

SOME INDIAN SPIDERS OF THE FAMILY ARGIOPIDAE.

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INTRODUCTION.

The following study is based mainly on the unnamed spiders of the family Argiopidae, present in the collection of the Zoological Survey of India (Indian Museum), Calcutta. The material comprises 34 species of 11 genera. Three new species of the genus *Argiope*, viz., *A. shillongensis* (from Shillong, Assam), *A. pradhani* (from Peshawar, Bihar and Assam) and *A. kalimpongensis* (from Coorg, S. India, Darjiling Dist., Bengal, and Sibsagar, Assam) have been described. *Argiope arcuata* Simon, *A. lalita* Sherriffs and *Ordgarius hobsoni* (Cambridge) are now being recorded for the first time from Fiyush district (Arabia), Bengal and Bihar (India), respectively.

The following references although mentioned in the text, could not be consulted in original :

1. *Trans. Sapporo Nat. Hist. Soc.* CIII.
2. Savigny in *Aud. & Serv. Egypte Ar.* XXII.
3. Clerck *Aranei Suecici*.
4. *Hong Kong Nat.* VI.

ACKNOWLEDGMENTS.

I am grateful to Dr. S. L. Hora, Director, Zoological Survey of India, for providing me with the necessary facilities. My thanks are also due to Dr. E. Browing of the British Museum (Natural History), London, for helpful information regarding the type-specimens of a few species dealt with in this paper and to Dr. A. P. Kapur and Mr. K. S. Pradhan of the Zoological Survey of India for going through the manuscripts and offering valuable suggestions.

SYSTEMATIC ACCOUNT.

Key to the genera dealt with in this paper--

- | | | |
|---|----|---------------------------------|
| 1. Spinnerets surrounded by a chitinous circular wall | | <i>Gasteracantha</i> Sundevall. |
| Spinnerets not surrounded by a chitinous wall .. | 2. | |
| 2. Chelicerae without boss or with rudimentary boss | 3. | |
| Chelicerae with well developed boss .. | 4. | |
| 3. Maxillae narrow at base, dilated and externally angled at the apex. | | <i>Leucage</i> White. |
| Maxillae not narrow at base, neither dilated nor externally angled at the apex. | | <i>Tetragnatha</i> Latreille. |

4. Tarsi with metatarsi longer than the total length of patella and tibia 5.
 Tarsi with metatarsi not longer than the total length of patella and tibia .. 7.
5. Lip wider than long; posterior row of eyes strongly procurved. Anterior lateral eyes much smaller than the posterior laterals *Argiope* Audouin.
 Lip longer than wide; posterior row of eyes straight or recurved. Anterior and posterior lateral eyes subequal 6.
6. Abdomen pentagonal. Carapace flattened *Herennia* Thorell.
 Abdomen not pentagonal. Carapace not much flattened *Nephila* Leach.
7. Head conical in front. Lateral eyes wide apart *Poltys* Koch.
 Head otherwise in front. Lateral eyes not wide apart 8.
8. Carapace with four symmetrically arranged tubercles. Abdomen very broad *Ordgarius* Keyserling.
 Carapace smooth or irregularly tubercular. Abdomen not very broad 9.
9. Cephalic part of cephalothorax demarcated from the thoracic by a deep semicircular furrow *Cyclosa* Menge.
 Cephalic part of cephalothorax not demarcated from the thoracic by a deep semicircular furrow .. 10.
10. Posterior row of eyes procurved *Araneus* Clerck.
 Posterior row of eyes recurved *Cyrtophora* Simon.

Genus *Nephila* Leach.

(Type *N. maculata* (Fabricius) China).

1815. *Nephila*, Leach, *Zool. Misc.* II, p. 133.
 1900. *Nephila*, Pocock, *Faun. Brit. Ind.*, Arach. p. 217.
 1912. *Nephila*, Dahl, *Mitt. Zool. Mus. Berlin*, VI, p. 27.

Distribution.—Tropical and rarely subtropical countries of the world.

Nephila (*Nephila*) *maculata* (Fabricius).

1793. *Aranea maculata*, Fabricius, *Ent. Syst.* II, p. 425 (*Type-locality*: China).
 1900. *Nephila maculata*, Pocock, *Faun. Brit. Ind.*, Arach. pp. 217, 218, fig. 68.
 1912. *Nephila* (*Nephila*) *maculata*, Dahl, *Mitt. Zool. Mus. Berlin* VI, pp. 52-54.

Material examined—

CEYLON—Suduganga, 1,386 ft., vii. 1923 (*S. White*) (11♀).—INDIA.—Cochin State: Kavalai, 1,300-3,000 ft., 24-27 ix. 1914 (*F. H. Gravely*) (1♀, Juv.). Courtallum, xi. 1921 (*M. O. T. Iyengar*) (1♀). Shevaroy Hills: Nagalaur, 3,900 ft., 6-15. vi. 1929 (*H. S. Pruthi*) (9♀, 3 Juv.). Mysore State: Shimoga, Shallow stream on the Eastern bank of Tunga river, 8. xii. 1928 (*B. Prashad & H. S. Rao*) (1♀, Juv.) Jog falls, 29. xi. 1928 (*B. Prashad & H. S. Rao*) (1♀). Bombay State: N. Kanara dist., Stream on Jog-Gersopha Road 29.xi. 1928 (*H. S. Rao*) (3♀), Jog, (*B. Prashad & H. S. Rao*) (1♀); Bandra, 7 x. 1925 (2♀). Orissa (Orissa dist.) 1916 (*C. Humble*) (1♀). Bengal: Gmatia (2♀); Serajgunj, 13. xi. 1928 (*D. L. Corbet*) (1♀); Sankari, 31. x. 1935 (*M. N. Datta*) (1♀); Sahibgunj, 25. ix. 1870 (3♀); Howrah, 4. x. 1908 (*T. Jellicoe*) (2♀), Amta, xii. 1929 (*N. P. Banerji*) (1♀),

Dum-Dum, 16. x. 1922 (*R. P. Mullins*) (1♂, 1♀), Calcutta (3♀); Darjiling dist., Kalimpong, 1914 (*S. W Sutherland*) (1♀), 26. x. 1939 (5♀), 1934 (*Gonour Ram*) (1♂), 20-21. x. 1939 (2♂), 28. vii. 1916 (*S. W Sutherland*) (1♀), *S. W Sutherland*) (4♂, 5♀), 2,000-4,500 ft., 28. vii. 1916 (*S. W Sutherland*) (2♂), (1♀), Teesta, 3,000 ft., 12. viii. 1916 (*S. W Sutherland*) (2♂), Soom, 4,000-5,000 ft., 9. vii. 1934 (*Carmichael's Coll.*) (5♀), Ghumti, 4,000 ft., viii. 1912 (*Carmichael's Coll.*) (1♀), Sukna, x. 1914 (*Mrs. Drake*) (1♂), Singla, 1,500 ft., viii-ix. 1912 (*Carmichael's Coll.*) (1♂), vi. 1913 (*Carmichael's Coll.*) (4♀), Pedong, 28. x. 1939 (1♂), 29. x. 1939 (2♀); Mymensingh dist., Ishwargunj (1♀). BURMA—Kyeinchoung forest, 20. iii. 1931 (*Biswas*) (1♂); Myitkeyina dist., Nyaungbin, a village at the north end of Indawgyi Lake, 7-10. xi. 1926 (*B. Chopra*) (6♀, 1 Juv.). NICOBARS—Kamorta Island (*Marine Survey*) (1♀), (*I. M. Puri*) (4♀).

Besides the above-mentioned localities, specimens from the following places are also present in the named material of the Zoological Survey of India :

CEYLON—Kandy; Peradeniya (*E.S.I.*). INDIA—Cochin State : Prambikulam, 1,700-3,200 ft. Uttar Pradesh : Hardwar (*W H. Phelus*) : Dehra Dun (? *Woodmason*). Assam : Darrang (*Godwin-Austin*). Sikkim (*T B. Fletcher*); Tavoy; MALAYA PENINSULA—(*Moti Ram*); Ta ping; Penang. SINGAPORE. ANDAMAN ISLANDS : Port Owen; Ross Island; Canistan Island.

Measurements.—Body 22-41.8 mm. long; carapace 6-13.5 mm. long fourth tibia 5.8-15.5 mm. long.

Distribution.—The species is known from Ceylon, India, Burma Sikkim, Andaman and Nicobar Islands, Malaya Peninsula, China and Japan.

Nephila (Trichonephila) clavata Koch.

1877. *Nephila clavata*, Koch, *Verh. z.-b. Wien.* XXVI, p. 741 (*Type-locality* : Japan).
 1900. *Nephila clavata*, Pocock, *Faun. Brit. Ind.*, Arach. pp. 218, 219.
 1912. *Nephila (Trichonephila) clavata*, Dahl, *Mitt. Zool. Mus. Berlin* VI, pp. 35, 74.
 1933. *Nephila clavata*, Saito, *Trans. Sapporo Nat. Hist. Soc.* XIII, pt. 1, pp. 32-61, pl. 1.

Material examined—

INDIA—Bengal : Darjiling dist. Kurseong, x. 1930 (*Sasanka Sarkar*) (2♂); Pedong, 29. x. 1939 (2♂). Assam : Shillong (Under stones along the sides of Ewelyn Ridle and the Golf Course), 7-8. xii. 1930 (*H. S. Rao*) (1♀); Shillong-Cherrapunji Road, near Shillong, 6. xii. 1930 (*H. S. Rao*) (1♀), Shillong, 15. xi. 1930 (*H. S. Rao*) (2♀), 3. xii. 1930 (*H. S. Rao*) (5♀), 2. ix. 1926 (*B. N Chatterji*) (9♀), 24. ix. 1926 (*B. N. Chatterji*) (2♀); Jaintia Hills, Streams near Mawlynkeng, 1. xii. 1930 (*H. S. Rao*) (1♀), Jowai-Choungpung bridlepath, 24. xi. 1930 (*H. S. Rao*) (1♀). BURMA—N. Shan States : Round about Namkham, Ca. 2,500 ft. xi. 1926 (*H. S. Rao*) (1♀). SIAM—Patalung : Lampam, 15. i. 1916 (*N. Annandale*) (1♂).

Besides the above mentioned localities, specimens from the following places are also present in the named material of the Zoological Survey of India :

PERSIAN BALUCHISTAN—Hung (*W T Blanford*); ANDAMAN ISLAND. LACCADIVE ISLAND. Kiltan. JAPAN—Komatsu (*L. Biva*).

In the specimen from Shillong-Cherrapunji, the base of protarsus of the first leg is yellowish.

Measurements.—Body 17.2- 20.3 mm. long ; carapace 6.7-7.2 mm. long ; fourth tibia 6.5- 7.1 mm. long.

Distribution.—The species is known from Persian Baluchistan, India, Burma, Andaman and Laccadive Island, Siam, Japan.

Nephila (Nephilaengys) malabarensis (Walckenaer).

1841. *Epeira malabarensis*, Walckenaer, *Ins. Apt.* II p. 103 (*Type-locality* : Malabar Coast, India).
 1890. *Nephilengys malabarensis*, Thorell, *Ann. Mus. Stor. Nat. Genova*, XXVIII, p. 188.
 1900. *Nephila malabarensis*, Pocock, *Faun. Brit. Ind.*, Arach. p. 219.
 1912. *Nephila (Nephilengys) malabarensis*, Dahl, *Mitt. Zool. Mus. Berlin* VI, pp. 49, 77.

Material examined—

CEYLON—(3♀). INDIA—Shevaroy Hills, S. Arcot (*Jaffer*) (1♀). Bombay State : Bombay (7♀). Bihar—Chota Nagpur : Purulia (*F H. Gravely*) (2♀). BURMA—Moulmein (5♀). MALAYA PENINSULA—Perak (*Moti Ram*) (5♀, 2 Juv.). SIAM—Patalung : Lampam, 12. i. 1916 (*N. Annandale*) (3♀).

Besides the above mentioned localities, specimens from INDIA—Cochin State : Chalakudi, and SINGAPORE are also present in the Zoological Survey of India.

In both the specimens from Purulia, Bihar, the sternum is yellow and bordered on all sides by blackish tinge. In Moulmein specimens labium is yellow and the head part of the cephalothorax is covered with many spine-like hairs.

Measurements.—Body 17.8—25.3 mm. long ; carapace 7.6—9.3 mm. long.

Distribution.—The species is known from, Ceylon, India, Burma, Nicobar Islands, Singapore, Siam, Thailand, Java, New Guinea, Bismarck-Archipelago and Australia.

Genus **Herennia** Thorell.

(*Type, H. ornatissima* (Doleschall), Amboina, Molucca).

1877. *Herennia*. Thorell, *Ann. Mus. Stor. Nat. Genova* X, p. 70.
 1900. *Herennia*, Pocock, *Faun. Brit. Ind.*, Arach. p. 219.

Distribution.—Tropical Asia, Malaysia and Papuaia.

Herennia ornatissima (Doleschall).

1859. *Epeira ornatissima*, Doleschall, *Verh. Nat. Vereen Nederland. India*, V. No. 5, p. 32 (*Type-locality* : Amboina, Molucca).
 1900. *Herennia ornatissima*, Pocock, *Faun. Brit. Ind.*, Arach. pp. 219, 220, fig. 69.

Material examined—

India.—Cochin State : Prambikulam, 1,700-3,200 ft., 16-24. ix. 1914 (*F. H. Gravely*) (4♀).

Besides the above mentioned locality, specimens from the following places are also present in the named material of the Zoological Survey of India :

INDIA—Cochin State : Chalakudi (*F. H. Gravely*). Mysore State : Coorg : Polibetta, Vijapet (*T. B. Fletcher*). Bengal : Darjiling dist., Kalimpong, 2,000-4,500 ft. (*S. W. Sutherland*), 2,000-4,000 ft. (*S. W. Sutherland*), 4,100 ft. (*S. W. Sutherland*), Pashok 3,500 ft. (*F. H. Gravely*), Ghumti, 1,500-5,000 ft. (*Carmichael's Coll.*), Sukna (*Mrs. Drake*), Gopaldhara (*H. Stevens*). Assam : Nazeerah (*Foster*) ; Garo-Hills, Above Tura, 2,000-3,900 ft. (*A. Kemp*). BURMA—Hopin (*T. B. Fletcher*) ; Myitkyina (*T. B. Fletcher*) ; Yamethin (*T. B. Fletcher*) ; Pegu Yoma. ANDAMAN ISLANDS. SINGAPORE.

Measurements.—Body 14-20 mm. carapace 4.8-6.8 mm. long.

Distribution.—The species is already known from Ceylon, India, Burma, Andaman Island, Singapore and Austro-Malaysia.

Genus **Argiope** Savigny.

(Type, *A. lobata* (Pallas).

1825. *Argiope*, Savigny, in *Aud. & Serv. Egypt. Ar.* XXII, pt. 4, p. 121.
 1900. *Argiope*, Pocock, *Faun. Brit. Ind.*, Arach. p. 220.
 1921. *Argiope*, Gravely, *Rec. Ind. Mus.* XXII, p. 412.
 1936. *Argiope*, Dyal, *Bull. Dept. Zool. Panjab Univ., Lahore*, I, p. 189.

Distribution.—Tropical, Subtropical and Temperate countries.

Key to the Species of Argiope.

- | | |
|--|------------------------------------|
| 1. Abdomen with caudal process and large lateral lobes | 2. |
| Abdomen without caudal process and large lateral lobes | 3. |
| 2. Coxae and trochanters of 3rd and 4th legs spined | <i>A. arcuata</i> Simon. |
| 3. Abdomen dorsally and posteriorly with longitudinal black and white markings arranged alternately | <i>A. lalita</i> Sherriffs. |
| Abdomen dorsally and posteriorly without such markings | 4. |
| 4. Abdomen evenly oval in outline | 5. |
| Abdomen pentagonal | 6. |
| 5. Abdomen dorsally with a band of silky hairs, broad in front and narrowed behind | <i>A. catenulata</i> (Doleschall). |
| Abdomen dorsally with no such band of silky hairs | <i>A. pradhani</i> , sp. nov. |
| 6. The large triangular olive black patch behind incompletely divided by a transverse bar of yellow colour | <i>A. shillongensis</i> , sp. nov. |

- No such transverse bar of yellow colour on the large triangular olive black patch 7.
7. Anterior pale trapezoidal area on the upper side of abdomen completely divided by a single broad transverse olive brown stripe .. *A. undulata* Thorell.
- No such brown stripe dividing the anterior pale trapezoidal area on the upper side of the abdomen 8.
8. Internal sclerite of vulva very large .. *A. pulchella* Thorell.
- Internal sclerite of vulva small 9.
9. Size big, more than 13 m.m. in length *A. kalimpongensis*, sp. nov.
- Size small, upto 12 m.m. in length *A. anasuja* Thorell.

Argiope arcuata Simon.

1884. *Argyope arcuata*, Simon, *Ann. Mus. Stor. Nat. Genova* XX, p. 343
(*Typelocality*: Burma).
1900. *Argyope arcuata*, Pocock, *Faun. Brit. Ind.*, Arach. pp. 220, 221, fig. 70.

Material examined—

ARABIA—Fiyush dist., near Aden, 1915 (*R.B.S. Sewell*) (1♀). INDIA—West India : Kachh (5♀).

Besides the above mentioned localities, specimens from the following places are also present in the named collection of the Zoological Survey of India :

India—Bihar : Chota Nagpur, Chakardharpur (*F H. Gravely*).
Madhya Pradesh (*Burton*).

In all the specimens from Kachh, the spinules on the coxae and trochanters of 3rd legs are very weak. The palpi are brownish yellow and the annulations of legs are not clear in some of the specimens.

Measurements.—Body 19.5-21.6 mm. long; carapace 4.8-7.1 mm. long.

Distribution.—The species is known from India and Burma and is now being recorded from Arabia.

Argiope lobata (Pallas).

1772. *Aranea lobata*, Pallas, *Spic. Zool.* II, pt. 9, p. 46, t. iii, fig. 14.
1900. *Argyope lobata*, Pocock, *Faun. Brit. Ind.*, Arach. p. 221.
1938. *Argiope lobata*, Kolasvary, *Zool. Anz., Leipzig*, CXXIII, p. 22.

Material examined—

INDIA—Madhya Pradesh : Nagpur, 28. ii-1-iii. 1919. (*F H. Gravely*) (15♂, 3 Juv.).

The specimens are interesting in that they have faint longitudinal markings dorsally on the posterior end of the abdomen and also because of their smaller size than the usual form.

Measurements.—Body 12.3-18.5 mm. long; carapace 2.1-3.6 mm. long.

Distribution.—India.

***Argiope pulchella* Thorell.**

1881. *Argiope pulchella*, Thorell, *Ann. Mus. Stor. Nat. Genova*, XVII, p. 74
(*Type-locality* : Siam).
1900. *Argiope pulchella*, Pocock, *Faun. Brit. Ind.*, Arach. p. 221, 222.
1921. *Argiope pulchella*, Gravely, *Rec. Ind. Mus.* XXII, pp. 412, 413,
fig. 3b.
1936. *Argiope pulchella*, Dyal, *Bull. Dept. Zool. Punjab Univ., Lahore* I, p. 90,
pl. xi, fig. 8.

Material examined—

CEYLON.—Trincomale dist., Niroddumnai, ii. 1914 (*Henry Coll.*) (1♀).

INDIA—Cochin State : Trichur, 0-300 ft., 1-4. x. 1914 (*F. H. Gravely*) (1♀), Forest tramway, mile 21, 400 ft., x. 1914 (*F. H. Gravely*) (1♀), Prambikulam, 1,700-3,200 ft., 14-16. x. 1914 (*F. H. Gravely*) (9♀, 3 Juv.) Ernakulam, 11-14. ix. 1914 (*F. H. Gravely*) (4♀). *Mysore State* : Coorg Saivra-Butti, Pollibetta, 21. v. 1914 (*Fletcher Coll.*) (1♀), 22. v. 1914 (*Fletcher Coll.*) (3♀). Bengal : Gmatia (3♀, 1 Juv.), Calcutta, Maniktolla, 8. ix. 1912 (*F. H. Gravely*) (1♂, 1♀), Calcutta (2♀). BURMA—Arakan (*Stoliczka bequest*) (10♀, 3 Juv.).

Besides the above mentioned localities, specimens from the following places are also present in the named collection of the Zoological Survey of India :

INDIA—Malabar Coast : Tellicherry (*T. Clapton*). Madras State : Ganjam dist., Gopalpur (*Maj. Bennett*). Orissa : Barkul, 0-1,000 ft. (*F. H. Gravely*) ; Bhubaneshwar (*F. H. Gravely*) ; Barkuda Island (*F. H. Gravely*). Bihar : Siripur (*Mackenzie*) ; Kierpur (*C. Paiva*) ; Pusa (*F. H. Gravely*). Bengal : Darjiling dist., Kalimpong, 2,000-4,500 ft. (*F. H. Gravely*), 4,000 ft. (*S. W. Sutherland*), 4,100 ft. (*S. W. Sutherland*), Pashok, 3,500 ft. (*F. H. Gravely*), Singla, 1,500 ft. (*Carmichael's Coll.*), Tindharia (*Mrs. Drake*). Assam : Samagooting (*Godwin-Austin*) ; Sibsagar (*S. S. Peal*). BURMA—Lashio, 3,000 ft. (*T. B. Fletcher*) ; Pegu ; Thayetmyo (*Oates*). MALAYA PENINSULA—Perak. ANDAMAN ISLANDS, LACCADIVE ISLAND, Kiltan Island. SINGAPORE.

It seems that with the age the bands on the legs get faint and indistinct.

Measurements.—Body 10.9-19.5 mm. long. carapace 5.2-6.4 mm. long.

Distribution.—The species is known from Ceylon, India, Burma, Andaman and Laccadive Islands, Malaya Peninsula and Singapore.

***Argiope undulata* Thorell.**

1877. *Argiope undulata*, Thorell, *Ann. Mus. Stor. Nat. Genova*, XXV, p. 154
(*Type-locality* : Shevegoo-myo, Burma).
1900. *Argiope undulata*, Pocock, *Faun. Brit. Ind.*, Arach. p. 222.

Material examined—

MALAYA PENINSULA—Perak : Taipeng, 27 xii. 1915 (*N. Annandale*) (♀).

Measurements.—Body 27 mm. long ; carapace 4.5 mm. long.

Distribution.—The species is already known from Burma, Andaman Islands and Malaya Peninsula.

Argiope anasuja Thorell.

1877. *Argiope anasuja* Thorell, *Ann. Mus. Stor. Nat. Genova* XXV, p. 162
(Type-locality : Burma).
1900. *Argyope anasuja*, Pocock, *Faun. Brit. Ind.*, Arach. p. 222.
1921. *Argiope anasuja*, Gravely, *Rec. Ind. Mus.* XXII, pp. 412, 413, text-
fig. 3a.

Material examined—

CEYLON—Colombo : Colepetty, 26. xi. 1914 (*Henry Coll.*) (1♀).
INDIA—Madras State : Ennur, 30-31. i. 1922 (*F. H. Gravely*) (over 25♀) ;
Tuticorin, near Yagoon and Tuticorin proper, 15. iii. 1926 (*R. B. S. Sewell*) (7♀, 3 Juv.) ; Bimlipatam, 22. ii. 1937 (*H. A. Hafiz.*) (2♀).

Besides the above mentioned localities, named specimens from the following places are also present in the Zoological Survey of India :

INDIA—Bombay State : Nasik. Madras State : Vizagapatam (*S. W. Kemp*). Orissa : Barkuda Islands (*F. H. Gravely*) ; Gheria Island (*Chilka Survey*). Bihar : Chota Nagpur, Chakardharpur (*E. P. Stebbing*). Bengal : Calcutta.

The median ventral plate of the vulva in the single specimen from Colpetty is slightly bigger than the normal and in this respect shows some resemblance to that of *A. pulchella* Thor.

Measurements.—Body 10.9-12 mm. long ; carapace 2.9-5.5 mm. long.

Distribution.—The species is known from Ceylon, India and Pakistan.

Argiope catenulata (Doleschall).

1859. *Epeira catenulata*, Doleschall, *Verh. Nat. Vereen Nederland. Indie* V, No. 5, p. 30, t. ix, fig. 1 (Type-locality : Java).
1900. *Argyope catenulata*, Pocock, *Faun. Brit. Ind.*, Arach. p. 223.

Material examined—

CEYLON—Kandy, 22. ix. 1925 (*S. L. Hora*) (1♀). INDIA—Foot of Nallamalai Hills, Mahanadi, 800 ft., 12-15. viii. 1929 (*H. S. Pruthi*) (1♀). Bengal : Salt lakes, near Durgapur, ii. 1919 (*F. H. Gravely*) (11♀, 6 Juv.), 27. x. 1912 (*F. H. Gravely*) (2♀), (1♀), Salt lakes, below Chingrighta, 12. ii. 1915 (*F. H. Gravely*) (2♂, 10♀), Salt lakes, Dhappa, 8. xii. 1912 (*F. H. Gravely*) (1♂, 1♀).

Specimens from Durgapur are interesting because the thoracic region is slightly wider than twice the width of the cephalic region. The outer base of maxillae is black while the femora, tibiae and tarsi of the 2nd pair of legs are with transverse bands.

Measurements.—Body 11.9-15 mm. long ; abdomen 7.6-9.5 mm. long and 4.3-6 mm. broad.

Distribution.—The species is known from Ceylon, India, Burma, Nicobar Island and Austro-Malaysia.

Argiope lalita Sherriffs.

1928. *Argiope lalita*, Sherriffs, *Ann. Mag. Nat. Hist.* (10) II, p. 18, figs. 3-7
(Type-locality : Charlotte Estate, Sidapur, S. Coorg, India).

Material examined—

INDIA—Mysore State : Shimoga dist., Kalurkatte Road, near Sagar, xii. 1928 (*H. S. Rao*) (1♀, with Cocoon). Bengal : Salt lakes, near Durgapur, 30. xii. 1913 (*F. H. Gravely*) (1♀).

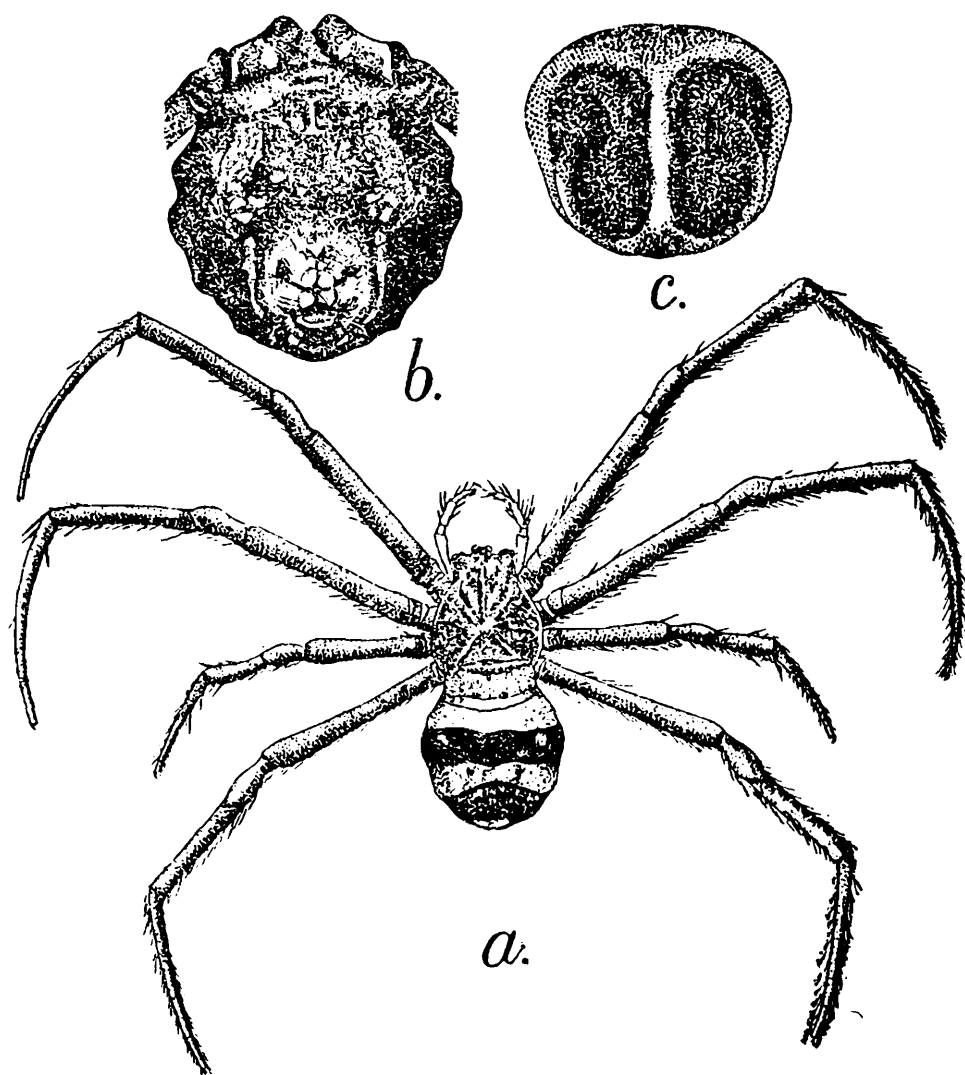
The South Indian specimen has the body tawny in coloration with a circular white band on the third femur and the white and bluish hairs on the cephalic region. The body in the only specimen from Durgapur is black while femora have white annulations and the area between the epigynum and the spinners is devoid of white spots.

Measurements.—Body 9.4-10 mm. long ; abdomen 6.6-7 mm. long and 4.3-5 mm. broad.

Distribution.—Hitherto known from Charlotte Estate, Sidapur, Coorg ; the species is now being recorded from Durgapur, Bengal.

***Argiope shillongensis*, sp. nov.**

Abdomen is pentagonal and is anteriorly truncated. The dorsum (text-fig. 1a) is marked with one very broad and a few transverse brownish black bands and alternating with two broad and rest narrow transverse yellowish bands. The last brownish black band is incompletely divided by a transverse narrow yellow streak. There are four yellowish cup-shaped spots, one on either side of the centre on the broad black band. The venter of the abdomen (text-fig. 1b.) is brown with a pair of



TEXT-FIG. 1.—*Argiope shillongensis*, sp. nov. a. Dorsal view : $\times 2\frac{2}{3}$; b. ventral view of the abdomen : $\times 5\frac{1}{3}$; c. Vulva : $\times 26\frac{2}{3}$.

broken longitudinal band, one on either side of the epigyneal plate, extending posteriorly upto the extremity of the abdomen. The spinnerets are brownish yellow in colour.

The cephalothorax is brownish yellow in coloration and the thoracic part is nearly thrice as long as the cephalic part. Sternum is yellow and is bordered with black. The palpi, maxillae and labium are yellow.

Median piece of the epigyneal plate (text-fig. 1c) is not much rounded and the vertical septum is neither very narrow nor very broad with almost straight or slightly sinuate lateral margins.

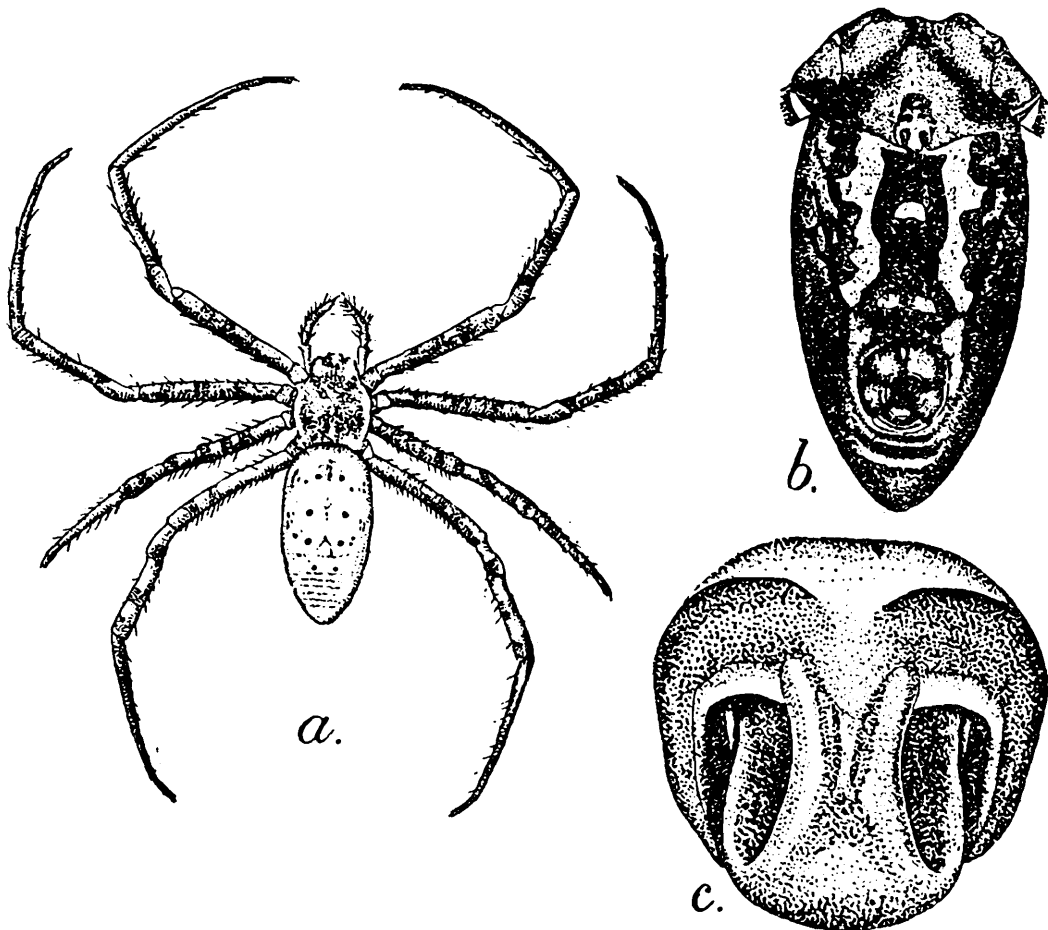
The species is close to *A. undulata* Thorell, from which it differs in size, being much smaller than *A. undulata*, and in the character of the vulva. The median piece of the epigyneal plate is not much rounded.

Measurements.—Body 9.7 mm. long; carapace 4.3 mm. long.

Material examined.—*Holotype*. Reg. No. 2277/18, Zoological Survey of India (Assam, Shillong, x. 1920 (*F. H. Gravely*) (♀).

***Argiope pradhani*, sp. nov.**

Abdomen is oval (text. fig. 2a) in outline with its dorsal side extending anteriorly over the carapace, and with silky hairs (seen in spirit). Prominent spots are seen on the dorsum of the abdomen. The ventral surface is marked with two yellow slightly broken, longitudinal bands, one on either side of the epigynum extending from the anterior of the epigynum backwards upto the extremity of the abdomen (text fig. 2b.). The



TEXT-FIG. 2.—*Argiope pradhani*, sp. nov. a. Dorsal view : $\times 1$; b. ventral view of the abdomen : $\times 2\frac{2}{3}$; c. Vulva : $\times 22\frac{1}{2}$.

area between the epigynum and spinners is marked with 3 spots as seen in the text-fig. 2b. Cephalothorax is clothed with hairs like the dorsum of

the abdomen. Sternum is black with a mid-longitudinal yellow band. Yellow tubercles are present on the sternum before the bases of the coxae 1-3. Yellowish bands extend from the base of the third pair of tubercles inwards to meet the mid-yellow longitudinal band.

Vulva (text-fig. 2c.) is T-shaped and the mid-ventral plate is fairly broad and of uniform breadth.

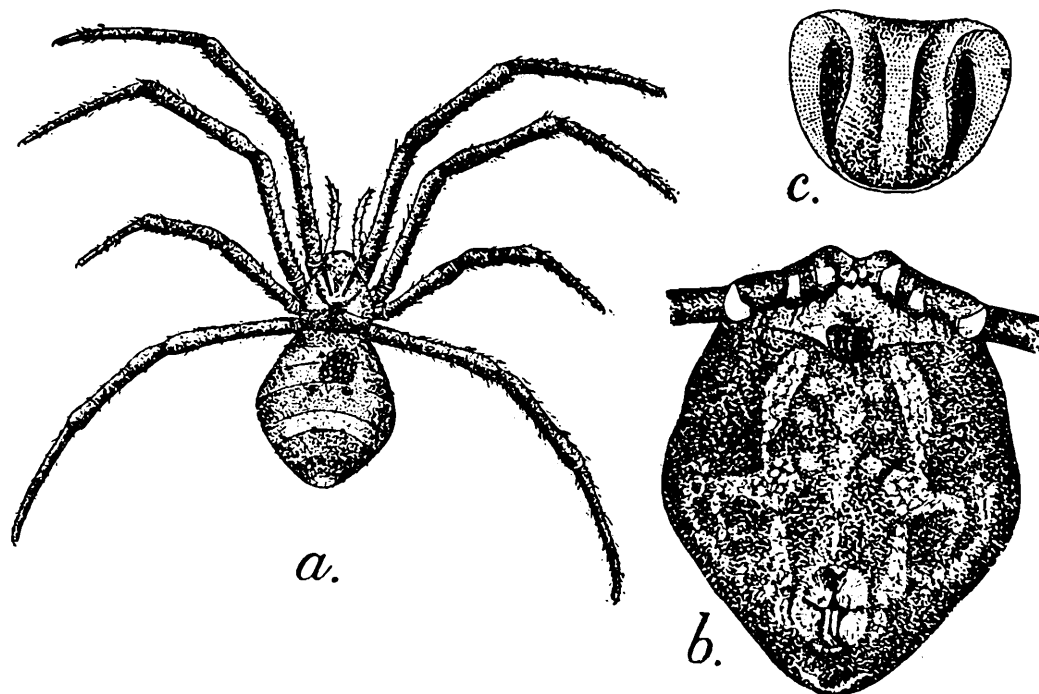
The species is close to *A. catenulata* (Doleschall) from which it differs in the absence of a band of silky hairs on the dorsum of the abdomen and in having a very broad T-shaped mid-ventral plate.

Measurements.—Body 16.5-25.8 mm. ; carapace 5.5-9 mm. long.

Material examined.—*Holotype.* Reg. No. $\frac{2287}{18}$, Zoological Survey of India. (Bihar : Saran (*Mackenzie*) (♀). *Paratypes.* Reg. No. $\frac{2288}{18}$, Assam : Shillong, x. 1920 (2♀). Reg. No. $\frac{2291}{18}$, Assam : Jaintia Hills ; Jowai-
Chongpung bridle-path, 24. xi. 1930 (*H. S. Rao*) (1♀). Reg. No. $\frac{2290}{18}$
Pakistan.—Near Peshawar, Bank of Kabul River, 18. xi. 1914 (*T. B Fletcher*) (2♀), Zoological Survey of India.

***Argiope kalimpongensis*, sp. nov.**

Abdomen is pentagonal. Dorsum of the abdomen (text-fig. 3a.) has yellow and black bands and also two pairs of prominent and a few smaller indistinct spots scattered over the anterior region. Venter of the abdomen is mottled with yellow spots and has two yellowish longitudinal



TEXT-FIG. 3.—*Argiope kalimpongensis*, sp. nov. a. Dorsal view : $\times 1$; b. ventral view of the abdomen : $\times 2\frac{2}{3}$; c. Vulva : $\times 13\frac{1}{2}$.

stripes (text-fig. 3b.) A transverse, somewhat irregular band tends to join the stripes near about the middle of their length. In the space

between the vulva and the spinners, but much nearer to the latter, are six small yellow spots. Cephalothorax is covered with hairs and is emarginated posteriorly. The thoracic part is slightly longer than the cephalic part.

Sternum is black with a mid-longitudinal yellow band. Palpi are yellow and the apical segment is brownish with black hairs. Labium and maxillae are yellow with brownish-black sides. Femora of all the legs are marked with black incomplete rings, that of the fourth femur very faintly and of the first two strongly. The annulations of the third femur are intermediate in coloration between the first, second and fourth legs. Coxae are with yellow spots. Median piece of vulva (text-fig. 3c.) is broad and rounded posteriorly.

The species is close to *A. anasuja*, from which it can be easily differentiated on the character of the size. This species is always longer than 13 mm., while *A. anasuja* seldom reaches 13 mm. in length. The median piece of vulva is also much rounded posteriorly.

Measurements.—Body 22-25.5 mm. long; carapace 8.5-10 mm. long.

Material examined.—*Holotype*. Reg. No. $\frac{2279}{18}$, Zoological Survey of India. (Bengal: Darjiling dist., Kalimpong, 4,100 ft., 5. viii. 1916 (*S. W. Sutherland*) (♀). *Paratypes*. Reg. No. $\frac{2289}{18}$, Zoological Survey of India. (Bengal: Darjiling dist. Gopaldhara, 1916 (*H. Stevens*) (3♀) Reg. No. $\frac{2292}{18}$ Lebong, ix. 1912 (*W. Bennett*) (1♀). Reg. No. $\frac{2293}{18}$, Assam: Sibsagar (*S. S. Peal*) (1♀). Coorg (2♀). Bengal: Darjiling dist., Kalimpong, 600-4,500 ft. (*S. W. Sutherland*) (1♂, over 50♀, 4 Juv.), 29. viii. 1916 (*S. W. Sutherland*) (1♀), 4,100 ft. (*S. W. Sutherland*) (1♀), 2,000-4,500 ft. (*S. W. Sutherland*) (over 10♀), Pashok, 3,500 ft., 1-12. x. 1917 (*F. H. Gravely*) (1♀), Soom, 4,000-5,000 ft., 9. vii. 1914 (*Carmichael's Coll.*) (1♀), Ghumti, 1,500-5,000 ft., vi. 1914 (*Carmichael's Coll.*) (1♀).

Genus *Tetragnatha* Latreille.

(Type, *T. extensa* (Latreille), Paris, France.)

1804. *Tetragnatha*, Latreille, *Nouv. Dict. d' Hist. Nat.* XXIV, p. 135.

1900. *Tetragnatha*, Pocock, *Faun. Brit. Ind.*, Arach. p. 215.

1921. *Tetragnatha*, Gravely, *Rec. Ind. Mus.* XXII, pp. 411, 424.

Distribution.—Tropical, temperate and subarctic countries.

Teragnatha gracilis (Stoliczka).

1869. *Meta gracilis*, Stoliczka, *Journ. Asiat. Soc. Bengal*, XXXVIII (II), p. 244, pl. XIX, fig. 2, (*Type-locality*: Calcutta. *Type-specimen*: Reg. No. 3594/10, Zoological Survey of India).

1900. *Tetragnatha gracilis*, Pocock, *Faun. Brit. Ind.*, Arach. p. 214.

1921. *Tetragnatha gracilis*, Gravely, *Rec. Ind. Mus.* XXII, pp. 427, 436-38, text-figs. 1 a-c.

Material examined.—

INDIA—Mysore State : near Sagar, Kalurkatte Road, XII. 1932 (*H. S. Rao*) (1♀). Palni Hills, 6. VII. 1929 (*H. S. Pruthi*) (1♀).

Besides the above mentioned localities, specimens from the following localities are also present in the named collection of the Zoological Survey of India :

INDIA—Cochin State : (*F. H. Gravely*), Prambikulam, 1,700-3,200 ft. (*F. H. Gravely*). Mysore State : Bangalore, ca. 3,000 ft. (*N. Annandale*). Bombay State : Koyna Valley, Taloshi, ca. 2,000 ft. (*F. H. Gravely*). Madras State : Villivakan. Orissa State : Barkuda Island (*F. H. Gravely*) ; Bhubaneshwar (*F. H. Gravely*). Bihar : Pusa (*F. H. Gravely*). Bengal : Darjiling dist., Kalimpong, 2,000-4,000 ft. ; Madhupur (*C. Paiva*). Port Canning, Calcutta.

The Palni hills specimen is devoid of the ventral tooth on the basal bend of the Chelicera.

Measurements.—Body 9.3 mm. long ; carapace 1.9-2.3 mm. long.

Distribution.—The species is already known from Ceylon, India, Burma, Andaman Island and Celebes.

***Tetragnatha mackenziei* Gravely.**

1921. *Tetragnatha mackenziei*, *Rec. Ind. Mus.* XXII. pp. 438, 439, text-figs. 1 e-g. (*Type-locality* : Salt Lakes, near Calcutta, *Type-specimen* : Reg. No. 9974/17, Zoological Survey of India).

Material examined.—

INDIA—Bihar : Hazaribagh dist., Hasla village, near Ramgarh 28. x. 1928 (*M. Shariff*) (1♂, 4♀) ; A permanent lake near Ranchi Hill and the Town Ranchi, 18. x. 1928 (*M. Shariff*) (2♂, 3♀, 1 Juv.).

Besides the above-mentioned localities, named specimens from the following places are also present in the Zoological Survey of India :

INDIA—Travancore : Kulattupuzha, Western base of Western Ghats (*N. Annandale*). Bombay State : Mahabaleshwar, 4,200 ft. (*F. H. Gravely*). Madras State : Villivakkam (*R. V. S.*). Orissa : Barkul 0-1,000 ft. (*N. Annandale*). Madhya Pradesh : Hoshangabad (*F. H. Gravely*). Pachmari. Bihar : Siripur (*Mackenzie*). Bengal : Salt lakes, near Calcutta, Salt lakes near Dhappa (*S. W. Kemp*).

Measurements.—Body 7.3 mm. long ; carapace 2.3 mm. long ; abdomen 4.6 mm. long and 1.4 mm. broad.

Distribution.—The species is known from India and Burma.

***Tetragnatha fletcheri* Gravely.**

1921. *Tetragnatha fletcheri*, Gravely, *Rec. Ind. Mus.* XXII, pp. 440, 441, text-fig. 3a, (*Type-locality* : Shillong, Assam, *Type-specimen.*—Reg. No. $\frac{9972}{17}$; *Cotypes*, Reg. No. 9973/17, Zoological Survey of India).

Material examined.—

INDIA—Assam : Jaintia Hills, Mawlyngkeng, 1. xii. 1930 (*H. S. Rao*) (1♀).

On the dorsal side of the fang there are five teeth in the diminishing series instead of 4 teeth.

Measurements.—Body 7.7 mm. long; carapace 2.1 mm. long.

Distribution.—It is not known from elsewhere, except from its type-locality.

***Tetragnatha mandibulata* Walckenaer s. str.**

1837. *Tetragnatha mandibulata*, Walckenaer, *Ins. Apt.* II, p. 211, (*Type-locality*: Monde-Maritime, Archipel des Mariannes-guam).

1900. *Tetragnatha mandibulata*, Pocock, *Faun. Brit. Ind.*, Arach. p. 215, fig. 67.

1921. *Tetragnatha mandibulata*, Gravely, *Rec. Ind., Mus.* XII, pp. 429, 430, 441, 442, text-figs. 1 d, 3d and e.

1939. *Tetragnatha mandibulata*, Sherriffs, *Hongkong Nat.* IX, 3, p. 135.

Material examined.—

INDIA—Mysore State: Kalurkatte Road, near Sagar, xii. 1928 (*H. S. Rao*) (1♀). Palni Hills, 6. vii. 1929 (*H. S. Pruthi*) (2♀). Bihar: Hazaribagh dist., Hazaribagh Lake (a big lake near the Central Jail) 4. xi. 1928 (*M. Shariff*) (1♀), Hasla village, ponds 28. x. 1928 (*M. Shariff*) (1♂, 2♀). Bengal: Darjiling dist., Kalimpong, 21. x. 1939 (1♀). BURMA—South end of the Indawgyi Lake and along its western shore near Louton, 18-31. x. 1926 (*B. Chopra*) (8♀).

Besides the above mentioned localities, named specimens from the following places are also present in the Zoological Survey of India:

CEYLON—Nuwara Eliya. INDIA—Cochin State: Ernakulam (*F. H. Gravely*); Chalakudi (*F. H. Gravely*). Mysore State: Bangalore, ca. 3,000 ft. (*N. Annandale*). Madras State: Villivankam (*E. V. S.*), Chinglepet. Orissa: Barkul 0-1,000 ft. (*F. H. Gravely*), Barkuda Island, South end of Chilka Lake, Rambha Island (*N. Annandale*), Barkuda Island (*N. Annandale & F. H. Gravely*). Bihar: Chota Nagpur, Pass between Chaibassa and Chakardharpur (*F. H. Gravely*); Purulia (*N. Annandale & F. H. Gravely*); Siripur (*Mackenzie*); Kierpur (*C. Paiva*). Bengal: Gmatia; Salt lakes, near Durgapur (*F. H. Gravely*); Calcutta, Port Canning (*F. H. Gravely*); Barisal (*Mrs. Drake*). Assam: Sibsagar (*S. S. Peal*); Selai Kuzi (*S. W. Kemp*); Nepal Terai; Bijaura (*Mus. Coll.*). BURMA—S. Shan States: Yawngwe State, Thantaung (*F. H. Gravely*). ANDAMAN ISLAND (*N. Annandale*). SIAM—Patalung: Lampam (*N. Annandale*).

Measurements.—Body 10-13 mm. long; carapace 3.3-4 mm. long.

Distribution.—The species is known from Ceylon, India, Nepal, Burma, Andaman and Nicobar Islands, Siam and Austro-Malaysia.

***Tetragnatha listeri* Gravely.**

1921. *Tetragnatha listeri*, Gravely, *Rec. Ind. Mus.* XXII, pp. 443, 444, text-figs. 4 d, (*Type locality*: Pashok, 5,000 ft. Darjeeling Dist.).

Material examined.—

INDIA—Bengal: Darjiling dist., Kalimpong, 20. x. 1939 (2♂, 2♀).

Besides the above mentioned locality, named specimens from the following places are also present in the Zoological Survey of India:

CEYLON—Peradeniya (*E. E. Green*). INDIA—Cochin State : Ernakulam (*F. H. Gravely*), Chalakudi. Bengal : Chittagong (*N. Annandale*). NEPAL—Nara Ghats (*Mus. Coll.*). BURMA—Mougmit State : Man. Tou (*Coggin Brown*). MALAYA PENINSULA—Penang, Talok Tikus (*N. Annandale*). SIAM—Patalung : Lampam (*N. Annandale*) ; Singora (*N. Annandale*).

On the dorsal side of the chelicera in females there are six teeth in descending series and not four or five, after the second tooth as mentioned by Gravely (1921).¹

Measurements.—Body 11 mm. long ; carapace 3.2-3.4 mm. long.

Distribution.—The species is already known from Ceylon, India, Nepal, Burma, Malaya Peninsula and Siam.

Genus *Leucage* White.

(Type, *L. argyrobapta* White, near Rio de Janeiro).

1841. *Leucage*, White, *Ann. Mag. Nat. Hist.* VII, p. 473.
 1900. *Argyropeira*, Pocock, *Faun. Brit. Ind.* Arch. p. 215.
 1921. *Leucage*, Gravely, *Rec. Ind. Mus.* XII, pp. 412, 450.
 1936. *Leucage*, Dyal, *Bull. Dept. Zool. Panjab Univ., Lahore*, 1, p. 187.

Distribution.—Tropical and subtropical countries.

Leucage celebesiana (Walckenaer).

1837. *Tetragnatha celebesiana*, Walckenaer, *Ins. Apt.* II. p. 222, (*Type-locality* : Celebes).
 1921. *Leucage celebesiana*, Gravely, *Rec. Ind. Mus.* XXII, p. 454, text-figs. 8 b, c.
 1936. *Leucage celebesiana*, Sherriffs, *Hong Kong Nat.* VII, no. 2, spiders III, p. 111.

Material examined.—

INDIA.—Bengal : Darjiling dist., Kalimpong, 20. x. 1939 (1♀).
 Assam : Shillong, Stream near Polo Ground, 22. ix. 1926 (*R. B. S. Sewell*) (1♀).

Besides the above mentioned localities, specimens from the following localities are also present in the named collection of the Zoological Survey of India :

INDIA.—Assam : Garo-Hills (*Lt. Williamson*).

Measurement.—Body 9 mm. long ; carapace 2.2-2.5 mm. long.

Distribution.—Ceylon, India, Burma, China and eastwards as far as Celebes.

Genus *Gasteracantha* Sundevall.

(Type, *G. cancriformis* (Linnaeus), America.)

1883. *Gasteracantha*, Sundevall, *Consp. Arachn.* p. 14.
 1900. *Gasteracantha*, Pocock, *Faun. Brit. Ind.*, Arach, p. 231.
 1921. *Gasteracantha*, Gravely, *Rec. Ind. Mus.* XXII, p. 416.
 1940. *Gasteracantha*, Saito, *Res. Bull. Saito Ho-on kai Mus. Sendai*, XVIII, p. 10.

Distribution.—Tropical countries of the world.

¹ 1921. Gravely, F. H. Some Indian Spiders of the Sub-family Tetragnathinae. *Rec. Ind. Mus.* XXII, pp. 423-459, 8 text-figs.

Gasteracantha arcuata (Fabricius.)

1793. *Aranea arcuata*, Fabricius, *Ent. Syst.* II, p. 425, (*Type-locality* : India, Orientali).
 1900. *Gasteracantha arcuata*, Simon, *Ann. Soc. Ent. Fr.* LXXII, p. 301.
 1900. *Gasteracantha arcuata*, Pocock, *Faun. Brit. Ind.*, Arach. p. 232.

Material examined.—

BURMA—Indawgyi Lake : Nyaungbin village, 7-10. xi. 1926 (*B. Chopra*) (1♀).

Besides the above mentioned locality, specimens from the following places are also present in the Zoological Survey of India :

INDIA—Assam : Silicuri ; Sibsagar ; Sylhet Hills : Haraigaj Range, 5,500 ft. (*G. Mackrall*). SIKKIM. BURMA—Pegu (*C. G. Rogers*).

Measurements.—Body 8·5 mm. long and 10 mm. wide ; median spine 27·4 mm. long.

Distribution.—The species is known from India, Sikkim, Burma and Malaysia.

Gasteracantha remifera Butler.

1873. *Gasteracantha remifera*, Butler, *Trans. Ent. Soc. Lond.*, p. 154, t. iv, fig. 5, (*Type-locality* : Ceylon).
 1900. *Gasteracantha remifera*, Pocock, *Faun. Brit. Ind.*, Arach. p. 233, fig. 78.

Material examined.—

ANDAMAN ISLAND—(4♀). NICOBAR ISLANDS—Coco Island (3♀, 1 Juv.) ; Kamorta (2♀).

Measurements.—Body 7·9-8·9 mm. long and 7·5-8·8 mm. wide ; median spine 8·5-12·1 mm. long.

Distribution.—The species is known from Ceylon and Andaman and Nicobar Islands.

Gasteracantha hasseltii Koch.

1838. *Gasteracantha hasseltii*, Koch, *Arch.* IV, p. 29, t. cxvii, fig. 267, (*Type-locality* : Java).
 1900. *Gasteracantha hasseltii*, Pocock, *Faun. Brit. Ind.*, Arach. p. 233.
 1921. *Gasteracantha hasseltii*, Gravely, *Rec. Ind. Mus.* XXII, p. 416.

Material examined.—

BURMA—Indawgyi Lake : village Nyaungbin, 7-10. xi. 1926 (*B. Chopra*) (1♀).

Besides the above mentioned locality, named specimens from the following places are also present in the Zoological Survey of India :

INDIA—Cochin State : Kavalai, 1,300 ft. (*F. H. Gravely*), Trichur, 0-300 ft. (*F. H. Gravely*). Madras State : Ganjam dist., Gopalpur (*Maj. Bennett*). Orissa : Barkul, 0-1,000 ft. (*F. H. Gravely*), Barkuda Island (*F. H. Gravely*) ; Bengal : Darjiling dist., Kalimpong, 2,000-4,500 ft. (*S. W. Sutherland*) ; Calcutta. Assam : Sonarpur (*S. W. Middleton*). SIKKIM. BURMA—Tenasserim ; Tavoy.

Measurements.—Body 7·9 mm. long, 8 mm. wide, median spine 3·7 mm. long.

Distribution.—The species is known from India, Sikkim and Burma.

Gasteracantha geminata (Fabricius).

1798. *Aranea geminata*, Fabricius, *Suppl. Ent. Syst.* p. 292 (*Type-locality* : India-Orientali).
 1900. *Gasteracantha geminata*, Pocock, *Faun. Brit. Ind.*, Arach. pp. 232, 234 fig. 79.

Material examined.—

INDIA—Courtallum, xi. 1921 (*M. O. T. Iyengar*) (4♀).

Besides the above mentioned locality, specimens from the following places are also present in the named collection of the Zoological Survey of India :

CEYLON—Peradeniya ; Matale (*S. White*) ; Luduganga (*S. White*).

INDIA—Cochin State : Chalakudi (*F. H. Gravely*), Prambikulam 1,700-3,200 ft. (*F. H. Gravely*). Mysore State : Coorg (*T. B. Fletcher*).

Measurements.—Body 4.8-5.7 mm. long and 6.4-8.5 mm. broad.

The species is known from Ceylon and India.

Gasteracantha leucomelaenas (Doleschall).

1859. *Plectana leucomelas*, Doleschall, *Verh. Nat. Vereen. Nederland Indië* V, no. 5, p. 42, t. xi, fig. 8 (*Type-locality* : Java).
 1900. *Gasteracantha leucomelaena*, Pocock, *Faun. Brit. Ind.*, Arach. p. 235.
 1940. *Gasteracantha leucomelaena*, Saito, *Rec. Bull. Saito Ho-on Kai Mus. Sendai*, XVIII, p. 10.

Material examined.—

ANDAMAN ISLAND—Rutland Island, 17. xii. 1932 (1♀).

Besides the above mentioned locality, named specimens from the following places are also present in the Zoological Survey of India :

INDIA—Orissa : Barkul, 0-1,000 ft. (*F. H. Gravely*). Bihar : Siripur (*Mackenzie*). Bengal : Darjiling dist., Kalimpong, 2,000-4,500 ft. (*S. W. Sutherland*) ; Pashok (*F. H. Gravely*) ; Soom, 300-3,500 ft. (*F. H. Gravely*) ; Gopaldhara (*H. Stevens*) ; Sureil, 5,000 ft. (*N. Annandale & F. H. Gravely*) ; Tindharia (*Mrs. Drake*) ; Labdan, 3,000 ft. (*F. H. Gravely*) ; Calcutta (*F. H. Gravely*). Assam : Assam-Bhutan frontier (*S. Kemp*) ; Silicuri (*J. Wood-Mason*) ; Garo-Hills (*Lt. Williamson*). BURMA : Lashio, 3,000 ft. (*T. B. Fletcher*) ; Pegu ; Maymyo (*Maj. Bennett*) ; Tavoy ; Moulmein. NICOBAR ISLANDS, Camorta.

Measurements.—Body 3.6 mm. long and 5.2 mm. broad ; median spine 1.4 mm. long.

Distribution.—The species is already known from India, Burma, Andaman and Nicobar Islands, Malaysia and Japan.

Gasteracantha brevispina (Doleschall).

1857. *Plectana brevispina*, Doleschall, *Nat. Tijdschr. Nederland Indiës*, XIII, p. 423 (*Type-locality* : Amboina, Molucca).
 900. *Gasteracantha brevispina*, Pocock, *Faun. Brit. Ind.*, Arach. p. 235.
 1921. *Gasteracantha brevispina*, Gravely, *Rec. Ind. Mus.* XXII, p. 416, pl. xix, figs. 7-14.
 1933. *Gasteracantha brevispina*, Saito, *Trans. Sapporo Nat. Hist. Soc.* XIII, pl. 1, p. 56.

Material examined.—

INDIA—Orissa : Barkuda Island, 20. iii. 1924 (*N. Annandale*) (1♀).

Besides the above mentioned locality, named specimens from the following places are also present in the Zoological Survey of India :

CEYLON : Colpetty (*Henry Coll.*). INDIA—Bombay State : Bombay. Orissa : Barkul, 0-1,000 ft. (*F.H. Gravely*) ; Bhubaneshwar (*F H. Gravely*). Bihar : Pusa (*F H. Gravely*) ; Purulia. Bengal : Darjiling dist., Kalimpong, 600-4,500 ft. (*S. W Sutherland*), Pashok, 3,000 ft. (*F H. Gravely*), Gopaldhara (*H. Stevens*) ; Calcutta, Durgapur. SIKKIM. NICOBAR ISLAND. Kamorta (*M. Bonning*).

Measurements.—Body 5.3 mm. long and 6.7 mm. broad, median spine 1.4 mm. long.

Distribution.—The species is already known from Ceylon, India, Pakistan, Burma, Andaman and Nicobar Islands and Austro-Malaysia and Japan.

Genus *Araneus* Clerck.

(Type, *A. diadematus* Clerck.)

- 1757. *Araneus*, Clerck, *Aranei Suecici*, p. 25.
- 1900. *Araneus*, Pocock, *Faun. Brit. Ind.*, Arach. p. 223.
- 1921. *Araneus*, Gravely, *Rec. Ind. Mus.* XXII, p. 414.
- 1936. *Araneus*, Dyal, *Bull. Dept. Zool. Panjab Univ., Lahore*, I, p. 177.

Distribution.—Tropical and temperate countries of the world.

Araneus dehaanii (Doleschall).

- 1959. *Epeira dehaanii*, Doleschall, *Verh. Nat. Vereen. Nederland Indië*, Y, no. 5, p. 33, t. ii, fig. 7 (*Type-locality* : Amboina, Molucca).
- 1900. *Araneus dehaanii*, Pocock, *Faun. Brit. Ind.*, Arach. p. 225, fig. 72
- 1935. *Araneus dehaanii*, Sherriffs, *Hong Kong Nat.* VI, no. 2, p. 99.
- 1938. *Araneus dehaanii*, Roewer, *Belg. Hors Ser.* 3, fas. 19, p. 38.

Material examined.—

INDIA—Bengal : Gorla, near Calcutta, 16. ii. 1950 (*Bole Gowda*) (1♀).

Besides the above mentioned locality, named specimens from the following places are also present in the Zoological Survey of India :

CEYLON. INDIA—Cochin State : Prambikulam, 1,700—3,200 ft. (*F H Gravely*). Mysore State : Coorg, Pollibetta (*T B. Fletcher*). Bengal : Darjiling dist., Kalimpong, 2,000—4,500 ft. (*S. W Sutherland*), Pashok, 3,500 ft. (*F H. Gravely*), Singla, 1,500 ft. (*Carmichael's Coll.*), Gopaldhara (*H. Stevens*) ; Serampur (*Mrs. Drake*) ; Salt lakes, Durgapur (*F H. Gravely*). Assam : Garo-Hills (*Godwin-Austin*). SIKKIM. BURMA—Moulmein. MALAYA PENINSULA—Penang.

Measurements.—Body 23 mm. long ; carapace 6.3 mm. long.

Distribution.—The species is known from Ceylon, India, Sikkim, Burma, Malaya Peninsula and Austro-Malaysia.

Genus *Cyrtophora* Simon.

(Type, *C. citricola* (Forskål), cairo, Egypt.)

- 1864. *Cyrtophora*, Simon, *Hist. Nat. Ar.* 2, p. 261.
- 1921. *Cyrtophora*, Gravely, *Rec. Ind. Mus.* XXII, p. 413.
- 1936. *Cyrtophora*, Dyal, *Bull. Dept. Zool. Punjab Univ., Lahore*, I, p. 174.

Distribution.—Tropical and sub-tropical countries of the world.

***Cyrtophora moluccensis* (Doleschall).**

1857. *Epeira moluccensis*, Doleschall, *Nat. Tijdschr. Nederland Indië* XIII, p. 418 (*Type-locality* : Amboina, Molucca).
 1900. *Araneus moluccensis*, Pocock, *Faun. Brit. Ind.*, Arach. p. 226.
 1919. *Cyrtophora moluccensis*, Strand, *Abh. Senckenb. Ges.* XXXVI, p. 217.

Material examined.—

INDIA—Bengal : Darjiling dist., Kalimpong, 600-4,500 ft. (*S. W Sutherland*) (over 50♀).

Besides the above mentioned locality, named specimens from the following places are also present in the Zoological Survey of India :

INDIA—Mysore State : Coorg, Pollibetta (*T. B. Fletcher*). NEPAL—Soondrijal. ANDAMAN ISLAND. NICOBAR ISLAND (*R. D. Oldham*).

Measurements.—Body 14-24 mm. long ; carapace 4.9-7.2 mm. long.

Distribution.—The species is known from Ceylon, India, Nepal, Burma, Andaman and Nicobar Islands and Austro-Malaysia.

***Cyrtophora citricola* (Forskål).**

1775. *Aranea citricola*, Forskål *Descript. Anim. etc.* p. 86 (*Type-locality* : Cairo, Egypt).
 1900. *Araneus citricola*, Pocock, *Faun. Brit. Ind.*, Arach. pp. 226, 227, fig. 73.
 1936. *Cyrtophora citricola*, Dyal, *Bull. Dept. Zool. Panjab Univ., Lahore*, I, p. 174, pl. xiv, figs. 111-115.

Material examined.—

INDIA—Bombay State : Koyna Valley, Helvak, ca. 2,000 ft., 28-30 v. 1912 (*F. H. Gravely*) (3♀). Bihar : Purulia, 15. x. 1914 (*F. H. Gravely*) (1♀).

Besides the above mentioned localities, specimens from the following localities are also present in the named collection of the Zoological Survey of India :

INDIA—Madhya Pradesh : Nagpur (*T. B. Fletcher*). Bihar : Siripur (*Mackenzie*) ; Pusa (*F. H. Gravely*). Bengal : Darjiling dist., Tindharia : Ranigunj ; Serampur (*Mrs. Drake*). BURMA—S. Shan States : Yawnghwe ; Hsamonghkam, 4,000-4,500 ft. (*F. H. Gravely*).

Measurements.—Body 8-11 mm. long ; carapace 3.3-3.3 mm. long.

Distribution.—The species is known from Ceylon, India, Pakistan, Burma, Australia, Madagascar, Africa and S. Europe.

***Cyrtophora cicatrosa* (Stoliczka).**

1869. *Epeira (Nephila?) cicatrosus*, Stoliczka, *Journ. As. Soc. Bengal* XXXVIII, p. 242, t. XX, fig. 5 (*Type-locality* : Calcutta).
 1900. *Araneus cicatrosus*, Pocock, *Faun. Brit. Ind.*, Arach. p. 226.
 1921. *Cyrtophora cicatrosa*, Gravely, *Rec. Ind. Mus.* XXII, p. 413.
 1936. *Cyrtophora cicatrosus*, Dyal, *Bull. Dept. Zool. Panjab Univ., Lahore*, I, p. 175.

Material examined.—

INDIA—Bengal : Calcutta, Beliaghata, opposite Sealdah railway station, 8. i. 1950 (*T. B. Sinha*) (3♀).

Measurement.—Body 5.7 mm. long ; carapace 1.2-1.5 mm. long.

Distribution.—The species is known from India, Pakistan, Burma and Austro-Malaysia.

Cyrtophora exanthematicus (Doleschall).

1859. *Epeira exanthematicus*, Doleschall, *Verh. Nat. Vereen. Nederland. Indic* V, no. 5, p. 38, t. iii, fig. 3 (*Type-locality* : Amboina, Molucca).
 1900. *Araneus exanthematicus*, Pocock, *Faun. Brit. Ind.*, Arach. p. 227.

Material examined.—

INDIA—Bengal : Darjiling dist., Gopaldhara, 1916 (*H. Stevens*) (1♀).

Measurement.—Body 10 mm. long ; carapace 2·3 mm. long.

Distribution.—The species is known from India, Burma, and Austro-Malaysia.

Genus **Cyclosa** Menge.

(*Type, C. conica* (Pallas), Germany).

1866. *Cyclosa*. Menge, *Preusa. Spinn.* I, p. 73.
 1921. *Cyclosa*, Gravely, *Rec. Ind. Mus.* XXII, p. 413.
 1936. *Cyclosa*, Dyal, *Bull. Dept. Zool. Panjab Univ., Lahore* I, p. 191.
 1938. *Cyclosa*, Roewer, *Mem. Mus. Hist. Nat. Belg. Hors. Ser. III*, fasc. 19, p. 37.

Distribution.—Tropical and temperate countries of the world.

Cyclosa insulana (Costa).

1834. *Epeira insulans*, Costa, *Cenni. Zool. etc.* p. 65 (*Type-locality* : Island of Ischia and Procida, Italy).
 1921. *Cyclosa insulana*, Gravely, *Rec. Ind. Mus.* XXVI, p. 413.
 1938. *Cyclosa insulana*, Roewer, *Mem. Mus. Hist. Nat. Belg. Hors. Ser. III*, fasc. 19, p. 37.

Material examined.—

INDIA—Bihar : Siripur, viii. 1913 (*Mackenzie*) (over 20♀). Assam : Jaintia-Hills, Mawlyngkneng, 1. xii. 1930 (*H. S. Rao*) (3♀).

Besides the above mentioned localities, named specimens from the following places are also present in the Zoological Survey of India :

CEYLON—Colombo (*Henry Coll.*). INDIA—Cochin State : Prambikulam, 1,700—3,200 ft. (*F. H. Gravely*), Trichur, 0-3,000 ft. (*F. H. Gravely*). Nilgiri Hills : Coonoor. Orissa : Barkul, 0-1,000 ft. (*F. H. Gravely*) Bhubaneshwar (*F. H. Gravely*) ; Barkuda Island (*N. Annandale & F. H. Gravely*). Bihar : Chota Nagpur, Purulia (*N. Annandale & F. H. Gravely*) ; Pass between Chaibassa and Chakardharpur (*F. H. Gravely*) ; Dinapur (*Caunter*) ; Pusa (*T. B. Fletcher*). Bengal : Serampur (*Mrs. Drake*) ; Darjiling dist., Kalimpong, 2,000-4,500 ft. (*S. W. Sutherland*), Argarra above Teesta, 1,000 ft. (*S. W. Sutherland*), Pashok, 3,500 ft. (*F. H. Gravely*), Soom, 3,000—3,500 ft. (*F. H. Gravely*), 4,000-5,000 ft. (*F. H. Gravely*), Ghumti, 1,500—5,000 ft. (*Carmichael's Coll.*), Suriel, 5,000 ft. (*N. Annandale & F. H. Gravely*), Lebong, 6,000-6,600 ft. (*F. H. Gravely*), Tindharia (*Mrs. Drake*), Birch Hills (*Carmichael's Coll.*) ; Salt lakes, near Durgapur (*F. H. Gravely*). NEPAL VALLEY—4,500-6,500 ft. (*Manners-Smith*). BURMA—S. Shan States : Kalaw, ca. 4,000-4,500 ft. (*F. H. Gravely*).

Measurements.—Body 6-7·3 mm. long ; carapace 1·8-2·2 mm. long.

Distribution.—The species is known from Ceylon, India, Nepal and Burma.

Genus **Ordgarius** Keyserling.(Type, *O. monstrosus*, Keyserling, Peak Downs, Australia).1886. *Ordgarius*, Keyserling, *Arach. Austral.* p. 114.1900. *Ordgarius*, Pocock, *Faun. Brit. Ind.*, *Arach.* p. 230.*Distribution.*—India and Australia.**Ordgarius hobsoni** (Cambridge).1877. *Cyrtarachne hobsoni*, Cambridge, *Proc. Zool. Soc. Lond.*, p. 562, pl. lvi, fig. 3 (*Type-locality* : Bombay, India).1900. *Ordgarius hobsoni*, Pocock, *Faun. Brit. Ind.*, *Arach.* p. 230, fig. 76.*Material examined.*—INDIA—Bihar : Siripur (*Mackenzie*) (1♀).*Measurements.*—Abdomen 3.9 mm. long and 4.9 mm. broad ; carapace 1.6 mm. long.*Distribution.*—The species is previously known from Ceylon and India (Bombay) and is now being recorded from Siripur, Bihar.Genus **Poltys** Koch.(Type, *P. illepidus*, Koch, Ostinsien, Singapore, Bintang).1843. *Poltys*, Koch, *Arach.* X, p. 97.1900. *Poltys*, Pocock, *Faun. Brit. Ind.*, *Arach.* p. 235.*Distribution.*—Ethiopian, Oriental, and Australian regions.**Poltys illepidus** Koch.1843. *Poltys illepidus*, Koch, *Arach.* X, p. 97, fig. 821 (*Type-locality* : Ostindien Singapore, Bintang).1900. *Poltys illepidus*, Pocock, *Faun. Brit. Ind.*, *Arach.* p. 236.*Material examined.*—INDIA—Bihar : Siripur (*Mackenzie*) (1♀). Bengal : Serampur, 1918-19 (*Mrs. Drake*) (1♀).*Measurements.*—Body 14-15 mm. long ; carapace 5.6 mm. long.*Distribution.*—The species is known from Ceylon, India and Austro-Malaysia.

REMARKS ON GEOGRAPHICAL DISTRIBUTION.

Of the thirty-four species dealt with in this paper all are found in the Indian region with the exception of *Argiope undulata* Thorell from Burma and Malaya, and *Gasteracantha remifera* Butler from the Nicobar Islands. One species, viz. *Nephila clavata* Koch, appears to be mainly palaeartic and is distributed in Persian Baluchistan, North-East India, Burma, Siam, Japan, but not in Peninsular India and Ceylon. Twenty-six species are recorded from Peninsular India and other regions as follows : *Argiope anasuja* Thorell is widely distributed in Ceylon and India (including North-Western and North-Eastern parts) ; *Argiope lobata* (Pallas) is so far recorded only from Peninsular India and *Gasteracantha geminata* (Fabricius) is known from Peninsular India as well as Ceylon. *Nephila malabarensis* (Walckenaer) and *Cyrtophora moluccensis* (Dole-schall) occur in Ceylon, Peninsular India, Burma and Austro-Malaysia

while they have not yet been recorded from other parts of India. *Argiope lalita* Sherriffs and *A. kalimpongensis* sp. nov. are common to Peninsular and North-East India. Eight other species, viz. *Tetragnatha gracilis* (Stoliczka), *T. mandibulata* Walckenaer, *Gasteracantha leucomelaena* (Doleschall), *G. brevispina* (Doleschall), *Nephila maculata* (Fabricius), *Ordgarius hobsoni* (Cambridge), *Cyclosa insulana* (Costa) and *Poltys illeptidus* Koch, occur in Peninsular as well as the Northern plains of India; of these all except *G. leucomelaena*, are also found in Ceylon, while four of them viz. *N. maculata*, *T. mandibulata*, *T. gracilis* and *G. brevispina*, are further known from Burma and Austro-Malaysia. *Tetragnatha mackenziei* Gravely and *Gasteracantha hasselti* Koch occur in Peninsular and North-East India, and Burma, but not in North-West India. *Tetragnatha listeri* Gravely, besides occurring in the foregoing three regions, also occurs in Ceylon and Malaya. Five other species, viz. *Argiope catenulata* (Doleschall), *Herennia ornatissima* (Doleschall), *Araneus dehaanii* (Doleschall), *Leucage celebesiana* (Walckenaer) and *Argiope pulchella* Thorell, have wider distribution and are common to Ceylon, Peninsular and North-East India, Burma and Austro-Malaysia, while *Argiope pulchella* also occurs in North-West India. *Cyrtophora cicatrosa* (Stoliczka) is known from the above mentioned regions excepting Ceylon.

Two species, viz. *Cyrtophora citricola* (Forskål) and *Argiope arcuata* Simon, from Ceylon, India, Burma and Austro-Malaysia have also been recorded from Cairo and Aden respectively.

Of the remaining five species *Argiope pradhani*, sp. nov., is described from Northern India; *Argiope shillongensis*, sp. nov. and *Tetragnatha fletcheri* Gravely are recorded from North-East India. *Gasteracantha arcuata* (Fabricius) and *Cyrtophora exanthematicus* (Doleschall) are found in North-East India, Burma and Malaya.

From the foregoing it is evident that most of the species under study occur in Peninsular India as well as Ceylon, Burma and Malaya. Some of the species which are known from one or more of the above mentioned localities are even more widely distributed in the east as far as the Celebes and the Australian region.