Revision of the genus *Phymeurus* Giglio-Tos, 1907
(Orth. Acridoidea)

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Synopsis.

The genus *Phymeurus* has been revised. All known hitherto species redescribed and five new species have been described. All existing types or paratypes were studied and in each case when the types were lost, neotypes were designated. There are now a total of eighteen species.

Introduction.

The genus was first erected in 1907 by Giglio-Tos with only one species *Phymeurus pardalis*. This species was based on one female only. In 1922 Uvarov described the genus *Platyphymus* with the type species *Platyphymus granulatus* Uvarov, 1922. In 1954 he synonymised it with the genus *Phymeurus*. The “Catalogue of African Grasshoppers”, Johnston (1956) lists twelve species. Two more species have since been described by Chopard, 1958, and Roy, 1964. Five more species are described below. The phallic complex and spermatheca of all species have been investigated. Descriptions and drawings are given for both except when females are not known. This is discussed in detail below.

Acknowledgment.

I wish to thank Dr. V. M. Dirsh for his valuable advice during the work and criticism of the manuscript.
THE PHALLIC COMPLEX.

According to the structure of the phallic complex the genus may be divided into two groups and by this character alone may even be considered as two genera. External characters however do not correspond to such a division. In all species a sheath of the penis is present which covers the apical valves of the penis and the valves of the cingulum. The rami are characterised by being narrow and sclerotized, and sometimes possesses obtuse, tooth-like projections. The ectophallic membrane is also a major characteristic feature, which frequently possesses large lateral sclerotizations also with obtuse teeth; dorsally the membrane is more sclerotized at the distal end.

In the first group which includes the type species *P. pardalis*, the apical valves of the penis and cingulum are long, slender and the sheath covers them both completely. The valves of the cingulum are pectering and shorter than the apical valves of the penis. The rami form a sclerotic bands which extend along the sheath of the penis. The following ten species belong to this group *angolensis, chianga, fitzgeraldi, hamatus, machadoi, macropterus, ocellatus, pardalis, rhodesianus, rufipes*. The species vary by different structure of the sheath and apical valves, basal valves, length and structure of the zygoma and apodemes (see figures and descriptions). By the phallic complex features only, each species can be easily distinguished.

The second group differs from the first by the apical valves of the penis and cingulum being generally shorter and more robust. The valves of the cingulum are much longer than the apical valves of the penis, they also possess small obtuse tooth-like projections. The apex of the valves of the cingulum project from the sheath. The apical valves of the penis are short and very wide in profile, these are enclosed in the sheath. The rami as in the previous group are narrow and sclerotized but there is no extra sclerotized band extending along the sheath of the penis. The ectophallic membrane in some species forms very large lateral sclerotizations, e.g. *bigranosus*. Species belonging to this group are *bigranosus, brachypterus, granulatus, illepidus, loamenesis, nimbaensis, reductus, tricostatus*. The main differences in structure are found in the basal valves of the penis, the zygoma, apodemes and the ectophallic membrane.

*P. illepidus* has unusual features for the group as the apical valves
of the penis are widened (in profile) near the flexure also they are not greatly expanded in the middle. However, other characters including the epiphallus are the same as the other species for this group.

The epiphallus also shows diversity between the two groups though not to such an extent as the rest of the phallic complex. The second group tends to have a smaller more robust structure with somewhat larger ancorae, but the general features are similar.

The Spermatheca.

Spermatheca was studied in all available species. All possess similar structure, with three diverticula. The large apical diverticulum always curving backwards at the base, the small preapical diverticulum varying in size in different species, and the third diverticulum not so long as the apical one and narrower. Sometimes there is slight variation within the species.

The Female Subgenital Plate.

After examination of all species, it was found that some of the species differ in structure in the female subgenital plate. All are trilobate with lateral lobes of different size and shape. The character can then to a certain extent be used to help to indentify the females, but not in all species. The subgenital plate was removed and slightly flattened before drawing, each one is illustrated.

Genus Phymeurus Giglio-Tos, 1907.

Platyphymus Uvarov, 1922 (Uvarov, 1954).

From small to medium size and from comparatively slender to robust. Integument rugose and sparsely hairy. Antenna filiform, slightly longer or slightly shorter than head and pronotum together. Fas- tigium of vertex concave or almost flat, with obtuse-angular apex and low lateral carinulae; weak occipital carinula present or absent; frontal ridge with shallow sulcus or with only slight depression under ocellus. Pronotum tectiform; median carina sharp; lateral carinae sharp, or ob-
tuse and partly obliterated diverging backwards and excurved or undulated; crossed by three narrow sulci; metazona as long as, longer than, or shorter than prozona; its posterior margin obtuse-angular, with sides either straight or slightly incurved. Prosternal process tongue-shaped, to spatulate, depressed, with rounded or incurved apex. Elytra and wings fully developed or shortened. Hind femur from moderately robust to robust and widened, with slightly expanded lower marginal area. Arolium moderately large. Last abdominal tergite of male with narrow sclerotization, its posterior margin with median projection, very elongated, small or absent. Supra-anal plate wider than its length, narrowing towards apex or approximately rectangular in apical part, apex elongate obtuse. Pair basal, pair of median and sometimes two or four transverse median tubercles present. Cercus strongly upcurved and elongate in apical part with subacute apex, obtuse or slightly widened, sometimes shallowly tri- or bilobate. Epiphallus with moderately small or large ancorae small lateral plates and long, narrow, upcurved lophi with acute apices. Ovipositor moderately robust, with curved valves; lower valve with small external, lateral projection. Female subgenital plate trilobate, usually with the median lobe larger than the lateral lobes.

Type species: Phymenus pardalis Giglio-Tos, 1907.

Key to Species.

1. (12). Elytra fully developed reaching or exceeding end of hind femur in both sexes.
2. (5). Supra-anal plate of male approximately rectangular in apical part.
3. (4). Median projection of last abdominal tergite of male absent. Male cercus with basal part three quarters length of apical part, basal curvature rounded, tip of apical part bilobate, posterior lobe elongated. Female subgenital plate with lateral lobes larger than median lobe, (Fig. 13.) .......................................................... ILLEPIDUS.
4. (3). Median projection of last abdominal tergite of male elongated. Apical part of male cercus slender three times longer than basal part, basal curvature angular. Subgenital plate of female with lateral lobes very reduced. (Fig. 9.) .................................................. RHODESIANUS.
5. (2). Male supra-anal plate narrowing towards apex.
6. (7). Pronotum with straight sharp lateral carinae, high median carina, posterior margin of metazona with incurved sides. Apex of male cercus shallowly trilobate .................................................. TRICOSTATUS.
Fig. 1.—Male head and pronotum from above: 1) *P. pardalis*; 2) *P. angolensis*, type; 3) *P. fitzgeraldi*, type; 4) *P. chianga*, type; 5) *P. machadoi*, type; 6) *P. hamatus*, paratype; 7) *P. rhodesianus*, type; 8) *P. macropterus*, paratype; 9) *P. ocellatus* paratype.
7. (6). Pronotum with lateral carinae excurved or undulated, median carina moderately low, sides of posterior margin of metazona not incurved. Apex of male cercus single lobed obtuse.

8. (9). Basal part of male cercus more than half length of apical part. Basal curvature relatively broad. Female subgenital plate with very reduced lateral lobes approximately one seventh the length of the median lobe.

9. (8). Basal part of male cercus half length of apical part. Basal curvature relatively narrow. Female subgenital plate with large lateral lobes half length of median lobe.

10. (11). Pronotum short and robust. Fastigium of vertex broad. (Fig. 1.) .......................................................... pardalis.

11. (10). Pronotum long and slender. Fastigium of vertex relatively narrow. (Fig. 1.) .......................................................... angolensis.

12. (1). Elytra not exceeding end of hind femur in either sex, in male reaching supra-anal plate, or in female not reaching it, or greatly reduced in both sexes.

13. (22). Elytra not greatly reduced, exceeding middle of abdomen reaching supra-anal plate.


15. (16). Base of male cercus robust and broad, apical part three times as long basal part. .................................................. macropterus.

16. (15). Base of male cercus slender and narrow, apical part twice as long as basal part. .................................................. hamatus.

17. (14). Male supra-anal plate narrowing towards apex, median projection of last abdominal tergite small.

18. (19). Apex of male cercus expanded, basal part three quarters length of apical part. .................................................. bigranosus.

19. (18). Male cercus narrowing to obtuse apex, basal part approximately half length of apical part.

20. (21). Lateral carinae of pronotum sharp the whole length and comparatively straight. .................................................. granulatus.


22. (13). Elytra greatly reduced in both sexes reaching or slightly exceeding middle of abdomen.

23. (30). Posterior margin of last abdominal tergite of male not greatly expanded and upcurved, median projection absent or very small; supra-anal plate narrowing towards apex.


Fig. 2.—Male head and pronotum from above: 1) *P. rufipes*, type; 2) *P. illepidus*; 3) *P. tricostatus*, neotype; 4) *P. brachypterus*, neotype; 5) *P. granulatus*, type; 6) *P. bigranosus*, type; 7) *P. reductus*, holotype; 8) *P. loamensis*, paratype; 9) *P. nimbaensis*, paratype.

Eos, XLI, 1965.

27. (28). Dorsum of pronotum very coarsely granulose. (Fig. 2.) loamensis.


30. (23). Posterior margin of last abdominal tergite of male greatly expanded and upcurved, median projection elongate; supra-anal plate approximately rectangular in apical part.

31. (32). Male cercus narrow at base, apical part slender, basal curvature rounded. machadoi.

32. (31). Male cercus broad at base, apical part relatively robust, basal curvature angular.

33. (34). Tip of male cercus sharply narrowing at posterior side to subacute apex. Basal projection small. (Fig. 12.) Hind tibia orange-red. rufipes.

34. (33). Tip of male cercus gradually narrowing at posterior side to obtuse apex. Basal projection elongate. (Fig. 11.) Hind tibia yellow. ocellatus.

Phymeurus pardalis Giglio-Tos, 1907.

(Figs. 1, 3.)

♂ Body slender. Integument finely rugose. Antenna longer than head and pronotum together. Fastigium of vertex concave, broader than its length. Occipital carinula present. Frontal ridge with shallow depression near ocellus. Prozona of pronotum longer than metazona; lateral carina excurved between first and third transverse sulci, incurved in metazona and becoming obliterate near posterior margin; pair tubercles on dorsum between second and third sulci present; posterior margin obtuse-angular. Prosternal process tongues shaped. Mesosternal interspace as broad as its length; metasternal interspace longer than its width. Elytra and wings fully developed extending well beyond abdomen and hind femur. Hind femur comparatively slender. Posterior margin of last abdominal tergite moderately expanded slightly upcurved, median projection small. Supra-anal plate narrowing towards apex, apex moderately elongated; median carina raised obtusely, divided in basal half by shallow median sulcus; pair elongated tubercles
at base beneath posterior margin of last tergite, pair small median tubercles at division of median carinula, pair small transverse tubercles between median tubercles and posterior margin present. Cercus slender, basal part half length of apical part, apex sloping backwards.
Phallic complex: apical valves of penis strongly elongated, slender, slightly upcurved and curved at apices, with lower part projecting; valves of cingulum slender, narrowing and petering at apex; both apical valves of penis and valves of cingulum enclosed in large wide sheath; basal valves of penis moderately slender with sides expanded at apices, dorsal ridge roughly irregularly serrated; gonopore processes large forming obtuse projection; zygoma of cingulum robust and broad; rami very narrow, sclerotized forming strongly sclerotized bands which merge with sheath of penis, apodemes robust, long, forming "U-shaped" structure, narrowing towards obtuse apices; ectophallic membrane forms in front small lateral sclerotizations and dorsal sclerotization at distal end. Epiphallus narrow bridged; small ancorae with acute apices; lophi very large tooth-like, comparatively narrow, slender with acute apices and sinuate outer sides.

General colouration yellowish-brown, mottled with beige and brown, or reddish-brown and dark brown with small black spots; pair tubercles on dorsum of pronotum whitish; base of elytron with dark brown spot; wing colourless; internal side of hind femur yellow, with elongated dark brown patch; hind tibia yellow; tips of spines black; tubercles on supra-anal plate black; tips of apex and base of cercus black.

♀ Type (Redescription). As male but larger and differs by meso-sternal interspace twice as wide as its length, metasternal interspace broader than its length. Elytra reaching hind knee. Subgenital plate with large lateral lobes nearly half the length of median lobe. Spermatheca (not type) with large apical diverticulum curving backwards at base, preapical diverticulum small and narrow, less than one eighth the length of apical diverticulum third diverticulum narrow elongated, slightly shorter than preapical diverticulum.

Length of body ♂ 17.6-20.0, ♀ 20.2-21.2; pronotum ♂ 4.9-5.5, ♀ 6.4-6.6; elytron ♂ 15.0-18.0, ♀ 18.3-19.1; hind femur ♂ 11.8-13.0, ♀ 14.0-15.0 mm.

Type locality: “Kwango”. Type ♀, in the Instituto di Zoologia, Via Accademia Albertina, Turin.

Geographical distribution: Congo (former Belgian Congo): Kwango, 1 ♀ (type); Kasai, Lula, 1958, 1 ♀ (A. J. Jobaert); Terr. Luisa, viii. 1956, 1 ♂ (Dr. M. Poll); Katanga, Dolo, 24-27.vii.1931, 1 ♂ (Prof. T. D. A. Cockrell); Lomami, viii.1925, 1 ♂, Barumbu, viii.1925, 1 ♀ (Lt. J. Ghesquière).
This species is related to *P. angolensis* (see *P. angolensis*). It represents the most slender species of the genus. There is slight variation in the length of the female elytra.

**Phymeurus angolensis** sp. nov.

(Figs. 1, 4.)

♀ Type. Of medium size. Integument finely rugose. Antenna as long as head and pronotum together. Fastigium of vertex broader than its length, slightly concave, apex sub-acute. Occipital carinula present. Frontal ridge almost flat with slight depression beneath ocellus, lateral carinulae poorly developed. Prozona of pronotum as long as metazona, relatively smooth, pair of tubercles between second and third sulci poorly developed; lateral carinae moderately excurred between the first and third transverse sulci, diverging in metazona with posterior part obliterated, posterior margin of metazona of pronotum obtuse-angular with sides narrowing sharply to rounded apex. Prosternal process tongue-shaped. Mesosternal interspace as long as its width; metasternal interspace twice as long as its width. Elytra and wings fully developed exceeding end of hind femur, reaching hind knee. Hind femur moderately robust. Posterior margin of last abdominal tergite slightly expanded and upcurved, median projection present but not very elongated. Supra-anal plate narrowing to subacute apex, slightly incised near transverse tubercles; median carinula raised obtuse, divided in basal half by median sulcus; pair elongated tubercles beneath edge of last abdominal tergite, pair small rounded tubercles near division of median carinula, pair small transverse tubercles extending from latter tubercles towards lateral margin present. Cercus upcurved, basal part half length of apical part, apical part slender, apex obtuse.

Phallic complex: apical valves of penis strongly elongated slender slightly upcurved and curved at apices with lower part of apex projecting; valves of cingulum short, slender, narrowing and petering at apex; both apical valves of penis and valves of cingulum enclosed in sheath, basal valves of penis robust with sides expanded at apices, dorsal ridge of valves roughly and irregularly serrated; gonopore processes large, projecting slightly backwards; zygoma of cingulum robust, broad; rami narrow, sclerotized, forming strongly sclerotized bands which merge
with sheath of penis, apodemes long wide forming "U-shaped" structure; ectophallic membrane forms in front lateral sclerotization and dorsal sclerotization at distal end. Epiphallus narrow bridged; ancorae

Fig. 4.—P. angolensis: 1) Distal part of phallic complex from above, with lateral and dorsal sclerotizations of the ectophallic membrane; 2) Phallic complex in profile, with lateral and dorsal sclerotizations of the ectophallic membrane; 3) Phallic complex from above, with ectophallic membrane removed; 4) Phallic complex in profile, with ectophallic membrane removed; 5) Endophallus in profile; 6) Epiphallus; 7) Spermatheca; 8) Variation of male cercus; 9) Male cercus; 10) Female subgenital plate from below; 11) Male supra-anal plate; 12) Prosternal process. (Numerals 1-7, 10, paratypes; Ibidem 9, 11, 12, type.)
small subacute; lophi very large tooth-like, narrow, with acute apices and sinuate outer edges.

General colouration black with dark brown and pale brown patches; eyes yellowish-brown; antenna pale brown above, underneath brownish black; head black and brown above, lower half of frons, gena, clypeus and pronotum pale brown, dorsum dark brown, lateral lobes black; thorax black, sternum yellowish; elytra black and pale brown with light brown post cubital vein; wings colourless; external side of hind femur pale brown, with black spots and dark brown patches, internal side yellow with brown spots near knee; tibia yellow with external black and internal yellow spines, with black tips; edge of last abdominal tergite and median projection black; tubercles on supra-anal plate black; sternites yellow; tip of cercus black.

♀ As male but larger differs by less concave fastigium of vertex; mesosternal interspace twice as broad as its length; metasternal interspace broader than its length. Elytron and hind knee usually exceeding end of abdomen. Subgenital plate with large, lateral lobes, half length of median lobe.

Spermatheca comparatively small, apical diverticulum broad curved backwards at basal end, preapical diverticulum very small approximately one twelfth of apical diverticulum, third diverticulum elongated narrow, slightly longer than half length of apical diverticulum.

Length of body ♂ 17.2-23.2, ♀ 23.5-29.1; pronotum ♂ 5.2-6.2, ♀ 6.4-8.4; elytron ♂ 14.3-15.8, ♀ 15.4-25.2; hind femur ♂ 11.8-12.5, ♀ 15.1-18.0 mm.

Type locality: "Angola, Sombo". Type ♂ in the British Museum (Natural History).

Geographical distribution. Angola: Sombo, x.1948, 1 ♂ (type); Dundo; viii.1948, 1 ♀; Lunda, A. O. P., 1 ♀; Xa-Ua, R. Luita; vii. 1962, 1 ♂, 2 ♀; Post de Cuilo, 8.25, 19.25, E. vii.1962, 3 ♂ ♀, 3 ♀ ♀ (Dr. A. de B. Machado). Moxico District; R. Lumeji, 21.vi.1927, 1 ♂; Upper Musimoj R., 20.ix.1927, 3 ♂ ♀, 3 ♀ ♀; Valley of R. Musimoj, 23.25.x.1927, 8 ♂ ♂, 5 ♀ ♀ R. Lungue Bungu, 1.x.1927, 2 ♂ ♂, 8 ♀ ♀; Munhango, Lungue Bungu Rd., 30.ix-1.x.1927, 2 ♂ ♂, 2 ♀ ♀. Luchase District; R. Makontolo, 11.x.1927, 2 ♂ ♂, 1 ♀; R. Quangu, 5000', x. 1927, 1 ♂, 6 ♀ ♀; Villa Luso, 1.xi.1927, 6 ♂ ♂, 1 ♀. Bihe District; Cohemba, 15.ix.1927, 5 ♂ ♂, 1 ♀, viii.1927, 4 ♂ ♂, 1 ♀ (Dr. M. Burr). Chimporo, 1928-29, 3 ♀ ♀; 1932-33, 4 ♂ ♂, 3 ♀ ♀, Tchitrunda, 1 ♂; Bimbi, x.1932, 1 ♀, Miss. Sc. Suisse.
Both sexes vary in size. In the males there is variable structure in the degree of curvature and length of cercus (Fig. 4). The posterior margin of the pronotum sometimes has slightly incurved sides. The elytra in the males may reach or exceed the hind knee but always exceeding the end of abdomen. In the females the elytra may be shorter.

The general colouration varies considerably from black, greyish-black, reddish-brown, pale-brown, all colours may be uniform or with patches of the colours combined, the spots near the knee on the internal side of the hind femur are frequently absent. This species is related to *P. pardalis* but differs by the pronotum being longer and the elytra shorter, also *P. angolensis* is generally more robust. The phallic complex differs mainly by the basal valves of the penis and shape of the apodemes (Figs. 3, 4).

**Phymeurus fitzgeraldi** sp. nov.

(Figs. 1, 5.)

♀ Type. Body moderately robust. Antenna as long as head and pronotum together. Fastigium of vertex concave broader than its length. Occipital carinulae weak. Frontal ridge with shallow sulcus and obtuse lateral carinulae. Prozona of pronotum as long as metazona; lateral carina excurved between first and third transverse sulci, obliterated in posterior region of metazona; pair small tubercles between second and third sulci present. Apex of prosternal process incurved. Mesosternal interspace slightly broader than its length; metasternal interspace broader then its length. Elytra and wings exceed end of abdomen and hind femur. Hind femur moderately robust exceeds end of abdomen. Posterior margin of last abdominal tergite slightly expanded and upcurved, median projection moderately developed. Supra-anal plate narrowing towards subacute apex, median carinula raised divided in basal half by shallow sulcus; pair small tubercles be-

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Fig. 5.—*P. fitzgeraldi*: 1) Distal part of phallic complex from above, with lateral and dorsal sclerotizations of the ectophallic membrane; 2) Phallic complex in profile, with lateral and dorsal sclerotizations of the ectophallic membrane; 3) Phallic complex from above, with ectophallic membrane removed; 4) Phallic complex in profile, with ectophallic membrane removed; 5) Endophallus in profile; 6) Epiphallus; 7) Spermatheca; 8) Male cercus; 9) Male supra-anal plate; 10) Female subgenital plate from below; 11) Prosternal process. Numerals 1-7, 10, paratypes; Ibidem 8, 9, 11, type.)
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neath edge of last abdominal tergite, pair large tubercles near division of median carinula, pair small transverse tubercles located between latter tubercles and lateral margin present. Cercus upcurved with comparatively broad curvature, basal part slightly more than half length of apical part, apex of basal part produced to elongated projection and slightly tilting backwards, apical part narrowing to obtuse apex.

Phallic complex: apical valves of penis strongly elongated, slender, upcurved, and slightly curved at apices, with lower part of apex projecting; valves of cingulum petering at apex; valves of cingulum and apical valves of penis enclosed in sheath; basal valves of penis robust with sides expanded at apices, dorsal ridge of valves slightly serrated; gonopore processes large; zygoma of cingulum moderately robust; rami narrow sclerotized, forming strongly sclerotized bands which merge with sheath of penis; apodemes of moderate length forming “U-shaped” structure; ectophallic membrane with lateral sclerotizations possessing small obtuse teeth, dorsal sclerotization at distal end present. Epiphallus narrow bridged; ancorae small subacute at apices; lophi very large, tooth-like, comparatively narrow, with acute apices and sinuate outer sides.

General colouration reddish-brown and greyish-brown, with pale brown, dark brown patches and black spots; antenna black below and light grey above; elytron with black patch at base; wing colourless, veins dark brown; internal side of hind femur yellowish brown, hind tibia yellowish-brown with black tipped spines; posterior margin of last abdominal tergite and median projection black; tubercles on supra-anal black; tip of cercus black.

♀. As male but larger; differs by fastigium of vertex being less concave. Mesosternal interspace twice as broad as its width; metasternal interspace broader than its length. Subgenital plate with lateral lobes less than one third length of median lobe.

Spermatheca large, apical diverticulum large, broad curving backwards at basal end, preapical diverticulum small, narrow, one sixth length of apical diverticulum, third diverticulum elongated narrow, bulbous at apical end, slightly shorter than apical diverticulum.

Length of body ♂ 21.1-23.7, ♀ 27.1-30.3; pronotum ♂ 5.7-5.8, ♀ 6.5-7.0; elytron ♂ 18.2-19.4, ♀ 22.5-22.6; hind femur ♂ 12.7-12.9, ♀ 16.1-16.5 mm.

Type locality: “Tanganyika: Malagarasi”. Type ♂ in the British Museum (Natural History).
**Geographical distribution:** Tanzania (former Tanganyika): Malagarasi, 11.x.1949, 1 ♂ (type); 30.vi.1958, 1 ♂, 1 ♀; 1.vi.1958, 1 ♀; Ufipa, Chapora, 3.xii.1949, 1 ♀ (L. D. E. F. Vesey-Fitzgerald); Ushironombo Road, 22 miles W. of Kahama, 17.xii.1948, 1 ♂; Mkwemi, Kahama, 17.ix.1947, 1 ♀; Kalula, Tabora, 9.ix.1925, 1 ♀ (N. C. E. Miller).

All specimens examined are from Tanzania. There is a variety of colouration from reddish-brown to grey and brown. The female elytra is also slightly variable in length either not reaching or slightly exceeding the end of abdomen. This species is related to *P. angolensis* but differs by shape of pronotum being generally broader and posterior margin less angular, broader curvature of the male cercus and a longer basal part; the apical valves of the penis are also longer. The females possess shorter lateral lobes of the subgenital plate.

**Phymeurus chianga** sp. nov.

(Figs. 1, 6.)

♂ Type. Body comparatively small. Integument weakly rugose. Fastigium of vertex concave, slightly broader than its length. Occipital carinula weak. Frontal ridge with shallow sulcus, and weak lateral carinulae. Pronotum with prozona as long as metazona; lateral carinae sharp, sinuate, excurved between first and third transverse sulci converging slightly in metazona, posterior margin of metazona obtuse-angular with sides slightly incurved and apex rounded; pair tubercles on dorsum between second and third sulci moderately developed. Prosternal process with incurved apex. Mesosternal interspace broader than its length, metasternal interspace narrower than its length. Elytra and wings fully developed extending beyond abdomen. Hind femur moderately robust exceeding elytra by at least length of hind knee. Posterior margin of last abdominal tergite slightly expanded and upcurved, median projection elongated. Posterior margin of supra-anal plate narrowing towards apex, apex elongated, subacute, with emargination at each side of its base; median carinula obtusely raised divided in basal part by a shallow sulcus; pair small tubercles at base under edge of last abdominal tergite, pair of larger tubercles where median carinula divides, pair elongated tubercles extending almost from latter ones towards lateral margin of supra-anal plate present. Cercus upcurved, elongated, slender, basal part half as long as apical part, apex
narrowing to elongated projection, apical part slightly broadened near curve but narrowing to subacute apex.

Phallic complex: apical valves of penis elongated slightly upcurved and curved at the apices with the lower part of apex projecting apices of valves (from above) turning outwards; valves of cingulum slender.
narrowing and petering at apex, both apical valves of penis and cingulum
enclosed in sheath; basal valves of penis moderately robust with sides
slightly expanded at apices, dorsal ridge of valves slightly irregularly
serrated; gonopore processes large, slightly projecting, in basal part
forming obtuse projection; rami narrow sclerotized forming strongly
sclerotized bands which merge with sheath of penis; apodemes long,
wide, forming "U-shaped" structure; ectophallic membrane forms
in front lateral sclerotizations and dorsal sclerotization at distal end
present. Epiphallus narrow bridged, ancorae small, moderately long
with obtuse apices; lophi very large, tooth-like, comparatively narrow,
with acute apices, and slightly sinuate outer sides.

General colouration greyish-brown, with reddish brown tinges; base
of elytra black, post cubital vein pale brown at base; wings brown in
apical part, rest colourless; external side of hind femur pale brown, internal
side red, upper and lower margins brownish-yellow, black spots
near hind knee present, tibia red; tips of spines black; edge of last ab-
dominal tergite and median projection black, tubercles on supra-anal
plate black; tip of cercus black.

♀ as the male but differs by being larger size. Mesosternal inters-
pace twice as broad as its length, metasternal interspace broader than
its length. Elytra and wings shorter than abdomen but reach last ab-
dominal tergite. Lateral lobes of subgenital plate one fifth length of
median lobe.

Spermatheca large with three distinct diverticula; apical diverticu-
lum large, broad, curving back at base, nine times longer than pre-
apical diverticulum, preapical diverticulum narrow, small; third diver-
 ticulum narrow with swelling at apex, slightly shorter than apical
diverticulum.

Body length ♂ 15.6-20.0, ♀ 22.9-30.3; pronotum ♂ 5.4-5.8, ♀ 7.0-
7.8; elytron ♂ 7.6-10.8, ♀ 13.2-14.6; hind femur ♂ 10.9-11.7, ♀ 14.5-
16.4 mm.

Type locality: Angola: "Chianga". Type ♂, in the British Mu-
seum (Natural History).

Geographical distribution: Angola: Chianga, 1.xi.52, 2 ♂ ♂, 1 ♀ ;
x.53, 1 ♀ ; viii.54, 1 ♂ ; xi.54, 2 ♂ ♂ (including type), 1 ♀ (L. M. Ell-
gáhia); 10.i.55, 1 ♀ ; Nova Lisboa, ix.52, 1 ♀ ; vi.52, 1 ♀ ; 9.x.53, 1 ♀
(A. J. Duarte)

This species shows variation in colouration from dark brown to
pale reddish brown. The length of the elytra varies slightly especially
in the females. The species has a similar pronotum, posterior margin of last abdominal tergite and supra-anal plate to that of *P. fitzgeraldi* but the male cercus and phallic complex is more similar to *P. machadoi*. The elytra are shorter than *P. fitzgeraldi* but longer than *P. machadoi*. The species is much smaller and more slender than either. The phallic complex differs from *P. machadoi* mainly by the structure of the apodemes being broader but placed nearer together by the structure of the apical valves of the penis, and the basal valves. The ancorae of the epiphallus of *P. chianga* are more elongated and more acute.

**Phymeurus machadoi** sp. nov.

(Figs. 1, 7.)

♂ Type. Body moderately robust. Antenna as long as head and pronotum together. Fastigium of vertex concave as long as its breadth. Occipital carinula present. Frontal ridge with slight sulcus and obtuse lateral carinulae. Prozona of pronotum longer than metazona; metazona comparatively narrow, posterior margin obtuse-angular; lateral carinae converging at anterior margin, slightly excurred between the first and third transverse sulcus, obliterated in metazona; pair tubercles poorly developed between second and third sulci. Apex of prosternal process deeply bilobate. Mesosternal interspace as broad as its length; metasternal interspace half as broad as its length. Elytra and wings shortened, reaching fourth abdominal tergite, narrowing to apex, anterior margin expanded in middle. Hind femur moderately robust and widened, exceeding end of abdomen. Posterior margin of last abdominal tergite upcurved, median projection very elongated. Apical part of supra-anal plate slightly narrowing towards acute apex; pair tubercles hidden under last abdominal tergite; pair tubercles situated in middle. Cercus strongly upcurved, comparatively narrow, elongated, basal part half as long as apical part, apical part forming slight anterior projection, narrowing to subacute apex.

Phallic complex: apical valves of penis moderately elongated, slender, slightly upcurved and curved at apices with lower part of apex projecting; valves of cingulum slender, narrowing and petering at apex, apical valves of penis and valves of cingulum completely enclosed in sheath; basal valves of penis moderately robust, with sides narrowing at apices, dorsal ridge of valves roughly, irregularly serrated; gonopore processes large and expanded below; zygoma of cingulum moderately
Revision of the genus «Phymeurus» gigli-o-tos, 1907

Broad; rami narrow, sclerotized, forming strongly sclerotized bands which are merging with sheath of penis; apodemes long narrowing at apex, forming horse-shoe like structure; ectophallic membrane forms in front lateral sclerotization and dorsal sclerotization at distal end. Epiphallus narrow bridged; ancorae small obtuse at apices; lophi very large, tooth-like, comparatively narrow, with subacute apices and sinuate outer edges.

General colouration pale brown with dark brown patches. Pronotum mostly dark brown with paler band near lateral carina; base of elytron black post-cubital vein, reddish brown rest of elytron dark

Fig. 7.—P. machadoi: 1) Distal part of phallic complex from above, with lateral and dorsal sclerotizations of the ectophallic membrane; 2) Phallic complex in profile, with lateral and dorsal sclerotizations of the ectophallic membrane; 3) Phallic complex from above, with ectophallic membrane removed; 4) Phallic complex in profile, with the ectophallic membrane removed; 5) Endophallus in profile; 6) Epiphallus; 7) Spermatheca; 8) Male cercus; 9) Male supra-anal plate; 10) Female subgenital plate from below; 11) Prosternal process. (Numerals 1-7, 10, paratypes; Ibidem. 8, 9, 11, type.)
brown; wing brown in apical region, veins black; upper marginal area of hind femur pale brown, with four dark brown patches; internal side reddish-orange with dark brown patch near knee and smaller patch near to centre of femur; hind tibia reddish orange, tips of spines black; posterior margin and median projection of last abdominal tergite black; tubercles on supra-anal plate black.

♀ As the male but larger, differs by mesosternal interspace twice as broad as its length, metasternal interspace also twice as broad as its length, subgenital plate with lateral lobes slightly shorter than half medial lobe.

Spermatheca large, apical diverticulum large, broad, curving back at basal end, preapical diverticulum small, narrow, one quarter the length of apical diverticulum, third diverticulum narrow, slightly shorter than apical diverticulum.

Body length ♂ 17.3-20.7, ♀ 23.2; pronotum ♂ 5.5-6.1, ♀ 6.9-7.6; elytron ♂ 7.5-8.7, ♀ 10.0-10.8; hind femur ♂ 12.2-12.4, ♀ 14.1-15.0 mm.

Type locality: “Angola: Luimbale, Serra do Moco”. Type ♂ in the British Museum (Natural History).


All specimens examined are from the same locality. There is very little variation except in size; general colouration varies from pale brown to dark brown, sometimes transverse tubercles are found on the male supra-anal plate. This species is related to P. hamatus, but differs by shorter elytra, the basal part of the cercus longer, the prosternal process bilobate and the body is generally more robust. The phallic complex differs mainly from P. hamatus by the apical valves of the penis and cingulum being shorter; the apodemes longer and at a more elevated angle in profile than in P. hamatus; the basal valves have less expanded apices. The general structure is smaller and less robust.

Phymeurus hamatus (Ramme 1931).

(Figs. 1, 8.)

Amblyphymus hamatus Ramme, 1931.
Platyphymus hamatus (Ramme, 1931) (Uvarov, 1953).
Phymeurus hamatus (Ramme, 1931) (Uvarov, 1954).

♂ (Redescription). Of medium size. Integument finely rugulose.
Fastigium of vertex as broad its length. Occipital carinula weak. Frontal ridge with shallow sulcus and moderately developed lateral carinulae. Prozona of pronotum longer than metazona, lateral carinae sharp, undulated, slightly diverging from first transverse sulcus to anterior margin, excurred between first and third sulci narrowing and becoming obliterated at posterior margin; posterior margin obtuse-angular, sides narrowing gradually to apex; tubercles between second and third sulci poorly developed. Prosternal process slightly narrowing to rounded apex. Mesosternal interspace twice as broad as its length, metasternal interspace longer than its width. Elytra and wings fully developed, comparatively narrow, not exceeding end of abdomen. Hind femur moderately robust. Posterior margin of last abdominal tergite moderately expanded and upcurved, with long median projection. Supra-anal plate broader than its length, posterior margin approximately rectangular with rounded edges; apex moderately elongated, subacute, small emargination present each side of base, median carinula raised but not sharply defined, in basal part dividing into two branches also weakly defined, sulcus between the branches shallow; pair tubercles at base underneath edge of last tergite and pair tubercles present where median carinula divides. Cercus slender upcurved, basal part half length of apical part, broad at curve, but narrowing to oblique projection; apical part comparatively long, narrowing to obtuse apex.

Phallic complex: apical valves of penis strongly elongated, slender upcurved, and slightly curved at apices with lower part projecting; valves of cingulum, slender, narrowing and petering at apex; both apical valves of penis and valves of cingulum enclosed in sheath; basal valves of penis moderately robust, with sides extending at apices, dorsal ridge of valves roughly serrated; gonopore processes large expanded at base; zygoma of cingulum short and moderately broad, rami narrow, sclerotized forming strongly sclerotized bands which are merging with sheath of penis; apodemes short, horse-shoe shaped, broad at base and narrowing towards obtuse apex. Ectophallic membrane in front forms lateral sclerotizations and dorsal sclerotization at distal end. Epiphallus narrow bridged; ancorae with subacute apices; lophi very large, tooth-like, comparatively narrow, with acute apices and sinuate outer sides.

General colouration pale brown with reddish brown and dark brown patches; basal part of elytron black; wing brown in apical part, veins black; hind knee from above black, internal side of hind femur reddish, with black spots near knee, margins yellowish-brown; hind tibia orange-
red; spines yellow with black tips; posterior margin of last abdominal tergite black; tubercles on supra-anal plate black.

Fig. 8.—*P. hamatus*: 1) Distal part of phallic complex from above, with lateral and dorsal sclerotizations of the ectophallic membrane; 2) Phallic complex in profile, with lateral and dorsal sclerotizations of ectophallic membrane; 3) Phallic complex from above, with the ectophallic membrane removed; 4) Phallic complex in profile, with the ectophallic membrane removed; 5) Endophallus in profile; 6) Epiphallus; 7) Male cercus; 8) Male supra-anal plate; 9) Prosternal process. (Numerals 1-9, paratype.)

♀ Not known.

Length of body ♂ 21.7; pronotum ♂ 5.6; elytron ♂ 13.3; hind femur ♂ 11.7 mm.
Type locality: "Belgian Congo: Katanga". Type ♂ in the Musée Royal du Congo Belge, Tervuren, Belgique.


Only one male paratype was studied. The species is related to P. machadoi and differs by being smaller and more slender by longer elytra, different shape of cercus and shape of prosternal process. (see P. machadoi).

Phymeurus rhodesianus sp. nov.

(Figs. 1, 9.)

♂ Type. Body robust. Integument finely rugulose. Antenna almost as long as head and pronotum together. Fastigium of vertex concave, broader than its length. Occipital carinula present. Frontal ridge with slight depression. Prozona of pronotum slightly longer than metazona; posterior margin of metazona obtuse-angular, narrowing to rounded apex; lateral carinae undulated excurred between first and third sulcus, obliterated in metazona; first transverse sulcus curved forwards; near lateral carinae, pair tubercles between second and third sulci also other tubercles mainly between first and third sulci present. Prosternal process tongue-shaped. Mesosternal interspace one and a half times as broad as its length; metasternal interspace longer than its width. Elytra and wings fully developed exceeding abdomen and hind knee. Hind femur moderately robust and thickened. Posterior margin of last abdominal tergite slightly expanded and upcurved, median projection very elongated with an emargination present at each side of its base. Apical part of supra-anal plate approximately rectangular, apex elongated and subacute median carina raised obtusely, divided in basal half by broad shallow concavity; pair small tubercles underneath posterior margin of last abdominal tergite, and pair small tubercles near division of median carinula present. Cercus upcurved, basal part one third length of apical part; tip of basal part with subacute projection, inclined to apical part; apical part straight elongated, thin, slender, expanding slightly near obtuse apex.

Phallic complex: apical valves of penis very strongly elongated, slender, upcurved, particularly at apices; valves of cingulum slender tapering towards upcurved apices; both apical valves of penis and valves
of cingulum enclosed in sheath; basal valves of penis moderately slender but with sides expanded at apices, dorsal ridge of valves slightly serrated; gonopore processes of moderate size projecting in basal part and forming obtuse projection; zygoma of cingulum comparatively narrow, rami narrow, sclerotized, forming strongly sclerotized bands which are merging with sheath of penis; apodemes short, broad, obtuse at apices, forming U-shaped structure; ectophallic membrane forms small lateral sclerotizations and dorsal sclerotization at distal end. Epiphallus narrow bridged; ancorae with small sub-acute apices; lophi very large, tooth-like, moderately broadened, with acute apices and sinuate outer sides.

General colouration pale brown and dark brown, with black spots and patches; elytron with black patch at base, in vannal area edged by yellowish postcubital vein, rest of elytron pale brown with black or dark brown patches; internal side of hind femur yellow; hind tibia yellowish with black tipped spines; posterior margin and median projection of last abdominal tergite black; tubercles on supra-anal plate black; tips of cercus black.

♀ As the male but larger. Differs by mesosternal interspace being twice as broad as its length; metasternal interspace broader than its length. Elytra reaching end of abdomen. Subgenital plate with elongate middle lobe, lateral lobes not extended.

Spermatheca with elongated apical diverticulum, preapical diverticulum about one sixth of length of apical diverticulum, third diverticulum slightly shorter than apical diverticulum.

Length of body ♂ 20.2-20.7, ♀ 27.5-31.5; pronotum ♂ 5.9-6.1, ♀ 6.9-7.0; elytron ♂ 17.2-17.7, ♀ 21.1-21.7; hind femur ♂ 12.8-13.3, ♀ 16.0-16.4 mm.

Type locality: "N. Rhodesia, Abercorn, Chiyanga", type ♂, in the British Museum (Natural History).

Geographical distribution: N. Rhodesia: Abercorn; vii.1949, 1 ♂, 2 ♀; x.1955, 2 ♀; x.1956, 2 ♂, 23.x.1956, 3 ♂, 4 ♀; v. 1957, 1 ♂, 1 ♀; 22.vii.1957, 1 ♀; 27.xi.1957, 1 ♂, 1 ♀; (L. D. E. F. Vesey-FitzGerald); 7.vii.1950, 1 ♂, 2 ♀; 12.xi.1950, 1 ♀; 8.vi. 1951, 1 ♂; i.1951, 1 ♀ (H. O. Backlund); x.1948, 1 ♂, 2 ♀ (M. Koma); 29.viii.1950, 1 ♂ (H. J. Bredo); Chiyanga; 3.ix.1950, 1 ♂ (type), 10 ♀ (paratypes); vii.1956, 15 ♂, 7 ♀; ix.1956, 10 ♂, 6 ♀; 3.iv.1956, 1 ♂. Lake Chila; 3.i.1950, 1 ♂, 1 ♀; vii.1949, 1 ♂ (L. D. E. F. Vesey-FitzGerald); Mbuga, 3.xi.1950, 2 ♂; Muswilo Rd., Chite-
mene, viii.1956, 1 ♂ (L. D. E. F. Vesey-FitzGerald); Chambesi River, 1942, 1 ♂; Mwern, Wantipa, 9.x.1949, 2 ♀ ♀ (N. T. F. Cooper).

This species is difficult to place in the correct position in relation to the other species. I am placing it near *P. macropterus* because the cercus has an angular basal curvature, the apical part is straight; the basal part however is not so broad as in *P. macropterus*. The supra-anal plate in both is of similar shape and the posterior margin of the last abdominal tergite is expanded and upcurved with a long me-

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**Fig. 9.—** *P. rhodesianus*: 1) Distal part of phallic complex from above, with lateral and dorsal sclerotizations of the ectophallic membrane; 2) Phallic complex in profile, with lateral and dorsal sclerotizations of the ectophallic membrane; 3) Phallic complex from above; with ectophallic membrane removed; 4) Phallic complex in profile, with ectophallic membrane removed; 5) Endophallus in profile; 6) Epiphallus; 7) Spermatheca; 8) Male supra-anal plate; 9) Male cercus; 10) Female subgenital plate from below; 11) Prosternal process. (Numerals 1-7, 10, paratypes; Ibidem 8, 9, type.)
dian projection. The phallic complex is completely different owing to the shape of the sheath of the penis and the sharp upward curvature of the apical valves. This structure is not similar to any other species but may be included in the first group as explained in the discussion of the phallic complex.

**Phymeurus macropterus** (Ramme, 1929).

(Figs. 1, 10.)

*Amblyphymus ocellatus macropterus* Ramme, 1929.

*Platyphymus macropterus* (Ramme, 1929) (Uvarov, 1953).

*Phymeurus macropterus* (Ramme, 1929) (Uvarov, 1954).

♂ (Redescription). Of medium size, moderately robust. Fastigium of vertex concave, as broad as its length; lateral carinae distinct; weak occipital carinula present; frontal ridge with shallow sulcus. Prozona of pronotum longer than metazona. Lateral carinae sharp; moderately excurved between second and third transverse sulci; pair tubercles on dorsum between second and third transverse sulci not pronounced; posterior margin of metazona obtuse-angular. Prosternal process spathulate. Mesosternal interspace as broad as its length; metasternal interspace broader than its length. Elytra and wings fully developed almost reaching end of abdomen; anterior margin of elytron slightly expanded in middle, apex rounded. Hind femur moderately robust; exceeding end of abdomen by length of knee. Posterior margin of last abdominal tergite with comparatively long median projection. Apical part of supra-anal plate approximately rectangular, median carinula raised, divided in basal part by shallow sulcus; pair tubercles at base, underneath last abdominal tergite and pair tubercles near division of median carinula present. Cercus very broad at base, curvature slightly angular, apical part three times longer than basal part becoming slender to subacute apex.

Phallic complex: apical valves of penis strongly elongated, slightly upcurved and curved at apices, with the lower part projecting; valves of cingulum slender, narrowing and petering at apex; both apical valves of penis and valves of cingulum enclosed in sheath; basal valves of penis robust, with sides expanded at apices, dorsal ridge slightly serrated; gonopore processes broad, slightly projecting in basal part; zy-
goma of cingulum comparatively narrow with small obtuse tubercles, rami form sclerotized bands which also narrow and merge with sheath of penis; apodemes of moderate length, narrow, forming “U-shaped” structure; ectophallic membrane forms lateral sclerotizations in front and dorsal sclerotization at distal end. Epiphallus narrow, bridged; ancorae very reduced, lophi very large, tooth-like, comparatively narrow, with acute apices and sinuate outer sides.

General colouration variable, reddish brown or dark reddish brown, sometimes mottled with pale brown, reddish brown, with dark brown spots; base of elytron dark brown; postcubital vein frequently yellow; wing brown in apical region the rest colourless with black veins; internal side of hind femur yellow, sometimes with brownish band extending full length, hind tibia yellowish; posterior margin of last abdominal tergite and median projection black; tubercles on supra-anal plate black; tip of cercus black.

♀ As the male but larger and more robust. Fastigium of vertex broader than its length; frontal ridge with slight depression beneath ocellus. Dorsum of pronotum with pair tubercles between second and third sulci more pronounced than in male. Mesosternal interspace twice as wide as its length, metasternal interspace one and a half times as broad as its length. Subgenital plate with very small lateral lobes, approximately one seventh length of median lobe.

Spermatheca with large broad apical diverticulum and very reduced preapical diverticulum, third diverticulum elongate, more than half length of apical diverticulum and narrower, with small bulbous swelling at apex.

Body length ♂ 23.4-23.5, ♀ 28.6-29.1; pronotum ♂ 6.4-6.5, ♀ 7.0-8.1; elytron ♂ 14.0-14.7, ♀ 15.3-17.2; hind femur ♂ 12.7-13.5, ♀ 15.3-16.3 mm.

Type locality: “Belgian Congo, Kinda”. Type ♂ in The Musée Royal du Congo Belge, Tarvuren, Belgique.

Geographical distribution: Congo (Former Belgian Congo, Elizabethville, 1.xi.1942, 5 ♂, 5 ♀; x.1911, 1 ♂ (paratype); Kinda, 9.ix.1914, 1 ♀ (L. Charliers).

The specimens redescribed are paratypes. There is variation in the width and length of elytra, the anterior margin being more expanded in some specimens, the length occasionally exceeds the end of abdomen. The reddish-brown colour varies from pale, dark brown to deep chestnut.
The females are some of the most robust in the genus. The species is related to *P. ocellatus* by the structure of the cercus, having a very broad base, but the apical part is much longer. The phallic complex differs mainly by the apical valves of the penis and cingulum being narro-
wer and slightly longer, different shape of the sheath of the penis, and apodemes being shorter and wider apart; the whole structure is more slender.

**Phymeurus ocellatus** (Ramme, 1929).

(Figs. 1, 11.)

_Amblyphymus ocellatus_ Ramme, 1929.
_Platyphymus ocellatus_ (Ramme, 1929) (Uvarov, 1953).
_Phyumeurus ocellatus_ (Ramme, 1929) (Uvarov, 1954).

♂ (Redescription). Body robust. Integument weakly rugose. Antenna longer than head and pronotum together. Fastigium of vertex very shallow, broader than its length. Occipital carinula weak. Frontal ridge without sulcus or lateral carinulae. Prozona of pronotum longer than metazona; lateral carinae not sharp, incurved between anterior margin and first transverse sulcus and widely excurved between second and third sulcus. Posterior margin of metazona obtuse-angular with rounded apex; pair of moderately developed tubercles on dorsum present between second and third transverse sulci. Prosternal process with incurved apex. Mesosternal interspace one and a half times as broad as its length; metasternal interspace twice as broad as its length, and half as broad as mesosternal interspace. Elytra and wings shortened, reaching posterior margin of third abdominal tergite; elytron with middle anterior margin expanded, narrowing to rounded apex. Hind femur robust and widened, slightly exceeding end of abdomen. Posterior margin of last abdominal tergite upcurved with very long median projection. Posterior margin of supra-anal plate approximately rectangular, apex subacute; pair tubercles under posterior margin of last abdominal tergite and pair tubercles situated at centre present. Cercus stout, very broad at base; basal part one third length of apical part, apical part narrowing to obtuse apex.

Phallic complex: apical valves of penis strongly elongated, slender, slightly upcurved and curved at apices, with lower part of apex projecting downward; valves of cingulum, slender, narrowing and petering at apex; both apical valves of penis and valves of cingulum enclosed in sheath; basal valves of penis moderately robust with sides expanded at apices, dorsal ridge of valves slightly irregularly serrated; gonopore
processes large, slightly projecting, in basal part forming obtuse projection; zygoma of cingulum broad; rami narrow, sclerotized, forming strongly sclerotized bands which are merging with sheath of penis; apodemes long, wide forming horse-shoe shaped structure; ectophallic membrane forms in front lateral sclerotizations and dorsal sclerotiza-

Fig. 11.—P. ocellatus: 1) Distal part of phallic complex from above, with lateral and dorsal sclerotizations; 2) Phallic complex in profile, with lateral and dorsal sclerotizations; 3) Phallic complex from above, with ectophallic membrane removed; 4) Phallic complex in profile, with ectophallic membrane removed; 5) Endophallus in profile; 6) Epiphallus; 7) Male cercus; 8) Male supra-anal plate; 9) Posterial process. (Numerals 1-9, paratype.)

tion at distal end. Epiphallus narrow bridged; ancorae small, subacute at apices; Lophi large, tooth-like, comparatively wide, with acute apices and sinuate outer sides.

General colouration dark reddish brown, mottled with pale brown, reddish brown and dark brown spots; tubercles on dorsum of pronotum whitish; elytra mottled, but with black patch; basal part of post-cubital vein yellowish-white; internal side of hind tibia yellow, spines with
black tips; posterior margin of last abdominal tergite and elongated median projection black; tubercles on supra-anal plate black; tips of apical and basal part of cercus black.

♀ As the male but larger. Fastigium of vertex twice as broad as its length; mesosternal interspace twice as broad as its length; metasternal interspace three times as long as its width, almost as broad as mesosternal interspace. Elytra and wings shortened but longer than in male, reaching eighth abdominal tergite (fifth to eighth tergites contracted). Subgenital plate with lateral lobes weak to moderately developed.

Body length ♂ 22.4, ♀ 25.0-31.0; pronotum ♂ 5.6, ♀ 7.4-7.5; elytron ♂ 9.0, ♀ 12.1-12.8; hind femur ♂ 12.0, ♀ 15.0-16.3 mm.

Type locality: "Belgian Congo: Kapiri". Type ♂, in The Musée Royal du Congo Belge, Tervuren, Belgique.

Geographical distribution: Congo (former Belgian Congo): Kapiri, xi.1913, 1 ♂, 1 ♀, Katanga, 2 ♀ (L. Charliers).

All specimens studied are paratypes. This species is somewhat superficially similar externally to P. rufipes, but differs by the antenna of P. ocellatus being longer than head and pronotum together, while P. rufipes is shorter then head and pronotum. The frontal ridge in P. ocellatus is without or with very weak sulcus and lateral cariniæ, while P. rufipes has a deeper sulcus and obtuse lateral carinulae. The pronotum has less sharp lateral carinae than P. rufipes more incurved in anterior part of prozona, more excurved in posterior part of prozona, and more obliterate in metazona. Cercus of P. ocellatus has a shorter apical part and more obtuse apex than P. rufipes. The main differences in the phallic complex are the broader and longer apical valves of the cingulum and penis and downcurved apical valves of penis; longer and stouter apodemes; the ridge of the basal valves is less serrated in P. ocellatus. The general colouration of P. ocellatus is a darker reddish brown than in P. rufipes. Hind tibia in P. rufipes is orange while that of P. ocellatus is yellow. Owing to the small number of specimens available for study there is very little variability from the description given above, it has been observed however that the length of the female elytra in comparison to body size does vary slightly.
Phymeurus rufipes (Ramme, 1929).

(Figs. 2, 12.)

Amblyphymus ocellatus rufipes (Ramme, 1929).
Platyphymus rufipes (Ramme, 1929) (Uvarov, 1953).
Phymeurus rufipes (Ramme, 1929) (Uvarov, 1954).

♂ Type. (Redescription). Body robust. Integument slightly rugose. (Antenna broken). Fastigium of vertex concave; as broad as its length. Occipital carinula present. Frontal ridge with shallow sulcus and moderately sharp lateral carinulae. Prozona of pronotum longer than metazona; metazona comparatively broad; its posterior margin obtuse-angular with rounded apex; lateral carina excurved between second and third sulci, undulated whole length, becoming obliterated in metazona; two tubercles weakly defined between second and third sulci present. Prosternal process with incurved apex. Mesosternal interspace two-thirds as broad as its length. Elytra and wings shortened reaching sixth abdominal tergite, anterior margin of elytron expanded in middle, narrowing to rounded apex. Hind femur robust and widened, exceeding end of abdomen. Posterior margin of last abdominal tergite upcurved, median projection very elongated. Apical part of supra-anal plate rectangular, apex obtuse; pair tubercles hidden under last abdominal tergite; median carinula raised divided in basal part by shallow sulcus; pair small tubercles present near division of median carinula. Cercus upcurved comparatively short and stout, basal part very broad, narrowing in apical part to subacute apex.

Phallic complex: apical valves of penis strongly elongated, slender, slightly upcurved and curved at apices with lower part of apex projecting; valves of cingulum slender, narrowing and petering at apex; both apical valves of penis and valves of cingulum enclosed in sheath; basal valves of penis moderately robust with sides expanded at apices, dorsal ridge of valves roughly and irregularly serrated; gonopore processes large projecting, in basal part forming obtuse projections; zygoma of cingulum moderately broad; rami narrow, sclerotized, forming strongly sclerotized bands which are merging with sheath of penis; apodemes short, wide, forming horse-shoe-like structure; ectophallic membrane forms in front lateral sclerotizations and dorsal sclerotization at distal end. Epiphallus narrow, bridged; ancorae small obtuse at apices;
lophi very large, toot-like, comparatively narrow, with acute apices and sinuate outer sides.

General colouration pale brown, mottled with reddish brown and dark brown spots; base of elytra blackish; wing generally colourless but veins in apical half black; internal side of hind femur orange-red, yel-

Fig. 12.—P. rufipes: 1) Distal part of phallic complex from above, with lateral and dorsal sclerotizations; 2) Phallic complex in profile, with lateral and dorsal sclerotizations of ectophallic membrane; 3) Phallic complex from above, with ectophallic membrane removed; 4) Phallic complex in profile, with ectophallic membrane removed; 5) Endophallus in profile; 6) Epiphallus; 7) Male cercus; 8) Male supra-anal plate; 9) prosternal process. (Numerals 1-9, paratype.)

low near knee with dark brown spots; hind tibia orange, spines yellow with black tips; posterior margin and elongated projection of last abdominal tergite black; tubercles on male supra-anal plate black.

♀ As male but larger. Antenna shorter than head and pronotum together. Frons more vertical. Fastigium of vertex broader than its length. Occipital carinula weak. Tubercles on dorsum of pronotum not prominent. Mesosternal interspace more than twice as broad as its length; metasternal interspace as broad as its length. Elytra and
wings reaching fourth abdominal tergite; anterior margin of elytra greatly expanded in middle. Hind femur shorter than abdomen. Sub-genital plate with lateral lobes weakly extended.

Length of body $\delta$ 20.5-21.5, $\varphi$ 30.2-31.9; pronotum $\delta$ 5.7-6.1, $\varphi$ 8.8; elytron $\delta$ 9.0-9.9, $\varphi$ 11.9-12.1; hind femur $\delta$ 12.8, $\varphi$ 16.6 mm.

Type locality: “Tanganyika, Congost, Kakoma”. Type $\delta$, in the British Museum. (Natural History).

Geographical distribution: S. Tanzania (former Tanganyika): Lake Rukwa, viii.ix.1899, 1 $\varphi$; Congost, Kakoma, 25-26.ix.1899, 2 $\delta$ $\varphi$ (including type), 1 $\varphi$ (S. Glauning).

All specimens studied are type and paratypes. There is slight variation in general colouration being generally darker or paler. This species is related to $P$. ocellatus (see P. ocellatus).

Phymeurus illepidus (Walker, 1870).

(Figs. 2, 13.)

Caloptenus illepidus Walker, 1870.
Caloptenus pinguis (Walker, 1870). (Uvarov, 1922).
Platyphymus illepidus (Walker, 1870). (Uvarov, 1922).

$\delta$ Of medium size. Integument slightly rugose. Antenna almost as long as head and pronotum together. Fastigium of vertex broader than its length, shallowly concave, occipital carinula present. Frontal ridge depressed at ocellus, lateral carinula present near ocellus. Prozona of pronotum as long as metazona, lateral carinae sharp, comparatively straight, diverging to posterior margin, dorsum smooth, pair large tubercles present between second and third transverse sulci, posterior margin of metazona obtuse-angular, sides sharply narrowing to rounded apex. Prosternal process spathulate. Mesosternal interspace slightly broader than its length; metasternal interspace narrower than its length. Elytra and wings exceeding abdomen reaching hind knee, comparatively narrow. Hind femur moderately robust. Posterior margin of last abdominal tergite moderately expanded and upcurved, median projection very small. Supra-anal plate broader than its length, apical part approximately rectangular with rounded sides, slightly incised near transverse tubercles; apex moderately elongated with small emargination
at each side of base; median carinula raised, in basal part divided by narrow longitudinal sulcus; pair tubercles at basal part near median carinula, pair tubercles half way along median carina, pair large elongated tubercles extending from latter pair to margin of supra-anal plate present. Cercus upcurved, comparatively slender, basal part three quarters length of apical part, tip of basal part subacute inclined towards apical part; apical part bilobate, posterior lobe elongated, anterior lobe very reduced.

Phallic complex: apical valves of penis moderately elongated, robust, upcurved and narrowing towards apices; valves of cingulum extending beyond valves of penis, at apices with small obtuse teeth; both valves of cingulum and valves of penis enclosed in sheath from which valves of cingulum project; basal valves of penis robust with sides expanded at apices, dorsal ridge slightly undulated; gonopore processes moderately large projecting in basal part; zygoma of cingulum broad; rami narrow, sclerotized, without elongated bands attached to sheath of penis; apodemes narrowing towards incurved apices; ectophallic membrane forms lateral sclerotizations projecting backwards and dorsal sclerotization at distal end. Epiphallus, narrow bridged; ancorae large, subacute at apices, lophi large, tooth-like, with acute apices and sinuate outer sides.

General colouration dark reddish-brown and paler patches; tubercles on pronotum whitish; elytron pale reddish-brown with darker patches; wing colourless with dark brown veins; internal side of hind femur orange, upper marginal area pale brown with dark brown spots near knee and in middle of femur; hind tibia orange with black tipped spines; tergites one to four dark brown, rest of abdomen yellowish-brown; posterior margin of last abdominal tergite black, tubercles on supra-anal plate black, tips of cercus black.

♀ Type. (Redescription). As male but larger. Fastigium of vertex broader and less concave, mesosternal interspace twice as broad as its length. Subgenital plate with small median lobe and large, rounded lateral lobes.

Body length ♂ 21.0, ♀ 26.7-27.2; pronotum ♂ 5.5, ♀ 6.8-7.6; elytron ♂ 16.2, ♀ 17.6-19.1; hind femur ♂ 13.4, ♀ 15.6-17.3 mm.

Type locality: S. Africa “Natal”. Type ♀, in The Bristish Museum. (Natural History).

Geographical distribution: S. Africa: 1 ♀ (Dr. Smith); Natal, 2 ♀ ♀ (including type); Durban, 1915, 1 ♂, 1 ♀ (C. Akerman).

This species is rather isolated but may be linked with the previous
species *P. rufipes* by the shape of the supra-anal plate which has a rectangular apical part, however the plate shows peculiarities which cannot be linked with any species, there is also no expanded upcurved posterior margin of the last abdominal tergite and no median elongate pro-

Fig 13.—*P. illepidus*: 1) Distal part of phallic complex from above, with lateral and dorsal sclerotizations of the ectophallic membrane; 2) Phallic complex in profile, with lateral and dorsal sclerotizations of the ectophallic membrane; 3) Phallic complex from above, with ectophallic membrane removed; 4) Phallic complex in profile, with ectophallic membrane removed; 5) Endophallus in profile; 6) Epiphallus; 7) Epiphallus (different angle); 8) Spermatheca; 9) Male cercus; 10) Male supra-anal plate; 11) Female subgenital plate from below.
The cercus has a narrow basal part and not broad as in *P. rufipes*.

The phallic complex belongs to the second group as explained in the discussion earlier and not to the first group as all previous species described, but it also has peculiarities to this group as the apical valves of the penis (in profile) are almost the same width the whole length, while in the other species belonging to the second group, the apical valves of the penis are (in profile) greatly expanded in the middle and narrower near the flexure (see *P. tricostatus*). Geographically it is also isolated from the other species being in S. Africa.

**Phymeurus tricostatus** (I. Bolivar, 1889).

(Figs. 2, 14, 15.)

*Euryphymus tricostatus* I. Bolivar, 1889.

*Platyphymus tricostatus* (I. Bolivar, 1889). (Uvarov, 1922).


*Euryphymus stolidus* I. Bolivar, 1889. (*Syn. nov.*).

♂ Neotype. Body comparatively slender. Fastigium of vertex concave broader than its length. Frontal ridge with shallow sulcus and obtuse lateral carinulae. Prozona of pronotum shorter than metazona; dorsum relatively smooth, lateral lobes rugose, median carina highly raised, lateral carinae sharp almost straight but diverging in metazona; posterior margin of metazona obtuse angular but sides sharply narrowing and incurved towards rounded apex; pair tubercles between second and third transverse sulci present. Prosternal process spatulate. Mesosternal interspace as broad as its length; metasternal interspace narrower than its length. Elytra and wings projecting beyond end of abdomen and hind femur. Hind femur comparatively slender. Posterior margin of last abdominal tergite moderately expanded, median projection absent. Supra-anal plate narrowing towards obtuse apex, each side of base is small emargination; median carina raised, divided in basal half by small narrow sulcus; pair large tubercles in basal part extending towards posterior margin, pair small tubercles near division of median carina, pair large transverse tubercles extending from margin towards small median tubercles present. Cercus upcurved, basal part, half length of apical part, apical part expanded, with trilobate apex.
Phallic complex: apical valves of penis moderately elongated and upcurved, narrow at flexure, expanded in middle, narrowing towards apices; valves of cingulum extending beyond valves of penis, apices with small obtuse teeth; both valves of cingulum and valves of penis en-

closed in sheath, valves of cingulum project beyond sheath; basal valves of penis robust with sides greatly expanded at apices; dorsal ridge relatively smooth; gonopore processes large projecting in basal part; zygoma of cingulum very broad and thick; rami moderately narrow, sclerotized, without elongated bands extending to sheath; apodemes narrowing to obtuse apices which are slightly incurved; ectophallic membrane forms lateral sclerotizations projecting backwards and dorsal sclerotization at distal end. Epiphallus small, moderately robust, narrow bridged. Ancorae small with subacute apices; lophi large, tooth-like, with acute apices and sinuate outer sides.

General colouration pale greyish-brown with brown patches; pronotum reddish-brown and black band along dorsum; tubercles between second and third sulci white; elytra pale brown, or reddish-brown with dark brown patches; internal side of hind femur orange-yellow with complete black fascia near knee, incomplete fascia near centre; knee
dark brown in upper half, yellow-orange in lower half; tibia pale orange; external spines black, internal spines with black tips; sternum and sternites yellowish brown with brown spots and patches, posterior margin of last abdominal tergite black, tubercles on supra-anal plate black, apex of cercus black.

♀ As the male, but larger, differs by less concave and broader fastigium of vertex. Mesosternal interspace twice as broad as its length; metasternal interspace broader than its length. Elytra and wings reaching end of abdomen and end of hind femur. Subgenital plate with lateral lobes one quarter length of median lobe.
Spermatheca moderately small with apical diverticulum slightly larger than third diverticulum, preapical diverticulum rudimentary.

Length of body $\delta$ 17.6-18.8, $\varphi$ 21.3-29.4; pronotum $\delta$ 5.4-5.5, $\varphi$ 6.6-7.3; elytron $\delta$ 14.9-15.7, $\varphi$ 19.0-21.1; hind femur $\delta$ 12.1-12.8, $\varphi$ 14.2-15.7 mm.

*Type locality:* "Angola: Duque de Braganca". *Neotype locality* "Angola: Distr. of Bihe, Cohemba". Neotype $\delta$, in The British Museum (Natural History).

*Geographical distribution:* E Angola: Moxico District: Upper Mu-Simoj R, 27.ix.1927, 1 $\delta$, 23-25.x.1927, 1 $\delta$, 2 $\varphi$ $\varphi$. River Langiliko, 22.vi.1927, 5 nymphs. R. Sachanga, 18.vii.1927, 2 $\delta$ $\delta$, 2 $\varphi$ $\varphi$, nymphs. Circa 475 M. 4-10.viii.1927, 1 $\delta$. River Lungue Bungu, x.1927, 2 $\delta$ $\delta$. Munhango, Lungu bungu Rd., 39-ix.-1.x.1927, 1 $\delta$, 1 $\varphi$. Benguela Rly, 23.vii.1927, 3 $\delta$ $\delta$, 4 $\varphi$ $\varphi$. Villa Juro, 15-17.vii.1927, 1 nymph. Valley Lotembwe, 4.vii.1927, 1 $\varphi$, Chimbumba, trib. of Lumeji, 6.vii.1927, 1 nymph. Bihe District, Cohemba, 29-31.viii.1927, 1330 m, 2 $\varphi$ $\varphi$, 1-4.ix.1927, 1 $\delta$ (Neotype). Luchase District, River Quangu, 13.x.1927. 1 $\delta$ (M. Burr). Rio Mbelé, 1928-29 1 $\varphi$ (Miss Sc. Suisse). R. Chicapa, Route Saurimo-Mona-Quinbundo, 9.39. S. 20.20.E., 29.iv.1964 (L. Carvalho).

This species shows variety in general size (especially in the females), colouration from greyish to reddish brown. The length of elytra is also variable but generally exceeding the hind knee. This species is related to *P. brachypterus* by similar supra-anal plate and relatively smooth dorsum of pronotum, but differs by the fully developed elytra and wings, the shape of the cercus, straighter lateral carina of the pronotum. The body is also generally more slender. The phallic complex differs mainly by the shape of the sheath of penis (from above), and by the structure of the basal valves. The epiphallus is more robust and the lophi more curved.

The type of *P. stolidus* I. Bolivar, 1889 is lost, however, after studying the description and a large series of material attributed to *P. stolidus* and *P. tricostatus*, it becomes apparent that both species are conspecific. The name of *P. tricostatus* has priority. As the type of *P. stolidus* is lost a neotype is designated here ($\delta$ Neotype. E. Angola, Moxico District, R. Munilango, 23.vii.1927 (M. Burr). The Neotype is in The British Museum (Natural History).
Phymeurus brachypterus (I. Bolivar, 1889).

(Figs. 2, 16.)

Euryphymus brachypterus I. Bolivar, 1889.

♂ Neotype. Body robust. Integument comparatively smooth. Antenna longer than head and pronotum together. Fastigium of vertex concave, broader than its length. Occipital carinula present. Frontal ridge with shallow sulcus whole length, lateral carinulae comparatively well developed. Prozona of pronotum slightly longer than metazona, dorsum smooth, lateral carinae almost straight but diverging backwards, sides of posterior margin obtuse angular but slightly incurved, apex rounded; pair prominent tubercles between second and third transverse sulci present. Posternal process incurved at apex. Mesosternal interspace slightly broader than its length; metasternal interspace broader than its length. Elytra and wings shortened, reaching end of fourth tergite. Hind femur robust, exceeding end of abdomen. Posterior margin of last abdominal tergite slightly expanded, median projection small. Supra-anal plate narrowing towards apex, slightly incised at transverse tubercles apex elongated obtuse, median carina raised, divided in basal half by shallow sulcus, pair large tubercles at base near posterior margin of last abdominal tergite, pair tubercles where median tubercles divide, pair transverse tubercles extending from the latter pair towards lateral margins of plate present. Cercus moderately thickened upcurved, basal part slightly more than half length of apical part, apical part narrowing towards obtuse apex.

Phallic complex: apical valves of penis moderately elongated, narrow at flexure, becoming greatly expanded in middle, narrowing towards apices; valves of cingulum robust almost as long as basal valves of penis, with small obtuse teeth at apices; both valves of cingulum and valves of penis enclosed in sheath, from which valves of cingulum project; basal valves of penis robust expanded at apices; dorsal ridge of valves roughly serrated; gonopore processes large projecting, in basal part forming obtuse projection; zygoma of cingulum broad; rami sclerotized without additional bands extending in sheath of penis; apodemes robust forming “U-shaped” structure, obtuse at apices; ectophallic mem-
brane forms lateral sclerotizations with small obtuse teeth, and dorsal sclerotization at distal end. Epiphallus narrow bridged; ancorae small, at apices obtuse; lophi large, tooth-like, with acute apices and sinuate outer sides.

Fig. 16.—P. brachypterus: 1) Distal part of phallic complex from above, with lateral and dorsal sclerotizations of the ectophallic membrane; 2) Phallic complex in profile, with lateral and dorsal sclerotizations of the ectophallic membrane; 3) Phallic complex from above, with the ectophallic membrane removed; 4) Phallic complex in profile, with the ectophallic membrane removed; 5) Endophallus in profile; 6) Epiphallus; 7) Spermatheca; 8) Male cercus; 9) Male supra-anal plate; 10) Female subgenital plate from below; 11) Prosternal process. (Numerals 8, 9, 11, neotype.)
General colouration pale brown, pale reddish-brown with dominating black stripes and patches; pronotum with longitudinal median black stripe, pale brown near lateral carina, pair tubercles between second and third sulci white; elytra mostly black with pale brown postcubital vein, apical part of wing dark brown, external side of hind femur pale reddish-brown with three black bands on upper marginal area forming indefinite fascia across the femur; internal side of hind femur orange at the lower marginal area, yellow with three black fascia in upper marginal area, hind tibia orange with external spines black and internal spines yellow with black tips, sternites yellowish-brown, tergites with dark brown and black patches; posterior margin of last abdominal tergite and median projection black.

♀ Larger and more robust than male. Differs by fastigium of vertex being less concave; mesosternal interspace twice as broad as its length, metasternal interspace broader than its length. Subgenital plate with small lateral lobes one fifth length of median lobe.

Spermatheca has large broad apical diverticulum and very reduced preapical diverticulum; third diverticulum is also broad and slightly shorter than apical diverticulum. In other respects as the male.

Length of body, ♂ 16.6-20.6, ♀ 25.2-28.5; pronotum, ♂ 5.5-6.0, ♀ 7.8-8.3; elytron, ♂ 8.2-8.7, ♀ 10.5-11.2; hind femur, ♂ 10.2-11.8, ♀ 15.0-15.7 mm.

Type locality: "Angola, Caconda". Neotype locality: Tanganyika "Mbisi". Neotype ♂, in The British Museum (Natural History).


This species differs from *P. tricostatus* by the reduced elytra and wings, and shape of cercus, with an obtuse single lobed apex. There is no black fascia near the knee on the internal side of the hind femur. The dorsum of the pronotum is much broader and the posterior margin of the metazona less incurved. The supra-anal plates are similar both narrowing towards the apex. The colouration of the dorsum of the pronotum is also similar. The species is generally much more robust. The phallic complex differs mainly by the form of the sheath of penis (from above and profile); the shape of the basal valves of the penis, and the angle of the apodemuses in profile.
Phymeurus granulatus (Uvarov, 1922).

(Figs. 2, 17.)

Platyphymus granulatus Uvarov, 1922.

♂ Type. Redescription. Body small. Integument moderately coarsely granulose. (Antenna broken). Fastigium of vertex slightly concave, broader than its length; occipital carinula weak. Frontal ridge with shallow sulcus and weak lateral carinulae. Prozona of pronotum as long as metazona, posterior margin of metazona obtuse angular but sharply narrowing to apex, sides slightly incurved; lateral carina sharp along whole length, converging to anterior margin, excurred between first and third transverse sulci, third transverse sulcus deeply cutting median carina; pair prominent tubercles between second and third sulci present but disc of pronotum relatively smooth. Prosternal process with incurved apex. Mesosternal interspace as broad as its length; metasternal interspace longer than its width. Elytra and wings fully developed, exceeding end of abdomen. Elytra comparatively narrow. Hind femur moderately thickened. Posterior margin of last abdominal tergite not expanded or upcurved with very small median projection. Supra-anal plate with sides rounded narrowing to apex, incised at transverse tubercles, apex elongate, subacute with small emargination at each side of its base; median carinula sharply divided at base by deep sulcus, in apical part less raised than in basal part; pair large tubercles at base of supra-anal plate, two small tubercles near division of median carinula, pair large elongated transverse tubercles from margin extending towards median tubercles. Cercus upcurved, basal part slightly broader than and half length of apical part, which is curved and narrowing to obtuse apex.

Phallic complex: apical valves of penis moderately elongated, narrow at flexure, becoming greatly expanded in middle and narrowing towards apices; valves of cingulum robust extending beyond valves of penis, apices with small obtuse teeth; both valves of cingulum and valves of penis enclosed in sheath from which valves of cingulum project; basal valves of penis moderately robust expanded at apices, dorsal ridge of valves slightly serrated in apical part; gonopore processes large obtuse; zygoma of cingulum moderately broad; rami narrow, sclerotized,
without additional bands extending in sheath of penis; apodemes robust forming "U-shaped" structure, obtuse at apices; ectophallic membrane forms lateral sclerotizations projecting backwards, and dorsal scleroti-

![Diagram](image-url)

**Fig. 17.**—*P. granulatus*: 1) Distal par of phallic complex from above, with the lateral and dorsal sclerotizations of the ectophallic membrane; 2) Phallic complex in profile, with lateral and dorsal sclerotizations of the ectophallic membrane; 3) Phallic complex from above, with the ectophallic membrane removed; 4) Phallic complex in profile, with the ectophallic membrane removed; 5) Endophallus in profile; 6) Epiphallus; 7) Spermatheca; 8) Male cercus; 9) Male supra-anal plate; 10) Female subgenital plate from below; 11) Prosternal process. (Numerals 1-6, cotype; Ibidem 8, 9, 11, type).

... Epiphallus small, robust, narrow bridged; ancorae small, with acute apices; lophi large, tooth-like, with acute apices and sinuate outer sides.

General colouration pale reddish-brown, with dark brown and pale brown patches; gena with pale brown and medium brown patches; pronotum with longitudinal dark brown stripe; tubercles between second and third sulci whitish; elytra pale reddish-brown, with darker brown patches, wing colourless with brown veins; hind femur pale brown with darker patches, internal side pale brown with two incomplete darker brown fasciae; tibia yellowish brown with black tipped spines.
♀ As the male but larger. Antenna almost as long as head and pronotum together. Mesosternal interspace twice as broad as its length, metasternal interspace broader than its length. Elytra shorter or reaching end of abdomen. Sugenital plate with well developed lateral lobes half length of median lobe.

Spermatheca with long broad apical diverticulum curved backwards at base, preapical diverticulum small, one fifth length of apical diverticulum. Third diverticulum elongated slightly shorter than apical diverticulum.

Length of body, ♂ 15.2-18.4, ♀ 21.9-24.8; pronotum ♂ 14.7-5.3, ♀ 6.0-6.9; elytron, ♂ 9.5-12.0, ♀ 11.0-14.0; hind femur, ♂ 10.8-11.2, ♀ 13.4-14.4 mm.

_Type locality:_ "Kenya, Baringo, 4,000 ft." Type ♂ in The British Museum (Natural History).

_Geographical distribution:_ Kenya: Baringo, 4,000 ft. 20.xii.1889, 5 ♂ ♂ (including type), 5 ♀ ♀, 4 nymphs; Chyulu Hills, 5,300 ft., v.1938, 2 ♂ ♂, 2 ♀ ♀.

Uganda: Elgon, 2,000 meters, 2 ♂ ♂. Loven.

Sudan: Imatong Mts., ii.1936, 3 ♂ ♂, 13 ♀ ♀, 2 nymphs; Lomuling, 19.xii.1933, 8,000 ft.; Kippia, 8,000-9,000 ft, 11.ii.1936, 1 ♂ (H. B. Johnson).

This species varies in general colouration from pale to dark brown, the hind tibiae also vary from reddish to yellowish brown.

The basal part of the cercus in _P. granulatus_ is slightly shorter than that of _P. brachypterus_ they both have obtuse apices. As in _P. brachypterus_ the median projection of the last abdominal tergite is small, also the supra-anal plates narrow towards the apex; both possess transverse tubercles extending towards the margin. The species differ mainly by the elytra in shape, length, and colouration. The prozona of the pronotum of _P. brachypterus_ is longer than the metazona, in _P. granulatus_ the prozona is shorter than the metazona. _P. granulatus_ is much smaller and more slender. The phallic complex differs mainly by the shape of the sheath of penis (from above), the cingulum which is narrower, and the less expanded apices of the basal valves of the penis. The epiphallus has smaller lophi, and larger ancorae.
Phymeurus bigranosus (Uvarov, 1922).

(Figs. 2, 18.)

Platyphymus bigranosus Uvarov, 1922.
Phymeurus bigranosus (Uvarov, 1922) (Uvarov, 1954).

♀ Type (Redescription). Body small. Integument finely rugulose. (Antenna broken). Fastigium of vertex concave, broader than its length. Occipital carinula weak. Frontal ridge with depression beneath ocellus and obtuse lateral carinulae. Dorsum of pronotum comparatively narrow, prozona as long as metazona, posterior margin obtuse angular but sides sharply narrowing to apex, lateral carinae sharp slightly converging to anterior margin, feebly excurred between first and third sulcus, pair smaller tubercles posterior to second sulcus, pair tubercles posterior to first sulcus present. Prosternal process bilobate. Mesosternal interspace one and half times as broad as its length; metasternal interspace longer than its width. Elytra and wings fully developed, exceeding end of abdomen but not hind femur. Hind femur moderately robust. Posterior margin of last abdominal tergite not strongly expanded and upcurved, median projection small. Supra-anal plate broader than its length, posterior margin with rounded sides narrowing to apex and incised near transverse tubercles, apex elongated subacute with small emargination each side of its base, median carinula divided in basal half with shallow sulcus, apical half slightly raised; pair large tubercles at base of supra-anal plate, pair smaller ones where median carinula divides, pair very elongated tubercles extending from margin almost to median tubercles present. Cercus upcurved, basal part slightly longer than half apical part, broad at base, apical part with expanded flattened apex.

Phallic complex: apical valves of penis upcurved elongated, narrow at flexure, greatly expanded in middle tapering towards apices; valves of cingulum moderately robust narrowing towards apices which extend well beyond apices of valves of penis, and possess obtuse tubercles; both valves of penis and valves of cingulum enclosed in sheath from which apices of valves of cingulum project; basal valves of penis moderately robust with sides expanded at apices; dorsal ridge of valves irregularly serrated; gonopore processes large, in basal part forming obtuse projection; zygoma of cingulum moderately broad; rami very narrow,
sclerotized bands are not extended into the sheath; apodemes sharply
narrowing to incurved apices; ectophallic membrane forms large lateral
heavily sclerotized finger-shaped projections covered with obtuse small
teeth and smoother dorsal sclerotization at distal end. Epiphallus small

and robust, narrow bridged; ancorae moderately large acute at apices;
lophi large, tooth-like, with elongate acute apices and sinuate outer
sides.

General colouration pale brown with dark brown patches (poorly pre-
served probably from alcohol), pronotum with dark brown longitudinal
stripe; elytra with dark brown patch at base, hind femur pale brown
with dark brown patches, hind tibiae pale brown, spines pale brown with
black tips; posterior margin of last abdominal tergite and small median

Fig. 18.—*P. bigranosus*: 1) Distal part of phallic complex from above, with lat-
eral and dorsal sclerotizations of the ectophallic membrane; 2) Phallic complex
in profile, with lateral and dorsal sclerotizations of the ectophallic membrane;
3) Phallic complex from above, with the ectophallic membrane removed; 4) Phal-
lic complex in profile, with the ectophallic membrane removed; 5) Endophallus in
profile; 6) Epiphallus; 7) Spermatheca; 8) Male cercus; 9) Male supra-anal
plate; 10) Female subgenital plate; 11) Prosternal process. (Numerals 8, 9, 11,
type.)
projection black; tubercles on supra-anal plate black; basal and apical tips of cercus black.

♀ As the male but larger. Antenna shorter than head and pronotum together. Fastigium of vertex broader than its length. Dorsum of pronotum broader; lateral carinae more excurved between first and third transverse sulci; mesosternal interspace twice as broad as its length; metasternal interspace broader than its length. Elytra and wings shorter than abdomen. Hind femur reaching or slightly shorter than end of abdomen. Lateral lobes of subgenital plate well developed, half length of median lobe.

Spermatheca small, apical diverticulum broad curving backwards at base, preapical diverticulum very reduced, third diverticulum three quarters length of apical diverticulum.

Length of body, ♂ 16.5-19.8, ♀ 23.8-30.0; pronotum, ♂ 5.1-5.5, ♀ 6.6-7.8; elytron, ♂ 11.9-12.0, ♀ 13.7-17.2; hind femur, ♂ 10.0-11.5, ♀ 13.7-16.1 mm.

Type locality: “British East Africa: Ngatana”, Type ♂, in The British Museum (Natural History).

Geographical distribution: Kenya: Ngobit, Aberdare Mts, 7,000ft. ix.1945, 5 ♂ 5 ♀ (P. A. Buxton); Nakuru, ix.1962, 1 ♀ (J. Burton); Nairobi, 23.iii.1906, 1 ♂ (W. L. Sclatter); viii.1934, 1 ♀, 2 ♂ (Dr. E. A. Lewis); 1 ♂, 3 ♀ ♀ (N. Wilkins).

Variability of the species is found in the general colouration from dark brown to reddish brown, and variation in general size. The prosternal process has sometimes a rounded apex and not incurved. The general shape and length of elytra is similar to *P. granulatus*, also the small supra-anal plates are similar, narrowing towards the apex and both have transverse tubercles extending from the median tubercles to the lateral margins. *P. bigranosus* differs mainly by the shape of the cercus being expanded at the apex, and the basal part three-quarters the length of the apical part while that of *P. granulatus* has an obtuse apex, and the basal part is half the length of the apical part. The pronotum of *P. bigranosus* is more slender. The main differences in the phallic complex is the shape and length of the apodemes of cingulum, the shape and length of the basal valves and the large lateral projections of the ectophallic membrane in *P. bigranosus*. The epiphalli and female subgenital plate are similar but the spermatheca has only a very reduced preapical diverticulum in *P. bigranosus*, while that of *P. granulatus* is more elongated.
Phymeurus reductus (Ramme, 1929).

(Figs. 2, 19.)

Amblyphymus reductus Ramme, 1929.
Platyphymus reductus (Ramme, 1929) (Uvarov, 1953).
Phymeurus reductus (Ramme, 1929) (Uvarov, 1954).

♀ Type (Redescription). Body comparatively small. Integument finely rugose. Fastigium of vertex concave broader than its length. Occipital carinula present. Frontal ridge with comparatively well developed sulcus and lateral carinulae on whole length. Prozona of pronotum longer than metazona; lateral carinae converging to anterior margin, excurved between first and third transverse sulci, slightly diverging backwards; posterior margin obtuse angular, sides moderately narrowing to rounded apex; pair large tubercles between second and third transverse sulci present, rest of dorsum also with large and small tubercles. Prosternal process spathulate. Mesosternal interspace one and a half times as broad as its length; metasternal interspace as broad as its length. Elytra and wings very reduced (damaged) reaching third tergite. Hind femur moderately robust. Posterior margin of last abdominal tergite not expanded or upcurved with slight trace of median projection. Supra-anal plate broader than its length sides with small incision near transverse tubercles posterior margin narrowing to apex, apex short obtuse with slight emargination each side of base, median carinula slightly raised, dividing in basal part, sulcus between dividing branches shallow; pair large elongated tubercles at base near last tergite, pair smaller tubercles near median carinula, two smaller tubercles transversely extending each side to posterior margin present. Cercus upcurved moderately thickened, basal part half length of apical part, apical part slightly broader than basal part, apex obtuse.

Phallic complex: apical valves of penis upcurved, moderately elongated, narrow at flexure, greatly expanded in middle, tapering towards apices; valves of cingulum moderately robust extending well beyond apices of valves of penis, with small obtuse teeth; both valves of cingulum and valves of penis enclosed in sheath from which valves of cingulum project; basal valves of penis robust in middle greatly expanded narrowing at apices; dorsal ridge of valves slightly serrated; gonopore processes large, projecting in basal part; zygoma of cingulum broad;
rami narrow, sclerotized, without prolonged bands attached to sheath; apodemes narrowing to slightly incurved apices; ectophallic membrane forms lateral sclerotizations projecting backwards, covered with obtuse small teeth and smoother dorsal sclerotization at distal end. Epiphallus small, moderately robust, narrow bridged; ancorae moderately large, with acute apices, lophi large, tooth-like, with acute apices and sinuate outer sides.

General colouration dark brown, with paler brown patches; abdomen yellowish brown with dark brown spots especially on ventral

Fig. 19.—P. reductus: 1) Distal part of phallic complex from above, with lateral and dorsal sclerotizations of the ectophallic membrane; 2) Phallic complex in profile, with lateral and dorsal sclerotizations of the ectophallic membrane; 3) Phallic complex from above, with ectophallic membrane; 3) Phallic complex from above, with ectophallic membrane removed; 4) Phallic complex in profile, with ectophallic membrane removed; 5) Endophallus in profile; 6) Epiphallus; 7) Epiphallus (different angle); 8) Male cercus; 9) Male supra-anal plate; 10) Prosternal process. (Numerals 1-10, holotype.)
side, internal side of hind femur yellow with complete black fascia near knee and small incomplete black fascia at middle of femur (hind tibia absent).

♀ not known.

Body length ♂ 18.0; pronotum 5.0; elytron (broken); hind femur 9.8 mm.

Type locality: "Camerouns: Ssanga, Lobaje Exp., Uamgebiet". Type ♂, in the British Museum (Natural History).

The species was described from the male type only. *P. reductus* differs from *P. bigranosus* by the very reduced elytra, and shape of cercus, which has an obtuse apex. The frontal ridge has a sulcus the whole length. Similarities are found in the width and shape of the pronotum, although the lateral carinae in *P. reductus* are more excurved.

Male supra-anal plate narrow towards the apex in both species, the transverse tubercles in *P. reductus* are broken into smaller ones while in *P. bigranosus* they are not. The median projections of the posterior margin of the last abdominal tergite are small in both species. The phallic complex differs mainly by the apical valves of the cingulum and penis being slightly longer in *P. bigranosus*; the shape of the sheath (from above) being narrower in *P. reductus*; the apodemes (from above) are less incurved at the apices; the basal valves of the penis have a different form. The ancorae of the epiphallus are more slender in *P. reductus*.


(Figs. 2, 20.)

♂ (Redescription). Body small. Antenna almost as long as head and pronotum together. Fastigium of vertex concave broader than its length. Occipital carinula weak. Frontal ridge with shallow sulcus and obtuse lateral carinulae. Pronotum coarsely rugose; prozona longer than metazona; median carina obtuse lateral carinae undulated, slightly excurved between first and third transverse sulci, diverging backwards in metazona; pair tubercles between second and third sulci present; posterior margin of metazona obtuse-angular with sides slightly incurved and rounded apex. Prosternal process spatulate. Mesosternal interspace as broad as its length; metasternal interspace narrower than its length. Elytra and wings shortened reaching seventh tergite;
elytron expanded in middle of anterior margin, gradually narrowing to rounded apex. Hind femur comparatively slender. Posterior margin of last abdominal tergite not greatly upcurved, slightly expanded, only slight traces of median projection present. Supra-anal plate narrowing towards apex, sides slightly incised at transverse tubercles, apex moderately elongated, obtuse; median carinula poorly developed divided in basal half by shallow sulcus, pair large tubercles beneath posterior margin of last abdominal tergite; pair large tubercles where median carinula divides; pair elongated tubercles extending from latter tubercles towards margin present. Cercus upcurved, basal part slightly more than half apical part, apical part narrowing towards obtuse apex.

Phallic complex: apical valves of penis upcurved, moderately elongated, narrow at flexure, greatly expanded in middle, narrowing towards apices; valves of cingulum robust extending beyond valves of penis, apices with small obtuse teeth; both valves of cingulum and valves of penis enclosed in sheath from which valves of cingulum project; basal valves of penis robust with sides expanded at apices, dorsal ridge of valves slightly serrated, gonopore processes with large obtuse projections; zygoma of cingulum moderately broad; rami narrow sclerotized without additional bands extending in sheath of penis; apodemes narrowing to slightly incurved apices; ectophallic membrane forms lateral finger-shaped sclerotization which project backwards and covered with obtuse small teeth, dorsal sclerotization is at distal end. Epiphallus small, robust, narrow bridged; ancorae moderately large, with obtuse apices; lophi large, tooth-like, with acute apices and sinuate outer sides.

General colouration black and dark brown; antenna black. Head from above blackish-brown, labrum and clypeus pale brown; elytra black and brown, wings dark brown in apical part; internal side of hind femur orange with complete black fascia near knee and incomplete black fascia near middle of femur, internal side of knee yellow, and orange with dark brown patch at base; tibia orange internal spines yellow with black tips, external spines black; posterior margin of last abdominal tergite black; supra-anal plate dark brown with black tubercles, division of median carinula pale brown, edge of subgenital plate black, cercus brownish black.

♀ As the male but larger; differs by elytra reaching fifth tergite. Mesosternal interspace twice as broad as its length, metasternal interspace broader than its length. Lateral lobes of subgenial plate one fifth length of median lobe.

Eos, XLI, 1965.
Spermatheca small, apical diverticulum curved back at base, preapical diverticulum one quarter length of apical diverticulum, third diverticulum slightly shorter than apical diverticulum.

Fig. 20.—*P. loamensis*: 1) Distal part of phallic complex from above, with lateral and dorsal sclerotizations of the ectophallic membrane; 2) Phallic complex in profile, with lateral and dorsal sclerotizations removed; 3) Phallic complex from above, with ectophallic membrane removed; 4) Phallic complex in profile, with ectophallic membrane removed; 5) Endophallus in profile; 6) Epiphallus; 7) Spermatheca; 8) Male cercus; 9) Male supra-anal plate; 10) Right elytron; 11) Prosternal process; 12) Female subgenital plate from below. (Numerals 1-12, paratypes.)

Length of body $\delta$ 19.0-19.2, $\varphi$ 27.1-27.8; pronotum $\delta$ 5.0-5.5, $\varphi$ 6.3-7.0; elytron $\delta$ 8.9-9.3, $\varphi$ 11.1-11.4; hind femur $\delta$ 10.9-11.2, $\varphi$ 13.0-13.6.

*Type locality:* “Sierra Leone, sommet du Bintumane (1885 m).

*Type $\delta$, in The Muséum National d'Histoire Naturelle, à Paris.*

*Geographical distribution:* Sierra Leone, bord du ruisseau (1850

All specimens examined are paratypes. There is slight variation in general colouration as some are reddish-brown. This species is related to *P. reductus* and *P. nimbaensis* (see also *P. nimbaensis*). The difference is mainly found in the structure of the pronotum being more coarsely granulose. The cercus of *P. reductus* has a shorter apical part, both have obtuse apices. Similarities are found in the male supraanal plate narrowing towards the apex, and small tubercles transversely arranged across the plate; both have reduced elytra; the body size is approximately similar. The main difference is in the structure of the phallic complex. It has large sclerotizations of the ectophallic membrane, the sheath of the penis is broader (from above) in *P. reductus*; the apices of the basal valves of the penis being more expanded. The ancorae in the epiphallus of *P. reductus* are slender and more elongated with subacute apices, while those of *P. loamensis* are more robust with obtuse apices.

**Phymeurus nimbaensis** Chopard, 1958.

(FIGS. 2, 21.)

♂ (Redescription). Of medium size. Integument finely rugose. Antenna almost as long as head and pronotum together. Fastigium of vertex broader than its length, concave. Occipital carinula present. Frontal ridge with shallow sulcus and obtuse lateral carinulae. Prozona of pronotum longer than metazona, dorsum comparatively narrow moderately smooth with pair large tubercles between second and third sulci; lateral carinae slightly excurved between first and third transverse sulci; anterior and posterior margins obtuse angular gradually narrowing to rounded apices. Prosternal process with apex incurved. Mesosternal interspace broader than its length. Metasternal interspace longer than its width. Elytra and wings shortened reaching fourth abdominal tergite; anterior margin of elytron expanded, sharply narrowing to rounded apex. Hind femur comparatively slender. Posterior margin of last abdominal tergite moderately expanded, slightly upcurved, only slight traces of median projection present. Supra-anal plate broader than its length; posterior margin narrowing towards apex, sides slightly incised at transverse tubercles, apex moderately elongated
obtuse; median carinula raised, divided at basal half with shallow median sulcus; pair large elongated tubercles at base near posterior margin of last abdominal tergite; pair smaller median tubercles at division of median carinula, pair elongated tubercles extending almost from median carinula to margin of supra-anal plate present. Cercus upcurved, thicker at base, basal part three-quarters length of apical part; apical part narrowing to obtuse apex.

Phallic complex: apical valves of penis upcurved elongated, broad in middle and narrowing towards apices, valves of cingulum moderately robust extending beyond valves of penis, apices with small obtuse teeth;

Fig. 21.—P. nimbaensis: 1) Distal part of phallic complex from above, with lateral and dorsal sclerotizations of the ectophallic membrane; 2) Phallic complex in profile, with lateral and dorsal sclerotizations of the ectophallic membrane; 3) Phallic complex from above, with the ectophallic membrane removed; 4) Phallic complex in profile, with ectophallic membrane removed; 5) Endophallus in profile; 6) Epiphallus; 7) Male cercus; 8) Male supra-anal plate; 9) Female subgenital plate from below; 10) Right elytron; 11) Prosternal process; 12) Spermatheca. (Numerals 1-12, paratypes.)
both valves of cingulum and valves of penis enclosed in sheath from which elongated valves of cingulum project; basal valves of penis robust with sides expanded at apices, dorsal ridge of valves slightly serrated, gonopore processes relatively small in basal part forming obtuse projection; zygoma of cingulum moderately slender; rami narrow sclerotized without additional bands attached to sheath of penis; apodemes
narrowing to incurved apices; ectophallic membrane forms in front lateralsclerotizations and dorsal sclerotization at distal end. Epiphallus

Fig. 23.—Map of distribution: black triangle, *P. rufipes*; black square, *P. illepidus*; black circle, *P. tricostatus*; black rhombus, *P. brachypterus*; white rhombus, *P. granulatus*; white circle, *P. bigranosus*; white square, *P. reductus*; white triangle, *P. loamensis*; black rectangle, *P. nimbaensis*.

small robust, narrow bridged; ancorae moderately large, sub-acute at apices; lophi large, tooth-like, with acute apices and sinuate outer sides.

General colouration dark reddish-brown with dark, and light brown, and black patches. Head from above with black and pale brown patches, labrum, clypeus and frons reddish-brown; pronotum with pair whi-
tish tubercles between second and third sulci, sternum yellowish brown; internal side of hind femur yellowish-orange with complete black fascia near knee and incomplete fascia in middle of leg; tibia pale orange with black tipped spines, posterior margin of last abdominal tergite black; tubercles on supra-anal plate black; supra-anal plate pale brown with blackish to brown patches; tips of cercus black.

♀ As the male but larger. Differs by mesosternal interspace twice as broad as its length, metasternal interspace wider than its length. Middle lobe of subgenital plate comparatively short, lateral lobes half length of median lobe.

Spermatheca small, apical diverticulum moderately large, curved back at the base, preapical diverticulum very reduced, third diverticulum almost as long as apical diverticulum.

Length of body ♂ 19.1-20.0, ♀ 29.0; pronotum, ♂ 5.0-5.3, ♀ 6.2-6.4; elytron, ♂ 7.2-8.0, ♀ 10.0-10.2; hind femur, ♂ 11.2-11.7, ♀ 13.3-13.6 mm.

Type locality: W. Africa "Mont Nimba". Type in The Muséum National d'Histoire Naturelle à Paris.

Geographical distribution: West Africa: Nimba (Guinée) Lamotte, Vanderplaetsen, xii.56-v.57, 3 ♂, 2 ♀.

The specimens studied were all paratypes and are very similar to *P. loamensis* but differs by shorter and broader elytra (figs. 20, 21), smoother dorsum of pronotum, slight difference in curvature and length of cercus. Internal side of hind femur and tibia yellow, in *P. loamensis* red. The species is similar to *P. loamensis* by the supra-anal plate narrowing towards the apex, the presence of transverse tubercles; the absence of a median projection at the posterior margin of the last abdominal tergite and the reduction of the elytra. The phallic complex differs mainly by the different angle of the apodemes (in profile) and different shape (from above) (see figs. 20, 21). The apices of the ancorae of the epiphallus are subacute not obtuse as in *P. loamensis*.

**Explanation of Symbols used in the Plates (After V. M. Dirsh, 1956.)**

Ac, arch of cingulum.

Ap, apical valve of penis.

Apd, apodemus.

Bp, basal valve of penis.

 Cv, valve of cingulum.
Dscl, dorsal sclerotized part of ectophallic membrane.
Ectm, ectophallic membrane.
EjD, ejaculatory duct.
Ejs, ejaculatory sac.
Gpr, gonopore process.
Lscl, lateral sclerotized part of ectophallic membrane.
Rm, ramus (plural rami) of cingulum.
Scl, sclerotized extension from rami into membranous sheath of penis.
Sh, sheath of penis.
SpS, spermatophore sac.
Zyg, zygona of cingulum.

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