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Salticidae from the Himalayas.

Genus *Rhene* Thorell, 1869

(Araneae: Salticidae)*

by P. Jastrzębski

Abstract: The genus *Rhene* Thorell 1869 from Nepal and Bhutan is studied. Three species are diagnosed, described and illustrated: *R. albigera* (C. L. Koch 1848), *R. flavicomans* (Simon 1902) and *R. phuntsolingensis* n.sp.

Introduction

Substantial progress has been made in research of Himalayan salticid fauna during the last 20 years (BOHDANOWICZ, 1978, 1987, PRÓCHNIEWICZ, 1990, PRÓSZYNSKI, 1978, 1992, WANLESS, 1975, ŻABKA, 1990). Till now about 118 species from 30 genera have been described and recorded from this region. Fothemor some species have been described from the adjacent areas (Pamir, Karakoram).

The Himalayas, being located in the area of Palaearctic and Oriental influences, are extremely attractive as a model area for taxonomic, zoogeographic and evolutionary research. The unique topography, the ecological variability, the effective isolation of different habitats and climatic zones, all provide excellent conditions for micro- and macro-evolution, resulting in the taxonomic richness of many groups of plants and animals (MARTENS, 1979, 1987, PRÓSZYNSKI, 1980).

The aim of this series of papers being initiated here is a complete taxonomic study of the Himalayan salticid fauna and its zoogeographical and evolutionary analysis. This paper deals with the genus *Rhene*.

The genus *Rhene* has been established by THORELL (1869). Since than about 40 nominal species have been described or redescribed; most of them are well documented (PECKHAM et PECKHAM, 1895, 1902, 1903; PRÓSZYNSKI, 1978, 1984, 1987, 1990, 1992; WANLESS, 1975; TIKADER, 1973, 1977a–b; TIKADER et BISWAS, 1981; ŻABKA, 1985; SONG DA-XIANG, CHAI JIAN-YUAN, 1991). The generic status of some of the older species has to be verified; others will certainly be

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included after related genera are revised. The present paper consists of descriptions of 3 species: *Rh. albígera* (C. L. Koch 1848), *Rh. flavicomans* (Simon 1902) and *Rh. phuntsholingensis* n.sp.

This study is based on a few collections listed below. I am most grateful to Prof. J. Martens (Mainz), Dr. W. Wittmer (Basel), Dr. N. Platnick (New York), Dr. M. Moritz (Berlin) and Dr. J. Svatón (Martin) for providing specimens and to Dr. M. Žabka (Siedlce) for critical remarks on the manuscript.

Abbreviations used:

a = apodeme, AEW = anterior eye width, ag = accessory gland, AL = abdomen length, CL = cephalothorax length, c = cymbium, co = copulatory openings, cr = conductor, CW = cephalothorax width, dh = distal haematodocha, e = embolus, EFL = eye field length, fd = fertilization duct, id = insemination duct, PEW = posterior eye width, pm = prolateral metatarsal spines, pt = retrolateral spines of tibiae, s = spermatheca, sr = seminal reservoir, ta = tibial apophysis, tg = tegulum.

Collections studied:

- NHMB = Naturhistorisches Museum, Basel (collected by Drs W. Wittmer, O. Stemmler, C. Baroni-Urbani, M. Würmli)
- SMF = Naturmuseum und Forschungsinstitut Senckenberg, Frankfurt a. M. (collected by Drs J. Martens, W. Schawaller, A. Ausobsky, B. Daams)
- ZMB = Zoologisches Museum der Humboldt-Universität, Berlin
- JS = collection by Dr. Jaroslav Svatón deposited in Andrei Kmet Museum, Martin
- AMNH = American Museum of Natural History, New York

Taxonomy

Rhene Thorell 1869

Figs 1–3.

Rhene THORELL, 1869, Nat. Act. reg. Soc. Sci., 7: 37.

Rhene, SIMON, 1897, Hist. Nat. Araig., 2: 641.

Rhene, TIKADER, 1973, Proc. Indian Acad. Sci., 78: 67–72.

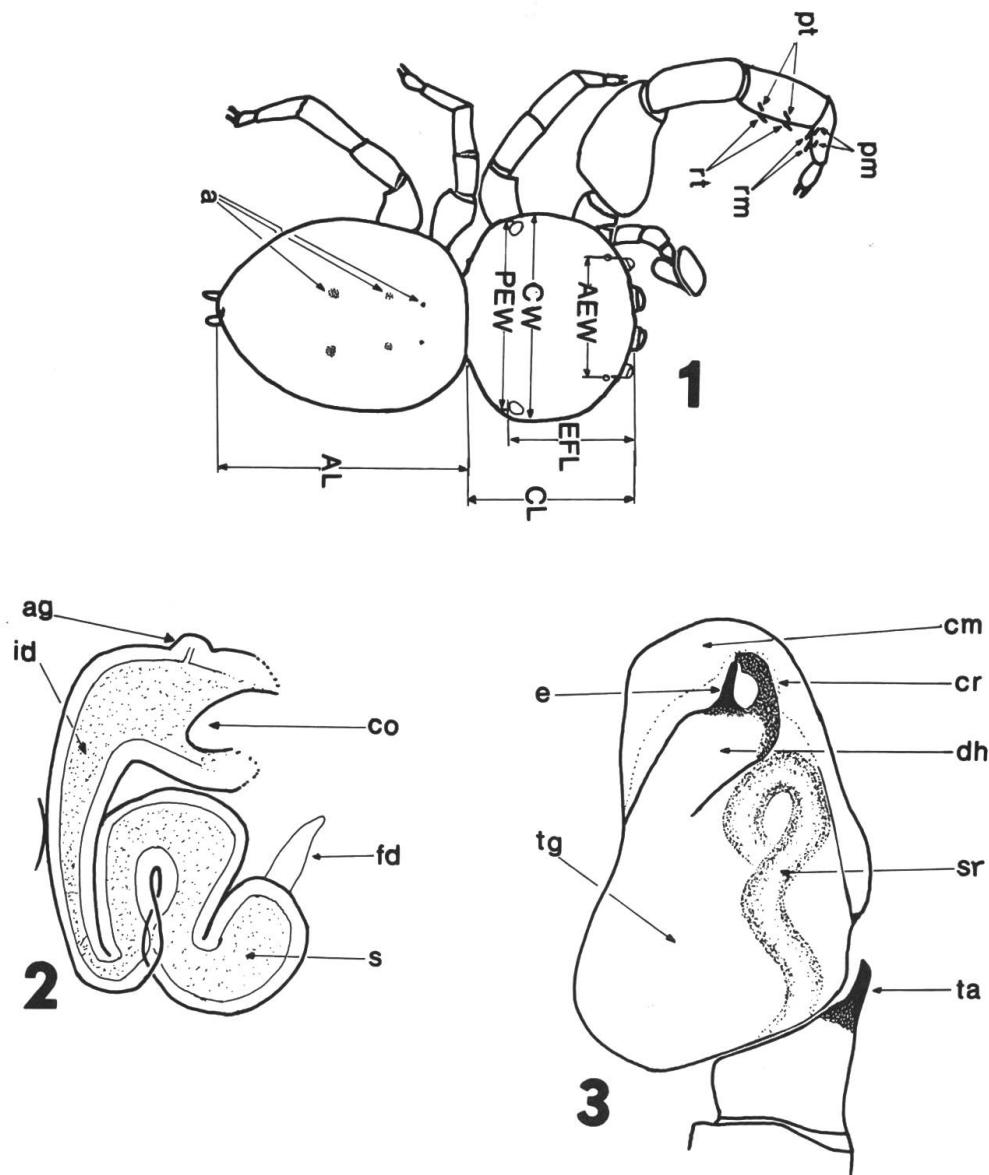
Rhene, ŽABKA, 1985, Ann. zool., 39: 197–495.

Diagnosis. The genus differs from other related taxa in having flat and wide cephalothorax. Posterior lateral eyes transferred posteriorly, posterior median ones close to the anterior row. Thoracic slope distinc-

tive. Abdomen usually with transverse belts of white hairs, in males with scutum. Chelicerae with mid-lateral incision.

Description (Fig. 1). A robust spider (3.50–6.96 mm). Cephalothorax wider than long, compressed dorso–ventrally, with the eye field occupying over 50 % of its total length.

Posterior median eyes close to the anterior ones. Thoracic slope very distinctive. Abdomen oval, beige to dark brown, with 3 transversal belts of white hairs. Chelicerae of unident pattern with 2 promarginal



Figs 1–3: General characters of *Rhene*: 1, dorsal aspect of male. 2, female genitalia. 3, male palpal organ, Abbreviations in the text.

teeth and 1 retromarginal tooth, their mid-lateral edge with distinctive incision. Male palpal organ (Fig. 3) massive, cymbium tapped, tegulum bag-like with retro-lateral meandering seminal reservoir, tibial apophysis simple, pointed, embolus short, usually curved, with or without conductor. Female epigyne rather sclerotized, sometimes with a single central pocket. Internal structures (Fig. 2) strongly sclerotized, simple, ‘‘U’’ shaped or longer, multichambered. Accessory glands distinctive. Legs I the strongest; patellae, tibiae and metatarsi with long hairs usually forming scopula – especially in males. Other legs more delicate. Tibiae and metatarsi I with rather long, blackish, shiny spines. Leg formula: 1-4-2-3.

Relationships and distribution

PECKHAM & PECKHAM (1895) placed *Rhene* in *Homalattus* Group and included a few unrelated genera.

SIMON (1897) placed genus *Rhene* in *Rheneae* – together with *Alcmena*, *Bianor*, *Partona*, *Dryphias*, *Napoca*, *Homalattus*, *Agassa* and *Zeuxippus*. On this grouping only *Zeuxippus* seems closely related to *Rhene*. The structure of genitalia suggests that a few other genera are allied, mainly *Dendryphantes* (acc. to Simon in *Dendryphantaeae*), *Phidippus* and *Metaphidippus* – both classified in *Dendryphantinae* by PETRUNKEVITCH (1928).

The genus *Rhene* seems to be of Oriental origin (its closest relative *Zeuxippus* is also known from the same area) with the concentration of species in India and southeast Asia (TIKADER, PRÓSZYNSKI, 1992, ZABKA, 1985, HU, 1984, SONG DA-XIANG, CHAI JIAN-YUAN, 1991, FOX, 1937). Some species have been recorded from Africa (PECKHAM & PECKHAM, 1895, BERLAND & MILLOT, 1941); at least two others have been found in Central and South America (GALIANO, 1963, PECKHAM & PECKHAM, 1895).

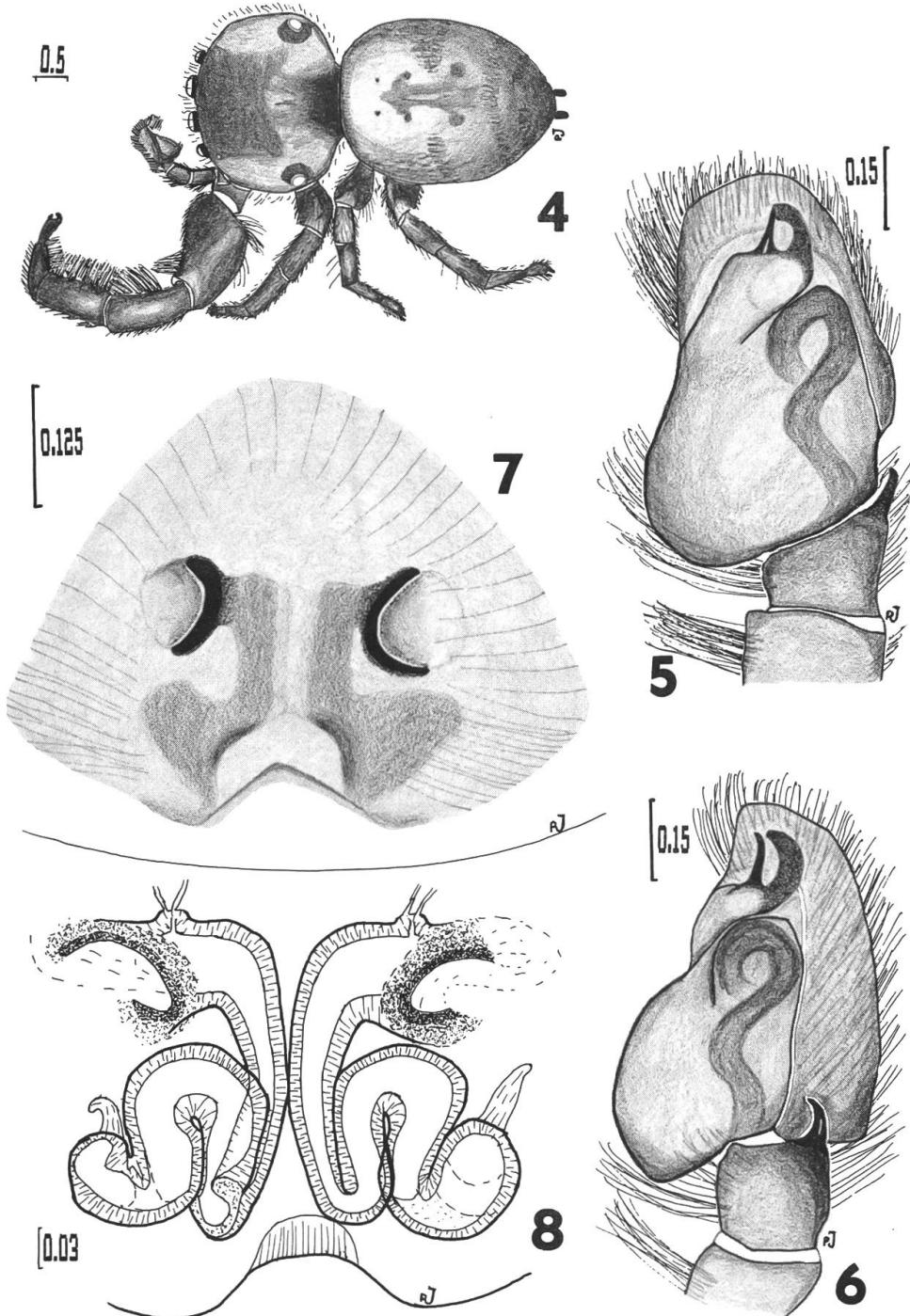
***Rhene albígera* (C.L. Koch 1848)**

Figs 4–8.

Rhanis albígera C.L. KOCH, 1848, Die Arachniden, 14: 87.

Rhene albígera, ŻABKA, 1985, Ann. zool., 39: 442–443.

Male (Figs 4–6): Cephalothorax brown with white hairs and long blackish bristles. Surroundings of eyes brown black with white hairs. Abdomen with 3 pairs of apodemes, light to dark brown, centrally marginally and posteriorly darker, with 3 transversal belts of white hairs.



Figs 4–8: *Rhene albigera* (C. L. Koch 1848): 4, dorsal aspect of male. 5, 6, male palpal organ. 7, female epigyne. 8, internal structures of female genitalia.

Whole surface clothed in thin blackish hairs. Spinnerets grey, their tips lighter. Clypeus brown with few whitish hairs. Chelicerae brown, their tips lighter; promargin with 2 teeth, retromargin with 1. Maxillae and labium dark brown with lighter tips. Sternum with few black and white hairs; brown, shiny with blackish central spots. Venter grey spotted. Palpal organ (Figs 5–6) brown. Cymbium dorsally lighter, its tips pale yellow. Tegulum bag-shaped; embolus short and thin, conductor rather massive, bent towards embolus. Tibial apophysis thin, hooked. Legs I massive, the darkest; patellae, tibiae and metatarsi with long, dark hairs forming scopula. Other legs more delicate, lighter, only femora dark brown, hairs black and white. Scopula absent. Spines formula: tI: p1-1, r1-0, mI: p1-1, r1-1.

Dimensions (in mm): CL 2.25, CW 2.61, EFL 1.60, AEW 1.63, PEW 2.49, AL 3.14.

Female (Figs 7–8): Cephalothorax generally brown with white hairs more numerous marginally, dorsally sparse. Eye field brown black. Abdomen light beige, centrally, marginally and posteroirly darkening, with 3 lighter transversal belts and 3 pairs of vague brownish apodema. Whole surface clothed in thin blackish hairs. Spinnerets pale brown with grey tips. Clypeus brown with dense white hairs marginally. Chelicerae brown; promargin with 2 teeth, retromargin with 1. Maxillae and labium brown, the latter with lighter tips. Sternum light brown with few blackish and white hairs. Venter greyish. Pedipalps light brown with white hairs. Epigyne (Fig. 7). Copulatory openings forming longitudinal, semicircular crevices. Insemination ducts long, broad, tapered with distinct accessory glands in their anterior parts. Spermatheca elongate, rather vast with 2 meanders. Legs I massive, the darkest. Patellae, tibiae and metatarsi with dark hairs forming scopula. Other legs more delicate, lighter, hairs black and white. Scopula absent. Spines formula: tI: p1-1-1, r1-0-0 or p1-1-0, r1-1-0 or p1-1-0, r1-0-0, mI: p1-1, r1-1.

Dimensions: CL 2.34, CW 2.64, EFL 1.58, AEW 1.62, PEW 2.59, AL 3.55.

Material: Nepal: 1M (SMF), Gorkha Dist., Buri Gandaki, Labubesi–Gorlabesi, 900–1000 m, Laubwald, 29.VII.1983, J. Martens & W. Schawaller. 1M (SMF), Lamjung Dist., Marsyandi, Phalesangu–Lamjung, 640–750 m, baumreiches Kulturland, 9.IV.1980, J. Martens & A. Ausobsky. 1M (SMF), Dhading Dist., W Samari, Banjyang/Topal Khola, 1000–1200 m, Kulturland, 23.VII.1983, J. Martens & W. Schawaller. 1M (SMF), Southern Dhaulagiri, Mayangdi Khola, Muri, 2100–2200 m, app 10, dry *Rhododendron* forest, 8.IV., J. Martens. 1F (SMF), Ilam, Dist., Mai Khola unterhalb Ilam, 560 m, Wegrand, 22.VIII.1983, J. Martens & B. Daams. 1F, Ijuv (SMF) Trisuli Vallay, Barabise Sun Kosi, 1200–1900 m, 4.VII.1970, J. Martens. 1M (SMF), Gorkha Dist., Darondi Khola,

zw. Naya Sanghu u. Gorkha, 1200 m, Bachtal/Gebusch, 14.VIII.1983, J. Martens & W. Schawaller. 1F, 1juv (SMF) Gorkha Dist., Buri Gandaki, Suteo—Labubesi, 700–800 m, Shorea, 29.VII.1983, J. Martens & W. Schawaller. 1F (SMF), Eastern Dhaulagiri, Thak Khola, Thak, Chadziou Khola, 2600 m, X.1969, J. Martens. 1F, (Np 61–130), Solu (Weg Rigma-Jumbesi) ca, 2700–2900 m, 11.VI.1961, H. Janetschek. 1M, (Np 61–133) Kabre—Kirantichap—Zaranje Khola, 1160–1800 m, 18.VI.1961, H. Janetschek. Bhutan: 1M, 1juv (NHMB), Phutsholing, 2/400 m, 6.V.1972. India: Mysore State, Mandi Hill; VIII.1957, N.L.H. Krauss.

Comparative material: *Rhene albígera* (C.L. Koch, 1848). Holotype: M. Bintang, ZMB 1831.

Distribution: Except for the original description from Bintang, the species also recorded from Viet-Nam (Žabka 1985) and here from Nepal and Bhutan.

Diagnosis. This species can be recognized by the shape of embolus and conductor, the epigynal pocket close to the epigastric furrow and the copulatory openings that form vertical semicircular crevices.

Rhene flavicomans Simon 1902

Figs 9–11.

Rhene flavicomans SIMON, 1902, Ann. Soc. ent. Belg., 46: 33.

Rhene flavicomans, PRÓSZYNSKI, 1984, Zesz. Naukowe WSRP, pp. 119–121.

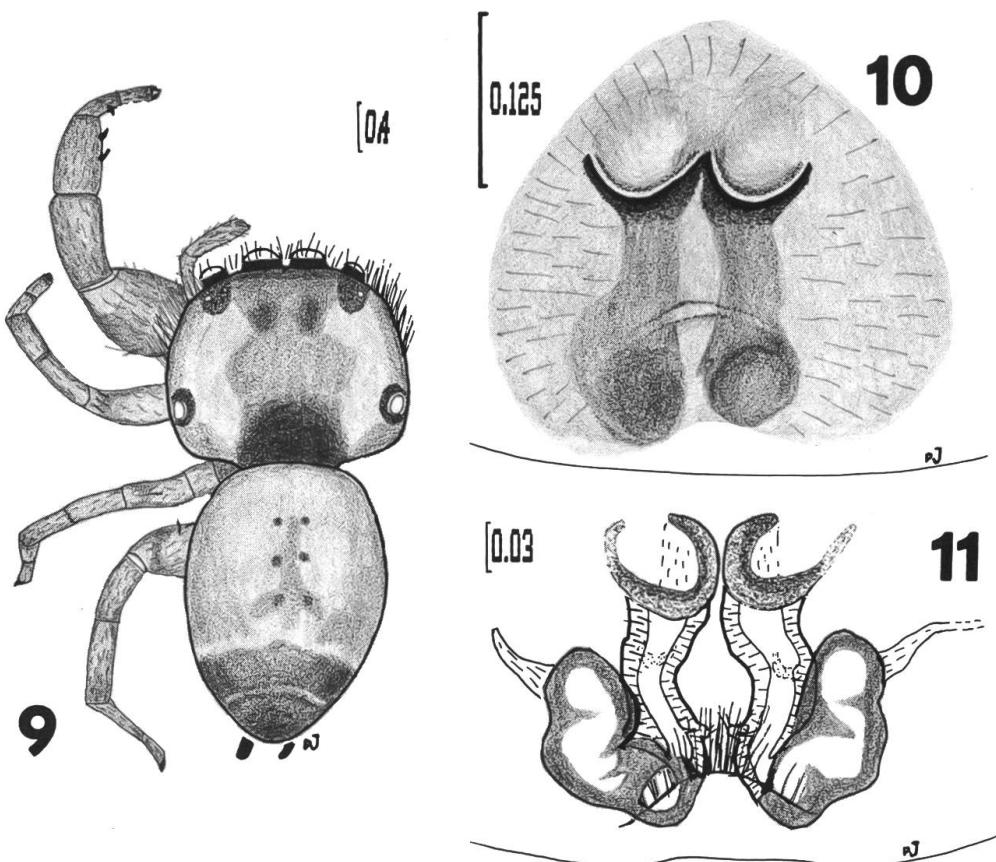
Female (Figs 9–11): Cephalothorax brown with white hairs and long blackish bristles. Surroundings of eyes brown black with white hairs. Abdomen beige, darkening marginally, posteriorly and centrally, with 3 pairs of orange-red apodemes and 3 lighter transversal belts, clothed in thin scattered blackish bristles. Spinnerets dirty brown with greyish tips. Clypeus dull brown with long white hairs. Chelicerae brown with white hairs; promargin with 2 teeth, retromargin with 1. Maxillae and labium brown with paler tips. Sternum dirty orange, shiny with few black hairs. Venter grey. Pedipalps dirty yellow with white hairs.

Epigyne (Fig. 10) with tiny black hairs. Copulatory openings with horizontal, semicircular crevices. Insemination ducts pipe-like, rather vast with distinct accessory glands. Spermathecae elongate, spiral-shaped.

Legs without scopula, the first massive, brown, ventrally lighter, clothed in the white hairs. Remaining legs more delicate, yellow with white hairs and few dark brown bristles. Distal segments of legs darker, brownish.

Spines formula: tI p1-1, r1-0, mI p1-1, r1-1.

Dimensions: CL 1.87, CW 2.11, EFL 1.23, AEW 1.34, PEW 2.11, AL 2.83.



Figs 9–11: *Rhene flavigomans* Simon 1902: 9, dorsal aspect of female. 10, epigyne. 11, internal structures of female genitalia.

Material: Bhutan: 1F, 1juv (NHMB), Phuntsholing, 2/400 m, 1972. 1F, 2 juv (NHMB), Samchi, 300 m, 7.–11.V.1972. Nepal: 1F (NHMB), Sankhua Sabha Distr., Arun Valley, Tunlingtar, 550 m, tree-rech curtural land near airport, 21.–22.VI.1988, J. Martens & W. Schawaller.

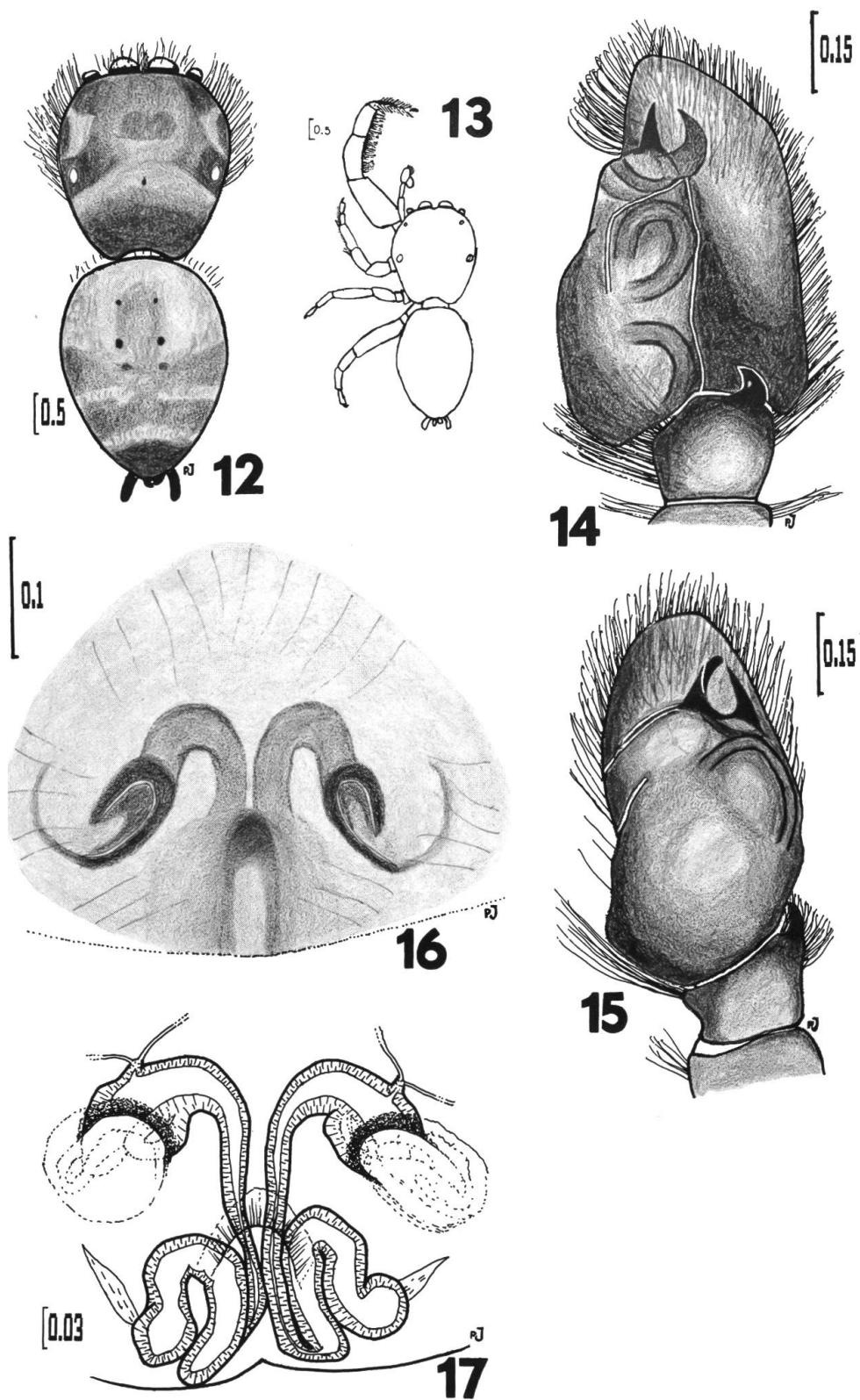
Distribution: Sri Lanka (Simon 1902, Prószyński 1984), Bhutan.

Diagnosis. Copulatory openings horizontal, spermatheca elongate with meanders. First legs without scopula.

Rhene phuntsholingensis n.sp.

Figs 12–17.

Male (Figs 12–15). Cephalothorax brown with whitish hairs longer and denser marginally and anteriorly. Surroundings of eyes dark brown. Abdomen light brown, darkening posteriorly and centrally, with 3 trans-verse belts and margins of white hairs. Three pairs of apodemes as in other species. Spinnerets brown, grey ventrally. Clypeus brown with whitish marginal fringe. Chelicerae brown; promargin with



Figs 12–17: *Rhene phuntsholingensis* n. sp.: 12, dorsal aspect of male. 13, male habitus. 14, 15, male palpal organ. 16, female epigyne. 17, internal structures of female genitalia.

2 teeth, retromargin with 1. Maxillae brown with light tips, labium brown. Sternum shiny, brown. Venter grey.

Palpal organ (Figs 14–15) brown, cymbium with buff tip. Tegulum more or less baglike. Embolus short, twisted along its axis, broad basally, blunt distally. Distal haematodocha membranous. Conductor less sclerotized, broad, taper, pointed apically. Tibial apophysis short, cone-like, pointed.

Legs I the darkest, only tarsi lighter. Patellae, tibiae and metatarsi with long blackish hairs forming scopula. Other legs more delicate, lighter. Segments distally darker; scopula absent.

Spines formula: tI: p1-1, r1-1, mI: p1-1, r1-1.

Dimensions (holotype): CL 1.76, CW 1.60, EFL 1.12, AEW 1.28, PEW 1.60, AL 2.32.

Female (Figs 16–17). Cephalothorax brown with white hairs longer marginally. Surroundings of eyes darker. Abdomen larger than in male, beige with darker central belt and 3 pairs red-orange apodeme; darkening posteriorly with 3 lighter, indistinct transverse belts; covered uniformly with white and black hairs. Spinnerets beige. Clypeus brown with dense white marginal fringe. Chelicerae light brown with white hairs; promargin with 2 teeth, retromargin with 1. Maxillae nad labium brown with light tips. Sternum shiny, brown. Venter beige. Pedipalps buff.

Epigyne (Fig. 16). Central pocket distant from the epigastric furrow. Copulatory openings forming slanting, semioval crevices. Insemination ducts long, accessory glands distinctive.

Legs I more massive than in male, brown, only metatarsi and tarsi lighter. Patellae and tibiae with long whitish hairs forming scopula. Other legs more delicate, light, with few black hairs, segments distally darker, scopula absent.

Spines formula: tI: p1-1, r1-1; mI: p1-1, r1-1.

Dimensions (allotype): CL 1.84, CW 1.68, EFL 1.04, AEW 1.20, PEW 1.68, AL 3.84.

Holotype, allotype, 4F, 1M, 1juv (NHMB): Bhutan: 87 km von Phuntsholing Richtung Thimphu, 22.V.1972; Thimpu, 31.V.1972, 2M paratypes (NHMB): Nepal: Sankhua Sabha Distr., betw. Pahakhola and Karmarang, 2300–1800 m, open forest bushes, 4.VI.1988; Sankhua Sabha Dist., Arun Vale, Chichila, 1900–2000 m, *Quercus* forest, bushes near village, 18.–20.VI.1988; 1F, 2M, 1juv JS.

Distribution: Bhutan, Nepal.

Diagnosis. The body more slender than in other species. In comparison to *Rh. albogera* (C.L.K.) copulatory openings and proximal

parts of insemination ducts of different shape, central epigynal pocket distant from the epigastric furrow. Male embolus twisted along its axis.

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