

Jerzy PRÓSZYŃSKI

Revision of the spider genus *Sitticus* SIMON, 1901 (*Aranei, Salticidae*).
II. *Sitticus saxicola* (C. L. KOCH, 1848) and related forms

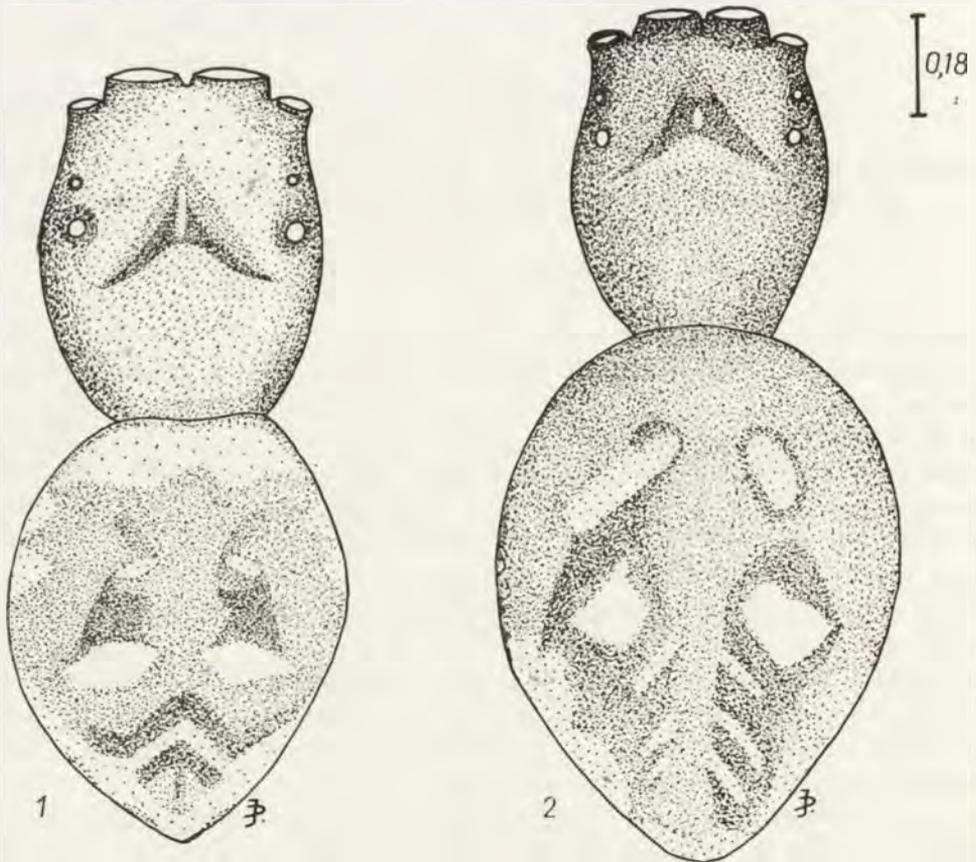
[With 39 figures in the text]

This paper deals with three closely related *Sitticus* species: *Sitticus saxicola* (C. L. KOCH, 1848), *S. lineolatus* (GRUBE, 1861) (known heretofore as *S. ranieri* PECKHAM, 1909) and a third species which I feel myself compelled to describe here as a new.

The two first species, to which the third bears clear resemblances, have somewhat special position within the genus *Sitticus* SIMON, 1901. They differ from the remaining species of the genus by the peculiarity of their copulatory organs, especially in females. Their relation, however, to other *Sitticus* species is clearly visible in their external appearance, basic plan of the copulatory organs, cheliceral dentition, proportions of parts of the body and segments of legs and also, to certain extent, in their biology, as far as we know it.

Both species are very closely related and resemble each other quite well — medium size spiders ornated with a comparable colour pattern, with characteristic copulatory organs. The colouration of *S. lineolatus* is much darker than that of *S. saxicola* (figs. 1, 2) but both species display the dark wedge-shaped spot with a white central mark (a dot in *S. lineolatus*, and a stroke in *S. saxicola*) in the posterior part of the eye field. There is a set of white and dark spots on the abdominal dorsal surface in both species (figs. 1, 2). However, such kind of colour pattern is usually quite variable and, what more, resembles to certain extent the colouration of several other *Sitticus* species, including *S. rupicola* (C. L. KOCH, 1848) and *S. floricola* (C. L. KOCH, 1848). It appears that colour pattern can be used as a recognition mark in field research, its taxonomic value, however, is very limited.

The most reliable characters are to be found, as usually, in the structure of the copulatory organs. In males the shape of the pedipalpal tibia is very special. The dorsal anterior margin of the segment is deeply carved and the anterior outer corner extended to the front so far that it equals the extension of the tibial apophysis (figs. 4, 6, 8, 10, 16, 18, 20). The shape of the bulbus and stylus are quite special but their general outlines are comparable to other *Sitticus*. The bulbus is large, the stylus arises from its posterior lateral corner perpendicularly and then turns abruptly forwards under the right angle and follows the contour of the bulbus, slightly bent, and ends slightly to the front of the anterior margin of the bulbus (figs. 3, 7, 9, 17, 19).



Figs. 1-2. Dorsal view, females: 1 — *Sitticus saxicola* (C. L. KOCH), 2 — *S. lineolatus* (GRUBE).

The males of the two species can be separated by the shape and direction of their tibial apophysis. The apophysis in *S. saxicola* is directed more sideways and has tip rounded with a small angular sharp edge pointed towards the cym-

bium (figs. 3–10). In *S. lineolatus* tibial apophysis is directed forwards and runs more parallelly to the cymbium. Its tip, if not broken and missing, is pointed forwards and sharp (figs. 14–21). There is also some difference in the dorsal anterior margin of the tibia (figs. 6, 8, 16, 20).

One of inconveniences of such characters is that they may look very different depending from the angle they are looked upon and drawn. Even the smallest movement of the segment in relation to the optical axis of the stereomicroscope, an almost imperceptible turn, changes proportions and lines of the tibia and its apophysis. As tibia is attached to the cymbium under certain angle, if cymbium is placed perpendicularly to the optical axis the tibia is seen and drawn foreshortened. This and distortion due to the turns of the tibia around its longitudinal axis gives false impression of different structure during examination of drawings. The stress should be therefore laid on essential or unmistakable differences and the minor difference liable to distortions should be disregarded or at least interpreted with caution.

One of easy differences between males of both species lies in the colouration and setae covering of the metatarsus and tibia I. In *S. saxicola* these segments are black or almost black and covered ventrally with a long and dense "brush" of reddish-brown setae. The same segments in *S. lineolatus* are normal, without any special "brush", or colouration different from other segments.

In females the structure of the epigynum is comparable in both species. Externally there is not much details to be seen. Epigynum is flat without external sculpture, there are only two copulatory openings with their external ends drawn far to the front, and white area between these openings ornated with a darker longitudinal cone-shaped crest. In *S. saxicola* the white area is pear-shaped, the openings are arranged parallelly to the posterior margin of epigynum (fig. 12). In *S. lineolatus* the openings are arranged diagonally, the white area is dagger-shaped, the longitudinal darker cone is more distinct (figs. 22–25).

The spermathecae and the copulatory canals have the same basic plan in both species, but differ in details. The spermathecae are spherical, heavily sclerotized vesicles with irregular internal chambers. In *S. saxicola* (figs. 12, 13) they are less complicated than in *S. lineolatus* (figs. 26–30) and their accessory gland cone less pronounced. The copulatory canals run from spermathecae anteriorwards but in *S. saxicola* they are short and arise from the anterior part of spermathecae (fig. 12), in *S. lineolatus* are longer and arise from the posterior part of spermathecae (figs. 26–30).

It is interesting to note that there is an intermediate form — a specimen of *S. lineolatus* from Wallowa Mts., Oregon (figs. 23, 28). I cannot give any explanation yet to the nature of that intermediate form.

The distribution of both species is quite wide. They are mountain and subarctic zone dwellers. *S. saxicola* occurs in Continental Europe and in Northern Scandinavia, there is also one unconfirmed yet quotation from Scotland (BON-

NET, 1958). *S. lineolatus* lives in Eastern Palaearctic Region and in Rocky Mountains (from Alaska up to Colorado) in North America.

S. saxicola has been first described from mountain forest in eastern Bavaria (Mt. Stüeck) by C. L. KOCH (1848) and in Germany reported also from Rhineland and Westphalia (BÖSENBERG, 1902). It has been then reported from Alps in France (Dauphine Alps) and in Switzerland (Wallis Alps, Zermatt) by SIMON (1937) to which I may add locality Fiesch (Rhône Valley). It presumably occurs also somewhere in Ticino (BONNET, 1958). In Italy known from Mt. Corno on the eastern side of Lake Garda (personal communication from Dr. K. THALER, Innsbruck University, Austria, to whom I am very indebted for numerous informations on various Alpine *Sitticus* species). In Austrian Alps known from a number of places in Northern Tirol (information from Dr. K. THALER). From Karkonosze Range in Sudety Mountains the species has been first quoted by THORELL (1875) without giving the precise locality. It has been recently collected again near that area in the Góry Stołowe (personal communication from Dr. St. PILAWSKI, Wrocław). Other areas where it occurs in Poland are Beskidy Mts. (Silesian, High, Low and East Ranges) and the Kraków area. In Tatra Mountains it occurs both in Polish and Czechoslovakian parts (CHYZER and KULCZYŃSKI, 1891). CHYZER and KULCZYŃSKI (1891) quote it also from the present localities Maramureş and Borsec in Rumania as well as from Rinsjak in Yugoslavia. Finally DRENSKY (1936) quotes it from Kopaonik and Toptschider in Yugoslavia.

All these records came from the mountains or, at least, hilly land and the altitude of collecting places vary between some 700 m. up to 2000 m., with probable exception of a few places in Poland (Kraków) being less elevated. SIMON'S (1937) remark on *S. saxicola* occurrence "à de grandes altitudes" in Alps must be taken as a slight exaggeration.

The ecological informations on *S. saxicola* are scarce, the best of them came from Dr. K. THALER (in a private letter). According to his observations *S. saxicola* lives in North Tirol in subalpine beech and fir forests on sunny clearings. It always avoids shaded or wet places and can be found on overgrown rocks and stones. It occurs up to the timber line or slightly above it. It may be expected that in other areas its environmental requirements may be similar.

The occurrence of *S. saxicola* in Northern Scandinavia in Lappland (in Sweden and Finland) and in Kola Peninsula in Soviet Union (as far north as Arctic Ocean shores near Murmansk) has been reported by TULLGREN (1944) and PALMGREN (1943). Neither autor give ecological data but some environments comparable with those in Alps can be certainly found there.

Sitticus lineolatus (GRUBE, 1861), better known heretofore as *S. ranieri* PECKHAM, 1909 (PRÓSZYŃSKI, in print) has been first described from River Vilyuy area in Northern Siberia. The exact collecting place is unknown but it had to be somewhere between 62° and 63° N. The only other Palaearctic specimen of the species has been reported as *Sitticus saxicola* (C. L. KOCH) by

SCHENKEL (1963) from "Urga-Tsitsikhar", that is from the area of some 1500 km between Ulan-Bator in Mongolia and Manchurian town of Tsitsikhar in China. As both these towns lie between 48° and 47°N we may assume that *S. lineolatus* occurs in Eastern Palaearctic Region at least between 63° and 47°N.

The range of *S. lineolatus* in Northern America is comparable: the northernmost collecting place I heard about lies at 68°36'N and 143°45'W in the Sheenjek Valley, Alaska, the southernmost at 39°35'N. (Mt. Evans, Colorado). All American records came from the Rocky Mountains (the only lowland place being that of Sheenjek River Valley) or smaller ranges west from their main crest, there is no record from any place east from Rocky Mountains. Little is known about environmental requirements of the species. The altitude, when quoted on labels, vary from about 1300 m. to 2850 m. above the sea level (4000' - 11500'), the environment described as "under rock" or "dry logs, forest clearing". It looks like that *S. lineolatus* is a mountain dweller and its ecological characteristics may be comparable to *S. saxicola*, but our informations are too scarce for drawing any firm conclusions.

Summing up the above there are two closely related species, one in mountains of Continental Europe and Northern Scandinavia, other in Eastern Palaearctic Region and in Rocky Mountains in North America. The presumed link between Eastern Palaearctic and Western Nearctic populations of *S. lineolatus* is or was across the Pacific Ocean, most probably via Bering Strait.

The premises for such a synthesis are meagre. European records are insufficient and the Siberian and American ones even worse. As spider fauna of vast areas in Siberia and N. America is very insufficiently known, we can only guess what the real range of both species can be. Does there none of the species live between Kola Peninsula and Vilyuy River? Is there none of them in Amur basin, Manchuria, Korea? What about North-West and Yukon Territories in Canada? Where is southern limit of *S. lineolatus* in N. America? Without answering these questions we cannot claim we understand the distribution and relationships of these two species.

A kind of systematic puzzle is supplied by the specimens of *Sitticus* from Puerto Cabello, Venezuela which I decide to describe as *Sitticus cabellensis* sp. n. I have discovered an unidentified female specimen of that species in the SIMON's collection in Paris. It displays characteristic cheliceral dentition (fig. 31) and the internal structure of its epigynum (fig. 33) suggests close relationship to *S. saxicola* and *S. lineolatus*. Unfortunately, there is also a male specimen in the same tube, externally quite similar to the female and with a typical cheliceral dentition but with completely different and incomparable copulatory organs (figs. 34-37). They resemble rather structures found in the genus *Pellenes* SIMON, 1876, but I can not identify them with any species I have seen yet. Are both male and female specimens conspecific? If not, the problem would be solved and it would only remain to find a proper male, with copulatory organs expectedly similar to those in *S. saxicola*. If, however, they are conspeci-

fic, either there must be a whole group of unknown *Sitticus* species in S. America or our comprehension of the genus *Sitticus* SIMON, 1901 is wrong.

SYSTEMATIC PART

Sitticus saxicola (C. L. KOCH, 1848)

Synonyms: *Euophrys saxicola* C. L. KOCH, 1848,

Attus saxicola: WESTRING, 1851 et auct.,

Sitticus saxicola: REIMOSER, 1919 et auct.,

Attus cingulatus SIMON, 1868¹,

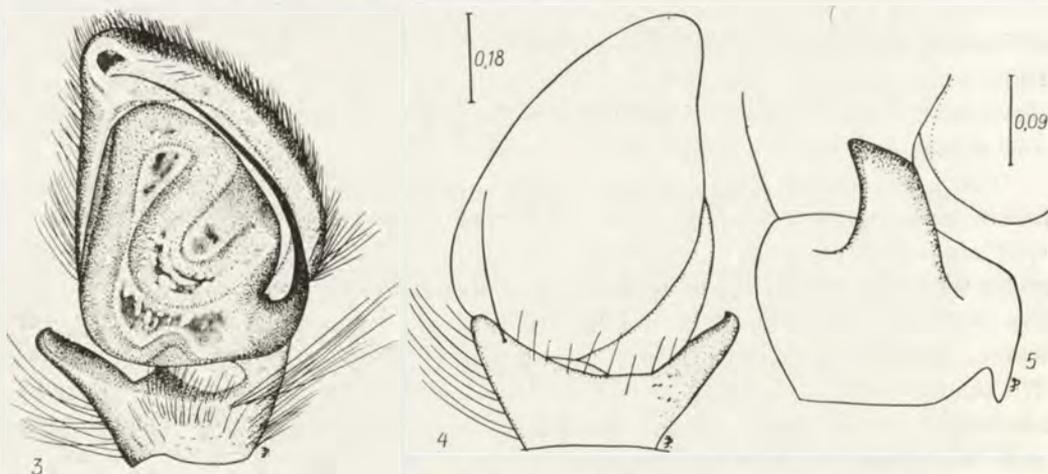
Sitticus cingulatus: LESSERT, 1901 et auct.,

Not *Sitticus cingulatus*: BRAUN, 1963 [it is in fact *Sitticus zimmermanni* (SIMON, 1877)],

Attus montigenus THORELL, 1875, syn. n.,

Sitticus montigenus: REIMOSER, 1919 et auct.,

Sitticus littoralis (part.): ROEWER, 1954².



Figs. 3-5. *Sitticus saxicola* (C. L. KOCH). Male copulatory organ: 3 — ventral view, 4 — dorsal view, 5 — tibial apophysis, lateral view.

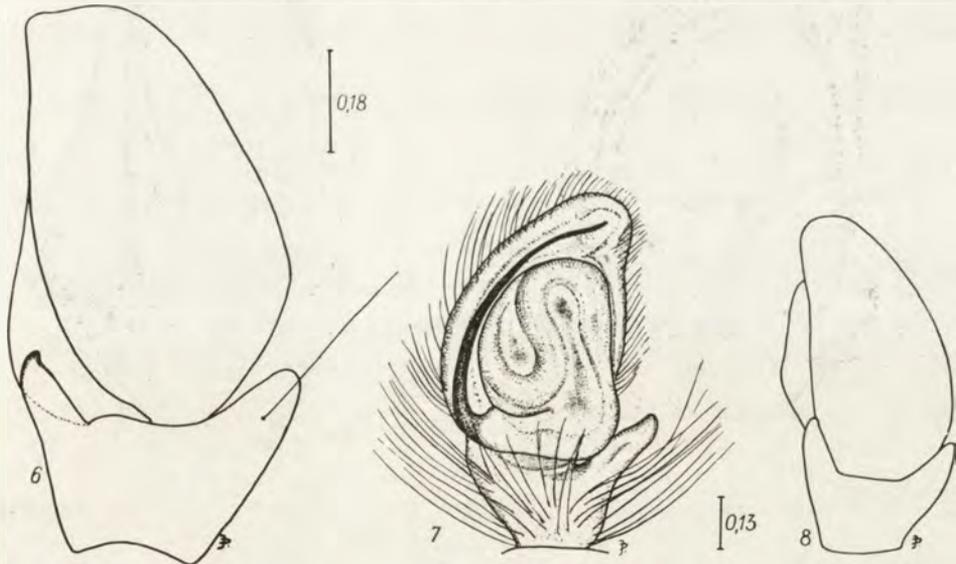
¹ SIMON (1937: 1256) recognized identity of his *Sitticus cingulatus* and *Attus saxicola*: KULCZYŃSKI, 1891. He assumed, however, that C. L. KOCH has described under *Euophrys saxicola* a damaged specimen of *Euophrys rupicola* C. L. KOCH, therefore *E. saxicola* would be a synonym of *E. rupicola* and the valid name for KULCZYŃSKI's specimen would have to be *Attus cingulatus*. Type specimen of *E. saxicola* is lost but the characters mentioned by KOCH in his description prove that he had really a *S. saxicola* specimen. SIMON's assumption should be, therefore, rejected as unfounded. It caused, however, a lot of confusion in the literature. The name *Sitticus cingulatus*, when used in abbreviation was also frequently confused with *Sallicus cingulatus* (PANZER, 1797).

² One of unfortunately frequent nonsenses in the catalogue of that great arachnologist.

Material: *Sitticus saxicola* C. L. KOCH, Tatry, Przemyśl, Pieniny, Kraków — ♀♀, ♂♂, coll. W. KULCZYŃSKI — IZ PAN-Warszawa and NHRM-Stockholm; *Attus saxicola* C. L. KOCH — Borsec, coll. CHYZER — ♂, ♀ — TM-Budapest; “*Sitticus cingulatus* SIM. Fiesch, 2221a” — 1 ♂ — NHM-Basel; “*Attus montigenus* THOR. Type, Riesengebirge, ZIMMERMANN” — 1 microscopic preparation of ♂, holotypus — ZM-Berlin.

Description of male

Cephalothorax brown or light brown with darker margins of the eye field and dark wedge-shaped spot with a white stroke in the posterior half of the eye field. That character seems to be very important diagnostic feature, visible in all *S. saxicola* I have seen and never so clear and distinct in any other *Sitticus* species. The remark about it in the original description of C. L. KOCH (1848) proves that his type-specimen had to belong to *S. saxicola*. It is on this



Figs. 6–8. *Sitticus saxicola* (C. L. KOCH). Male copulatory organs: 6 — “*Sitticus montigenus* (THOR.)”, holotype, dorsal view, 7–8 — Hungarian specimen, ventral and dorsal views.

basis that we must reject SIMON'S (1937) doubts as totally unfounded. Length of cephalothorax¹ 2.38–2.35 (2.36), length of eye field 0.91–0.81 (0.86), width of eye field I 1.52–1.26 (1.39), width of eye field III 1.55–1.26 (1.40). Ratios: *a* 0.39–0.34 (0.36), *b* 1.00–0.98 (0.99), *c* 0.64–0.60 (0.62).

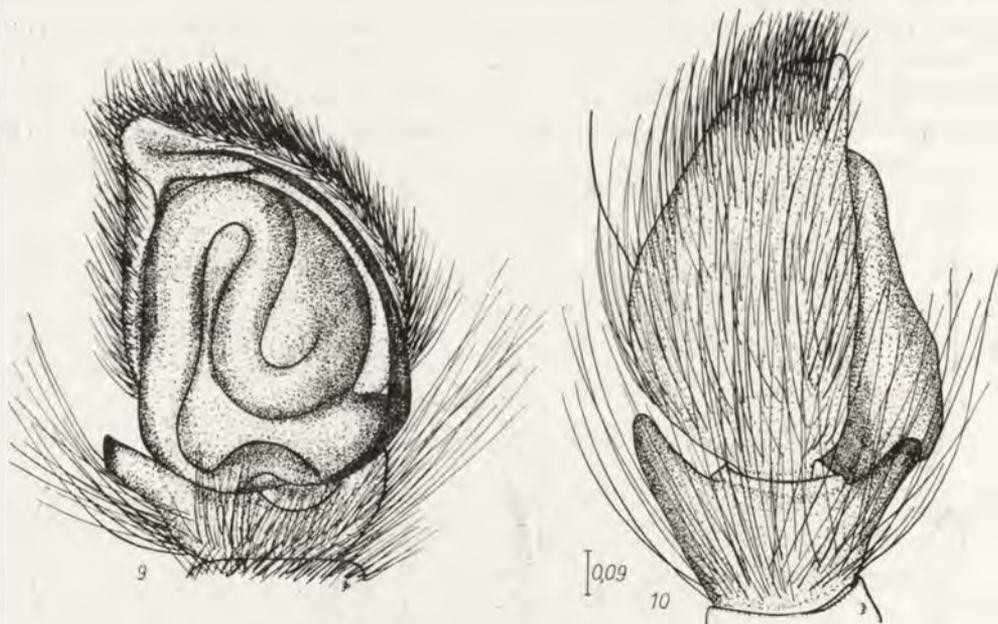
Abdomen dorsally brown, covered with brown, blackish-brown and white setae forming a variable pattern of pale and dark spots. There is a pair of rounded blackish spots in the middle of the abdomen, followed by a pair of large white

¹ For explanation of measurements and ratios see PRÓSZYŃSKI, 1968a, b.

spots just behind it. There is a pair of small and indistinct white spots in front of those darker ones. The lateral surfaces as well as median longitudinal area of the posterior half of the abdomen are paler. Ventral coloration fawnish or yellowish. Length of abdomen 2.66–2.10 (2.38).

Sternum brown, coxae olive-yellow. Maxillary plates and labium white tipped. Chelicerae brown with a typical for *Sitticus* dentition.

Pedipalps pale (in *S. lineolatus* dark brown). The shape of tibia, tibial apophysis, cymbium, bulbus and stylus is drawn on figs. 3–10. The most important character is supplied by the shape of the dorsal anterior margin of the pedipalpal



Figs. 9–10. *Sitticus saricola* (C. L. KOCH). Male copulatory organ of "*S. cingulatus* (SIM.)" ventral and dorsal views.

tibia. Its outer part is expanded anteriorwards and forms a kind of a process equal in length to the tibial apophysis (figs. 4, 6, 8, 10). It is, however, less broad than the same in *S. lineolatus*. The apophysis is directed more perpendicularly to the main axis of the tibia than in *S. lineolatus*. The tip of the apophysis is rounded and has a small angular sharp edge pointed towards the cymbium (figs. 3, 4, 6, 7). In side view the apophysis appears slightly bent dorsalwards (fig. 5). These details in *S. lineolatus* are different.

The bulbus is large and sack-shaped. The stylus arises from the posterior outer corner of the bulbus perpendicularly and after sharp bend follows the contour of it (figs. 3, 7, 9).

Legs fawnish-brown, covered with brownish setae and stout brown spines. Metatarsus and tibia I are characteristic — dark brown or black with a dense

brush of long blackish-brown setae ventrally. There is also a spot of white adpressed setae dorsally on metatarsus I. The tarsus I is yellow, covered with white setae, and this gives strong contrast to the blackish metatarsus and tibia. The metatarsus and tibia I seems to be the best characters separating the males of *S. saxicola* and *S. lineolatus*. Length of segments of legs: I 0.72–0.66 (0.69) + 0.96–0.69(0.86) + 1.14–1.01(0.98) + 0.90–0.80(0.85) + 1.53–1.25(1.39), II 0.64–0.57(0.60) + 0.72–0.64(0.68) + 0.67–0.60(0.64) + 0.75–0.67(0.71) + 1.20–1.18 (1.19), III 0.64–0.60(0.61) + 0.83–0.78(0.80) + 0.72–0.65(0.70) + 0.64–0.54(0.58) + 1.26–1.19(1.22), IV 0.78–0.75(0.76) + 1.30–1.20(1.25) + 1.41–1.24(1.30) + 0.89–0.72(0.78) + 2.13–1.80(1.93). Ratio d 1.96–1.75(1.88).

Description of female

Cephalothorax brown with margins of eye field darker, covered with adpressed white setae and sparsely with brown bristles. There is that characteristic arrow-head-shaped dark brown sign on the posterior half of the eye field, pointed anteriorwards. The sign is covered with dark brown setae with some white setae admixed on its anterior margins, there is also a patch of white setae making a thin longitudinal white line in the middle of the sign. The pointed posterior ends of the sign stretch behind the level of eyes III, the posterior margin of the sign is deeply procurved, the anterior point reaches the level of eyes II (fig. 1). Length of cephalothorax: 2.57–2.21(2.40), length of eye field 0.94–0.91(0.93), width of eye field I 1.63–1.44(1.56), width of eye field III 1.63–1.61(1.60). Ratios: a 0.41–0.36(0.38), b 1.00–0.93(0.98), c 0.63–0.56 (0.59).

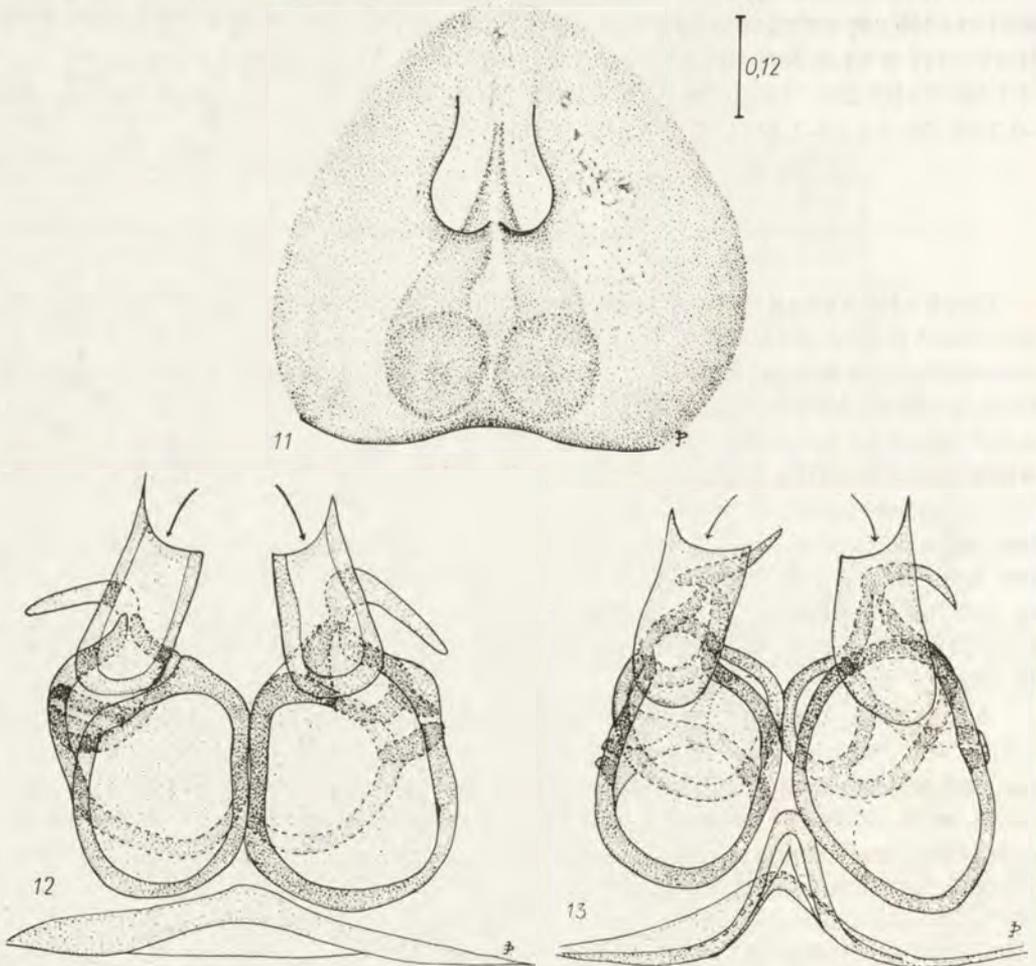
Abdomen dorsally brown with white and dark brown spots covered with white and brown setae respectively (fig. 1). The general appearance of that pattern resembles that of *S. floricola* (C. L. KOCH) and *S. rupicola* (C. L. KOCH) quite well. It would require larger series of specimen of these three species to detect the real differences of that presumable quite variable abdominal pattern. Length of abdomen 3.05–2.49(2.79).

Abdomen ventrally pale fawnish. Epigynum flat, the copulatory openings arranged parallelly to the posterior margin of the epigynum, the external ends of the openings are drawn to the front and enclose a pear-shaped white area divided by the cone-shaped brown crest (fig. 11). The spermathecae are heavily sclerotized spherical vesicles with short copulatory canals arising from their anterior parts (figs. 12, 13).

Sternum fawn. Coxae fawnish-yellow, but anterior coxae are slightly darker. Maxillary plates and labium fawn, white tipped. Chelicerae brown with a typical dentition. Pedipalps pale yellow.

Legs pale fawn with legs II–IV slightly paler. Tibia I without any particular "brush" of setae. Length of segments of legs: I 0.69–0.66(0.67) + 0.86–0.72

(0.77) + 1.00-0.80(0.90) + 0.83-0.78(0.81) + 1.41-1.33(1.37), II 0.64-0.61(0.62) + 0.66-0.61(0.64) + 0.69-0.61(0.66) + 0.78-0.69(0.72) + 1.27-1.11(1.21), III 0.64-0.61(0.63) + 0.86-0.75(0.81) + 0.72-0.66(0.70) + 0.69-0.58(0.65) + 1.41-1.14(1.27), IV 0.83-0.75 (0.79) + 1.44-1.16(1.30) + 1.47-1.22(1.38) + 0.97-0.78(0.87) + 2.33-1.88(2.16). Ratio d 2.04-1.83(1.96).



Figs. 11-13. *Sitticus saxicola* (C. L. KOCH) Female copulatory organ: 11 — before maceration, 12-13 — (two specimens) after maceration.

***Sitticus lineolatus* (GRUBE, 1861)**

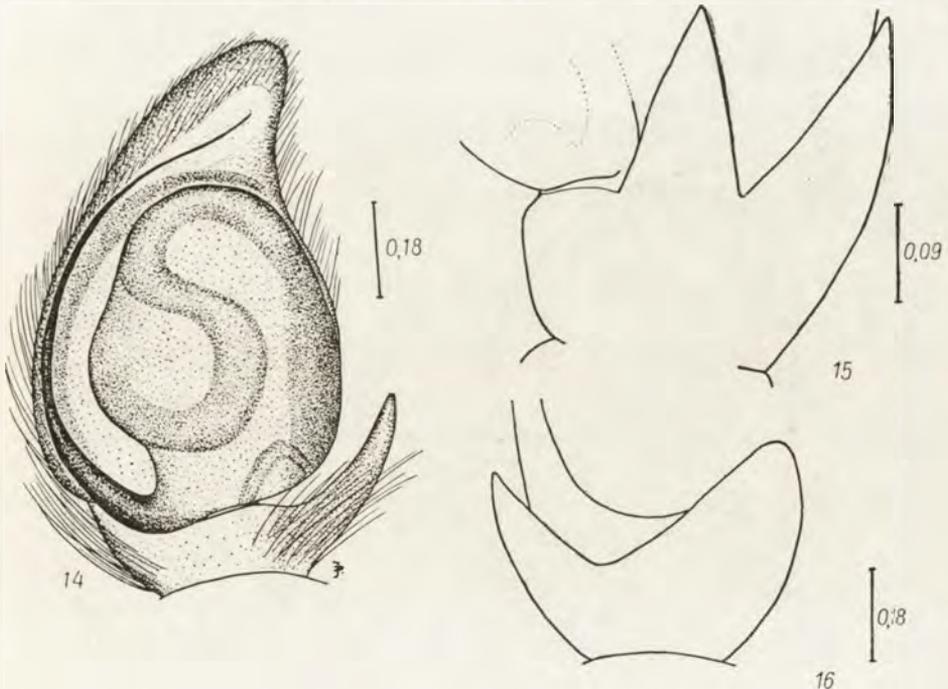
Synonyms: *Attus lineolatus* GRUBE, 1861,
 "Attus" *lineolatus*: CHARITONOV, 1932 et auct.,
Sitticus lineolatus: PRÓSZYŃSKI, in print,
Sittacus ranieri PECKHAM, 1909 et auct., syn. n.,
Attus ranieri: BANKS, 1910,

- Sitticus ranieri*: PETRUNKEVITCH, 1911,
Sitticus ranierinus: BONNET, 1958,
Sitticus haydeni LEVI et LEVI, 1951, syn. n.,
Sitticus mazamae SCHENKEL, 1951, syn. n.,
Sitticus saxicola: SCHENKEL, 1963.

Material: "*Euophrys lineolatus* GR.[UBE] ♂ [leg] MAACK. Wilui" — 1 ♂, holotype — Muz. Zool. Wrocław; "337. *Sitticus ranieri* PECK. Type. B. C. Glacier. G. W. and E. G. PECKHAM coll." — 1 ♂, holotype — MCZ-Harvard University; ♀♀, ♂♂ from various localities in Western North America, det. W. J. GERTSCH and J. PRÓSZYŃSKI — coll. AMNH-New York; 4 ♀♀, ♂, juv. juv. from British Columbia and from Salmita N. W. Territories, Canada, det. B. CUTLER, — coll. Canad. Agric. Res. Inst., Belleville, Ontario; "*Sitticus haydeni* LEVI & LEVI, Wyoming, Yellowstone Nat. Park, July 1931. W. E. GERTSCH ♂ Holotype" — MCZ-Harvard University; "*Sitticus lineolatus* GRUBE, det. J. PRÓSZYŃSKI — Alaska 68°36'N. 143°15'W. Sheenjek River, Valley, 18 mi. jct. Old Woman Cr. lowland 1-10 July 1956. G. SCHALLER" — 1 ♂ MCZ-Harvard University; "♀ *Sitticus mazamae* SCHENKEL 1951, Crater lake, Or. USA. Holotype. Coll. E. SCHENKEL" — NHM-Basel; "*Sitticus saxicola* C. K. Mus. Paris. Mongolie — Mandjourie Ourga à Tsitsikhar CHAFFANJON: 174-96" "SCHENKEL det." — 1 ♀ MNHN-Paris.

Description of male

Cephalothorax brown or dark brown with darker eye field, covered with brownish setae sometimes sprinkled with white one. The triangular dark sign



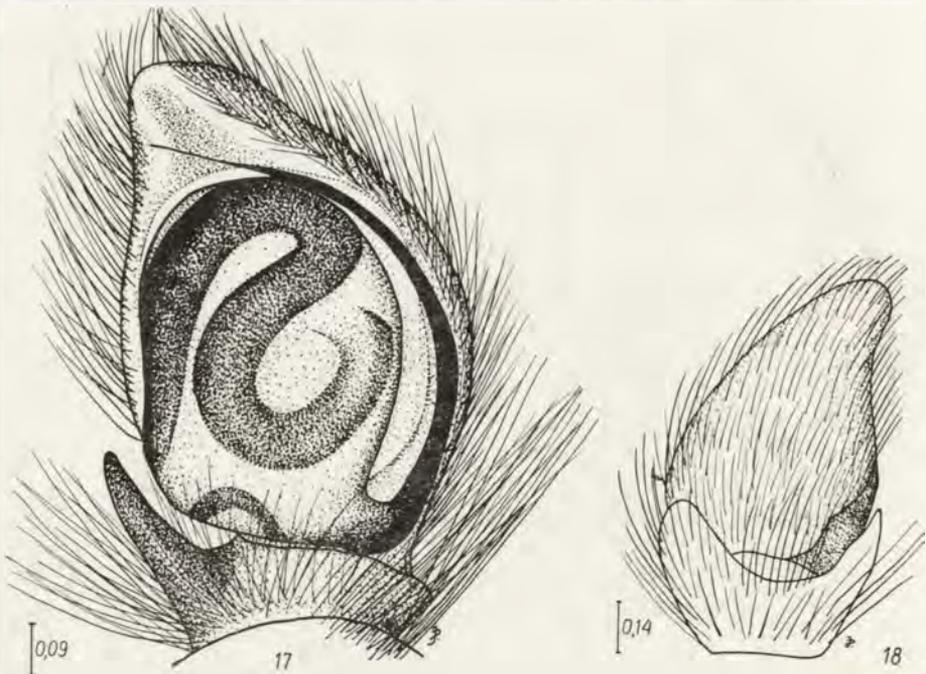
Figs. 14-16. *Sitticus lineolatus* (GRUBE). Holotype. Male copulatory organ: 14 — ventral view, 15-16 tibia, lateral and dorsal views.

in the posterior half of the eye field so characteristic in *S. sawicola* is very indistinct on the dark background of the eye field or not visible at all. The white spot in the centre of that sign is present in the majority of the specimens seen. One of the studied specimens have also an undistinct stroke of white setae between median-anterior eyes. Length of cephalothorax 2.52–1.68(2.26), length of eye field 0.98–0.83(0.86), width of eye field I 1.58–1.31(1.45), width of eye field III 1.53–1.26(1.43). Ratios: *a* 0.58–0.34(0.38), *b* 1.04–0.96(1.01), *c* 0.65–0.55 (0.59).

Abdomen dark brown, covered with brown and whitish-grey setae. There are traces of white spots on the dorsal surface: a pair of larger spots in the middle and less distinct pair on the margin of the posterior half of the abdomen. These spots are indistinct, variable and sometimes lacking. Ventral coloration — yellowish-fawn. Length of abdomen 2.71–2.01(2.32).

Sternum dark brown. Coxae fawnish-olive-grey. Maxillary plates fawn or brown, white tipped. Labium brown or dark brown, white tipped. Chelicerae dark brown anteriorly and paler brown posteriorly, with two teeth on the anterior and none on the posterior inner margin.

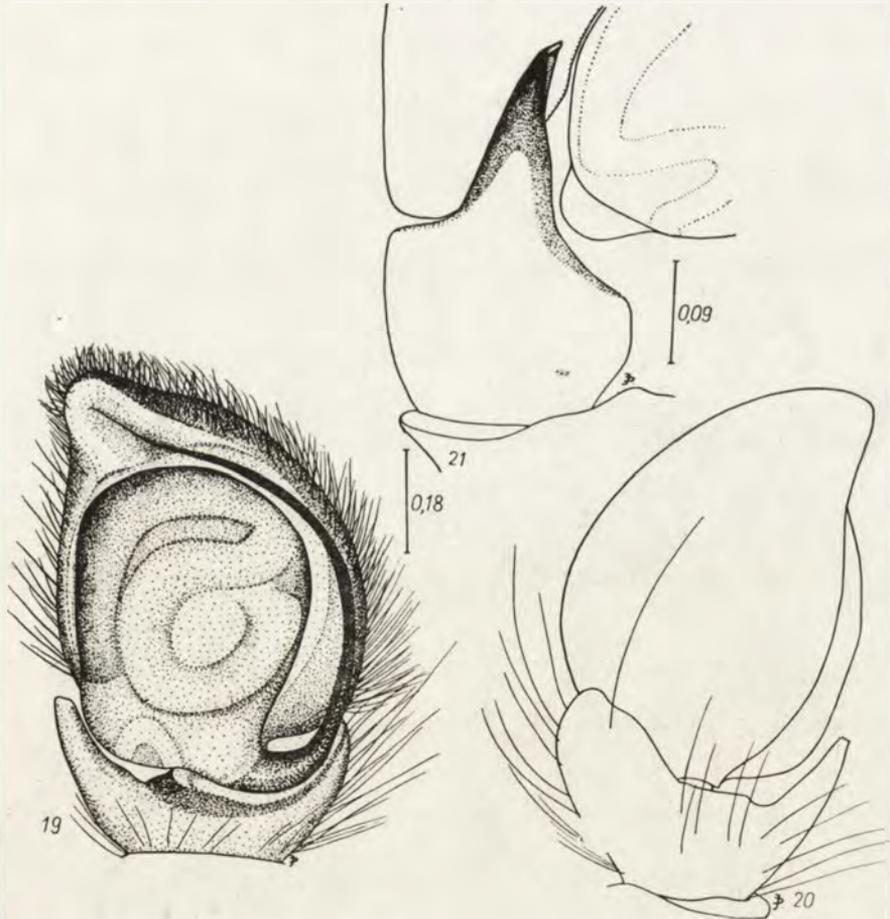
Copulatory organ resembles that of *S. sawicola* in general outlines but differs in details. The expanded anterior outer corner of the tibia's anterior dorsal margin appears to be larger and more robust (figs. 16, 18, 20). The apophy-



Figs. 17–18. *Sitticus lineolatus* (GRUBE). Holotype of "*S. ranieri* PECKH.", male copulatory organ, ventral and dorsal views.

sis of the tibia is more parallel to the main axis of the cymbium than in *S. saxicola* (figs. 14, 17, 19, 20). The tip of the apophysis is sharp and pointed forwards (figs. 14, 17, 18, 19, 20, 21) but sometimes it is missing. Bulbus and stylus resemble that of *S. saxicola*.

Legs brown with paler, fawn areas covered with brown and white setae. Femora I–IV dark brown, patellae and tibiae I–IV fawn with two brown rings these rings are very distinct on tibia IV, much less on remaining ones. Tars and metatarsi I–IV fawn, the tips of tarsi I and II dark brown. Length o



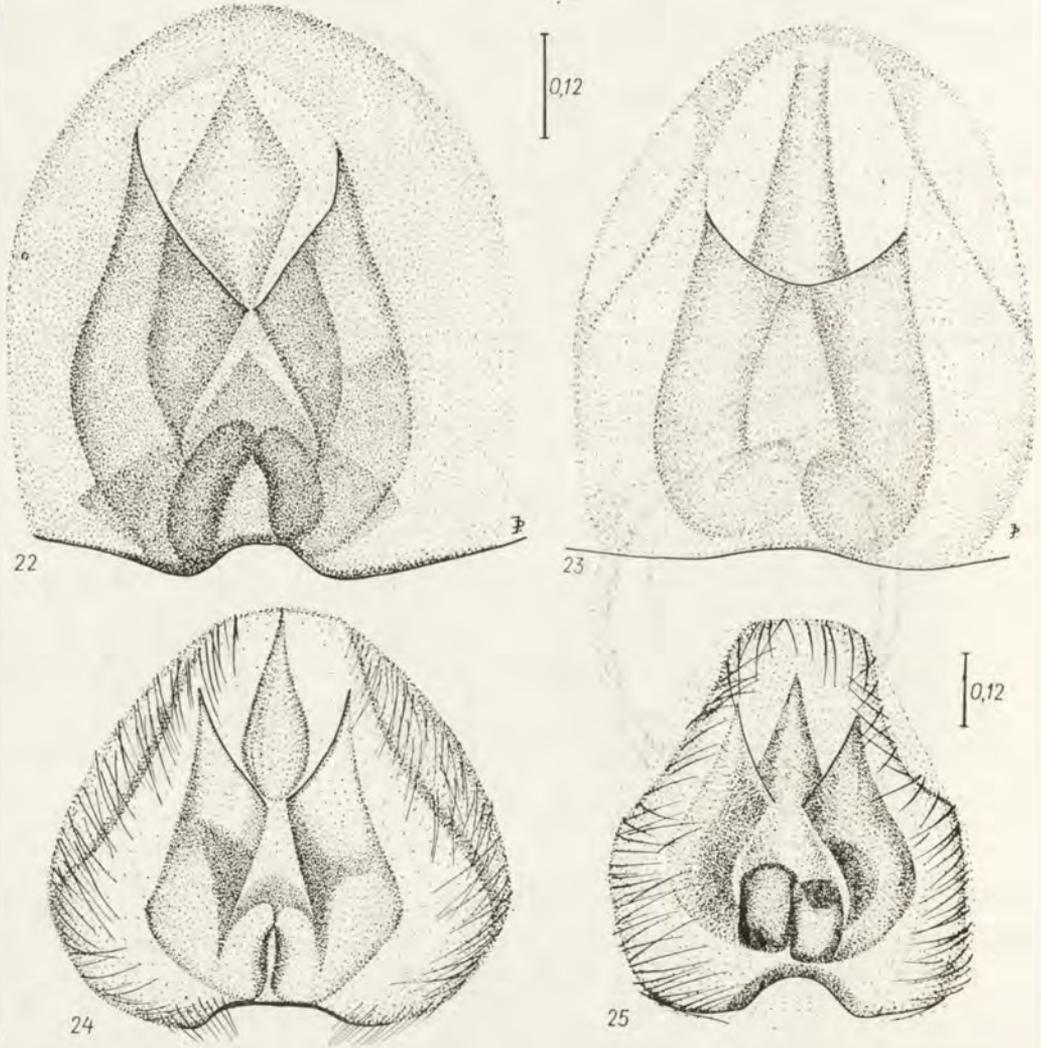
Figs. 19–21. *Sitticus lineolatus* (GRUBE). Holotype of "*S. haydeni* LEVI et LEVI". Male copulatory organ: 19–20 – ventral and dorsal views, 21 – lateral view of tibia.

segments of legs: I 0.66–0.56(0.60)+0.84–0.64(0.72)+0.81–0.64(0.74)+0.83–0.56(0.70)+1.31–1.01(1.17), II 0.66–0.47(0.56)+0.72–0.56(0.65)+0.70–0.53(0.64)+0.72–0.50(0.65)+1.17–0.89(0.95), III 0.66–0.50(0.59)+0.87–0.56(0.71)+0.72–

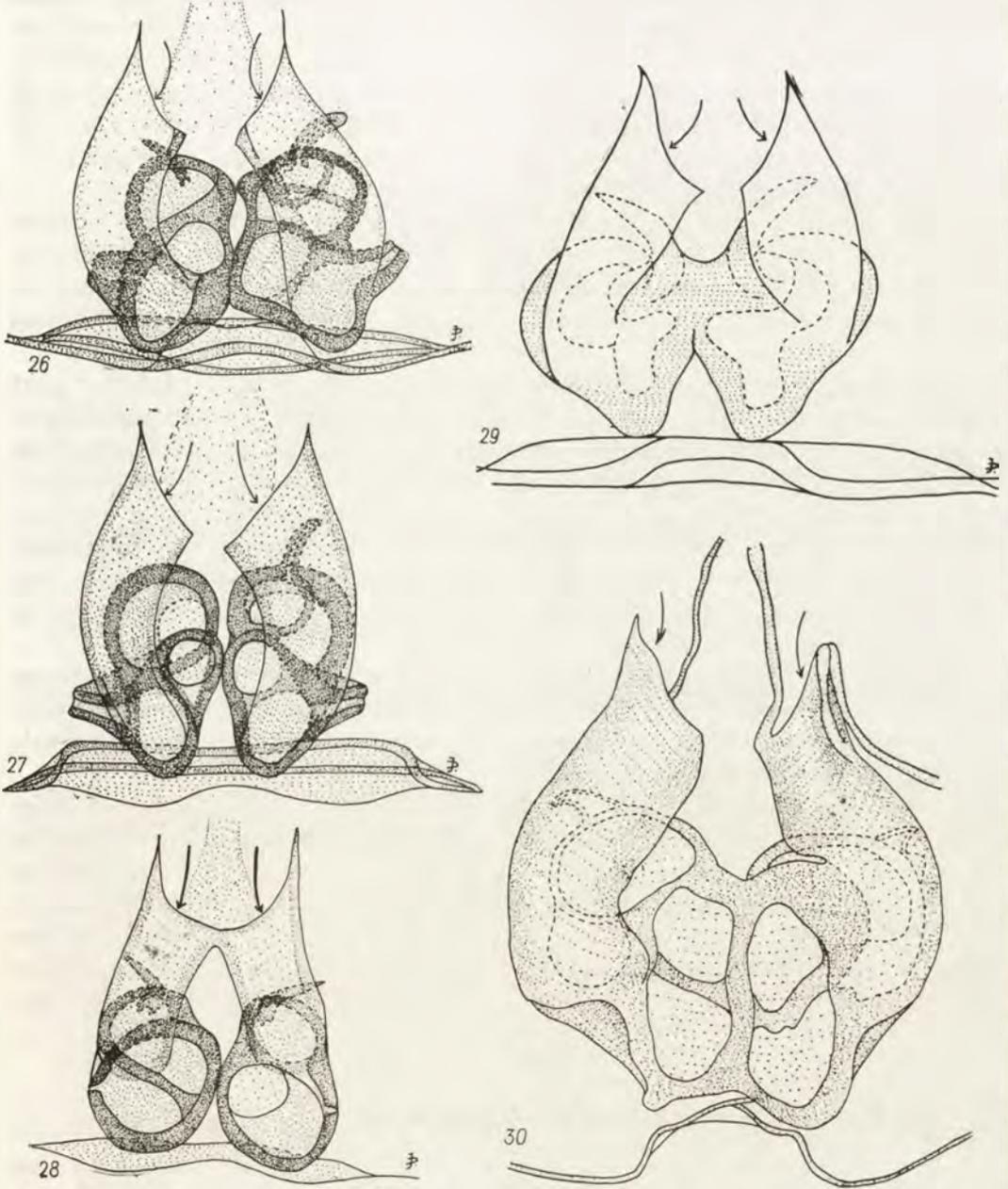
$-0.53(0.64)+0.69-0.42(0.60)+1.26-0.87(1.08)$, IV $0.78-0.59(0.70)+1.31-0.84(1.14)+1.40-0.84(1.23)+0.87-0.61(0.75)+1.86-1.42(1.80)$. Ratio d 2.17-1.50 (1.85).

Description of female

Cephalothorax brown or dark brown with characteristic dark arrow-head sign with a white dot in the centre (fig. 2). Due to general colour variation this sign is sometimes hardly visible or, in some specimens, not visible at all. Also



Figs. 22-25. *Sitticus lineolatus* (GRUBE). Variation in female copulatory organs: 22 - Mt. Glacier specimen, 23 - Wallowa Mts. specimen, 24 - holotype of "*S. mazamae* SCHENKEL", 25 - Mongolian specimen.



Figs. 26-30. *Siticus lineolatus* (GRUBE). Variation in the female copulatory organs, after maceration: 26-27 — two American specimens, 28 — Wallowa Mts. specimen, 29 — holotype of "*S. mazamae* SCHENKEL", 30 — Mongolian specimen. Specimens drawn to different scales).

white dot varies in size and shape — from a minute dot up to a distinct stroke, in one specimen out of ten examined it was even lacking. Cephalothorax covered with brown and white setae, which are more dense on the lateral surfaces, stouter black bristles scattered over the eye field. Clypeus covered with dense white setae. Length of cephalothorax 2.79–2.27(2.56), length of eye field 1.06–0.89 (0.94), width of eye field I 1.70–1.42(1.54), width of eye field III 1.73–1.42(1.56). Ratios: *a* 0.42–0.34(0.37), *b* 1.00–0.95(0.98), *c* 0.68–0.56(0.61).

Abdomen covered dorsally with brown and white setae forming a variable pattern of pairs of white spots on the brown or dark brown background (fig.2). In the view of variability of that pattern no taxonomic conclusions can be based upon it. Ventrally pale fawn, sometimes with darker grey longitudinal stripes. Length of abdomen 4.02–2.58(3.33).

Epigynum flat, with copulatory openings located in its anterior part and arranged diagonally. The area between both openings is white and dagger-shaped, with a large diamond- or cone-shaped brown spot in the middle (figs. 22, 23, 24, 25). The spermathecae are spherical vesicles, heavily sclerotized, consisting of several irregular internal chambers. The accessory gland openings are located on tops of very pronounced conical protuberances. The copulatory canals seem to reach and join the spermathecae at their posterior ends, but the course of canals is not very clearly seen due to the dark background of sclerotized spermathecae (figs. 26, 27, 28, 29, 30).

Coxae fawn or pale fawn, sternum fawn, maxillary plates and labium fawn, white tipped. Chelicerae brown, with a typical for *Sitticus* dentition. Pedipalpal femur and patella pale fawn, remaining segments brown or pale brown, covered with whitish setae.

Legs pale yellow with anterior pair slightly darker, tibia I does not differ from remaining segments and there are no traces of a setae brush on its ventral surface. Length of segment of legs: I 0.66–0.53(0.56) + 0.80–0.59(0.62) + 0.89–0.64 (0.74) + 0.97–0.48(0.79) + 1.55–1.11(1.25), II 0.66–0.47(0.57) + 0.75–0.56(0.65) + 0.78–0.56(0.67) + 0.91–0.64(0.76) + 1.44–1.02(1.20), III 0.70–0.59(0.64) + 0.94–0.64(0.78) + 0.91–0.61(0.71) + 0.78–0.53(0.67) + 1.50–1.09(1.27), IV 0.89–0.70 (0.76) + 1.52–1.20(1.33) + 1.74–1.29(1.48) + 1.01–0.70(0.90) + 2.46–1.86(2.15). Ratio *d*: 2.20–1.84(2.07).

Sitticus cabellensis sp. n.

Material: "20841. Sit. p°. Cabello" — 1 ♀ — holotype, 1 ♂ (if really of the same species) — allotype — coll. E. SIMON, MNHN, Paris.

Remark. The classification of the female specimen into the genus *Sitticus* SIMON, 1901 seems justified in view of its cheliceral dentition (fig. 31), the proportions of the body and the resemblances of its genital organs to the *S. saxicola* — *S. lineolatus* group. The structure of genital organs of the male specimen, however, gives rise to serious doubts whether that classification is justified. Male copulatory organ is quite special and while completely dif-

ferent from *S. saxicola* group it bears little resemblance to the remaining *Sitticus* species. Of the other hand, however, general appearance of the male resembles female quite well and its cheliceral dentition is definitely *Sitticus*-like. In view of the above contradiction I decided to assign both specimens to the genus *Sitticus* SIM., but I cannot exclude possibility that this may have to be revised in the future. It is hoped that future research will throw more light on the little known South American *Sitticus* species.

Description of female

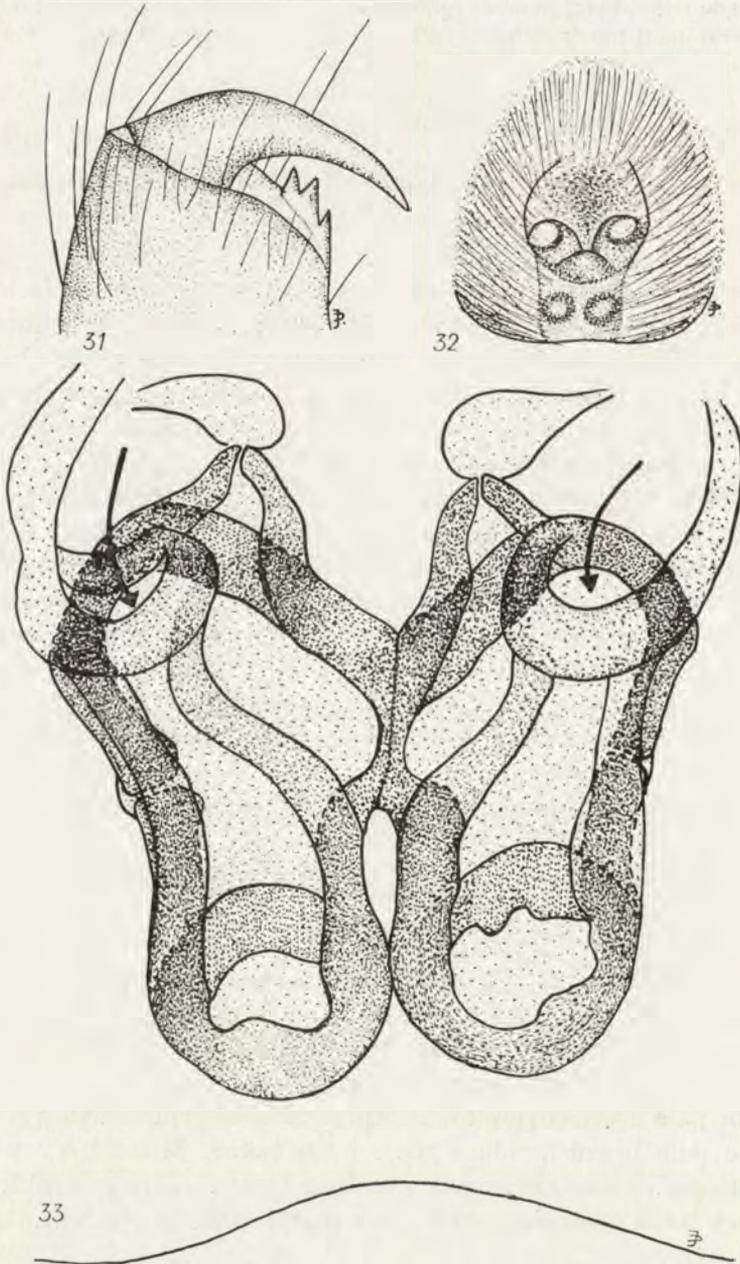
Cephalothorax pale chestnut-brown with lateral and anterior margins of the eye field black. Covered with small but distinctly visible intensely white setae. There is also a median more intensely white line along the eye field. Dark brown bristles scattered over the eye field. Length of cephalothorax 1.84, length of eye field 0.81, width of eye field I 1.18, width of eye field III 1.28. Ratios: *a* 0.44, *b* 0.92, *c* 0.69.

Abdomen dorsally greyish-brown with numerous small yellow dots inside the numerous folds of the cuticle. Covered with white setae sprinkled with slightly bigger brown bristles. There is a pale yellowish median streak along the posterior half of the abdomen which does not reach the posterior end of abdomen. There is also a pair of indistinct spots of white setae in the middle of the abdomen, close to the beginning of the yellow streak. The whole pattern is poorly preserved and is not certain how it looks like on the fresh specimens. Ventrally pale fawn with greyish shade. Lateral surfaces greyish-brown dotted yellow. Length of abdomen 2.16.

Epigynum. Copulatory openings inside small depression in the anterior part of epigynum, there is a small protuberance medially behind these openings. Two darker spots in the posterior part of epigynum are more sclerotized chambers of spermathecae visible through the sclerotized wall of epigynum (fig. 32). Spermathecae in a form of a pair of elongated heavily sclerotized vesicles, with accessory gland opening in their mid-length. Copulatory opening of each spermatheca on the level of anterior end of spermathecal vesicle, its canal, short and thick-walled runs straight to the rear and join heavily sclerotized chamber at the posterior part of spermatheca (fig. 33).

Sternum pale fawn, covered with whitish setae sprinkled with a few brown ones. Coxae pale fawnish-yellow with white setae. Maxillary plates pale fawn, white tipped. Chelicerae pale chestnut-brown with a typical for a *Sitticus* group of black teeth on the anterior inner margin and no teeth on the posterior margin (fig. 31).

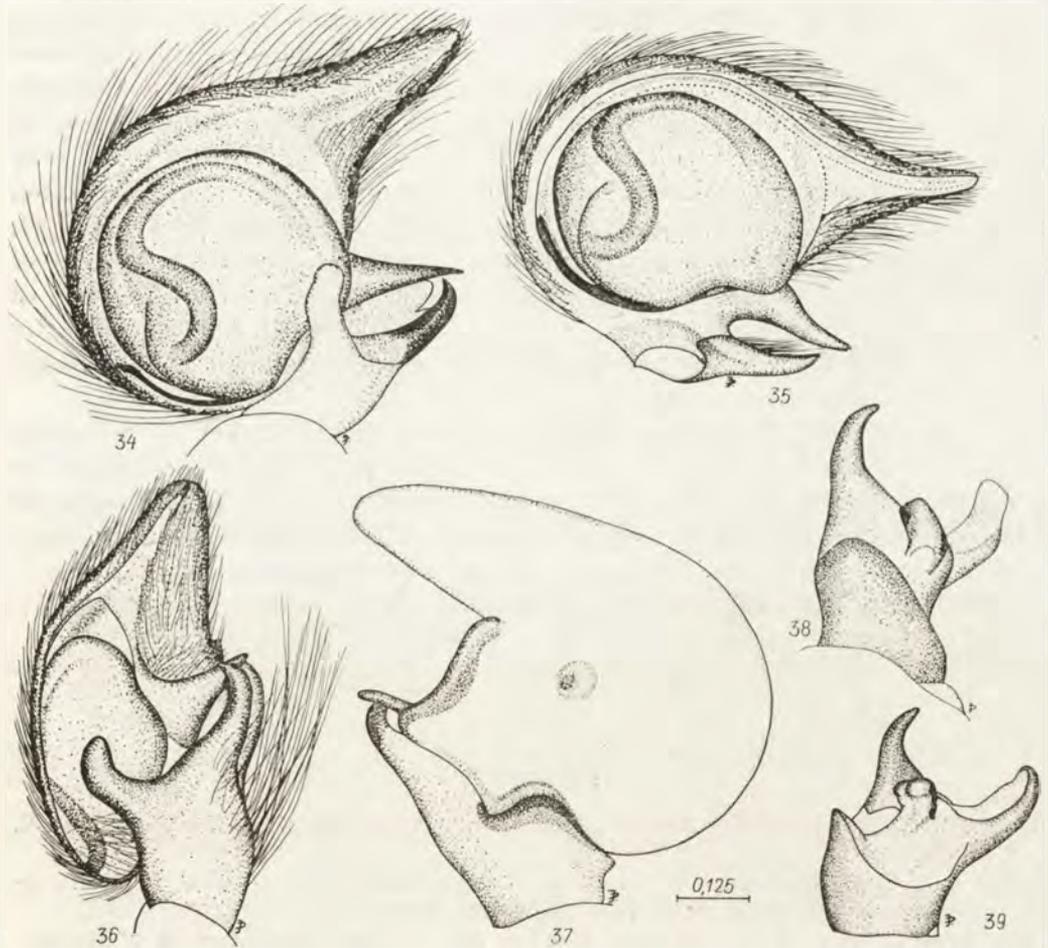
Legs pale fawn with femora even paler but dark tipped at their distal ends. Covered with whitish and brownish setae. Length of segments of legs: I 0.44 + 0.49 + 0.59 + 0.61 + 0.84, II 0.39 + 0.47 + 0.49 + 0.59 + 0.84, III 0.44 + 0.52 + 0.49 + 0.44 + 0.79, IV 0.49 + 0.74 + 0.84 + 0.61 + 1.40. Ratio *d* 1.70.



Figs. 31-33. *Sitlicus cabellensis* sp. n. Female: cheliceral dentition and epigynum before and after maceration.

Description of male (provisionally assigned to that species)

Cephalothorax chestnut-brown with a copper gleam on the eye field. Anterior and lateral margins of eye field black. Cephalothorax covered with indistinct very small whitish setae. Lack of any distinct colour pattern. Length of cephalothorax 1.77, length of eye field 0.71, width of eye field I 1.13, width of eye field III 1.13, Ratios: *a* 0.40, *b* 1.00, *c* 0.56.



Figs. 34-39. "*Sitticus cabellensis*" (?) sp. n. Male copulatory organ: 34 - ventral view, 35 - ventral view of isolated tarsus, note apophyses, 36-37 - the same, lateral and dorsal views, 38-39 - tibia in two positions.

Abdomen dorsally greyish-brown dotted densely with minute yellow dots. There is indistinct large reddish spot in the anterior part of abdomen. Covered with indistinct small setae, white on the lateral surfaces and pale fawn on the dorsal one. Lack of any colour pattern. Ventral surface pale grey,

epigastral fold with brown shade and the posterior half of abdomen with olive-brown shade. Length of abdomen 1.57.

Sternum and coxae fawn, covered with short whitish and brown setae. Maxillary plates and labium pale fawn, white tipped. Chelicerae pale chestnut-brown, with a typical for a *Sitticus* dentition, resembling that of female (fig. 31).

Pedipalps. Tarsus flattened dorso-ventrally, rounded, with an expanded tip of a cymbium. Bulbus round, stylus short, located in a groove running around outer edge of bulbus and then throughout the middle of the expanded tip of the cymbium (fig. 34, 35). Apophyses of cymbium and tibia form a complicated articulating apparatus. There are two long and horn-like apophyses of the cymbium (figs. 35–37) and four apophyses on the tibia (figs. 38, 39), they are so complicated that can be seen distinctly only after tarsus is separated from tibia. Their general appearance when both segments are fused (figs. 34, 37) is confusing as for their real structure. Looking for possible resemblances of that organ with other *Sitticus* species I can recall only certain features of male copulatory organs in the *Sitticus terebratus* group, but these analogies are quite distant. There are two brushes of long white setae on the pedipalpal femur's dorsal and ventral edges.

Legs pale fawn with tarsi, metatarsi and tibiae slightly darker — brownish-fawn. Two anterior pairs of legs appear somewhat paler than the two posterior ones. There are traces of two darker greyish rings on femora II–IV. All segments covered with brownish and greyish-white setae. Length of segments of legs: I $0.37 + 0.52 + 0.59 + 0.64 + 0.96$, II $0.34 + 0.49 + 0.52 + 0.54 + 0.84$, III $0.39 + 0.54 + 0.49 + 0.47 + 0.84$, III $0.39 + 0.54 + 0.49 + 0.47 + 0.84$ +, IV $0.54 + 0.86 + 0.93 + 0.66 + 1.38$. Ratio d 1.8.

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STRESZCZENIE

[Tytuł: Rewizja rodzaju *Sitticus* SIMON, 1901 (*Aranei*, *Salticidae*). II. *Sitticus saxicola* (C. L. KOCH, 1848) i formy pokrewne]

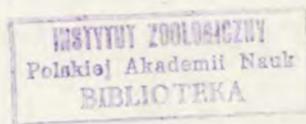
Autor omawia budowę morfologiczną, zmienność indywidualną oraz rozmieszczenie geograficzne i dane biologiczne trzech gatunków z rodzaju *Sitticus* SIM. Zrewidowane zostały opisy odnoszące się do dwu blisko spokrewnionych, górsko-borealnych gatunków *Sitticus saxicola* (C. L. KOCH, 1848) i *S. lineolatus* (GRUBE, 1861), z których pierwszy występuje w Europie, a drugi we Wschodniej

Palearktyce i w Górach Skalistych w Ameryce Północnej. Wiele nazw zostało uznanych za synonimy wymienionych wyżej nazw obowiązujących. Trzeci gatunek, opisany z Wenezueli *Sitticus cabellensis* sp. n. jest prowizorycznie włączony do rodzaju *Sitticus* SIM. ze względu na istotne podobieństwo samicy do omówionych poprzednio gatunków, wymaga jednak dalszych badań.

РЕЗЮМЕ

[Заглавие: Ревизия рода *Sitticus* SIMON, 1901 (*Aranei, Salticidae*). II. *Sitticus saxicola* (C. L. KOCH, 1848) и родственные формы].

Автор рассматривает морфологическое строение, индивидуальную изменчивость, географическое распространение и биологию трех видов из рода *Sitticus* SIM. Ревизия двух близкородственных видов: *Sitticus saxicola* (C. L. KOCH, 1848) и *Sitticus lineolatus* (GRUBE, 1861), являющихся горно-бореальными видами, из которых первый распространен в Европе, а второй в восточной Палеарктике и в Скалистых горах в Северной Америке, позволила ввести в синонимы значительную часть связанных с ними описаний и названий. Третий вид, описанный из Венесуэлы *Sitticus cabellensis* sp. n. временно включен в род *Sitticus* SIMON, 1901 поскольку его самка характеризуется существенным сходством с двумя предыдущими видами. Необходимо, однако, дальнейшие исследования над этим видом.



Redaktor pracy — dr W. Starega