

REVIEW OF THE CHINESE FUNNEL - WEB SPIDERS OF THE GENUS
MACROTHELE, WITH DESCRIPTIONS OF TWO NEW SPECIES
(ARANEAE: HEXATHELIDAE)

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ABSTRACT. - The five described Chinese species of the funnel-web spider genus *Macrothele*, *M. guizhouensis* Hu et Li, 1986, *M. holsti* Pocock, 1901, *M. palpator* Pocock, 1901, *M. simplicata* (Saito, 1933) and *M. taiwanensis* Shimojana et Haupt, 1998, are reviewed. The species *Macrothele sinensis* Zhu et Mao, 1983, was transferred to the genus *Raveniola* by Song et al. (1999). Two new species, *M. humanica* and *M. yunnanica* are described and recorded from Central China and Southwest China respectively. A key is given to the Chinese species in the genus and notes on species distribution are included.

KEY WORDS. - China, new species, *Macrothele*, Araneae, Hexathelidae, funnel-web spiders, taxonomy.

INTRODUCTION

Up to date, five species of the spider genus *Macrothele* were reported from China. They are: *Macrothele guizhouensis* Hu et Li, 1986 (Guizhou), *M. holsti* Pocock, 1901 (Taiwan), *M. palpator* Pocock, 1901 (Hong Kong, Guizhou, Hubei), *M. simplicata* (Saito, 1933) (Taiwan) and *M. taiwanensis* Shimojana et Haupt, 1998 (Taiwan). The species *M. sinensis* Zhu et Mao was transferred to the genus *Raveniola* by Song et al. (1999: 40). On examining the spider collection we came across two species of the genus which are described as new species: *M. humanica* (Hunan) and *M. yunnanica* (Yunnan).

Thus, totally seven species are recorded in China. The diagnostic characters of the new species as well as the classification of some species are mentioned as below. The types are deposited in the Department of Biology, Hebei University. All measurements given are in millimeters.

TAXONOMY

Macrothele Ausserer, 1871

Macrothele Ausserer, 1871: 181; Raven, 1980: 254-255; 1985: 72; Song et al., 1999: 36.

Diagnosis. - Medium-sized to large mygalomorph spiders. Carapace glabrous, fovea a transverse pit, deep. Chelicerae with row of inner teeth, and short row of smaller teeth at base. Labium and endites usually with numerous cuspules. Sternum with two or three pairs of sigilla, posterior pair largest. Trochanters of palp or leg I provided with paddle setae (lyra). Tarsi of legs without scopulae or claw tufts, spinose. Tibia of leg I of male thickened. Spermathecae with two undivided receptacula. Four spinnerets. Posterior median spinnerets (PMS) one segment, apart from each other by distance about 4 times its diameter. Posterior lateral spinnerets (PLS) three-segmented, slender.

Distribution. - Twenty-five species are found in western Europe, southern Asia and Africa. Spiders construct tube-web or funnel-web under rocks, logs or crevices in the grounds.

Type species. - *Macrothele calpeina* (Walckenaer, 1805)

Macrothele guizhouensis Hu et Li, 1986

Macrothele guizhouensis Hu & Li, 1986: 35, f. 1-7.

This species was described by Hu & Li (1986) from Meitan County, Guizhou Province. Body length: female 28. Female palpal trochanter furnished with 11 paddle setae (lyra), tarsus with 11 black spines on ventral side

(one distally, five pairs laterally). Patellae of legs I and II each with two spines, tibiae with five spines, metatarsi with 9-10 spines, and tarsi with 16-17 ventral spines. Legs III and IV more numerous and less regularly spined. Sternal sigilla two pairs. Receptacula tubular, rather slender, bent laterally and posteriorly, then turned ventrally and anteriorly. PMS widely separated by distance equal to about four times its diameter or equal to its length.

***Macrothele holsti* Pocock, 1901**

Macrothele holsti Pocock, 1901: 214, pl. 21, f. 5; Shimojana & Haupt, 1998: 2, f. 1-2, 11, 21-22.

This species was originally described by Pocock (1901) from Taiwan. Shimojana & Haupt (1998) have examined the types and made a redescription of the species. Body length: male 14, female 14.1. Quite hairy spider. Male palpal tibia with about 14 stout, blunt spines in irregular double row on prolateral side, one long median bristle on ventral side. Dorsal side with single curved row of 13 or 14 stout, blunt spines. Bulb ending in long, slender, slightly and evenly curved embolus with straight distal part. Embolus in normal position slightly overreaching proximal end of tibia. Female receptacula tubular, slightly bent laterally, with ovular terminal part. Most of tubule covered with glandular pores. Sternal sigilla three pairs.

***Macrothele hunanica*, new species**
(Fig. 1)

Material examined. - Holotype: male; paratypes: two males, four females. Dayung County (29°6'N, 110°24'E), Hunan Province, coll. M. S. Zhu, 10 Oct. 1986.

Description of male. - Length (holotype) 10.00; cephalothorax 4.90 long, 4.20 wide; abdomen 5.30 long, 3.30 wide. Carapace red-brown, glabrous, with some hairs only on its margins. Fovea transverse. Two eye rows recurved from above, PMA triangular. Eye sizes and interdistances: ALE 0.33, AME 0.23, PLE 0.25, PME 0.18; ALE-AME 0.05, AME-AME 0.18, PLE-PME 0.05, PME-PME 0.40. Eye group 0.55 long, 1.25 wide. Clypeus 0.18 high. Chelicerae red-brown, with row of 14 stout promarginal teeth, short row of smaller teeth at base. Labium, endites and sternum yellow brown. Labium and endites provided with numerous cusps. Sternum with 3 pairs of sigilla. Palpal tibia swollen, with 9 stout spines on dorsal side. Embolus 3.65 long. Legs yellow brown, hairy. Tibia I with prolateral spine near distal end, and 5 ventral spines; metatarsus with 10 ventral spines; tarsus 9 ventral spines. Tibia II with prolateral spine near distal end, and 5 ventral spines; metatarsus with prolateral spine near middle, and 5 ventral spines; tarsus 8 ventral spines. Tibiae, metatarsi and tarsi of leg III and IV with many spines.

Measurement of palp and legs: palp 8.65 (2.50, 1.15, 2.70, 2.30); I 13.70 (3.70, 2.10, 2.70, 3.20, 2.00); II 13.60 (3.70, 2.10, 2.70, 3.10, 2.00); III 13.30 (3.40, 1.90, 2.50, 3.50, 2.00); IV 16.10 (4.10, 2.00, 3.10, 4.60, 2.30). Leg formula: 4123. Abdomen brown, hairy. Spinnerets: PMS one segment, PLS 3 segments. PMS 1.15 long, 0.30 wide; PLS 4.60 long (1.70, 1.40, 1.50); PMS-PMS 1.00.

Description of female. - Length 13.20; cephalothorax 5.50 long, 4.60 wide; abdomen 8.10 long, 5.70 wide. Body colour resembles that of male. Eye sizes and interdistances: ALE 0.38, AME 0.28, PLE 0.28, PME 0.18; ALE-AME 0.05, AME-AME 0.13, PLE-PME 0.05, PME-PME 0.53. Eye group 0.60 long, 1.25 wide. Clypeus high 0.18. Chelicerae red-brown, with row of 13 stout promarginal teeth, short row of smaller teeth at base. Legs with many spines and hairs. Tibia I with prolateral spine and 2 ventral spines near distal end; metatarsus with 3 prolateral spines in row and 7 ventral spines; tarsus 8 ventral spines. Tibia II with a prolateral spine, 2 ventral spines; metatarsus with 3 prolateral spine and 5 ventral spines; tarsus 8 ventral spines. Tibiae, metatarsi and tarsi of leg III and IV with many spines. Measurement of palp and legs: palp 9.20 (2.90, 1.60, 2.00, 2.70); I 13.40 (3.70, 2.30, 2.70, 2.90, 1.80); II 13.30 (3.50, 2.40, 2.50, 3.20, 1.70); III 13.20 (3.30, 2.10, 2.40, 3.40, 2.00); IV 16.60 (4.20, 2.40, 3.20, 4.50, 2.30). Leg formula: 4123. Abdomen brown, hairy. Receptacula directed forward, turning laterally, and then inward and turning anteriorly, somewhat S-shaped. Spinnerets: PMS 1.30 long, 0.30 wide; PLS 6.20 long (2.30, 1.60, 2.30); PMS-PMS 1.40.

Remarks. -The new species resembles *Macrothele palpator* Pocock but differs from the latter in lacking paddle setae on palpal trochanter of the female, palpal tibia of the male with 9 stout spines rather than 12, and also in the different shape of the basal part of the embolus.

Etymology. - The specific name refers to the type locality.

***Macrothele palpator* Pocock, 1901**

Macrothele palpator Pocock, 1901: 213, pl. 21, f. 4.

This species was described by Pocock (1901) from Hong Kong and Zhejiang (Da Lan San, 60 miles uphill from Ningbo). Body length: male 12, female 18. Male: palpal tibia with about 12 short, dorsal spines. Palpal organ enormously long, about as long as the patella and tibia of the palp; the embolus broad at base, gradually narrowing and very fine and filiform at apex, with slightly sinuous curvature. Tibia I with three long, ventral spines in addition to an apical pair. Tibia II with five long spines below. Metatarsus I with three rows of long, strong spines. Metatarsus II slightly bowed at base and only with about four inferior spines. Female: palpal tarsus

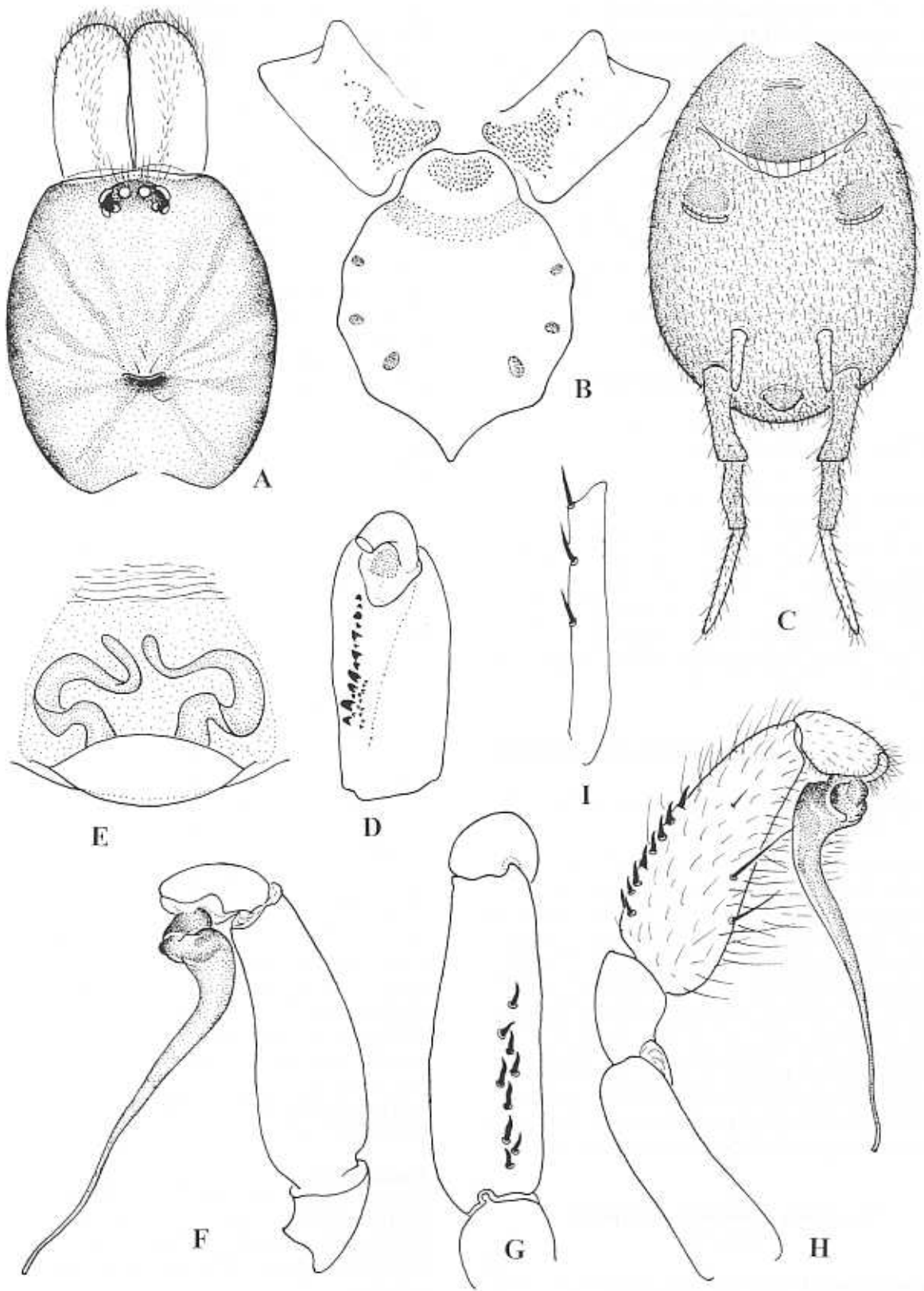


Fig. 1. *Macrothele humanica*, new species A-E. Female, F-I. Male. A. Cephalothorax; B. Sternum, labium and endites. C. Abdomen, ventral view; D. Chelicerae, ventral view; E. Epigyne, inner view; F. Left palp, prolateral view; G. do. dorsal view; H. do. retrolateral view; I. Metatarsus II, retrolateral view

about as long as patella and tibia, slightly expanded at base, with three retrolateral, one ventral, and three or more prolateral spines. Tibia of first leg with three ventral spines, metatarsus with 11 ventral spines, tarsus with 14 lateral spines. Leg II spined much like the first leg; legs III and IV with tibiae, metatarsi and tarsi more numerous and less regularly spined, and also with few spines on patellae. According to Snazell & Allison (1989) the palpal trochanter of the female are provided with lyra. The specimens reported by Hu & Li (1986: 37, f. 8-11, Guizhou and Hubei provinces) under the name of *M. palpator* have no lyra. The spines of legs of the specimens are also different from those of *M. palpator*. It should be assigned to a different species.

Macrothele simplicata (Saito, 1933)

Ischenothele simplicata Saito, 1933: 34, pl. 3, f. 3.
Macrothele simplicata: Lee, 1964: 13, f. 2a-b.

This species was described by Saito (1933) from Taiwan. The original description of the species was based on a single female, simple and without the illustration of the epigyne. No new material was acquired of the species by Shimojana in his collection in Taiwan (Shimojana & Haupt, 1998). Body length: female 19. Their figure (pl. 3, Fig. 3d) showed the posterior median spinneret very short, and terminal segment of posterior lateral spinneret longer than preceding two segments.

Macrothele taiwanensis Shimojana et Haupt, 1998

Macrothele taiwanensis Shimojana & Haupt, 1998: 7, f. 5-6, 13, 16, 23.

This species was described from Taiwan by Shimojana & Haupt (1998). The diagnostic characters are as follows. Body length: male 9.4, female 16.7. Male palpal tibia with 11-13 short, conical, acute spines on dorsal side (tips bent ventrally) in two irregular, longitudinal rows. Embolus of palpal organ long and strongly curved into S-shape, with sharp ridge making lengthy longitudinal spiral. Tibia of leg I with row of four ventral spines, two apical spines more prolaterally and one median spine more retrolaterally. Female receptacula tubular in shape, strongly curved in dorsal direction, turning posteriorly and then again in latero-anterior direction, about half of tube covered by glandular pores. Sternal sigilla two pairs,

Macrothele yunnanica, new species (Fig. 2)

Material examined. - Holotype: male; paratypes: 8 females. Mengla County (21°24'N, 101°30'E), Yunnan Province, coll. M. S. Zhu, 18 Oct. 1989.

Description of male. - Length (holotype) 11.40:

cephalothorax 5.30 long, 5.10 wide; abdomen 6.20 long, 4.00 wide. Carapace brown, glabrous, with some hairs only on its margins. Fovea deep, transverse pit. Two eye rows, recurved from above. PMA triangular. Eye sizes and interdistances: ALE 0.38, AME 0.33, PLE 0.33, PME 0.20; ALE-AME 0.05, AME-AME 0.08, PLE-PME 0.05, PME-PME 0.50. Eye group 0.68 long, 1.30 wide. Clypeus high 0.20. Chelicerae light brown, with row of 12 stout promarginal teeth, short row of smaller teeth at base. Labium, endites and sternum light brown. Labium and endites with numerous cusps. Sternum with 3 pairs of sigilla. Palpal tibia swollen, with 11-12 stout spines on dorsal side. Embolus 4.60 long. Legs yellow brown, spiny and hairy. Tibia I with 3 prolateral spine near distal end, 5 ventral spines and retrolateral spine; metatarsus with 11 ventral spines; tarsus 7 ventral spines. Tibia II with 2 prolateral spines near distal end, and 7 ventral spines; metatarsus with prolateral spine, and 7 ventral spines; tarsus 8 ventral spines. Measurement of palp and legs: palp 9.00 (3.00, 1.40, 3.40, 1.20); I 16.20 (4.70, 2.70, 3.20, 3.50, 2.10); II 16.10 (4.60, 2.60, 3.10, 3.50, 2.30); III 15.80 (4.10, 2.30, 3.00, 4.10, 2.30); IV 19.20 (4.80, 2.00, 3.80, 5.20, 2.80). Leg formula: 4123. Abdomen black brown, hairy. Spinnerets: PMS one segment, PLS 3 segments. PMS 1.30 long, 0.25 wide; PLS 6.50 long (2.20, 1.90, 2.40); PMS-PMS 1.00.

Description of female. - Length 20.00: cephalothorax 9.50 long, 8.30 wide; abdomen 11.50 long, 8.10 wide. Body colour resembles that of male. Carapace with many white hairs. Eye sizes and interdistances: ALE 0.50, AME 0.45, PLE 0.43, PME 0.30; ALE-AME 0.08, AME-AME 0.18, PLE-PME 0.10, PME-PME 0.80. Eye group 1.03 long, 1.95 wide. Clypeus 0.10 high. Chelicerae with row of 13 stout promarginal teeth, short row of smaller teeth at base. Legs with many spines and hairs. Tibia I with only 2 ventral spines; metatarsus with only 3 ventral spines; tarsus 11 ventral spines. Tibia II with prolateral spine; metatarsus with 1 prolateral spine near base and 3 ventral spines; tarsus 7 ventral spines. Measurement of palp and legs: palp 17.60 (5.40, 2.80, 3.60, 5.80); I 26.70 (7.40, 4.40, 5.70, 6.10, 3.10); II 26.50 (7.30, 4.20, 5.50, 6.30, 3.20); III 26.40 (7.00, 3.40, 5.50, 7.20, 3.30); IV 32.30 (8.50, 4.10, 6.70, 9.20, 3.80). Leg formula: 4123. Abdomen black brown, with many setae and fine hairs. Receptacula directed forward, with anterior portion bent inward and directed posteriorly. Spinnerets: PMS 2.20 long, 0.60 wide; PLS 12.00 long (3.50, 3.50, 5.00); PMS-PMS 2.40.

Remarks. - The new species resembles *Macrothele palpator* Pocock but differs from the latter in lacking paddle setae on palpal trochanter of the female, palpal tibia of the male with 9 stout spines rather than 12, and also in the different shape of the basal part of the embolus.

Etymology. - The specific name refers to the type locality.

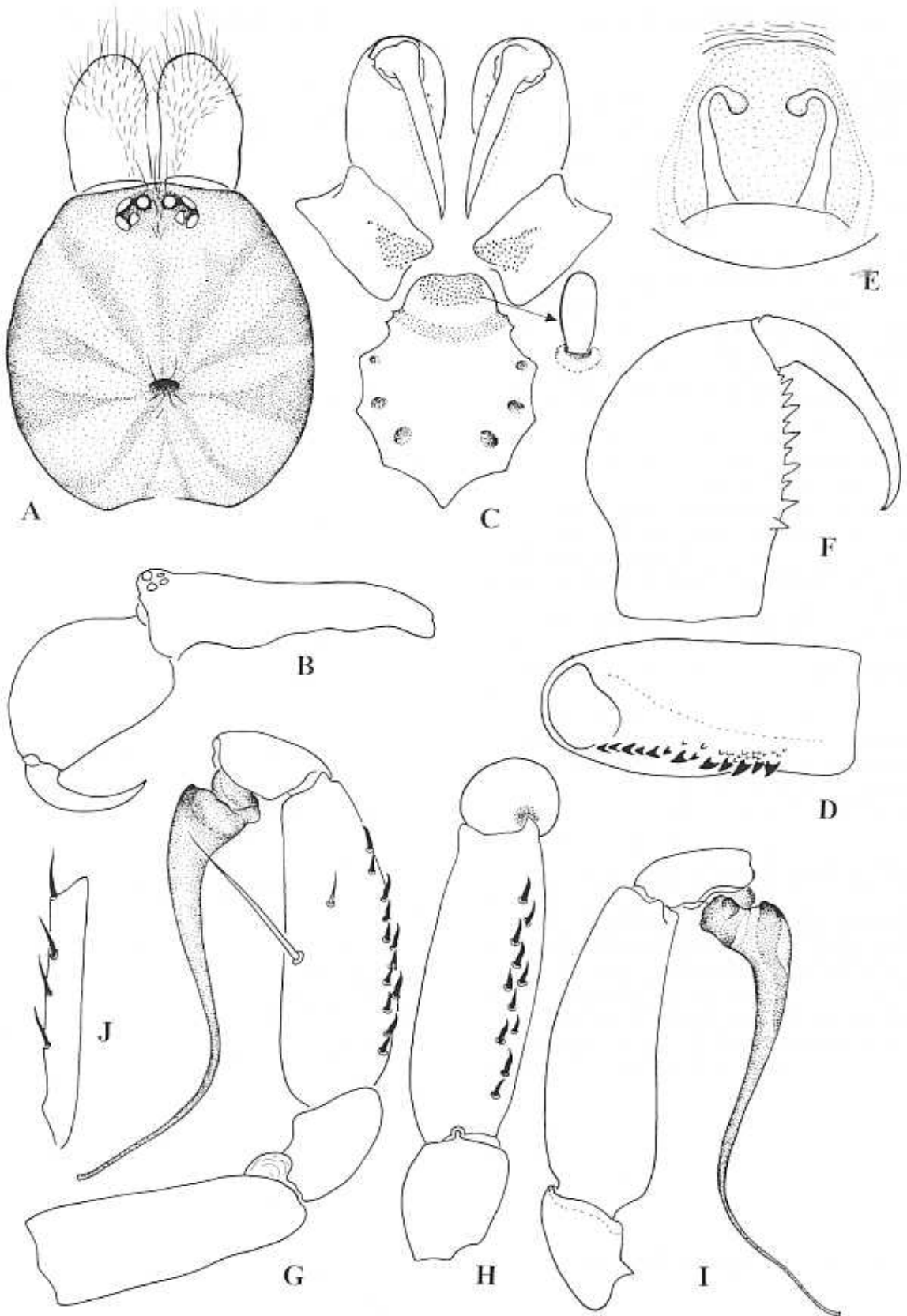


Fig. 2. *Macrothele yunnanica*, new species A-E. Female, F-J. Male. A. Cephalothorax, dorsal view; B. do, lateral view; C. Sternum, labium, endites and chelicerae, D. Chelicerae, ventral view; E. Epigyne, inner view; F. Chelicerae, prolateral view; G. Right palp, prolateral view; H. do, dorsal view; I. do, retrolateral view; J. Metatarsus II, retrolateral view

KEY TO CHINESE SPECIES OF *MACROTHELE*

1. Female 2
- Male 8
2. Palpal trochanter with paddle setae (lyra) 3
- Palpal trochanter without paddle setae (lyra) 4
3. Body about 18mm long; palpal tarsus with 14 spines *M. palpator* Pocock
- Body about 28mm long; palpal tarsus with 16-17 spines *M. guizhouensis* Hu et Li
4. Basal segment of PLS very short, terminal segment longer than preceding two segments *M. simplicata* (Saito)
- Basal segment of PLS long, terminal segment shorter than preceding two segments 5
5. Sternal sigilla two pairs; receptacula strongly curved in dorsal direction, turning posteriorly and then again in latero-anterior direction *M. taiwanensis* Shimojana et Haupt
- Sternal sigilla three pairs; receptacula not strongly curved in dorsal direction 6
6. Receptacula directed forward, turning laterally, and then inward and turning anteriorly, somewhat S-shaped *M. humanica* new species
- Receptacula directed forward first, but not turning laterally 7
7. Anterior portion of receptacula turning inward *M. yunnanica* new species
- Anterior portion of receptacula not turning inward *M. holsti* Pocock
8. Embolus short, only as long as tibia of palp or half the width of carapace *M. holsti* Pocock
- Embolus long, at least as long as tibia and patella of palp and as width of carapace 9
9. Palpal tibia only with nine dorsal spines *M. humanica* new species
- Palpal tibia with 11-13 dorsal spines 10
10. Embolus curved dorsally first, then ventrally *M. palpator* Pocock
- Embolus curved ventrally first, then dorsally 11
11. Body smaller (9.4mm); tibia I with seven spines (four ventral, two apical, one median spine) *M. taiwanensis* Shimojana et Haupt
- Body larger (11.4mm); tibia I with nine spines (five ventral, three prolateral, one retrolateral spine) *M. yunnanica*, new species

ACKNOWLEDGEMENTS

Principal support for this project was provided by National Natural Science Foundation of China (grant No. 39670097), with additional support from the Hebei Natural Science Foundation (grant No. 396173). Thanks are also due to Dr. Daiqin Li of National University of Singapore for his reading the manuscript and Professor Jinzhao Zhao of Hubei University for his suggestion of doing the work.

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