

# New psammophilous Solifugae, chiefly from desert regions of the Kalahari and South West Africa



by  
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### References

In addition to the taxa listed above a number of valuable specimens of the following peculiar desert species were collected by Mr. E. Holm at Gobabeb and nearby localities:

*Metasolpuga picta* (Kraepelin).  
*Prosolpuga schultzei* (Kraepelin).  
*Unguiblossia caudulifer* Lawrence.  
*Namibesia pallida* Lawrence.

Since the last census of the Solifugae of South West Africa (Lawrence, 1963), seventeen forms have been added to the faunal list during recent years, raising the known number from 81 to 98 species. Many of them live almost entirely on sand and are characterised by a marked pallor, there being often an almost complete absence of any colour pattern, and a pronounced elongation of the appendages, including the claws of the legs. In both respects they resemble the small scorpion *Uroplectes teretipes* Lawrence from the northern Namib (Rocky Point and Torra Bay).

As more of these desert Arachnida are studied it becomes increasingly apparent that the southern, central and northern areas of the Namib are not only inhabited by forms distinct from the inland fauna of South West Africa, but that each of these three subregions supports a characteristic autochthonous fauna of its own. It should be added however, that the southern and northern subregions of the Namib Desert are still incompletely known. A great deal of valuable material has been and is still being collected by the dedicated workers of the Namib Desert Research Station, Gobabeb, as well as by various other biologists. Their discoveries form the basis for this paper. The following collectors must be singled out for special thanks as having made contributions of new or unusual forms of Solifugae from South West Africa: Mr. E. Holm, Dr. M. Jensen, Dr. L. Schulze, Mr. W. D. Haacke, Mr. F. Gaerdes, Mr. Klaus Schaer, Dr. P. Olivier, Mr. C. G. Coetzee, Dr. H. Dick Brown and Professor W. J. Hamilton III.

The following Table of Contents lists 14 new species and subspecies, described in this paper. In addition the male of *Biton browni* (Lawrence), a species occurring near the mouth of the Orange river, is described.

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sus III with a dorsal row of five long strong spines, tibia with four similar but weaker spines in distal half.

**Dimensions:** Total length 10 mm; pedipalp subequal to or only a little longer than body.

**Remarks:** The species resembles *tripilosa* Lawrence from Namaqualand in the shape of the dorsal jaw, the reduction in the number of its teeth and in the thickened modified hairs of the flagellum; the ventral jaw in *hamiltoni* is, however, much longer anterior to the teeth and more strongly curved, with four instead of six teeth; the number of ctenidia is about the same but they are larger and thicker in *hamiltoni*. The type of *longitarsis* Lawrence from Gobabeb is probably a female and is thus not strictly comparable with *hamiltoni* which also differs from *hewitti* in the dentition.

### Family Daesiidae

Genus *Hemiblossia* Kraepelin

*Hemiblossia robusta* n. sp.

(Fig. 1e)

**Holotype** ♀, Hardap Dam, Mariental, S.W. Africa, 24.X.1968 (R. F. Lawrence).

This species comes very near to *michaelseni* Roewer described from Omaruru in northern S.W. Africa.

**Colour:** Body entirely pale, as in *michaelseni*; pedipalp with tibia, a small spical portion of metatarsus and whole of tarsus (except the pulvillus), violet; tibia much lighter than metatarsus-tarsus which is blackish purple, basal five-sixth of metatarsus white.

**Setation:** Chelicerae with sparse short setae, headplate with shorter setae except at the back and sides; abdominal tergites almost smooth.

**Pedipalp:** Femur with one long inner spine, tibia with two inner and three outer spines in distal half; metatarsus with four strong inner spines forming a regular row, four outer spines and a fifth smaller spine at basal end of the row; tarsus without spines. Viewed from the side, tibia is much deeper than metatarsus and with the ventral side distinctly curved.

**Dentition:** Jaws massive and deep, especially the dorsal one which is almost twice the depth of the ventral (Fig. 1e). Both jaws with scattered coarse granules of variable size on their outer surfaces, ventral with 13 to 15, dorsal with 5 or 6 such granules, a short indistinct coarse keel on both jaws near the fang-tip. Dorsal jaw with six large teeth in the outer series. Ventral jaw with only a single distinct tooth, the large anterior tooth; posterior main tooth represented by a low swelling. Stridulatory area with six long, fine ridges.

**Dimensions:** Total length 14 mm; of pedipalp 8.5 mm.

**Remarks:** The species is characterised by its robust facies and short, deep, massive jaws; in *michaelseni*, which it most closely resembles, the jaws are much longer and comparatively more slender. The ventral jaw of *michaelseni* has two well-developed teeth as compared with one in *robusta*. In its generally pale colouring it closely resembles *michaelseni* except in the pattern of the pedipalp; it also has fewer spines on the pedipalp-metatarsus 4:5 as compared with 10:5 and appears to be a considerably larger species, unless *michaelseni* (body 8 mm) was based on a juvenile specimen.

### Genus *Blossiola* Roewer

*Blossiola pallide-flava* n. sp.

(Figs. 1f, 3a)

**Holotype** ♂, 2 ♀♀ paratypes, Twee Rivieren, Kalahari Gemsbok National Park, C.P., I:1967 (W. D. Haacke).

### MALE

**Colour:** Entirely pale yellow without darker markings.

**Setation:** Chelicerae (Fig. 3a) with a few stout, blunt-tipped, dorsal spines of varying size, laterally with a few shorter spines. Headplate almost smooth, with a ground coat of very fine short setae, among them a few spinose setae resembling those of chelicerae but much shorter, the posterior margin with much longer setae forming a backwardly projecting fringe, a pair of strong setae between the eyes on anterior margin, a few more located between and just behind them. First thoracic tergite with spines similar to headplate, the second with scattered spines in posterior half. First abdominal tergite with sparse scattered spines in anterior half, remaining abdominal tergites with progressively fewer and smaller setose spines backwards, the last two with long slender setae only. First stigma-bearing sternite on each side with a contiguous pair of long, weakly curved, blade shaped ctenidia which are a little wider in the middle and taper slightly at their apices.

Pedipalp, metatarsus and tarsus thickly covered dorsally and ventrally with a fur-like covering of very short, erect, cylinder bristles; tibia with similar bristles on ventral surface except at its base and on distal half of dorsal surface; femur with a few ventral but no dorsal bristles. Femur below with a row of five blunt spines, tibia with nine, metatarsus with four, all on the inner side; spines of the metatarsus a little shorter than those of tibia, tarsus without spines.

**Dentition:** As seen in Fig. 3a, teeth of the outer series well-defined and sharp, seven in number, the last two subequal; intermediate tooth of ventral jaw unusually large, only a little shorter than the adjacent main (second) tooth; inner series with three teeth, the two posterior ones close to-

gether; considerably smaller than the anterior one and widely separated from it.

**Flagellum:** As seen in Fig. 1f, with a strong longitudinal axis continuing along its whole length, in general appearance closely resembling that of *namaquensis* Purcell, but much longer and more slender, its length almost six times its greatest width (in *namaquensis* it is four times); almost all the middle portion covered with triangular scale-like denticles which become progressively more slender and setiform at the sides which appear to be fringed; opening of flagellum on inner side extending almost its entire length and thus considerably longer than in *namaquensis* (cf. Purcell, 1901:212, Fig. 2). Two principal setae of dorsal jaw inserted just behind the level of basal attachment of flagellum, not much thicker than the others, apparently smooth but under magnification seen to bear a few very minute prickles.

**Legs:** Claw of leg IV very long, slender and strongly curved, if straightened it would easily exceed the combined length of the two tarsal segments, these also very long and slender.

**Dimensions:** Total length 13 mm; of pedipalps 15 mm.

#### FEMALE

**Colour:** similar to that of ♂.

**Chelicerae** more massive, spines of chelicerae, headplate and tergites in general fewer and shorter than on anterior margin of headplate; behind these are two smaller spines, a ring of small spines along the posterior curve of each eye, a longer spine behind ocular tubercle (in line with the outer margin of each eye) and a spine lateral to the ocular tubercle on each side, a little more than the combined width of the eyes from it. First thoracic tergite with a row of eight, second with a row of four long spines on posterior margin; spines of abdominal tergites irregularly scattered and small. Abdomen with a pair of ctenidia on each side of the first stigma-bearing sternite but less modified than in the ♂, longer, more slender and almost straight.

**Pedipalp:** Femur without spines, tibia with about eight spines, some of them paired; metatarsus with two in basal half of inner side; tarsus without spines.

**Legs:** Tarsal segments of IV much shorter than in the ♂ but the claws long, considerably exceeding the combined tarsal segments in length; in the ♀ the two segments are subequal, while in the ♂ the basal segment is distinctly longer.

**Dentition:** Outer series with seven well-defined teeth differing little in size, intermediate tooth well developed; intermediate tooth of ventral jaw much smaller than that of ♂; inner series with three teeth, a little larger than those of ♂, otherwise similar.

**Dimensions:** Total length 15 mm; pedipalps shorter than total length.

**Remarks:** The new species is obviously related to *namaquensis* (Purcell) from Steinkopf, Namaqualand, but differs in the longer and more slender flagellum in which the opening on the inner surface is much longer. Both jaws are also much longer and relatively more slender; the intermediate tooth of the ventral jaw is much larger and subequal to the second main tooth, instead of being much smaller as in *namaquensis*.

#### *Blossiola schulzei* n. sp.

(Figs. 3b, c, d, e)

**Holotype** ♂, allotype ♀, Hardap Dam, Marien-tal, S.W. Africa. — XI:1968 (R. F. Lawrence).

#### MALE

**Colour:** Chelicerae and headplate pale yellow, opisthosomal tergites very faintly infuscated violet; femora to metatarsi of all legs pale violet with reddish tinge but basal segments and tarsi pale; on anterior legs these segments only infuscate at the sides; except for basal half of femur, pedipalp darker violet than legs.

**Setation:** Chelicerae with long slender blackish setae, which are clothed with accessory spines or granules as in *B. robusta*; headplate covered with setae of varying length, the longest similar to those of the chelicerae; thoracic and abdominal tergites with a row of similar setae bordering their posterior margins, otherwise sparsely covered with setae of variable length.

First stigma-bearing sternite on each side with three long, strongly curved, blade-shaped ctenidia, slightly flattened and expanded in the middle but with pointed apices.

**Pedipalp:** Femur unspined, inner margin of tibia with four long sloping spines, outer margin without; metatarsus with three spines on the inner side only, stronger but shorter than those of the tibia, tarsus without. Metatarsus-tarsus rather sparsely clothed with cleft bristles of varying size, more numerous on ventral than on dorsal surface and in distal than in proximal half; these bristles covered with saw-like rows of minute spicules.

**Legs:** Claw of leg IV not greatly elongate, distinctly shorter than the combined tarsal segments which are very slender, being more than ten times as long as wide.

**Flagellum:** As seen in Fig. 3c, its lower margin describing a weak but regular curve, the apex somewhat swollen and resembling the outline of a bird's head (Fig. 3d). Just above the rotatory centre of flagellum a stout and short principal seta is implanted on the outer side. As shown in Fig. 3e it is smooth, somewhat flattened and expanded in its distal half, differing in this respect from *karrooica* (Purcell) and *brincki* Lawrence where it is slender throughout its entire length and provided with fine spicules.



**Dentition:** Dorsal jaw on the outer side with a distinct denticle very near its upper margin above the second tooth (Fig. 3b), similar to that found in *maraisi* (Hewitt) and *karrooica* (Purcell). Eight teeth in the outer, three in the inner series, the two anterior ones larger than any of the outer series, the third one a little smaller. Ventral jaw massive, especially posteriorly, with four teeth, the anterior ones obsolete, broadly rounded or truncate.

**Dimensions:** Total length 10 mm; femur + tibia + metatarsus tarsus of pedipalp, 4,3 + 4,1 + 3,9 mm in length.

#### FEMALE

**Colour:** Chelicerae and headplate yellow, abdomen dark slate-grey; appendages lightly infuscated, violet.

**Setation:** Chelicerae and headplate with setae as in the ♂ but shorter and weaker; abdomen almost smooth. No ctenidia on ventral surface of abdomen.

**Pedipalp:** Femur without spines, tibia with four to five on inner side, the basal ones more pointed; metatarsus with three spines on inner side only. Claw of leg IV short, little more than half length of combined tarsi.

**Dentition:** Normal, with seven teeth in outer series of dorsal jaw, inner series with three moderate sized teeth, the basal one smaller than the others which are subequal; middle tooth a little nearer the basal than the apical one. Seven stridulatory ridges.

**Dimensions:** Total length 12,5 mm, pedipalp length 12 mm.

**Remarks:** The species falls within a group which includes *hessei* (Lawrence), *karrooica* (Purcell), *orangica* (Lawrence), *brincki* Lawrence and *maraisi* (Hewitt), but is quite distinct from any of them. The general shape of the flagellum recalls that of *filicornis* (Hewitt) but the dentition of the dorsal jaw is quite different. The new species is named in honour of Dr. L. Schulze of the Transvaal Museum, who has collected many interesting forms of Solifugae in the desert regions of S.W. Africa and the Kalahari.

#### *Blossiola homodonta* n. sp.

(Figs. 4a, b)

**Holotype** ♂, allotype ♀, Unjab River mouth, 5:XI:1968 (R. F. Lawrence); under stones on flats between dunes.

#### MALE

**Colour:** Generally with very light violet infuscation; headplate lightly infuscated, its anterior border with a narrow dark margination; posterior margin of headplate and thoracic tergites similar-

ly coloured but less distinct; abdomen with lateral margins of the tergites and their posterior borders with faint infuscation and a weak median stripe; appendages, except the basal segments and tarsi, weakly infuscated light reddish violet.

**Setation:** Chelicerae with about twenty rather strong dorsal setae, their apices not tapering; headplate with a few large setae, two short ones on posterior margin, the outer ones longest; second thoracic tergite with a row of six setae on its posterior margin, the outer ones longest; second thoracic tergite with a procurved row of four short, strong spiniform setae close to the posterior margin; abdominal tergites almost smooth, with a ground coat of very short, minute setae; the last two segments with numerous long, cylindrical, apically cleft setae.

First stigma-bearing sternite on each side with four very long, slender, strongly curved ctenidia uniform in width throughout, their apices pointed and crossing each other (cf. Roewers' figure of *B. crepidulifera* (Purcell), 1934, Fig. 261 i).

**Pedipalp:** Tibia with a rather irregular row of five inner and four outer weak spines, the outer weaker than the inner ones; femur similar but with four inner and five outer spines; metatarsus with three inner spines, tarsus without spines, both thickly covered with a brush of cylinder bristles, those of ventral surface longer.

**Legs:** Leg IV very long and slender, considerably exceeding total length of body, with very slender, elongate tarsi, their combined length about ten times their width; longer than the claws.

**Dentition:** Seen in Fig. 4a: outer series of seven teeth of dorsal jaw all small and subequal, the two basal ones a little larger; both jaws long and slender, especially the distal half of ventral jaw. Inner series of dorsal jaw with three teeth, the anterior one very large (largest of all teeth of the dorsal jaw), the middle one moderate, the basal one minute and contiguous with the middle tooth which is far removed from the anterior one.

**Flagellum:** As seen in Figs. 4a and 4b, with an indistinct groove-like axis in the middle more clearly seen on its outer surface (Fig. 4a); lower margin of flagellum with a distinct notch just before apex, inner surface with numerous fine striations but few prickles, the opening of the capsule on inner side fairly large (Fig. 4b).

Two principal setae reaching to about the same point anteriorly, apparently smooth but, seen under high magnification, with some fine minute spicules in their distal halves; the outer (lateral) setae shorter and thicker than the inner one.

**Dimensions:** Pedipalp 11 mm; total length 9 mm.

#### FEMALE

**Colour:** Paler than the male, the only darker colour being a narrow margination of the anterior

border of headplate; no median stripe on the abdomen.

Setae on the dorsal surface of chelicerae fewer and much weaker than in the male; four ctenidia on each side of the first stigma-bearing sternite similar to those of the male.

**Dentition:** Jaws long and slender, though less so than in the male; teeth normal, sharp and large; first main tooth of dorsal jaw little smaller than second, intermediate tooth large, third main tooth a little smaller than second. Inner series with three teeth, anterior one largest, the posterior smallest, the latter very close to the middle one which is far removed from the anterior one; the largest of the inner teeth smaller than any of the outer series and much smaller than the anterior, main, teeth (the reverse is found in the male). Two main teeth of ventral jaw subequal, not widely separated. Stridulatory area of chelicera with six long ridges.

**Pedipalp:** Femur with about four spines on each side of ventral surface, those of inner side larger; tibia with eight inner and an irregular row of seven smaller outer spines; metatarsus with three to four inner, no outer spines.

**Dimensions:** Total length 14 mm, pedipalp 13,5 mm.

**Remarks:** This species is probably allied to *macilenta* Lawrence which it resembles in the number and form of the ctenidia, and in the slender shape of both jaws. It differs in having all the teeth of the outer series of the dorsal jaw small and subequal, in having a differently shaped flagellum and in lacking a very thick, blunt-tipped, principal setae near the outer upper edge of the dorsal jaw.

*Blossiola robusta* n.sp.

(Figs. 3f, g, 4c)

**Holotype** ♂, allotype ♀, Keetmanshoop, S.W. Africa, X:1968 (R. F. Lawrence) under stones.

**MALE**

**Colour:** Whole of dorsal surface, except the interstices of the thoracic segments, light violet with reddish tinge, headplate with a narrow darker anterior margination; chelicerae without or with ill-defined longitudinal stripes; headplate bisected by a fine light stripe; pedipalp, except at apex of femur, much lighter than dorsal surface or than leg IV, tarsus pale; femur, tibia and basal half of metatarsus of legs III and IV similar in colour to dorsal surface, their tibiae and metatarsi infuscate only at the sides, their trochanters and tarsi pale; leg II and to a lesser extent leg I with only the femur darkened at the sides. Entire ventral surface of specimen pale.

**Dentition:** Very similar to that of *pallide-flava* n.sp.

**Flagellum** (Fig. 4c): Long and slender, resembling that of *pallide-flava* but less slender; five instead of six times as long as wide; when rotated forwards, the apex surpasses the apex of dorsal jaw by more than the distance between fang apex and first tooth.

The short spines of the dorsal surface of chelicerae with numerous minute but distinct granules (Fig. 3f), much stronger than those of *pallide-flava*. Two principal setae with microscopic, hardly perceptible, prickles at their apices.

**Pedipalp:** Femur with five inner spines, tibia with seven inner, four outer spines, metatarsus with four inner, no outer spines.

**Ventral Surface:** Apparently with three ctenidia on each side of first stigma-bearing sternite; although all the ctenidia except one have been lost, the scars of three sockets arranged in a triangle are visible. Ctenidium as seen in Fig. 3g and quite differently shaped from that of *pallide-flava*.

**Dimensions:** Total length 13,5 mm, pedipalp 17,5 mm.

**FEMALE**

**Colour:** As in the male.

**Pedipalp:** Femur of pedipalp with one apical inner spine, tibia with seven to nine outer, eight to nine inner spines arranged in irregular rows; metatarsus with four inner and one outer spine at base. A pair of ctenidia present on each side of stigma-bearing sternite; they are long, very slender and almost hair-like, of uniform width throughout but pointed, and thus quite different from those of the male.

**Dimensions:** Total length 16,3 mm, pedipalp 14,3 mm.

**Remarks:** The new species forms a group together with *pallide-flava* Lawrence, *grandicornis* (Lawrence), *laminicornis* (Hewitt) and *namaquensis* (Purcell). It differs from *pallide-flava*, *grandicornis* and *namaquensis* by its distinctly darker colouring and larger size. It seems to be intermediate to *pallide-flava* and *grandicornis* in the slender shape of the flagellum with its opening on the inner surface. The flagellum of *robusta* also seems shorter than that of others of the group. The stout spines on the dorsal surface of the chelicerae in the new species are provided with numerous minute but distinct granules (Fig. 3f), which are almost absent in *pallide-flava*.

*Blossiola gaerdesi* n.sp.

(Figs. 4d, e, f)

**Holotype** ♂, Okahandja, S.W. Africa, XII: 1968, (R. F. Lawrence).

**Colour:** Chelicerae and headplate dark purple almost black, thoracic segments pale with broad blackish lateral margination; anterior abdominal

tergites light violet or almost pale, the last five dark, as in the headplate and chelicerae, pleurites of abdomen black, ventral surface very pale, contrasting sharply with dorsal surface but with the last few sternites light violet, progressively more infuscated at the sides, anal segment deep purple. Apex of femur and tibia of pedipalp light violet, metatarsi darker at base and apex, the middle much lighter; legs III and IV with a little more than distal half of femora dark violet, remaining segments with violet stripes only at the sides, even the tarsi pale violet; anterior legs pale or with only faint traces of violet.

**Setation:** Chelicerae above with strong, rather blunt-tipped, cleft, spiniform setae, most of them with fine surface granules; headplate with a ground coat of very short spiculiform setae; some long setose spines on ocular tubercle, some others forming a curved row along the posterior margin of headplate, these of variable size, the outer ones long and strong; thoracic tergites with a less regular row of spinose setae near their posterior margins; abdominal tergites almost smooth but with spinose setae anteriorly at the sides.

First stigma-bearing sternite with two short thick ctenidia on each side, fairly sharply pointed at their apices (Fig. 4e); the two pairs well separated from each other, but the individual ctenidia contiguous on each side.

**Pedipalp:** Femur with two spines near inner apex; tibia with three inner, two outer spines, the inner longer than the outer; metatarsus with three inner (all much shorter than those of the tibia) and no outer spines. Claws of leg IV much shorter than the combined tarsi.

**Flagellum:** As seen in Fig. 4d, somewhat as in *unguicornis* (Purcell) but much longer and relatively more slender. There is a wide central axis which becomes more sharply defined distally and which projects beyond the apex of capsule, where it is smooth, curved and claw-like; opening of capsule extending  $\frac{2}{3}$  to  $\frac{3}{4}$  length of flagellum. Only one principal seta on dorsal margin a little behind the rotatory centre, only a little thickened and with extremely minute prickles in apical third; none of the other setae enlarged or modified. Stridulatory area with five to six ridges.

**Dentition:** Both jaws massive, dorsal one with an inconspicuous blunt tubercle between anterior tooth and fang-tip which is short (Fig 4f); no tooth on the lateral surface near dorsal margin above the second tooth; the teeth of both jaws robust, intermediate tooth large; dorsal jaw with seven outer teeth; inner series with three, the anterior one large, the second moderate.

**Dimensions:** Total length 10,8 mm, pedipalp 12 mm.

**Remarks:** This species has affinities with *unguicornis* (Purcell) from near Uitenhage and *laticosta* (Hewitt) from N.E. Transvaal, in having both jaws massive, armed with large teeth and in

having only a single, modified, principal setae. It resembles the latter species in the form of the flagellum which is however longer in the S.W. African species; the dentition of *gaerdesi* is also somewhat different and there are two instead of three ctenidia on each side of first stigma-bearing sternite. It differs from *unguicornis* in its darker colouring and the much longer and more slender flagellum which is four times as long as its greatest width (in *unguicornis* it is  $2\frac{1}{2}$  times, in *laticosta* three times as long).

The species is named for the well-known naturalist and collector, Mr. F. Gaerdes of Okahandja, who has made many valuable contributions to the Arachnid fauna of South West Africa.

*Blossiola sabulosa* n.sp.

(Figs. 4g, 5a, b, c)

**Holotype** ♂, paratype ♂, Gobabeb sand-dunes, Namib Desert Research Station, VI:1969 (E. Holm).

**Colour:** Entirely pale except as follows: setae of dorsal surface blackish brown, eyes large, surrounded by blackish pigment, anterior border of headplate with narrow blackish margination; posterior legs (except tarsi and basal segments) and pedipalpi suffused pale pink.

**Setation:** Chelicerae with 12 to 15 long slender, apically-cleft, dorsal setae, some even longer ones at the sides, especially posteriorly; headplate with a pair of long anterior setae between the eyes, and one at each antero-lateral angle; in addition 3 to 4 setae on each side in anterior fourth of headplate as well as a row of much shorter setae arranged in a curve along the inner and posterior margins of each eye. No long setae in middle of headplate which is covered with very short, fine spicules; posterior margin of the headplate, thoracic and abdominal tergites with a posterior row of long slender setae which are lighter in colour and in general less conspicuous than those of the chelicerae and headplate.

Second stigma-bearing sternite with three long slender ctenidia on each side; blade-shaped, slightly expanded in the middle and pointed apically; the apices crossing each other.

**Pedipalp:** With five slender setiform spines on ventral inner side, none on outer side; tibia similarly with three and no spines, metatarsus with two short strong spines in the middle third of the inner side, its ventral surface with a sparse brush of fine cylinder bristles.

**Chelicerae:** Flagellum long-oval as seen in Fig. 5a, about four and a half times as long as wide; most of the transparent surface of the capsule covered with very fine long striations, its lower surface near apex with a peculiar, spirally twisted, chitinised structure (Fig. 4g). Margins of capsule quite smooth except at the apex where it is slightly frayed.

Two principal setae of dorsal jaw strongly incrassate basally, but quite smooth throughout; the anterior one longer, tapering almost to apex of the jaw. Two distal bristles of the group on inner surface of ventral jaw distinctly thicker than the others, quite smooth; four stridulatory ridges present, these long and distinct.

**Dentition:** Both jaws slender, especially apically (Figs. 5b, c); dorsal jaw with eight teeth in outer series, the two anterior ones small and irregular, the third indistinctly bifid; inner series with three teeth, the two anterior ones small, subequal and widely separated, the posterior (third) minute and subcontiguous with the second.

**Legs:** Leg IV very long, about twice length of body, the claws long and semicircularly curved, about four times as long as those of leg III; if straightened they would be  $1\frac{1}{2}$  times as long as the tarsi combined which are also very long and slender.

**Dimensions:** Total length 9.5 mm; pedipalps 14.5 mm.

**Additional material:** 2 ♂♂ from the same locality, IV and V:1969 (E. Holm).

**Remarks:** The new species resembles *longipalpis* Lawrence from Kamanjab, but differs in details of the dentition and in the much longer and more slender flagellum, which is racquet-shaped in *longipalpis*. It also resembles *macilenta* Lawrence from Brand Kaross, Little Namaqualand, but the shape of the posterior principal setae and also of the flagellum is quite different; *macilenta* has four pairs of ctenidia, *sabulosa* only three.

*Blossiola scapicornis* n. sp.

(Figs. 5d, 6a)

**Holotype** ♂, paratypes 3 ♂♂, Nuwerus, Namaqualand, C.P., —:IX:1969, (W. D. Haacke).

**Colour:** Pale, chelicerae, headplate and abdomen dorsally very lightly infuscated, little darker than the rest of the body; appendages similar, headplate with narrow dark margination in front of the ocular tubercle and at the antero-lateral angles; setae of chelicerae, headplate and abdomen dark brown.

**Setation:** Chelicerae above with 12 to 15 long cylindrical slender setae, none of which are spiniform; headplate with similar setae, four in front and four in a row behind ocular tubercle; middle of headplate with only a few shorter setae, the ground coat composed of very short, fine, fur-like spicules, the posterior and lateral margins with a row of long setae; tergites of thorax and abdomen with a posterior marginal row of setae, those of the abdomen shorter.

Second stigma-bearing sternite with long stout ctenidia of almost the same width throughout,

pointed though not tapering at the apices, which cross; in the holotype and two of the paratypes there are 4:3 ctenidia, in one of the paratypes 4:4; in one of the paratypes also the apices are rounded not pointed.

Pedipalp femur without, tibia and metatarsus with three weak slender inner spines, no outer spines; metatarsus-tarsus with very sparse cylinder bristles, not forming a brush.

**Flagellum:** As seen in Fig. 6a; oval with a fairly long slender stalk, pointed at apex, a ring-like chitinised structure near apex of dorsal surface; opening of capsule on inner side large, its lower fold with numerous weak though long striations; both principal setae incrassate, but quite smooth as in *sabulosa*; five stridulatory ridges, these long and fine.

**Dentition:** As seen in Fig. 5d, only seven teeth in outer series of dorsal jaw, the two anterior ones very small, widely separated, hardly as large as the intermediate tooth which is contiguous with and subequal to fourth tooth (third main tooth) the last three teeth of the series much larger than the others, subequal; inner series with three teeth, the two anterior ones large, well separated, the third small and close to the second. Lower jaw very deep, of almost equal depth throughout; the anterior tooth unusually small, peculiar in being very distant from the intermediate tooth which is obscure and well-removed from the second main tooth; both jaws with an indistinct keel along their outer surface.

**Legs:** Claws of tarsus IV not strongly curved, shorter than the combined tarsi which are very long and slender; the distal segment  $\frac{3}{5}$  the length of the proximal one.

**Dimensions:** Total length 11 mm, pedipalp 13.5 mm.

**Remarks:** The new species has no obvious resemblances to any other species of *Blossiola*; in the shape of the flagellum it resembles *longipalpis* and is nearest this species in the key (p. 105); it can be easily distinguished from this species by the shape and dentition of the ventral jaw as well as by many other details.

*Blossiola falcifera namibensis* n. subsp.

(Figs. 6b, c)

**Holotype** ♂, near Kriess se Rus, Namib Desert Park, —:VIII:1969 (M. Jensen).

**Colour:** Pale, pedipalps and legs very faintly infuscated violet.

**Setation:** Headplate and chelicerae with weak and sparse setae; second stigma-bearing sternite with 2 to 3 ctenidia, these long, curved and pointed, crossing each other.



**Chelicera:** Flagellum, as in Fig. 6b, not tapering sharply to a point as in other forms of this species but fairly wide throughout, its apex not hooked. Posterior of the two principal setae distinctly longer than the anterior one (Fig. 6b); another additional short spiculated setae on the outer surface inserted just below the level of the rotatory centre of flagellum shaft; it is spiculated in the middle and tapers rather abruptly in its middle third which is quite smooth; another, perhaps similar setae, is represented by a large socket scar just below the origin of the anterior principal seta; five stridulatory ridges present.

**Dentition:** Dorsal jaw (Fig. 6c) with the first two teeth large and subequal; the third and fourth small and subequal; seven teeth in outer, three in inner series.

**Pedipalp:** Very long and slender, femur unspined; both tibia and metatarsus with three inner spines, those of the tibia much longer than the metatarsal ones.

**Dimension:** The body is somewhat damaged and cannot therefore be measured, the pedipalps though long, do not or only slightly exceed the body length.

**Remarks:** This subspecies can be easily distinguished from the other forms by the shape of the flagellum and by the long fang-tip anterior to the first main tooth; in the last respect it agrees with the subspecies *longicornis* Lawrence from Outjo, differing in the shape of the wider flagellum, the spiculated seta just below the rotatory axis tapering to a smooth fine point, not blunt or roughened with minute spicules apically.

#### Key to the South West African species of *Blossiola* (males)

1. Ventral jaw with 2 teeth  
*fimbriata* (Kraepelin)
- Ventral jaw with 3 or 4 teeth 2
2. Ventral jaw with 3 teeth 3
- Ventral jaw with 4 teeth 10
3. Flagellum with a narrow stalk expanding distally into a more or less ovate structure with an opening at its apex 4
- Flagellum broad, more or less oval basally, tapering distally to a point 8
4. The 3 to 5 anterior teeth of dorsal jaw very small, smaller than the rest of the series, subequal 5
- The two anterior teeth normal, large 6
5. Both jaws very long and slender, five small subequal anterior teeth in dorsal jaw; intermediate tooth of ventral jaw remote from anterior main tooth, very near posterior main tooth; flagellum not slender, bifid at apex;

four very long, slender, strongly curved, setiform ctenidia on each side

*homodonta* Lawrence

- Both jaws moderately slender, three small subequal anterior teeth in dorsal jaw, the third bifid; intermediate tooth of ventral jaw only a little further from anterior than from posterior main tooth; flagellum long, slender, with a spiral chitinous structure at its apex; three long, slightly curved ctenidia, a little expanded in the middle

*sabulosa* Lawrence

6. Flagellum short, of a tennis racquet shape with a long narrow stalk; three long setiform ctenidia  
*longipalpis* (Lawrence)
- Flagellum much longer, stalk wide and short; ctenidia more or less incrassate 7

7. Flagellum slender, five times as long as wide, with a very strong median rib extending almost its whole length; three long blade-shaped ctenidia on each side, a little wider in the middle; fang-tip of dorsal jaw narrow and sharp, without a tubercle between anterior tooth and apex of fang  
*robusta* Lawrence

- Flagellum four times as long as wide, only the distal half with a median rib which ends in a chitinous beak-like pointed process at apex; short ctenidia on each side, very thick at their bases, tapering rapidly to a point; dorsal jaw massive, its apex blunt with a round tubercle between the anterior tooth and fang-tip  
*gaerdesi* Lawrence

8. Dorsal jaw with two anterior teeth  
*costata* Roewer

- Dorsal jaw with three anterior teeth, a tubercle between first anterior tooth and fang-tip 9

9. Intermediate tooth of dorsal jaw hardly smaller than the main teeth anterior and posterior to it; flagellum rounded at apex

*tricolor* (Hewitt)

- Intermediate tooth of dorsal jaw much smaller than the main teeth anterior and posterior to it; flagellum ending in a fine point

*spincornis* (Lawrence)

10. With two principal spiculated setae  
*falcifera* (Kraepelin) and its subspecies

- With one principal seta 11

11. Principal seta with its proximal two-thirds slightly incrassate and strongly spiculated; flagellum with a small hook at apex; dorsal jaw with the two anterior teeth subequal, larger than the rest of the series; no tooth on its inner surface near upper margin

*filicornis* (Hewitt)

- Principal seta greatly thickened, especially in the middle, quite smooth; apex of flagellum with a small swollen process shaped like a bird's head; dorsal jaw with the two anterior teeth unequal, smaller than the rest of the series, a distinct tooth on its inner surface near the upper margin  
*schulzei* Lawrence

Genus *Eberlanzia* Roewer*Eberlanzia flava trilineata* n. subsp.

Holotype ♂, allotype ♀, paratypes 3 ♂♂, Namib Desert Research Station, Gobabeb, 4:IX:1969 (E. Holm).

This subspecies differs very little from the typical form and I can see no difference in the shape of the jaws, the dentition and the flagellum as shown in Roewer's figures (1941:139, Figs. 53–58).

## MALE:

**Colour:** Differing from typical *flava* in that there is a distinct though narrow longitudinal stripe down the middle of abdomen; lateral borders of the tergites edged with pale violet, giving the appearance of a narrow lateral stripe on each side of the median one; the femur of leg IV pale violet, remainder of the body white except for the spines of pedipalp and the ctenidia which are yellow brown. In some specimens even these colour markings are faint.

**Ctenidia:** Varying from 20:20 in one of the smaller males to 27:29 in one of the larger ones. **Pedipalp:** In all four males the number of spines on the ventral surface of pedipalp is constant, viz. five inner (medial) and six outer (lateral) spines, the two basal ones of the outer row being more slender, pointed and subsetiform while all the others are stout and bluntly pointed "true" spines; tarsus with a single, blunt, inner spine. There is thus a distinct difference in the number from that given for the nominate species which has seven outer and six inner spines (Roewer reverses the position of the spines, giving seven medial and six lateral, but this is no doubt a slip; similarly the single tarsal spine is medial and not lateral as stated by him).

**Dimensions:** Total length of holotype 19 mm; of pedipalp 20 mm; of largest paratype ♂, total length 24; pedipalp 24 mm.

## FEMALE:

The allotype ♀ agrees in the dentition of the chelicerae, in the spination of the pedipalps and legs, and in colouring with my description of the female of *Eberlanzia flava* (1962, p. 215), The lower jaw is considerably deeper and more massive than in the male.

**Dimensions:** Total length 22, pedipalp 17 mm.

**Remarks:** The new subspecies can be chiefly distinguished from the nominate species found at Lüderitz, by the smaller number of spines on the pedipalp and to a lesser extent by the colour pattern of the male.

Genus *Biton* Karsch*Biton longisetosus* n.sp.

(Figs. 6g, h)

Holotype ♂, Twee Rivieren, Kalahari Gemsbok National Park, Cape Province. — V:1969 (L. Schulze).

**Colour:** Chelicerae with a single dorso-lateral and a single dorsal brown stripe, the latter faint and almost obsolete; headplate with the usual pattern of violet markings characteristic of the genus, fading posteriorly; thoracic tergite I with two short crescentic markings on posterior margin, abdomen dorsally with three ill-defined brown longitudinal stripes, the lateral ones (defining the lateral borders of the tergites) wider than the median one. Pedipalp femur with brown longitudinal stripes above and below, the sides yellowish, becoming a little darker at distal apices; tibia, metatarsus and tarsus infuscated brown or yellow-brown but tibia yellowish ventrally. Legs with femur and tibia of IV infuscated brown, III and II similar but the markings becoming progressively lighter in anterior legs. Ventral surface light yellow, malleoli white.

**Setation:** Chelicerae dorsally and dorso-laterally with very long and fairly strong setae, these 12 to 14 in number; headplate with even longer erect setae arranged symmetrically, about nine on each side (posterior margin with a row of four), four shorter ones just anterior to ocular tubercle; tergites in general without setose spines but thoracic tergites with 4 to 6 much shorter ones on posterior margin; abdominal tergites with long setae.

**Legs:** Posterior apex of second trochanter in II to IV with a strong backwardly projecting setose spine, very strong and conspicuous in III where it is about three-fourths length of femur. Tarsi of II and III with a thick, ventral brush of short reddish setae which are denser than on IV where the tarsal segments are much longer and more slender.

**Pedipalp:** Very long, with strong spines and spinose setae; femur with a very strong spinose seta on inner surface located about one fifth from distal apex and, in addition, five strong spinose setae on inner ventral side, stouter and shorter than the corresponding ones of the tibia; tibia with four very long slender setae on inner side which are paired with similar but slightly weaker ones on outer side; metatarsus with an inner and outer ventral row of five spines each, two basal ones of the outer side and three basal ones of the inner side setose and pointed, the others blunt, short and spinose; tarsus without spines.

First stigma-bearing sternite of abdomen with a group of 8 to 9 ctenidia on each side, well separated from each other, expanded and pointed apically, in shape resembling those of *B. haackei* Lawrence (1968, Fig. 4b).

**Dentition:** Ventral jaw longer than dorsal jaw, characterised by the very large, posterior main tooth, minute intermediate tooth and the great distance between the two main teeth (Fig. 6g). Dorsal jaw with outer series of seven, inner series of three teeth, two large and a minute denticle between them, but nearer to the anterior than to the posterior tooth (Fig. 6g).

**Flagellum:** Basal portion oval-circular, the narrow distal portion only slightly longer than the basal part; inner surface of basal portion covered with a delicate, finely striated membrane, but leaving a fairly large opening (Fig. 6h).

Stridulatory area reduced, only 4 to 5 ridges which are restricted to the upper third of the inner surface of chelicerae.

**Dimensions:** Total length 14 mm; of pedipalp approximately 16 mm.

**Remarks:** The species resembles *subulata* (Purcell) in the shape of the flagellum, but in that form the distal drawn out portion is much narrower and markedly longer than the basal portion. In *subulata* teeth are practically absent from the dorsal jaw and in this respect the dentition of *longisetosus* more closely resembles that of *ovambicus* (Lawrence). It doubtless also has relationships with *namaqua* (Kraepelin) differing from it in the dentition, the flagellum (the basal half much wider and more rounded) and in having 8 to 9 pointed ctenidia instead of 15 to 20 clavate ones; the ctenidia of *subulata* also differ widely in shape and number from those of the species described here.

*Biton adamanteus polytricha* n. subsp.

**Holotype** ♂, 2 m. E. Swartport, Richtersveld, Namaqualand, C.P. —:IX:1967 (W. D. Haacke). This subspecies closely resembles *Biton adamantus* Lawrence to which it is obviously related. It differs in the dorsal fang-tip being much more sharply pointed, the flagellum not drawn out so far towards its apex and the distal half being much less slender and wider than in the nominate form; when rotated forwards the tip falls well short of the apex of the fang.

The ctenidia of the second stigma-bearing sternite are 19 to 21 in number on each side instead of eight, while being of the same shape as those of the nominate form. As often in species of this genus, leg IV has two tarsal segments on one side and four on the other.

**Dimensions:** Total length 18 mm, of pedipalp 21 mm.

*Biton browni* (Lawrence)  
(Figs. 6d, e, f)

*Broomiella browni* Lawrence 1965, Proc. Zool. Soc. Lond. Vol. 144 (1), p. 54, Fig. 2E.

1 ♂, Brand Kaross, 1 m. N.E. of Alexander Bay, C.P., —:IX:1968 (H. D. Brown).

Since the male of this species was unknown it is described below.

**Colour:** Uniformly pale yellow without darker markings but femur of leg IV and pedipalps (except at their bases) with faint violet infuscation; abdomen dorsally a little darker than the rest, light brown in the middle.

**Setation:** Chelicerae dorsally with fairly numerous setae which are incrassate basally but taper to a fine point; headplate with long slender setae similar to but weaker than those of chelicerae, about twelve on each side, the groundcoat composed of minute spiculiform setae; four long setae in front of and between the eyes; thoracic and abdominal tergites with fewer and weaker setae, more at the sides.

Coxal segments, especially III and IV, with numerous long thickened bacilliform setae which are of uniform width and slightly cleft at their apices, as in those of *Namibesias purpurea* (Lawrence, 1962:217, Figs. 2a, b); these bacilliform setae irregularly distributed among the other setae, but easily distinguished from them.

Second stigma-bearing sternite with 8 to 11 ctenidia, short, expanded and pointed apically (Fig. 6e), not clavate.

**Flagellum:** As seen in Fig. 6d, f, the apex not finely drawn out, with a large opening on inner surface which continues to the distal apex (Fig. 6f); when rotated forwards this apex clearly falls short of the fang-tip. Stridulatory area with 5 to 6 ridges.

**Dentition:** Dorsal jaw with much reduced dentition, only six teeth in the single outer series, the second main tooth situated very far back, (Fig. 6d); inner series with three small teeth, the anterior one separated and far from the others, advanced to just behind and medial to the second main tooth of the outer series, the posterior tooth minute, the two anterior teeth subequal. Ventral jaw long, the basal tooth placed very far back, unusually far from the anterior main tooth.

**Pedipalp:** Femur ventrally with an inner row of 3 to 4 long setae, another stronger one on its inner surface in apical third; tibia with two irregular rows of 4 to 6 long setae; metatarsus with an inner and outer row of three true spines, situated in the proximal half of the segment and without any cylinder bristles, only a few long slender setae above and below.

**Legs:** Spination formula of tarsus IV, 2.2.2/0 as in the female type; tarsal segments II and III and metatarsi II–IV spined as in female (Lawrence, 1965: p. 55).

**Dimensions:** Total length 12 mm, of pedipalp 12 mm.

**Remarks:** The fourth leg of the male of *browni* described above is missing on the one side; presumably it also consists of only two segments as in the other leg. The close proximity of the type locality of *browni* (Oranjemund) to that of the male specimen described above (Alexander Bay, just south of Oranjemund) supports the belief that the two individuals are conspecific; in addition the spination of the legs of both sexes, though not of the pedpalpi, is in agreement. For reasons given below it is no longer necessary to retain the genus *Broomiella* which becomes a synonym of *Biton*; the species *browni* should also be included in the genus *Biton* which it resembles in almost all its characters.

#### Discussion of the genus *Broomiella* Pocock

Pocock (1902:7) separated his new genus *Broomiella* from the allied *Biton* (*Daesia*) on the basis of the fourth tarsus which consisted of two instead of four segments. Roewer later used the character of an additional small tooth behind the second large main tooth of the ventral jaw, a feature not found in any other species among the six families of Solifugae occurring in southern Africa. The same author employed a third character, viz. a single row of ventral spines on the tarsal segments of leg IV instead of the paired row found in all species of *Biton*.

Hewitt (1919:54) without seeing the type, believed *Broomiella lineata*, Pocock's genotype from Pears-ton, C.P., to be merely an aberrant specimen of what Purcell later described as *Daesia schreineri* (1903:14) and which he therefore regarded as a synonym of *lineata*. Roewer on the other hand retained Pocock's new genus in his monograph, placing it in a newly created subfamily, but also did not examine the type, basing his conclusions and figures on the chelicerae of a single male ("die uns in einem Exemplar vorliegt"), without precise locality data, "Capland".

Later authors (Hewitt, 1919:54; Lawrence, 1962:199) expressed considerable doubt as to the validity of a genus based mainly on the tarsal characters. Many specimens of *Biton schreineri* subsequently examined by these authors were found to have two tarsal segments on one side of the posterior pair of legs and four on the other. In males of *schreineri* from Graaff Reinet in the collections of the Albany Museum the writer found many specimens with both of the fourth pair of legs missing or with one of these missing; of ten separate legs examined, eight had four-segmented tarsi and two had two segments so that while the normal number appears to be four there can frequently be two on one side in the last pair of legs.

*Biton schreineri* is not the only species of the genus in which the number of tarsal segments of

leg IV is asymmetrical; I have also found it in the males of *striata*, *rhodesianus* and *adamanteus polytricha* described in this paper.

In many small, fast-moving Solifugae the last pair of legs is easily lost or discarded by autotomy; this frequently occurs in males of *Blossiola* and *Biton* where the fourth pair of legs is distinctly longer than in the females. Male specimens frequently arrive in Museum collections with the fourth pair already disarticulated, the break occurring between the second trochanter and the femur. As these limbs are not regenerated in adult individuals it is difficult to explain the variation in number of segments of the fourth tarsus. All that can be said is that it does quite frequently occur in the genus *Biton*, perhaps originating in the moulting preadult stages when the tarsi of the rapidly growing animals are injured or lost and subsequently regenerated. Although four tarsal segments are the norm there may, for reasons unknown, be a failure in some individuals to have more than a single division on one side of the body, thus producing a tarsus with two instead of four joints.

Through the courtesy of the British Museum of Natural History, I have been enabled to see the male type of Pocock's *Broomiella lineata*; I am especially indebted to Mr. D. J. Clark and Mr. E. Browning of the Department of Arachnida who kindly made it available to me.

The following points which emerge as the result of an examination of this type lead me to accept Hewitt's view that *lineata* and *schreineri* differ very little in dentition and flagellum, and that *Broomiella* cannot be separated from *Biton* (= *Daesia*); accordingly *Biton schreineri*, having been described at a later date (Purcell, 1903:14), becomes a synonym of *lineata*.

(i) I cannot detect in either chelicera of the type the small, tooth behind the second main tooth of the ventral jaw which is figured by both Pocock and Roewer.

(ii) Only one of the fourth pair of legs is present in the type; the tarsus of this leg has only two segments, which, as has been pointed out, is quite common in *schreineri* and other species of the genus *Biton*. Roewer gives only 1.1.1/0 spines on the two tarsal segments of this leg in his alleged specimen of *lineata*, regarding this as one of the important characters of the genus *Broomiella*, the spine formula for *Biton* being 2.2/0/2/0. In the type of *lineata* there are 1.1.2.2/0 spines and the paired ones of the basal segment situated in its distal half are much longer, thicker and more conspicuous than the two single spines in the proximal half.

Pocock's description of the spination of these segments is not clear but in his illustration of tarsi III and IV (IV presumably being the one on the left) the tarsus is viewed from the side so that probably only one of each of the distal paired spines is shown; the spinal formula of leg IV



would then be 1.2.2/0 which agrees fairly well with that of the type which, as has been already noted, is 1.1.2.2/0.

(iii) The flagellum of the type is drawn out to a slender elongate point which resembles Roewer's Fig. 276b of *schreineri* more closely than his Fig. 271b of *lineata*. When compared with males of *schreineri* from Graaff Reinet the basal rounded portion of *lineata* is somewhat more slender and while the apex, when rotated forwards, just exceeds the fang-tip, it falls just short of it in *schreineri*. Pocock's figure of *lineata* shows that in slenderness of form the flagellum is about intermediate to Roewer's and Purcell's figures of *schreineri*.

(iv) The ctenidia are pressed together in the type, being indistinct and somewhat difficult to count, but there appear to be forty or a few more, of very variable size, the largest situated near the middle line. They thus agree with my supplementary description and figures of the ctenidia of *schreineri* from Middelburg, C.P., (Lawrence 1962a: 200, Figs. 2a—d) and differ from Roewer's illustration (1954:129, Fig. 113), of the structures in *schreineri* where they are shown as being of uniform size and occupying most of the sternite instead of only a half of it.

(v) Roewer describes his specimen of *lineata* as having four pairs of true spines on the pedipalp-metatarsus. The type has an inner and outer row of five spines each, the three distal ones of the outer side being blunt true spines, the two proximal ones setiform; the inner side similarly has one or two true spines distally, the rest being setiform; the basal spine on both sides is slender and much weaker than the others. From this it can be concluded that the specimens described by Pocock on the one hand and by Roewer on the other, could not have been the same species.

#### Key to the S.W. African species of *Biton* (males)

1. Ventral jaw with 2 teeth  
*striata bidentata* Lawrence
- Ventral jaw with 3 teeth 2
2. Dorsal jaw with only 1 distinct anterior tooth, no intermediate tooth *kolbei* (Purcell)
- Dorsal jaw with 2 anterior teeth, 1 or 2 intermediate teeth 3
3. Two anterior teeth of dorsal jaw contiguous *wernerii* Roewer
- Two anterior teeth of dorsal jaw well separated 4
4. First anterior tooth of dorsal jaw as far from apex of fang as from second anterior tooth; 5—9 ctenidia on each side 5
- First anterior tooth of dorsal jaw much nearer to the second than to the apex of fang; 15—20 ctenidia or more (except *adamanteus*) 6
5. Ctenidia 8—9, short and wide, almost oval but pointed apically; flagellum drawn out into a narrow distal process almost as long as the rounded basal portion *longisetosus* Lawrence
- Ctenidia 5—6, long setiform, almost cylindrical; flagellum almost oval, the distal portion not drawn out into a long, narrow process *ovambicus* (Lawrence)
6. Flagellum drawn out into a narrow distal process longer than the oval basal portion; ctenidia short and club-shaped (16—20) *namaqua* (Kraepelin)
- Flagellum more or less oval, not narrowly elongate distally; ctenidia long, slender and setiform 7
7. Dorsal jaw with 2 intermediate teeth *pearsoni* (Hewitt)
- Dorsal jaw with 1 intermediate tooth 8
8. Flagellum not narrowing to a point distally, not oval, not much wider at apex than at base; 16—18 short, wide axe-shaped ctenidia; pedipalp-metatarsus with 4 pairs of ventral spines *arenicolus* Lawrence
- Flagellum more or less oval, pointed and frayed at apex; pedipalp-metatarsus with 5 pairs of spines including setiform ones, or 4 outer and 1 inner spine 9
9. Two anterior teeth of dorsal jaw subequal *hottentotta* (Kraepelin)
- First anterior tooth of dorsal jaw shorter, or much shorter, than second 10
10. No ctenidia; pedipalp-metatarsus with 4 outer, 1 inner (apical) spine *gaerdesi* Roewer
- Ctenidia present; pedipalp-metatarsus with 5 spines on each side 11
11. Two main teeth of ventral jaw not widely separated; drawn out apex of flagellum more slender and longer, when rotated forwards it slightly surpasses the fang-tip; a wide opening on inner surface of flagellum left by the infolded edges of the capsule *adamanteus* Lawrence
- Two main teeth of ventral jaw widely separated; the drawn out apex of flagellum shorter, when rotated forwards it falls short of the fang-tip; the infolded edges of the capsule meeting or partly meeting in the middle line 12
12. Ventral jaw not strongly curved upwards; intermediate tooth small *striata striata* (Lawrence)
- Ventral jaw strongly curved in a semi-circle; intermediate tooth microscopic *striata curvichelis* Lawrence

**Remarks:** The position of *Biton kolbei* (Purcell) in the key is based on Roewer's description and figures of the male (Roewer, 1934:393, Figs. 275 h1 and 275 h2). Purcell's description was based on a single female specimen from Rhodesia. According to Roewer, p. 405, *loc. cit.*, the species is a widespread one since he records it from the following localities: the Cape, Great Namaqualand (roughly the southern half of S.W. Africa), Windhoek and Bethanie in addition to the type locality. It is however improbable that a species occurring at Bulawayo, Rhodesia, would be the same as one found in S.W. Africa.

Several species such as *cataractus*, *haackei*, *subulata* and *triseriatus* have been described from near the borders of S.W. Africa just south of the Orange river and some of these may later be found on the northern side of the river as well. Generally the S.W. African members of *Biton* are surprisingly distinctive and are confined within the limits of the territory; the same applies to the genus *Blossiola* of the subfamily Daesiinae and probably to most of the genera of Solifugae which are found in S.W. Africa.

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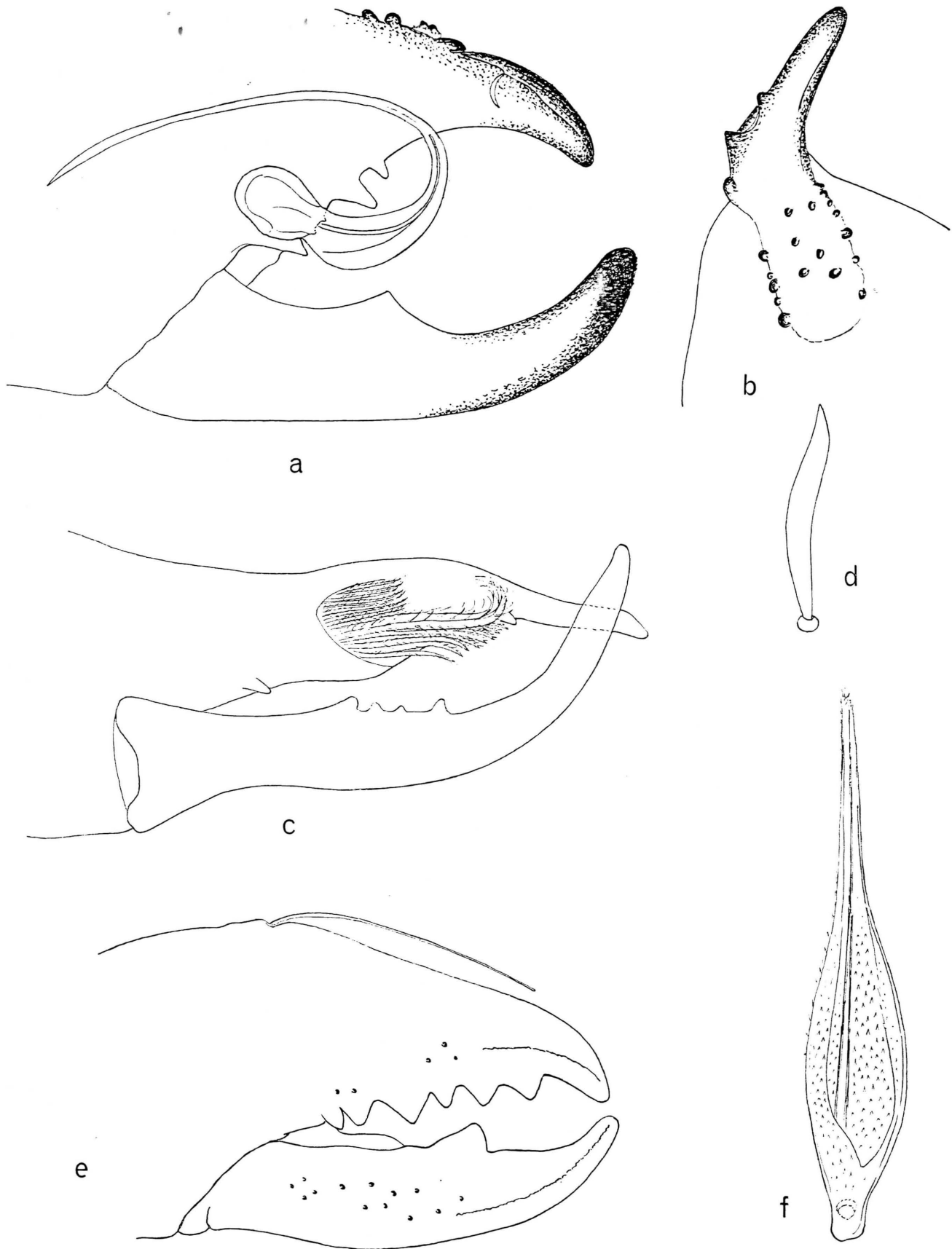


Figure 1. *Hexisopus nigroplagiatus* n.sp. ♂. a. chelicera from inner side; b. apex of dorsal jaw from above. *Lawrencega hamiltoni* n.sp. ♂. c. chelicera from inner side; d. ctenidium. *Hemiblossia robusta* n.sp. ♀. e. chelicera from outer side. *Blossiola pallide-flava* n.sp. ♂. f. flagellum from inner side.

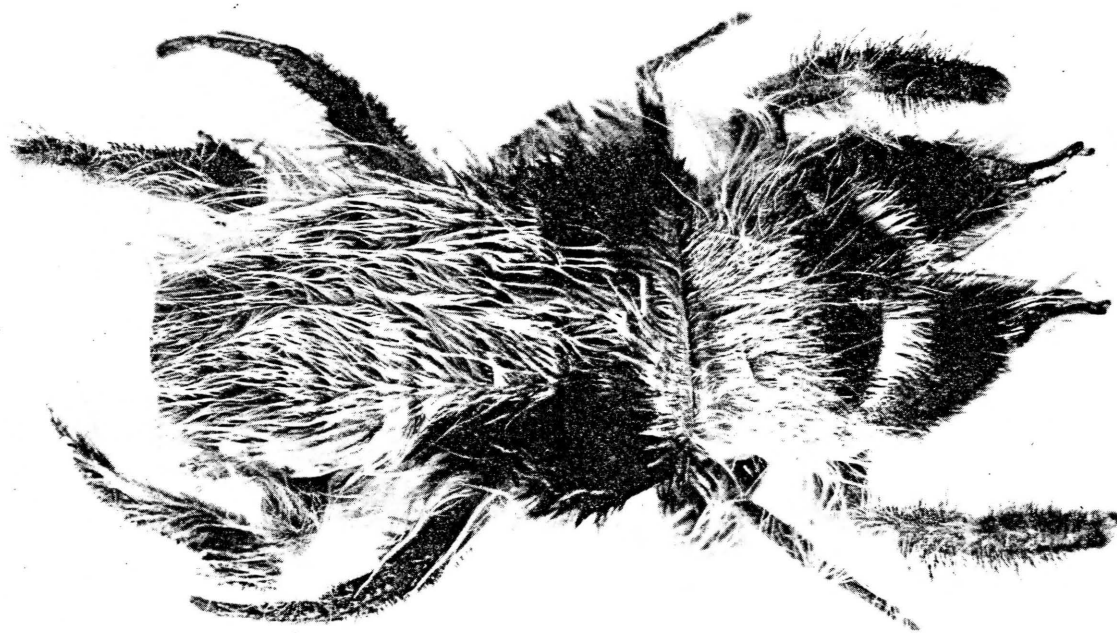


Figure 2. *Hexisopus nigroplagiatus* n.sp. ♂. above, dorsal; below ventral view.



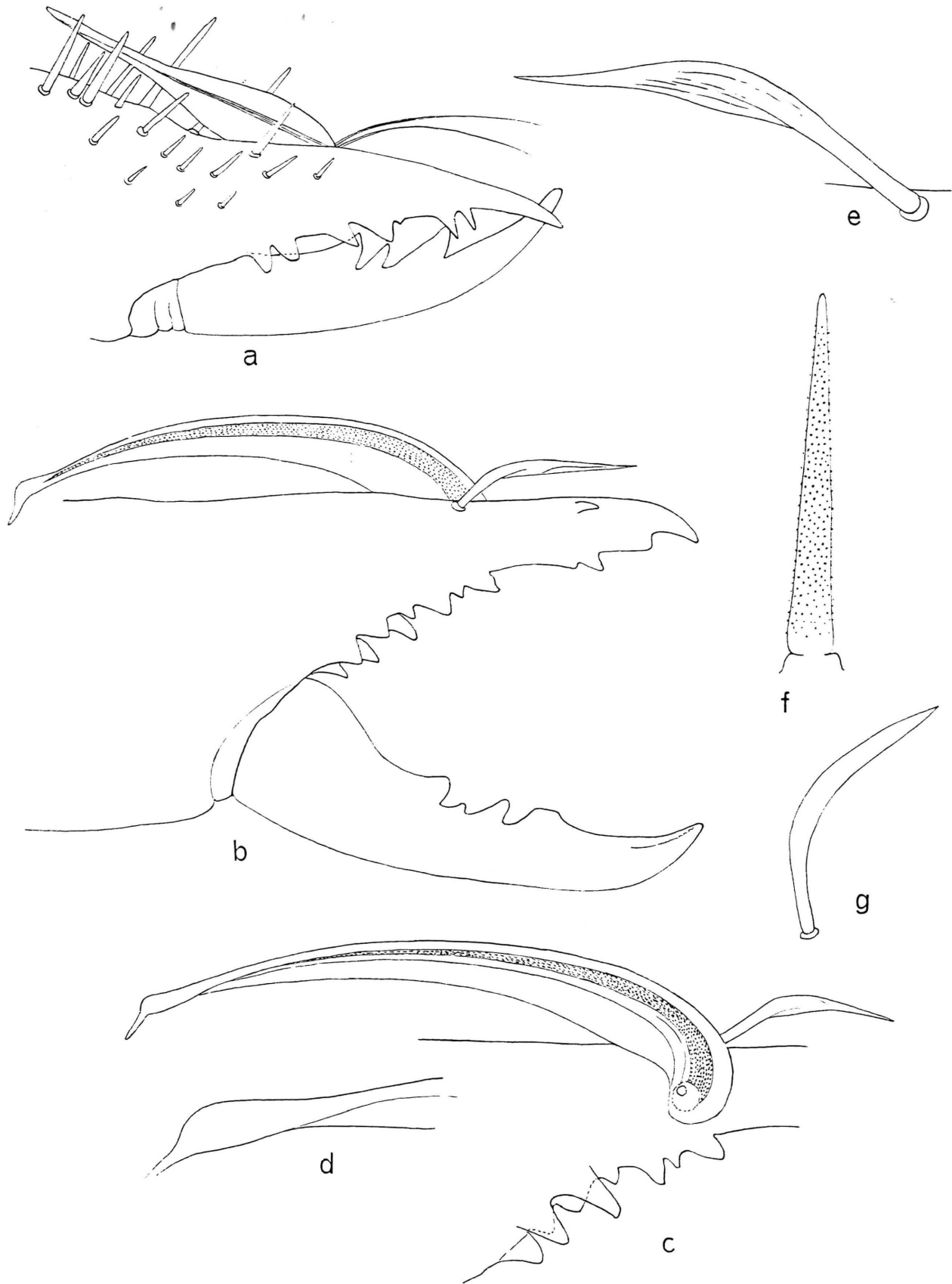


Figure 3. *Blossiola pallide-flava* n.sp. ♂. *a*, chelicera from outer side. *Blossiola schulzei* n.sp. ♂. *b*, chelicera from outer side; *c*, flagellum from inner side, enlarged; *d*, apex of same enlarged; *e*, principal seta, enlarged. *Blossiola robusta* n.sp. ♂; *f*, a spine from dorsal surface of chelicera, enlarged; *g*, ctenidium.

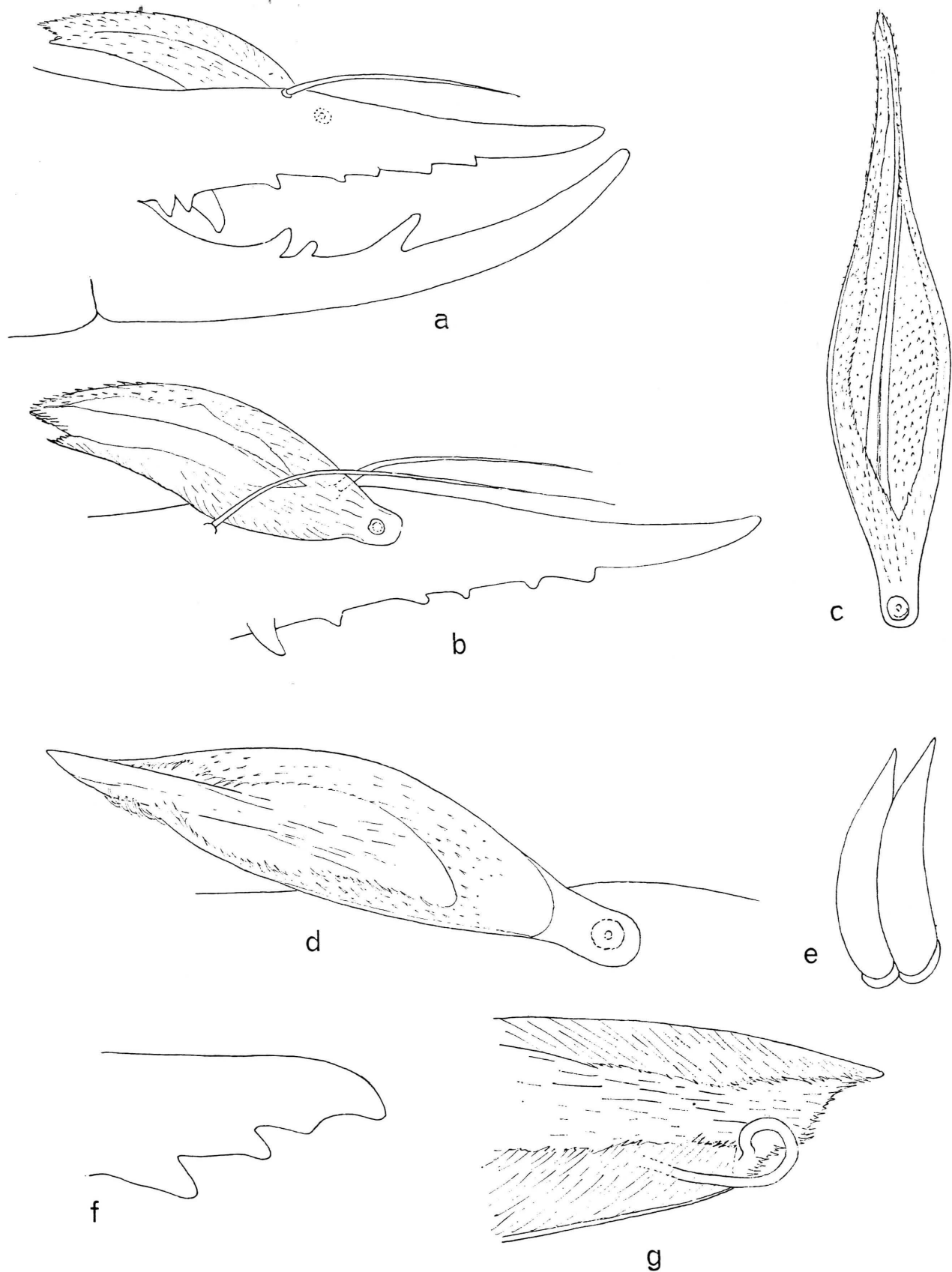


Figure 4. *Blossiola homodonta* n.sp. ♂. a, chelicera from outer side; b, dorsal jaw enlarged, from inner side. *Blossiola robusta* n.sp. ♂. c, flagellum from inner side. *Blossiola gaerdesi* n.sp. ♂. d, flagellum from inner side enlarged; e, ctenidia; f, apex of dorsal jaw enlarged. *Blossiola sabulosa* n.sp. ♂. g, apex of flagellum enlarged, from inner side.

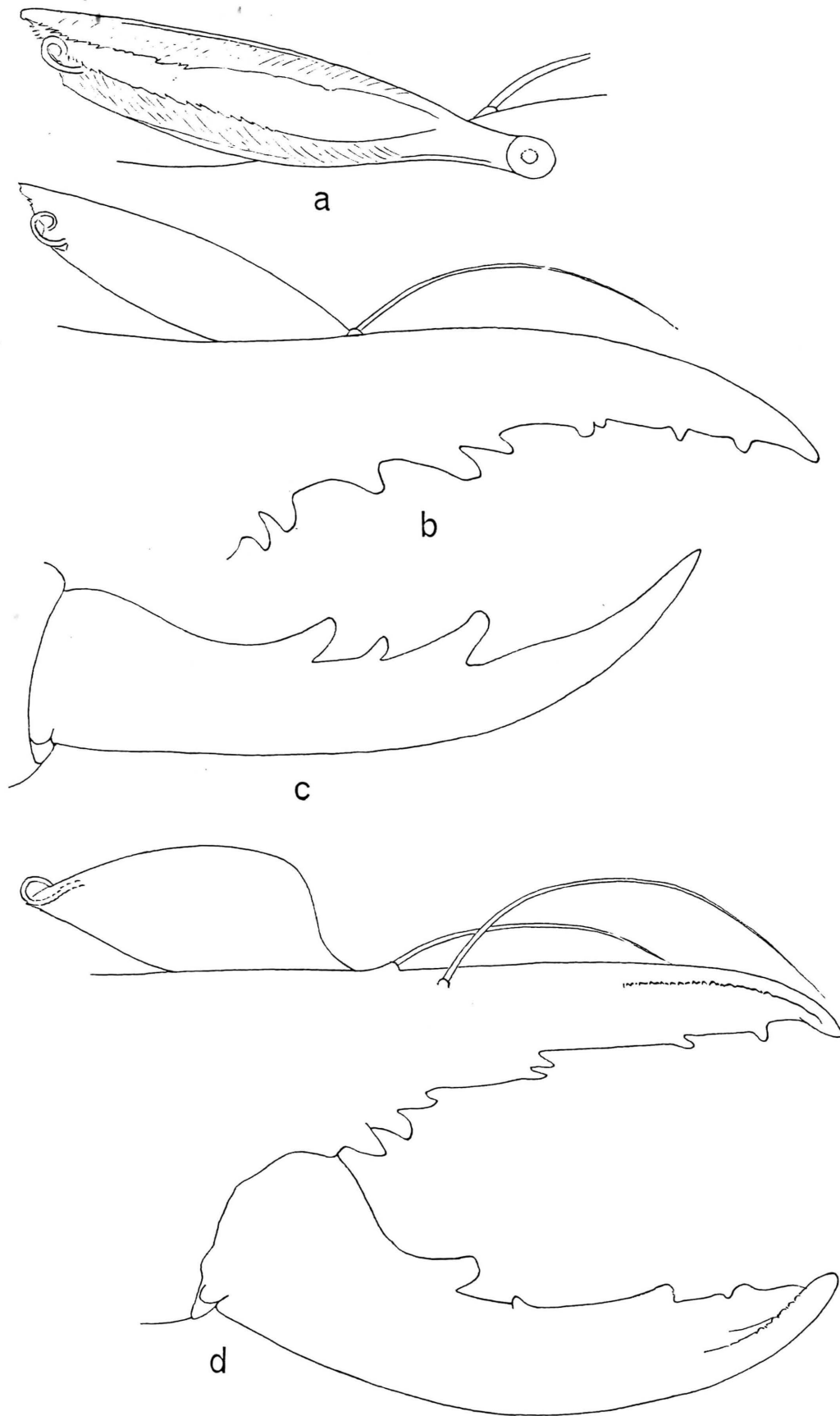


Figure 5. *Blossiola sabulosa* n.sp. ♂; a, flagellum from inner side; b and c, dorsal and ventral jaws from outer side. *Blossiola scapicornis* n.sp. ♂; d, chelicera from outer side.

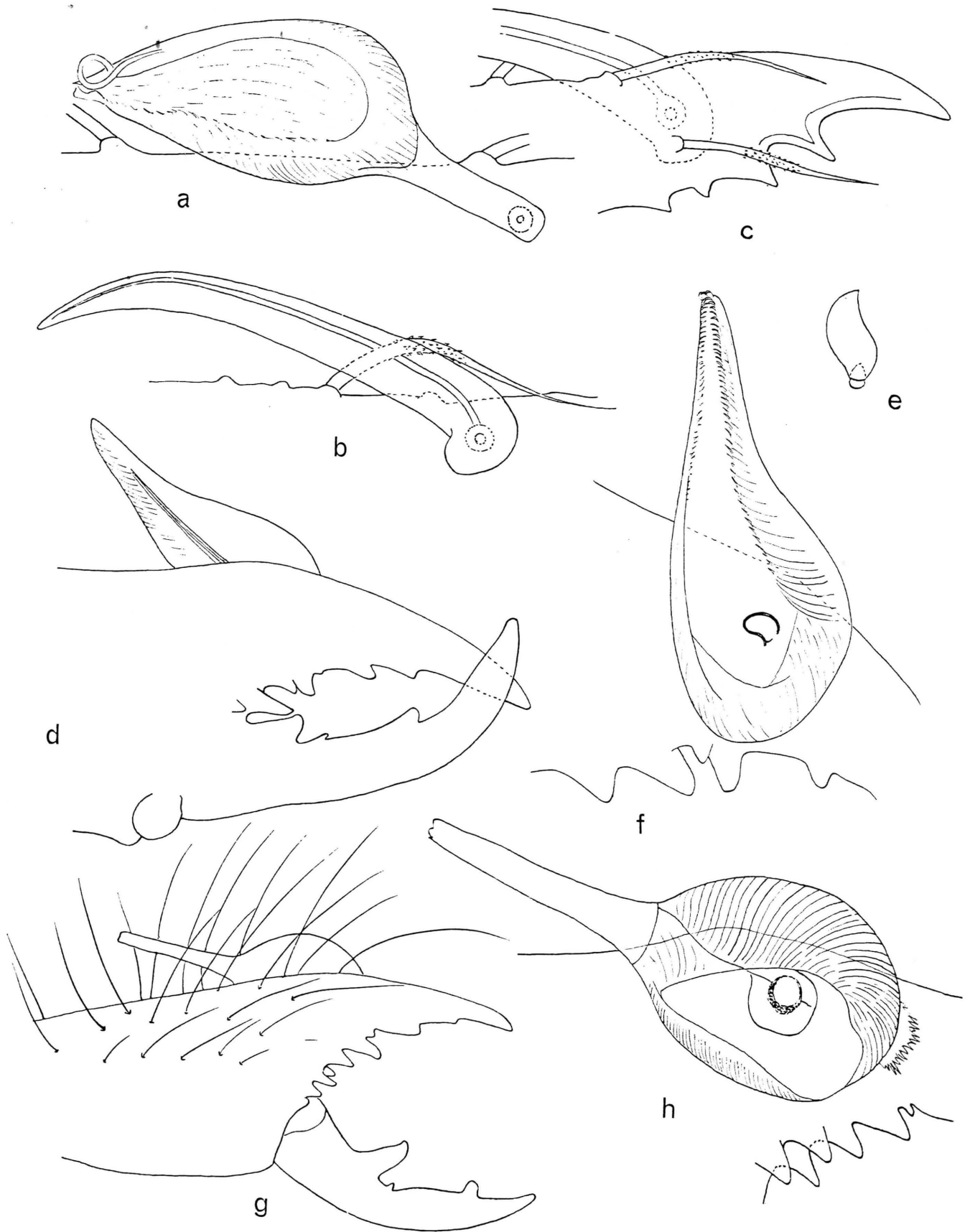


Figure 6. *Blossiola scapicornis* n.sp. ♂; a, flagellum from inner side, enlarged. *Blossiola falcifera namibensis* n.subsp. ♂. b, flagellum from inner side; c, apex of dorsal jaw from outer side, enlarged. *Biton browni* (Lawrence) ♂. d, chelicera from outer side; e, ctenidium; f, flagellum from inner side enlarged. *Biton longisetosus* n.sp. ♂; g, chelicera from outer side; h, flagellum from inner side, enlarged.