

Notes on the *Piezotrachelus colonus* group, with a description of a
new species*
(*Coleoptera: Curculionoidea: Apionidae*)

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ABSTRACT. The key to four species of the *Piezotrachelus colonus* group, including pests of cowpeas - *Vigna* spp., is given; *P. curviclava* n. sp. is described from Senegal. New localities of *P. colonus* FAUST, *P. melichari* (WAGNER) and *P. schoutedeni* (WAGNER) are recorded.

Key words: entomology, taxonomy, *Coleoptera*, *Curculionoidea*, *Apionidae*, *Piezotrachelus*, new species, Africa.

The enormously speciose genus *Piezotrachelus* comprises approximately 150 species described from Africa south of Sahara, but even four times more can be expected to live in the Ethiopian region. The huge number of species is not, however, accompanied by extensive morphological diversity. All of them express a great uniformity of external characters, differing mainly in proportions of body parts and in genital structures. This may indicate an explosive radiation in not very remote past and makes the genus one of the most difficult taxonomically among *Apionidae*. VOSS (1959, 1961), who was the only one who tried to divide *Piezotrachelus*, erected finally 4 subgenera (*Kispiezotrachelus*, *Eupiezotrachelus*, *Sympiezotrachelus*, *Mepiezotrachelus*), and excluded one species as a separate genus *Propiezotrachelus*. Most of these subgenera are single character-based and very poorly delimited, making assignment of many species dubious and leaving the nominate subgenus as a large, artificial group of species with no peculiar character in common. Due to the limited number of useful characters, their mostly metric

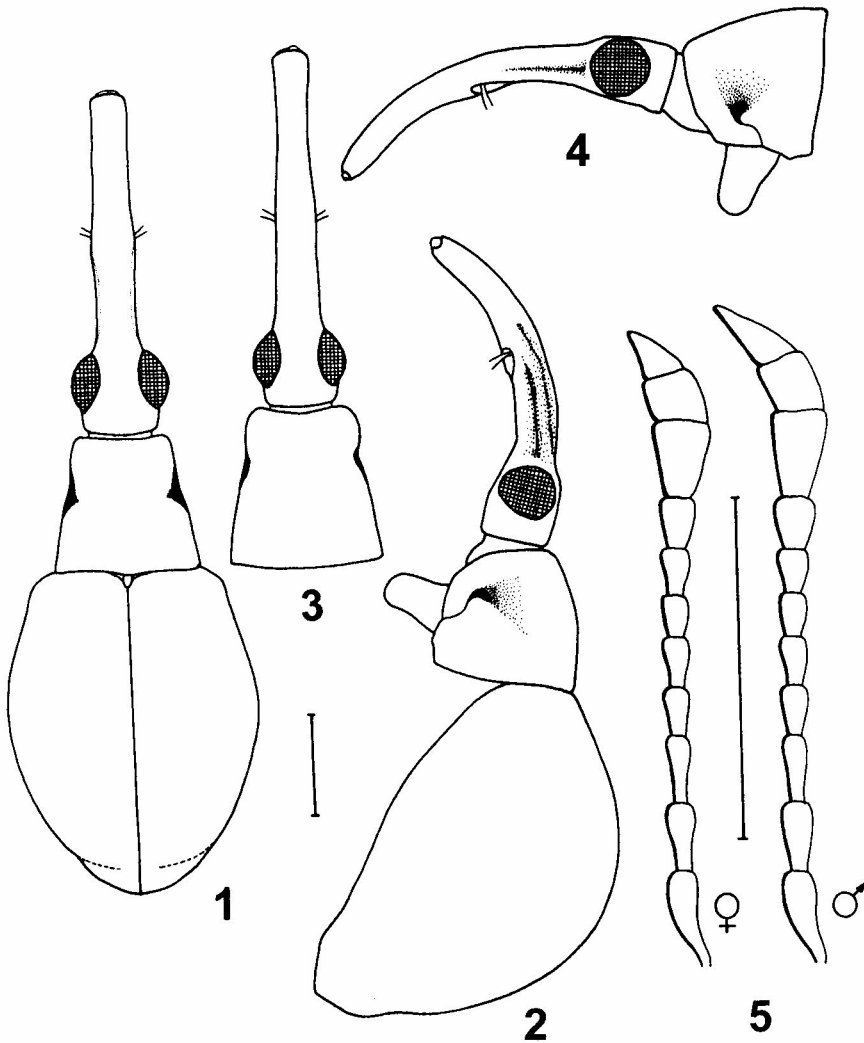
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nature and usually continuous variation in a larger set of species considered, the reasonable division of *Piezotrachelus* into phylogenetically grounded subgenera may even turn out to be a hopeless affair. Nevertheless, an attempt to arrange species sharing peculiar, even if single characters, into several groups could facilitate taxonomic treatment of the genus and would be practically useful.

The *P. colonus* group has not been precisely defined hitherto, and is here tentatively proposed for the medium size species (body length 2.6-3.4 mm) having very stout, strongly sclerotized and tubular median lobe of aedeagus, with its apex provided with a tubercle or raised crista giving the lobe characteristic outline in lateral view (figs 15-18, 22-25), and the internal sac bearing two long rows of teeth (when resting inside the tube). The species are externally very similar to each other and characterized, among others, by rostrum less than twice as long as pronotum, distinctly curved and more or less cylindrical, head about as long as wide, temples 0.3-0.4 as long as the eye, elytra inflated, relatively short, rounded and widest at about middle, elytral striae very shallow and about 5 times narrower than the intervals. WAGNER (1908) was the first author who treated species of this group extensively and illustrated peculiar shape of aedeagi. After a synonymisation of a few infraspecific forms and one nomenclatural correction (WANAT 1990) it comprised three species, two of them known as important pests of cowpeas - *Vigna* spp., the legume plants largely cultivated in tropics. One of them, together with another African apionid - *Conapion chirindanum* (WAGNER), was an object of detailed morphological and bionomical studies based on both adult and preimaginal stages (PHELPS 1956, 1956b). The species called there *Piezotrachelus varium* (WAGNER) was treated by PHELPS (l.c.) as a complex of two forms, largely differing in the structure of aedeagus, while he presented them as identical in external morphology. It can be clearly seen from the aedeagi illustrated in one of these papers (PHELPS 1956, p. 181) that one of the forms was *P. melichari* (WAGNER) (l.c. fig. 24), while the other (l.c., fig. 25) represented another species, unknown to me and not belonging to the *P. colonus* group in the above delimited sense. My studies on a large unidentified material of the *Apionidae* preserved at several European collections revealed one more species sharing the unique structure of aedeagus with *P. schoutedeni*, *P. melichari* and *P. colonus* and occurring in Western Africa. Its description is presented below, accompanied by the key for determination of hitherto known species of the *P. colonus* group and new faunistic data on the remaining three species.

Abbreviations used in the text: BMNH - The Natural History Museum, London; DEI - Deutsches Entomologisches Institut, Eberswalde; HMNH - Hungarian Museum of Natural History, Budapest; MHNG - Muséum d'Histoire Naturelle, Genève; MIZW - Museum and Institute of Zoology PAS, Warsaw; MNB - Museum für Naturkunde der Humboldt Universität, Berlin; MRAC - Musée Royal de l'Afrique Centrale, Tervuren; MW - author's coll.; NMW - Naturhistorisches Museum, Wien; SMTD - Staatliches Museum für Tierkunde, Dresden; WS - W. SUPPANTSCHITSCH'S

coll.; ZMC - Zoologisk Museum, Copenhagen; ZMH - Zoological Museum of Helsinki University; ZML - Zoological Museum of Lund University; m - male; f - female.



1-5. *Piezotrachelus curviclava* sp. n.: 1 - male body, dorsal view; 2 - male head, pronotum and elytra, lateral view; 3 - female head and pronotum, dorsal view; 4 - female head and pronotum, lateral view; 5 - male and female antennae. Scale 0.5 mm

Piezotrachelus curviclava sp. nov.

MATERIAL

Holotype male. SENEGAL: Ziguinchor [12°35'N/16°16'W], I 1982, leg. H. SCHMID (WS, deposited at NMW). Paratypes: 4 exs., same data as holotype, coll. MW (2m), WS (1m, 1f).

DIAGNOSIS

Distinct from other species of the *P. colonus* group in an asymmetrical, crescentic antennal club in both sexes and in the shape of aedeagus; to a lesser extent in relatively longer male rostrum and legs.

DESCRIPTION

Length (rostrum excluded) m: 2.69-2.87 mm, f: 3.00 mm. Body black, weakly shining, visibly bare, only the base of antennae dark testaceous.

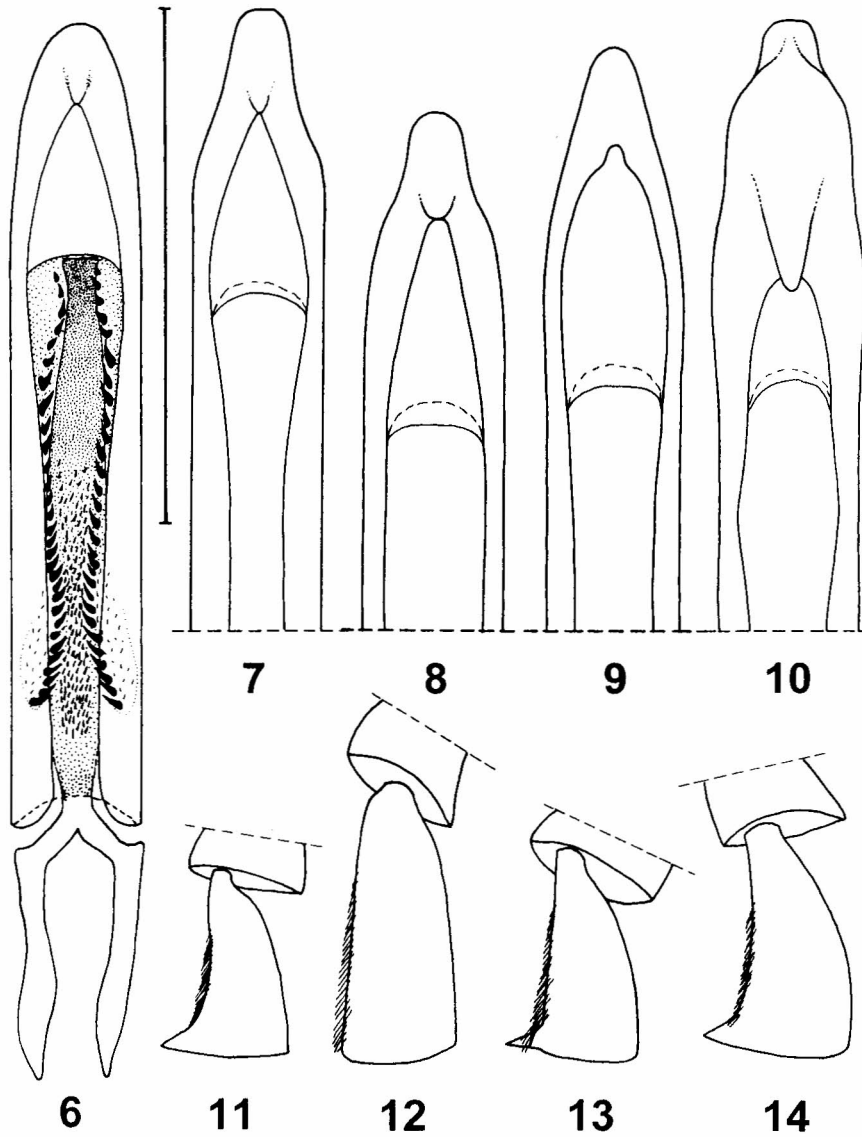
Rostrum subcylindrical, 1.58-1.63 (m), 1.75 (f) × longer than pronotum; slightly thickened at antennal insertion (m), weakly constricted subapically (f), at antennal insertion 1.45-1.60 as broad as the scape long, in lateral view regularly curved (figs 1-4), with a weak sheen only in female; puncturation dense and extremely fine to vanishing; sides of rostrum with two basal ribs reaching antennal insertion, the upper one much less distinct; venter of pronotum without carinae, impunctate; septum between antennal pits raised and extended backwards into median carina not reaching the eye; antennal scrobes with distinctly raised lateral margins reaching middle of interocular area.

Head 1.04-1.19 as long as broad; frons flat, impunctate and strongly microsculptured, sometimes with an obsolete median carina; eyes moderately large, ca. 2.1 × longer than the antennal scape, variably convex; temples 0.35-0.38 (m), 0.30 (f) as long as the eye, rugosely punctate; venter of head behind eyes rugosely punctate.

Antennae inserted at basal 0.41-0.45 of rostrum, relatively long, the length ratio of antennomeres 100:75:75:55:55:45:50:60:225(m)/190(f); 1st funicular segment 2.20-2.25 × longer than wide; the club rigid and curved inwards, more distinctly so in male (fig. 5).

Pronotum trapeziform, as long as wide and about 1.5 × wider at base than at anterior margin, weakly convex; punctures on the disc shallow, of about one ommatidium size, 1-2 diameters apart, their interspaces flat, microreticulate; prescutellar fovea obsolete; supracoxal fovea small, crescentic, well margined and not extended upwards; venter with posterior intercoxal process rhomboidal, well delimited.

Elytra globose, 1.46-1.54 as long as wide, at base 1.45 × wider than the pronotum; humeral tubercles prominent; striae narrow and shallow, obscurely punctate, apically connected 1+2+9 and deepened; intervals flat or barely convex, not less than 6 times broader than the striae in middle of the elytron, impunctate, densely microreticulate; apical portion of the 10th interval strongly convex.



6-10. Median lobes of aedeagi, dorsal view: 6 - *Piezotrachelus curviclava* sp. n. (internal structures showed); 7-9 - *P. schoutedeni*, variation (7 - Sudan: Malakal; 8 - Zanzibar; 9 - Zaire: Kiswishi); 10 - *P. melichari* (Nigeria: Mubi). 11-14. First metatarsomeres in lateral view: 11 - *P. curviclava* sp. n.; 12 - *P. schoutedeni*; 13 - *P. melichari*; 14 - *P. colonus*. Scale 0.5 mm

Legs long and slender; femora weakly swollen medially, 1.03-1.11× thicker than the meso- and meso-; protibiae straight, 1.60-1.65 (m), 1.78 (f) as long as the pronotum and 11-12.3× longer than wide; the length/width ratio of protarsomeres I - 100/50, II - 85/55, III - 60/80, IV+V - 95/35; basal meso- and metatarsomere bearing a ventral spine in male.

Wings and metathoracic muscles well developed.

Median lobe of aedeagus parallelsided, regularly rounded apically in dorsal view (fig. 6), in lateral view with the apical head-like swelling very small (fig. 15); the internal sac as in other members of the *colonus* group with a pair of long rows of teeth, which are more compact and forming almost a kind of lamellae in basal portion of each row, while they are larger and more distinctly separated below and in the orifice; basal half of the sac with numerous minute setae. Tegminal plate not enveloping ventrally, shaped as in fig. 21 and not distinct from that in the related species; apical membranous lobes small, bearing microchaetae; macrochaetae 1-3 rudimentary; fenestrae closed laterally and narrowly separated medially; prostegium with one median and two sublateral belts of stronger sclerotization, produced backwards into a long, narrow, acute process, flattened and not forming a crista in lateral view.

Biology unknown.

Distribution. Senegal.

ETYMOLOGY

From Latin *curvus* - curved and *clava* - club, emphasising the most peculiar character of the new species.

Piezotrachelus schoutedeni (WAGNER, 1908)

Apion (*Piezotrachelus*) *schoutedeni* WAGNER, 1908: 40.

?*Apion* (*Piezotrachelus*) *schoutedeni* f. *salsburgense* WAGNER, 1908: 41.

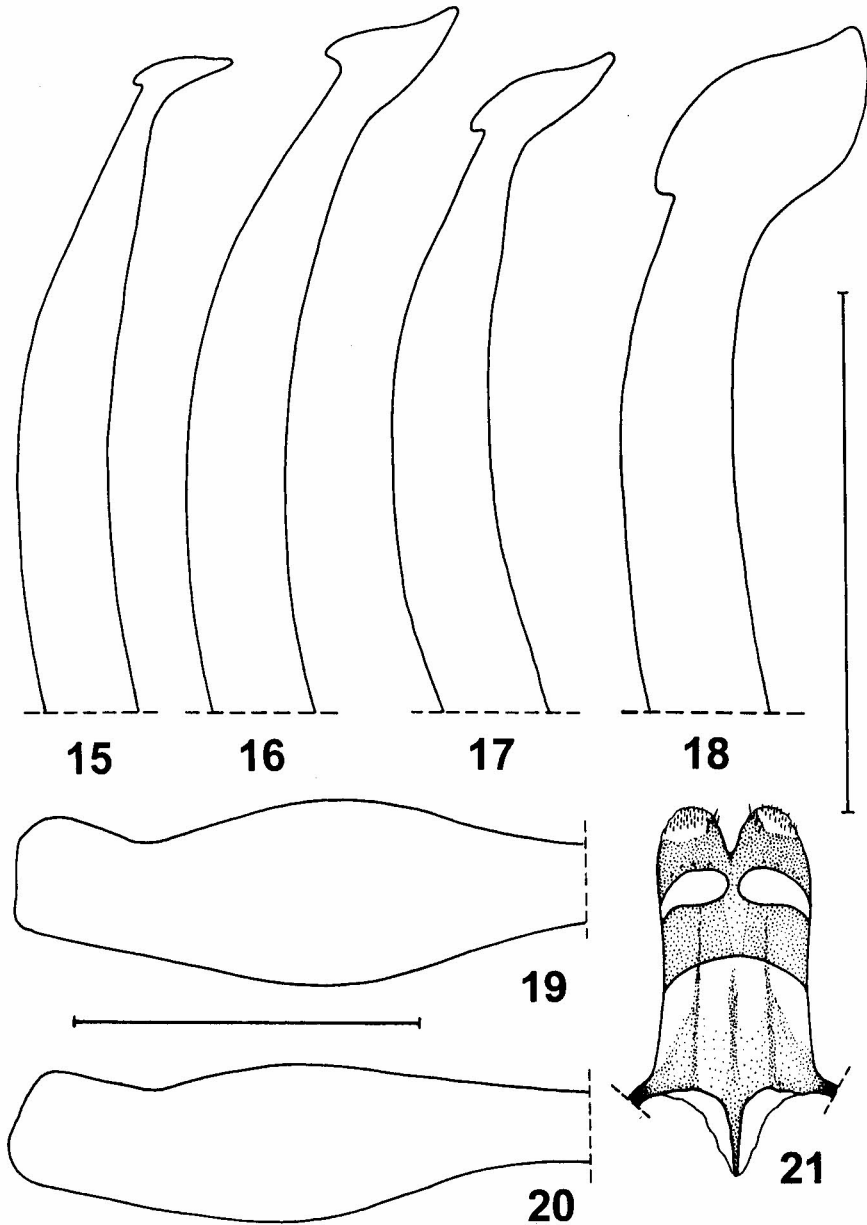
MATERIAL

SUDAN: Upper Nile, Malakal, 5-20 I 1963, 6m 6f; Equatoria: Juba-Nimule, 10-11 III 1963, 1m; Yambio, 18-25 IV 1963, 1f; Lotti forest, 14-17 III 1963, 1m; Torit, 24-25 III 1963, 4m, 4f - all leg. R. LINNAVUORI (ZMH); Bahr el Zeraf, 6 III 1913, 1m det. by A. HUSTACHE as *P. opulentus* WGR. (DEI); Equatoria: Juba, 25-27 II 1979, 1m (at light), 26 II 1979, 1f "aus Gebüsch geklopft", leg. H. J. BREMER (HMNH).

TANZANIA: Zanzibar Is., 1m (syntype of *A. schoutedeni*), leg. KRAATZ (SMTD).

ZAIRE: Kiswishi, Lubumbashi, 14 VIII 1988, 1m, 15 IX 1988, 1m 1f - leg. J. NADOLSKI (1988 Łódź University Expedition) (MW).

Distribution. Sudan, Kenya, Tanzania, Zaire, Zimbabwe. The occurrence in Western Africa reported by HOFFMANN (1963) should be confirmed.



15-18. Median lobes of aedeagi, lateral view: 15 - *Piezotrachelus curviclava* sp. n.; 16, 17 - *P. colonus*, variation (16 - Tanzania: Amani; 17 - Kenya: Shimba Forest); 18 - *P. melichari* (Nigeria: Mubi). 19, 20. Male profemur: 19 - *P. colonus*; 20 - *P. melichari*. 21. *P. curviclava*, sp. n., tegminal plate in dorsal view. Scale 0.5 mm

REMARKS

All my earlier determinations of the specimens from Sudan (ZMH, HMNH) as "*Piezotrachelus indentatus* sp. nov." refer to the above species.

The species is unique in the *P. colonus* group in having basal segments of male meso- and metatarsi devoid of ventral spine. Type specimens of the form *salsburgense* WAGN. have not been examined by me, so it is here placed among synonyms of *P. schoutedeni* conditionally. However, it should be noticed that great morphological variation expressed by this species involves all the characters listed by WAGNER (l.c.) as distinctive for the form *salsburgense*, i.e. the shape and sculpture of head, length and thickness of rostrum, the extent of humeral calli prominence, as well as the shape of aedeagal apex, the swelling of which is described by WAGNER (l.c.) as weaker developed in the form *salsburgense*.

Piezotrachelus colonus FAUST, 1900

Piezotrachelus colonus FAUST, 1900: 342.

Piezotrachelus vicinus HARTMANN, 1904: 399.

Apion (*Piezotrachelus*) *varium* WAGNER, 1908: 38.

MATERIAL

KENYA: Mulango, 2m lf, coll. F. KESSEL (MIZW); Mombasa, 5-19 III 1970, 2f; Shimba Forest, 17 III 1970, 22 exs. - leg. T. PALM (ZML).

TANZANIA: E Usambara Mts., Amani, at Sigi River, 500-1000 m alt., 20,21 I 1977, 23 exs. ZMC Exped. (ZMC).

Distribution. Hitherto found for certain only in East Africa (Kenya, Tanzania). Other records, including those from Zaire (VOSS 1962), should be confirmed or verified as possibly referring to *P. melichari*.

REMARKS

The genus *Piezotrachelus* earlier erected by SCHÖNHERR, was consistently treated by WAGNER as a subgenus of the enormous genus *Apion*, which in that sense comprised some 99% of the world apionid fauna. *Piezotrachelus colonus* FAUST, 1900 became thus a junior subjective homonym of *Apion colonus* FAUST, 1893 described from Venezuela, hence the origin of the replacement name *Apion varium* introduced by WAGNER. However, the names of FAUST were originally used as combined with different genera and are not objective homonyms. Therefore, if generic status of *Piezotrachelus* is maintained, the name *colonus* should be resurrected for the above species, as having priority over *varium*.

P. vicinus HARTMANN was subsequently assigned to this group and treated as a variety of *Apion varium* by WAGNER (1908). He examined the male holotype and described the shape of its aedeagus as not distinct from that in typical *A. varium*, while he treated the unusually convex frons of that specimen as an aberration. The type of *P. vicinus* has not been found in SMTD nor MNB (probably lost with a great

part of H. WAGNER's collection), so I accept WAGNER's opinion as supporting the above synonymy.

***Piezotrachelus melichari* (WAGNER, 1908)**

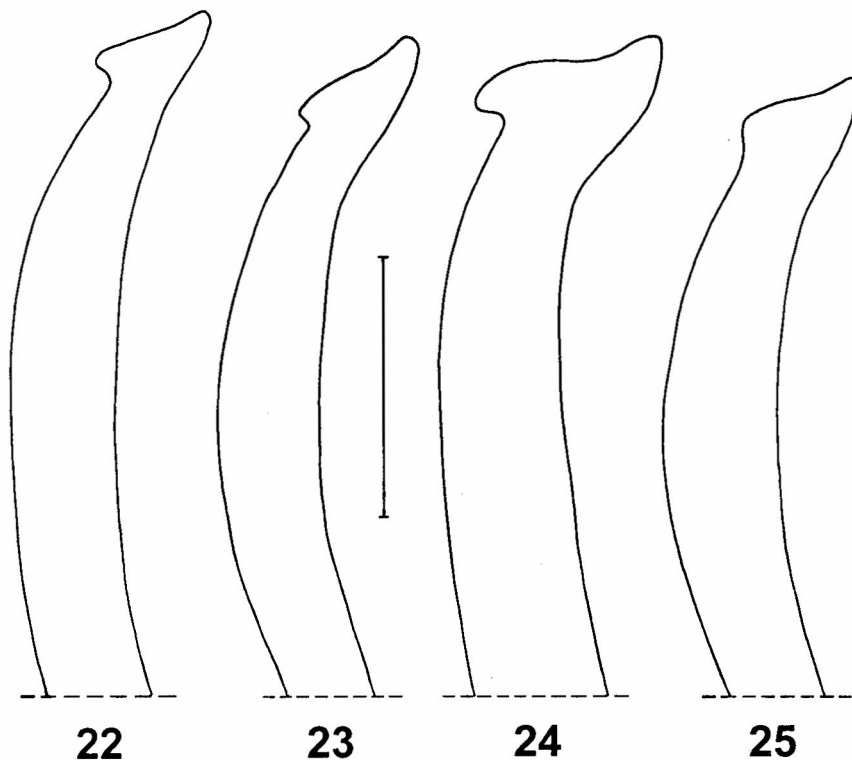
Apion (*Piezotrachelus*) *varium* var. *Melichari* WAGNER, 1908: 40.

Apion (*Piezotrachelus*) *varium congruum* WAGNER, 1908: 40, nec LEA, 1899: 609.

Apion (*Piezotrachelus*) *varium occidentale* WAGNER, 1911: 44.

MATERIAL

ETHIOPIA: Mulu, above Muger valley, ca. 8000 ft. alt., 18-23 XII 1926, 1f (det. as *P. erythreanus* WAGNER by BALFOUR-BROWNE), leg. H. SCOTT (BMNH); Kaffa Prov., Gojeb valley, VIII 1971, 1 ex., leg. G. DE ROUGEMONT (MRAC); Harage Alemaya, 15 III 1974, 1 ex., leg. H. SILFVERBERG; Decamere, 25 V 1963, 1 ex.; Mt. Maigudo, 16 VI 1963, 1 ex. - leg. R. LINNAVUORI (ZMH).



22-25. *Piezotrachelus schoutedeni*, variation of median lobe of aedeagus (lateral view): 22 - Sudan: Malakal; 23, 24 - Zaire: Kiswishi; 25 - Zanzibar. Scale 0.25 mm

GAMBIA: Bathurst, I 1968, 2m 3f, leg. T. PALM; Bamba Forest, 4 km NNW of Brikama road junction (Loc. 5, UTM 28PCK1970), 6 XI 1977, 1f, Lund Univ. Gambia/Senegal Exped. (ZML).

GHANA: Tamale (8°25'N/0°53'W), 184 m alt., nos. 496, 498, 499, I-II 1972, 422 exs., no. 481, 22 X 1971, 1 ex., no. 507, 7-15 IV 1972, 1 ex.; Nakpanduri (10°38'N/0°32'W), 430 m alt., no. 252, 8 VIII 1967, 1 ex. - Leg. S. ENDRÓDY-YOUNGA (HMNH); Winneba, 16 IX 1973, 1 ex., leg. R. LINNAVUORI (ZMH); Yendi, 14 II 1964, 2 exs at light, leg. M. PRÓSZYŃSKA & J. PRÓSZYŃSKI (MIZW).

KENYA: Mulango, 3 exs; Lamu, 3 exs; Kibwezi, 1 ex., leg. S. V. SCHEFFLER; Ikutha, 1 ex. (MNB).

MOZAMBIQUE: 1m (MNB).

NIGERIA: Plateau State, Jos, 8 XI 1979, 1 ex.; Gongola State, Mubi, 18 XI - 9 XII 1979, 18 exs, leg. et coll. MW (1979/80 Łódź University Expedition).

SOUTH AFRICA: Transvaal, 1m, JUNOD Miss. 624.25 (MHNG).

SUDAN: Kordofan nr. Talodi, 12 II 1963, 1m 2f, leg. R. LINNAVUORI (ZMH).

TANZANIA: Kilimandjaro: Moschi, 16 exs; Dschagga Land, 1m (det. by H. WAGNER as *colonus* var. *vicinus* HARTM., ex typ!), leg. T. PAESLER; Victoria Nyanza: Ukerewe Is., 1 ex., leg. S. G. CONRADS; Amani, IV 1911, 4 teneral exs reared from "*Vigna iviuensis* u. *Phas. mungo*" (MNB); Uluguru Mts., Lupanga, 1400-1600 m alt., 1 VII 1981, 10 exs., leg. M. STOLTZE & N. SCHARFF (ZMC).

ZAIRE: Kiswishi, Lubumbashi, 14 VIII 1988, 2m 1f, 15 IX 1988, 2m 1f ; Kundelungu N.P., Lukafu, 18 VIII 1988, 1m - leg. J. NADOLSKI (1988 Łódź University Expedition) (MW).

Distribution. Widest distributed species of the group, known throughout African continent south of Sahara.

The key for determination of four species of the *colonus* group is proposed below. Except for *P. curviclava*, the females cannot be distinguished for certain if not accompanied by males in the same sample of material examined.

1. Antennal club long, crescent-like curved inwards (fig. 5).
..... *P. curviclava* sp. nov.
-, Antennal club short, almost symmetrical 2.
2. Basal segment of male tarsi unarmed (fig. 12). Median lobe of aedeagus shaped as in figs 7-9 and 22-25.
..... *P. schoutedeni* (WAGNER)
-, Basal segment of male meso- and metatarsus with a ventral spine (figs. 13, 14)
..... 3.
3. Median lobe of aedeagus strongly inflated apically (figs 10, 18). Tarsal spine thinner (fig. 13). Femora more slender (fig. 20).
..... *P. melichari* (WAGNER) (= *Apion varium congruum* WAGNER).
-, Median lobe of aedeagus not inflated apically (figs 16, 17). Tarsal spine broader at base (fig. 14). Femora more robust (fig. 19).
..... *P. colonus* FAUST (= *Apion varium* WAGNER).

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REFERENCES

- FAUST, J., 1893. Reise von E. SIMON in Venezuela. Stett. Entomol. Z., **54**: 313-368.
- FAUST, J., 1900. Neue Curculioniden aus Deutsch-Ost-Afrika. Dtsch. Entomol. Z., **1899**: 321-344.
- HARTMANN, F., 1904. Neue Rüsselkäfer aus Ostafrika. Dtsch. Entomol. Z., **1904**: 369-419.
- HOFFMANN, Ad., 1963. *Coleoptera Curculionidae* (Deuxieme note). La reserve naturelle intégrale du Mont Nimba, fasc. V. Mem. Inst. Franc. Afr. Noire, **66**: 309-336.
- LEA, A. M., 1899. Descriptions of new species of Australian *Coleoptera*. Part V. Proc. Linn. Soc. N. S. W., **1898**, 23: 521-645.
- PHELPS, R. J., 1956. A contribution to the morphology of *Piezotrachelus varium* (WAGNER) : (*Coleoptera*, *Apioninae*) with observations on that of *Apion (Conapion) chirindanum* WAGNER (*Coleoptera* : *Apionidae*). J. Entomol. Soc. South. Afr., **19**: 143-191.
- PHELPS, R. J., 1956b. Investigation on the biology of *Piezotrachelus varium* (WAGNER) and *Apion (Conapion) chirindanum* WAGNER (*Coleoptera: Apionidae*). J. Entomol. Soc. South. Afr., **19**: 86-99.
- VOSS, E., 1959. Ein Beitrag zur Kenntnis der Apioniden-Fauna Zentralafrikas. Ann. Mus. R. Congo Belg. Ser. Quarto Zool., **76**: 1-119.
- VOSS, E., 1961. Über aethiopische Apionen und einigen Bemerkungen zur Systematik der Apioniden. Ann. Hist. Nat. Mus. Nat. Hung., **53**: 419-433.
- VOSS, E., 1962. *Attelabidae, Apionidae, Curculionidae (Coleoptera Rhynchophora)*. Exploration du Parc National de l'Upemba, Mission G. F. DE WITTE en collaboration avec W. ADAM, A. JANSSENS, L. VAN MEEL et R. VERHEYEN (1946-1949), Fasc. 44, 380 pp.
- WAGNER, H., 1908. Die südafrikanischen Apioniden des British Museum, vorzugsweise von Herrn G. -A. -K. MARSHALL im Mashonalande und im Natal gesammelt. Mem. Soc. Entomol. Belg., **16**: 1-62, 6 pl.
- WAGNER, H., 1911. Neue Apioniden aus dem Aethiopischen Faunengebiete. Mem. Soc. Entomol. Belg., **19**: 33-51.
- WANAT, M., 1990. *Apionidae (Coleoptera, Curculionoidea)* of the Arabian Peninsula. Fauna of Saudi Arabia, **11**: 55-81.