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# Revision of the genus *Chinoscopus* (Araneae, Salticidae, Lyssomaninae)

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## Summary

The Neotropical genus *Chinoscopus* Simon, 1901 is revised. The four species included are redescribed and the female of *Chinoscopus gracilis* (Taczanowski, 1872) is described for the first time. The geographical distribution of *C. gracilis* and *C. maculipes* Crane, 1943, is enlarged. The genital morphology of both sexes is discussed.

## Introduction

The systematics of the family Salticidae at the subfamily level remains unresolved. Only two groups of genera have been given subfamily rank supported by distinctive characters: Spartaeinae and Lyssomaninae. Lyssomanines have been considered a family by some authors, a group or a subfamily by others. For discussion about the previous literature on this subject, see Galiano (1976) and Wanless (1980).

According to Wanless (1980), the Lyssomaninae comprises seven genera divided into three groups defined by derived characters:

Group I: Comprising only the Oriental genus *Onomastus* Simon, 1900; its placement in Lyssomaninae might change when other groups of Salticidae are studied.

Group II: Includes *Lyssomanes* Hentz, 1845 and *Chinoscopus* Simon, 1900 from Neotropical areas. They are the only Salticidae that have dorsal spines on the patellae, all the other genera having lateral but no dorsal spines. They differ from the other lyssomanines by the lack of furrows or apophyses on the femur, patella and tibia of the male palp and by the presence of a paracymbium and a lamellar conductor.

Group III: Composed of four genera: *Asemonea* O.P.-Cambridge, 1869, *Pandisus* Simon, 1900, *Macopaeus* Simon, 1900 and *Goleba* Wanless, 1980, all from the Old World. They are distinguished by having the posterior median eyes closer to and inside the optical axis of the anterior lateral eyes; in *Asemonea, Macopaeus* and *Goleba* the posterior median eyes are rather large, only a little smaller than the posterior lateral eyes.

The present paper completes the revision of all the genera included at present in the Lyssomaninae.

The four known species of *Chinoscopus* differ from each other by very small details of the copulatory organs. *C. gracilis* (Taczanowski, 1872) and *C. maculipes* Crane, 1943 are sympatric in Amazonas and Bahia (Brazil). The male holotype of *C. maculipes* was collected in Venezuela, but the female paratype came from Guyana (formerly British Guiana). More specimens and the observation of matings could help to confirm the specific identity of males and females established by Crane and in the present paper. This is not the case in *C. flavus* (Peckham, Peckham & Wheeler, 1889), apparently the only species present in Panama and of which there are abundant specimens of both sexes collected together. *C. ernsti* (Simon, 1900) from Venezuela, is known only by the male holotype which has small differences from *C. flavus*.

*Chinoscopus* species are very unusual salticids. Almost all the specimens preserved in collections are severely damaged because the legs break easily and the integument is extremely fragile. Spines and hairs are mostly detached and loose; even the insertions of spines are difficult to locate. Many specimens have died with all the legs extended and forming a dorsal bundle. This position is not common among other salticids, which die with the legs flexed under the body.

## Material and methods

The format of the descriptions follows Galiano (1962), and the leg spination is described as in Platnick & Shadab (1975) with minor changes. All measurements are in millimetres. The nomenclature proposed by Sierwald (1989, 1990) for genitalia is applied when possible. Tracheae were observed by first dissecting away the dorsal cuticle of the abdomen, digesting away non-chitinous tissue in 10% KOH solution and boiling for 5 minutes. The structure of the unexpanded bulbs and that of the epigyna was studied by submerging them in clove oil. To expand bulbs they were submerged for several minutes in warm 10% KOH solution, studied in distilled water and preserved in 80% ethanol. No important changes in the position of the different parts of the bulb were observed as a consequence of expansion, except that the basal haematodocha became visible and that small spaces between subtegulum and tegulum, tegulum and apical division appeared.

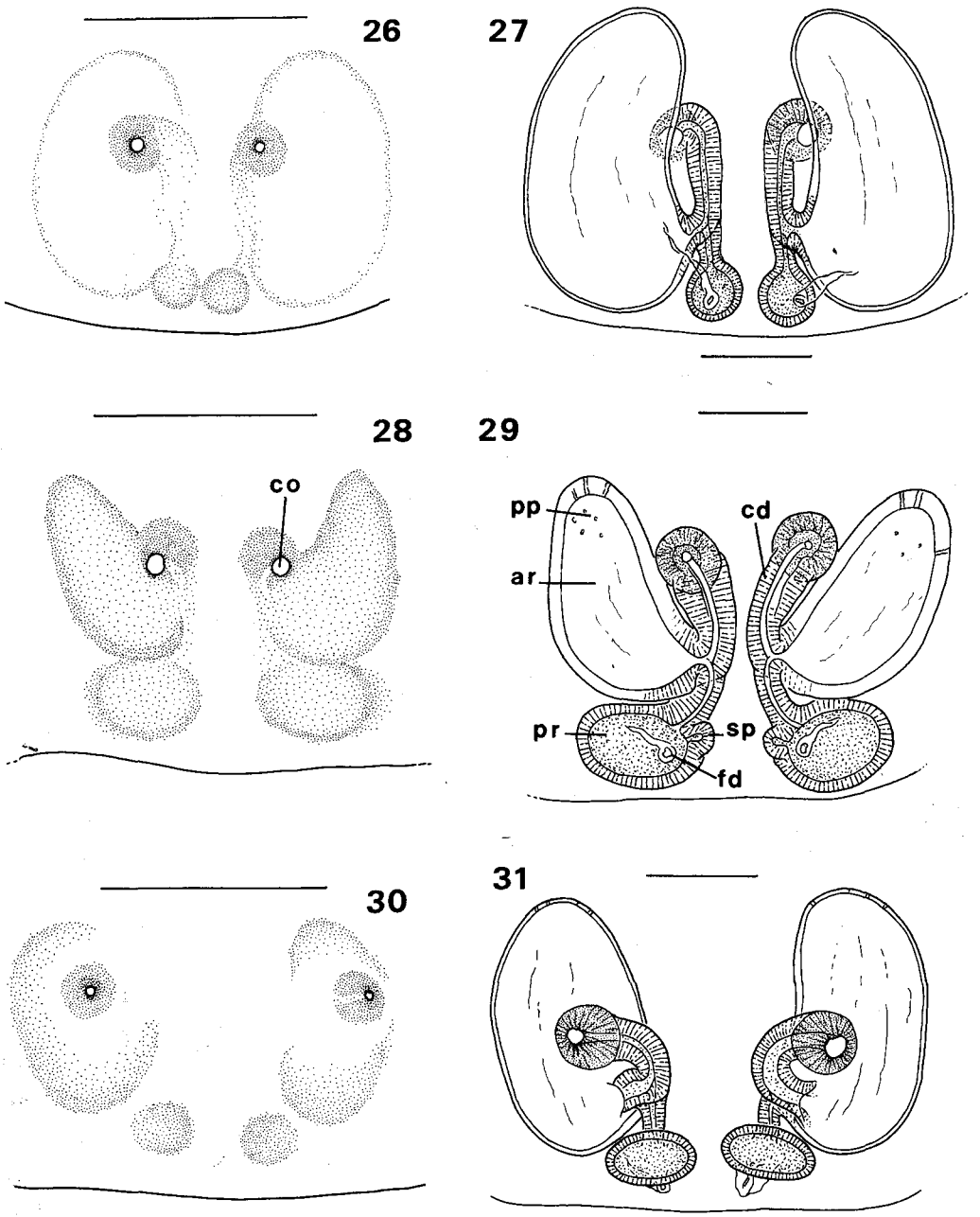
Abbreviations used: AME=anterior median eyes, ALE=anterior lateral eyes, PME=posterior median eyes, PLE=posterior lateral eyes; MACN=Museo Argentino de Ciencias Naturales; MCZ=Museum of Comparative Zoology, Harvard, USA; MNRJ=Museu Nacional de Rio de Janeiro, Brazil; AMNH=American Museum of Natural History, New York, USA; MNHN=Muséum national d'Histoire naturelle, Paris, France; MZSP=Museu de Zoologia da Universidade de São Paulo, Brazil; SMNK=Staatliches Museum für Naturkunde, Karlsruhe, Germany; FZB=Fundaçao Zoobotânica do Rio Grande do Sul, Brazil; CEPEC=Centro de Pesquisas do Cacau, Bahia, Brazil.

## Morphology of the copulatory organs

### *Females*

*Epigynum* (Figs. 26, 28, 30): Plate with only two rounded holes, the copulatory openings (**co**) in the middle. Each hole is surrounded by a sclerotised ring. Frequently there are hard irregular plugs over the copulatory openings.

*Vulva* (Figs. 27, 29, 31): Two pairs of reservoirs, which will be called anterior and posterior receptacula. (1) Anterior receptacula (Fig. 29: **ar**): Very large, ovoid, with transparent, weakly sclerotised walls, easily




Figs. 26–31: Female copulatory organs. **26** *Chinoscopus gracilis*, epigyne; **27** Ditto, vulva, dorsal view; **28** *C. maculipes*, paratype, epigyne; **29** Ditto, vulva, dorsal view; **30** *C. flavus*, epigyne; **31** Ditto, vulva, ventral view. Abbreviations: ar=anterior receptaculum, cd=copulatory duct, co=copulatory opening, fd=fertilisation duct, pp=primary pores, pr=posterior receptaculum, sp=secondary pore. Scale lines=0.25 mm (26, 28, 30), 0.1 mm (27, 29, 31).

females differs from those of *C. flavus* and *C. maculipes* by the spherical posterior receptacula, from *C. flavus* also by the larger anterior receptacula and the copulatory openings being closer to each other, and from *C. maculipes* by the different shape of the anterior receptacula.

*Description: Male lectotype*: Total length 5.07. Carapace 1.63 long, 1.17 wide, 0.47 high. Clypeus 0.17 high. Eye sizes and interdistances: AME 0.42, ALE 0.17, PME 0.03, PLE 0.15; ALE- PME 0.05, PME-PLE 0.10, ALE-PLE 0.47. Eye rows width: first 0.79, second 0.88, third 0.63, fourth 0.67. Thoracic groove 0.43 behind PLE. Abdomen 3.57 long. Palp: Figs. 11–13. Colour: body brown, carapace lighter in ocular area; abdomen with iridescent sheen. Chelicerae, labium and maxillae dark brown proximally, almost white distally. Legs pale yellow, femora I with brown lines on basal third of prolateral side and two basal thirds of retrolateral side. Some black hairs on ventral distal half of metatarsi I and II.

Note: According to Peckham, Peckham & Wheeler (1889) who redescribed the species, they received the specimens from Dr Taczanowski. These two males mentioned in the original description should be considered syntypes. Both are now at the MCZ, placed together in the same vial where legs, broken articles and one palp are mixed. One of the specimens lacks palps and legs; the other, in better condition, has one palp, legs I, II and III from the right and II, III and IV from the left. Right leg II and left leg III are broken more or less at the

tibia-metatarsus articulation. This better-preserved male is here designated as lectotype. More details about the colour are given in the original description.

*Female* (No. 9528 MACN): Carapace 1.53 long, 1.00 wide, 0.62 high. Clypeus 0.13 high. Eye sizes and interdistances: AME 0.38, ALE 0.15, PME 0.03, PLE 0.13; ALE-PME 0.10, PME-PLE 0.10, ALE-PLE 0.42. Epigynum: Fig. 26. Vulva: Fig. 27. Colour: body yellow; yellowish scale hairs over black ocular spots. Legs pale yellow, with small blackish spots on prolateral and retrolateral basal and apical ends of tibiae and bases of metatarsi. Distal two-thirds of tarsi I and II and distal half of tarsi III and IV blackish. A dark triangular spot on clypeus, its base on basal border of AME.

*Material examined:* BRAZIL: *Amazonas*: Reserva Ducke (26 km NE of Manaus), 1♀, MACN 9526, August 1971 (Galiano); *Pará*: Belém, 1♂, MACN 9527, August 1970 (Galiano); *Bahia*: Uruçuca, Faz. Sta. Teresa, 2♂ 5♀, 3 pulli, MACN 9528 (CEPEC); Faz. Santo Antonio, 2♂ 4♀, FZB 11.800, 24 October 1978 (I. S. Santos); Faz. Almada, 1♂ 1♀, FZB 20.244, 27 November 1977 (I. S. Santos); 2♂, FZB 11.393, same date and coll.; Camacan, Faz. São Roque, 1♂ 1♀, FZB 10.260, 3 December 1977 (I. S. Santos); Faz. Matiapa, 1♀, FZB 11.191, 14 October 1978 (I. S. Santos); 1♂, FZB 11.317, 16 October 1978 (I. S. Santos); Faz. Sta. Ursula, 1♂, MACN 9532 (CEPEC); Lomanto Jr.: Faz. Sao José, 1♂, MNRJ, 19 May 1969 (Ventocilla); Faz. Martinica, 2♀, 1 pullus, MNRJ (CEPEC); Gandu, 2♀, MNRJ (CEPEC); Juçari, Faz. Sao Francisco, 1♂ 1♀, MNRJ (CEPEC); 1 pullus, MNRJ (CEPEC); Coaraçi, 1 pullus, MNRJ (CEPEC); *Goiaz*: Faz. Aceiro Yataí, 1♀, MZSP, E 2836-1, October 1962 (Exp. Dto. Zoologia). ECUADOR: Jumboe River, 1♀, MCZ, 1 June 1965 (L. Peña).

*Distribution*: French Guiana, Ecuador, Brazil: Amazonas, Pará, Bahia, Goiaz.

### *Chinoscopus flavus* (Peckham, Peckham & Wheeler, 1889) (Figs. 5–9, 16–18, 20, 22–24, 30, 31)

*Asemonea flava* Peckham, Peckham & Wheeler, 1889: 246, pl. 12, fig. 18 (*Asamonea*, lapsus) (female from Central America); F. O. P.- Cambridge, 1900: 186; Zúñiga Vega, 1980: 339.

*Chinoscopus flavus*: Simon, 1901: 393, 396; Petrunkevitch, 1911: 610; Banks, 1929; 76 (*Chionoscopus*, lapsus); Chickering, 1936: 455; 1946: 7: Roewer, 1954: 928; Bonnet, 1956: 1045; Wanless, 1980: 216; Platnick, 1989: 548; Nentwig, 1993: 159.

*Diagnosis*: Females of *C. flavus* can be distinguished from *C. gracilis* and *C. maculipes* by the copulatory openings of the epigynum being separated by a distance equivalent to the antero-posterior length of the anterior receptaculum. Males are distinguished by the apical division of the bulb being shorter than in the above-mentioned species and dilated just below the base of the embolus.

*Description: Female* (No. 22 Peckham coll.): Total length 5.67. Carapace 1.73 long, 1.23 wide. Abdomen 4.00 long. Eye interdistances: ALE-PME 0.08, PME-PLE 0.13, ALE-PLE 0.45. Eye rows width: first 0.85, second 0.95, third 0.72, fourth 0.75. Thoracic groove 0.40 behind PLE. Epigynum: Fig. 30.

Note: Chickering (1946: 7) saw this female and mentioned that it was labelled "Type"; this label was not inside the tube when the present study was made. It is highly probable that this specimen is the holotype. At present it is badly preserved, eyes and abdomen are shrunken and the left legs are missing. Some parts of the legs are in the same tube. As the ventral side of the abdomen is destroyed, the vulva was not examined.

*Male* (No. 9531 MACN): Total length 6.38. Carapace 1.63 long, 1.30 wide, 0.53 high. Clypeus 0.18 high. Eye sizes and interdistances: AME 0.43, ALE 0.18, PME 0.04, PLE 0.15; ALE-PME 0.10, PME-PLE 0.17, ALE-PLE 0.55. Eye rows width: first 0.88, second 1.03, third 0.77, fourth 0.80. Thoracic groove 0.33 behind PLE. Palp: Figs. 8, 9, 16–18. Colour: body dark brown, lighter between lateral eyes. Legs yellow, I and II dark brown on prolateral and retrolateral sides from coxae to near distal end of femora; tibiae darkened distally on both sides; tarsi with brown apical half. Palps dark brown. Mouthparts and chelicerae dark brown proximally, yellow distally.

*Female* (No. 9531 MACN): Carapace 1.63 long, 1.23 wide, 0.57 high. Clypeus 0.18 high. Eye sizes and interdistances: AME 0.43, ALE 0.17, PME 0.03, PLE 0.14; ALE-PME 0.10, PME-PLE 0.15, ALE-PLE 0.52. Eye rows width: first 0.87, second 1.00, third 0.75, fourth 0.77, Vulva: Fig. 31. Colour: yellow; legs with dark brown lines on both sides of tibiae distally, and on distal two-thirds of tarsi.

*Note*: For the present study, the male specimen described by Banks (1929) and the male drawn by Chickering (1946: fig. 1) have been examined. One of the females collected by Chickering has the following label: "Ceph. with blue-green radiating lines, abdomen with minute green dots".

*Material examined*: PANAMA: Chiriqui, 1♀, MCZ No. 22 (G. W. & E. G. Peckham coll.); *Canal Zone*: Biological Area, 5♀, MCZ, June–July 1934 (Chickering); 1♂ 3♀, MCZ, 1♂ 3♀, MACN 9531, June–August 1939 (Chickering); Barro Colorado Island, 1♂, MCZ, 11–29 June 1950 (Chickering); 1♀, MCZ, 24 June 1950 (Chickering); 1♀, MCZ, 19 June 1950 (Chickering); 1♂, MCZ, June 1950 (Chickering); 1♂ 1♀, 1 pullus, MCZ, 3 July 1950 (Chickering); 1♂ 2♀, MCZ, 2 July 1954 (Chickering); 1♂ 1♀, MCZ (Chickering); Porto Bello, 1♀, MCZ, August 1936 (Chickering); Port Davies, 1♂, MCZ, 5 July (Banks); Forest Reserve, 1♂, MCZ, August 1939 (Chickering) (labelled by Chickering as drawn); Gamboa, 1♀, MCZ, August 1939 (Chickering); Pedro Miguel, 1♂, MCZ, July 1950 (Chickering); COLOMBIA: *Valle de Cali* (1000 m): 1♂, MCZ, October 1973 (Eberhard).

*Distribution*: Panama, Colombia: Cali.

### *Chinoscopus ernsti* (Simon, 1990) (Fig. 14)

*Epicharmus Ernsti* Simon, 1900: 28 (male holotype from Venezuela, Caracas, in MNHN, examined).

*Chinoscopus ernsti*: Simon, 1901, 391, 395, 396, 398, fig. 401 (*Ernsti*); Petrunkevitch, 1911: 610; Caporiacco, 1948: 697; Roewer, 1954: 927; Bonnet, 1956: 1045; Galiano, 1963: 321.

*Note*: A redescription of this species was given by Galiano (1963: 321, pl. 14, figs. 6, 8). The apical division of the tegulum appears close to that of *C. flavus* but the distal end is not enlarged. The only other specimen of *Chinoscopus* collected in Venezuela so far is the holotype of *C. maculipes*. It seems correct to maintain *C. ernsti* as a valid species at present. A final decision should be made when more specimens, especially females, from Venezuela are studied.

*Distribution:* Known only from Venezuela: Caracas.

***Chinoscopus maculipes* Crane, 1943** (Figs. 10, 15, 28, 29)

*Chinoscopus maculipes* Crane, 1943: 128, figs. 1L, M, O (male holotype No. 42.161 (AMNH) from Venezuela, Monagas, Caripito, and one female paratype No. 241.010 (AMNH) from Guyana, Bartica, Kartabo, examined). Roewer, 1954: 928.

*Diagnosis*: Males of *C. maculipes* are distinguished from *C. flavus* and *C. gracilis* by the body colour and by the apical division of the tegulum (Fig. 10) being longer and thinner in its distal half. The vulva differs from those of the above-mentioned species in having diverging anterior receptacula (Fig. 29).

*Redescription: Male holotype*: Total length 5.05. Carapace 1.70 long, 1.27 wide, 0.73 high in cephalic region. Clypeus 0.25 high. Eye sizes and interdistances: AME 0.45; ALE-PME 0.10, PME-PLE 0.14, ALE-PLE 0.50. Eye rows width: first 0.88, second 1.02, third 0.77, fourth 0.78. Palp: Figs. 10, 15. Colour: see original description.

*Female paratype*: Total length 5.72. Carapace 1.83 long, 1.23 wide, 0.70 high in cephalic region. Eye interdistances: ALE-PME 0.10, PME-PLE 0.13. Eye rows width: first 0.92, second 1.08, third 0.82, fourth 0.84. Epigynum: Fig. 28. Vulva: Fig. 29. Colour: see original description.

*Material examined:* BRAZIL: *Bahia*: Camacan, Faz. Esperanza, 1♀, MNRJ (CEPEC); Itamarajú, 1♀, MNRJ (CEPEC); Ilheus, 1♂, MNRJ (CEPEC), 12 December 1969 (Ventocilla); Faz. Sta. Ursula, 1♂ 5♀, MACN 9530 (CEPEC), 5 February 1969 (Ventocilla); *Amazonas*: Reserva Ducke (26 km NE of Manaus), 1♀, MACN 9529, 1♀, MNRJ, August 1971 (Galiano); 1♂, MCZ, June–September 1911 (Standford Exp., Mann & Baker); 1♂, SMNK, 12 March 1992 (Höfer & Gasnier, fogging epiphytes+*Bromelia*); WEST INDIES: *Trinidad*: Port of Spain, 1♂, 1 pullus, MCZ, 1913 (R. Thaxter); Simla, 1 pullus, MCZ, April 1964 (Chickering); Cumoto, 1 pullus, MCZ (W. S. Brooks).

*Distribution*: Venezuela: Monagas. Guyana: Bartica. West Indies: Trinidad. Brazil: Amazonas, Bahia.

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# *Nesticus henderickxi* (Araneae, Nesticidae), a new blind troglobitic spider from Crete

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## Summary

*Nesticus henderickxi* sp. n., an eyeless troglobitic spider species discovered in a limestone cave in Crete, is described as new. The possible affinities of the new species are discussed, and the possible causes of the development of extreme adaptations to cave life in troglobitic arthropods, such as complete loss of eyes, are commented upon.

## Introduction

In July 1996, H. Henderickx searched the "Kournas cave" (Fig. 1), a limestone cave in NW Crete, for invertebrates. Two adult specimens of an undescribed species of *Nesticus* Thorell, 1869 (Nesticidae) were collected. The new species is completely eyeless (Figs. 2, 7) and devoid of pigment, characters typical of true troglobionts.

## Material and methods

Specimens were studied under a binocular microscope, using incident light. In order to make a detailed drawing of the internal female genitalia, the vulva preparation was dissected free, cleared in methyl salicylate and photographed under a compound microscope under transmitted light. Photographs were electronically enhanced with an "unsharp masking" technique, using the computer programme Pictor vl.2 (Schollaerts & Houben, 1994). Terminology of male and female reproductive organs follows Huber (1993), unless stated otherwise.

Type specimens are deposited in the Royal Belgian Institute for Natural Sciences, Brussels (RBINS 28.476).

Abbreviations used in figures and text: ad=anterior diverticulum of vulval pocket; co=copulatory orifice; ef=epigastric furrow; efs=epigastric furrow sclerite; fd=fertilisation duct; Fe=femur; id=insemination duct; Mt=metatarsus; Pa=patella; sp=spermatheca; Ta=tarsus; Ti=tibia; Tm=distance between tibia/metatarsus junction and base of metatarsal trichobothrium, divided by metatarsus length; To=distance between metatarsus/tarsus junction and tarsal organ, divided by tarsus length; vf=ventral fold in female vulva; vpl=vulval pocket, lateral part; vpm=vulval pocket, medial part. Measurements are in mm, except for Tm and To, which are ratios.

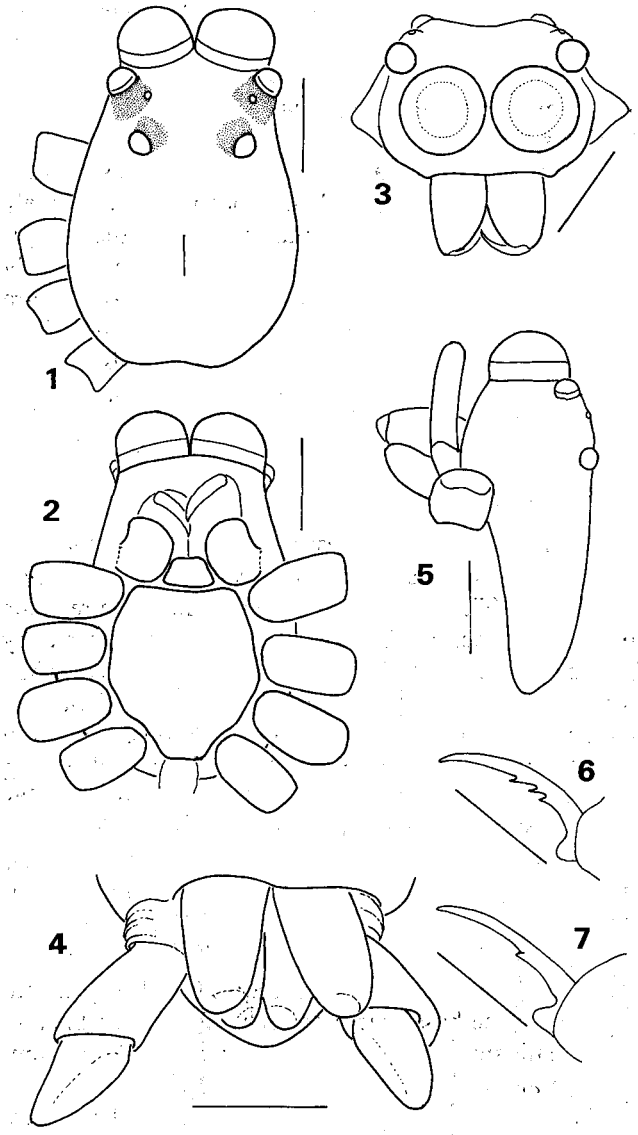
## *Nesticus henderickxi*, sp. n. (Figs. 2–8)

*Type material*: Male holotype, Crete, Kournas cave (35°19′00″N, 24°17′13″E), altitude 250 m, hand captured in limestone cave, 7 July 1996, Hans Henderickx leg. Paratype: one female, same data.

*Etymology*: The species is named after Hans Henderickx, who collected the type specimens.

*Diagnosis*: The male can be distinguished by the shape of the paracymbium and its cavity and by

Fig. 1: Inside view of the type locality (Kournas cave, Crete).




Figs. 1–7: **1–4** *Chinoscopus gracilis*, male lectotype. **1** Carapace, dorsal view; **2** Ditto, ventral view; **3** Ditto, frontal view; **4** Spinnerets, ventral view. **5–7** *C. flavus*, female. **5** Carapace, lateral view; **6, 7** Tarsal claws of palp. Scale lines=0.5 mm (1-3, 5), 0.25 mm (4), 0.05 mm (6,7).

collapsible. The walls are thin in *Chinoscopus gracilis*, but thicker in *C. flavus* and especially in *C. maculipes*. Only in these last two species, two or three small ducts through the walls could be seen on the anterior borders of the receptacula (Fig. 29: **pp**). It is likely that they correspond to the "primary pores" (Bennett, 1991, 1992; Suhm & Alberti, 1993). It was not possible to find these pores in *C. gracilis*; perhaps histological techniques will clarify this matter. (2) Posterior receptacula (Fig. 29: **pr**): Situated near the epigastric furrow, spherical in *C. gracilis* and ovoid in *C. flavus* and *C. maculipes*. The walls are thick and sclerotised. There is a bulbous process on the anterior internal border (Fig. 29: **sp**) that corresponds to the "dictynoid pore" (Bennett, 1991, 1992), or "secondary pore" (Suhm & Alberti, 1993). In *Chinoscopus*, as in some cybaeid species, the "porous plate is everted" (Bennett, 1991: 544).

*Ducts*: Copulatory ducts (Fig. 29: **cd**): The copulatory duct connects the copulatory opening with the anterior receptaculum. It has thick sclerotised walls; the lumen is a little enlarged after the copulatory opening and also at the place where it enters the anterior receptaculum on its medial border. Near this point, a rearward-directed branch separates from the copulatory duct, ending at the posterior receptaculum, just internally to the dictynoid pore. Fertilisation ducts (Fig. 29: **fd**): Weakly sclerotised, exit the posterior receptacula dorsally near the medial border.

*Males*

*Palp*: The tibia bears two apical processes: one prolatero-dorsal and the other retrolateral; both are wide and blunt and are considered homologous with the tibial apophyses of other Salticidae. The cymbium has a well developed paracymbium (Fig. 16: **pc**).

*Bulb* (Fig. 8): The ground plan of the bulb in *Chinoscopus* is typical of the Salticidae. The bulb is divided into three parts: (1) Basal division, formed by the basal haematodocha (**bh**) and the subtegulum (**st**), where the fundus (**f**) of the sperm duct (**sd**) is visible through the walls. (2) Middle division, formed by the almost spherical tegulum (**te**), inside which the sperm duct describes several loops. A membranous process arises on the distal side of the tegulum, its basal half cylindrical, its distal half lamellar. It runs almost parallel to the apical division, close to it but without contacting it. By its origin (tegular) and its position (near the embolus), it could be considered as a conductor (**c**). (3) Apical division (Figs. 8–11, 18, 19), formed by a weakly sclerotised tube, whose basal half is cylindrical and bent twice almost at right angles, while the apical half is more or less cylindrical and carries the embolus (**e**) at its distal end. The embolus is strongly sclerotised and corkscrew-like. The thin ejaculatory duct (**ed**) enters the apical division at its median angle (Fig. 8; **ma**), runs towards the apex and ends at the apical opening of the embolus.

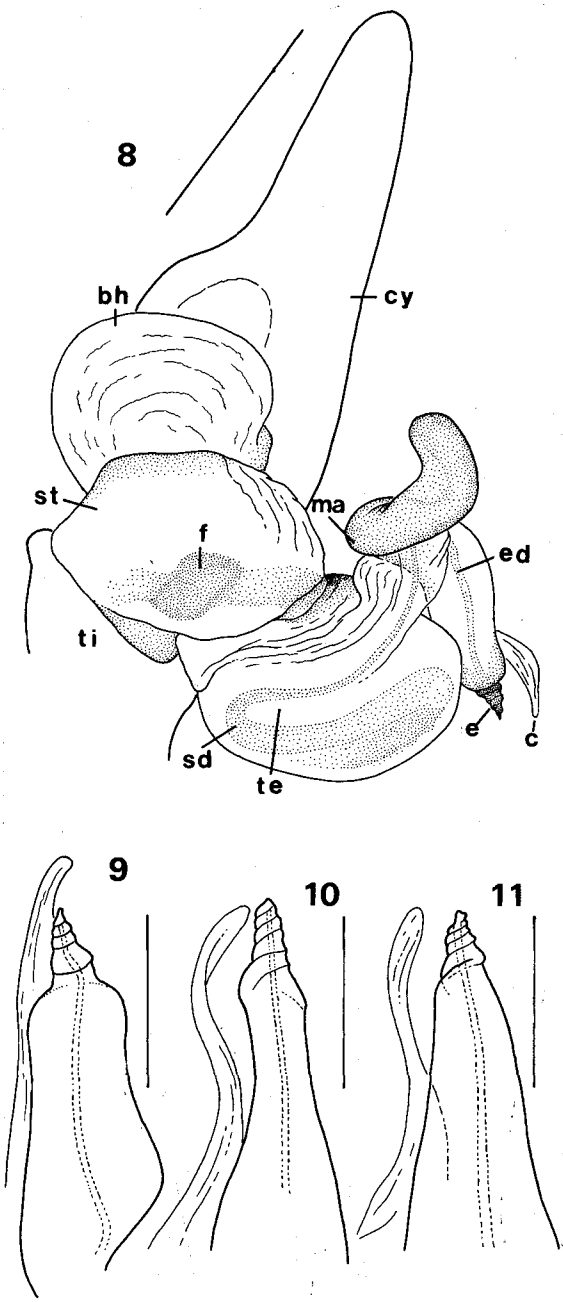
*Discussion*

In the present paper it was intended to apply the nomenclature proposed by Sierwald (1989, 1990) for pisaurids in order to "standardize the names of presumably homologous parts in different taxa" (Bennett, 1992). However, the structure of the female copulatory organs of *Chinoscopus* does not agree with these definitions. Sierwald (1989) wrote: "no prediction can be made regarding whether this ground plan is valid for other families". The receptacula or reservoirs that are found in some species have received different names according to the authors. Saaristo (1975) called them "receptaculum A and B" in Linyphiidae; Opell (1983a,b) called them "spermathecae" in *Hyptiotes* and *Tangaroa*; Wiehle (1967) used "receptaculum I and II" in *Dipoena*; Griswold (1990) used for Amaurobioidinae the term "spermathecae" to refer to the entire sclerotised internal genitalia exclusive of the bursa and fertilisation ducts. Sierwald (1989) produced a paper on the morphology of female copulatory organs of Pisauridae, giving definitions and establishing a nomenclature which has been accepted by more recent authors, e.g. Bennett (1991,

1992), Griswold (1993, 1994), Ovtsharenko *et al.* (1995). However, Ramirez (1995) found that some terms could not be applied to the organs of *Monapia*. The "head of the spermatheca" (Sierwald, 1989: 20) is recognised by the presence of the primary pores and is never connected with the copulatory duct. But in *Chinoscopus* the copulatory duct is clearly connected with the anterior receptaculum where there are (perhaps only a few) primary pores. The "stalk of spermatheca" is defined as the part that connects the head with the base. In *Chinoscopus* there is no direct communication between the anterior and posterior receptacula. If the sperm is stored first in the anterior receptaculum, in order to pass to the posterior receptaculum, the sperm must return along the copulatory duct up to the point where it branches, and then pass towards the posterior receptaculum from where the fertilisation duct originates.

The following hypothesis is presented: the only part of the male bulb that enters the female organ is the embolus (extremely sclerotised and short), because there is no room for the rest of the apical division. The sperm may move rearwards towards the two pairs of receptacula and may be distributed into both of them, most likely at the same time. The posterior receptaculum of *Chinoscopus* could be considered homologous with the "base of the spermatheca" of pisaurids, except that it is not connected directly with the anterior receptaculum.

The tegular process may be considered homologous with the conductor of other spiders, but it is unlikely that it functions as a protection of the embolus, because its membranous structure is far more fragile than the embolus itself. On the other hand, the epigynum has no specialised structure that could accommodate this lamellar conductor.




Figs. 8–11: Palps. **8** *Chinoscopus flavus*, expanded bulb. **9–11** Distal half of apical division. **9** *C. flavus*; **10** *C. maculipes*, holotype; **11** *C. gracilis*, lectotype. Abbreviations: bh=basal haematodocha, c=conductor, cy=cymbium, ed=ejaculatory duct, e=embolus, f=fundus, ma=median angle, sd=sperm duct, st=subtegulum, te=tegulum, ti=tibia. Scale lines=0.25 mm (8), 0.1 mm (9–11).

## Systematics

### Genus *Chinoscopus* Simon, 1901

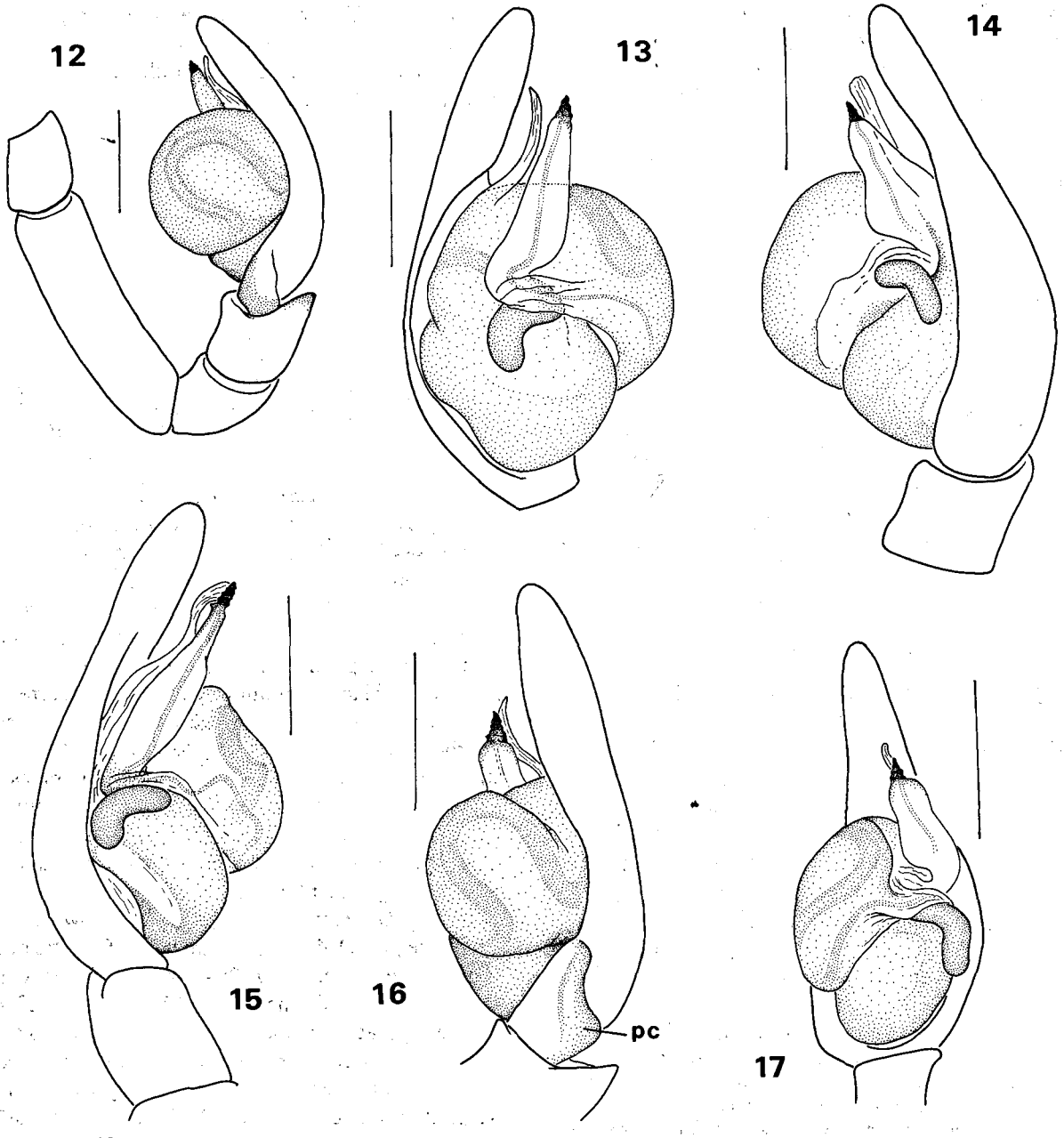
*Jelskia* (part) Taczanowski, 1872: 70.
*Asemonea* (part) Peckham, Peckham & Wheeler, 1889: 245 (*Asamonea*, lapsus); F. O. P.-Cambridge, 1900: 186.
*Epicharmus* Simon, 1900: 28 (praeoc.).
*Chinoscopus* Simon, 1901: 393, 395–399 (nom.nov.); Petrunkevitch, 1911: 610; 1928: 181; Neave, 1939: 695; Chickering, 1946: 7; Caporiacco, 1948: 697; Roewer, 1954: 927; Bonnet, 1956: 1045; Galiano, 1976: 60, 64, 65, 67, 68; Wanless, 1980: 215, 216; Platnick, 1989: 548.

*Type species: Jelskia gracilis* Taczanowski, 1872.

*Diagnosis: Chinoscopus* is closest to *Lyssomanes* Hentz, 1845, by the position of the small PME situated on the optical axis of ALE, the presence in some species of one dorsal apical spine on patellae, these articles never with lateral spines; male palp without apophyses on femora or patellae and only short and blunt projections on tibiae; cymbium with well-developed paracymbium. *Chinoscopus* is separated from *Lyssomanes* by the more flattened carapace, shorter ocular area, strongly inclined clypeus, lack of ventral spines on the legs, lack of median apophysis on tegulum, long posterior lateral spinnerets in males. Females can be distinguished from *Lyssomanes* by the vulva with two pairs of large receptacula.

*Description*: Carapace (Figs. 1–3, 5) low, moderately broad, height 29–43% of length; width 65–80% of length. Ocular area occupying 26–38% length of carapace. Clypeus 24–57% diameter of AME in males, 23–44% in females; greatly inclined rearwards, sometimes almost horizontal. Insertion of mouthparts further to rear than in *Lyssomanes* (which has vertical clypeus). ALE row wider than AME, PME and PLE rows. PLE row wider than PME row. ALE about 39–43% diameter of AME in males, 34–42% in females, positioned behind them.

PME closer to ALE, small, less than half diameter of ALE and situated on their optical axis. Fovea long, halfway between PLE and posterior margin. Chelicerae (Fig. 20) vertical, relatively small, with three promarginal and five to six retromarginal teeth. Inner edge of fang serrated. Sternum cordiform. Maxillae parallel, with serrula and scopula; outer edge rounded, without apophysis. Legs extremely slender and long. Leg formulae: males IV-I-II-III or IV-I-III-II; females IV-I-III-II. Few spines, long and slender. Only dorsal and lateral spines, no ventral spines on any article. Tentative leg spination (variation between brackets): Femora I-IV d 1-1-1, p 1-1 (p 1-1-1, r 1-1-1, r 1-1). Patellae I, II 0; III, IV d 1ap (d 0). Tibiae I, II p 1-1, r 1-1; III, IV d 1-1 (d 1), p 1-1 (p 1), r 1-1 (r 1). Metatarsi I, II p 1-1 (p 1, p 0), r 1-1 (r 1, r 0); III, IV p 1 (p 0), r 1 (r 0), Hairs: few sparse hairs on body and legs; white or yellow hairs ("pelos escamosos" — Galiano, 1975; "scales" — Hill, 1979) over black spots of eyes; plumose hairs (Lehtinen, 1975) on abdomen and legs, more abundant on legs I and II of males. Leg tarsi (Fig. 23) with onychium, two pectinate tarsal claws, with dorsal scales. Female palp with smooth apical tarsal claw (Figs. 6, 7, 21), in some specimens with one to three teeth, sometimes differing in same individual. Claw tufts with dense spatulate truncate hairs (Fig. 23). Tarsal organ (Fig. 25) a small pit, without any sculpture. Tracheal system: a narrow stigma, followed by two tracheal tubes that immediately divide into two branches that extend directly forwards without branching and limited to abdomen. Abdomen long and slender. Surface of integument folded (Fig. 24), with iridescent sheen, even in green individuals. Cuticle thin, extremely fragile. Anterior lateral spinnerets conical; posterior laterals slender and long, with long




Figs. 12–17: Palps. **12** *Chinoscopus gracilis*, lectotype, retrolateral view; **13** Ditto, prolateral view; **14** *C. ernsti*, holotype, prolateral view; **15** *C. maculipes*, holotype, prolateral view; **16** *C. flavus*, retrolateral view (pc=paracymbium); **17** Ditto, ventral view. Scale lines=0.25 mm.

terminal article obliquely truncated, with long spigots (probably aciniform) on interior wall (Figs. 4, 22).

### *Chinoscopus gracilis* (Taczanowski, 1872) (Figs. 1–4, 11–13, 19, 21, 25–27)

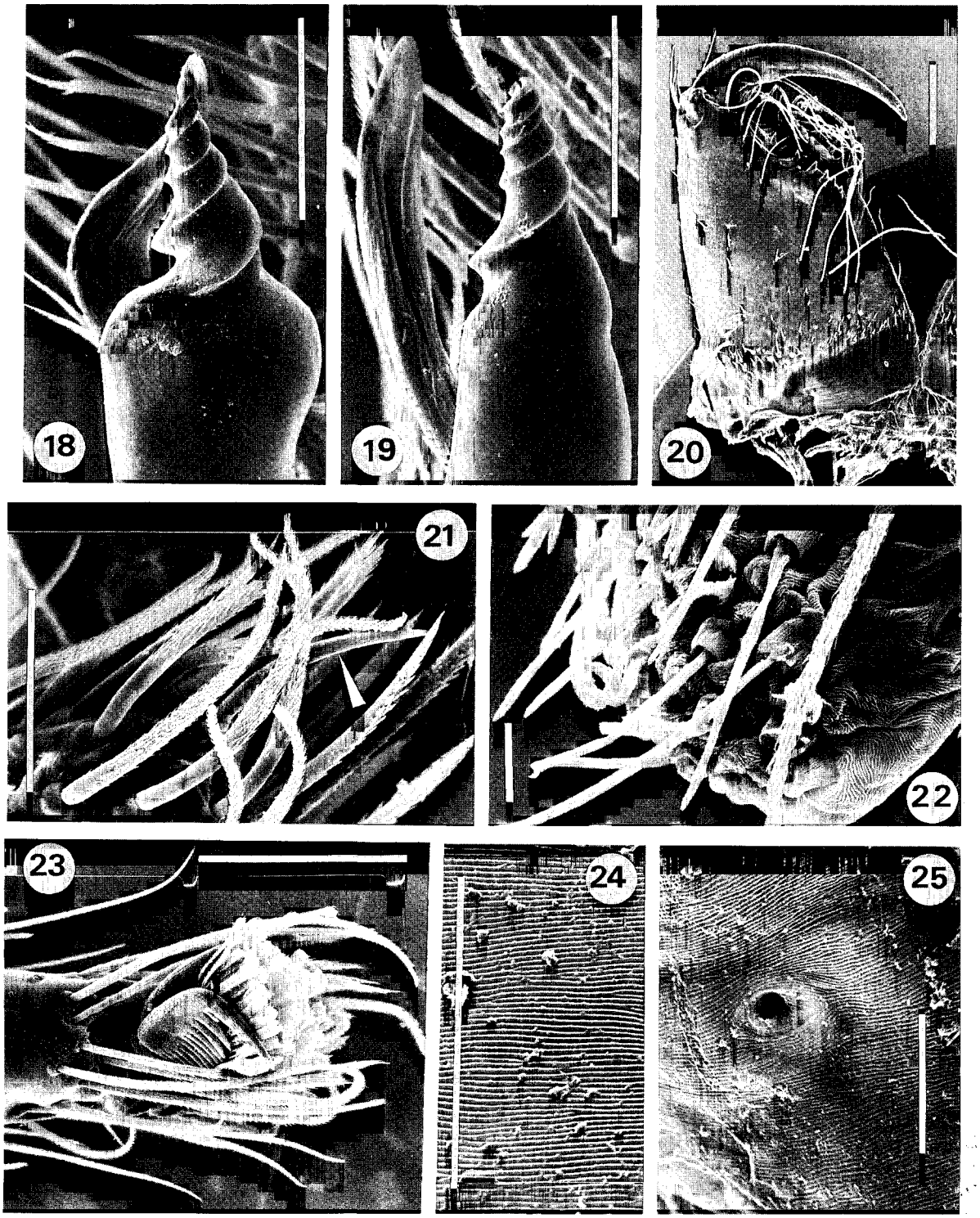
*Jelskia gracilis* Taczanowski, 1872: 70, pl. 3, fig. 3 (male lectotype and one male paralectotype here designated, from French Guiana, leg. C. Jelski, in Peckham collection (MCZ), examined).

*Asamonea gracilis*: Peckham, Peckham & Wheeler, 1889: 245, pl. 12, fig. 2.

*Epicharmus gracilis*: Simon, 1900: 28.

*Chinoscopus gracilis*: Simon, 1901: 393, 396, 399, 400; Petrunkevitch, 1911: 610; 1928: 181; Caporiacco, 1948: 697; Roewer, 1954: 928; Bonnet, 1956: 1046.

*Diagnosis*: Males differ from those of *C. flavus* by the longer and thinner apical division of the tegulum and from *C. maculipes* by the body colour; the vulva of the




Figs. 18–25: **18, 19** Apical division of bulb, distal end. **18** *C. flavus*; **19** *C. gracilis*. **20** *C. flavus*, female, right chelicera, posterior view; **21** *C. gracilis*, female, tarsal claw (arrowed) of palp; **22** *C. flavus*, male, apical segment of posterior lateral spinneret; **23** *C. flavus*, female, claws of tarsus I; **24** *C. flavus*, male, ventral surface of abdomen; **25** *C. gracilis*, female, tarsal organ of leg I. Scale lines=0.1 mm (20, 23), 0.05 mm (18, 19, 21), 0.01 mm (22, 24, 25).