area deep brown or dark patch, lateral two sides provided with

longitudinal broad deep brown patch. Eyes anterior row short and slightly recurved, median larger than laterals. Second row of eyes large and situated close together than the third row. Sternum oval, pale in colour and clothed with hairs. Legs long and strong, clothed with hairs and spines.

Abdomen.—Longer than wide, dorsally provided with minute greyish dots, broadest behind the middle. Ventral side uniform light colour. Epigyne as in text-fig. 40, b. Longitudinal portion of median piece of vulva narrow.



TEXT-FIG. 40. *Lycosa tista* sp. n. (a) Dorsal view of cephalothorax of female. (b) Epigyne.

Holotype one female in spirit.

Type-locality.—Rothak near Nayabazar, West Sikkim, 24.9.1959. Coll. B. K. Tikader.

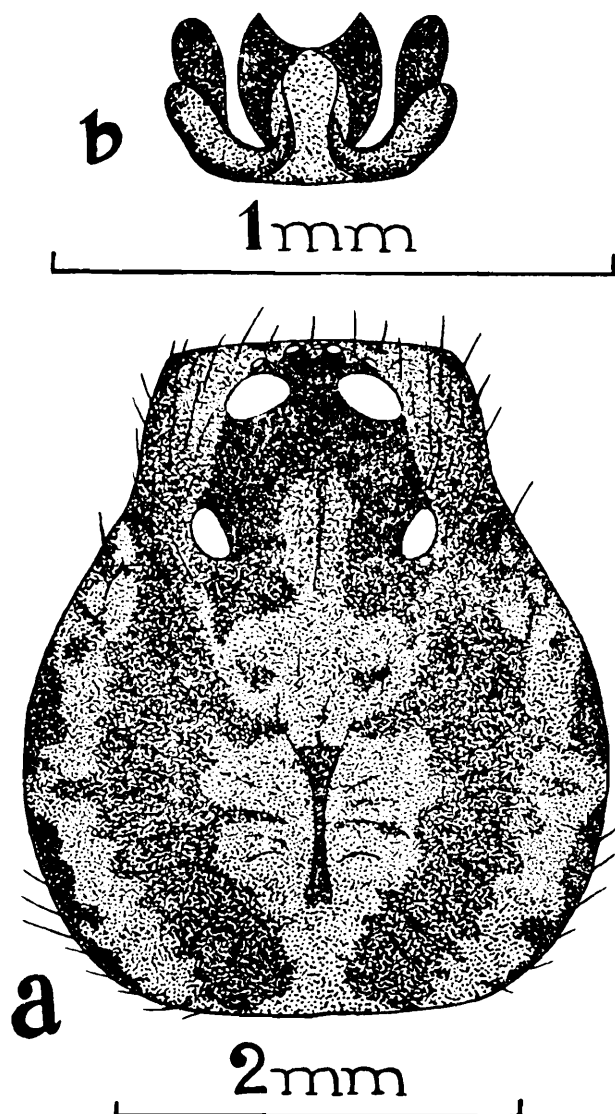
This species resembles *Lycosa carmichaeli* Gravely from India but it is separated as follows: (i) Maximum total length 9.00 mm. but in *L. carmichaeli* maximum total length 19.00 mm. (ii) Abdomen dorsally provided with minute greyish dots but in *L. carmichaeli* abdomen marked with narrow transverse bands of a more snowy white. (iii) Epigyne structurally different.

57. *Lycosa rhenockensis* sp. n.

General.—Cephalothorax, legs and abdomen light brown. Total length 8.50 mm. Carapace 3.50 mm. long, 2.90 mm. wide; abdomen 5.00 mm. long., 3.20 mm. wide.

Cephalothorax.—Longer than wide, convex, clothed with fine hairs and few spines, cephalic region slightly high and narrowing in front. Ocular area deep brown and provided with some long spines; lateral sides with deep brown longitudinal patches and centre provided with a sharp fovea. Eyes anterior row short and recurved, placed at equal distance. Second row of eyes large and situated much closer together than the third row. Sternum nearly oval, slightly pointed behind, light colour and clothed with hairs. Legs long and stout, clothed with hairs and spines, provided with some brown irregular bands or patches.

Abdomen.—Longer than wide, clothed with thin hairs, dorsally



TEXT-FIG. 41. *Lycosa rhenockensis* sp. n. (a) Dorsal view of cephalothorax of female. (b) Epigyne.

provided with light chevrons. Ventral side uniform pale colour. Epigyne as in text-fig. 41, b. Longitudinal portion of median piece of vulva narrow and dumb-bell-shaped.

Holotype one female. *Paratypes*, ten females in spirit.

Type-locality.—Rhenock, East Sikkim, 2.9.1959. Coll. B. K. Tikader.

This species is closely related to the foregoing species i.e. *Lycosa shyamae* sp. n. but it differs as follows: (i) Cephalothorax and abdomen remarkably different. (ii) Epigyne also structurally different.

Family XI. OXYOPIDAE

Characters.—Cephalothorax oval, high; cephalic region narrow, subacuminate; eyes forming a compact subcircular group, those of the posterior line being typically strongly procurved and those of the anterior recurved, the anterior medians minute; clypeus very high, vertical. Mandibles long and acuminate; fang short; fang-groove unarmed or weakly armed; maxillae and labium very long. Legs, slender, armed with long black, conspicuous spines, not scopulate;

three claws. Abdomen generally oval, narrowed behind; spinning-mamilla short, subequal; a small colulus present.

Genus 32. *Oxyopes* Latreille

1804. *Oxyopes* Latreille, *Hist. Nat. Arach.*, France, 14(7), p. 144.

1900. *Oxyopes*: Pocock, *Fauna Brit. India.*, Arach., p. 255.

Characters.—Posterior row of eyes strongly procurved and equidistant from each other. Ocular quadrangle longer than wide and limited by the posterior median eyes and the anterior lateral eyes.

Type species.—*Oxyopes heterophthalmus* Latreille.

Distribution.—Europe, Africa, Asia, Australia, and America.

Key to the Indian species of *Oxyopes* Latreille

- | | | | | |
|---|-----|-----|-----|------------------------------|
| 1. Clypeus provided with two black lines extending from anterior median eyes to the base of fang | ... | ... | 2 | |
| Clypeus not provided with black line | ... | ... | 6 | |
| 2. Cephalothorax clothed with spatulate hairs | ... | ... | 3 | |
| Cephalothorax clothed with normal hairs | ... | ... | 4 | |
| 3. Upper side of femora of all legs provided with a longitudinal black line | ... | ... | ... | <i>O. ratnae</i> sp. n. |
| Lower side of femora of all legs provided with a longitudinal black line | ... | ... | ... | <i>O. sunandae</i> sp. n. |
| 4. Abdomen broad | ... | ... | ... | <i>O. sakuntalae</i> sp. n. |
| Abdomen narrowed | ... | ... | 5 | |
| 5. Lower side of femora of all legs provided with two conspicuous longitudinal black lines | ... | ... | ... | <i>O. sitae</i> sp. n. |
| Lower side femora of all legs provided with only one longitudinal black line | ... | ... | ... | <i>O. shewta</i> sp. n. |
| 6. Cephalothorax clothed with fine hairs. Abdomen provided with irregular net like white minute patches | ... | ... | ... | <i>O. subhadrae</i> sp. n. |
| Cephalothorax clothed with short and blunt deep brown hairs. Abdomen provided with irregular dirty white and deep brown hairs | ... | ... | ... | <i>O. sikkimensis</i> sp. n. |

58. *Oxyopes ratnae* sp. n.

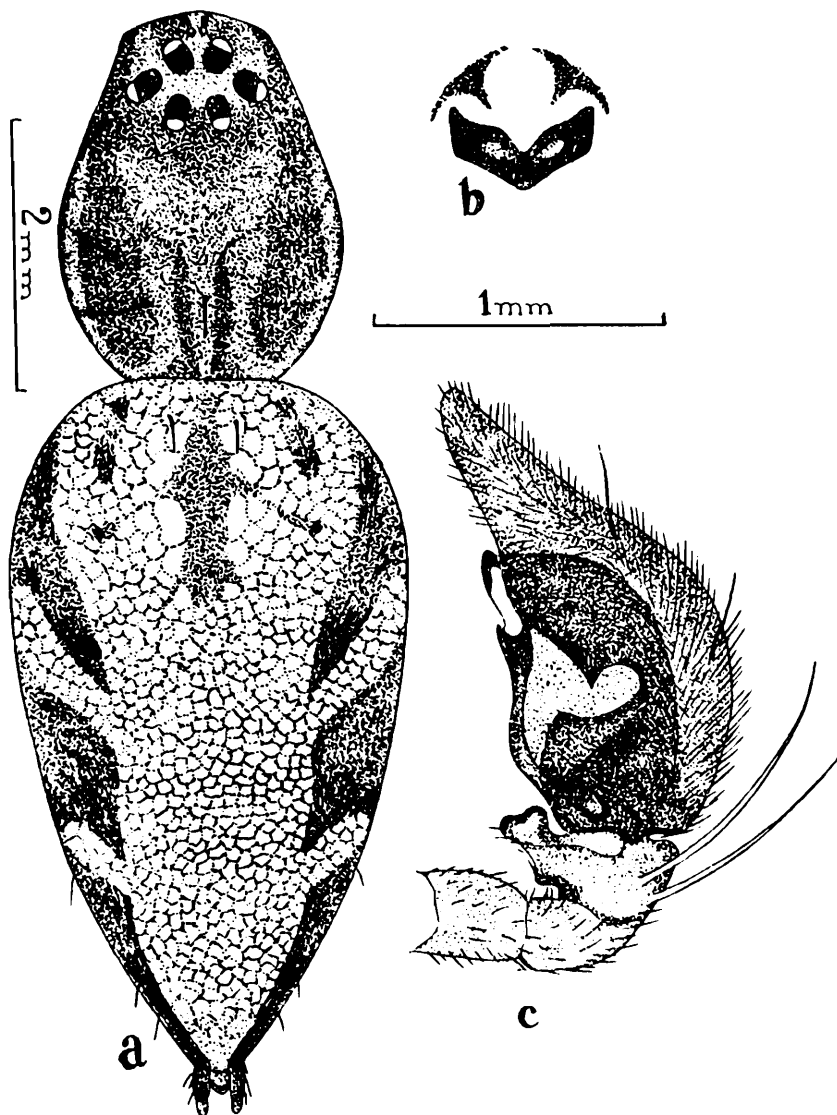
General.—Cephalothorax and legs brownish-green, abdomen dirty white. Total length 10.00 mm. Carapace 3.50 mm. long, 3.00 mm. wide; abdomen 7.00 mm. long, 4.00 mm. wide.

Cephalothorax.—Longer than wide, convex, cephalic region slightly high, clothed with short spatulate deep brown hairs; centre of thorax provided with fine fovea. Eyes posterior row procurved and situated in equal distance, base of each eye encircled with a black patch. Clypeus long and provided with two black lines extending from anterior median eyes to near the base of fang of chelicerae. Sternum heart-shaped, pointed behind, clothed with hairs and spines. Legs long and strong, clothed with hairs and conspicuous long spines, upper side of femora of all legs provided with a longitudinal deep brown line.

Abdomen.—Longer than wide, narrowing behind, clothed with fine and some spatulate hairs. Lateral sides with deep brown patch and mid-dorsally with a dirty-white longitudinal broad patch, posterior half with dirty-white chevrons. Ventral side uniform dirty white but middle provided with conspicuous longitudinal broad black line,

extending from epigastric fold to base of spinners. Epigyne as in text-fig. 42, b. Male smaller than female, male palp as in text-fig. 42, c.

Holotype one female. *Paratypes*, two females and *Allotypes*, two males in spirit.



TEXT-FIG. 42. *Oxyopes ratnae* sp. n. (a) Dorsal view of female, legs omitted. (b) Epigyne. (c) Male palp.

Type-locality.—Legship, West Sikkim, 1.10.1959. Coll. B. K. Tikader.

This species resembles *Oxyopes rufisternis* Pocock from India but it is separated as follows : (i) Cephalothorax brownish-green and clothed with short spatulate deep brown hairs but in *O. rufisternis* cephalothorax deep mahogany brown and clothed with white hairs. (ii) Abdomen dirty white, clothed with some spatulate deep brown hairs but in *O. rufisternis* abdomen olive yellow above varied with white and reddish hairs. (iii) Epigyne and male palp structurally different.

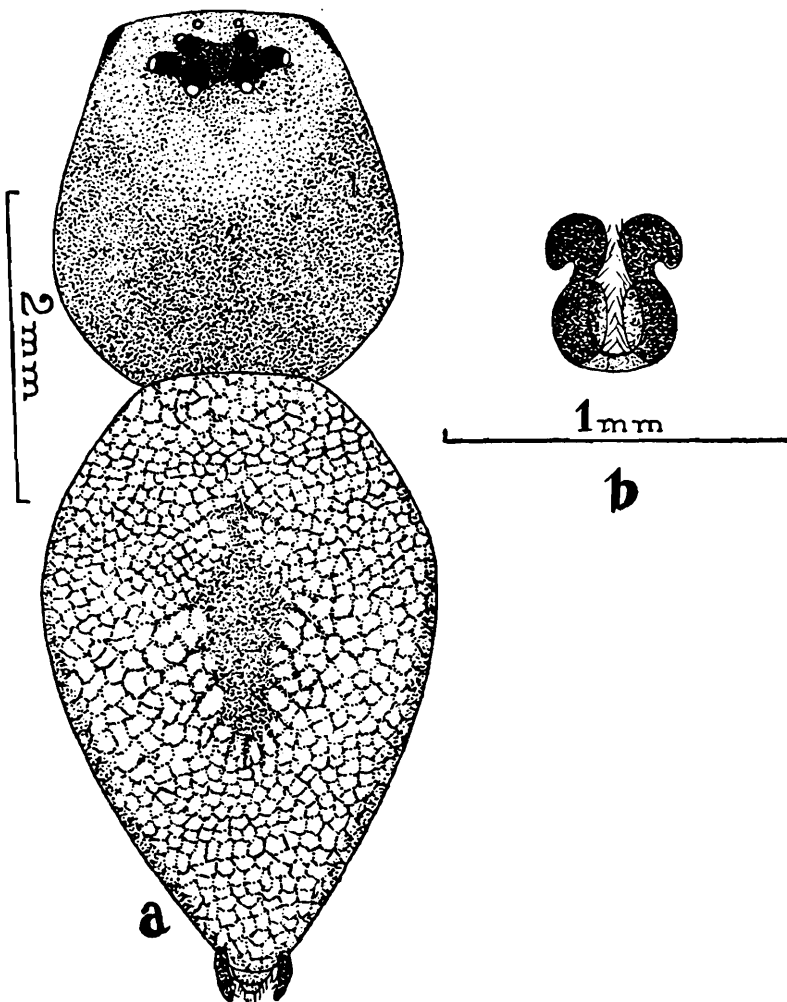
59. *Oxyopes subhadrae* sp. n.

General.—Cephalothorax and legs brownish-green, abdomen dirty white. Total length 8.00 mm. Carapace 3.30 mm. long, 2.60 mm. wide ; abdomen 5.00 mm. long, 3.40 mm. wide.

Cephalothorax.—Longer than wide, convex, clothed with fine hairs, cephalic region slightly high and broad, centre provided with sharp fine fovea. Eyes posterior row strongly recurved, middle eyes small, base of each eye encircled by a black patch and rest of the ocular area blackish in appearance. Clypeus long, clothed with grey hairs. Sternum heart-shaped, pointed behind, clothed with fine hairs. Legs long and strong, clothed with fine hairs and conspicuous long spines.

Abdomen.—Longer than wide, narrowing behind, clothed with fine hairs, mid-dorsally with a lance-shaped brown patch and all over the abdomen provided with irregular net-like white minute patches as in text-fig. 43, a. Ventral side uniform light brown colour and clothed with short and stout deep brown hairs. Epigyne as in text-fig. 43, b.

Holotype one female in spirit.



TEXT-FIG. 43. *Oxyopes subhadrae* sp. n. (a) Dorsal view of female, legs omitted. (b) Epigyne.

Type-locality.—Legship, West Sikkim, 1.10.1959. Coll B. K. Tikader.

This species resembles the foregoing species i.e. *Oxyopes ratnae* but it is separated as follows: (i) Cephalothorax in front slightly high and broad, clothed with fine hairs but in *O. ratnae* cephalothorax in front slightly narrow and clothed with short spatulate deep brown hairs. (ii) Abdomen provided with uniform net-like white patches and mid-dorsally with a lance-shaped brown patch but in *O. ratnae* abdomen laterally

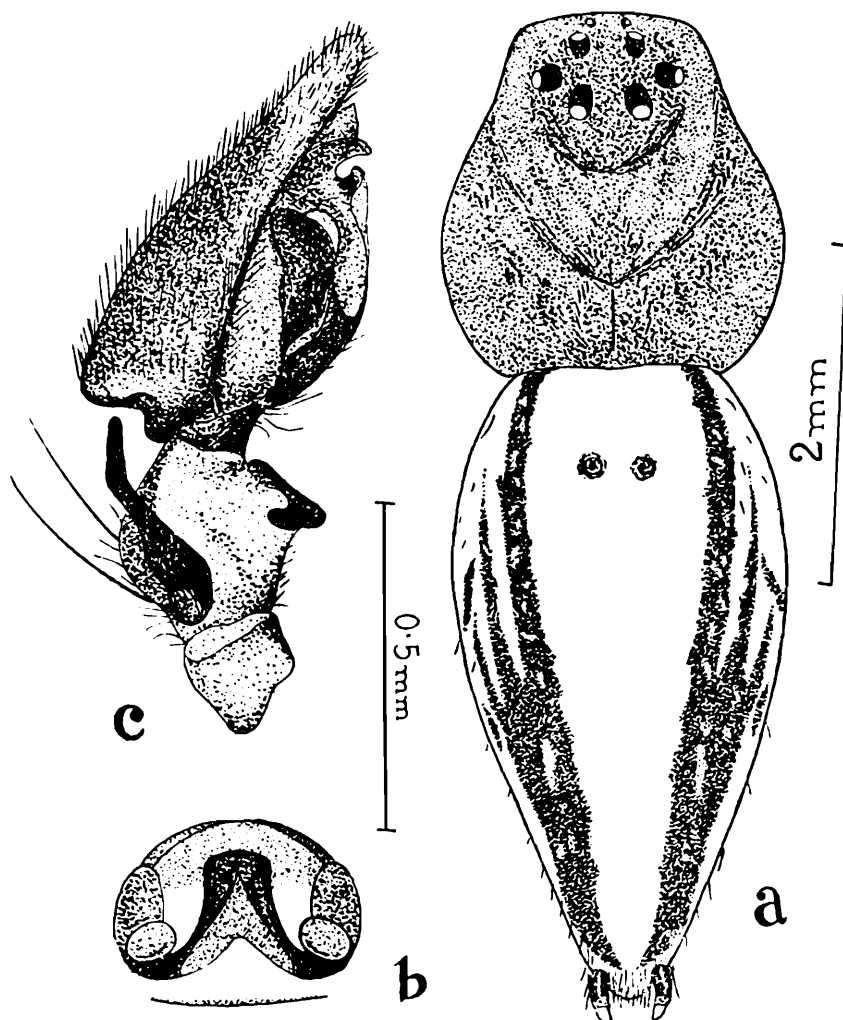
provided with deep brown marking and clothed with some spatulate hairs. (iii) Epigyne structurally different.

60. *Oxyopes sakuntalae* sp. n.

General.—Cephalothorax, legs and abdomen brownish-green. Total length 8.50 mm. Carapace 3.20 mm. long, 2.50 mm. wide; abdomen 5.50 mm. long, 2.40 mm. wide.

Cephalothorax.—Slightly longer than wide, convex, cephalic region slightly high and broad, clothed with fine hairs, centre provided with sharp fovea. Eyes pearly white, posterior row procurved and situated at equal distance, base of each eye encircled with a black patch. Anterior row strongly recurved and middle eyes small. Clypeus long and provided with two black lines extending from anterior median eyes to near the base of fang of chelicerae. Sternum oval, pointed behind, clothed with fine hairs and spines. Legs long and strong, clothed with fine hairs and conspicuous long spines, all legs provided with longitudinal deep-brown discontinuous lines, one situated dorsally and one ventrally.

Abdomen.—Broad, longer than wide, narrowing behind, clothed with fine hairs; lateral sides provided with an irregular longitudinal broad line, extending from base to end of abdomen. Ventral side uniform pale colour but middle provided with a conspicuous longitudinal broad black line extending from epigastric fold to base of spinners. Epigyne as in text-fig. 44, b. Male like female, male palp as in text-fig. 44, c.



TEXT-FIG. 44. *Oxyopes sakuntalae* sp. n. (a) Dorsal view of female, legs omitted. (b) Epigyne. (c) Male palp.

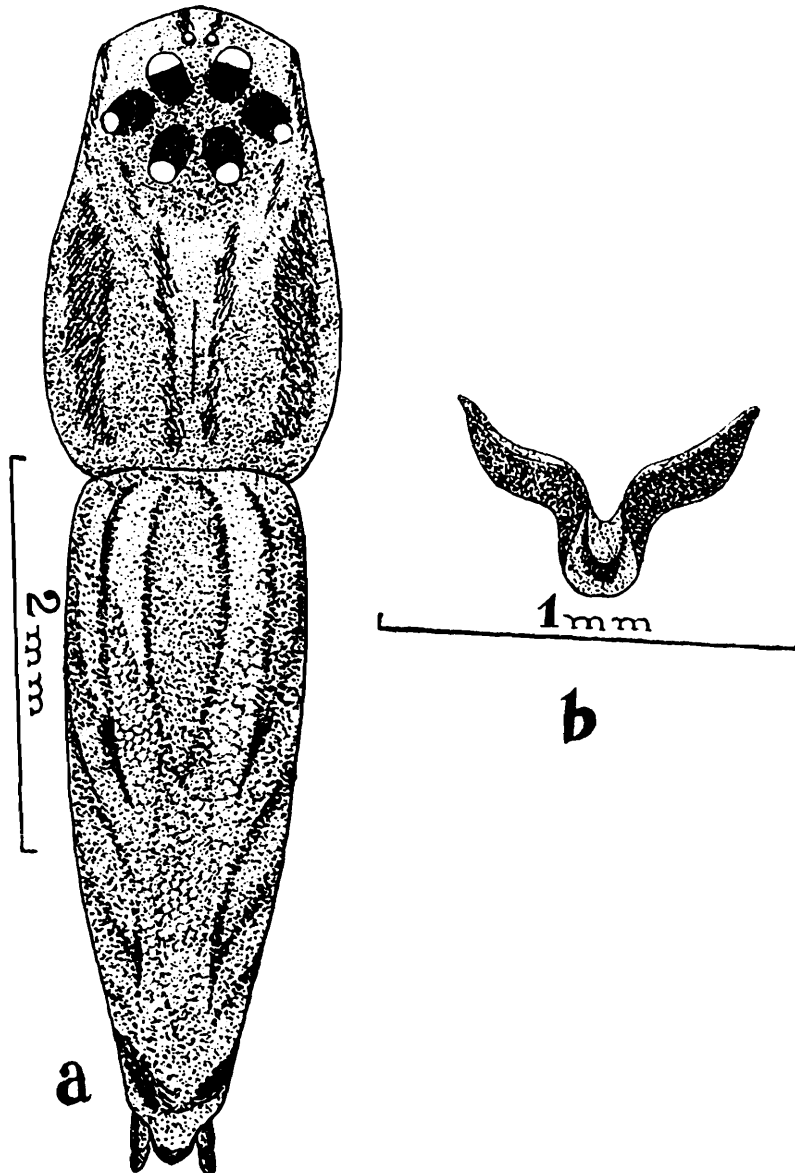
Holotype one female. *Paratypes*, two females. *Allotype*, one male in spirit.

Type-locality.—Bhudbari, Dist. Darjeeling, West Bengal, India. 15.9.1959. Coll. B. K. Tikader.

This species resembles *Oxyopes ratnae*, but it is separated as follows: (i) Cephalothorax slightly high in front and broad, clothed with fine hairs but in *O. ratnae* cephalothorax slightly narrow in front and clothed with short spatulate deep brown hairs. (ii) Abdomen brownish-green lateral sides provided with an irregular longitudinal black line extending from base to end of abdomen and clothed with fine hairs but in *O. ratnae* abdomen dirty white with irregular net-like minute patches clothed with some spatulate deep brown hairs. (iii) Epigyne and male palp also structurally different.

61. *Oxyopes sunandae* sp. n.

General.—Cephalothorax and legs light brownish-green; abdomen dirty-white. Total length 8.00 mm. Carapace 3.60 mm. long, 2.80 mm. wide; abdomen 4.50 mm. long, 2.00 mm. wide.



TEXT-FIG. 45. *Oxyopes sunandae* sp. n. (a) Dorsal view of female, legs omitted. (b) Epigyne.

Cephalothorax.—Longer than wide, convex, clothed with fine hairs and some deep-brown special type of blunt or spatulate hairs mainly on the thoracic region as in text-fig. 45, a. and centre of thorax with fine fovea. Eyes pearly white, posterior row procurved and situated in equal distance and anterior row strongly recurved, anterior lateral eyes large and medians small; base of each eye encircled with a black patch. Clypeus long, provided with two black lines, extending from anterior median eyes to near the base of fang of chelicerae. Sternum heart-shaped pointed behind, clothed with fine hairs and conspicuous long spines, lower side of femora of all legs provided with a longitudinal black line.

Abdomen.—Long, narrowing behind, clothed with fine grey hairs, anterior mid-dorsally with a lance-shaped yellowish-brown patch, lateral sides provided with longitudinal deep-brown discontinuous lines. Ventral side pale-yellowish colour but middle provided with a conspicuous deep-brown broad longitudinal line, extending from epigastric fold to spinners. Epigyne as in text-fig. 45, b.

Holotype one female. *Paratype*, one female in spirit.

Type-locality.—Legship, West Sikkim, 1.10.1959. Coll. B. K. Tikader.

This species resembles the foregoing species i.e. *Oxyopes sakuntalae* but it is separated as follows: (i) Cephalothorax much longer than wide, clothed with fine hairs and some deep-brown special type of blunt hairs mainly on the thoracic region but in *O. sakuntalae* cephalothorax slightly longer than wide clothed with fine hairs. (ii) Abdomen narrow clothed with fine grey hairs, anterior mid-dorsally with a lance-shaped yellowish-brown patch and lateral sides provided with longitudinal deep brown discontinuous lines but in *O. sakuntalae* abdomen longer than wide, lateral sides provided with an irregular longitudinal black broad line extending from base of end of abdomen. (iii) Epigyne structurally different.

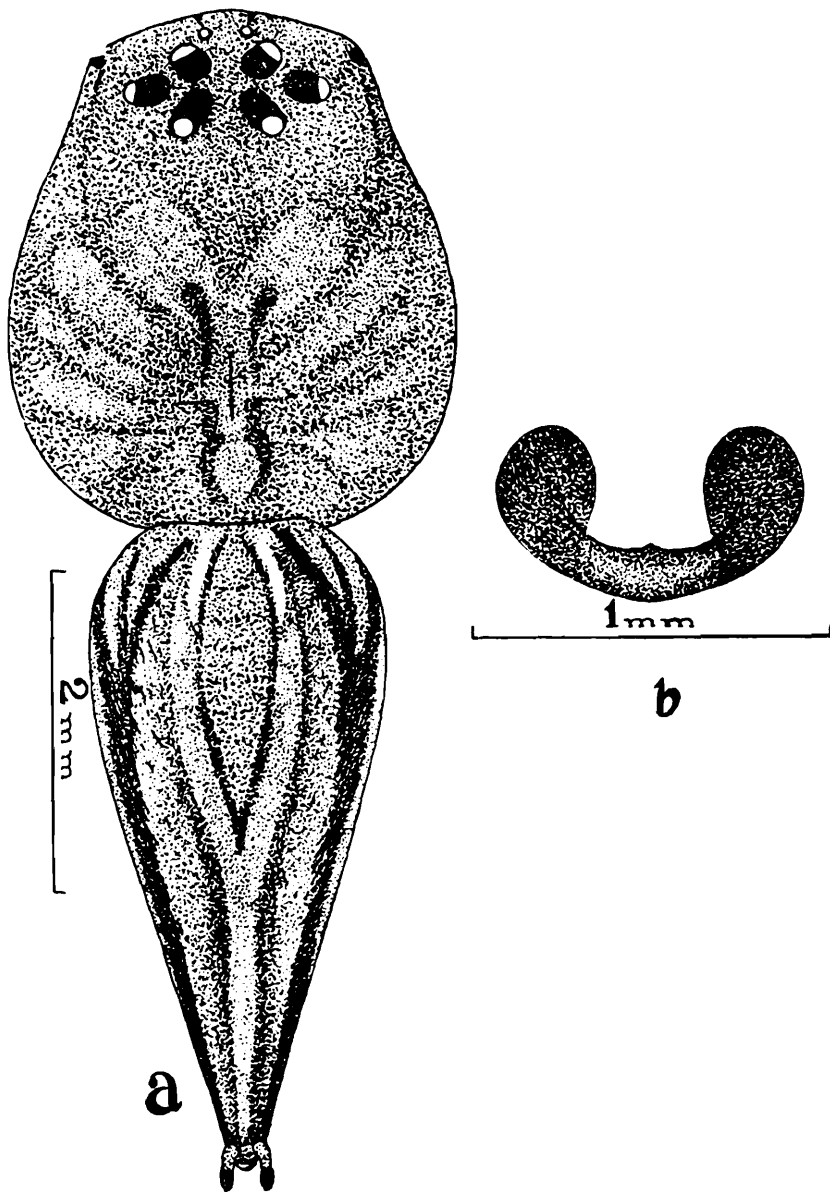
62. *Oxyopes sitae* sp. n.

General.—Cephalothorax and legs brownish-green, abdomen pale-brown. Total length 11.60 mm. Carapace 5.20 mm. long, 4.00 mm. wide; abdomen 7.00 mm. long, 2.00 mm. wide.

Cephalothorax.—Longer than wide, convex, cephalic region high and broad, clothed with fine hairs; centre of thorax with a sharp fovea. Eyes posterior row procurved and situated at equal distance, base of each eye encircled with a black patch. Clypeus long and provided with two black lines extending from anterior median eyes to near the base of fang of chelicerae. Sternum heart-shaped, pointed behind, clothed with fine hairs and spines. Legs long and strong, clothed with fine hairs and conspicuous long spines; lower side of femora of all legs provided with two and dorsal side of patella and tibiae with one conspicuous longitudinal black line.

Abdomen.—Long, narrowing behind, clothed with fine grey and dark hairs. Anterior mid-dorsally with a lance-shaped black patch and lateral sides provided with longitudinal black line extending from base to end of abdomen. Ventral side uniform pale colour but middle

provided with a conspicuous longitudinal broad black line extending from epigastric fold to spinners. Epigyne as in text-fig. 46, b.



TEXT-FIG. 46. *Oxyopes sitae* sp. n. (a) Dorsal view of female, legs omitted. (b) Epigyne.

Holotype one female in spirit.

Type-locality.—Rothak, near Nayabazar, West Sikkim, 24.9.1959. Coll. B. K. Tikader.

This species also resembles *Oxyopes sakuntalae* but it is separated as follows: (i) Cephalothorax in front high and broader than in *O. sakuntalae*. (ii) Abdomen narrower than in *O. sakuntalae*. (iii) Epigyne also structurally different.

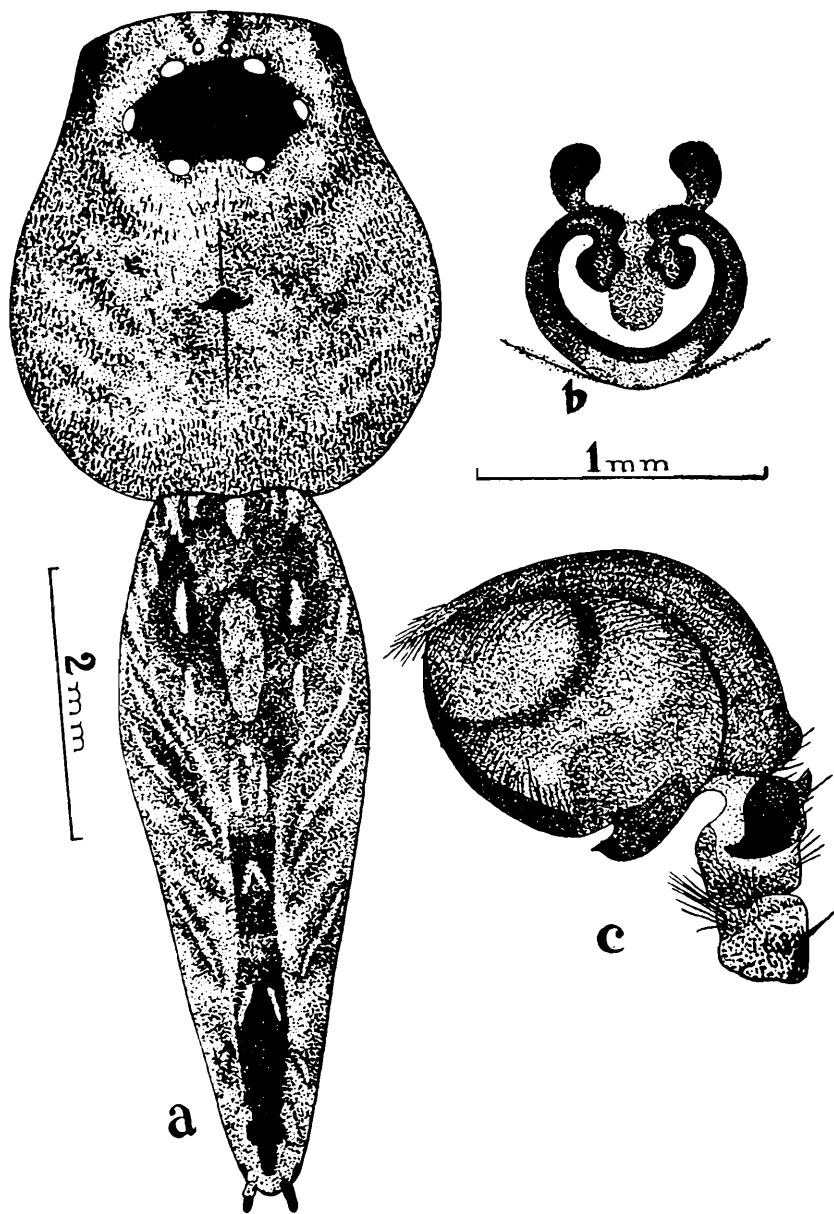
63. *Oxyopes sikkimensis* sp. n.

General.—Cephalothorax and legs brownish-green, abdomen blackish. Total length 14.50 mm. Carapace 6.00 mm. long, 5.00 mm. wide; abdomen 9.50 mm. long, 1.90 mm. wide.

Cephalothorax.—Slightly longer than wide, convex, cephalic region,

high, clothed with short and blunt deep brown hairs. Eyes posterior row procurved and situated at equal distance, anterior row strongly recurved, middle eyes small, ocular area with conspicuous black patch. Clypeus long, clothed with similar hairs like cephalothorax, lateral end of margin with a black spot. Sternum heart-shaped, pointed behind, clothed with hairs and small spines. Legs long and strong, clothed with hairs and conspicuous long spines; front side of each femora provided with a longitudinal deep-brown line.

Abdomen.—Long, narrowing behind, clothed with fine grey and brown hairs; dorsum provided with irregular dirty-white and deep-brown bars. Ventral side uniform light-brown colour, but middle provided with two conspicuous blackish lines, extending from epigastric fold to base of spinners and end of two lines join together near the spinners. Epigyne as in text-fig. 47, b. Male almost similar but smaller than female, male palp as in text-fig. 47, c.



TEXT-FIG. 47. *Oxyopes sikkimensis* sp. n. (a) Dorsal view of female, legs omitted. (b) Epigyne. (c) Male palp.

Holotype one female. *Paratypes*, four females. *Allotypes*, two males in spirit.

Type-locality.—Legship, West Sikkim, 2.10.1959. *Allotype*, from Nayabazar, West Sikkim, 2.10.1959. Coll. B. K. Tikader.

This species resembles *Oxyopes sitae* but it is separated as follows : (i) Cephalothorax clothed with short and blunt deep brown hairs and ocular area with conspicuous black patch but in *O. sitae* cephalothorax clothed with fine hairs and ocular area no such black patch. (ii) Abdomen provided with irregular dirty white and deep brown bars but in *O. sitae* abdomen lateral sides provided with longitudinal black line extending from base to end of abdomen. (iii) Epigyne structurally different.

64. *Oxyopes shweta* sp. n.

General.—Cephalothorax and legs light brownish-green, abdomen chalk-white. Total length 12.00 mm. Carapace 4.90 mm. long, 3.50 mm. wide ; abdomen 8.50 mm. long, 2.50 mm. wide.

Cephalothorax.—Longer than wide ; convex, cephalic region high, clothed with fine hairs, posterior lateral side of thorax provided with patches of deep brown, short and blunt hairs ; two longitudinal black lines of either side of cephalic region ; centre of thorax with a prominent fovea. Eyes posterior row procurved and situated at equal distance, base of each eye encircled with a black patch. Anterior row strongly recurved, anterior lateral eyes larger and median smaller. Clypeus long, and provided with two black lines extending from anterior median eyes to near the base of fang of chelicerae. Sternum oval, pointed behind, clothed with fine hairs. Legs long and strong, clothed with fine hairs and conspicuous long spines, ventral side of femora of all legs provided with a longitudinal black line.

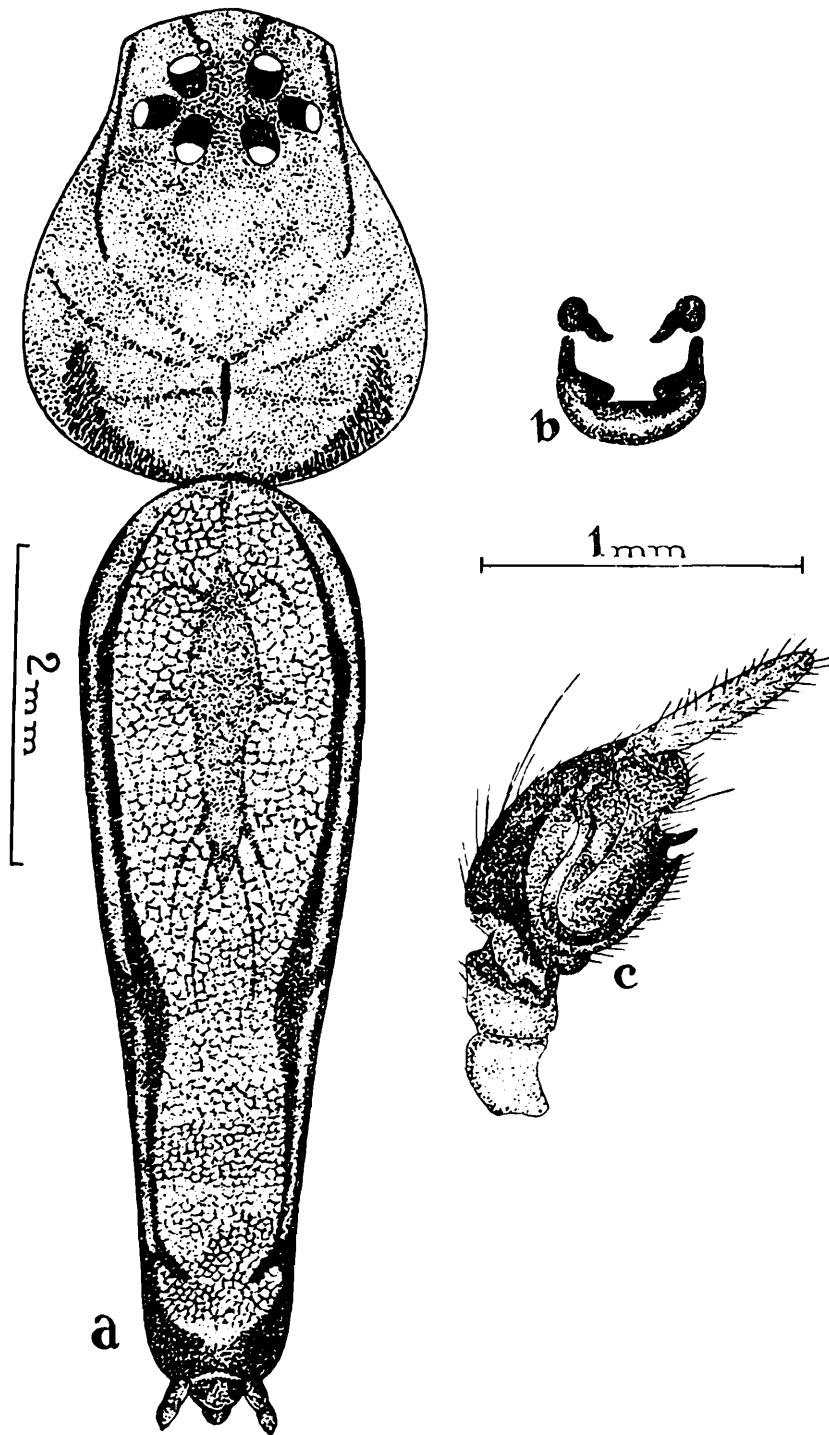
Abdomen.—Long, narrowing behind, anterior mid-dorsally, with a lance-shaped brown patch ; lateral sides with longitudinal blackish line extending from base to end of abdomen ; dorsum with minute net-like chalkwhite patches. Ventral side similar chalk-white nets but middle provided with a longitudinal broad brown line extending from epigastric fold to spinners. Epigyne as in text-fig. 48, b.

Male almost similar like female, but smaller in size ; male palp as in text-fig. 48, c.

Holotype one female. *Paratypes*, three females. *Allotype*, one male in spirit.

Type-locality.—Manjithar, West Sikkim, 22.9.1959, Coll. B. K. Tikader.

This species resembles *Oxyopes sikkimensis* but it is separated as follows : (i) Cephalothorax narrow in front, clothed with fine hairs, posterior lateral sides of thorax provided with patches of deep brown, short and blunt hairs but in *O. sikkimensis* cephalothorax broad in front, clothed with deep brown short and blunt hairs only. (ii) Base of eyes with black patch but in *O. sikkimensis* entire ocular area with conspicuous black patch. (iii) Abdomen chalkwhite and lateral sides with longitudinal blackish line extending from base to end of abdomen but in *O. sikkimensis* abdomen blackish with irregular dirty white and deep brown hairs. (iv) Epigyne also structurally different.



TEXT-FIG 48. *Oxyopes shweta* sp. n. (a) Dorsal view of female, legs omitted. (b) Epigyne. (c) Male palp.

Genus 33. *Peucetia* Thorell

1869. *Peucetia* Thorell, *On European Spiders*, Uppsala, 7, p. 196.

1940. *Peucetia* : Comstock and Gertsch, *The Spider Book*, New York, p. 666.

1964. *Peucetia* : Brady, *Bull. Mus. Comp. Zool.*, Harvard, 131(13) pp. 505-518.

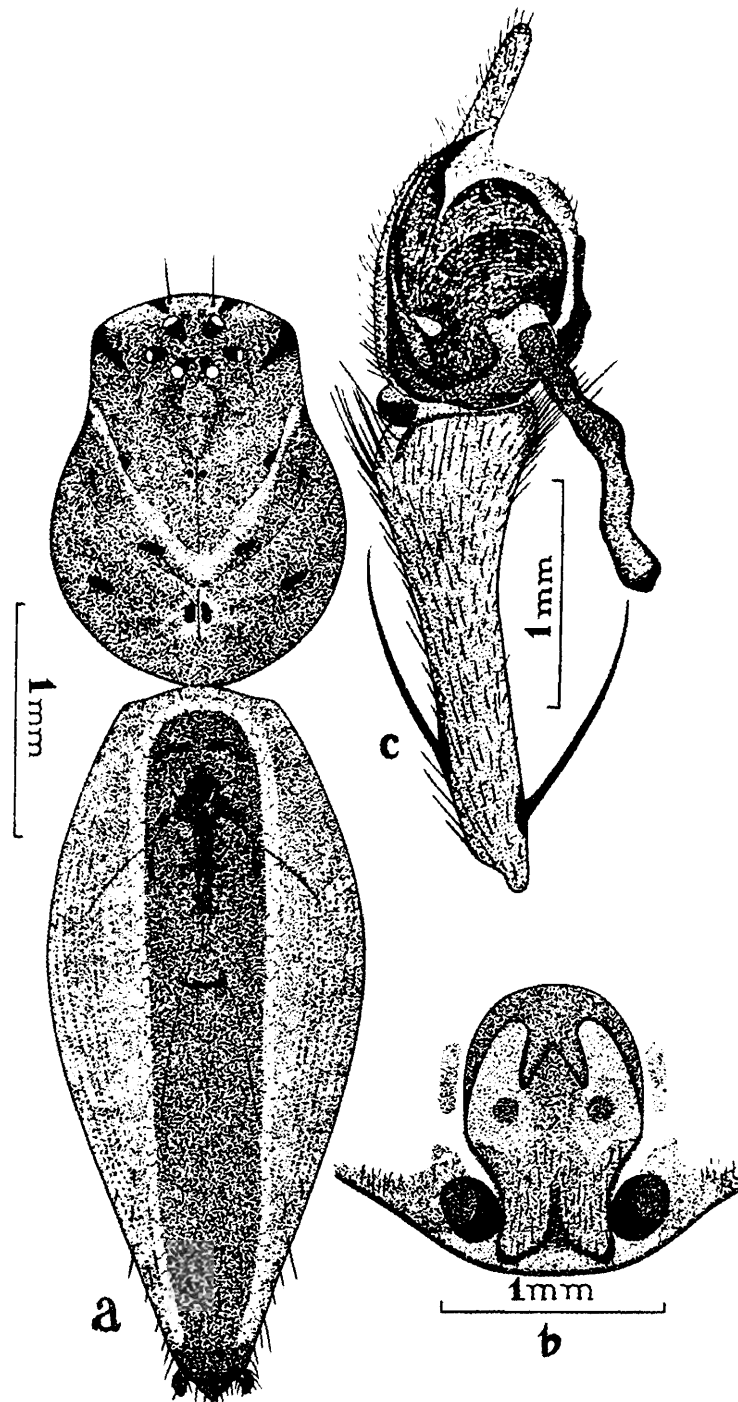
Characters.—Anterior median eyes smallest; posterior lateral eyes forming a slightly procurved row, not so procurved as in *Oxyopes*, Latreille. Cephalothorax not so high or convex as that of *Oxyopes*. Male palp with characteristic paracymbial process in each species, sometimes partly broken off during mating.

Type-species.—*Peucea viridis* Blackwall.

Distribution.—Europe, Africa, Asia and America.

65. *Peucea latikae* sp. n.

General.—Cephalothorax, legs and abdomen green. Total length 20.00 mm. Carapace 7.00 mm. long, 5.00 mm. wide; abdomen 13.00 mm. long, 6.00 mm. wide



TEXT-FIG. 49. *Peucea latikae* sp. n. (a) Dorsal view of female, legs omitted. (b) Epigyne. (c) Male palp.

Cephalothorax.—Longer than wide, moderately high provided with conspicuous black spots and cephalic region high and broad clothed with a few spines, centre provided with a sharp fovea. Eyes posterior row

slightly procurved and situated in equal distance, bases of all eyes encircled by black patch. Anterior row strongly recurved and middle eyes small. Clypeus long and provided with four black lines extending from ocular area to near the base of fang of chelicerae. Sternum oval, pointed behind, clothed with spiny hairs. Legs long and strong, clothed with conspicuous black spots and black long spines.

Abdomen.—Long, narrowing behind, clothed with fine hairs; mid-dorsally with a longitudinal broad brown band and this band encircled by a white line as in text-fig. 49, c. Ventral side more light colour than dorsal. Epigyne as in text-fig. 49, b. Male like female, male palp as in text-fig. 49, c.

Holotype one female. *Paratype*, one female. *Allotype*, one male in spirit.

Type-locality.—Manjithar, West Sikkim, 22.9.1959. Coll. B. K. Tikader.

This species is closely related to *Peucetia viridans* (Hentz) from America but it is separated as follows: (i) Cephalothorax provided with conspicuous black spots but in *P. viridans* cephalothorax without black spot. (ii) Legs provided with conspicuous black spots and black spines but in *P. viridans* legs provided with long spines and only femora provided with black spots. (iii) Epigyne and male palp also differs.

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IV—SUMMARY

Sixty-five species of spiders are described in this paper. Of these, 20 are known and 45 are new to science. The new species belong to 33 genera distributed in the families Uloboridae, Homalonychidae, Theridiidae, Linyphidae, Argiopidae, Thomisidae, Agelenidae, Hahniidae, Pisauridae, Lycosidae and Oxyopidae.

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