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Revision of the spider genus *Sitticus* SIMON, 1901 (*Aranei, Salticidae*),  
III. *Sitticus penicillatus* (SIMON, 1875) and related forms

[With 57 figures in the text]

It is rather difficult to find out relationships of two rather peculiar American *Sitticus* species: *S. absolutus* GERTSCH et MULAİK, 1936 and *S. cursor* BARROWS, 1919. The structure of their copulatory organs shows certain similarities to *S. penicillatus* (SIMON, 1875) so I place these three species provisionally together. The structure of the female copulatory organ in *S. penicillatus* resembles simultaneously that of *S. floricola* (C. L. KOCH, 1837) and, somewhat less, that of *S. distinguendus* (SIMON, 1868) groups; so it may be assumed that *S. penicillatus* is an intermediary, at least morphologically if not phylogenetically, between these groups. The phylogenetical relationships, however, will be dealt with in a separate paper ending this set of revisions of the genus *Sitticus*.

Other species dealt with in the present paper are *S. longipes* (CANESTRINI, 1873) and *S. mazorecanus* CHAMBERLIN, 1920, their copulatory organs in males seem to be comparable with those in *S. penicillatus* and *S. absolutus*.

Acknowledgement. This paper could not be written without kind cooperation of a number of scientists, who during ten years I spent on study of *Sitticus*, have permitted me to examine comparative materials being in their possession. I wish, therefore, to express my best thanks to: Dr. J. A. L. COOKE, formerly of Zoology Department, Oxford University; Dr. B. CUTLER — Department of Entomology, Minnesota University, St. Paul, Minn.; the late Mr. D. J. CLARK — British Museum (N. H.), London; Dr. H. FARKAS — Természettudományi Múzeum Állattara, Budapest; Dr. L. FORCAET — Naturhistorisches Museum, Basel; Dr. W. J. GERTSCH — The American Museum of Natural History, New York; Mr. K. J. HEDQUIST — formerly of Naturhistoriska Riksmuseet, Stockholm; Prof. O. KRAUS — formerly of Senckenberg-Museum, Frankfurt a. M.; Prof. H. W. LEVI — Museum of Comparative Zoology, Harvard University, Cambridge, Mass.; Prof. E. TORTONESE — Museo Civico di Storia Naturale, Genova; Prof. M. VACHON — Muséum National d'Histoire Naturelle, Paris. I am especially indebted to Dr. W. J. GERTSCH for important suggestions on

synonymy of American species. My thanks are also due to Dr. W. STAREGA with whom I have discussed several problems and to Mrs. T. BUSZKO for assistance in taking measurements.

### *Sitticus penicillatus* (SIMON, 1875)

*Attus illibatus* SIMON, 1868<sup>1</sup>: 541, *syn. n.*

*Attus inaequalipes* SIMON, 1868<sup>1</sup>: 614, *syn. n.*

*Attus penicillatus* SIMON, 1875: 92,

*Attus guttatus* THORELL, 1875: 119,

*Attus inaequipes*: SIMON, 1876: 119; L. KOCH, 1876: 275,

*Attulus illibatus*: SIMON, 1889: 375,

*Attulus penicillatus*: SIMON, 1889: 375,

*Sitticus patellidens* BÖSENBERG et STRAND, 1906: 342, *syn. n.*

*Sitticus guttatus*: REIMOSER, 1919: 104,

*Attulus inaequalipes*: REIMOSER, 1919: 105,

*Sitticulus penicillatus*: DAHL, 1926: 29,

*Sitticus penicillatus*: PERELETCHINA, 1930: 385; PRÓSZYŃSKI and STAREGA, 1971: 286,

? *Sitticus clavator* SCHENKEL, 1936: 11, *syn. n.* (New comments — see page 25).

Material: "886 *Attul. illibatus* E. S. Polonia"<sup>2</sup> — 1 juv. ♀ — holotype, coll. E. SIMON, MNHN-Paris; "*Attulus inaequalipes* (SIMON) Bozen [Botzen = Bolzano, North Italy] VIII 1865 [leg. L. KOCH]" — 1 ♂ — holotype — British Museum (N. H.), London; "*Sitticus guttatus* TH. = *Attulus penicillatus*? SIM., coll. CHYZER 1187, Ujhely" — 1 ♂, SM-Frankfurt a. M.; "*Attus penicillatus*? SIM., coll. CHYZER 1187, Plitvicza" — 1 ♀ — both samples in — TMA-Budapest; "*Sitticus patellidens* Bös. et STR. Japan: Saga [Kiushiu Island, N. of Nagasaki] [leg.] DÖNITZ 1882" "2624" — 1 ♂ — holotype — SM-Frankfurt a. M.; "K 2: *Sitticus clavator* SCHKL. Typus", "Kina S. Kansu", "Sven HEDINS Exp. Ctr. Asien [leg.] Dr. HUMMEL" — 1 ♂ — holotype — NR-Stockholm; "*Sitticus guttatus* THOR. Jeny-Sala (Al. v. NORD. [MANN]) No. 1685" — 1 ♂ — holotype — NR-Stockholm; "*Attus penicillatus*, 128" — 2 ♀♀ ex coll. W. KULCZYŃSKI, no collecting locality — IZ PAN-Warszawa; "*Sitticus penicillatus* (SIM.), Berkowa Góra near Kroczyce, distr. Olkusz, Poland, sunny slope of a limestone hill, 11.VII.1958 and 19.VI.1958 [two samples], leg. det. J. PRÓSZYŃSKI" — 1 ♂, 1 ♀ — IZ PAN-Warszawa.

The distribution of this species appears to be very wide but it has been collected from a few localities only and in a small number of specimens. Known from France (Digne in Department Basses-Alpes and in Neudorf, Alsace — according to DE LESSERT 1910; also Haute-Savoie), Switzerland (Richelien near Genève and Lavigny in Vaud), West Germany (Baden, Rhineland), Northern Italy, Yugoslavia (Bakar near Rijeka and a few other localities), Hungary,

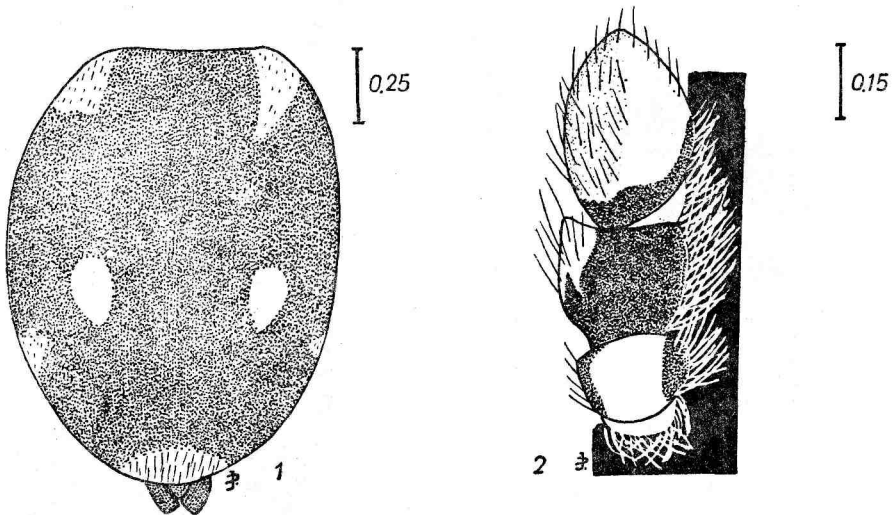
<sup>1</sup> Obsolete names "*illibatus*" and "*inaequalipes*" have priority over "*penicillatus*" which, as commonly used, should be retained. The proposal to that effect shall be submitted to the International Commission on Zoological Nomenclature.

<sup>2</sup> SIMON (1868: 541) mentions only single specimen of that species collected by KARPIŃSKI nearby Kiev, Ukraine, that specimen is erroneously labelled "Polonia" — cf. explanation of an identical mistake of SIMON in PRÓSZYŃSKI 1971: 233.

Austria, Poland, Southern European part of the USSR (Kiev, Crimea), China (South Kansu) and Japan. The biology is almost unknown. The species was usually collected from sun exposed sandy or rocky ground, also on shrubs in these places. Adults collected in summer but DE LESSERT quotes 1 ♀ collected in December.

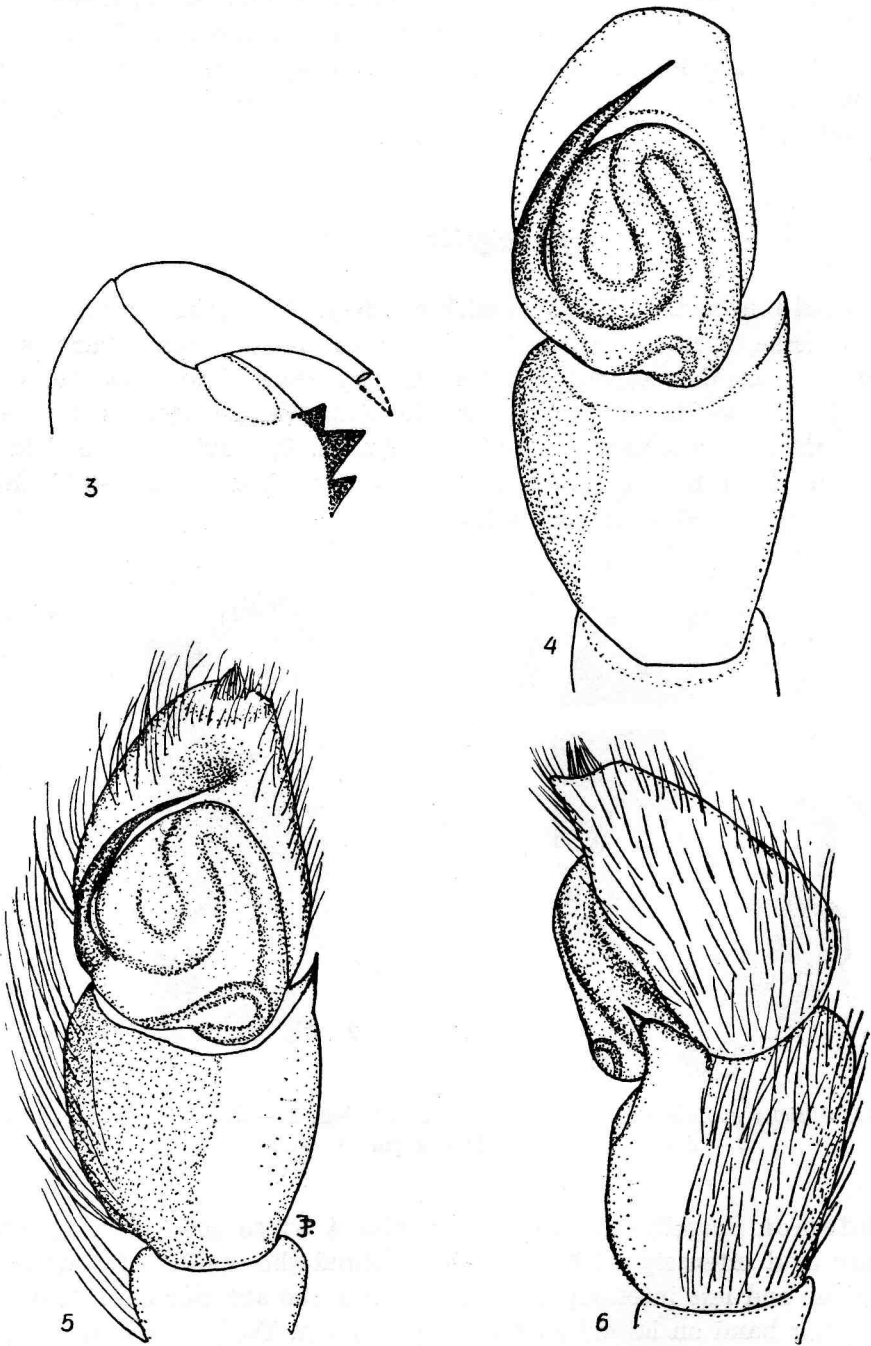
#### Description of male

Cephalothorax dark brown with eye field still darker and covered with colourless setae, there are traces of white setae below lateral margins of eye field. Eyes I median surrounded sparsely by short fawnish setae. Clypeus narrow, face type II. Length of cephalothorax (measurements of the type of *S. clavator* and a Kroczyce specimen) 2.24–1.47, length of eye field 0.81–0.63, width of eye field I 1.35–1.02, width of eye field III 1.26–0.75. Ratios: *a* 0.36–0.43, *b* 1.07–1.05, *c* 0.60–0.62.

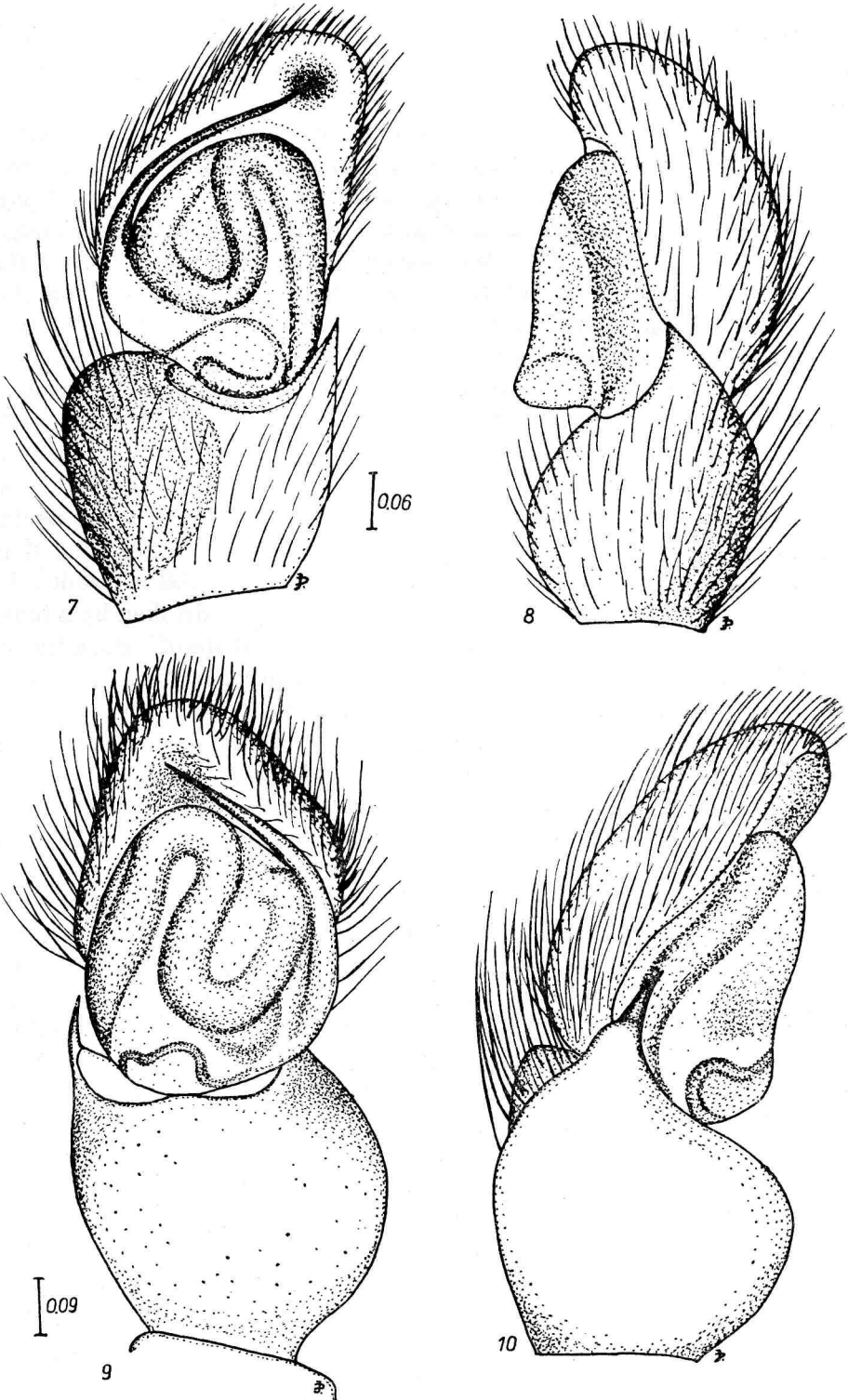


Figs. 1–2. *Sitticus penicillatus* (SIMON, 1875). Coloration. 1 – dorsal surface of abdomen; 2 – dorsal surface of three segments of pedipalps.

Abdomen dorsally blackish-brown with 4 white spots (fig. 1) – 2 medium size oval intensely white spots just behind the middle of abdomen and 2 triangular and less intensely white spots near the anterior end. Also, a whitish irregular band on lateral surfaces of abdomen. Dark brown areas covered with dark brown setae, white areas with white setae. Ventrally brownish with paler lung books and a narrow area in front of spinnerets. Length of abdomen 2.24–1.50.



Figs. 3-6. *Sitticus penicillatus* (SIMON, 1875). 3 - cheliceral dentition; 4-6 - male copulatory organ, ventral and lateral views: 4 - holotype of *S. patellidens* BÖSENBERG et STRAND, 1906, 5-6 - German specimen.



Figs. 7-10. *Sitticus penicillatus* (SIMON, 1875), male copulatory organ — ventral and lateral views: 7-8 — Hungarian specimen, 9-10 — holotype of *S. clavator* SCHENKEL, 1935.

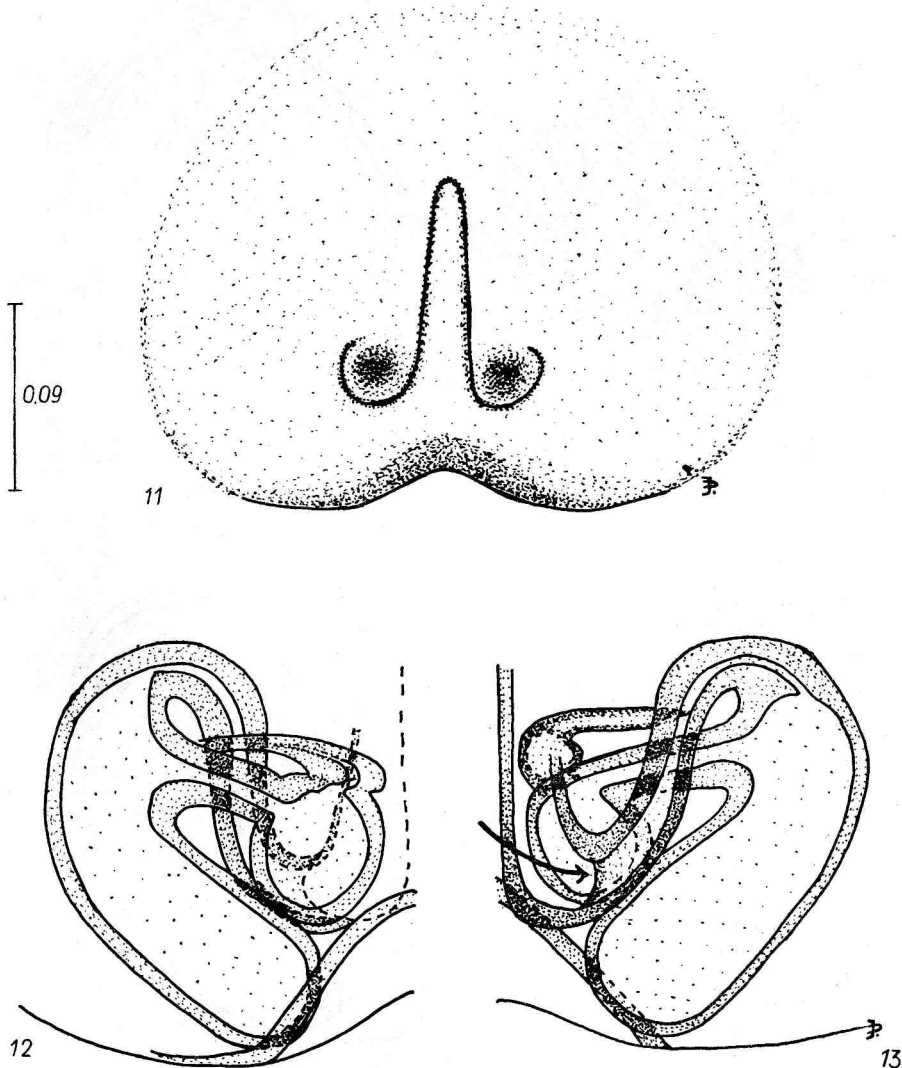
Chelicerae dark brown anteriorly, posteriorly yellowish with typical *Sitticus* dentition (fig. 3). Sternum brown, coxae yellowish-grey. Labium and maxillae dark brown, white tipped.

Pedipalps yellowish with dark brown tibia and basal part of tarsus — that darker area covered with dark setae, while remaining parts, as well as dorsal edge of tibia and tarsus, covered with dense brush of long white setae (fig. 2). That pattern is very characteristic for the European specimens and permits to separate them from the rather similar species *S. saltator* (O. P.-CAMBRIDGE, 1868). Presence of this character was not checked on Asiatic specimens and needs confirmation on fresh material. Another important character is size and swelling of pedipalpal tibia — egg-shaped and longer than patella, terminated by a very thin and short semitransparent apophysis (figs. 4–10). It can be mistaken with the tibia in *S. saltator* which is somewhat less swollen, and has a more pronounced apophysis — proper evaluation of these differences requires experience. Pedipalpal tibia in *S. „patellidens”* is somewhat intermediate between these two and it is advisable to check again the characters of Japanese specimens on fresh material. BÖSENBERG and STRAND (1906) described an „apophysis” on patella of *S. „patellidens”* which I was unable to find on their specimen. They were presumably mistaken by a bunch of glued setae which in the meantime have fallen out. The shape of bulb and stylus in *S. penicillatus* is given on figs. 4–10 and is rather like that in *S. saltator*.

Legs (described from a fresh specimen from Poland, these in Asiatic specimens require second examination). The best distinguishing characters are supplied by coloration and setae of tibia I and basal half of metatarsus I: dark brown and with scarce and indistinct dark setae in *S. penicillatus*, intensely black with dense brush of long and very conspicuous black setae in *S. saltator*. Tarsus I yellowish, patella and femur I dark brown with somewhat paler dorsal surfaces. Femora II and III with two blackish brown rings on lateral surfaces, remaining parts of these segments pale yellowish or fawnish. Patellae II–III and tibiae II–III with two darker rings, metatarsi II–III with one dark ring basally, tarsi II–III yellowish. Femur IV dark brown with paler brown area in middle, patella and tibia IV brown, metatarsus and tarsus IV yellowish with darker basal areas. Length of segments of legs (measurements in following order: 1 — type of *S. clavator*, 2 — type of *S. patellidens*, 3 — „Rheinprovintz” specimen, 4 — Kroczyce specimen, I did not calculate the mean and variation from it in order to show differences between these specimens): I 0.78–0.54–0.54–0.46 + 1.12–0.90–0.78–0.67 + 1.44–1.20–1.14–0.75 + + 1.17–0.84–0.78–0.60 + 1.80–1.35–1.26–0.90, II 0.54–?–0.36–0.33 + 0.84–?–0.54–0.40 + 0.96–0.60–0.54–0.42 + 0.90–0.54–0.54–0.37 + 1.26–0.90–0.81–0.58, III 0.60–?–0.36–0.36 + 0.78–?–0.54–0.45 + 0.63–0.54–0.48 – 0.37 + 0.63–0.42–0.42–0.36 + + 1.17–0.90–0.72–0.63, IV 0.72–0.60–0.54–0.37 + 1.14–0.84–0.72–0.72 + 1.26–1.20–1.02–0.78 + 0.76–0.66–0.30–0.46 + 1.80–1.53–1.44–1.20. Ratio  $\bar{d}$  2.00–2.22–2.12–2.08.

## Description of female

The external appearance of the female seems to be singularly devoid of any characteristic marks. Cephalothorax brownish with darker eye field, covered with sparse short colourless or whitish setae. Carapace somewhat swollen behind eye field. Abdomen brownish-grey with indistinct darker area in middle. Posterior end of abdomen and lateral surfaces slightly paler. Ventral surface with large square greyish area surrounded by whitish-yellow margin.

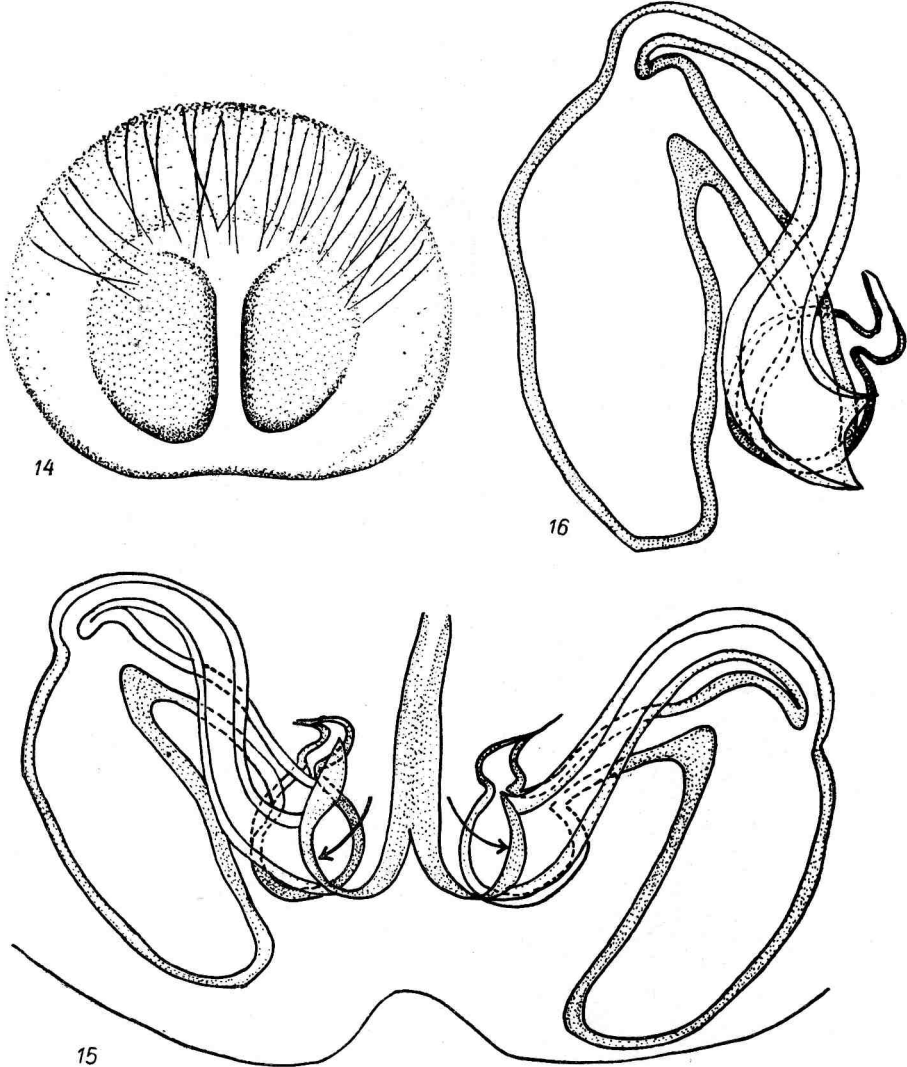


Figs. 11-13. *Sitticus penicillatus* (SIMON, 1875), Hungarian specimen. Epigynum before and after maceration (ventral and dorsal view on left spermatheca).



Chelicerae fawnish with characteristic dentition. Labium and maxillae yellowish-fawn, white tipped. Sternum fawn with metallic gleam. Legs I–II fawnish, III–IV yellowish with indistinct greyish stripes.

The only characteristic mark is epigynum and its internal structure. External appearance of epigynum is shown on fig. 11 and is characterized by presence of a very narrow median ridge and two small round depressions posteriorly, sometimes also spermathecae can be seen through semitransparent wall and that complicates appearance of epigynum. Fig. 14 shows somewhat



Figs. 14–16. *Siticus penicillatus* (SIMON, 1875) – holotype of *Attus inaequalipes* SIMON, 1868. Epigynum before and after maceration (14–15); 16 – right spermatheca and copulatory canal.

atypical drawing of epigynum, due perhaps to some drawing error, I cannot check it again but the internal structure of it (fig. 15) is perfectly normal. The spermathecae and copulatory canals are also shown on figs. 12-13 and 16.

Owing to lack of external characters, identification of the immature type of *Attus illibatus* is somewhat hypothetic. It is, however, a most probable solution.

Measurements (1 — specimen from Kroczyce, 2 — and 3 — specimens from W. KULCZYŃSKI's collection). Length of cephalothorax 1.80-1.65-1.80, length of eye field 0.66-0.67-0.67, width of eye field I 1.14-1.12-1.20, width of eye field III 1.15-1.11-1.20. Ratios: *a* 0.37-0.41-0.37, *b* 0.99-1.01-1.00, *c* 0.58-0.60-0.56. Length of abdomen 2.17-1.95-2.40. Length of segments of legs: I 0.42-0.37-0.40 + 0.46-0.42-0.51 + 0.60-0.54-0.60 + 0.57-0.52-0.57 + 0.87-0.87-0.94, II 0.36-0.33-0.37 + 0.48-0.39-0.45 + 0.49-0.45-0.48 + 0.49-0.49-0.52 + 0.79-0.75-0.82, III 0.37-0.36-0.40 + 0.55-0.49-0.52 + 0.52-0.42-0.51 + 0.45-0.37-0.43 + 0.81-0.75-0.81, IV 0.52-0.48-0.52 + 0.90-0.84-0.90 + 1.12-1.05-1.20 + 0.63-0.60-0.60 + 1.57-1.47-1.60. Ratio *d* 2.50-2.50-2.35.

### *Sitticus absolutus* GERTSCH et MULAİK, 1936

*Sitticus absolutus* GERTSCH et MULAİK, 1936: 19,

*Sitticus callidus* GERTSCH et MULAİK, 1936: 20, *syn. n.*,

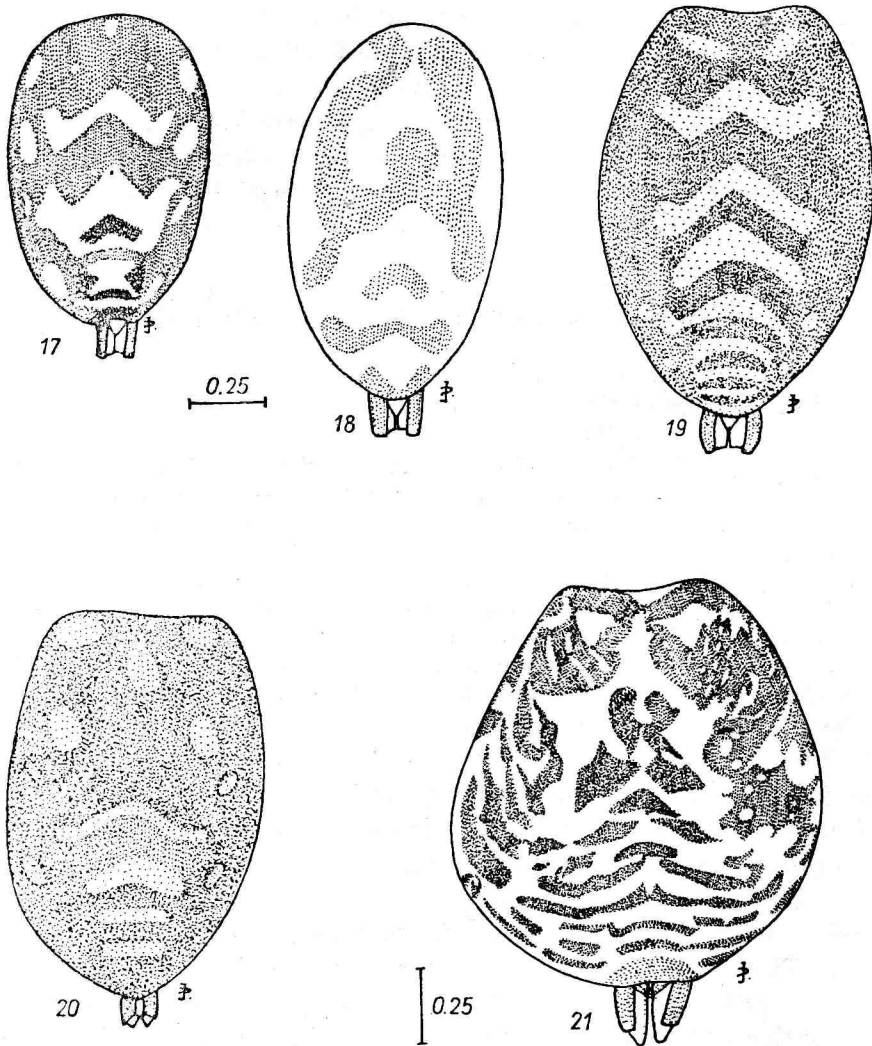
*Sitticus hansii* SCHENKEL, 1951: 44-45, *syn. n.*

Material: "♂, ♀ *Euophrys absolutus* GERTSCH paratypus. 10 mi. S Edinburg, Texas, October 20, 1934, S. MULAİK coll" — 1 ♂, 1 ♀ paratypes — AMNH-New York; "*Sitticus absolutus* GERTSCH, Edinburg, Texas, Nov. 11, 1934 — ♂ paratype, Rutherford, det. GERTSCH" — 1 ♂ — paratype — MCZ-Harvard Univ.; *Sitticus absolutus* — 2 ♂♂ from Dallas, Texas — det. GERTSCH — MCZ-Harvard Univ. and 5 ♂♂, 7 ♀♀ from Texas (Edinburg, Llano, San Antonio, Comanche and Harlington) and Utah (Salt Lake City) — det. J. PRÓSZYŃSKI — AMNH-New York; 3 mi. NW of Brownsville, Texas — det. J. PRÓSZYŃSKI — MCZ-Harvard Univ.; "♂, ♀ *Sitticus callidus* GERTSCH, det. GERTSCH, Calif. Pt. Molate, Richmond, POWELL collector" — 1 ♂, 1 ♀ — AMNH-New York; "*Sitticus hansii* SCHENKEL 1951", "Holotypus", "2225", "Berkeley Hills" [Berkeley Hills, Cal., 23.V.1939] — 1 ♂ — holotype — NHM-Basel.

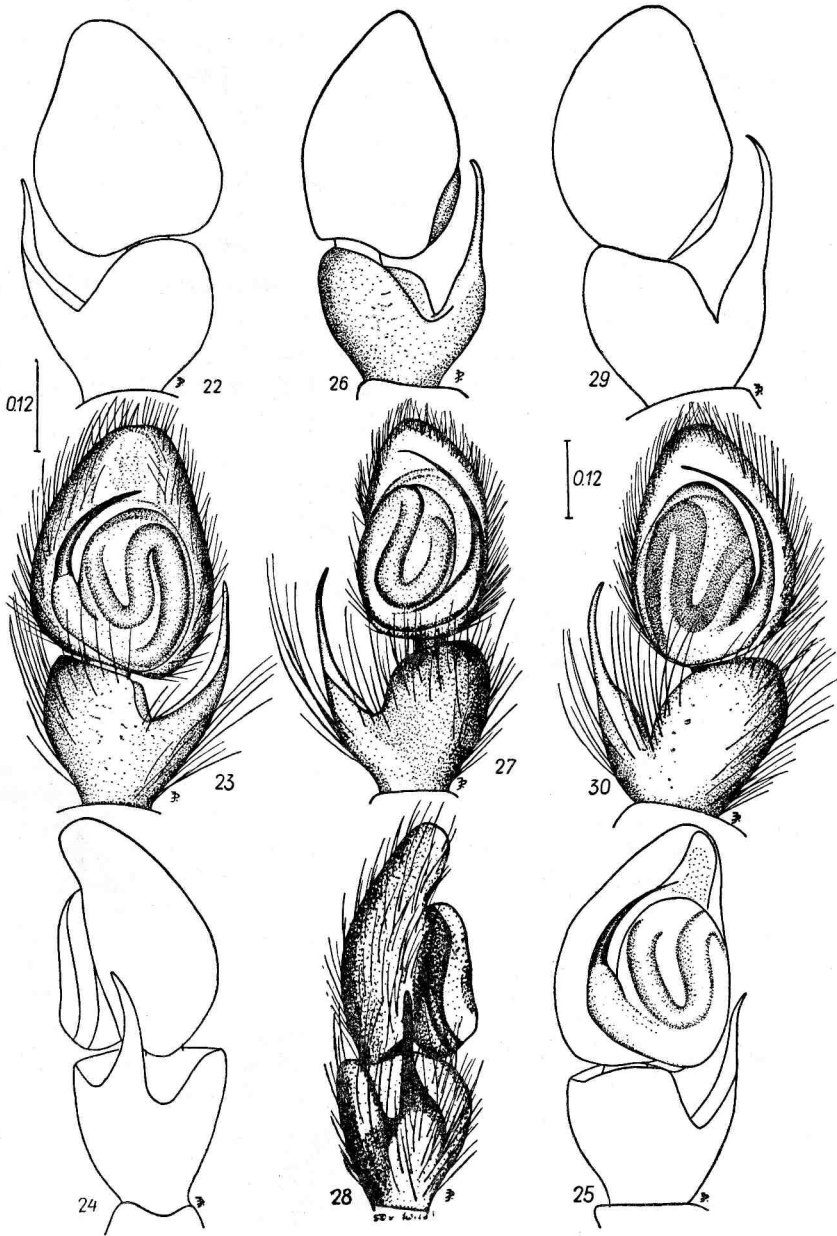
The structure of the copulatory organs in studied specimens is quite variable, especially in females, and it is impossible to tell yet where an individual variation range ends and a different species begins. The study of males is particularly difficult because small change of a position of a copulatory organ when examined under a stereo-microscope distorts proportions of the tibia and its apophysis. This may cause serious errors in evaluation of characters of the specimen — as illustrated on figs. 31-34. Due to scarcity of specimens available for examination and lack of informations on ecology and biology of *S. absolutus* my conclusions on this species can be only considered as preliminary hypotheses and require further check.

The examined specimens came from three states in the South and West

USA: Texas, California and Utah, a triangular area with distances between extreme collecting points amounting to approximately 2000, 1800 and 1000 kilometers in the straight line. Some 21 specimens are known from this large area (although listed above material does not contain all known specimens, there are not many more left in collections in the USA) — that certainly is neither a sufficient nor representative sample of populations of this species. The only biological data I know are collecting days written on labels — basing on these I can state that adult specimens appear in March, end of May, July and from September 24th till December 1st.



Figs. 17–21. Abdominal coloration in *Sitticus absolutus* GERTSCH et MULAİK, 1936 and *Sitticus cursor* BARROWS, 1919. 17–19 — *S. absolutus*: 17 — male, 18 — juvenile, 19 — female. 20 — 21 — *S. cursor*: 20 — male, 21 — female.

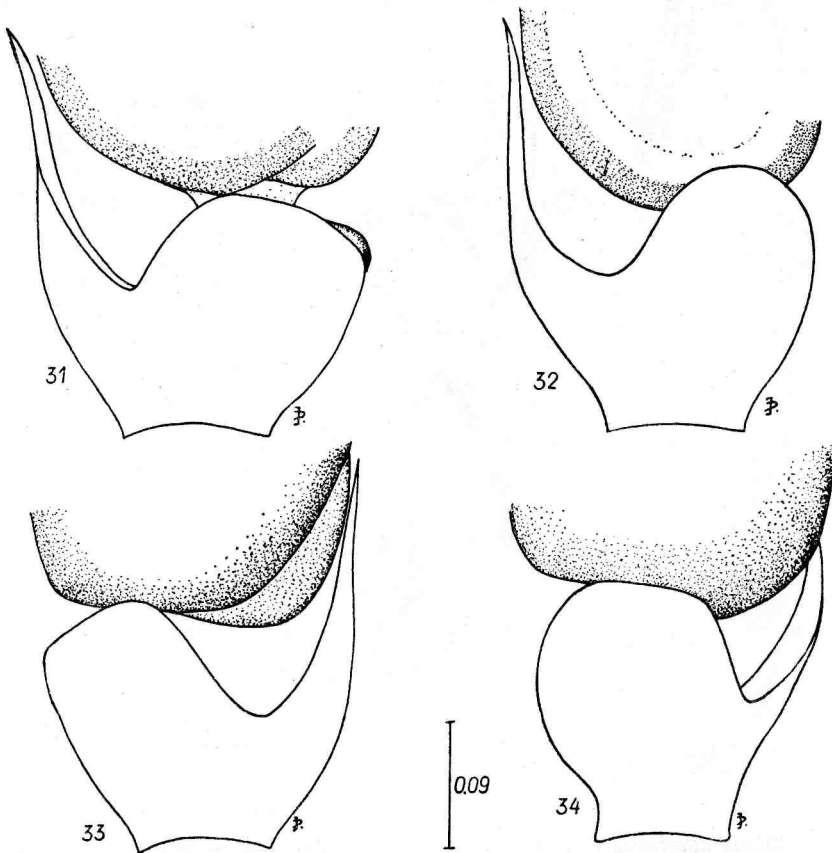


Figs. 22-30. *Sitticus absolutus* GERTSCH et MULAİK, 1936. Male copulatory organ, ventral, dorsal and lateral views: 22-25 - paratype of *S. absolutus*, 26-28 - holotype of *S. hansii* SCHENKEL, 1951, 29-30 - *S. callidus* GERTSCH et MULAİK, 1936.

## Description of male

Cephalothorax dark brown to fawnish-brown, eye field darker, usually black, covered with whitish or colourless fine setae. Length of cephalothorax (smallest specimen, mean of all specimens and biggest specimen) 1.09–1.23–1.56, length of eye field 0.44–0.49–0.65, width of eye field I 0.71–0.79–1.00, width of eye field III 0.76–0.83–1.02, height 0.49–0.53–0.61. Ratios: *a* 0.34–0.40–0.43, *b* 0.91–0.95–0.98, *c* 0.56–0.62–0.67.

Abdomen dorsally brownish-grey with indistinct pale spots arranged in a variable pattern (fig. 17). Coloration in young specimens much paler and consisting of grey spots on whitish background (fig. 18). I assume that coloration in alive or freshly killed specimens is much more contrasted. Abdomen ventrally whitish with three indistinct darker longitudinal lines in some specimens. Length of abdomen 0.92–1.21–1.84.



Figs. 31–34. How to make a *S. callidus* from a *S. absolutus*. Distortions in proportions and shape of male pedipalpal tibia and tarsus due to small position change under microscope — all drawings made from the same palpus: 31–32 — ventral view, 33–34 — dorsal view.

Sternum brownish or yellowish covered with fine white setae. Coxae fawnish with anterior one darker, dorsal surfaces dark. Chelicerae brown anteriorly, posteriorly pale fawn, inner anterior margin with three teeth, posterior one toothless.

Pedipalps dark brown, femur paler with a brush of white setae on dorsal surface. Shape of male copulatory organ as shown in figs. 22–30. The main difference between *S. absolutus* and *S. callidus* is shape and proportions of pedipalpal tibia, but these change considerably with the slightest turn of tibia in relation to the optical axis of a stereo-microscope — as illustrated in figs. 31–34. As the basic plan of male copulatory organ in types of *S. absolutus* and *S. callidus* is essentially the same, I assume that these individuals are two extremes of variation of *S. absolutus*.

Legs fawnish or brownish with darker rings, anterior surfaces of tibia and femur I darker. Length of segments of legs: I 0.27–0.33–0.45 + 0.31–0.39–0.55 + 0.36–0.49–0.72 + 0.34–0.43–0.55 + 0.48–0.68–0.90, II 0.24–0.29–0.35 + 0.27–0.31–0.42 + 0.27–0.33–0.41 + 0.27–0.31–0.40 + 0.46–0.53–0.65, III 0.25–0.30–0.35 + 0.27–0.35–0.47 + 0.29–0.32–0.37 + 0.24–0.28–0.37 + 0.44–0.53–0.70, IV 0.31–0.40–0.50 + 0.46–0.52–0.67 + 0.53–0.63–0.75 + 0.36–0.38–0.50 + 0.76–0.90–1.10. Ratio  $\bar{d}$  1.82–1.99–2.26.

#### Description of female

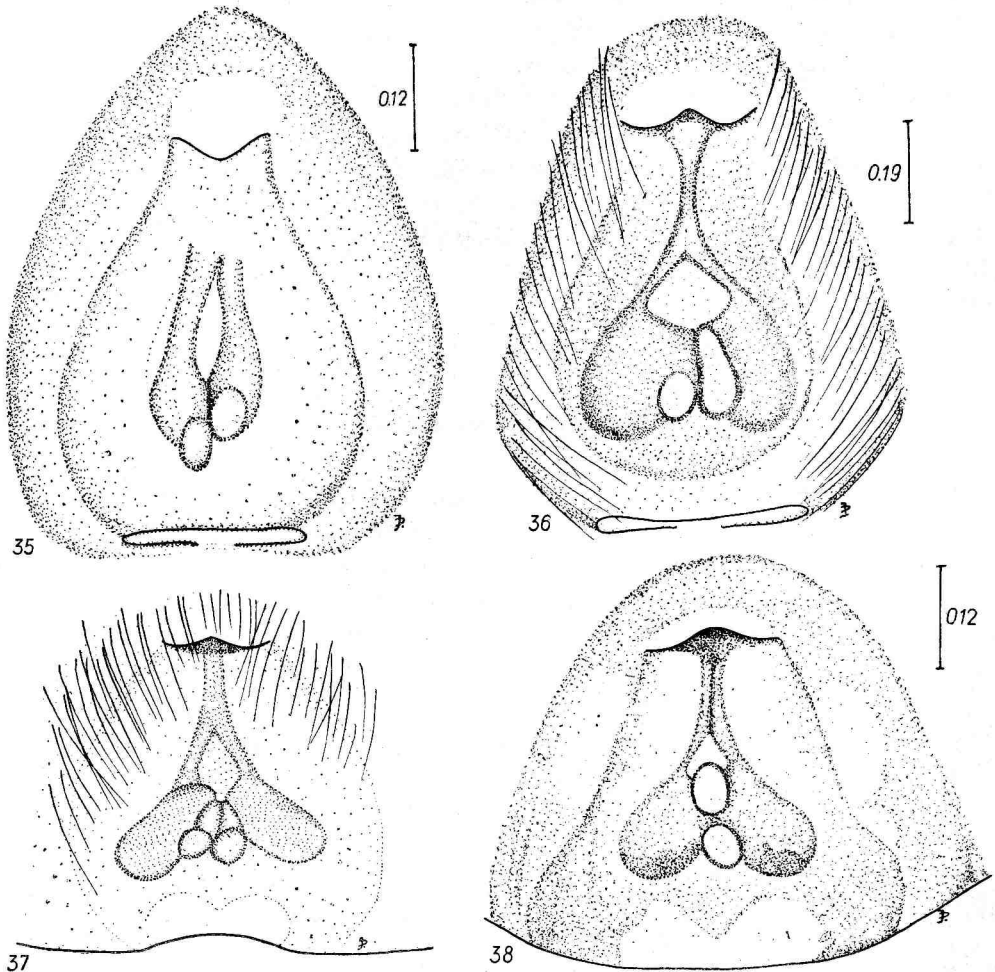
Cephalothorax brownish with margins of eye field blackish or black, thorax slightly paler brown. Covered with very fine sparse whitish setae. There is a row of brown bristles above eyes I which are also surrounded by short thick setae: white above and beneath eyes, orange laterally. Face type II. Clypeus narrow and bald. Length of cephalothorax (smallest, mean and biggest) 1.19–1.45–1.87, length of eye field 0.49–0.59–0.77, width of eye field I 0.76–0.93–1.22, width of eye field III 0.85–0.89–1.30, height 0.51–0.53–0.56. Ratios:  $a$  0.38–0.41–0.44,  $b$  0.92–0.95–0.98,  $c$  0.57–0.64–0.67,  $h$  0.37–0.42–0.45.

Abdomen dorsally brownish with mosaic pattern of darker spots (fig. 19), covered with very fine and inconspicuous colourless setae and more sparsely with stouter brown and white setae. Ventrally brownish or yellowish with paler longitudinal streak sometimes divided into three narrow stripes. Length of abdomen 1.19–1.81–2.47.

Epigynum very inconspicuous, devoid of any external sculpture or other marks, triangular in shape. Copulatory canals and spermathecae visible through semitransparent wall as a set of variable and confusing brownish spots (figs. 35–38, 43). Copulatory canals short, straight and relatively broad, they fuse usually near the copulatory opening (in difference to *S. cursor* in which they

fuse just in front of spermathecae). Spermathecae consist of three chambers directed in various and varying directions (figs. 39–42, 44). Different epigynum is shown on figs. 43–44, I identify that specimen as *S. absolutus* but it needs further considerations.

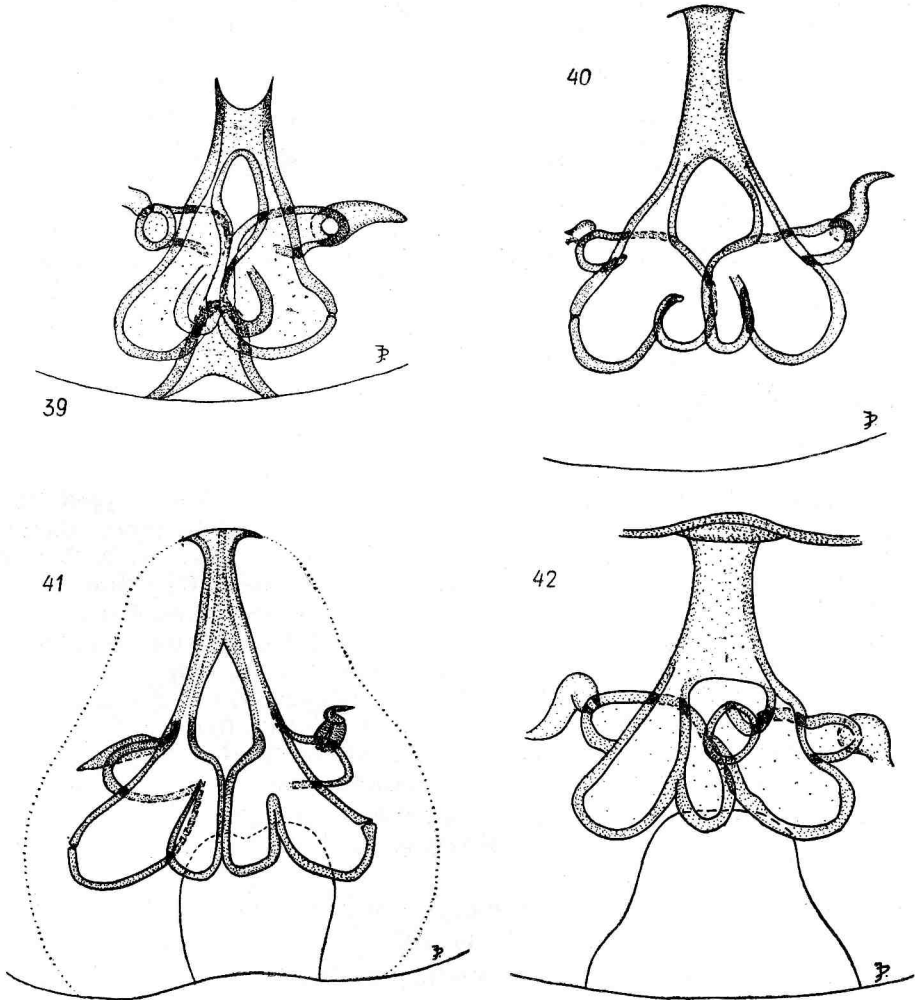
Sternum brownish or yellowish covered with fine whitish setae. Coxae greyish or yellowish, posteriorly paler, covered with whitish setae. Maxillae and labium fawnish or brownish, white tipped. Chelicerae fawnish with typical *Sitticus* dentition. Pedipalps yellowish with darker brown femur,



Figs. 35–38. *Sitticus absolutus* GERTSCH et MULAİK, 1936. Variation in female epigynum. 35 – *S. absolutus* – paratype; 36 – *S. callidus* – specimen from California; 37 – Salt Lake City specimen; 38 – Idaho specimen.

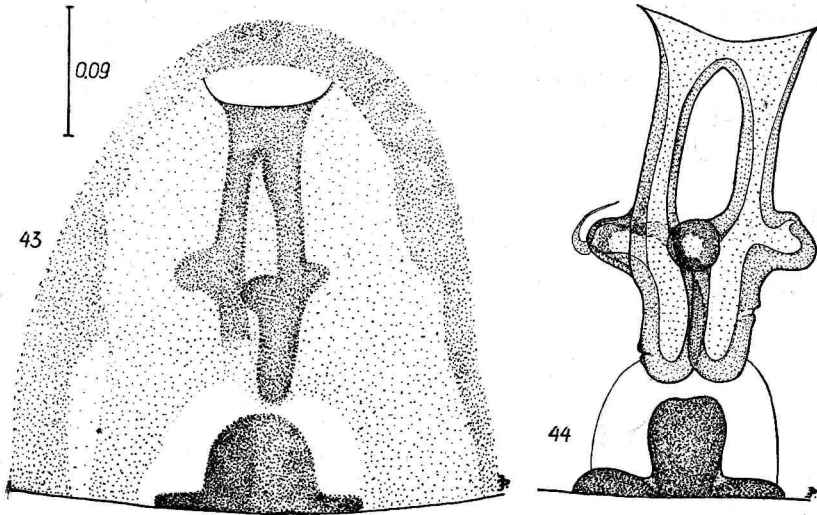
dorsal surface of tibia and a part of tarsus. The darker areas are quite variable in shape and size.

Legs yellowish or brownish with darker rings on femora I-IV, tibiae I-IV, tarsi III-IV and metatarsi III-IV. Length of segments of legs: I 0.22-0.32-0.45 + 0.25-0.36-0.50 + 0.30-0.43-0.62 + 0.31-0.41-0.57 + 0.49-0.67-0.95, II 0.22-0.30-0.42 + 0.25-0.34-0.47 + 0.27-0.36-0.52 + 0.29-0.37-0.47 + 0.44-0.60-0.82, III 0.24-0.34-0.47 + 0.27-0.40-0.60 + 0.27-0.38-0.50 + 0.25-0.34-0.47 + 0.46-0.63-0.85, IV 0.34-0.46-0.59 + 0.49-0.69-0.95 + 0.63-0.85-1.12 + 0.37-0.46-0.62 + 0.90-1.10-1.45. Ratio *d* 2.10-2.26-2.57.



Figs. 39-42. *Sitticus absolutus* GERTSCH et MULAİK, 1936. Variation in internal structure of epigynum: 39 - paratype of *S. absolutus*, 40 - *S. callidus*, 41 - Salt Lake City specimen, 42 - Idaho specimen.





Figs. 43–44. An atypical specimen of *Sitticus absolutus* GERTSCH et MULAİK, 1936 or a different species? A Llano, Texas specimen, epigynum before and after maceration.

### *Sitticus cursor* BARROWS, 1919

*Sitticus cursor* BARROWS, 1919: 359,

*Sitticus floridanus* GERTSCH et MULAİK, 1936: 20, *syn. n.*<sup>1</sup>,

*Sitticus cursor*: BONNET, 1958: 4071.

Material: "*Sitticus cursor* BARROWS F – E. B. B" = "321 *Neon sanfordi* PECKHAM new, Neb. Omaha, G. W. and E. G. PECKHAM coll." – 1 ♂ – MCZ-Harvard Univ.; "*Sitticus cursor* BARROWS" = "2675 *Icius cinctipes?* BANKS, N. C. Canton, Nathan BANKS coll." – 2 ♂♂ – MCZ-Harvard Univ.; "*Sitticus cursor* BARROWS, ♂ Charleston, . . . June 29, 19 W. M. BARROWS" – 1 ♂ – MCZ-Harvard Univ.; "*Sitticus cursor* BARROWS . . ." = "525 *Neon* . . . new G. W. and E. G. PECKHAM coll" – 1 ♂ – MCZ-Harvard Univ.; "*Sitticus cursor* BARROWS ♂ F. E. B. B" "Ark. Berryville 30 May, 1939 WILSON" – 1 ♂ – MCZ-Harvard Univ.; "Ala., Baldwin Co. Fish River, 14 July 1930 W. S. CREIGHTON coll." "*Sitticus cursor* BARROWS det. J. PRÓSZYŃSKI" – 1 ♀ – MCZ-Harvard Univ.; "*Sitticus floridanus* ♀ GERTSCH and MULAİK, det. B. CUTLER" "N. Y. Bearfort Mt., Orange Co., August 1959 leg. J. HALLAN" – 1 ♀ – coll. B. CUTLER-St. Paul, Minn. Dr. B. CUTLER has also informed me on another specimen, a male, collected in Iowa, Wodbury Co., 4 miles ENE of Hornick – sweeping on upland prairie on bluff, June 14, 1970.

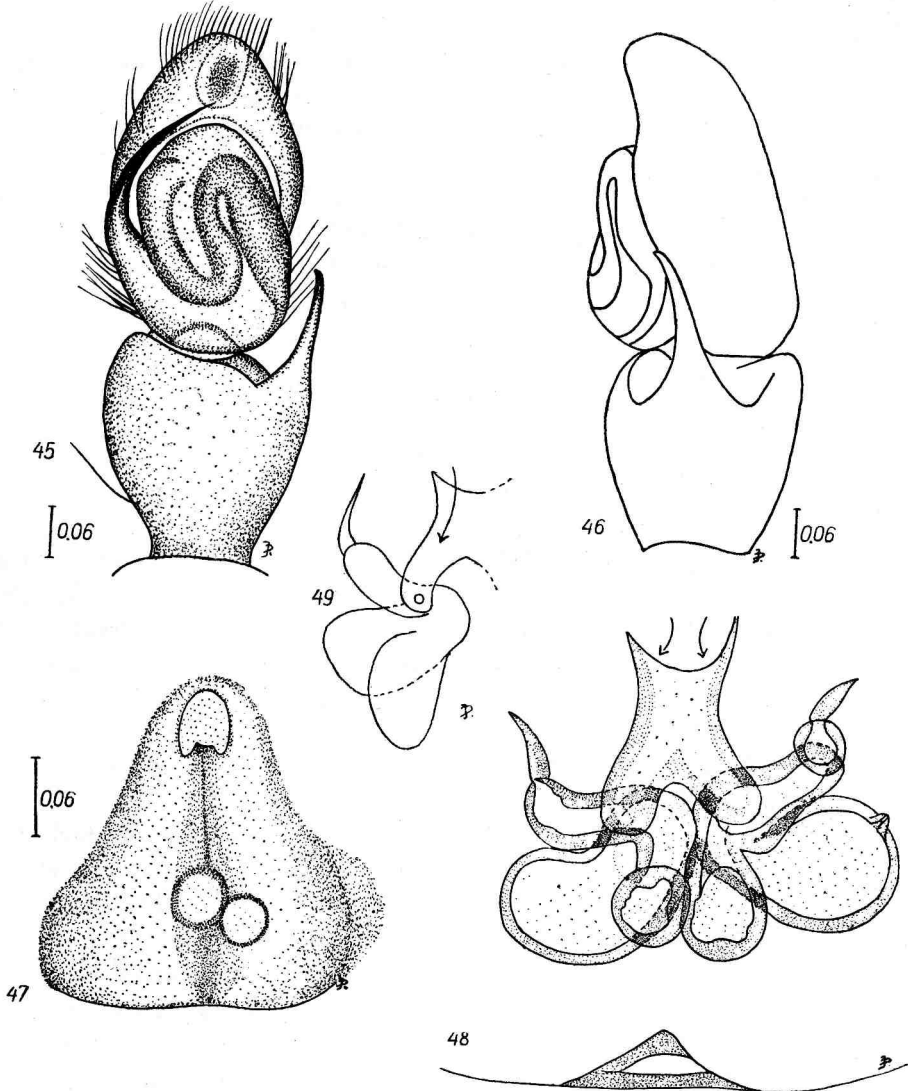
Matching of the male with the female described here needs further confirmation, especially considering that the differences between this female and that of *S. absolutus* are not entirely convincing. Biology of the species is almost unknown. Label data indicate that adult specimens appear from end of May till August. Presumably occurs on grasses (see CUTLER's remark quoted above).

<sup>1</sup> The opinion that *S. floridanus* is conspecific with *S. cursor* has been communicated to me by Dr. W. J. GERTSCH in a private letter and I follow it after him.

The specimens studied came from Midwest, East and South East states of the USA but available data are insufficient to indicate precise geographical range of the species.

### Description of male

Cephalothorax pale chestnut-brown covered with short and adpressed white setae, eye field slightly darker with lateral margins almost black. Length of cephalothorax (smallest, mean and biggest specimen) 1.44–1.50–1.61, length



Figs. 45–49. *Sitticus cursor* BARROWS, 1919. Male and female copulatory organs, the latter before and after maceration, 49 – a diagram of chambers of a spermatheca, lateral view.

of eye field 0.54–0.59–0.63, width of eye field I 0.90–0.95–1.02, width of eye field III 0.93–0.99–1.07, height 0.63–0.67–0.71. Ratios: *a* 0.38–0.39–0.41, *b* 0.93–0.95–0.97, *c* 0.60–0.62–0.65, *h* 0.42–0.44–0.47.

Abdomen dorsally fawnish-grey with indistinct pattern of paler and darker spots, as in fig. 20. Ventrally fawnish-grey with yellowish-fawn spots. Length of abdomen 1.21–1.29–1.35.

Sternum pale brown with thin darker margin covered with fine white setae. Maxillae fawnish-grey, white tipped, external anterior angle of maxilla elongate and protruding anteriorwards. Labium chestnut-brown, white tipped. Chelicerae pale fawn with typical dentition.

Pedipalpal tarsus and tibia covered densely with thick grey setae, and with a distinct row of dense white setae on dorsal surface of femur. Copulatory organ resembles that of *S. absolutus* from which it differs in having much shorter tibial apophysis (figs. 45–46).

Legs fawn with darker brown rings, covered with white setae. Length of segments of legs: I 0.32–0.38–0.42 + 0.34–0.45–0.57 + 0.41–0.50–0.72 + 0.29–0.42–0.54 + 0.63–0.74–0.90, II 0.33–0.36–0.39 + 0.34–0.42–0.46 + 0.39–0.43–0.48 + 0.29–0.39–0.42 + 0.63–0.69–0.75, III 0.33–0.36–0.39 + 0.39–0.43–0.44 + 0.32–0.37–0.41 + 0.31–0.33–0.36 + 0.58–0.65–0.73, IV 0.39–0.45–0.51 + 0.58–0.63–0.71 + 0.68–0.78–0.85 + 0.37–0.45–0.51 + 0.95–1.12–1.27. Ratio *d* 2.00–2.08–2.17.

#### Description of female

Cephalothorax pale greyish-brown with darker eye field and blackish-brown area behind eyes I, surroundings of eyes III blackish-brown. Eyes I surrounded with whitish and yellowish setae. Clypeus very narrow. Length of cephalothorax (1 figure — Bearfort Mt., 2 — Fish River specimen) 1.48–1.44, length of eye field 0.65–0.54, width of eye field I 1.00–1.02, width of eye field III 1.04–1.09.

Abdomen dorsally with indistinct pattern of mosaic dark spots — as in fig. 21. Length of abdomen ?–1.27.

Epigynum resembles that of *S. absolutus*, the pattern of dark brown spots of internal structures visible through semitransparent wall is misleading and cannot be used as a taxonomic character (fig. 47). Copulatory canal broad and common for both spermathecae. Spermathecae consist of three chambers as in *S. absolutus* from which they differ in proportions (figs. 48–49). The value of these differences should be checked, however, on larger series of females of both species.

Sternum greyish-fawn, coxae fawnish, labium and maxillae fawn, white tipped. Chelicerae pale fawnish with typical dentition. Pedipalps brownish with patella and femur dorsally yellowish.

Legs yellowish with darker rings. Length of segments of legs: I 0.34–0.34+0.36–0.37+0.46–0.46+0.46–0.46+0.70–0.68, II 0.31–0.29+0.36–0.32+0.37–0.36+0.41–0.39+0.61–0.59, III 0.37–0.36+0.39–0.37+0.34–0.36+0.34–0.32+0.58–0.61, IV 0.48–0.42+0.65–0.63+0.75–0.80+0.49–0.44+1.07–1.10. Ratio  $\bar{d}$  2.20–2.24.

### *Sitticus longipes* (CANESTRINI, 1873)

*Attus longipes* CANESTRINI, 1873: 48,

*Sitticus longipes*: SIMON, 1901: 580,

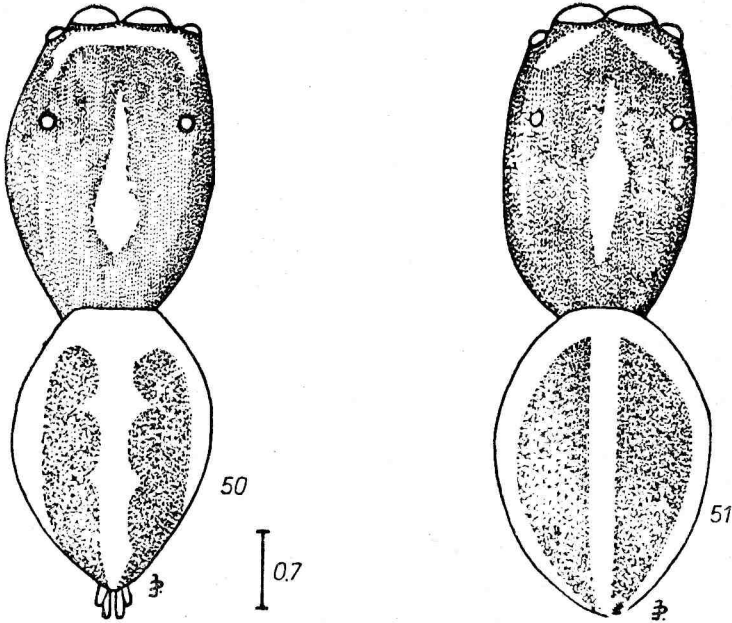
*Sitticus muralis* SCHENKEL, 1925: 316.

Material: "*Sitticus longipes* (CANESTRINI) 934 c Saas Tal" – ♀♀, ♂♂ – coll. SCHENKEL, NHM-Basel; "*Attus longipes* CANESTRINI det. SIMON, dono SIMON 1875 – Alpi" – 1 ♀, 1 ♂ – coll. MCSN-Genova; "*Sitticus longipes* CANESTRINI – ATKINSON, Simplon" – 2 ♂♂ – coll. O. P.-CAMBRIDGE, Dept. Zool.-Oxford.

*S. longipes* is known only from Alps and occurs on sun exposed rocks from 2300 to 3500 m above the sea level. In France reported from two high mountain passes – Col Volgelaye and Col d'Allas located by SIMON (1937: 1256) in „Alpes du Dauphine et de la Savoie" but according to map rather in Basses-Alpes between Barcelonette and Digne. In Switzerland known from Canton Valais (a number of places in the mountains between Matterhorn, Monte Rosa and Simplon Pass) and Canton Grisons (Graubünden) from Lischanna 3100 m. In Italy reported from Mt. Stelvio area, west from Bolzano (KULCZYŃSKI 1887) and from Cima Chiadin – 2300 m (Carnia, NE Italy – CAPORACCO 1922), there are a few other reports from Italy without collecting locality given. I have not found any other reliable report on this species in the literature and KOLOSVÁRY's (1939: 338) remark on *S. longipes* living in the alpine zone of the Carpathian Mts. seems to be an error.

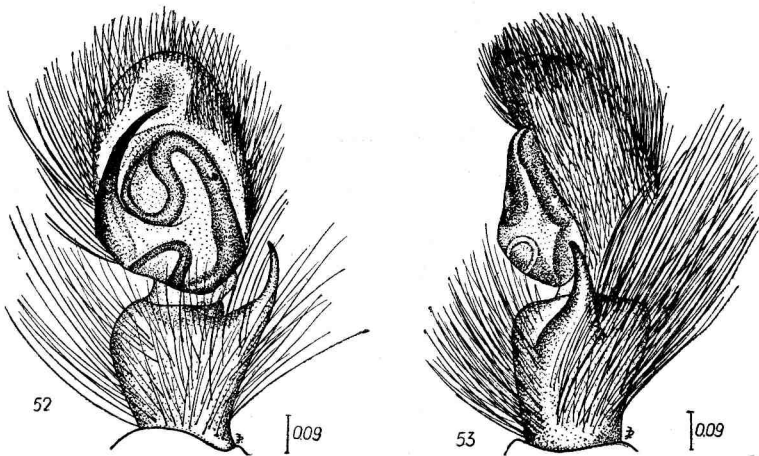
### Remarks on morphology

The external appearance of *S. longipes*, especially size and colouration (figs. 50–51), is so striking that it cannot be mistaken with any other *Sitticus* species. The structure of male copulatory organ is shown in figs. 52–53. It resembles that of *S. absolutus* and *S. cursor* in its basic outlines and differs from them mainly in size and length of tibial apophysis. Length of cephalothorax in male is 2.52, length of abdomen 2.80. Length of segments of legs (two specimens): I 0.90–0.77+1.53–1.49+2.10–1.96+1.62–1.26+2.24–2.10, II 0.72–0.66+1.02–0.84+0.96–1.08+0.96–0.90+1.44–1.35, III 0.66–0.66+0.87–0.84+0.72–0.90+0.72–0.63+1.35–1.17, IV 0.84–0.78+1.14–1.08+1.26–1.35+0.90–0.81+1.80–1.80. Ratio  $\bar{d}$  1.75–1.50.

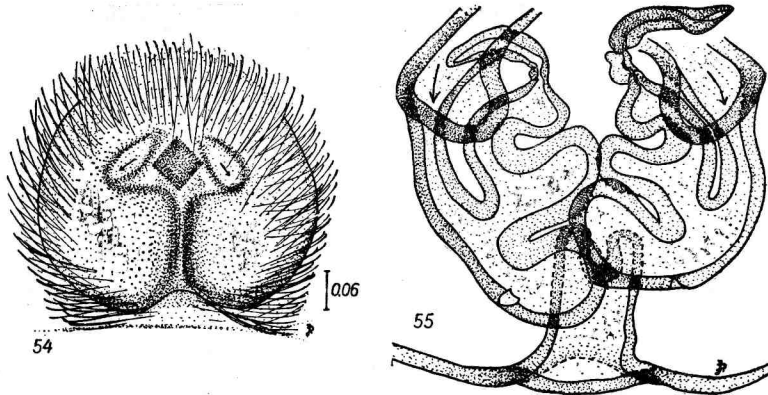


Figs. 50–51. *Sitticus longipes* (CANESTRINI, 1873). Colour pattern variation.

Female resembles male in colour pattern but is bigger and according to DE LESSERT (1910) can reach even 13 mm total length, length of cephalothorax 3.6 mm. The shape of epigynum is rather unusual for the genus — an oval sclerotized plate with a small anterior groove with separate copulatory openings separated by a diamond-shaped dark protuberance. Also, a median longitudi-



Figs. 52–53. *Sitticus longipes* (CANESTRINI, 1873). Male copulatory organ.



Figs. 54-55. *Sitticus longipes* (CANESTRINI, 1873). Female copulatory organs.

nal furrow running from the groove up to the posterior end of epigynum (fig. 54). Spermathecae consist of three irregular chambers with fertilisation canal attached to the anterior one — a structure resembling somewhat that in *S. cursor*. Short and broad copulatory canals join spermathecae at the point of junction of two posterior chambers of spermathecae (fig. 55). It seems that similarities in structure of copulatory organs of both sexes between *S. longipes* and *S. cursor* are significant enough to suggest relationships between these species; that tempting conclusion requires, however, further studies.

### *Sitticus mazorcana* CHAMBERLIN, 1920

Material: "*Sitticus mazorcana* CHAMB. Peru: Mazorca Id. 29 Dec., 1919. R. C. MURPHY. 525" — 1 ♂ — type — MCZ-Harvard Univ.

The species is known from Mazorca Island only, one of Guano Islands off the Peru coast, Lat. 11°25' S. The systematic position of the species is rather uncertain. The basic plan of copulatory organ suggests relationships with the *penicillatus* group, the cheliceral dentition is, however, not exactly typical for the genus *Sitticus*. The analogy to *S. terebratus* (CLERCK, 1758) suggested by CHAMBERLIN in the original description does not seem to be very convincing. Female is unknown.

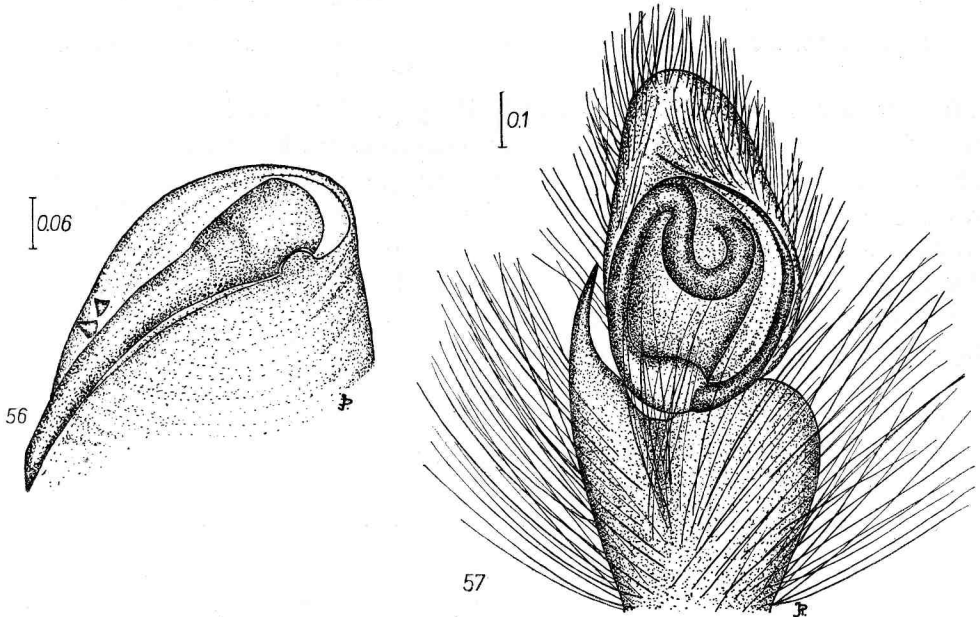
#### Description of male

Cephalothorax blackish-brown, eye field covered densely with short and adpressed white, yellow and grey setae. Anterior part of eye field greyish-yellow, posterior part intensely white. Thorax dark and bald now. Length of

cephalothorax 2.73, length of eye field 1.02, width of eye field I 1.58, width of eye field III 1.48. Ratio  $a$  0.31,  $b$  1.07,  $c$  0.65.

Abdomen dorsally greyish-black, covered densely with white long setae giving general white appearance, there are very indistinct and inconspicuous yellowish-grey spots arranged segmentally. Longer grey setae scattered sparsely over the abdomen. Ventrally whitish-grey. Length of abdomen 2.38.

Sternum dark brown, bald. Coxae greyish-brown with paler greyish-fawn spots. Labium and maxillae greyish-fawn, white tipped. Chelicerae with very long fang, posterior inner edge toothless, anterior one with two small teeth (fig. 56).



Figs. 56–57. *Sitticus mazrocenus* CHAMBERLIN, 1920, holotype. Cheliceral dentition and male copulatory organ.

Pedipalps black with dense fur of white long setae on dorsal surfaces of segments. Tibia swollen and long with long and slightly bent apophysis. Bulbus resembles that in *S. absolutus* but has much longer stylus (fig. 57).

Legs. Femur I dark brown with two longitudinal white stripes on dorsal surface and a spot of white setae near the distal end. Femur II paler with two white longitudinal stripes separated by a narrow brown stripe. Distal half of femur III olive-grey, proximal one pale fawn. Femur IV similar to femur III but paler. Patella II olive-grey. Tibia, metatarsi and tarsi II–IV fawn. Tarsus–patella of legs I are missing. All segments covered densely with short white setae sprinkled with grey ones, general appearance of legs whitish. Length



of segments of legs: I — femur 1.14, II 0.72+0.87+0.78+0.84+1.44, III 0.78+1.02+0.90+0.78+1.53, IV 0.78+1.31+1.49+1.02+2.24. Ratio  $d$  1.65.

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<sup>1</sup> This paper was usually credited to Maria DAHL following BONNET's "Bibliographia araneorum". However, Messrs Gustav Fischer Verlag, Jena, the Editors of "Die Tierwelt Deutschlands" have explained recently that in fact it was Friedrich DAHL who wrote the paper and Maria DAHL has only made drawings to it. This information was very kindly communicated to me by Dr. Marie HARM, Dessau, in a private letter.



westlichen Provinzen Chinas, unter Leitung von Dr. Sven HEDIN und Prof. Sü PING-CHANG. *Araneae* gesammelt vom schwedischen Arzt der Expedition Dr. David HUMMEL 1927–1930. Ark. Zool., Stockholm, **29A**, 1, 314 pp., 110 ff.

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#### STRESZCZENIE

[Tytuł: Rewizja rodzaju *Sitticus* SIMON, 1901 (*Aranei*, *Salticidae*), III. *Sitticus penicillatus* (SIMON, 1875) i formy pokrewne]

Autor omawia morfologię, zmienność indywidualną, rozmieszczenie geograficzne oraz problemy systematyczne spokrewnionych ze sobą gatunków: palearktycznego *Sitticus penicillatus* (SIMON, 1875), stanowiącego ogniwo pośrednie z pokrewnymi grupami gatunków, alpejskiego *S. longipes* (CANESTRINI, 1873), nearktycznych *S. absolutus* GERTSCH et MULAİK, 1936 i *S. cursor* BARROWS, 1919 oraz neotropikalnego *S. mazorcanus* CHAMBERLIN, 1920. Autor synonimizuje kilka dotychczas używanych nazw.

#### РЕЗЮМЕ

[Заглавие: Ревизия рода *Sitticus* SIMON, 1901 (*Aranei*, *Salticidae*), III. *Sitticus penicillatus* (SIMON, 1875) и близкие формы]

Автор рассматривает морфологическое строение, индивидуальную изменчивость, географическое распространение и вопросы систематики ряда близкородственных видов: палеарктического *Sitticus penicillatus* (SIMON, 1875) (занимающего одновременно промежуточное положение между рассматриваемой группой и другими родственными группами видов — эти вопросы рассматриваются в других работах автора), альпийского *S. longipes* (CANESTRINI, 1873), неарктических *S. absolutus* GERTSCH et MULAİK, 1936 и *S. cursor* BARROWS, 1919 и неотропического *S. mazorcanus* CHAMBERLIN, 1920. Несколько употребляемых до настоящего времени названий автор вводит в синонимы.

New comments on synonymy of *Sitticus clavator*

According to personal communication from Dr. K. ANDREJEWA-PRÓ-SZYŃSKA (formerly E. M. ANDREEVA), received during printing of this paper, a species resembling *S. clavator*, but different from *S. penicillatus*, occurs in the high mountains of the Soviet Middle Asia on the height from 2000 to 5200 m. She has found it in the Hissar, Darvaz and Allay Ranges as well as in the West and East Pamir Mts. The species has been described in her unpublished Ph.D. thesis. Apparently, there is need for further research on this group of species.

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Redaktor pracy — dr W. Starega

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