ZOOLOGISCHE MEDEDELINGEN

UITGEGEVEN DOOR HET

RIJKSMUSEUM VAN NATUURLIJKE HISTORIE TE LEIDEN

(MINISTERIE VAN CULTUUR, RECREATIE EN MAATSCHAPPELIJK WERK)

Deel 53 no. 15 10 oktober 1978

VALGINE BEETLES: A PRELIMINARY REVIEW OF THE GENERA, WITH DESCRIPTIONS OF TWO NOVELTIES

by

J. KRIKKEN

Rijksmuseum van Natuurlijke Historie, Leiden

With 16 text-figures

ABSTRACT

Heterovalgus popei (Java) and *Tibiovalgus perplexus* (Cameroun), new genera and species, are described and inserted in a key to the known genera of Valginae. A checklist of valgine genus-group names is given, including details about type-species, synonymies, number of species per genus, and occurrence in zoogeographical regions. For six old genus-group names type-species are designated.

INTRODUCTION

After the publication of Arrow's review (1944) of the Valginae (Scarabaeoidea: Cetoniidae) four new genera have been proposed in this subfamily, bringing their total to 31. Being interested in the supraspecific classification of the group I scanned the unidentified accessions of some of the larger museums, and also looked at the types of species of doubtful generic placement. In this way two remarkable novelties were found, which are described below. Despite the fact that I am not now in a position to revise the generic classification thoroughly, a preliminary review has been composed, including a key. The arrangement of the genera in the key basically agrees with that in Arrow's "synopsis", which I have found very useful. Although a complete revision certainly would result in the abandonment of some genera (as also anticipated by Arrow), nearly all those mentioned in the key given here constitute easily recognizable entities. For some genera better characters must be found, e.g. for the set *Dasyvalgus*, *Hybovalgus*, *Dasyvalgoides*, *Bivalgus*. The classification as used here is supported by the structure of the male genitalia, but the key is, with one exception, confined to exoskeletal characters. Virtually all the key characters have been verified on the extensive collection of Valginae in Leiden, and on material in Berlin, London, and

Paris. Arrow's synonymies as well as his bipartition of the subfamily are confirmed. In addition to the key I have drawn up a list of all the genus-group names, comprising references to original diagnoses, and information on type-species, synonymies, number of described species included, occurrence in zoogeographical regions. All details concerning species-group taxa are omitted here because too many still need description and/or further investigation.

Most adult Valginae are small flower-visitors probably feeding on nectar and pollen. Several have long maxillary hairs which form a suctorial brush. The scale-patterns, characteristic of many of the species, are often muddled with pollen from the flowers they visited. Certain species, like those of *Microvalgus*, are associated with termites, apparently developing inside the termitaria. Some 265 species of Valginae have been described; they occur in all the major zoogeographic regions, except the Neotropics. The largest genus, *Dasyvalgus*, is largely confined to tropical Asia and shows signs of a recent explosive evolution. Northern temperate regions are poor in genera and species. One genus, *Valgoides*, is known from Madagascar.

Brief diagnosis of the Valginae. — Hind coxae widely separated. Mesepimeron not protuberant, indistinct in dorsal view. Posthumeral section of elytral border not emarginate. Elytral disc flat. Propygidium and pygidium exposed; propygidium not constricted at spiracular level. Implantation of antenna distinct from above. Fore coxa conical, projecting. Mandibles and labrum covered by clypeus, invisible from above. Length not exceeding 1.5 cm.

KEY TO THE GENERA

1. Mesosternum with lobe distinctly interposed between middle coxae. Less squamose/setose forms with unmodified pronotum . . Microvalgini 30
— Metasternum with lobe distinctly interposed between middle coxae. Usually abundantly squamose forms with modified pronotum (paramedian ridges, crenulate lateral margins, etc.) . . . . Valgini 2
2. Propygidial spiracles not near posterior border of propygidium . 23
— Propygidial spiracles near posterior border 3
3. Posterolateral angles of pronotum more or less produced or at least distinctly angulate 4
— Posterolateral angles of pronotum at most feebly, obtusely angulate, usually rounded 7
4. Posterolateral angles of pronotum acute 6
— Posterolateral section of pronotum approximately rectangular . . 5

5. Pronotal base deeply excavate . . . . . *Excisivalgus*
— Pronotal base simple . . . . . *Euryvalgus*
6. Pygidium with a short spine on anal margin . . . . *Hoplitovalgus*
— Pygidium on anal margin with pair of spines, more or less bifurcate (males, females), or bilobate (females) . . . . . *Acanthovalgus*
7. Fore tibia with 2, 4, 5 or 6 external denticles 8
— Fore tibia with 3 distinct denticles, regularly spaced along external border 16
8. Propygidial spiracles not produced 9
— Propygidial spiracles produced, more or less conical 12
9. Tarsal segments of middle and hind legs acutely produced externally. Females with pygidial stylus . . . . . *Lobovalgus*
— Tarsal segments not produced, or produced internally 10
10. Middle coxae separated by less than width of adjacent femora . . 11
— Middle coxae more widely separated. Females without pygidial stylus. . . . . *Chromovalgus*
11. Pronotal sides convergent caudad. Females with pygidial stylus . *Valgus*
— Pronotal sides broad basally. Females without pygidial stylus . . . . . *Homovalgus*
12. Middle tibia lacking external protrusion, frequently more or less "swollen". Aedeagus of males complex, branched. Females with pygidial stylus . . . . . *Charitovalgus*
— Middle tibia with external protrusion. Aedeagus of males (usually) simple. Females lacking pygidial stylus 13
13. Fore tibia with 2 external denticles. Body setose . . . . *Bivalgus*
— Fore tibia with 6 external denticles . . . . . *Dasyvalgoides*
— Fore tibia with 4 or 5 external denticles 14
14. Elytral striae sinuous 15
— Elytral striae straight . . . . . *Mimovalgus*
15. Visible sternite 6 of abdomen retractile, smooth, shiny . . *Dasyvalgus*
— Visible sternite 6 not retractile and smooth . . . . . *Hybovalgus*
16. Propygidial spiracles near the lateral-superior corner of the pygidium. Body usually squamose 17
— Propygidial spiracles placed inward from pygidial corner. Body setose . . . . . *Chaetovalgus*
17. Propygidium with two scale-tufts 18
— Propygidium without scale-tufts 19
18. Tarsal segment 1 of hind legs short . . . . . *Xenoreoderus*
— Tarsal segment 1 of hind legs distinctly longer than segment 2 . . . . . *Lepivalgus*

19. Pronotum anteriorly with pair of ridges 20
— Pronotum lacking pair of ridges . . . . . *Idiovalgus*
20. Tarsi robust; segment 1 of middle and hind tarsi very short. Pygidial apex without bristle-tuft 22
— Tarsi slender 21
21. Pygidial apex without bristle-tuft. Tarsal segment 1 of hind legs short . . . . . *Xenoreoderus*
— Pygidial apex with bristle-tuft. Tarsal segment 1 of hind legs much longer than segment 2 . . . . . *Yanovalgus*
22. Clypeus simple . . . . . *Oreoderus*
— Clypeus anterolaterally tuberculate . . . . . *Podovalgus*
23. Body not very elongate. Propygidial spiracles somewhere about halfway anterior and posterior border of propygidium 24
— Body very elongate. Propygidial spiracles near anterior border. Female with upbent pygidial stylus . . . . . *Sphinctovalgus*
24. Middle and hind tibiae more or less biplanate. Clypeus not dilated, not angulate laterally 25
— Middle and hind tibiae cylindrical, glabrous. Clypeus dilated, angulate laterally. Female with pygidial stylus . . . . . *Heterovalgus*
— Hind tibia greatly "swollen" . . . . . *Oedipovalgus*
25. Pronotum with paramedian carinae, usually with scale-tufts . . 26
— Pronotum with median carina only, without scale-tufts . . *Valgoides*
26. Body elongate. Pronotal outline not elliptic 27
— Body short. Pronotal outline more or less elliptic . . *Comythovalgus*
27. Scutellum not very long and narrow . . . . . *Oreovalgus*
— Scutellum very long and narrow 28
28. Middle and hind tibiae strongly dilated-complanate. Underside of fore tibia with conspicuous ridge . . . . . *Tibiovalgus*
— Middle and hind tibiae simply biplanate. Underside of fore tibia lacking conspicuous ridge 29
29. Pronotal base lobate . . . . . *Pygovalgus*
— Pronotal base not lobate . . . . . *Cosmovalgus*
30. Scutellum large 31
— Scutellum small, length 0.3 or less of length of elytral suture . . . . . *Ischnovalgus*
31. Fore tibia robust, with 3 external denticles . . . . *Stenovalgus*
— Fore tibia with more than 3 external denticles . . . . *Microvalgus*

CHECKLIST OF GENUS-GROUP NAMES *

Acanthovalgus Kraatz, 1895: 144, type-sp. *A. marquardi* Kraatz (monotypy). — Oriental, 5 spp.

Acanthurus Kirby, 1827: 155, type-sp. *Scarabaeus hemipterus* L. (original designation). — Syn. of *Valgus*.

Anepsiovalgus Kolbe, 1904: 30, type-sp. *A. minus* Kolbe (monotypy). — Syn. of *Dasyvalgus* (cf. Arrow, 1944).

Bivalgus Paulian, 1961: 256, type-sp. *B. harmandi* Paulian (original designation). — Oriental, 1 sp.

**Chaetovalgus* Moser, 1914: 612, type-sp. *C. fulvosetosus* Moser (present designation). — Oriental, 2 spp.

Charitovalgus Kolbe, 1904: 20, type-sp. *Valgus pulcher* Kraatz (Arrow, 1910). — Australian, Oriental, 12 spp.

Chromovalgus Kolbe, 1897: 215, type-sp. *Valgus peyroni* Mulsant (original designation). — Oriental, Palaearctic, 4 spp.

**Comythovalgus* Kolbe, 1884: 166, type-sp. *Valgus fasciculatus* Gyllenhal (present designation). — Afrotropical, 13 spp.

Cosmovalgus Kolbe, 1897: 204, type-sp. *C. conradti* Kolbe (original designation). — Afrotropical, 3 spp.

Dasyvalgoides Endrödi, 1952: 65, type-sp. *D. denticulatus* Endrödi (original designation). — East Palaearctic, 1 sp.

Dasyvalgus Kolbe, 1904: 34, type-sp. *Valgus vethi* Ritsema (Arrow, 1910). — Oriental, East Palaearctic, ca. 85 spp.

Euryvalgus Moser, 1908: 260, type-sp. *E. borneensis* Moser (monotypy). — Oriental, 3 spp.

Excisivalgus Endrödi, 1952: 62, type-sp. *E. klapperichi* Endrödi (original designation). — East Palaearctic, 2 spp.

Heterovalgus Krikken, present paper, type-sp. *H. popei* Krikken (present paper). — Oriental, 1 sp.

Homovalgus Kolbe, 1897: 214, type-sp. *Valgus seticollis* Beauvois (monotypy). — Nearctic, 1 sp.

Hoplitovalgus Kolbe, 1904: 49, type-sp. *H. fallaciosus* Kolbe (monotypy). — Oriental, 1 sp.

Hybovalgus Kolbe, 1904: 55, type-sp. *H. bioculatus* Kolbe (monotypy). — Oriental, East Palaearctic, 12 spp.

Idiovalgus Arrow, 1910: 230, type-sp. *Oreoderus planicollis* Gestro (original designation). — Oriental, 3 spp.

---

* Asterisk before genus-group name indicates present designation of type-species.

**Ischnovalgus* Kolbe, 1897: 190, type-sp. *I. gracilis* Kolbe (present designation). — Afrotropical, 6 spp.

Lepivalgus Moser, 1914: 613, type-sp. *Oreoderus borneensis* Gestro (original designation). — Oriental, 3 spp.

Lobovalgus Kolbe, 1897: 207, type-sp. *L. glabratus* Kolbe (monotypy). — Afrotropical, 5 spp.

**Microvalgus* Kraatz, 1883: 374, type-sp. *Valgus lapeyrouse* Gory & Percheron (present designation). — Australian, Oriental, Afrotropical, 37 spp.

Mimovalgus Arrow, 1944: 239, type-sp. *M. rufus* Arrow (original designation). — Oriental, 1 sp.

Nannovalgus Kolbe, 1904: 26, type-sp. *N. pusio* Kolbe (monotypy). — Syn. of *Dasyvalgus* (cf. Arrow, 1944).

Nipponovalgus Sawada, 1941: 9, type-sp. *Valgus angusticollis* Waterhouse (original designation). — Syn. of *Dasyvalgus* (cf. Arrow, 1944).

**Oedipovalgus* Kolbe 1897: 208, type-sp. *Valgus oedipus* Gestro (present designation). — Afrotropical, 4 spp.

Oreoderus Burmeister, 1842: 726, type-sp. *Valgus argillaceus* Hope (monotypy). — Oriental, 20 spp.

Oreovalgus Kolbe, 1904: 18, type-sp. *O. montuosicollis* Kolbe (monotypy). — Oriental, 4 spp.

Paidiovalgus Kolbe, 1904: 14, type-sp. *P. micros* Kolbe (monotypy). — Syn. of *Microvalgus* (cf. Arrow, 1944).

Plocovalgus Kolbe, 1904: 45, type-sp. *P. waterstradti* Kolbe (monotypy). — Syn. of *Dasyvalgus* (cf. Arrow, 1944).

Podovalgus Arrow, 1910: 229, type-sp. *P. griseus* Arrow (original designation). — Oriental, 2 spp.

**Pygovalgus* Kolbe, 1884: 166, type-sp. *P. insignis* Kolbe (present designation). — Afrotropical, 3 spp.

Sphinctovalgus Kolbe, 1904: 50, type-sp. *S. conradti* Kolbe (monotypy). — Afrotropical, 1 sp.

Spilovalgus Kolbe, 1904: 32, type-sp. *Valgus modiglianii* Gestro (original designation). — Syn. of *Dasyvalgus* (cf. Arrow, 1944).

Stenovalgus Kolbe, 1892: 141, type-sp. *S. carinulatus* Kolbe (monotypy). — Afrotropical, 9 spp.

Syngonovalgus Kolbe, 1904: 28, type-sp. *S. nitidus* Kolbe (monotypy). — Syn. of *Dasyvalgus* (cf. Arrow, 1944).

Synistovalgus Kolbe, 1897: 194, type-sp. *S. minutus* Kolbe (original designation). — Syn. of *Microvalgus* (cf. Arrow, 1944).

Tibiovalgus Krikken, present paper, type-sp. *T. perplexus* Krikken (present paper). — Afrotropical, 1 sp.

Trichovalgus Kolbe, 1904: 44, type-sp. *Valgus niger* Kraatz (monotypy). — Syn. of *Dasyvalgus* (cf. Arrow, 1944).

Valgoides Fairmaire, 1899: 529, type-sp. *Valgoides perrieri* Fairmaire (Pouillaude, 1920). — Malagasy, 2 spp.

Valgus Scriba, 1790: 66, type-sp. *Scarabaeus hemipterus* L. (monotypy). — Oriental, Palaearctic, Nearctic, ca. 10 spp.

Xenoreoderus Arrow, 1910: 232, type-sp. *Oreoderus humilis* Gestro (original designation). — Oriental, 3 spp.

Yanovalgus Nomura, 1952: 29, type-sp. *Y. planiusculus* Nomura (original designation). — East Palaearctic, 1 sp.

Descriptions of new taxa

Genus **Heterovalgus** nov.

Diagnosis. — Propygidium strongly elongated (fig. 3), with moderately produced spiracles at 0.3-0.5 from hind border. Lateral flange of clypeus dilated, angulate, surface almost flush with discal surface (fig. 1). Derm glabrous or with inconspicuous microsetae. Middle and hind tibiae cylindrical, lacking external protrusion (fig. 6).

Pronotum (fig. 2) with arcuate base, posterolateral angles distinct, not produced. Pronotal disc with paramedian ridges. Lateral margins of pronotum entire. Scutellum (fig. 3) moderately elongate. Elytral striae obsolescent. Middle coxae widely separated, hind coxae very widely separated (cf. metasternum, fig. 7). Abdomen with 6 visible sternites, 1-4 of equal length along midline, 6 retractile. Pygidium of female (fig. 8) with downbent stylus (male unknown). Fore tibia (fig. 4) with 5 external denticles. Tarsi (fig. 5) long, slender, segments subcylindrical to club-shaped, tarsal segment 1 of hind leg as long as 2 + 3. Derm black, opaque, due to dense microsculpture.

Type-species. — *Heterovalgus popei* sp. nov.

Distribution. — One species on Java.

Heterovalgus popei sp. nov. (figs. 1-8)

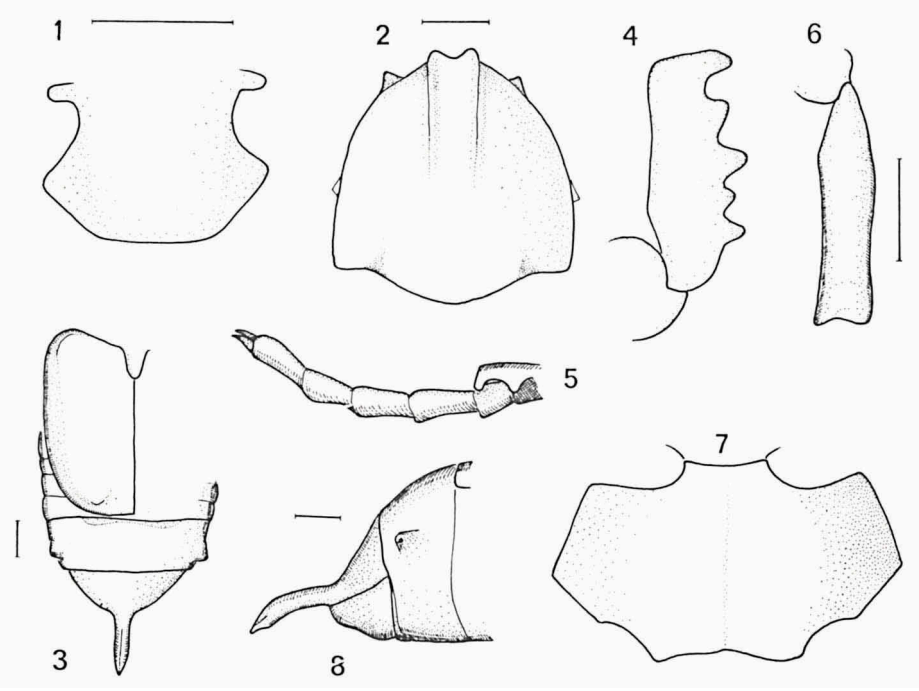
Holotype (female). — Approximate length 7.5, width 2.5, height 2 mm. Black, almost completely glabrous, with a few pale-yellow setae and scales; derm completely shagreened, with vague indication of annulate punctation and braided striolation. Habitus not unlike *Charitovalgus*.

Cephalic contours, fig. 1; surface convex; lateral flange of clypeus distinctly angulate. Maximum width of clypeus 0.77 mm.

Pronotal contours, fig. 2; paramedian ridges vaguely punctate-crenulate; propectus laterally with denticle. Median length of pronotum 1.78, maximum width 1.72 mm. Scutellum (fig. 3) elongate, sides feebly sinuate.

Elytral contours, fig. 3; disc flat, with seven nearly effaced striae; no scale-tufts; humerus very convex, distal umbone feebly convex; disco-lateral transition rather gradual, apicosutural angle pointed. Elytral length (suture to apex of scutellum) 1.94, maximum width of elytra combined 2.56 mm.

Metasternal disc (fig. 7) flat, steeply convex to lateral wings; midline shallowly impressed; sculpture consisting of vague annulate-arcuate punctures; extremely fine, sparse, more or less appressed setae present. Ab-



Figs. 1-8. *Heterovalgus popei,* holotype. Contours of: 1, clypeus, full-face view; 2, pronotum, dorsal; 3, hind body, dorsal; 4, right fore tibia; 5, left fore tarsus and tibial apex, lateral; 6, left hind tibia; 7, metasternum; 8, abdominal apex, propygidium. Scale-lines = 0.5 mm; 1, 4, same scale; 2, 7, same scale; 5, 6, same scale.

dominal sternites with similar setae; anteanal sternite very wide, with feebly sinuate hind border, separated from anal sternite by brown membrane; anal sternite convex (fig. 8), bulbous apically. Pygidium (figs. 3, 8) slightly convex, apically with well-developed stylus. Propygidium with feebly elevated coniform spiracles at one-third from hind border (figs. 3, 8).

Fore tibia and tarsus, figs. 4, 5. Femora long and slender. Middle and hind tibiae (fig. 6) rounded off (in cross-section). Tarsi all long and slender.

Affinities. — *Heterovalgus* shows a great overall similarity to *Charito-*

valgus, and may, despite differences in clypeus, propygidium, and middle and hind tibiae, indeed be a close relative of that genus. A third Oriental genus in which the females have a pygidial stylus is *Valgus*. It seems unlikely, however, that the presence of the stylus is an autapomorphous feature. The same applies to the position of the propygidial spiracles, a character of great practical importance (cf. key couplet 2).

Material examined. — Holotype from Java: Idjen Plateau: Bondowoso, 1200 m, ii-1939, H. R. Folkertsma, in British Museum (Natural History).

Genus **Tibiovalgus** nov.

Diagnosis. — Middle and hind tibiae strongly dilated, complanate, apex strongly dentate (fig. 14), external protrusion present. Underside of fore tibia with strongly developed acute longitudinal carina (fig. 13). Aedeagus branched, very complex (fig. 15).

Clypeus (fig. 9) bilobate in front. Posterolateral angles of pronotum (fig. 10) obtusely angulate. Paramedian ridges of pronotum present, sublateral elevations present. Basal surface of pronotum depressed, basal border rounded medially. Lateral margins of pronotum crenulated. Scutellum (fig. 11) elongate. Discal striae of elytra straight or nearly so. Mesosternum not fully interposed between middle coxae, which are widely separated. Abdominal sternite 6 apparently not retractile, not smooth and glabrous. Propygidial spiracles (fig. 11) slightly raised, situated at ca. 0.3 of the total propygidial length from hind border. Pygidium scarcely convex, semielliptic. Pygidial apex (fig. 11) produced. Fore tibia (fig. 12) with 6 external denticles. Tarsal segments unmodified, segment 1 of hind leg (fig. 14) long. Derm black, squamose. Habitus slender.

Type-species. — *Tibiovalgus perplexus* sp. nov.

Distribution. — One species in Cameroun.

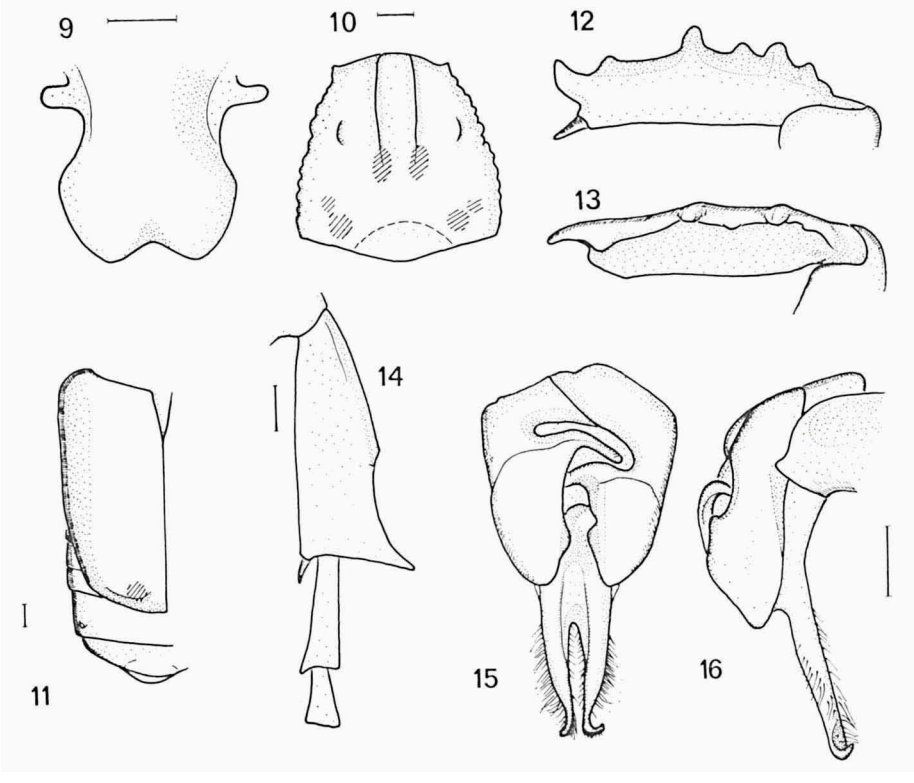
Tibiovalgus perplexus sp. nov. (figs. 9-16)

Holotype (male). — Approximate length 10.5, width 4.5, height 3 mm. Derm blackish-brown, with dense microsculpture, abundantly squamose, scale colour mostly pale-brown. Habitus slender.

Cephalic contours, fig. 9; paraocular ridge distinct; cephalic derm contiguously annulate-punctate, everywhere sparsely set with scales; eye-canthi crowded with scales. Maximum width of head 1.3 mm.

Pronotal contours, fig. 10; paramedian ridges and lateral protrusions well pronounced. Scale-tufts poorly pronounced but present (fig. 10); posterolateral tuft double, ca. 10 + 20 dark-brown scales; central tuft very poorly

pronounced, ca. 10 dark-brown scales. Densities/0.1 sq. mm and colours of scales on respective pronotal sections as follows: anteromedian, 7-10, brown, some white; anterolateral, 7-10, brown; central, 10, brown, some white; mediolateral, 10, brown, some white; posteromedian, 10, brown; all scales more or less elliptic, subappressed. Derm densely, almost contiguously annulate-punctate. Median length of pronotum 3.0, maximum width 3.0 mm. Scutellum (fig. 11) elongate-triangular, with cover of contiguous brown, circular, appressed scales.



Figs. 9-16. *Tibiovalgus perplexus*, holotype. Contours of: 9, clypeus, full-face view; 10, pronotum, dorsal; 11, hind body, dorsal; 12, right fore tibia; 13, left fore tibia, lateral; 14, left hind tibia plus tarsal segments 1-2; 15-16, aedeagus, full-face and lateral. Hatched (10, 11): position of scale-tufts. Scale-lines = 0.5 mm; 9, 12, 13, 15, 16, same scale.

Elytral contours, fig. 11. Moderately pronounced scale tuft on distal umbone of elytron, consisting of 10-20 brown scales; scales in all elytral sections brown (posterolateral section with some white), densities 10-15/0.1 sq. mm, circular and appressed in front, elliptic and subappressed in posterior

sections; no separate central scale patch. Derm annulate-punctate, disc with longitudinal striae, everything largely covered by the scales. Elytral length (suture to apex of scutellum) 3.3, maximum width of elytra combined 4.2 mm.

Pectus and abdomen laterally with abundant appressed, brown, elliptic scales, medially with smaller whitish, oval scales, tips of the latter more or less split. Abdominal sternites 1-4 sublaterally with large patch of white tomentum, sternite 5 with small patch; anal sternite (6) with abundant orange-brown, small, appressed, elliptic scales. Pygidium feebly convex, length/width ratio 0.8, apical margin (fig. 11) slightly protuberant; derm annulate-punctate; medially on pygidium a large white patch of scales and tomentum; scales laterally elliptic-furled, pale-brown, density 10-15/ 0.1 sq. mm, standing more or less erect. Propygidium (fig. 11) with slightly raised spiracles and dense cover of elliptic-flabellate, brown, subappressed scales, densities 10-15/0.1 sq. mm; no scale-tufts.

Fore tibia, fig. 12; underside with heavy ridge (fig. 13), terminal spur acuminate, rather short, not extending beyond tarsal segment 1. Femora and tibiae with mostly subappressed, abundant, pale-brown elliptic scales. Middle and hind tibiae (fig. 14) strongly dilated, with striolate sculpture; spurs unmodified, acuminate, short. Tarsi all long and slender, with large sickle-shaped claws; length proportions of tarsal segments 1-5 of right hind leg 10/5/5/5/7. Aedeagus very complex, figs. 15-16.

Affinities. — This valgine stands close to *Cosmovalgus* and *Pygovalgus*, but the modified tibiae render it easily recognizable. Together the three genera constitute a presumably monophyletic group confined to the Afrotropical rainforest.

Material examined. — Holotype from Cameroun, no further data, in Leiden museum.

Acknowledgements

For the loan of valgine specimens and other help I am indebted to: British Museum (Natural History), London (R. D. Pope); Museum für Naturkunde, Zoologisches Museum, Berlin DDR (F. Hieke); Muséum National d'Histoire naturelle, Paris (A. Descarpentries).

References

Arrow, G. J., 1910. The fauna of British India. Coleoptera Lamellicornia (Cetoniinae and Dynastinae) : xiv + 332 pp., 76 figs., 2 pls. — London : Taylor & Francis.

——, 1944. The beetles of the lamellicorn subfamily Valginae, with a synopsis of the genera and descriptions of some new species. — Trans. R. ent. Soc. Lond., 94 : 225-246.

BURMEISTER, H., 1842. Handbuch der Entomologie. 3. Coleoptera Lamellicornia Melitophila: 828 + (1) pp. — Berlin: Enslin.

ENDRÖDI, S., 1952. Neue und bekannte Hopliinen und Valginen aus der Fukien-Ausbeute des Herrn J. Klapperich. — Folia ent. hung., (S.N.) 5: 41-71.

FAIRMAIRE, L., 1899. Matériaux pour la faune coléoptérique de la région malgache. — Annls Soc. ent. Belg., 43: 511-558.

KIRBY, W., 1827. A description of some new genera and species of petalocerous Coleoptera. — Zool. Journal, 3: 145-158.

KOLBE, H. J., 1884. Neue Stammesgenossen der Gattung Valgus (Coleoptera) aus Centralafrika. — Berl. ent. Zeitschr., 28: 165-166.

——, 1892. Ueber die von Hauptmann Kling und Dr. R. Büttner in Togo (Ober-Guinea) gesammelten melitophilen Lamellicornier. — Stett. ent. Ztg., 53: 125-142.

——, 1897. Die afrikanischen Genera und Spezies der Valgiden. — Stett. ent. Ztg., 58: 184-215.

——, 1904. Gattungen und Arten der Valgiden von Sumatra und Borneo. — Stett. ent. Ztg., 65: 1-57.

KRAATZ, G., 1883. Ueber die Gattung Valgus und eine Anzahl neuer Arten derselben. — Deutsche ent. Zeitschr., 27: 373-379.

——, 1895. Acanthovalgus nov. gen. Valginorum. — Deutsche ent. Zeitschr., 1895: 444.

MOSER, J., 1908. Beitrag zur Kenntnis der Cetoniden. — Annls Soc. ent. Belg., 52: 252-261.

——, 1914. Beitrag zur Kenntnis der Cetoniden (Col.). — Deutsche ent. Zeitschr., 1914: 573-614.

NOMURA, S., 1952. Neue Valgiden-Gattung aus Japan. — Mushi, 23: 29-31, 1 fig.

PAULIAN, R., 1961. Coléoptères Scarabéides de l'Indochine, II. (Rutélines et Cétoines) (suite et fin). — Paris: Soc. ent. France, separate edition: 225-271, figs. 335-360. Also: Annls Soc. ent. France, 130: 1-47, same figs.

POUILLAUDE, I., 1920. Les Cétonides Malgaches. (Suite). — Insecta, 10: 10-47.

SAWADA, H., 1941. The Valginae of the Japanese Empire, Report II. — Nippon no Kôchû, 4: 1-4, 2 figs., pl. 1.

SCRIBA, L. G., 1790. Verzeichnis der Insekten in der Darmstadter Gegend. — Journal Liebh. Ent., 1: 40-73.