

OCCASIONAL PAPER NO. 221

**RECORDS OF THE
ZOOLOGICAL SURVEY OF INDIA**

**Studies on some spiders of the family Lycosidae
(Araneae : Arachnida) from Madhya Pradesh, India**

U. A. GAJBE

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CONTENTS

	Page
INTRODUCTION	1
Key to the Indian Genera of the Family Lycosidae	2
Genus 1. <i>Hippasa</i> Simon.....	3
Key to Indian species of the Genus <i>Hippasa</i> Simon.....	4
1. <i>Hippasa olivacea</i> (Thorell).....	4
2. <i>Hippasa greenalliae</i> (Blackwall).....	4
3. <i>Hippasa charamaensis</i> sp. nov.....	5
4. <i>Hippasa partita</i> (Cambridge).....	7
5. <i>Hippasa agelenoides</i> (Simon).....	7
Genus. 2. <i>Evippa</i> Simon	8
6. <i>Evippa mandlaensis</i> sp. nov.	8
7. <i>Evippa jabalpurensis</i> sp. nov.....	10
Genus 3. <i>Pardosa</i> Koch.....	12
Key to Indian species of the genus <i>Pardosa</i> Koch.....	12
8. <i>Pardosa birmanica</i> Simon.	13
9. <i>Pardosa kalpiensis</i> sp. nov.....	14
10. <i>Pardosa porpaensis</i> sp. nov.....	16
11. <i>Pardosa balaghatensis</i> sp. nov.....	18
12. <i>Pardosa annandalei</i> (Gravely).....	20
13. <i>Pardosa sumatrana</i> (Thorell).....	20
14. <i>Pardosa bargaonensis</i> sp. nov.....	21
15. <i>Pardosa orcchaensis</i> sp. nov.....	23
16. <i>Pardosa bastarensis</i> sp. nov.....	25
17. <i>Pardosa tappaensis</i> sp. nov.....	27
Genus 4. <i>Ocyale</i> Audouin.....	27
18. <i>Ocyale kalpiensis</i> sp. nov.....	29
Genus 5. <i>Arctosa</i> Koch , C.L.....	31
19. <i>Arctosa indicus</i> Tikader & Malhotra.....	31
20. <i>Arctosa tappaensis</i> sp. nov.....	31
Genus 6. <i>Lycosa</i> Latreille.....	33
Key to Indian species of the genus <i>Lycosa</i> Latreille.....	34
21. <i>Lycosa Jagadal purensis</i> . sp. nov.	34
22. <i>Lycosa bistrata</i> Gravely	36
23. <i>Lycosa nigrotibialis</i> Simon	36
24. <i>Lycosa shahapuraensis</i> sp. nov.	37
SUMMARY	39
ACKNOWLEDGEMENTS	39
REFERENCES	39

INTRODUCTION

The lycostd spider are found everywhere and can be easily seen running on the grassy land as well as on rocky ground and are strictly ground dwellers. Their body colour is brown and dull, so that they are inconspicuous on the ground and the collector notices them only when the spiders are disturbed by the ground vibration and they run inside the grass and hide. Lycosid spiders occupy a variety of habitats from sea-shore to the high mountains, according to the specific requirements viz, availability of food humidity, temperature etc. Most of the wolf spiders are nocturnal. Though the lycosid spiders in general do not spin webs, yet only the genera *Hippasa* and *Sosipus* are seen to built the funnel retreats, the outside of which expands into a sheet web. Spiders wait inside for the prey to fall on the expanded sheet and as soon as some prey is caught on the web, they came out of the funnel retreat to bite, kill and suck the prey. There is not particular location of these webs on the ground. These webs can be located at the bases of stems of large trees, under boulders with expanded sheet out side, on the ground with crevices or holes, on the sloping or verticle edges of nullahas and in small ditches. Almost always the tube retreat is deep in to the soil or crevices and may extend from six inches to one foot deep from the expanded sheet. When these spiders sense danger, they go to the extreme end of the tube and may escape even from the end. While travelling in vehicles or trains in the morning, the webs of *Hippasa* look very conspicuous on the road sides due to the deposition of dew drops on them.

Lycosids of the genus *Lycosa* Latr., also in habit varied habitats. They are found on dry ground, understones and logs, in crevices and in the verticle or slanting tubes, inside the ground, the inner surfaces of which are lined with silk secretions. These tubes may extend upto one foot inside the ground. The spiders inhabiting these tubes are usually bigger in size (4 to 6 cm. in total length) and they come out for food at night only. Some species of *Lycosa* are seen in large numbers near the heaps of cow dung, kept for drying. It may be interpreted that these lycosids gather these for preying on insects like Diptera which come to lay their eggs in the cow dung and other insect attracted by smell, At night the spider of the genus *Lycosa* are seen in large numbers chasing their prey occassionally coming in the human habitations in search of food. Some members of *Lycosa* prefer the cool, moist cavities under stones, where they die in the day time.

Species of the genera *Pardosa* and *Arctosa* seems to prefer the humid atmosphere, since they are frequently found near the edges of ponds, lakes, rivers etc. *pardosa birmanica* Simon and *P. sumatrana* (Thorell) are seen jumping in water and running on the surface of water like small frogs upto eight feet in one stretch, for their defence, when disturbed and some species of *Pardosa* even go under water holding the water twig, for defence. Lycosid spiders are seen in large numbers accumulated around the drying water holes, obviously for the insects which visit these places attracted by the smell of putrifying fishes and

other organisms and the lycosid spiders catch and feed on these insects.

The egg sac of lycosid spider is spherical and is composed of two halves with a seam around it and is carried by the females attached with their spinnerets. After hatching the young ones climb up on the mothers' abdomen and carapace, and are carried by her for a considerable time.

The chief food of lycosid spiders is insects. These spiders feed on a variety of insects like Diptera, Lepidoptera, Dictyoptera, Hymenoptera, Coleoptera, Collembola, Dermaptera etc. They may even consume the young spiders of their own species as well as of different species showing cannibalism. Usually these spiders feed in the night. Lycosid chase their prey, catch and bite them. Then they suck the juices of the body of the prey. The chitinised remains of the insects can be seen in the ground tubes of some *Lycosa* species which inhabit the tubes. There is no comprehensive work on this group in our country. Simon (1884), Cambridge (1870) and Pocock (1900-1901) were the pioneer workers, who described many species from India, Burma and Sri Lanka. Gravely (1924) made some attempts to work out this neglected group of spiders. Pocock (1900) has recorded only seventeen species of the family Lycosidae in his 'Fauna' of British India, volume, Sadana (1972), Sinha (1951), Tikader (1964, 70, 71, 76, 77 a, b, 80) described many species of the Lycosid spiders.

The type specimens will be deposited in due course in the National Zoological Collection, Kolkata.

1833 Lycosidae Sundevall, *Conspectus Arachnidum*: 1-39.

1895 *Lycosidae* : Thorell, *Spiders of Burma*, London, 406.

Characters : This family was erected by Sundevall (1833). The Lycosidae are hunting spiders and chase their prey like a wolf. For this reason the typical genus was named *Lycosa*, which is derived from the Greek word for wolf. Due to their habit of chasing the prey they got the common name "Wolf spiders" The wolf-spiders are very common; they run through grass or lurk under stones especially in damp situations. Many species dig tunnels in the ground, and some build snares which expand into a sheet like structure on the ground. They are also found in dry areas.

Type-genus *Lycosa* Latreille

Distributions Cosmopolitan

Key to the Indian genera of the family LYCOSIDAE

- 1 Posterior spinnerets distinctly longer than the anterior, with apical segment conical and as long as the basal. Anterior row of eyes little wider than the second row. Sternum generally provided with midlongitudinal dark marking *Hippasa* Simon

- Posterior spinnerets at most only slightly longer than the anterior and apical segment hemispherical and very short. Anterior row of eyes shorter than the second row. Sternum without longitudinal marking2.
2. Clypeus from side vertical. Fourth metatarsus longer than or as long as tibia and patella IV together3.
Clypeus from front slanting. Fourth metatarsus shorter than tibia and patella IV together4.
3. Cephalic region somewhat abruptly elevated from thoracic region. Superior claws long and slender and toothed only at the base *Evippa* Simon
Cephalic region not much elevated from thoracic region. Superior claws not long and slender and toothed all over the length of claw *Pardosa* Koch.
4. Third pair of legs longer than the first pair *Ocyale* Audouin
Third pair of legs shorter than the first pair5.
5. Tibia IV dorsally with the proximal spine usually thinner or more drawn out than the dorsal one, sometimes reduced to bristle.6.
Tibia IV with two dorsal spines about equally stout7.
6. Carapace hirsute (Hairy) and tarsus I without a dorsobasal thin, long bristle *Trochosa* Koch Carapace glabrous or nearly so and tarsus I with a dorso-basal bristle which is drawn out thin and fine at the end and is much longer than the hairs and trichobothria. *Arctosa* Koch.
7. Anterior row of eyes straight or slightly procurved, Anterior median eyes never smaller than the anterior laterals*Lycosa* Latreille
Anterior row of eyes strongly procurved. Anterior median eyes smaller than the anterior laterals *Venonia* Thorell.

Genus 1. *Hippasa* Simon

1885. *Hippasa* Simon, *Bull Soc. Zool. Fr.* 10 : 31

1900. *Hippasa*; Pocock, *Fauna Brit. India, Arach.* : 249.

Characters This genus is allied to *Lycosa* but differs from it in having posterior spinnerets considerably longer than the anterior spinnerets and the apical piece of the posterior spinnerets is as long as the basal piece. Anterior row of eyes little wider than the second row and the space enclosed between the posterior eyes is much wider behind than in front. In almost all species, a black mid-longitudinal band is present on the sternum. In habits these spiders are a typical for the family. They build sheet-like webs with a funnel retreat which they run like members of the family Agelenidae, hence the name *Hippasa*

agelenoides is given by Simon to the type species of the genus.

Type-species *Hippasa agelenoides* (Simon)

Distributions Madagascar, Africa : Arabia : Malayasia, India.

Key to Indian species of the Genus *Hippasa* Simon

- 1 Spiders of large size (Total length more than 10mm.2
 Spiders of small size (Total length less than 10mm.4
2. Pit of vulva without chitinous plate. Dorsal side of abdomen without dark brown spots and chevrons*olivacea* (Thorell)
 Pit of vulva covered with chitinous plate. Dorsal side of abdomen with dark brown spots or chevron3
3. Abdomen pale brown, anterior median area with longitudinal brown patch followed by transverse patches *greenalliae* (Blackwall)
 Abdomen light brown, dorsally provided with brownish patches
 *charamaensis* sp. nov.
4. Plate of vulva slightly invaginated anteriorly and hence without distinct posteriorly directed truncate proceses Abdomen pale ventrally with three longitudinal dark bands extending from the epigastric fold to the base of spinnerets *partita* (Cambridge)
 Plate of vulva strongly invaginated in front and hence with two distinctly posteriorly directed turncate processes. Abdomen pale ventrally with chalk white patches ..*agelenoides* (simon).

1. *Hippasa olivacea* (Thorell)

1887. *Dipontia olivacea* Thorell, *Ann. Mus. civ. Stor. nat. Genova*, 5 (2) : 297.

1895. *Hippasa olivecea* : Thorell, *Soiders of Burma* : 217.

Specimens examined : 7 ♀ ♀ Gwari village on Jabalpur Mandla road, Mandla district, M.P. Coll, U.A. Gajbe, 22, XII, 1981 (Reg. No. A/2762).

Distribution BURMA, Rangoon, Tharrawaddy Tenasserin, Bhamo, Metanja, Kyeikpadam, pegu, Bassein, INDIA: Mandla district, Madhya Pradesh.

Remarks : This species is being reported here for the first time from India.

2. *Hippasa greenalliae* (Blackwall)

1867. *Lycosa greenalliae* Blackwall, *Ann. Mag. Nat. Hist.* (3), 19 : 387.

1885. *Hippasa greenalliae* : Simon, *Bull. Soc. zool. Fr.* 10 : 31.

Specimens examined : 1 ♀, Narayanganj village on Jabalpur- Mandla road, Mandla district, Madhya Pradesh, Coll. U.A. Gajbe, 23.1.1985 (Reg. No. A/2763).

Distribution : INDIA, Trivendrum, Travancore, Trichur, Cochin Kerala; Ootacammand, Coimbatore, Ramnad, Krusadi Island Gulf of Manar, E. Khandesh, Nagpur, Maharashtra; Barkuda Island Chilka Lake, Orissa; Sikkim; Darjiling, West Bengal; Mandla Madhya Pradesh; Sri Lanka; Trincomall.

Remarks This species is being reported here for the first time from Madhya Pradesh.

3. *Hippasa charamaensis* sp. nov.

(Fig. 1-5)

General : Cephalothorax and legs light reddish-green, abdomen light brown. Total length 11 mm. Carapace 5.00 mm. long, 3.50mm. wide ; abdomen 6.10 mm. long, 4.00 mm. wide.

Cephalothorax Longer than wide, clothed with pubescence. Cephalic region slightly high and abruptly narrowing from the thoracic region. Middle or thoracic region provided with a distinct long fovea from which thick brown bands radiate towards the lateral sides. Anterior row of eyes slightly recurved, slightly wider than the second row, anterior medians slightly larger than the laterals and equidistant to each other, bases of anterior laterals provided with a conspicuous black patches. Eyes of the posterior row almost equal in size and spaces between them much wider behind than in front as in fig. 1. Bases of posterior eyes provided with conspicuous and contiguous black patches as in fig. 1. bases of posterior eyes provided with conspicuous and contiguous black patches as in fig.1. Ocular quad wider than long, sternum heart-shaped, pointed being, clothed with spine like hairs and mid-longitudinally provided with a deep brown band. Labium wider than long, maxillae longer than wide and slightly wider at the distal end, clothed with hairs. Chelicerae moderately strong and inner margin of fang provided with three teeth. Legs long and thin, clothed with hairs and spines, uniform in colour. Male same in colour but smaller in size than female. Male palp as in figs. 4 and 5.

Abdomen Longer than wide dorsally provided with spine like hairs and pubescence. Abdomen dorsally provided with brownish patches as in fig. 1. Ventral side lighter than the dorsal and uniform in colour, Prosterior spinnerets much longer than the anterior and the apical piece of posterior spinnerets as long as the basal piece and clothed with hairs. Epigyne as in fig. 2 Internal genitalia as in fig. 3

Type-specimens : *Holotype* ♀, *allotype* 1 ♂ in spirit, other details as above.

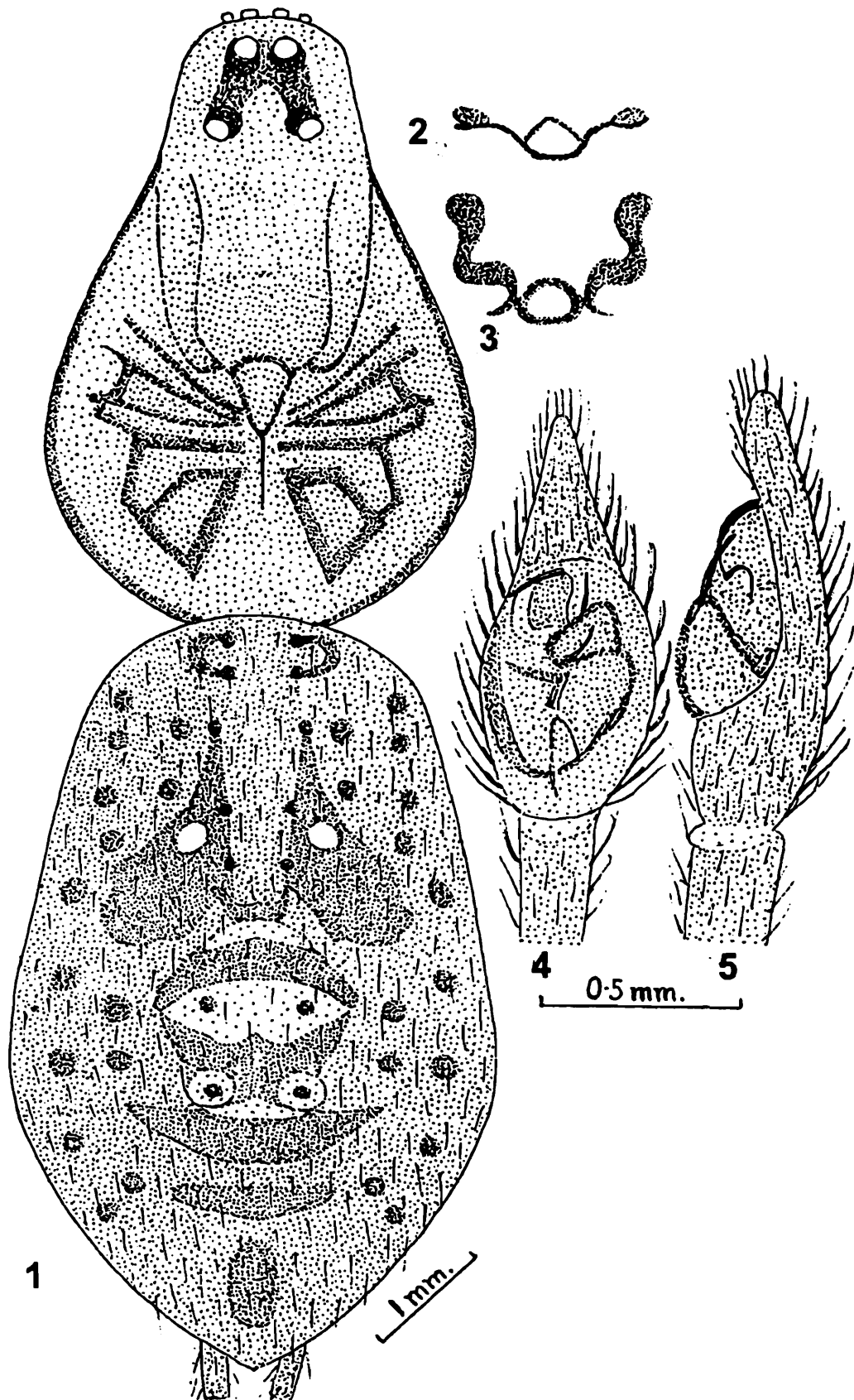


Fig. 1-5. *Hippasa charamaensis* sp. nov. 1. Dorsal view of female, legs omitted, 2. Epigyne, 3. Internal genitalia, 4. Left male palp, ventral view, 5. Left male palp, lateral view.

Type-locality : INDIA : Madhya Pradesh; Charama Bastar district. Coll U. A. Gajbe, 5.1.1984.

This species closely resembles *Hippasa holmerae* Thorell but differs from it as follows; (i) Anterior row of eyes slightly recurved, anterior medians slightly larger than the laterals but in *holmerae* anterior row of eyes slightly procurved and the eyes equal in size. (ii) Abdomen provided with brownish patches but in *H. holmerae* Abdomen provided with brown and white spots. (iii) Epigyne and internal genitalia structurally different. (iv) Male palp also structurally different.

4. *Hippasa partita* (Cambridge)

1876. *Trochosa partita* Cambridge, *Proc. zool. Soc.*, 541.

1897. *Hippasa deseticola* : Simon, *Bull Mus. Hist. Nat.*, 3 (7) : 290.

Specimens examined 1 ♀ Tappa village, Rajnandgaon district, Madhya Pradesh, Coll U. A. Gajbe, 22. XII. 1983 (Reg. No. A/2764). 1 ♀ Chitrakote Bastar district, Madhya Pradesh, Coll. U. A. Gajbe, 1.1.1984. (Reg. No. 2765).

Distributions ALEXANDRIA, EGYPT, ARABIA, Central Asia Karachi, PAKISTAN, Rajnandgaon and Bastar district of Madhya Pradesh.

Remarks This species is being reported here for the first time from India.

5. *Hippasa agelenoides* (Simon)

1834 *Pirata agelenoides* Simon, *Ann. Mus. civ. Stor. nat., Genova*, 20 : 334.

1895. *Hippasa agelenoides* : Thorell, *Spiders of Burma*, : 218.

1900. *Hippasa agelenoides* : Pocock, *Fauna Brit. India Arach.*, : 251.

Specimens examined : 1 ♀ Shikara village, Lakhanadown Tahsil, Seoni district, Madhya Pradesh. Coll. U. A. Gajbe, 26. 11.1986 (Re. No. A/2766). 1 ♀ , Saraidongari village, Lakhanadown tahsil, Seoni district, Madhya Pradesh, Coll. U. A. Gajbe. 4. XII.1986 (Reg. No. A/2767), 3 ♀ ♀ , Barghat on Seoni - Balaghat road, Seoni district Madhya Pradesh, Coll. U. A. Gajbe, 7.III.1987 (Reg. No. 2768).

Distributions Pramikulam, Cochin, Kerala, Eastern Ghats, Mathiapalle, Yercaud, Shevaroy, hills, North Malabar, Belgaun Kotigehar, Karnataka, Gudalur, Madras, Tamil Nadu, Dehradun, Uttar Pradesh; Mahabaleshwar, Maharashtra; Seoni district, Madhya Pradesh Burma, Tharrawady and Rangoon.

Remarks This species is being reported here for the first time from Madhya Pradesh.

Genus. 2. *Evippa* Simon

1882. *Evippa* Simon, *Ann. Mus. Civ. Stor. nat. Genova*, 18 : 222

1924. *Evippa* : Gravely, *Rec. Indian Mus.* 26 : 611.

1951. *Evippa* : Sinha, *Rec. Indian Mus.* 48(2) : 48

1980. *Evippa* Tikader & Malhotra, *Fauna of India, Spiders*, 1(2) : 302

Characters Anterior portion of cephalothorax somewhat abruptly elevated thus forming an angle with its posterior portion of thoracic region. Anterior row of eyes procurved. Superior claws of the legs long, slender and toothed only at the base. Tibise I provided with six pairs of ventral robust spines. Metatars IV is longer than tibia plus together or atleast not shorter. Clypeus vertical. Labium wider than long. Inner margin of chelicera bears only two teeth, while the outer margin armed with three teeth.

Type species *Evippa arenaria* (Audoin),

Distributions Africa, Egypt. Asia.

6. *Evippa mandlaensis* sp. nov.

(Fig. 6-9)

General Cephalothorax dark brown, legs reddish-green, abdomen brownish-black. Total length 6.50 mm Carapace 3.20 mm long, 2.80 mm wide; abdomen 3.40 mm long, 2.50 mm wide.

Cephalothorax Longer than wide, narrowing anteriorly, clothed with pubescence and some hairs, Cephalic region abruptly elevated thus forming a distinct angle with the thoracic region as in fig. 8. Anterior row of eyes slightly procurved and shorter than the second row; anterior medians larger than the laterals and close to laterals than to each other. Eyes of the second row larger than others. Ocular area dark. Space enclosed between posterior eyes as long as wide as in fig. 6. Middle of cephalothorax provided with a sharp fovea. Sternum heart-shaped, pointed behind; uniform deep brown in colour, clothed with pubescence and some spine like hairs. Labium wider than long anterior portion pale yellow and posterior deep brown in colour, anterior margin provided with spine like hairs. Maxillae longer than wide, uniform pale in colour, anterior margin provided with conspicuous scopulae. Chelicerae moderately strong, inner margin provided with three dissimilar teeth. Legs relatively long and slender, clothed with hairs and spines and dorsoventrally transversely

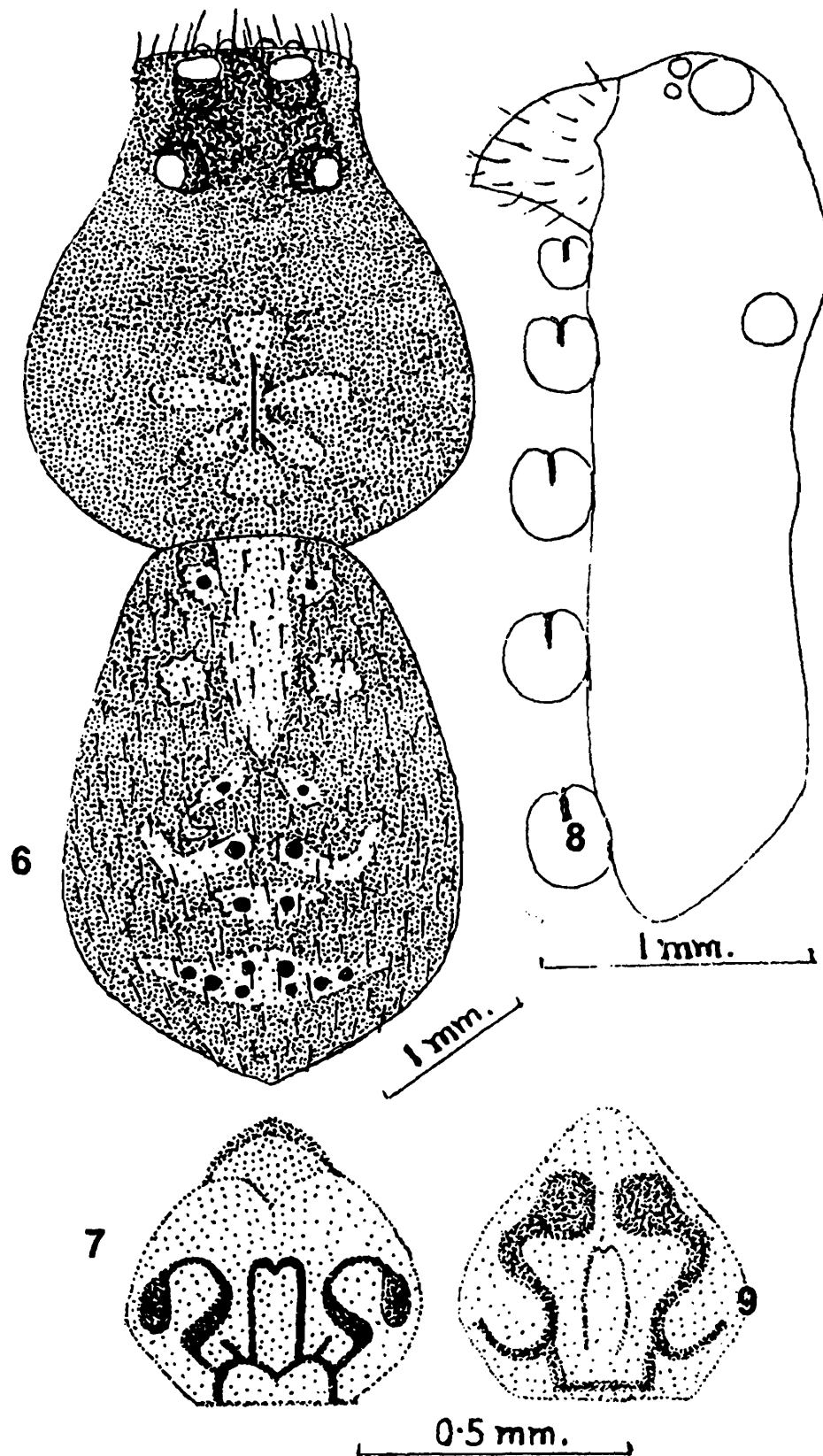


Fig. 6-9 *Evippa mandlaensis* sp. Nov. 6. Dorsal view of female, legs omitted. 7. Epigyne, 8. Lateral view of cephalothorax, 9. Internal genitalia.

banded with conspicuous brown patches. Tibiae I provided with three pairs of ventral spines.

Abdomen Longer than wide, pointed posteriorly, clothed with pubescence and spine like hairs and provided with white patches with black dots as in fig. 6. Ventral side uniform yellow in colour laterally clothed with hairs. Epigyne as in fig. 7. Internal genitalia as in fig. 9.

Type-specimen : *Holotype* ♀ in spirit, other details as above.

Type-locality : INDIA : Madhya Pradesh, Narayanganj, Mandala dist. Coll. U. A. Gajbe. 23.I.1985.

This species resembles *Evippa sohani* Tikader & Malhotra but differs from it as follows : (i) Cephalothorax uniform without patches but in *E. sohani* the cephalothorax provided with a broad median longitudinal pale band and pale spots. (ii) Sternum uniform deep brown in colour but in *E. sohani* sternum uniform pale in colour. (iii) Inner margin of chelicera provided with three teeth but in *E. sohani* inner margin of chelicera provided with two teeth (iv) abdomen dorsally provided with white patches with black dots but in *E. sohani* Abdomen dorsally provided with alternate transverse patches of black and reddish colour. (v) Epigyne and internal genitalia also structurally different.

7. *Evippa jabalpurensis* sp. nov.

(Fig. 10-13)

General Cephalothorax brown, Legs pale yellow, abdomen light brownish-green. Total length 7.60mm, Carapace 3.20mm, long, 2.40 wide, abdomen 4.50mm, long , 3.00mm wide.

Cephalothorax Longer than wide, narrowing anteriorly, clothed with pubescence; cephalic region abruptly elevated thus forming a distinct angle with the thoracic region as in fig. 11. Anterior row of eyes slightly procurved and shorter than the second row, anterior medians larger than the laterals and slightly closer to adjacent laterals than to each other. Eyes of second row larger than the others, ocular area dark. Space enclosed between posterior eyes slightly longer than wide as in fig. 10. Middle of cephalothorax provided with a sharp longitudinal fovea. A broad longitudinal pale band extends from the bases of third row of eyes to bases of cephalothorax. lateral margin provided with longitudinal black bands as in fig. 10. Sternum heart-shaped, pointed behind, uniform pale yellow in colour and provided with few spines. Labium wider than long, posterior half brown, anterior half yellow in colour, anterior margin provided with spines. Maxillae longer than wide light brown in colour, anterior margin provided with conspicuous scopulae. Chelicerae moderately

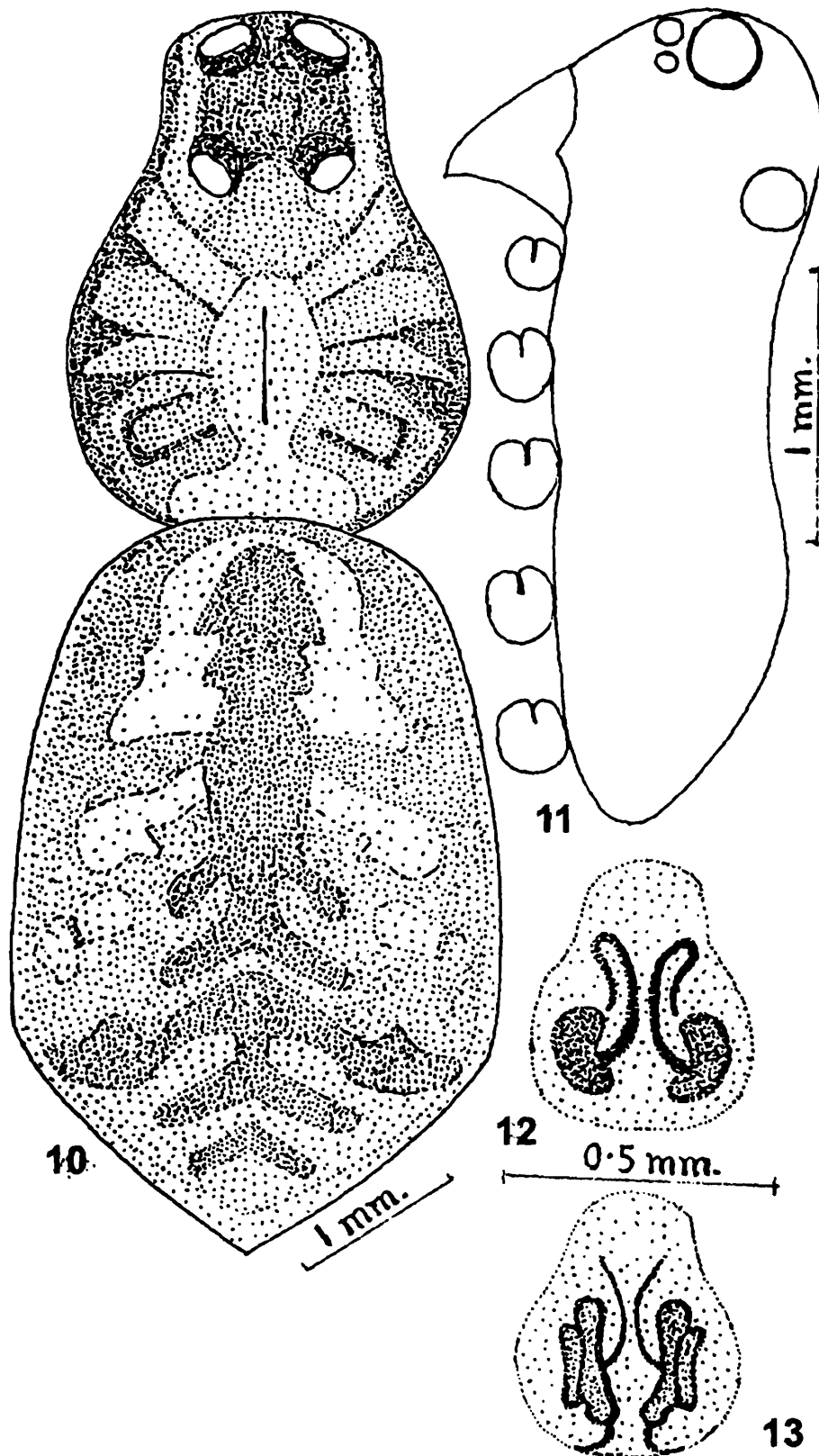


Fig. 10-13. *Evippa Jabalpurensis*. sp. nov. 10. Dorsal view of female, legs omitted, 11. Lateral view of cephalothorax, 12. Epigyne. 13. Internal genitalia.

strog, inner margin provided with conspicuous scopulae. Chelicerae moderately strong, inner margin provided with two similar teeth and outer margin with three teeth. Legs long, slender and transversely banded with deep brown patches, tibiae I provided with five pairs of robust ventral spines.

Abdomen Longer than wide. pointed behind, dorsally clothed with hairs and provided with black and white patches as in fig.10. Ventral side lighter than the dorsal. Epigyne as in fig.12. Internal genitalia as in fig.13.

Type-specimen *Holotype* ♀ in spirit, other details as above.

Type-locality INDIA : Madhya Pradesh, Bilpathar, Village, near Shahpura, Jabalpur district, Coll. U. A. Gajbe, 28.IV.1984.

This species resembles *Evjppa shivajii* Tikader a Malhotra, but differs from it as follows : (i) Tibiae I provided with five pairs of ventral spines but in *E. shivajii* Tibiae I provided with six pairs of ventral spines. (ii) Abdomen dorsally provided with black and white patches but in *E. shivajii* abdomen provided with broad patches. (iii) Epigyne and internal genitalia also structurally different.

Genus 3. *Pardosa* Koch

1848. *Pardosa* Koch, *Die. Arachnide*, 14 : 100

1898. *Pardosa* : Simon, *Hist. Nat. Arach.* 2(2) : 361.

Characters Cephalic region elevated, clypeus vertical and chelicerae much smaller than in most other lycosids so that their height is less than the height of the head. Cephalic region almost entirely occupied by posterior two rows of eyes. The anterior row of eyes shorter than the second row. Labium usually wider than long with the basal articular notches. Legs relatively long and thin and provided with long spines. Metatarsus IV usually longer than or at least as long as patella plus tibia together. Tibia I provided with three pairs of ventral spines. These spiders are generally found in dry open woods as well as on wet ground near ponds and streams. The egg-sac is lenticular, usually greenish, when fresh, changing to dirty grey when older.

Type-species *Pardosa striatipes* Koch

Distributions Europe, America, Asia.

Key to Indian speices of the genus *Pardosa* Koch

- 1 Spiders of small size. Total length not more than 7mm,2
- Spiders of bigger size. Total length more than 7mm,5

2. Anterior row of eyes less wider than the second row or as long as the second row 3.
 Anterior row of eyes shorter than the second row 4.
3. Inner margin of chelicera provided with three unequal teeth. Legs provided with conspicuous transverse greenish dark brown patch.....*birmanica* Simon
 Inner margin of chelicera provided with three equal teeth Legs uniform in colour without any patches*kalpinensis* sp. nov.
4. Sternum light yellowish green. Inner margin of chelicerae with two dissimilar teeth. Labium as long as wide. Abdomen laterally provided with black reticulations and posterior half with whitish patches *porpaenis* sp. nov.
 Sternum light brownish green. Inner margin of chelicerae with three similar teeth. Labium longer than wide. Abdomen dorsally provided with longitudinal white patches *balaghatensis* sp. nov.
5. Anterior row of eyes straight6.
 Anterior row of eyes slightly procurved 7.
6. Ocular area black and hairy and maxillae provided with minute inconspicuous scopulae. Abdomen provided with minute light spots all over the dorsal side. *annandalei* (Gravely)
 Ocular area not black (except bases of posterior eyes) and hairy and maxillae provided with conspicuous scopulae. Abdomen dorsally provided with dark brown and pale patches and black spots. *sumatrana* (Thorell).
7. Legs uniform in colour 8.
 Legs not uniform in colour 9.
8. Inner margin of chelicerae with three dissimilar teeth. Abdomen dorsally provided with whitish transverse patches, ventral side yellowish green,*bargaonensis* sp. nov.
 Inner margin of chelicera with three similar teeth. Abdomen dorsally provided with some whitish patches, ventral side uniform pale.*oracchaensis* sp. nov.
9. Inner margin of chelicera with three small teeth. Sternum yellowish green in colour. Abdomen dorsally provided with transverse black patches and black dot. Ventral side yellowish green. *bastarensis* sp. nov.
 Inner margin of chelicera with two small teeth. Sternum uniform in colour. Abdomen dorsally provided with some whitish patches, ventral side laterally provided with reddish dots *tappaensis* sp. nov.

8. *Pardosa birmanica* Simon.

1884. *Pardosa birmanica* : Simon, *Ann. Mus. civ. Stor. nat. Genova*, 20 : 333.

1890. *Pardosa ipnochoera*: Thorell, *App. Mus. civ. Stor. nat. Genova*, 10(2) : 138.

1980. *Pardosa birmanica*: Tikader Malhotra *Fauna of India, Spiders*, 1 (2) : 329.

Specimens examined 1 ♀ Amkhas village, Jabalpur district, Madhya Pradesh, Coll. V. V. Rao, 4.VII.1969. (Reg. No. A/2769). 1 ♀ Barela village, Jabalpur district, Madhya Pradesh, Coll. B. S. Gurum. 23.IV.1974, (Reg.No. A/2770). 1 ♂, Madan Mahal, Jabalpur, Jabalpur district, Madhya Pradesh. Coll. S. K. Mishra, 4.IV.1975 (Reg. No. A/2771). 1 ♂, Rani Durgawati Samadhi, Jabalpur district, Madhya Pradesh, Coll. V. V. Rao, 29.IV.1970. (Reg. No. A/2772), 2 ♀♀, 2 ♂♂, Amkhas village, Jabalpur district, Madhya Pradesh. Coll. B. S. Gurum, 22.III.1975. (Reg. No. A/2773).

Distribution INDIA : Panchgani, Poona, Bombay, Ahmednagar Maharashtra; Ludhiyana, Khewra, Salt range, Punjab; Gujrat; Berhampur, Burdwan, Gurdanga, Gmatia, Birbhum, Calcutta, Single, Darjeeling, West Bengal; barkuda island, Chilka lake, Brijal Sagar, Orissa; Mouni bara bank, Mirzapur, Dehra Dun, Uttar Pradesh : Udaipur, Jodhpur, Rajashtan; Rajkot, jamnagar, Mehsana, Gujrat; Poonta, Kangara, Solan, Sirmour, Kot Khal, Chamba, Himachal Pradesh; Mandla, Jabalpur, Burhampur, Rewa, Madhya Pradesh; Garo Hills, Shillong, Meghalaya; Manbhum, Siripur, Saran, Chaibasa, Chakradharpur, Bihar; Octacamund, Nilgiris, Madras City, Tamil Nadu; Horsley konda, Ennur Chingleput, Andhra Pradesh; BURMA: Minhala Tharrawaddy and Rangoon java, Alexandria, PAKISTAN : lahore.

Remarks This species is being reported here for the second time from Jabalpur district of Madhya Pradesh.

9. *Pardosa kalpiensis* sp. nov.

(Fig. 14-16)

General : Cephalothrax and legs brownish-green, abdomen dark brown. Total length 5.90mm. Carapace 2.90mm, long, 2.00mm, wide; Abdomen 3.00mm, long 1.90mm, wide.

Cephalothrax Longer than wide, convex, narrowing in front, cephalic region high, clothed with pubescence and some spines. Centre of thoracic region provided with a sharp longitudinal dark fovea and thin dark brown bands radiate towards the sub-lateral side of the fovea. Area surrounding fovea pale in colour, anterior row of eyes slightly procurved, nearly as long as second row, medians larger than the laterals and closer to laterals than to each other, laterals provided with conspicuous black patches. Eyes of the second row larger than the others. Ocular quad wider behind and narrowing in front. Bases of posterior eyes provided with conspicuous black patches thus making the postarior quadrangle black as in fig.14. Space enclosed between posterior eyes, wider behind and narrowing in front. Sternum heart-shaped pointed behind, uniform pale yellow in colour, clothed with spine

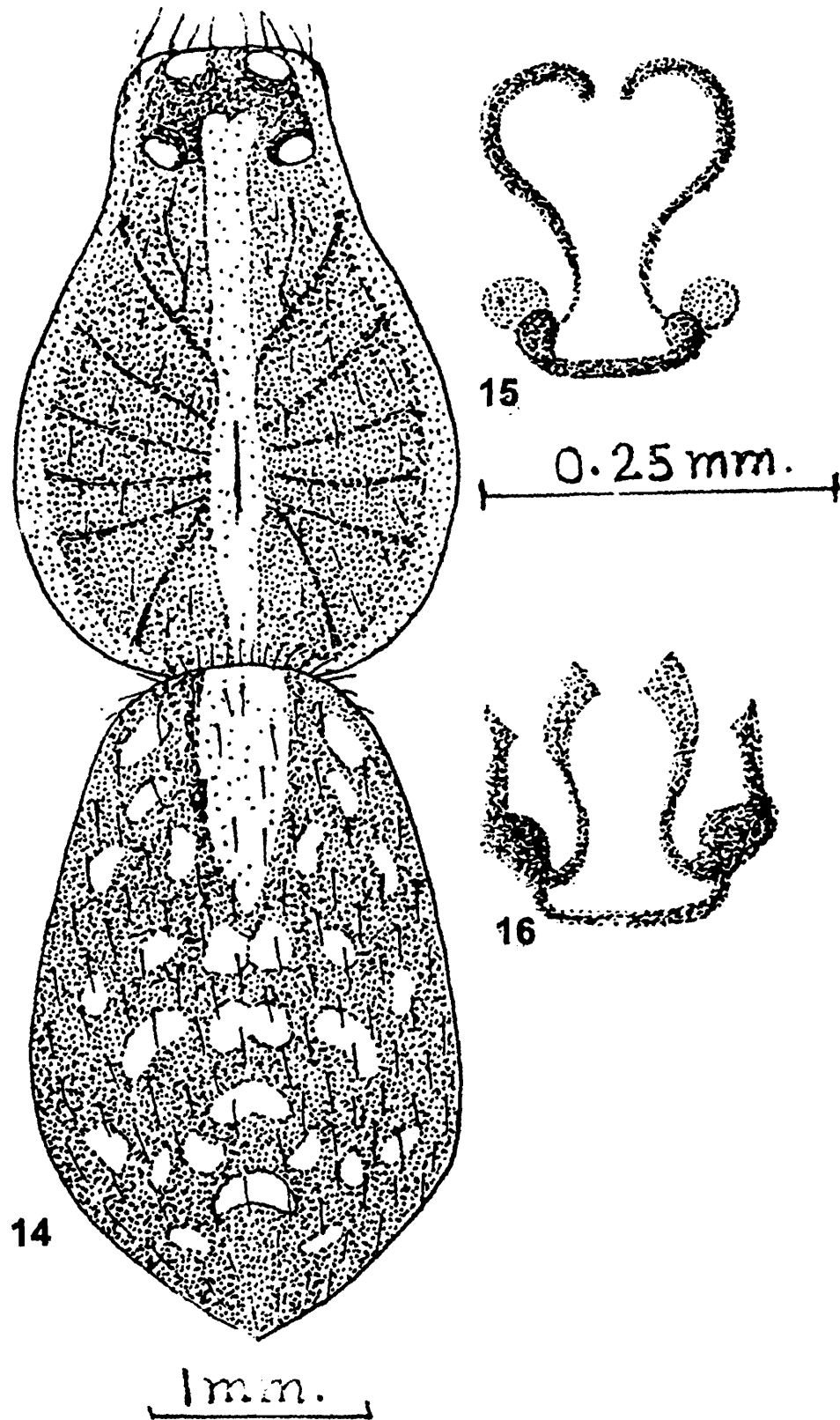


Fig. 14-16. *Pordosa kalpiensis*. sp. nov. 14. Dorsal view of female, legs omitted, 15. Epigyne, 16. Internal genitalia.

like hairs. Labium as long as wide, light brown, anterior margin wide, pale yellow in colour, anterior margin provided with conspicuous scopulae. Chelicerae moderately strong, vertical, inner margin provided with three similar teeth. Legs relatively long and thin clothed with hairs and spines, uniform in colour without patches.

Abdomen : Longer than wide, nearly elliptical, widest behind the middle, pointed behind, clothed with pubescence and hairs. Abdomon dorsally provided with white patches as in fig. 14. Ventral side pale yellow in colour, clothed with hairs. Epigyne as in fig. 15. Internal genitalia as in fig. 16.

Type-specimen : Holotype ♀, in spirit, other details as above.

Type-locality : INDIA : Madhya Pradesh, Kalpi Village, Mandla district, Coll. U. A. Gajbe, 1.VI.1982.

This species closely resembles with *Pardosa tatensis* (Tikader) but differs from it as follows : (i) Anterior row of eyes slightly procurved but in *P. tatenis* anterior row of eyes straight. (ii) Abdomon dorsally provided with whitish patches but in *P. tatensis* abdomon dorsally provided with black and pale patches and black spots. (iii) Epigyne and internal genitalia also structurally different.

10. *Pardosa porpaensis* sp. nov.

(Fig. 17-19)

General : Cephalothorax and legs light reddish-green, abdomen yellowish-green. Total length 5.20mm. Carapace 2.50mm. long. 1.80mm, wide; abdomen 2.70mm long 1.70mm, wide.

Cephalothorax : Longer than wide, convex, clothed with pubescence, slightly high and narrowing in front, centre of thoracic region with a conspicuous fovea. Anterior row of eyes slightly procurved (as seen from in front), shorter than the second row, medians larger than the laterals and closer to laterals than to each other. Eyes of the second row larger than the others. Ocular quadrangle broader than long, wider behind and narrowing in front. Space enclosed between posterior eyes slightly behind than in front and black in colour. Sternum heart-shaped pointed behind, light yellowish-green and clothed with small hairs. Labium as long as wide, brown in colour. Maxillae longer than wide, clothed with hairs and spines and anterior portion provided with scopulae. Chelicerae moderately strong, vertical, inner margin provided with two dissimilar teeth. Legs relatively long and thin, uniform in colour, provided with hairs and spines.

Abdomen : Oval, broadest just behind the middle, clothed with pubescence, provided laterally with black reticulations and posterior half with whitish patches as in fig.17. Ventral

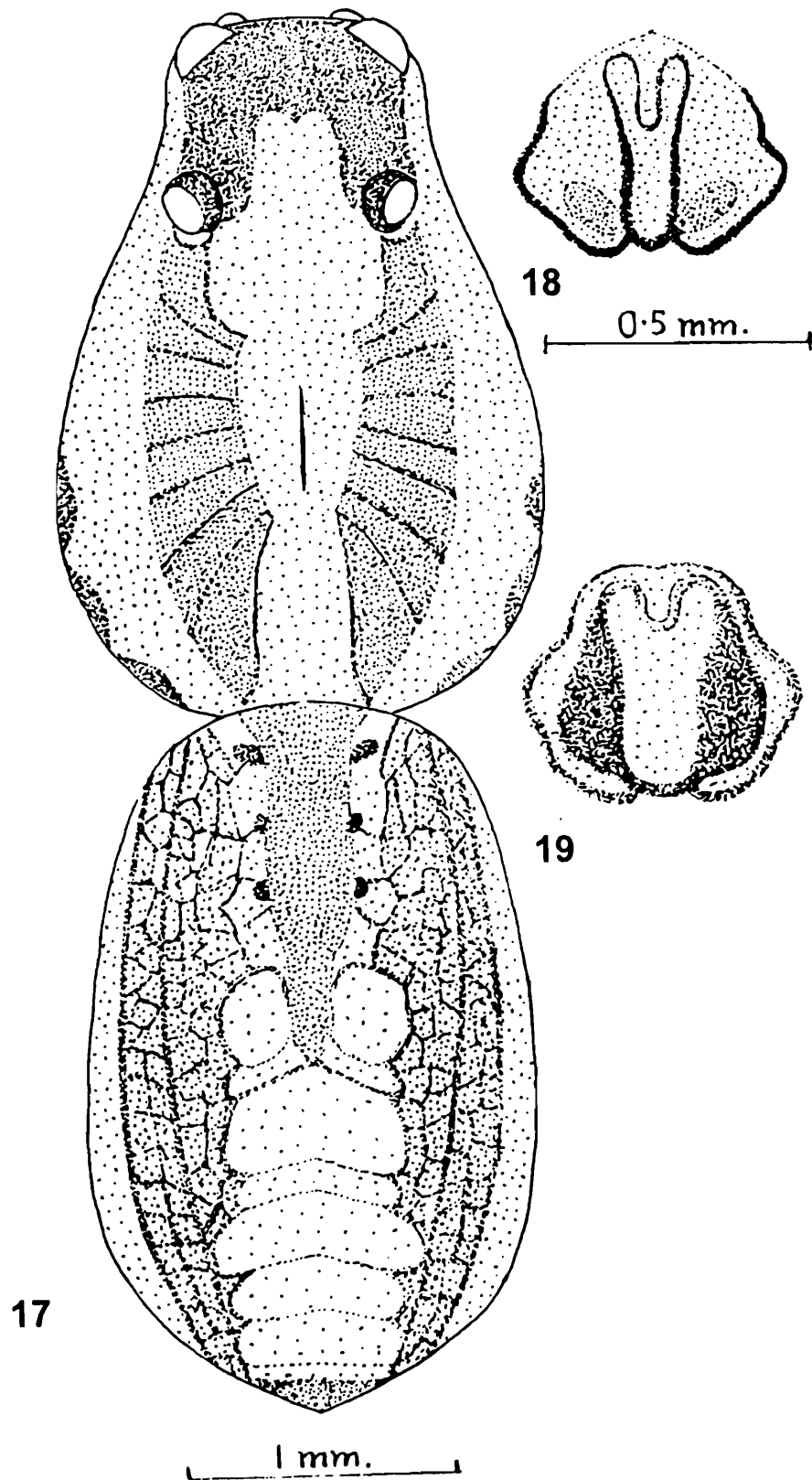


Fig. 17-19 *Pardosa porpaensis* sp. nov. 17. Dorsal view of female, legs omitted. 18. Epigyne. 19. Internal genitalia.

side slightly lighter than the dorsal. Epigyne as in fig. 18. Internal genitalia as in fig. 19.

Type-specimen Holotype ♀, in spirit, other details as above.

Type-locality INDIA : Madhya Pradesh; Porpa village near Jagdalpur, Bastar district, Coll. U. A. Gajbe, 31.XII.1983.

This species closely resembles with *Pardosa kupupa* (Tikader) but differs from it as follows: (i) Legs uniform in colour but in *P. kupupa* legs provided with conspicuous black transverse patches. (ii) Inner margin of chelicera provided with two teeth but in *P. kupupa* inner margin of chelicera provided with three teeth. (iii) Abdomen laterally provided with black reticulations and posterior half with whitish patches but in *P. kupupa* abdomen provided with black patches. (iv) Epigyne and internal genitalia also structurally different.

11. *Pardosa balaghatensis* sp. nov.

(Fig. 20-22)

General Cephalothorax and legs brownish-green, abdomen black. Total length 6.80mm, Carapace 3.50mm, long, 2.60mm, wide; abdomen 3.30mm, long, 2.00mm, wide.

Cephalothorax Longer than wide, convex, clothed with pubescence and some hairs, cephalic region slightly high and narrowing in front. Centre of thoracic region provided with a sharp fovea. Ocular area dark brown. Anterior row of eyes slightly procurved, shorter than the second row, medians larger than the laterals and closer to laterals than to each other, laterals provided with conspicuous black patches. Ocular quad wider behind and narrowing in front, bases of posterior eyes provided with conspicuous black patches thus making the ocular area black as in fig. 20. Space enclosed between posterior eyes wider behind and narrowing in front. Sternum heart-shaped, pointed behind, clothed with pubescence and some spine like hairs, uniformly light brownish-green in colour. Labium slightly longer than wide, pale yellow in colour, anterior margin provided with conspicuous scopulae. Chelicerae moderately strong, vertical, inner margin provided with three similar teeth. Legs relatively long and thin provided with hairs and spines, uniform in colour without any patches.

Abdomen Longer than wide, elliptical, pointed behind, clothed with pubescence. Abdomen dorsally provided with longitudinal white patches as in fig. 20. Abdomen ventrally lighter than the dorsal. Epigyne as in fig. 21. Internal genitalia as in fig. 22.

Type-specimen Holotype ♀, in spirit, other details as above.

Type-locality INDIA: Madhya Pradesh, Lauguer village, Baihar Tahsil, Balaghat district. Coll. U. A. Gajbe, 18.XII.1983.

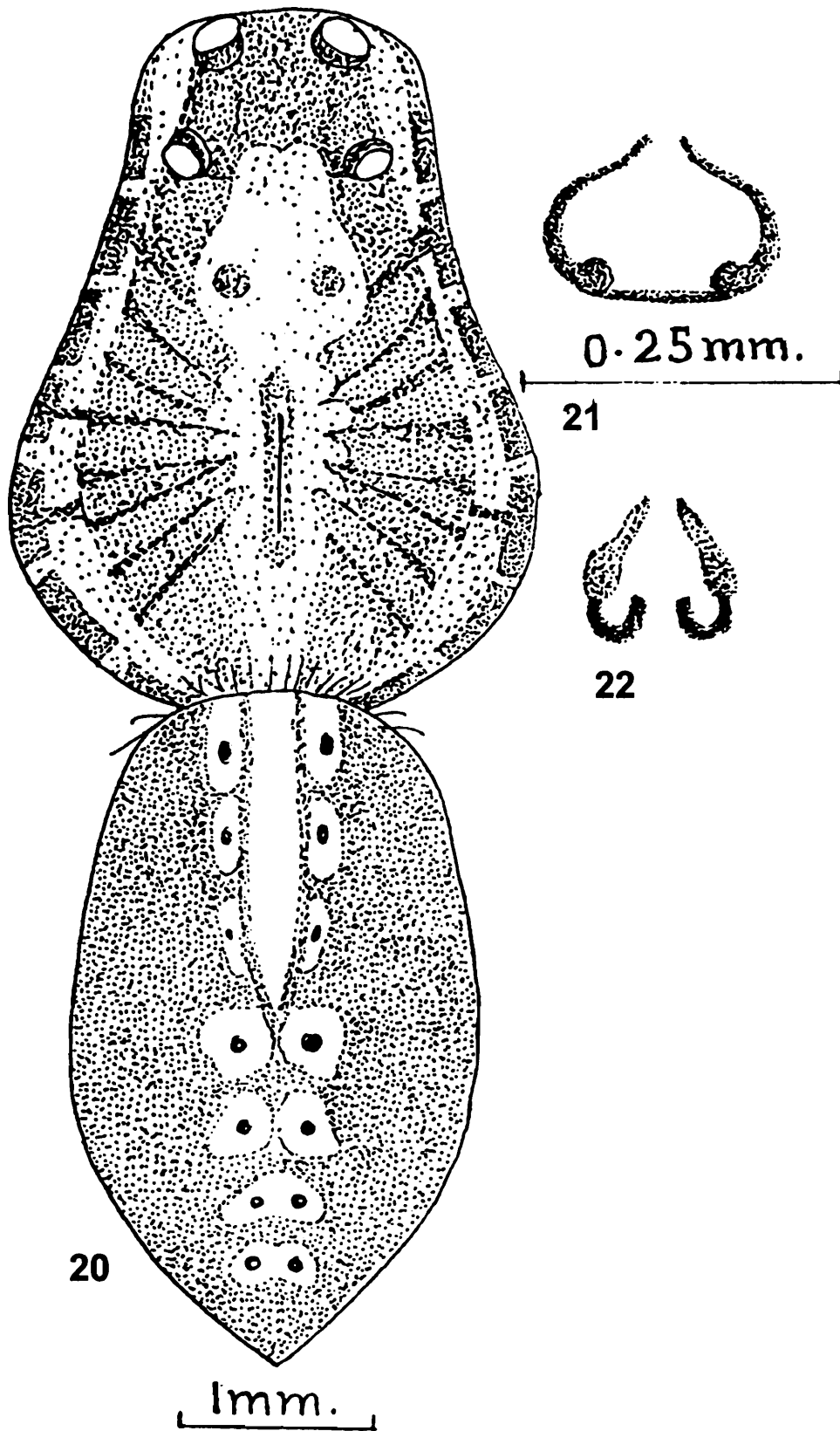


Fig. 20-22. *Pardosa balaghatensis* sp. nov. 20. Dorsal view of female, legs omitted. 21. Epigyne. 22. Internal genitalia.

This species resembles with *Pardosa rhenockensis* (Tikader) but differs from it as follows : (i) Anterior row of eyes slightly procurved but in *P. rhenockensis* anterior row of eyes straight. (ii) Sternum uniform without any band but in *P. rhenockensis* sternum mid-longitudinally provided with a V-shaped black band. (iii) Abdomen middorsally provided with white bands but in *P. rhenockensis* abdomen dorsally provided with longitudinal brown lens shaped markings. (iv) Epiyne and internal genitalia also structurally different.

12. *Pardosa annandalei* (Gravely)

1934. *Lycosa annandalei* Gravely, *Rec. Indian Mus.*, 26 : 606.

1935. *Lycosa basiri* : Dyal, *Bull Dept. zool. Punjab Univ.*, 1 : 137

Specimens examined : 1 ♀, Budagar village, Jabalpur district Madhya Pradesh, Coll. H. S. Sharma, 30.VII.1969. (Reg. No. A/2774) 1 ♀, Amkhas village, Jabalpur district, Madhya Pradesh, Coll. B. S. Gurum, 19. IV. 1975. (Reg. No. 2775).

Distribution INDIA : Trivandrum, Travancore, Kerala; Poona, Maharashtra; bangalore, karnataka; Horslekonda, Dist. Chittooce, Andhra Pradesh; Ootacamund Tamil Nadu; Rewa, Jabalpur, Madhya Pradesh; Siripur Saran dist. Manbhum, Bihar; Darjeeling, Birbhum, Durgapur, Dum Dum, Dhakuria, Calcutta, Serampur Court, Siliguri, West Bengal; Cachar, Manipur; Assam; Gujrat; Chittagong, Bangladesh, Myitkyina, North Shan States, Burma : Pakistan : Multan.

Remarks : This species is being reported here for the first time from Jabalpur district of Madhya Pradesh.

13. *Pardosa sumatrana* (Thorell)

1890. *Lycosa sumatrana* Thorell, *Ann. Mus. Stor. Nat. Genova*, 30 : 136.

1924. *Lycosa sumatrana* : Gravely, *Rec. Indian Mus.*, 26 : 604.

Specimens examined : 1 ♀, Budanagar village, Jabalpur district, Madhya Pradesh, Coll. V. V. Rao, 13.IV.1970. (Reg. No. A/2776) 1 ♀, Rani Durgavati Samadhi, Jabalpur district, Madhya Pradesh, Coll. V. S. Durve, 26.IV.1969. (Reg. No. A/2778). 3 ♀♀, Bijadandi village on Jabalpur Mandla road, Mandla district, Madhya Pradesh, Coll. Manohar, 23.XI.1981 (Reg. No. A/2779) 1 ♂, Kalpi village on Jabalpur Mandla road, Mandla district, Madhya Pradesh, Coll. U. A. Gajbe, 15.VI.1982. (Reg. No. A/2780). 4 ♀♀, Bargi vililage, Jabalpur Dist. M. P. Coll. R. K. Singh, 26.VI.19727 (Reg. No. A/2777).

Distribution : INDIA : Pranbikulam, Chalakudi, Cochin, Canannoor, Kerala; Bangalore, Bandipur, Karnataka; Madras; Nilgiris, Gudlaur, Ootacammund, Keti, Yercaud, Shevaroyes,

Tamil Nadu; Chingleput, Horslyakond, Chittor dist. Andhra Pradesh; Bandra, Bombay, Poona, Ahamadnagar, Maharashtra; Siripur, Saran, Kierpur, Purenea, Gmatia, Birbhum district, Bihar; Simla, Solan, Himachal Pradesh; Kalimpong, Suiel, Darjeeling, Dum Dum, Calcutta, West Bengal; Khasi Hills; Garo Hills; Upper Shillong, Meghalaya; Tripura; Kailana, Jodhpur, Rajasthan; Bhuj; Gujarat; Mandla, Jabalpur, Sagar, Madhya Pradesh; Nepal valley, Eastern Himalayas, East pakistan, Rangamati Hills tracts, Chittagong, Camorta, Nicobars, Mt. Singalang, Sungel, Bulu, Ager and Mancior, Sumatra, Sri Lanka; Anuradhapur.

Remarks This species is being reported here for the second time from Jabalpur and Mandla district of Madhya Pradesh.

14. *Pardosa bargaonensis* sp. nov.

(Fig. 23-27)

General : Cephalothorax and legs reddish-brown, abdomen dark brown. Total length 7.70mm, Carapace 3.60mm, long, 2.60mm, wide; abdomen 4.20mm, long, 2.30mm, wide.

Cephalothorax : Longer than wide, convex, clothed with pubescence, cephalic region narrowing in front and slightly high. Centre of thoracic region reddish-green and middle provided with a long conspicuous fovea. Ocular area black and anterior portion provided with a long spine like hairs. Anterior row of eyes slightly procurved, less wider than the second row, medians larger than the laterals and closer to laterals than to each others, bases of laterals provided with black patches. Eyes of the second row are larger than the others. Ocular quadrangle broader than long, wider behind and narrowing in front. Base of posterior eyes provided with conspicuous black patches. Space enclosed between posterior eyes black and very slightly wider behind than in front. Sternum heart-shaped, pointed behind, clothed with pubescence and some spine like hairs and uniform brownish-black in colour. Labium nearly as long as wide, posterior half dark brown and anterior portion light yellowish-green in colour. Maxillae longer than wide, clothed with hairs and spines, anterior portion provided with conspicuous scopulae. Chelicerae moderately strong, vertical, inner margin of fang furrow provided with three dissimilar teeth. Legs long and thin, clothed with spines and hairs. Male same in colour but smaller than the female. Male palp as in fig. 24 & 25.

Abdomen Longer than wide, nearly elliptical, pointed behind, clothed, with pubescence and hairs and provided with whitish transverse patches as in fig. 23. Ventral side yellowish-green. Epigyne as in fig.26. Internal genitalia as in fig. 27.

Type-specimens Holotype ♀, Allotype 1 ♂, in spirit other details as above.

Type-locality : INDIA : Madhya Pradesh; Bargaon village, Narayanpur Tahsil, Bastar district, Coll. U. A. Gajbe, 24.XII.1983.

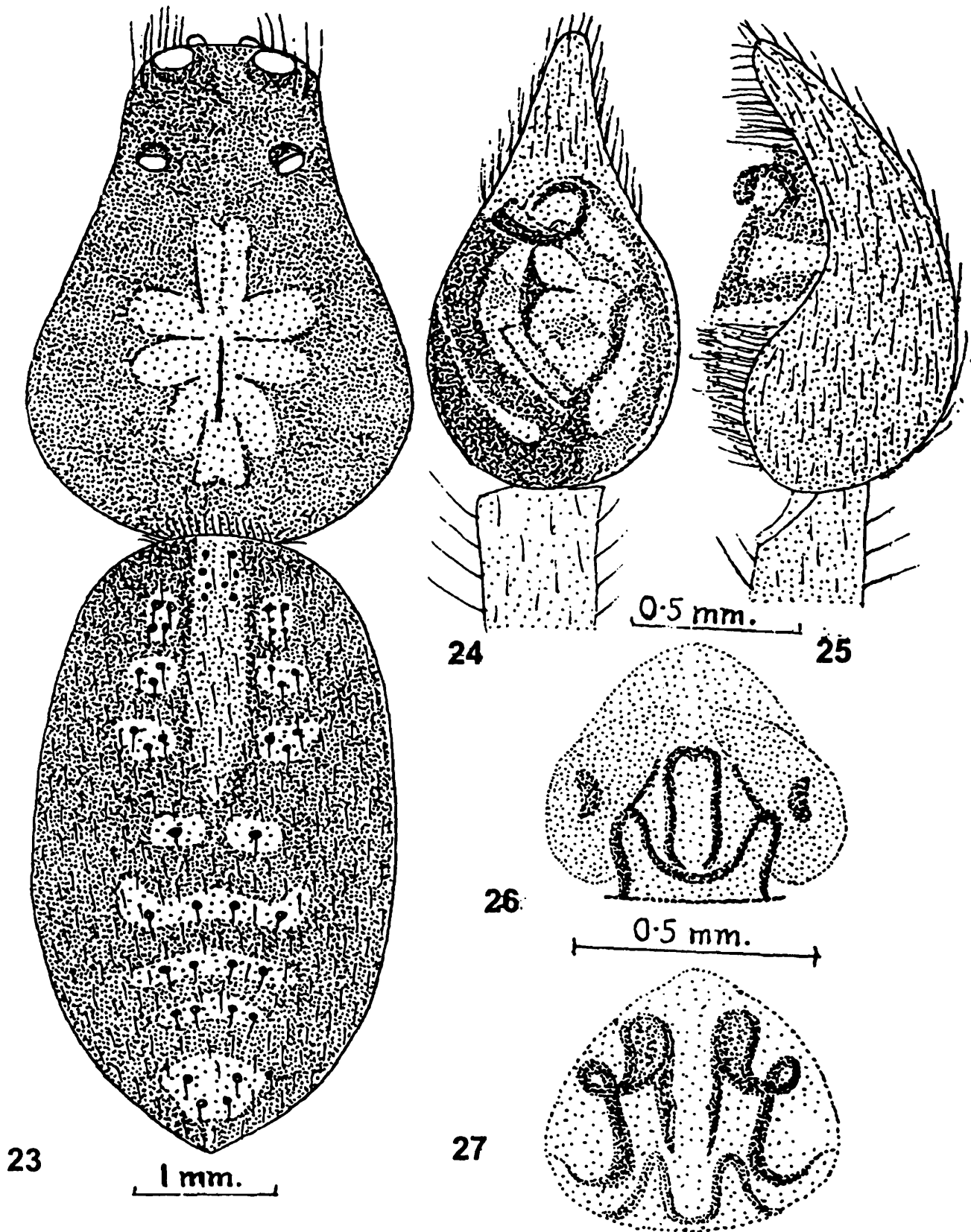


Fig. 23-27. *Pardosa bargaonensis* sp. nov. 23. Dorsal view of female, legs omitted. 24. Left male palp, ventral view. 25. Left male palp, lateral view. 26. Epigyne. 27. Internal genitalia.

This species closely resembles *Pardosa birmanica* Simon but differs from it as follows: (i) Abdomen dorsally provided with transverse whitish patches but in *P. birmanica* abdomen without transverse patches. (ii) Epigyne, internal genitalia and male palp also structurally different.

15. *Pardosa orcchaensis* sp. nov.

(Fig. 28 - 30)

General Cephalothorax and legs light brownish-green, abdomen dark brown. Total length 7.90mm, Carapace 3.80mm, long, 2.60mm, wide; abdomen 4.30mm, long, 2.20mm, wide.

Cephalothorax Longer than wide, convex, narrowing in front, clothed with pubescence and black hairs, cephalic region slightly high. Centre of thoracic region with sharp longitudinal dark fovea and thin dark bands radiate towards the sublateral sides from the fovea. Anterior row of eyes slightly procurved, shorter than the second row, anterior medians larger than the laterals and closer to lateral than to each other. laterals provided with conspicuous black patches. Eyes of second row larger than the others, space enclosed between posterior eyes wider than long and narrowing in front than behind and black in colour as in fig. 28. Sternum heart-shaped, pointed behind, uniform pale yellow in colour, clothed with black spine like hairs. Labium slightly longer than wide, anterior portion pale yellow and posterior half deep brown in colour, anterior margin provided with conspicuous scopulae. Maxillae longer than wide, pale yellow in colour, anterior margin provided with conspicuous scopulae. Chelicerae moderately strong vetical, inner margin provided with three similar teeth. Legs relatively long and strong, uniform in colour, clothed with hairs and spines.

Abdomen Longer than wide, nearly elliptical, widest just behind middle, pointed behind, clothed with hairs. Abdomen dorsally provided with some whitish patches as in fig. 28. Ventral side uniform pale yellow in colour and clothed with black hairs. Epigyne as in fig.29. Internal genitalia as in fig. 30

Type-specimen Holotype ♀, in spirit, other details as above,

Type-locality INDIA : Madhya Pradesh, Orccha village, Bastar district, Coll. U. A. Gajbe, 28.XII.1983.

This species closely resembles *Pardosa alii* Tikader, but differs from it as follows : (i) Lateral edges of cephalothorax without bands but in *P. alii* lateral edges of cephalothorax provided with dark brown bands. (ii) Sternum uniform pale yellow in colour but in *P. alii* sternum uniform dark brown. (iii) Abdomen dorsally provided with white patches but in *P.*

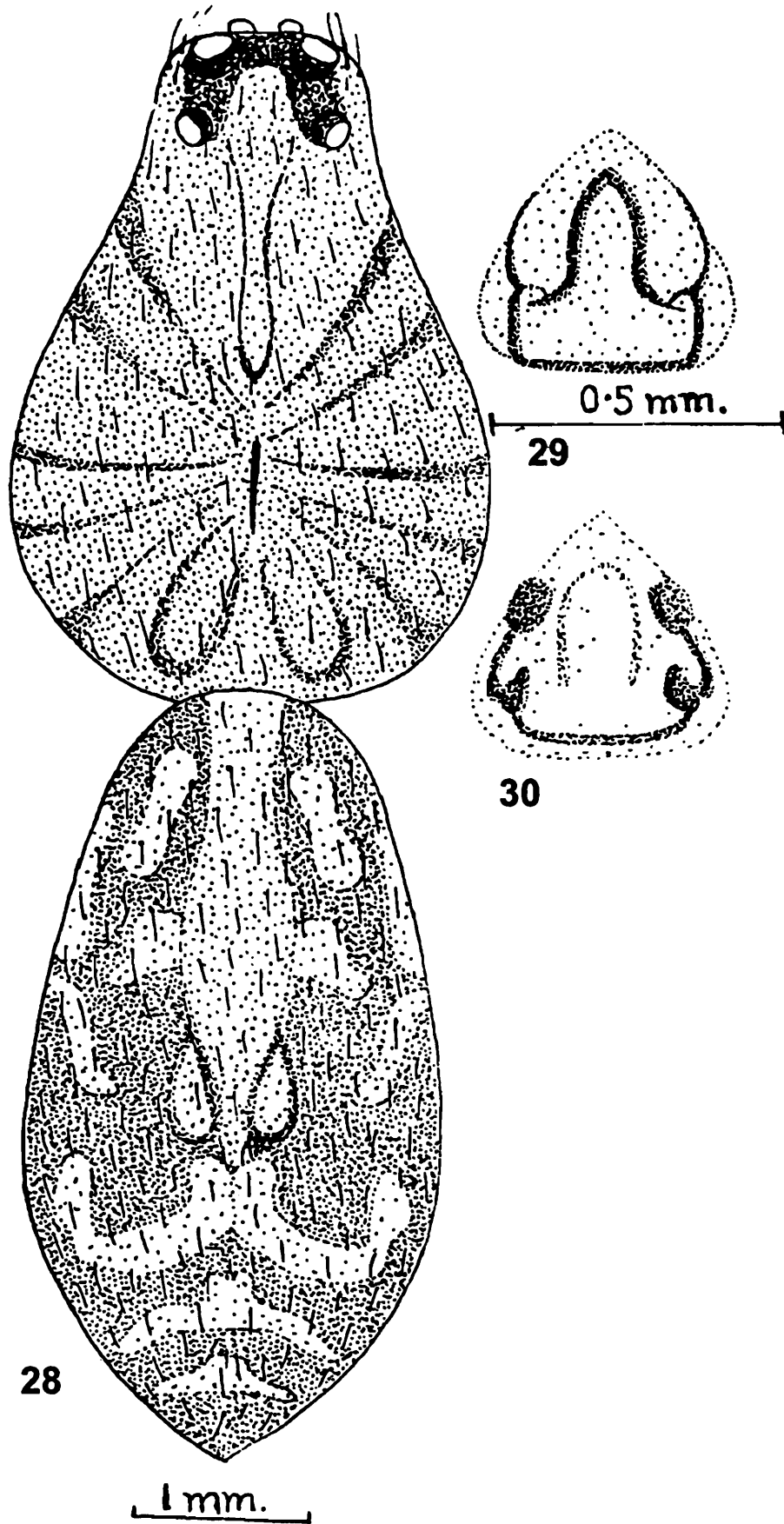


Fig. 28-30. *Pardosa orcchaensis* sp. nov. 28. Dorsal view of female legs omitted. 29. Epigyne. 30. Internal genitalia.

alii abdomen anteromiddorsally provided with a lens-shaped pale marking. (iv) Epigyne and internal genitalia also structurally different.

16. *Pardosa bastarensis* sp. nov.

(Fig. 31 - 33)

General : Cephalothorax and legs brownish-green, abdomen reddish green, Total length 7.80mm, Carapace 3.90mm, long 2.90mm, wide, abdomen 4.00mm, long, 2.00mm, wide.

Cephalothorax : Longer than wide, convex, clothed with pubescence, cephalic region entirely occupied by the posterior two rows of eyes. Centre of thoracic region provided with a conspicuous longitudinal fovea. Radiating streaks diverge from fovea to lateral sides of carapace. Clypeus vertical and provided with spine like hairs. Anterior row of eyes slightly procurved (as seen from in front), less wider than the second row, anterior medians slightly larger than the laterals and closer to laterals than to each other. Eyes of the second row larger than others. Ocular quadrangle longer than wide, widest behind and narrowing in front. Bases of posterior eyes provided with a conspicuous black patches thus making the ocular are black. Sternum heart-shaped pointed behind and yellowish green. Labium as long as wide, light brown maxillae longer than wide, clothed with small hairs and anterior portion provided with scopulae. Chelicerae moderately strong, vertical, inner margin of fang furrow provided with three small teeth. Legs long and thin, clothed with hairs and spines and provided with deep brown patches.

Abdomen Longer than wide, nearly elliptical, pointed posteriorly and provided with transverse black patches and posteriorly black dots as in fig. 31. Ventral side yellowish-green. Epigyne as in fig. 32. Internal genitalia as in fig.33.

Type-specimen : *Holotype* ♀ , in spirit, other details as above.

Type-locality INDIA : Madhya Pradesh, Orccha village, Bastar district, Coll. U. A. Gajbe, 28.XII.1983.

This species closely resembles *Pardosa mysorensis* (Tikader & Mukherji) but differs from it as follows: (i) Abdomen dorsally provided with transverse black patches and posteriorly black dots but in *P. mysorensis* abdomen not provided with such patches and dots. (ii) Epigyne and internal genitalia also structurally different.

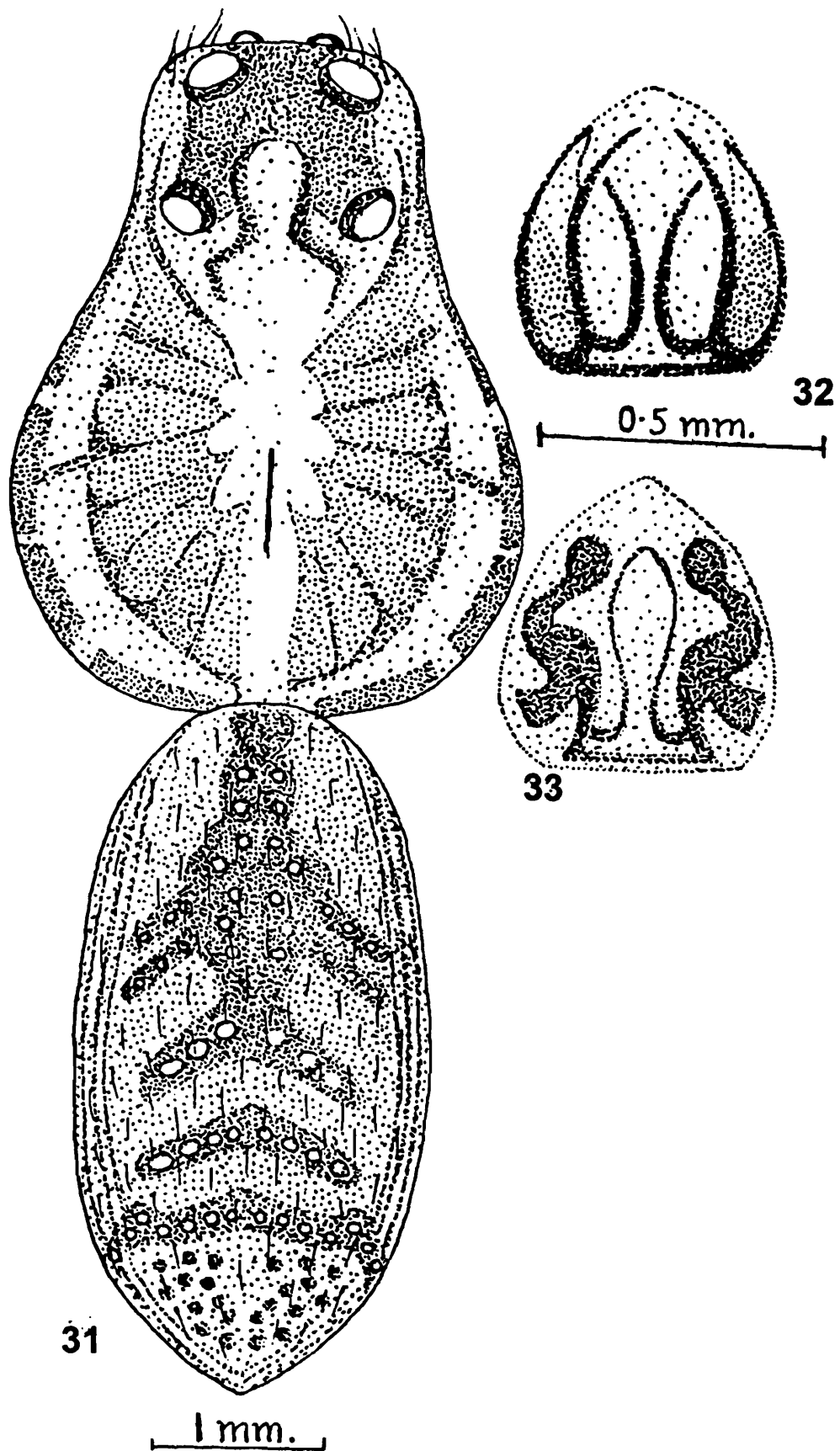


Fig. 31-33. *Pardosa bastarensis* sp. nov. 31. Dorsal view of female, legs omitted. 32. Epigyne. 33. Internal genitalia.

17. *Pardosa tappaensis* sp. nov.

(Fig. 34 - 36)

General : Cephalothrax and legs brownish-black, abdomen black. Total length 7.40 mm, Carapace 3.40mm, long, 2.70 mm, wide; abdomen 4.00mm, long, 2.10mm wide.

Cephalothorax Longer than wide, convex, clothed with pubescence, cephalic region narrowing in front and slightly high. Centre of cephalic region light brown and middle provided with a short fovea. Ocular area black. Anterior row of eyes slightly procurved, less wider than the second row, anterior medians slightly larger than the laterals and closer to laterals than to each other. Ocular quad wider behind and narrowing in front, bases of posterior eyes provided with conspicuous black patches as in fig. 34. Space between posterior eyes black and very slightly wider behind than in front. Sternum heart-shaped, pointed behind, clothed with pubescence and uniform black in colour. Labium as long as wide, dark brown in colour, interior end provided with scopulae. Maxillae longer than wide, light brown in colour, anterior end provided with scopulae, Chelicerae moderately strong, vertical inner margin provided two similar teeth. Legs relatively long and thin, clothed with hairs and spines. Tibiae of all legs provided with reddish patches. Male palp as in fig. 35 and 36.

Abdomen Longer than wide, nearly elliptical widest just behind the middle, clothed with pubescence. Abdomen dorsally provided with some whitish patches as in fig. 34. Ventral side slightly lighter than the dorsal and laterally provided with reddish dots.

Type-specimen : Holotype ♂, in spirit, other details as above.

Type-locality INDIA : Madhya Pradesh, Tappa village, Rajnandgaon district, Coll. U. A. Gajbe, 22.XII.1983.

This species closely resembles with *Pardosa birmanica* Simon, but differs from it as follows : (i) Inner margin of chelicera provided with two teeth but in *P. birmanica* inner margin of chelicera provided with three teeth. (ii) Abdomen dorsally provided with elliptical whitish patches but in *P. birmanica* abdomen dorsally provided with irregular patches. (iii) Male palp also structurally different.

Genus 4. *Ocyale* Audouin

1825. *Ocyale* Audouin, *Description del Egypte Arachnides*, 1 : 150.

1885. *Ocyale* : Simon, *Ann. Soc. entomol. Fr.*, 5 (6) : 357.

Characters The genus *Ocyale* Aud. is allied to *Lycosa* but the III legs longer than the I, quadrangle of posterior eyes much wider behind than *Lycosa*. Eyes of anterior row slightly recurved, eyes of posterior two rows almost of similar size but in *Lycosa* eyes of

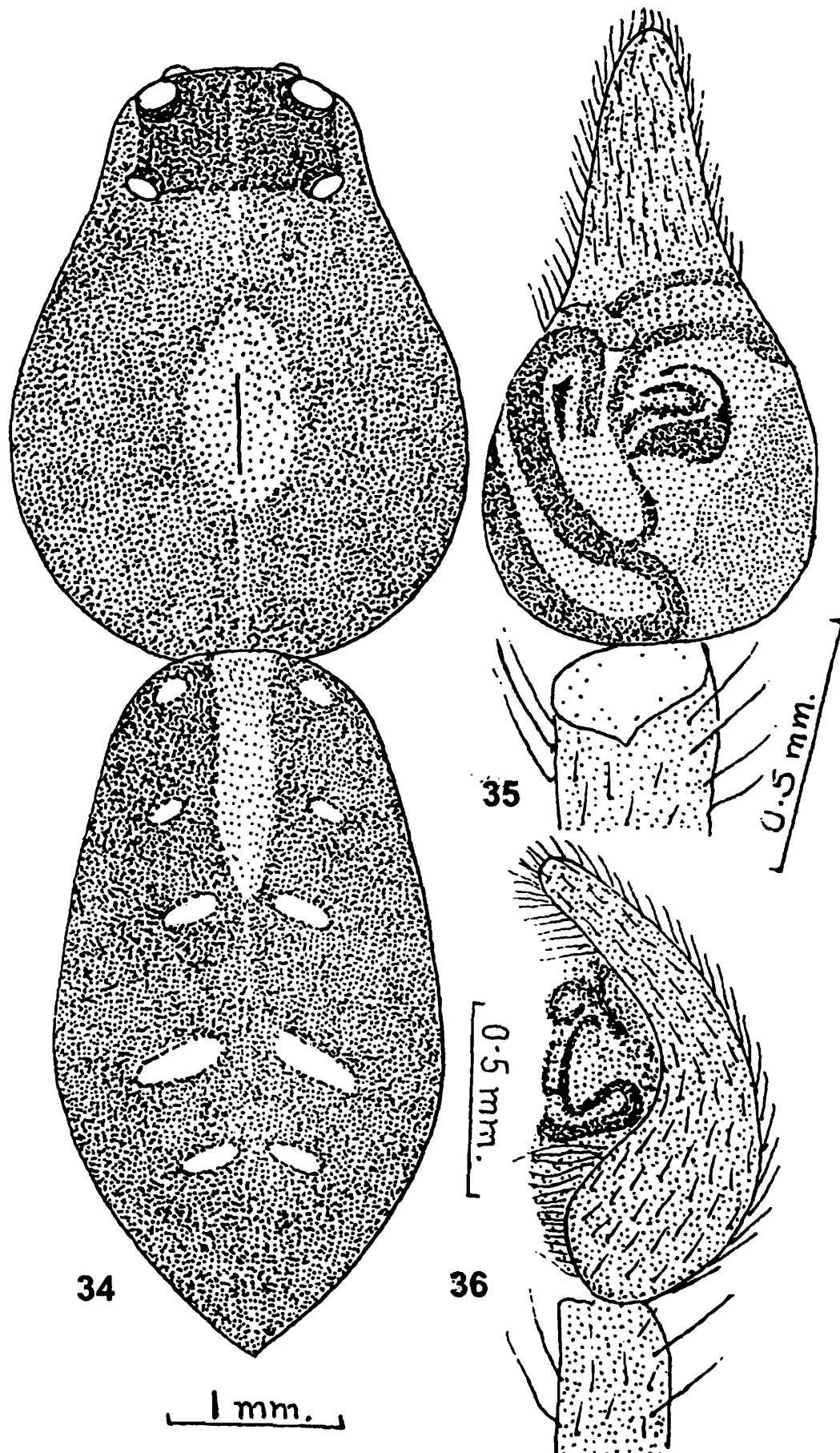


Fig. 34-36. *Pardosa tappaensis* sp. nov. 34. Dorsal view of male, legs omitted. 35. Left male palp, ventral view. 36. Left male palp, lateral view.

the second row larger than the third row. Anterior spinnerets longer than the posterior spinnerets with the apical piece short and round.

Type-species : *Ocyale atalanta* Audouin

Distribution India, Egypt, Ethiopia, Sri Lanka, Burma, Senegal, Guinea, Congo and Europe.

18. *Ocyale kalpiensis* sp. nov.

(Fig. 37 - 39)

General : Cephalothorax and legs deep brown, abdomen light brown. Total length 7.20mm, Carapace 3.30mm, long, 2.30mm wide; abdomen 3.90mm, long, 2.40mm, wide.

Cephalothorax Longer than wide, convex, clothed with pubescence. Centre of thoracic region provided with a fovea and dark brown bands radiating from fovea to lateral sides of cephalothorax. Anterior row of eyes slightly recurved and slightly wider than the second row, anterior medians larger than the laterals and closer to laterals than to each other, bases of anterior laterals with a black patches. Eyes of the second and third row equal in size but very longer than the eyes of anterior row. The distance between the eyes of second row is less than their diameter. Bases of posterior eyes provided with conspicuous black patches. Space enclosed between posterior eyes much wider behind than in front as in fig.37. Sternum heart-shaped, pointed behind, yellowish-green and clothed with spine like hairs. Boundaris of sternum with conspicuous black markings. Labium slightly longer than wide, clothed with hairs, uniform yellowish-green with basal excavation prominent. Maxillae longer than wide, light yellow, much wider at the distal and provided with conspicuous scopulae at the distal end. Chelicerae strong, inner margin provided with three prominent teeth. Legs long and strong, clothed with hairs and spines.

Abdomen Longer than wide, widest behind the middle, pointed behind, dorsally provided with black patches and posteriorly transverse incontinous black bands as in fig. 37. Ventral side ligher than the dorsal. Epigyne as in fig. 38. Internal genitalia as in fig. 39.

Type-specimen *Holotype* ♀, in spirit, other details as above.

Type-locality INDIA : Madhya Pradesh, kalpi Village, Mandla District, Coll. *U. A. Gajbe*, 15.VI.1982.

This species resembles *Ocyale atalanta* Audouin but differs from it as follows : (i) Abdomen dorsally provided with black patches and posterirly transverse incontinous black bands but in *O. atalanta* abdomen dorsally provided with irregular brown and yellow patches. (ii) Epigyne and internal genitalia also structurally different.

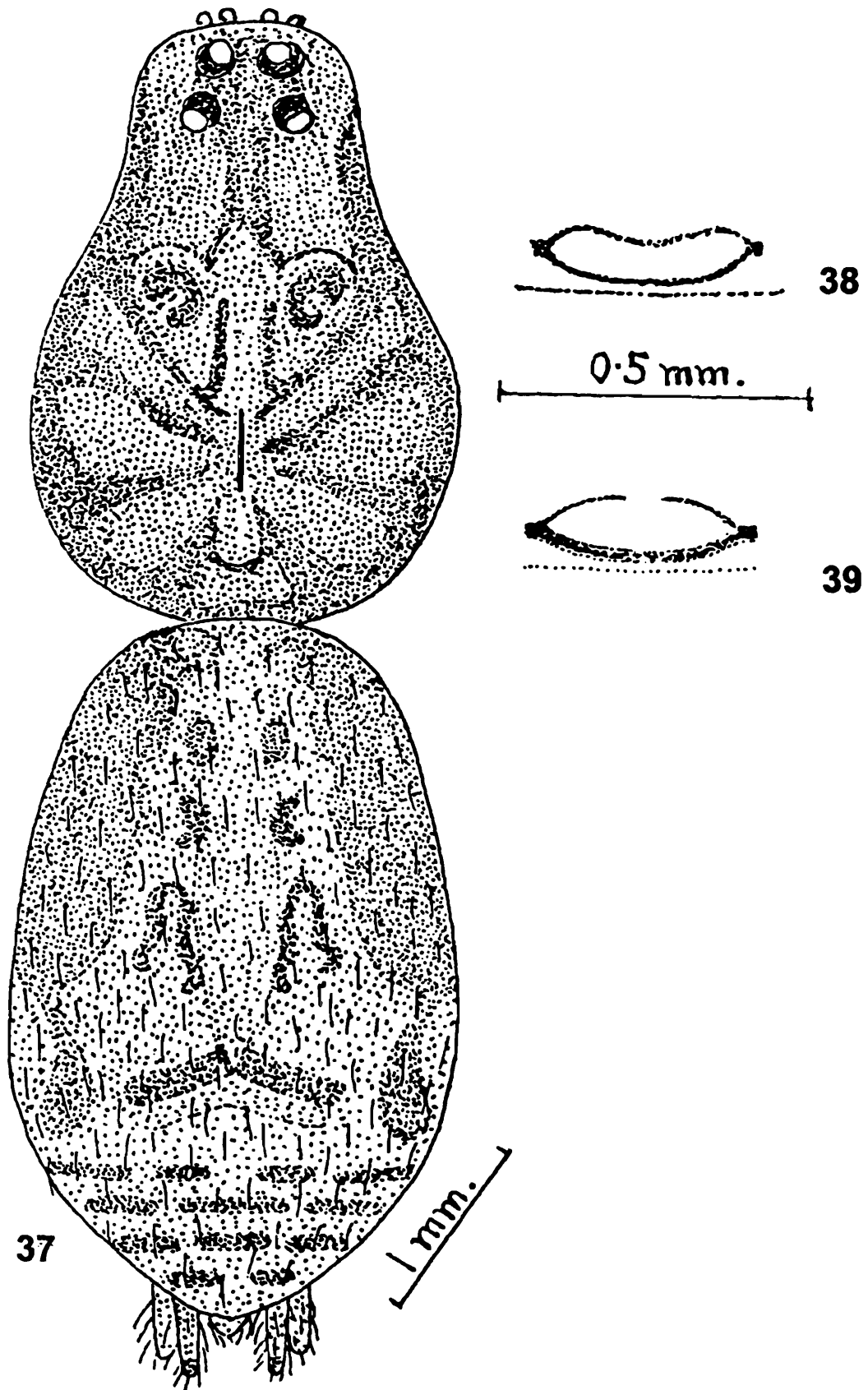


Fig. 37-39. *Ocyale kalpiensis* sp. nov. 37. Dorsal view of female, legs omitted. 38. Epigyne. 39. Internal genitalia.

Genus 5. *Arctosa* Koch , C.L.

1847. *Arctosa* Koch, *Die Arachniden*, 14 (3) : 94.

1951. *Arctosa* Locket & Millidge, *British Spiders*, 1 : 29.

Characters : Moderately large spiders. The general colouration greyish brown to black. Carapace with no properly defined longitudinal light band and is glabrous or nearly so. Legs slender, tarsi I provided with dorso-bristal which is drawn out thin and fine at the end, and is longer than the hairs and trichobothria. Tibia IV dorsally thinner or more drawn out than distal one. Some times reduced to a bristle.

Type-species : *Arctosa cinerea Fabricius*

Distribution : India, America, New England, Europe.

19. *Arctosa indicus* Tikader & Malhotra

1980. *Arctosa indicus* Tikader & Malhotra, *Fauna of India, Spiders*, 1 (2) : 371.

1981. *Arctosa indicus* : Tikader & Biswas, *Rec. zool, Surv. India occ. pap.* 30 : 58.

Specimens examined 1 ♀, Kalpi village on Jabalpur Mandla Road, Mandla district, Madhya Pradesh, Coll. U. A. Gajbe, 15.VI.1982. (Reg. No. A/2783) 1 ♀, Devtal, Jabalpur, Jabalpur district, Madhya Pradesh, Coll. L. P. Dube, 7.XII.1973. (Reg. No. 2784).

Distribution : INDIA : Shivaji Nagar, Poona, Maharashtra; Mandla, and Jabalpur district; Madhya Pradesh; Calcutta, 24-parganas, West Bengal.

Remarks This speices is being reported here for the first time from Madhya Pradesh.

20. *Arctosa tappaensis* sp. nov.

(Fig. 40-44)

General Cephalothrax reddish-brown, legs light reddish-green, abdomen deep brown, Total length 11.20mm, Carapace 5.60mm, long, 4.00mm, wide; abdomen 5.60mm, long, 3.60mm, wide.

Cephalothorax Longer than wide, cephalic region glabrous and slightly elevated from the thoracic region, clothed with pubescence and some spine like hairs. Centre of thoracic region provided with a conspicuous fovea from which light brown bands radiates towards the lateral sides of cephalothorax. Eyes occupy a smaller region on the cephalic region. Anterior row of eyes slightly recurved, as long as the second row, medians larger than the laterals and closer to adjacent laterals than to each other, anterior laterals provided with black patches. Eyes of the second and third row almost equal in size and bases of these

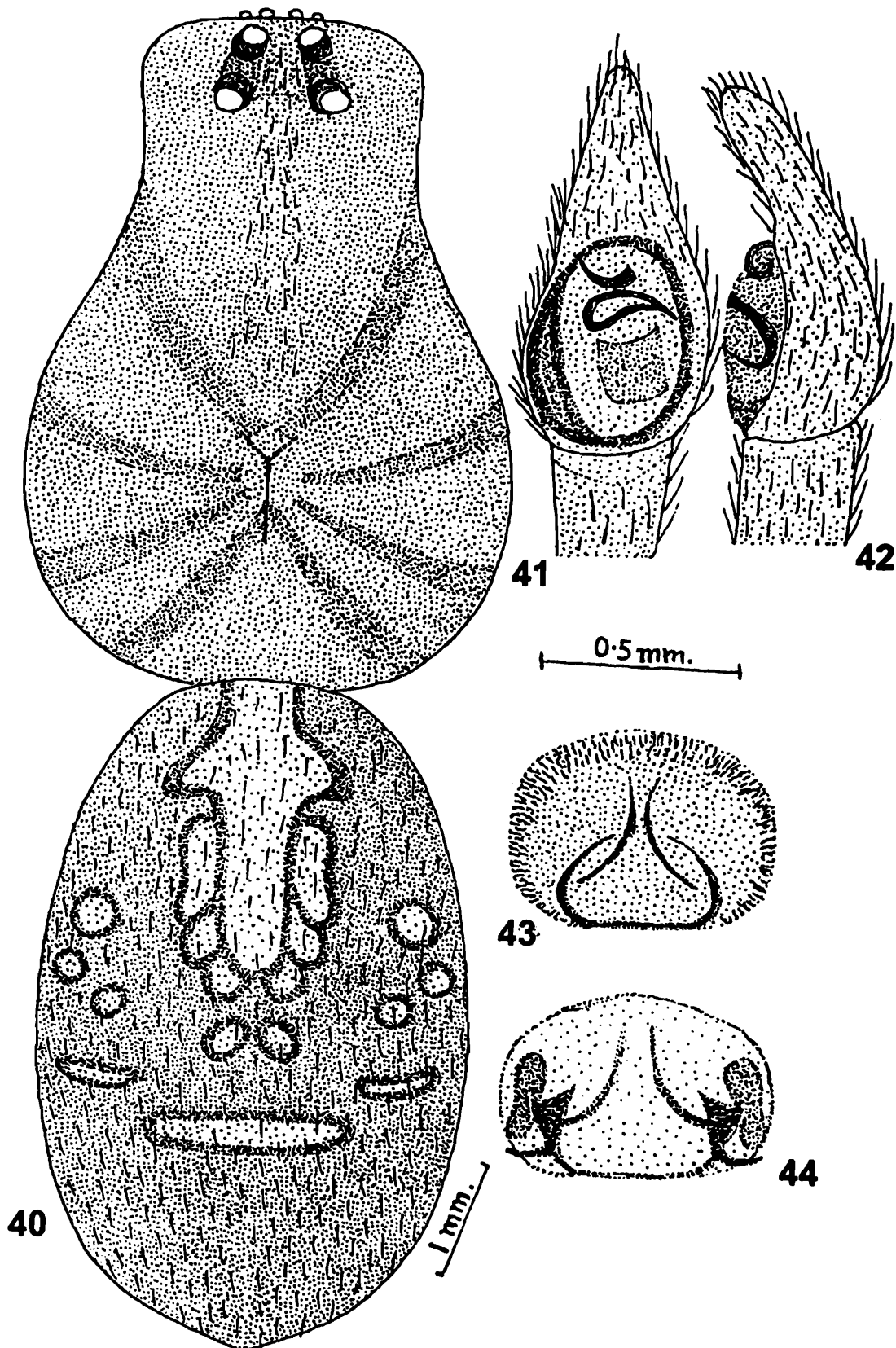


Fig. 40-44. *Arctosa tappaensis* sp. nov. 40. Dorsal view of female, legs omitted. 41. Left male palp, ventral view. 42. Left male palp, lateral view 43. Epigyne. 44. Internal genitalia.

eyes provided with conspicuous black patches as in fig.40. Ocular quad wider behind and narrowing in front. Posterior quadrangle slightly wider behind. Sternum light brownish green, heart-shaped, pointed behind, clothed with spine like hairs. Labium slightly longer than wide, clothed with hairs. Maxillae longer than wide, wider in front, clothed with hairs and spines, anterior end provided with conspicuous scopulae. Chelicerae moderately strong, inner margin of fang furrow provided with three small dissimilar teeth. Legs relatively strong and stout, uniform in colour. Male similar in colour as female but slightly smaller. male palp as in figs. 41 & 42.

Abdomen Longer than wide, nearly oval, clothed with pubescence and some hairs. Abdomen dorsally provided with black reticulations as in fig.40. Ventral side lighter than the dorsal. Epigyne as in fig. 43. Internal genitalia as in fig. 44.

Type-specimen : Holotype ♀, Paratype 1 ♀, Allotype 1 ♂, in spirit, other details as above.

Type-Locality : INDIA : Madhya Pradesh; Tappa village, Rajnandgaon district, Coll. U. A. Gajbe, 22.XII.1983.

This species closely resembles with *Arctosa indicus* Tikader & Malhotra but differs from it as follows : (i) Legs uniform but *A. indicus* femora of all legs conspicuously banded and provided with patches with greenish brown colour. (ii) Abdomen dorsally provided with greenish-black reticulation but in *A. indicus* abdomen dorsally provided with greenish-black and pale patches. (iii) Epigyne and internal genitalia structurally different. (iv) Male palp also structurally different.

Genus 6. *Lycosa* latreille

1804. *Lycosa* latreille, *Nouv. Dict. d. Hist. Nat.*, 24 : 135.

1898. *Lycosa* : Simon *Hist. Nat. Arach.* 2 (2) : 345.

Characters : This is a very large genus including majority of species of wolf-spiders. Carapace long, facial area vertical and sides of the face slanting, four posterior eyes large and arranged in a quadrangle which is slightly wider behind than in front. The labium is always longer than wide and the basal excavation is prominent, usually one third or more of the length of the labium. Clypeus is not vertical. Tibiae I and II are armed with three pairs of ventral spines. Metatarsi IV never longer than tibia plus patella together. The species of this genus spin no web. The larger forms live in a silk-lined burrows and under stones. The females carry the cocoon attached to their spinnerets, and the young after hatching swarm on the mothers back.

Type-species *Lycosa tarantula* Rossi

Distribution : All over the world.

Key to Indian species of the genus *Lycosa* Latreille

1. Anterior row of eyes straight or nearly so. Space enclosed between posterior eyes longer than wide and slightly narrow in front2

Anterior row of eyes slightly recurved or nearly so, Space enclosed between posterior eyes as long as wide *jagadalpurenis* sp. nov.

2. Coxae of legs provided with patches3

Coxae of legs not provided with any patches. Dorsal side of abdomen pale except the midlongitudinal brown irregular markings *bistriata* Gravely.

3. Carapace with a broad mid-longitudinal pale band. Sternum reddish brown. Coxae of all legs dark brown ventrally and extremities of ventral side of IV tibiae provided with dark brown bands. Ventral side of abdomen dirty brown in colour *nigrotibialis* Simon.

Carapace laterally with transverse patches, sub-lateral sides with broad longitudinal brown patches. Abdomen middorsally provided with deep red band and some light brown irregular patches. Ventral side of abdomen provided with brown patches with white spots *shahpuraensis* sp. nov.

21. *Lycosa Jagadal purensis*. sp. nov.

(Fig. 45-47)

General Cephalothorax and legs reddish green, abdomen brownish-green, Total length 10.60mm, Carapace 5.00mm, long, 3.40mm, wide; abdomen 5.70 long, 3.10mm wide.

Cephalothorax Longer than wide, convex, clothed with pubescence. Centre provided with a distinct fovea and a longitudinal medium pale band. Two broad bands extend from the bases of posterior eyes to the base of cephalothorax. Anterior row of eyes very slightly recurved and shorter than the second row in width and anterior median eyes larger than the anterior laterals, anterior lateral eyes provided with a conspicuous black patches. Eyes of the second row larger than the others, base of posterior eyes (second and third row) provided with conspicuous black patches as in fig. 45. Space enclosed between posterior eyes as long as wide as in fig. 45. Sternum heart shaped, pointed behind, light yellow and provided with hairs and spines. Labium as long as wide with the basal excavation prominent. Maxillae broader at the distal end and distal end provided with conspicuous scopulae. Chelicerae moderately strong and inner margin provided with three teeth. Legs strong and provided with spines and hairs.

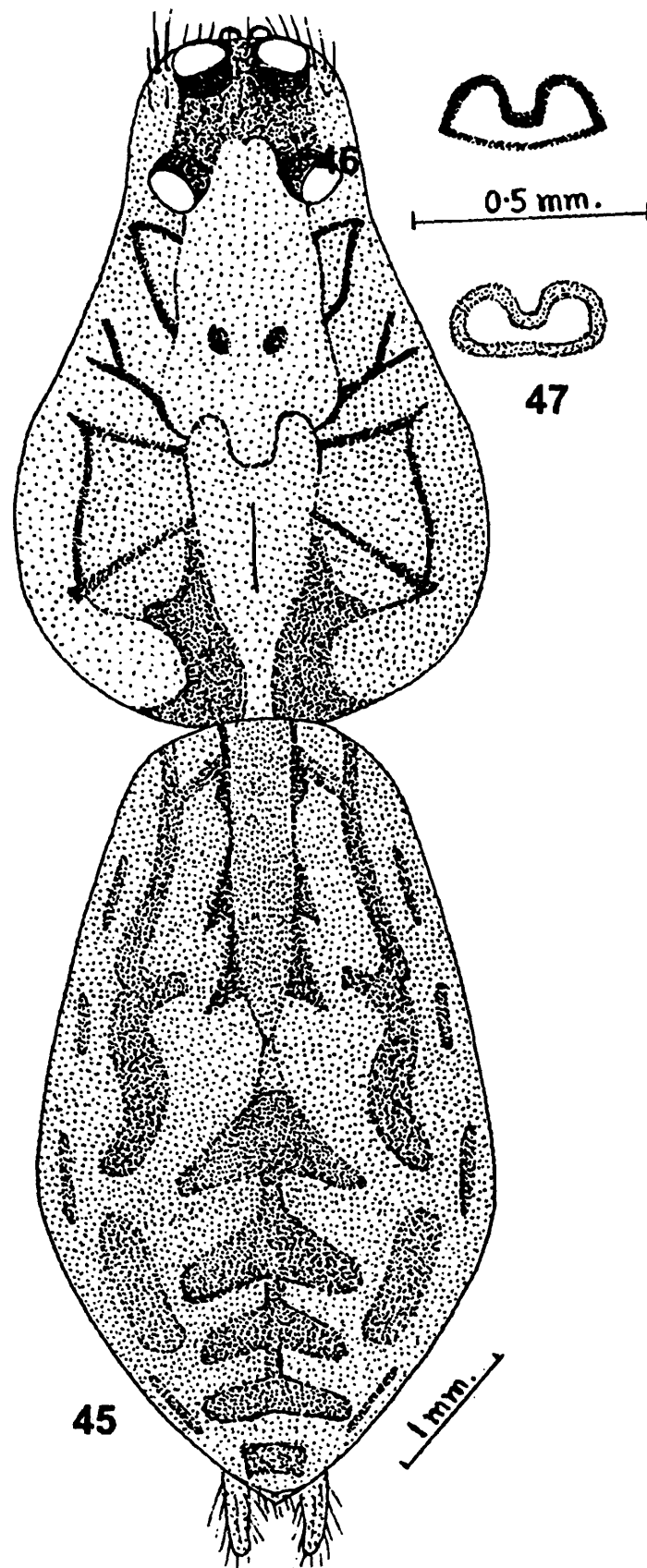


Fig. 45-47. *Lycosa jagadalpurenensis* sp. nov. 45. Dorsal view of female, legs omitted. 46. Epigyne. 47. Internal genitalia.

Abdomen : Longer than wide, pointed behind clothed with pubescence and spine like hairs. Middorsally provided with deep red longitudinal band and transverse black patches as in fig. 45. Ventral side provided with a broad brown patch extending from the epigastric fold to the base of spinnerets, clothed with hairs, on the brown patch for longitudinal incontinous white bands are present. Epigyne as in fig. 46 Internal genitalia as in fig. 47.

Type-specimen *Holotype* ♀, in spirit, other details as above.

Type-locality INDIA : Madhya Pradesh; Porpa village, near Jagdalpur, Bastar district, Coll. U. A. Gajbe, 31.XII.1983.

This species closely resembles *Lycosa chaperi* Simon but differs from it as follows :
 (i) Anterior row of eyes slightly recurved but in *L. chaperi* anterior row of eyes straight.
 (ii) Abdomen dorsally provided with deep red longitudinal patch and transverse black patches but in *L. chaperi* abdomen dorsally provided with reddish brown spots and patches.
 (iii) Epigyne and internal genitalia also structurally different.

22. *Lycosa bistriata* Gravely

1924. *Lycosa bistriata* Gravely, *Rec. Indian Mus.*, 26 : 600

1951. *Lycosa bistriata* : Sinha, *Rec. Indian Mus.*, 48(2) : 21.

Specimens examined 1 ♀, Amkhas village, Jabalpur district, Madhya Pradesh, Coll. B. S. Gurum, 19.IV.1975. (Reg. No. A/2781).

Distribution : INDIA : Madras city, Tamil Nadu; Gmatia, Dist. Birbhum, Bihar; Calcutta, Darjeeling, West Bengal; Jabalpur, Madhya Pradesh.

Remarks This species is being reported here for the first time from Madhya Pradesh.

23. *Lycosa nigrotibialis* Simon

1884. *Lycosa nigrotibialis* Simon, *Ann. Mus. Stor. Nat. Genova*, 20 : 330.

1895. *Tarantula nigrotibialis*; Thorell, *Spiders of Burma*, : 236.

Specimen examined : 1 ♀, Amkhas, Jabalpur district, Madhya Pradesh, Coll. V. V. Rao, 4.VII.1969. (Reg. No. A/2785)

Distribution INDIA : Satara Dist. Poona, Maharashtra; Gujrat Simla; Dharampur, Himachal Pradesh; Sukna, Singla, Kalimpong, Darjeeling, Calcutta, West Bengal; Pusa, Siripur, Saran, Purnea Dist. Gmatia, Birbhun. dist. Bihar; Sikkim, Mangaldal dist. Sibsagar, Garo Hills, Assam; jabalpur District, Madhya Pradesh; Baluchistan, Zangi, Nawar, Afganistan; Pakistan; Rawalpindi, Burma; Arakan, Rangoon, Kakhyin Hills, Irrawadi,

Tharrawaddy, Minhla, Tenassrim, Kosi Hah, Tale Sap, Singgora Province, Sam.

Remarks : This species is being reported here for the first time from Madhya Pradesh.

24. *Lycosa shahapuraensis* sp. nov.

(Fig. 48 - 50)

General : Cephalothorax and legs reddish-green, abdomen light brownish-green. Total length 18.00mm, Carapace 8.20mm, long, 5.50mm, wide; Abdomen 10.00mm, long, 5.50mm wide.

Cephalothorax Longer than wide, convex, clothed with fine hairs. Lateral sides provided with transverse patches extending from the bases of third row of eyes to the base of cephalothorax; centre provided with distinct fovea, sublateral sides also provided with broad longitudinal brown patches as in fig.48. Anterior row of eyes straight, shorter than the second row in width, anterior medians slightly larger than the anterior laterals, lateral eyes provided with black patches. Eyes of second row larger than the others. Bases of second and third row of eyes provided with conspicuous black patches as in fig.48. Space enclosed between posterior eyes longer than wide and slightly narrow in front as in fig.48. Sternum heart-shaped, pointed, behind, reddish-brown in colour, clothed with spine like hairs and some fine hairs. Labium slightly longer than wide, anterior end provided with scopulae. Maxillae longer than wide, distal end broader and provided with scopulae. Chelicerae moderately strong, vertical, inner margin provided with three teeth. Legs long and strong, clothed with hairs and spines.

Abdomen Longer than wide, nearly elliptical, pointed behind, clothed with pubescence and small hairs. Middorsally provided with a deep red band starting from the anterior end of abdomen to nearly half the abdomen and some light brown irregular patches. Ventral side provided with a broad brown patches extending from epigastric furrow to the base of spinnerets and provided with white spots. Epigyne as in fig. 49. Internal genitalia as in fig. 50.

Type-specimen *Holotype* ♀, in spirit, other details as above.

Type-locality : INDIA : Madhya Pradesh; on the right bank of Narmada river at Bilpathar village near Shahpura, Jabalpur district, Coll. U. A. Gajbe, 28.IV.1982.

This species closely resembles with *Lycosa bistrata* Gravely but differs from it as follows : (i) Abdomen dorsally provided with deep red band, some light brown patches but in *L. bistrata* abdomen provided with longitudinal brown irregular markings. (ii) Abdomen ventrally provided with broad brown patch but in *L. bistrata* ventral side pale. (iii) Epigyne and internal genitalia also structurally different.

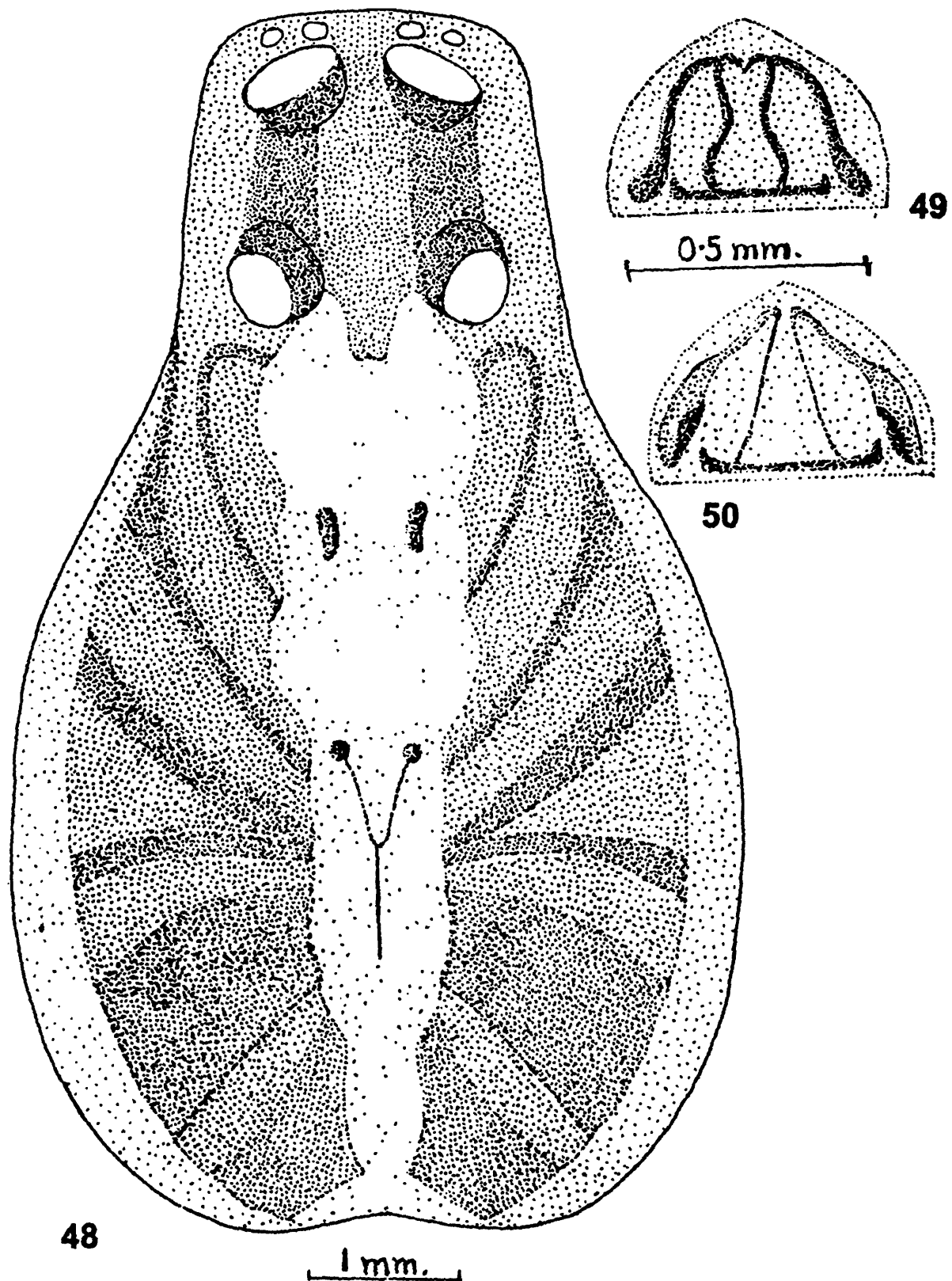


Fig. 48-50. *Lycosa shahapuraensis* sp. nov. 48. Dorsal view of cephalothorax of female, legs omitted. 49. Epigyne. 50. Internal genitalia.

SUMMARY

This paper deals with 24 species under 6 genera of the family Lycosidae out of which 14 species are new to science.

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