

LÁSZLÓ MÓCZÁR¹⁾

Revision of the *helvetica*-group of the genus *Ceropales* LATREILLE (Hym.: Ceropalidae)

With 74 text figures

This study is the continuation of the revision of the genus *Ceropales* (MÓCZÁR, 1986, 1987). The previous two parts discussed the *fulvipes*-, *ruficornis*-, *variegata*-, *maculata*- and *albicincta*-groups, thus a total of 26 valid species and 13 subspecies were on the basis of 1241 specimens (excepting the further 13 species and 3 subspecies with 732 specimens of the *Hemiceropales*) housed in various museums. This time were elaborated further 20 species and 1 subspecies (of 475 specimens), whereby the number of the known species of the widely distributed genus *Ceropales* increases to 60 species and subspecies.

The largest group of the genus *Ceropales* is the *helvetica*-group with its 21 species, of which 9 are described herewith as new: *africana* ♀♂, *angolaensis* ♀, *australensis* ♀♂, *dayi* ♀♂, *ferrugo* ♀♂, *gambiae* ♀♂, *haupti* ♂, *indica* ♀♂ and *maliensis* ♀♂. The female of *spinolai* MÓCZÁR and *lawrencei* ARNOLD as well as the males of *waltoni* ARNOLD and *helvetica bogdoensis* are described for the first time. *Ceropales interrupta* was published by SAY in 1837, therefore *C. spinolai* nom. nov. is given for the homonym *C. interrupta* SPINOLA, 1838.

In 1937 ARNOLD added 5 taxa to the *helvetica*-group, while other authors described only one valid species each, namely, SPINOLA (1838), MAGRETTI (1884), TOURNIER (1889), NURSE (1902), BINGHAM (1903), GINER MARI (1945) and MÓCZÁR (1977, 1986, 1987). BERLAND (1925), HAUPT (1937), DE BEAUMONT (1947), PRIESNER (1955, 1963, 1965, 1966, 1969) and WOLF (1972) enriched our knowledge of the group with detailed descriptions. The following authors completed the known distribution of species with new data: DE SAEGER (1945), MÓCZÁR (1954, 1956, 1985—1987), MOREL, NOUVEL and RIBAUT (1956), PRIESNER (1960), WOLF (1960), WOLF and DINIZ (1970) and WAHIS (1986).

Lectotypes of five valid species (*judicatrix*, *karoensis*, *kriechbaumeri*, *ligea* and *multipecta*) were designated, while three synonyms (*diversipes* HAUPT ♀ = identical with *kriechbaumeri* MAGRETTI; *fulvus* HAUPT ♀♂ = *variolosa* ARNOLD; *sabulicola* PRIESNER ♀♂ = *juncoi* GINER) were established. These synonyms are newly confirmed and some new ones were found by studying original type-materials.

The majority of the species (10) occurs only in the Ethiopian faunal region (*africana*, *angolaensis*, *dayi*, *ferrugo*, *gambiae*, *karoensis*, *lawrencei*, *maliensis*, *multipecta* and *waltoni*). Four of these are also found the southern Palearctic faunal district: from Nigeria as far in north as Egypt and Qatar (*kriechbaumeri*), or from Senegal north to Morocco and eastwards to Pakistan (*juncoi*), and from Ghana across Africa to Jordan and Aden (*spinolai*, *variolosa*). Three species are distributed only in the Palearctis: from Morocco and Portugal as far east as to Mongolia (*helvetica*) and its subspecies (*helvetica bogdoensis*) was discovered in the Kazakh SSR southwards to

¹⁾ Adresse: H-1114 Budapest, Szabolcska M. u. 1, Ungarn:

Israel, or only in Israel (*haupti*). Three species inhabit the Oriental faunal region: in India (*indica*, *judicatrix*) or from Pakistan as far east as to Philippines and southeast to Australia (*ligea*). One species is described hereunder from the Notogaea: Australia (*australensis*).

The 475 specimens studied in the present contribution are deposited in the following museums (the city names on the locality labels referred to are in the text within parentheses). I am much indebted to the following curators and private persons for the loan of materials: Amsterdam = by R. WAHIS. — Coll. ARGAMAN = Private collection of Dr. Q. ARGAMAN (Beit-Dagan), Israel. — Berlin = Zoologisches Museum an der Humboldt-Universität zu Berlin, DDR, Dr. F. KOCH. — Budapest = Természettudományi Múzeum Állattára (Zoological Department, Hungarian Natural History Museum), Budapest, Hungary, Dr. J. PAPP. — Cairo = Insect Classification Section, Plant Protection Research Institute, Ministry of Agriculture, Cairo, Egypt, Dr. M. A. Moustafa. — Cape Town = South African Museum, Cape Town, Republic of South Africa, Dr. V. B. WHITEHEAD. — Fukuoka = Kyushu University, Entomological Laboratory, Faculty of Agriculture, Fukuoka, Japan, Dr. Y. HIRASHIMA. — Geneva = Museum d'Histoire Naturelle, Genève, Suisse, Dr. C. BESUCHET. — Genova = Museo Civico di Storia Naturale, Genova, Italia, Dr. R. POGGI. — Coll. GUSENLEITNER = Private collection of Dr. J. GUSENLEITNER, Linz, Österreich. — Halle = M. LUTHER Universität, Sektion Biowissenschaften, Halle/Saale, DDR, Dr. J. O. HÜSING and Dr. M. DORN. — Lausanne = Musée Zoologique, Lausanne, Suisse, Dr. J. AUBERT, and Dr. M. SARTORI. — Leiden = Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands, Dr. I. T. WIEBES and Dr. C. ACHTERBERG. — Leningrad = Zoological Institut of Academy of Sciences, Leningrad, USSR, Dr. V. TOBIAS. — London = British Museum (Natural History), London, England, Dr. M. C. DAY. — Madrid = Consejo Superior de Investigaciones Científicas Instituto Español de Entomología, Madrid, España, Dr. E. MINGO PEREZ. — Coll. MOCHI = Private collection of Dr. A. MOCHI, Roma, Italia. — New York = American Museum of Natural History, New York, USA, Dr. J. G. ROZEN. — Ottawa = Biosystematics Research Institute, Research Branch, Ottawa, Canada, Dr. L. MASNER. — Paris = Museum National d'Histoire Naturelle Entomologie, Paris, France, by Dr. R. WAHIS. — Pretoria = Transvaal Museum, Department of Entomology, Pretoria, Rep. of S. Africa, Dr. S. ENDRÓDY-YOUNGA and partly by Dr. R. WAHIS. — Tel Aviv = Tel Aviv University Zoological Museum, Tel Aviv, Israel, Dr. A. FREIDBERG. — Tervuren = Koninklijk Museum voor Midden-Africa, Tervuren, Belgium, Dr. J. DECELLE and E. DE CONINCK. — Torino = Università di Torino Dipartimento di Biologia Animale, Torino, Italia, Dr. A. ROLANDO. — Coll. TOWNES = Collection of Dr. H. TOWNES in American Entomological Institute, Gainesville, Florida, USA. — Coll. WAHIS = Private collection of Dr. R. WAHIS, Chaudfontaine, Belgium. — Coll. WASBAUER = Private collection of Dr. M. S. WASBAUER, Sacramento, California, USA. — Washington = USNM National Museum of Natural History, Smithsonian Institution, Washington, USA, Dr. A. MENKE. — Wien = Naturhistorisches Museum Wien, 2. Zoologische Abteilung, Österreich, Dr. M. FISCHER. — Coll. WOLF = Private collection of Herr H. WOLF, Plettenberg, BRD. — Zürich = Eidgenössische Technische Hochschule, Entomologisches Institut, Zürich, Schweiz, Dr. P. BOVEY and G. BENZ.

The *Helvetica*-Group

Head slightly broader than long (measured from the lower margin of clypeus up to top of head behind ocelli). Frons as a rule remarkably flat above antennal sockets and broken at an obtuse angle (Fig. 1) in its two-thirds length between antennae and fore ocellus, the transitional line usually perceptible in lateral view and rarely visible by a transverse torus (Figs. 19—20); frons more or less curved and convex sometimes over its whole length (Fig. 3), surface finely sculptured, usually mat, hardly shining, in some species more or less punctured, exceptionally smooth and shining. Colour of the lower face (including clypeus and labrum) often characteristic. Ocelli forming an acute angle.

Lower part of the outer orbit sometimes thickened and with a deep, so-called orbital groove (Fig. 3), being adjacent to the compound eye above mandible. It is one-third

or half as long as the length of outer orbit, or it is narrow, hardly perceptible and present only as a short shining line between the thickened gena and eye. Pronotum short dorsally, disc flat or sometimes distinctly thickened and convex, steeply declivous towards mesonotum in lateral view. Basal hump laterally in front usually partly yellow. Pronotal tubercle usually flat, rarely thickened (Fig. 21). Scutellum moderately conical and remarkably raised together with postscutellum over the level of the notum (Fig. 4). Postnotum very short, usually transversely wrinkled. Propodeum conspicuously flat over its entire length, rarely concave and moderately bent towards spiracles, or rarely, weakly bent at most in its anterior one-fifth length in lateral view, posterior corners slightly raised; surface uniformly very finely and transversely rugulose, or rarely, rugosity coarser and partly granulate medially and either with a long or short medial sulcus (Fig. 2). Metapleural suture often well developed sometimes only partly or perceptible only in traces, beginning from the pit of the suture between pronotum and propodeum laterally (Fig. 6) arcuately running up to the lateral corner of propodeum. Last abdominal segments strongly compressed transversely and pointed apically (Fig. 5). Wings normal, usually hyaline, venation without essential differences when compared to the other species of *Ceropales*. Fore femur basally more or less impressed (♀) on outer side; hind metatarsus with a row of erect tomentose hairs inside (Fig. 7). Claws of fore and middle tarsi normal, armed with a short and minute subapical tooth (Fig. 8, ♀♂), excepting the inner tooth of fore tarsus (♂), which is asymmetric and deeply bifid (Fig. 9); claws of hind tarsi strongly and rectangularly bent (Fig. 10). Colour of body mostly black, rarely ferruginous, with white or yellowish spots and abdomen usually with interrupted bands apically; legs often largely ferruginous. Sternite 8 poorly chitinized and very narrow or broader (Figs. 11—12). Sternite 9 usually elongated (Fig. 17) and often raised longitudinally, as well as mostly excised or emarginated apically. The general form of the male genitalia is rather uniform in this group, in spite of this, it readily segregates the species into three related groups: a) paramere elongated inwards like a horn or a beak (*africana*, Figs. 33—34, *australensis*, *ligea*, *variolosa*, *gambiae*, *helvetica* and *indica*); b) paramere elongated and truncated apically (*kriechbaumeri*, Fig. 56, *juncoi lawrencei*, *dayi*, more or less *ferrugo* and *maliensis*); c) paramere elongated into one or two semilunar lobes (*karooensis*, Fig. 55, *multipicta* and *waltoni*, Fig. 74).

Considering the shape of the sternite 9 two main species groups can be distinguished, unfortunately they differ from those of the genitalia, namely: d) sternite oval (*ferrugo*, Fig. 30), at most basal half raised (*ligea*, *gambiae*, Fig. 14, *australensis*) or with a very narrow and steeply raised keel (*variolosus*, Fig. 70); e) sternite 9 elongate and raised like a roof (the rest of the species belongs here: *africana*, Fig. 35, *helvetica*, *karooensis*, *multipicta*, *waltoni*, *juncoi*, *kriechbaumeri*, *lawrencei*, *dayi*, *maliensis* and *indica*).

Considering both the external morphology and the geographical distribution of the species, we may presume two distinct evolutionary lines within the *helvetica*-group: 1) *helvetica* — *juncoi* — *kriechbaumeri* — *maliensis*, and *helvetica* — *africana* — *lawrencei* — *dayi*
2) *ligea* — *gambia* — *variolosa* — *ferrugo*, and *ligea* (towards SE) — *australensis*.

Key to the species

- 1 Propodeum remarkably concave. Head and thorax with strong, deep and dense punctures, interspaces mostly narrower than diameter of punctures. Frons sharply curved below fore ocellus. Base of fore femur impressed on outer side 2
— Propodeum flat in lateral view. Head and thorax with moderate, frons sometimes with small and deep, and dense punctures, but usually with minute and very dense punctures. Frons mostly moderately curved, or rarely convex 3

- 2 Body together with antennae and legs nearly entirely ferruginous. At least basis of mandible, labrum, clypeus, supraclypeal area, outer orbit, a smaller (♀) or larger (♂) spot on frons, lower side of antennal joints 1–2, pronotum, mesonotum posteriorly, tegula, scutellum and postscutellum, lateral corners of propodeum, a spot on episternum below tegula, a continuous band on tergites 1–5 (♀) or 1–6 (♂), a large spot of last tergite, spots or streaks on legs, usually excepting last tibia and tarsi, yellow. Tergites 2–5 mostly on females blackish. Some sutures of thorax, basal sulcus of propodeum (mostly on ♀), black. Outer orbit with a distinct groove above mandible. Metapleural suture (Fig. 6) well developed. Punctures of pronotum coarser, on mesonotum and mesepisternum very dense. 7.2–10 mm . . . *variolosa* ARNOLD
- Body mostly black, antennae and legs extensively ferruginous, the light colour white (♂), at most partly on thorax ♀ yellowish white. Outer orbit slightly thickened, without a distinct groove (♂). Bands of tergites 1–5 (♂) or 1–4 (♀) broadly interrupted, a large spot on last tergite (♀♂) and a narrow apical streak medially on tergite 6, white. Metapleural suture basally (♂) poorly or (♀) well developed. Punctures of pronotum and mesothorax deep and coarse, less dense than in *variolosa*. 8–8.3 mm. . . . *spinolai* nom. nov.
- 3 Lateral side of propodeum with a distinct and often a deep metapleural suture (Fig. 6) . . . 4
- Lateral side of propodeum without suture, sometimes only with a partly developed, shallow suture (see couplet 18) or with a trace of that 11
- 4 Pronotal tubercle strongly protruding, conspicuously large before tegula, white, width of thorax here remarkably broader than the same at tegulae (Fig. 13 ♀), or only moderately broader than tegula (mostly on ♂) and partly black. Sternite 9 rounded apically with erect hairs (Fig. 14 ♂), tip sometimes bending upwards. Frons with scattered, below finer and above deeper punctures, a feeble torus beginning between hind and fore ocelli and ending in a light spot of ocular sinus (♀) present, sculptures on males finer. At least tergites 1–4 with lateral streaks, femora sometimes more or less brownish ferruginous. 4.7–7.2 mm *gambiae* spec. nov.
- Pronotal tubercle normal, not protruding, often more or less black, width of thorax at most as broad as, or distinctly narrower exceptionally hardly broader than the same at tegulae, shape of sternite 9 different 5
- 5 Lower face usually largely black (including labrum) or dark brown, only partly white. Orbital groove well developed (Fig. 3), as long as and at least one-third or half the length of outer margin. Mesepisternum with remarkably deep, dense and coarse punctures, especially below tegula. Frons convex, with rather deep and dense (♀), or slightly finer (♂) punctures. Posterior margin of pronotum, hump, postscutellum and lateral corners of propodeum white. Reddish black mandible punctured. Tibial spurs often black. Posterior bands of tergites 1–(2)3 (♀) or 1–4 (♂) widely interrupted 6
- Lower face mostly extensively white. Orbital groove at most short (1/3), or as a shining line. Mesepisternum with moderate, only below tegula with deeper and more or less coarse and dense punctures. Frons with fine or without punctures. At most hind spurs brown . . . 7
- 6 Orbital groove deep and as long as one-third (Fig. 3, ♀) or half the length of outer eye margin. Lateral deepening of pronotum longitudinally wrinkled (♀) or with some punctures (♂) behind hump. Lateral side of propodeum and hind coxa at most with some punctures. Lateral corners of pronotum only with a few punctures. Tibial spurs black. Propodeum very finely and transversely rugulose over apical half with a longitudinal sulcus (Fig. 16) basally broad with indistinct margins, and does not extend beyond the basal half. Ocular sinus at most with a minute white spot, lower part of inner eye margin at most with a white streak, rarely also a triangular spot below antennae. Lower margin or lateral corners of clypeus ferruginous or sometimes narrowly white. Tergites 1–4 with broadly interrupted bands. Legs largely brownish black (♀♂), hind femur brownish ferruginous. 4.5–6 mm . . . *karoensis* ARNOLD
- Orbital groove deep, broad and as long as the half length of outer eye margin (♀♂). Metapleural suture hardly, or in exceptional cases distinct. Mesepisternum, lateral corners of pronotum and mesonotum with deeper and dense punctures, than in *karoensis* (see in couplet 13) *waltoni* ARNOLD
- 7 Legs largely or nearly entirely brownish black, hind femur often, other femora and middle tibia, partly sometimes, ferruginous. Fore wings remarkably infuscated in apical third. Clypeus white, with continuous or interrupted longitudinal brownish line. Abdominal segments black, with light streaks 8
- Legs entirely ferruginous, at most coxae and trochanters partly black or largely brown. Fore

- wings at most hardly infuscate. Clypeus different. Abdominal segments largely, or sometimes at most partly ferruginous or dark brownish red translucent. 9
- 8 Hind femur nearly entirely, sometimes all femora and tibiae partly ferruginous. Scutellum raised conically over the level of mesonotum-postscutellum in lateral view (Fig. 4). Lower corner of pronotum normally pointed laterally. Frons with some fine scattered punctures (♀). Propodeal sulcus gradually narrowed, as a rule broad basally. Mandible usually white with a large black spot medially (♀) or black (♂). Tergites 1–3 (♀) or 1–4 (♂) with white lateral streaks, last one with a large spot. Legs black, partly brownish ferruginous with a white spot on coxae, on fore and middle tibiae apically, on fore (♀) and on middle (♂) tarsi. Middle coxa black basally. ♀ 4.7–6.5, ♂ 4.1–5.8 mm *ligea* BINGHAM
- Hind femur entirely brownish black. Scutellum flat, on a level with mesonotum-postscutellum. Lower corner of pronotum conspicuously elongated laterally, sharply pointed and bent down towards coxa (Fig. 15). Frons with hardly discernible fine punctures. Medial sulcus of propodeum conspicuously broad basally, suddenly narrowed apically. Tergites 1–4 lateral streaks, middle coxa with a white spot basally. 7 mm *angolaensis* spec. nov. ♀
- 9 Usually abdominal segments 1–2 and legs nearly entirely ferruginous, tergites 3–5 largely black, partly dark reddish translucent, posterior margin of 1–4 with an interrupted white band each. Metapleural suture of propodeum well developed and finely wrinkled transversely. Median sulcus of propodeum broad only basally, then remarkably narrowed, reaching at least nearly to the middle (♂) or beyond that (♀). Pronotal disc thickened, rather convex in lateral view. Flagellar joints black above, usually 1st nearly entirely, 2nd ferruginous below. 6–8 mm. *judicatrix* NURSE
- Abdomen black, at most partly ferruginous or brownish red translucent 10
- 10 Metapleural suture distinct. Orbital groove very short, as long as basal width of mandible and discernible as a shining line. Median sulcus reaching to the middle of segment. Sternite 9 strongly raised longitudinally in the middle, with scattered punctures, rounded and very deeply excised apically (Fig. 17). All coxae nearly entirely brown. 5.3 mm *hapti* spec. nov. ♂
- Metapleural suture as a rule hardly distinct. Orbital groove broad and reaching nearly to the middle (♂), or to one-third length (♀) of the outer eye margin. Median propodeal sulcus hardly reaching beyond to the one-third length of propodeum (♀♂). Sternite 9 flat (♂), oval, rather pointed apically (Fig. 18). At least middle and hind coxae almost entirely (♀♂) ferruginous (see in couplet 18) *australensis* sp. n.
- 11 Frons with deep and rather dense punctures, in exceptional cases in some males hardly punctured 12
- Frons smooth, shining or mat, hardly punctured, at most with fine punctures (♀♂) or when exceptionally with some scattered, deeper punctures then legs largely or entirely ferruginous 15
- 12 Orbital groove remarkably developed, as long as half the length (♀♂) or at least one-third of outer eye margin (♀). Hind metatarsus inside, apically with a row of erect tomentose hairs about one-third or rarely nearly half the length of the joint. Supraclypeal area deeply impressed 13
- Orbital groove hardly or only weakly developed, at most as long as one-third the length of outer eye margin (♂) or present only as a narrow shining line between the slightly thickened orbit and eye margin. Hind metatarsus (♂) with a row of tomentose hairs (Fig. 7) generally nearly half as long as the breadth of the joint 14
- 13 Orbital groove as long as one-third (♀) or broader and half (♂) the length of outer eye margin. Mesepisternum and lateral corners of pronotum only with a few punctures. All tibial spurs black. Propodeal sulcus shorter (Fig. 16). Metapleural suture rarely less developed. (For further details see couplet 6) *karooensis* ARNOLD
- Orbital groove deep and broad, as long as half the length of outer eye margin (♀♂). Mesepisternum, lateral corners of pronotum and mesonotum with deeper and closer punctures. At least spurs of middle tibia white. Propodeal sulcus longer. Metapleural suture hardly distinct. Lateral deepening of pronotum shallow but punctures are strong, in the fossa deeper (♀♂), and towards pronotal tubercle moderate (♂). Lateral margin of disc and side of propodeum, as well as hind coxa with large, deep and scattered punctures, often also the lower part of hind femur with smaller punctures. Labrum black, clypeus and supraclypeal area extensively white with black spots typically (♀) or often nearly entirely black (also ♀♂),

- with a white streak laterally (mostly ♂), then often with a white triangular area below antennae. Hind legs usually black, fore femur, tibia and tarsi mostly, rarely hind coxa, femur (♀♂) ferruginous, middle ones more brownish, legs with white spots. Lower side of flagellum ferruginous, sometimes infuscated. ♀ 5.5–6.5, ♂ 4.1–6 mm *waltoni* ARNOLD
- 14 Legs usually largely light (♀♂), hind femur always ferruginous, exceptionally infuscated above (♂), tibia at least infuscated, tarsal joints brownish or black. Fore and middle legs often partly or largely ferruginous or partly infuscated. Pronotal disc normal flat, not thickened. Frons usually with very deep and often close punctures, latter only rarely shallow and more scattered; frons sharply curved down below fore ocellus in lateral view (♀♂). Outer orbit thickened, without a distinct basal groove (♀), or latter narrow and as long as one-third of outer eye margin (♂). Lower face usually entirely white, often with brownish spots or with a longitudinal line medially (♀♂), sometimes entirely black (♂) and only supra-clypeal area more or less white mostly on (♂). Propodeal sulcus remarkably long. Abdominal tergites 5–6 usually black, last tergite with a white spot (♀♂), 1–4(5) with lateral streaks, only rarely with bands. Antennal joints 1–2 with white spots on the lower side, 3–4 usually (♀) or some last joints (♂) ferruginous below, further joints mostly infuscated, antenna black above. ♀ 3.5–7.2, ♂ 3.3–5.3 mm *helvetica helvetica* TOURNIER
- Legs largely dark, at least all femora black or brownish black. Pronotal disc slightly thickened, convex in lateral view and connected moderately steeply with mesonotum. Frons with deep, but slightly scattered punctures (♀), or usually smooth, hardly punctures (♂); frons more convex, only moderately curved down (♀♂). Orbital groove present only as a narrow shining line basally (♀♂). Lower face white with 5 minute brownish black spots (♀) or at least partly black (♂). ♀ 5.2–6.5, ♂ 3.3 mm *helvetica bogdoensis* MÓCZÁR
- 15 Frons conspicuously sharply divided by a feeble torus into a smaller and a larger flat area below fore ocellus (Fig. 19), torus obtuse angled transversely and only moderately developed on male (Fig. 20); surface of frons mat, not punctured, rarely with fine and scattered punctures. Usually hind femur entirely or largely ferruginous, at most middle one brown or black below, while its upper edge ferruginous. Middle tibia white basally and apically. Body never ferruginous. Posterior bands of tergites with white bands, 1st slightly, 2nd–4th broadly interrupted medially. Mandible partly white (♀), or black (♂, Figs. 31–32). Lower face white (♀, Fig. 20), or always with black spots (♂, Figs. 31–32). 4.4–7 mm *africana* spec. nov.
- Frons not divided transversely by a conspicuous torus. Several femora largely ferruginous or legs more or less brown with light spots. Body rarely ferruginous 16
- 16 Frons smooth, strongly shining, broadly impressed medially, hardly punctured and only with some distinct punctures above ocellar sinus. Orbital groove narrow, discernible as a shining line along the outer eye margin below. Femora and lower face largely black. 3.3 mm. (See also couplet 14) *helvetica bogdoensis* MÓCZÁR ♂
- Frons mat or slightly shining, without longitudinal impression, more or less curved down in lateral view and often punctured. Often larger species. 17
- 17 Orbital groove well developed, body never, at most only legs ferruginous 18
- Orbital groove only rarely developed, when so only a shining line discernible on some males, or body richely light-coloured and sometimes also largely ferruginous 19
- 18 Orbital groove conspicuously broad and reaching nearly the middle of sometimes white outer eye margin (♀♂). Legs nearly entirely brown, except some white spots (mostly in ♀). Clypeus and supra-clypeal area largely, sometimes also mandible white (♀) or black with brownish red lower margin (♂). Abdominal bands at least 2–3 usually continuous, 1 and 4–5 narrowly interrupted. Frons convex. Supraclypeal area impressed. Labrum more or less brown or black basally (♀♂) or entirely (♂). 4–4.5 mm. *multipecta* ARNOLD
- Orbital groove narrower, only one-third (♀) or nearly half as long as the length of outer eye margin (♂). Legs nearly entirely ferruginous, except some white spots, only fore and middle coxae black basally and hind tarsi blackish infuscated. Clypeus mostly with two small and a longitudinal black spot in the middle, supra-clypeal area with two small triangular spots below antennae (♀) or extensively black (♂). Apical white bands of tergite 1 continuous, of 2–5 broadly interrupted (♀) or of 1–4(5) interrupted and (5)6 black (♂). Frons sharply curved down in lateral view (♀♂). 4.7–6.5 mm *australensis* spec. nov.
- 19 Pronotal disc rather flat, hardly thickened. The row of tomentose hairs inside on hind metatarsus of equal with the breadth of joint and extends farther than half the length of joint (Fig. 7). Legs largely ferruginous, coxae brownish black, labrum largely pale brownish.

- Clypeus largely white. Tergite 1 with continuous, 2–5 with interrupted white bands. Tempora thickened above mandible, but without an orbital groove. Mesonotum with scattered and fine punctures. 4.5–5 mm *indica* spec. nov. ♂
- Pronotal disc usually strongly (Fig. 21), only rarely moderately convex and thickened. Tomentose hairs of hind metatarsus (♂) usually short, as long as half or one-third the breadth of joint 20
- 20 At most abdominal band 1 continuous, 2–5 interrupted, or black. Orbital groove only rarely (*maliensis* ♂) distinct 21
- All abdominal bands continuous and at most (4) 5 interrupted, or when not, then whole body entirely ferruginous with yellow spots or lines. Orbital groove moderately distinct and short at most on the species with largely ferruginous body 24
- 21 Legs and antennae ferruginous, at most basis of fore and hind coxae narrowly brown, whole lower face, mandible, eye margin broadly white. Last segment dark brownish, lower edge without a yellowish white spot. Inner margin of the large white spot on ocular sinus parallel basally, concave and pointed apically. The white spot of frons quadrangular. Last abdominal segment elongate and sharply pointed apically (Fig. 22). 4.7–6.5 mm *indica* spec. nov. ♀
- At least all coxae partly black, femora-tarsi more or less ferruginous, or largely brown or black, antenna brownish black, partly ferruginous below 22
- 22 Orbital groove at least one-third as long as the length of outer eye margin. Lower side of flagellum ferruginous, above brown. Fore and middle tibiae, tarsal joints 1–3 with a continuous white line. Band of tergite 1 broad, and only slightly emarginated laterally. Tomentose hairs of hind metatarsus nearly as long as the two-thirds breadth of the joint (♂). Femora brownish ferruginous, middle tibia lighter below, hind one darker ferruginous, latter with two indistinct yellowish white spots basally and before apex. 4.1 mm *maliensis* spec. nov. ♂
- Orbital groove not developed. Lower side of flagellum ferruginous at most basally and apically, elsewhere infuscate or brownish black (except rarely *juncoi* ♂). White line of middle tibia more or less interrupted. Tergite 1 with continuous white band posteriorly, rarely being finely excised medially and usually deeply emarginated laterally. Tomentose hairs on hind metatarsus posteriorly as long as half breadth of the joint. Mandible punctured (♀♂). Last tergite deeply and narrowly emarginated apically (♂, Fig. 23) 23
- 23 Fore coxa partly ferruginous along the white spot below, middle and hind ones below extensively as well as trochanters and tarsi usually ferruginous, last tarsus apically and tarsal joints infuscated, spot on femur not elongated. Mandible yellow, with a black spot medially (♀), or black (♂). Sulcus usually reaching nearly to half the length of propodeum (♀♂). Lower face white (♀♂). Abdominal bands 2–4 (♀) or 2–5 (♂) interrupted, penultimate tergite usually black. Sternite 9 unpunctured (♂, Fig. 25). ♀ 5.2–7, ♂ 4.1–5.5 mm. Labrum with darker spot (mostly ♀) *juncoi* GINER
- All coxae entirely black, femora usually extensively ferruginous, brownish or black (♀♂); at least hind tibia and tarsi black (typically in ♂), white streak on the middle femur often remarkably elongate (♀). Mandible black (♀♂), lower margin often white (♀, Fig. 58). Sulcus very broad basally but narrowed suddenly and short, about one-third as long as propodeum (Fig. 2). Lower face white (♀♂) with pale brownish spot(s) or sometimes blackish streaks (Fig. 58), rarely largely black (MAGRETTI's diagnosis ♂). Abdominal bands 2–4 hardly, 5 widely interrupted (♀) or also 1 interrupted and tergites (4)5–6 black (♂). Sternite 9 (♂, Fig. 26) with scattered punctures. Inner (longer) spur of hind leg partly black (on lectotype only apically, ♀). ♀ 4.4–8, ♂ 3.3–5.8 mm *kriechbaumeri* MAGRETTI
- 24 Head, thorax, usually abdomen black, legs from trochanters to tarsi ferruginous with white spots. Medial sulcus of propodeum remarkably broad basally. Posterior corners of mesepisternum with a yellowish line 25
- Body entirely ferruginous or only partly black 26
- 25 Flagellum black, only basal joints lighter below. Mandible and the whole lower face white (♀♂) or partly (♂) black. Medial sulcus remarkably broad basally, extending beyond the middle of propodeum (Fig. 24). Middle coxa with a white spot basally (♀). At least fore coxa mostly black. At least middle and hind ones with a ferruginous line ventrally, moreover the underside of fore coxa largely, apical margins of middle and hind coxae, white. Only abdominal band (4) 5 interrupted, 5 rarely black (♀), or with large lateral spots (♂). Last tarsal joints of hind leg brownish infuscated, white line of the middle tibia broadly interrupted

- (♀♂). Last abdominal segment triangularly elongated (Fig. 27). ♀ 6.5–8, ♂ 4.7–5.8 mm
lawrencei ARNOLD
- Flagellum, mandible nearly entirely light ferruginous, only apically black. Lower face white. Medial sulcus short, as long as about one-third of the length of propodeum. Middle coxa without a basal spot. All coxae entirely ferruginous together with trochanters-tarsi, coxae with apical white streaks and sometimes with a small black spot basally. All abdominal bands continuous and broad. Tarsal joints 2–5 of hind leg black basally, as well as joints 5 of middle and hind legs brown, respectively, black apically. Last segment (♀) rather stumpy and with yellowish white streak (♀, Fig. 28). ♀ 6–6.5, ♂ 4.1 mm . . . *maliensis* spec. nov. ♀
- 26 Body nearly entirely ferruginous (♀), only lateral side of thorax partly and tergites 3–5 basally, black (♂). Orbital groove shorter than one-third of outer eye margin (♀). Spots and bands of body yellowish white. Sternite 9 conspicuously oval (Fig. 30, ♂). Abdominal sternites with smaller (♀) or broader lateral spots (♂). Hind femur below with a broad yellowish white line except basis (♀♂). The row of the tomentose hairs of hind metatarsus remarkably long, as long as breadth of joint (♂). ♀ 8.3, ♂ 6.5 mm . . . *ferrugo* spec. nov.
- Body extensively ferruginous, frons, mesonotum, mesepisternum largely black, partly ferruginous (♀♂). Orbital groove shallow, present as a shining line on the basal third. Spots and bands of body ivory white (♀♂). Sternite 9 rather broadly, but not deeply emarginated apically (♂, Fig. 29). Sternites at most with silvery toment (♀♂), only last one with small medial spots (♂). Hind femur below ferruginous (♂) at most with a small white spot apically (♀). Tomentose hairs of hind metatarsus shorter, as long as one-third the breadth of joint. ♀ 8, ♂ 6.5–7.2 mm . . . *dayi* spec. nov.

***Ceropales africana* spec. nov.**

Ceropales krieckbaumeri sensu ARNOLD, 1937, Ann. Transv. Mus. 19: 89 ♀♂ partim, nec MAGRETTI, 1884

Specimens examined: 75 ♀, 37 ♂. Holotype. Zimbabwe="Botswana, Serowe 10. v. 1983 Per FORCHAMMER leg.", "Taken in Malaise trap" ♀ (Washington). Paratypes. Zimbabwe="Rhodesia Matopos Nat'l Pk. IV-1 & 2-1968 PAUL J. SPANGLER", "Taken in Malaise trap" ♀ (London, British Museum, Natural History); "Rhodesia Salisbury Chishawasha ix 1978 A. WATSHAM", 2 ♀ (London), the same data but "ix 1979" 1 (Hym. Typ. No. 3805, Budapest), as well as "viii" 1 ♀ (Hym. Typ. No. 3737 Hungarian Nat. Hist. Museum Budapest); the same data, but "x. 1979" 3 ♀, "xi. 1979" 1 ♀, "viii 1980" 2 ♀ and "x. 1980" 1 ♀ and "i. 1981" 1 ♀ (London); "Salisbury S. Rhodesia Dept. Agric. 14. iv. 1937", "A. CUTHBERTSON Collector", "South African Museum ex National Museum Bulawayo 1981" blue labe, "*C. krieckbaumeri*" 1 ♂ (London).—Senegal="Senegal PM Zinguinchor 11 viii 1979 A. PAULY réc." 1 ♀ (Coll. WAHIS); "Senegal Parc. nat. bas. Casamance 17–27. iv 81", "21–31 v. 81" 2 ♂ "21–23 iii 1981", "Malaise trap réc. Siegwalt" 1 ♂ (Coll. WAHIS) and (Hym. Typ. No. 3738, Budapest).—Gambia="Gambia: Keneba Malaise ix–x 1975 M. C. D. SPEIGHT" 4 ♀, 1 ♂ (London) and 1 ♀ (Hym. Typ. No. 3739 Budapest).—Ivory Coast="Ivory Coast Korhogo Komborodougou 18–21. iii. 1984 M. MATTHEWS 2 ♂ (London) and (Hym. Typ. No. 3740, Budapest).—Upper Volta="Haute Volta Bobo-Dioulasso 400 m. PM, x. 1982 M. DELVAUX & A. PAULY", "WAHIS" 1 ♂ (Coll. WAHIS); the same data, but "26. 9. 1979, A. PAULY réc. PM" 2 ♀ (Coll. WAHIS); the same locality but "La Guignette 27–30 iii. 1984 M. MATTHEWS" 1 ♀ (London).—Ghana="Ghana: Kumasi Kwadaso iii 1977 CIBC SCHEIBEL-REITER" 1 ♀ (London).—Nigeria="Nigeria State Fashola xi 1973 Coll. I. T. MEDLER" 5 ♀, 1 ♂ (London), 1 ♀ (Hym. Typ. No. 3741) and "xi. 1974" 1 ♀, 1 ♂, the same data but "Ikene WState Sep 1974" 2 ♂ and "Ilorin Aug 1974" 1 ♂ (London); "Ile-Ife x. 73 W. State JOHN T. MEDLER" 1 ♀ (Hym. Typ. No. 3742, Budapest); "Umuahia, Nigeria April 11, 1973 JOHN T. MEDLER" 1 ♀ (Coll. TOWNES), and with the same data but "9 iv 1975" 1 ♂ (Hym. Typ. No. 3743); "N. Nigeria: Zaria, Samaru 11 vi 1973 J. C. DEEMING" 1 ♀ (London).—Zaire="Musée du Congo Banana 14. IX. 1913 Dr BEQUAERT", "*Ceropales Krieckbaumeri* MAGR. ♀ det ARNOLD" 1 ♀ (Tervuren); "Congo Belge P. N. U. Riv. Lukawe (700 m) 28. X. 1947 Mis. G. F. DE WITTE 903a" 1 ♀ (Coll. WAHIS); "Musée du Congo, Congo de Lemba IV–1913 R. MAGNÉ" 1 ♀ (Tervuren); "Coll. Mus. Congo Kasongo VIII-1959 P. L. G. BENOIT" 1 ♀ (Hym. Typ. No. 3748, Budapest); "Kinshasa-Binza xi 1983", "Mal. trap M. DELVAUX réc." 1 ♀ 1 ♂ (Coll. WAHIS); "Musée du Congo Stanleyville 21-II-

1928 A. COLLART", "*C. kriechebaumeri* MAGR. ♂ det G. ARNOLD" 1 ♂ (Tervuren); "Coll. Mus. Congo Tanganika: Moba 780 m VIII-X-1953 H. BOMANS" 1 ♀ (Tervuren); "Tshibanga XI-1984 A. PAULY leg.", "WAHIS" 1 ♀ (Coll. WAHIS). — Kenya = "Nairobi, Kenya Nov. 5, 1978 A. M. OWINY" 1 ♀ (Coll. TOWNES). — Malawi: "Zomba, Nyasaland H. S. STANNUS" 1 ♀ (London). — Zambia = "Zambia 15 km E. LUSAKA 13—22-xi 1979 R. A. BEAVER" 1 ♀ (Hym. Typ. No. 3744, Budapest), the same data but "14—29. xii 1979" and "vi—vii. 1980" 2 ♀ (London). — Angola = "Angola (A. 11) Bruco, 26. ii—2. iii, 1972", "Southern African Exp. B. M. 1972-I" 1 ♂ (London); "Angola (A. 15) R. GIRAULT 10 mls. NE Mocamedes 27—29. ii 1972", "Southern African Exp. B. M. 1972-1" 2 ♂ (London). — Namibia = "South West Africa, Namib/Naukluft Park Kuiseb R nr Gobabeb 23.34 S 15.03 E 18. ii—20. iii. 1983 Nat Coll. Kuiseb Survey", "Malaise trap" 1 ♀ 1 ♂ (Coll. WAHIS); "Okahandja 12—16. xii. 1927", "S. W. Africa R. E. TURNER Brit. Mus. 1928—14" 1 ♀ (Hym. Typ. No. 3745, Budapest); "S. W. Africa (31) Okahandja 2—4. ii 1972" 1 ♀, 1 ♂ (London). — Botswana = "Mopiti, Botswana Apr. 17—28, 1973 PETER GINN" 1 ♀ (Hym. Typ. No. 3746, Budapest); "Botswana, Serowe 17 iii 1983 PER FORCHHAMMER leg" 1 ♂, the same data but "3. vi" 1 ♀, "13—17. vi" 2 ♀, as well as "16. iv" 1 ♀ (London), "28" and "30 iv" 1 ♀ (Hym. Typ. No. 3747, Budapest), "2. v." 1 ♀ (London), the same locality and collector and "Farmer's Brigade FEB. 1986 malaise trap", 1 ♂, as well as "SEPT. 1986" 1 ♀ (Washington), 1 ♂ (Hym. Typ. No. 3749, Budapest). — Rep. of S. Africa = "Grahamstown X-20-70 So. Afr. H. & M. TOWNES" 1 ♂, the same locality but "XI. 1—11. 70 S. Afr. FRED GESS" 2 ♂ (Coll. TOWNES), "XI. 12—30. 70 S. Afr." 1 ♂ (Hym. Typ. No. 3750, Budapest), the same locality and collector but "XII. 1—16. 70 S. Afr. 1 ♀ (Coll. TOWNES) and "11—16. 71 FRED GESS 1 ♀ (Hym. Typ. No. 3751, Budapest); "Jonkershoek near Stellenbosch I-25-71 V. WHITEHEAD" 1 ♀ (Coll. TOWNES); "S. Africa: Natal St. Lucia 2832 Ab Charters Creek x. 1977 LONDT 1 ♀ (London); the same Natal but Estuary xii 1977 POOLEY 1 ♀ (Hym. Typ. No. 3752, Budapest), the same but "XI-15-70 So. Afr. H. & M. TOWNES" 1 ♀ (Coll. TOWNES); "S. Africa: Natal Umlazi N. R. i 1979 R. MILLER" 1 ♀ (Hym. Typ. No. 3753, Budapest) and "ii 1979" 1 ♀ (London); S. Africa R. E. TURNER Brit. Mus. 1924—289", "Port St John, Pondoland May 1924", "*Ceropales kriechebaumeri* MAGR. var. det. ARNOLD" 1 ♀ (London); Schoemanshoek II. 23. 71 S. Africa V. WHITEHEAD" 1 ♀ (Coll. TOWNES); "S. Africa: Transvaal KRÜGER N. P. Pafuri ii. 1982 L. BRAACK" 1 ♂ allotype (Cape Town), the same locality, but "i. 1982" 4 ♀, 4 ♂ (London) and 2 ♀, 1 ♂ (Hym. Typ. No. 3754-3755-3756); South Africa C. P. WELLINGTON Rooshoek February 1960 A. M. VERHOEFF 2 ♀, 1 ♂ (Zürich) and 1 ♀, 1 ♂ (Hym. Typ. No. 3757-3758, Budapest).

Non-paratypic material. Senegal=Casamanca 15—20 Mar 1981, 1 ♀ (Coll. WAHIS); Mbour 26 Mai—4 Jun 1981, 1 ♀ (Budapest). — Upper Volta=Bobo-Dioulasso, La Guignette 27—30 Mar 1984 M. MATHEWS, 1 ♀ (Budapest). — Togo=Sokodé 4 Jan 1982 A. PAULY, 1 ♀ (Coll. WAHIS). — Gabon=Léconi Jan 1985 A. PAULY, 1 ♂ (Coll. WAHIS) and 1 ♀ (Budapest). — Zaire=Congo Belge P. N. G. 26 Feb 1952 H. DE SAEGER 1 ♀ (Coll. WAHIS). — Kenya=Tsavo Aug 1976 D. QUICK, 1 ♀ (Budapest). — Zambia=15 km E. Lusaka 13—22 Nov 1979 R. A. BEAVER, 1 ♂ (London). — Namibia=Kuiseb R'nr Gobabeb 18 Feb—20 Mar 1983 Kuiseb Survey 1 ♂ (Budapest). — Rep. of S. Africa=Wellington Rooshoek Feb 1960 A. M. VERHOEFF, 1 ♀ (Coll. WAHIS) and 1 ♀, 1 ♂ (Budapest).

♀.—Length 4.4—7 mm. Black, mandible nearly entirely, except as small black spot on upper margin and the ferruginous apex, labrum, clypeus, supraclypeal area, except two narrow black spots below antennae, inner eye margin including the ocular sinus narrowing and bending towards the middle apically (Fig. 19), outer eye margin narrowly, a spot between antennal sockets and on antennal joints 1—2 below, hind margin of pronotum, pronotal tubercle, basal hump, a spot on tegula, posterior lower angle of mesopleuron and on scutellum, postscutellum, on posterior corners of propodeum, posterior bands on tergites 1—4, on 1 slightly, on 2—4 broadly interrupted medially and dilated at sides, tergite 6 largely, fore coxa below, a short line on the outer margin of the middle and hind coxae, a spot on fore and middle femora outside apically, upper side of fore tibia, two elongate spots on the base and apex of the middle tibia, fore and middle tarsal joints 1—4 in front, and tibial spurs, white. Flagellar joints 1—2 distinctly, the others indistinctly ferruginous below. Fore femur inside partly, tibia largely pale ferruginous, upper side of middle femur, lower side

of middle tibia, as well as hind femur, ferruginous. Wings hyaline, hardly infuscated apically, veins brown, pterostigma yellowish brown. Body, especially propodeum and mesopleura with short silvery pubescence.

Head (Fig. 19) hardly broader than long (57:50) and narrowed behind eyes. Ocelli in an acute angle, POL:OOL=6:8. Frons sharply bent below ocelli and separated by a feeble and obtuse angularly curved transverse torus into a smaller area forming a slight angle including the fore ocellus and a larger flat area below, which is remarkably raised between antennal sockets; surface mat, with a very fine frontal sulcus, with scattered and fine punctures along the eye margin before apex. Temple narrow, without orbital groove. Antenna short, hardly longer than thorax, flagellar joints nearly of equal size, length (and breadth) proportions of antennal joints 1—7 = 11 above (7): 4.5(5): 6.5(5): 7(5): 7(5): 7(5): 7(5). Pronotal disc short, rather convex, thickened in lateral view, finely punctured before tubercles, lateral side of pronotum remarkably concave laterally between tubercle and the elongate hump, with some wrinkles on the deepening. Middle and also lateral third of mesonotum convex longitudinally and slightly raised, punctures rather deep and scattered. Scutellum convex and impressed posteriorly in the middle. Postscutellum remarkably raised but impressed medially. Propodeum conspicuously flat in lateral view, its lateral margin feebly convex, nearly one-third (1.38 times) wider at base than long; medial sulcus broad transversely wrinkled, gradually narrowed and reaching to beyond the middle of the segment, surface finely, transversely rugulose, weakly shining, feebly punctured behind spiracle. Metapleural suture not developed, with some punctures below episternal scrobe. Mesepisternum rather deeply and evenly punctured, sternal lobe pointed, white. Last segments strongly compressed laterally, lower margin slightly convex basally and straight apically in lateral view (Fig. 36). Claws normal, those of hind legs rectangularly bent.

♂.—Length 4—5 mm. Similar to female, but differs as follows: Black: mandible entirely, upper margin of clypeus narrowly and laterally, spots below antennae largely and triangularly (Fig. 20), outer eye margin basally, tergite 6 entirely; on the other hand, still white a small spot on middle coxa basally and tergite 7 largely, and hind femur blackish infuscated basally and apically. The row of tomentose hairs of hind metatarsus short, extending over the apical third of the joint. Breadth and length of head 31:21. POL:OOL=3:6. Transverse torus of frons moderately raised. Gena above mandible slightly thickened with a trace of a short orbital groove. Lower side of the last three joints of antenna strongly concave. Pronotum less convex. Propodeum 1.29 times broader basally than its length medially. Sternite 8 poorly chitinized (Fig. 11), 9 gradually raised towards basally with concave lateral sides and deeply excised apically (Fig. 35), tip slightly bent upwards. Genitalia remarkably stumpy and thick (Figs. 33—34), inner side of paramere rectangularly curved like a beak and sharply pointed apically (Fig. 33).

The great number of the examined specimens helped to establish the variety of this species both in sculpture and in colour. Frons usually as described for the holotype, but the fine, scattered punctures are often hardly discernible owing to the pubescence, punctures only rarely distinct, sometimes may even be deep (Upper Volta partly). The transverse torus on frons rarely moderate, mostly in the majority of the males. Thorax rather broad in front, often as broad as distance measured across pronotal tubercle, depending on the position of the wings; but the pronotal tubercle is always remarkably smaller than that in *gambiae*.

Mandible rarely entirely white (19 ♀: Senegal, Gambia, Ghana, Nigeria, Zaire, Namibia, Botswana), generally either with a small or large black spot (32 ♀: Gambia, Upper Volta, Nigeria, Gabon, Zaire, Zimbabwe, Zambia, Botswana, Rep. of S. Africa) or entirely black (30 ♀: Gabon, Zimbabwe, Botswana, Rep. of S. Africa and 35 ♂:

Niger, Gambia, Senegal, Ivory Coast, Upper Volta, Zaire, Botswana, Angola, Namibia, Rep. of S. Africa).

Clypeus and supraclypeal area only rarely white entirely, mostly with small or large black spots (Figs. 19—20, 31—32), the triangular black spots below antennae is always well developed especially on males.

Femora largely black (Rep. of S. Africa: Transvaal 4 ♂ Namibia 1 ♂, Botswana 2 ♂), hind femur dark brownish black (Gabon: Lecomis 1 ♀, 1 ♂), exceptionally entirely black (Gabon: Lécomis 1 ♀) or femora ferruginous entirely (Namibia 1 ♀, Senegal 2 ♀, 1 ♂), and all coxae and femora may be entirely ferruginous (Kenya: Tsavo 1 ♀).

Sometimes tergite 3 only with minute white spots or black together with tergites 4—5 (Rep. of S. Africa: Wellington 1 ♀, resp. 2 ♀, 1 ♂).

Distribution. Senegal, Gambia, Ivory Coast, Upper Volta, Ghana, Togo, Nigeria, Gabon, Zaire, Kenya, Malawi, Zambia, Angola, Namibia, Botswana, Rep. of S. Africa.

Ceropales angolaensis spec. nov.

Specimen examined: 1 ♀. Holotype. Angola—"Angola (A 11) Bruco 26. ii—2. iii 1972", "Southern African Exp. B. M. 1972-1" leg. M. C. DAY (London).

♀.—Length 7 mm. Black, mandible largely, excepting the blackish and partly ferruginous basis, labrum, lower face, excepting a narrow longitudinal brown line on clypeus medially, inner eye margin up to half of ocular sinus, broadly interrupted line on outer eye margin, antennal joints 1—2 below, a narrow nearly interrupted band on pronotum before the hyaline posterior margin and not reaching the spot of tubercles, basal hump, a spot on postscutellum and posterior corners of propodeum, lateral streaks on tergites 1—4 dilated at the sides, a large spot on tergite 6, fore coxa below almost entirely, a small spot on middle coxa basally, posterior and outer margins of middle and hind coxae, narrow line on trochanters posteriorly, a spot on fore and middle femora outside apically, a minute spot on hind femur, fore tibia and metatarsal joints 1—3 in front, a spot on middle tibia basally, spurs, excepting the basis of the longer spur of hind tibia, white. Lower side of flagellar joints dark ferruginous. Posterior margin of pronotum laterally dark reddish translucent. Tegula brown. Fore femur, tibia and tarsus yellowish brown inside. Fore femur outside, middle and hind femora, tibiae and tarsi brownish black, partly reddish ferruginous translucent. Wings hyaline, nearly apical half of the fore wing, beginning from pterostigma brownish infuscated, veins, pterostigma brown. Body, especially propodeum and thorax laterally and ventrally, as well as coxae with a short silvery toment.

Head nearly as long as broad (39 : 42), thickened behind eyes, then gradually narrowed towards occiput. Ocelli in an acute angle, POL : OOL = 10 : 4. Frons rather convex, with a narrow shining line between ocellus and the raised lower margin of frons, surface granulate, slightly shining with hardly discernible fine punctures and with some deeper punctures along upper eye margin. Temple about one-third as broad as the breadth of eye medially (5 : 16), orbital groove represented by a shining line. Antenna remarkably long and slender, longer than length of head and thorax together, flagellar joints slender, nearly twice longer than its breadth, length (and breadth) proportions of antennal joints 1—12 = 10(7) : 4.5(5) : 9(5) : 10(5) : 9(5) : 9(5) : 9(5) : 8(5) : 8(4.5) : 7(4.5) : 9(4). Pronotal disc flat, only with some fine punctures, lateral groove narrow, with longitudinal wrinkles, lower corner conspicuously elongated, sharply pointed and bent down along the fore coxa (Fig. 15). Mesonotum granulated, with scattered fine and some deeper punctures, and with a medial, nearly unpunctured longitudinal area. Scutellum convex viewed from above, but remarkably flat compared to the other species in lateral view, surface granulated with some fine

punctures. Postscutellum flat and raised up to height of scutellum. Postnotum very narrow, wrinkled transversely. Propodeum 1.28 times broader than long (32 : 25), medial sulcus conspicuously broad basally, suddenly narrowed apically and continued in a deep furrow nearly to middle of segment, surface in front hardly bent towards postnotum and towards spiracles, consequently, the basal part hardly convex on its one-fifth length and flat on four-fifths part in lateral view, surface mat on disc and laterally very minutely rugulose. Metapleural suture distinct, shallower than on *ligea*. The scattered and distinct punctures of mesepisternum also less deep than that in *ligea*. The white sternal lobe is pointed apically. Last abdominal segment strongly compressed laterally, lower margin slightly curved, then straight close to triangularly pointed apex (Fig. 37). Fore and middle claws normal, hind ones sharply and rectangularly bent.

Distribution. Angola.

Ceropales australensis spec. nov.

Specimens examined: 17 ♀, 9 ♂. Holotype. Australia = Northern Territory = "Amadeus Basin N. T. 26-9 1962 P. RANFORD" ♀ (Hym. Typ. No. 3759, Hungarian National History Museum Budapest). Paratypes: "Areyonga, 600 m N. T. Australia September 15" 1 ♀, with the same locality but date: "September 28" 1 ♂, and "October 27" 2 ♀ (Coll. TOWNES), as well as 1 ♀ (Hym. Typ. No. 3760, Budapest), "October 30" 1 ♀ (Coll. TOWNES), "November 10" 5 ♀, 2 ♂ (Coll. TOWNES and 1 ♂ (Wien), 2 ♀, 2 ♂ (Hym. Typ. No. 3761-3764, Budapest), "December 6" 1 ♀ (Coll. TOWNES), "December 8" 2 ♀, 1 ♂ (Coll. TOWNES). — Western Australia = "W. Australia: Merredin 12-13. xii. 1935 R. E. TURNER, B. M. 1936-28" 1 ♀, 1 ♂ (allotype) (London). — New South Wales = "40 N Broken Hill 19 Nov 49 EF RIEK" 1 ♂ (Hym. Typ. No. 3765, Budapest).

♀.—Length 4.7—6.5 mm. Black, large spot on ocular sinus, inner eye margin, lower face, except two small triangular black spots below antennae and on clypeus medially, as well as a brownish spot on labrum medially, the interrupted line on outer eye margin, spots on antennal joints 1—2 below, posterior margin of pronotum interrupted before tegulae, basal hump of pronotum, tegula basally, postscutellum, lateral corner of propodeum, band emarginated on both sides before the apical margin of tergite 1 and also emarginated but medially broadly interrupted line on tergites 2—5, a large spot on tergite 6, spots on coxae laterally, a very narrow line on trochanters apically, a small spot on fore femur above apically, the same on middle tibia basally, a streak on fore tibia above, as well as on fore metatarsus, a pale short streak on middle metatarsus basally, tibial spurs of middle and hind tibiae, white. Apical half of mandible dark red; lower side of antennal joints 3—4, a diagonal streak along the white spot of fore coxa, middle coxa largely, hind one and rest of legs ferruginous, except the infuscate apical end of hind tibia and the middle and hind tarsal joints; middle metatarsus with a minute yellowish white spot. Wings normal, fore wing infuscated apically. Head, especially propodeum and venter covered with silky toment.

Head distinctly broader than long between clypeus and vertex (46 : 41), the shortest distance of face between eyes below antennae and the greater one on vertex = 17 : 27. Head remarkably narrowed behind eyes. Ocelli in an acute angle, separated from each other by about one-third the distance of that between an ocellus and eye (6 : 10). Eye deeply emarginated before apex. Frons rather sharply curved down at the low transverse torus between eyes; frontal sulcus narrow and not reaching to antennal sockets, frons slightly shining with fine scattered punctures, and some deep and densely set punctures only along the inner eye margin above, vertex nearly smooth, shining. Outer orbit thickened basally, orbital groove as long as one-third length of the outer eye margin. Antenna short, flagellar joints about one-and-a-half times longer

than its breadth, length (and breadth) proportions of antennal joints 1—8 = 10(6) : 4(5) : 7(5) : 8(5) : 7.5(5) : 8(5) : 7(5.5) : 7(5.5). Pronotum normal, disc with some fine punctures, moderately shining and slightly thickened, longitudinal and vertical impressions along the basal hump finely cross clathrated. Mesonotum finely granulate with some deep scattered punctures, parapsidal furrow narrow and shallow. A deep transverse furrow between mesonotum and scutellum present. Scutellum with some fine punctures, postscutellum smooth, shining, latter laying much lower than scutellum in lateral view. Propodeum remarkably flat, only hardly convex basally, surface with microscopically fine transverse rugulosity, medial sulcus hardly reaching beyond the one-third of propodeum and transversely clathrate. Mesepisternum below tegula with deep, beneath with shallower and finer punctures. Metapleural suture hardly distinct, only partly perceptible. Last abdominal segment curved towards apex, lower margin very slightly concave before tip (Fig. 38). Fore femur slightly impressed on the outer side basally. Claws with subapical tooth on fore and middle tarsi and rectangularly bent on the hind tarsus.

♂.—Length 4.7—5.8 mm. Similar to female, but allotype differs as follows. Lower face with a broad longitudinal black streak from antennal sockets to apical margin of clypeus, as well as upper margin of clypeus. Apical band of tergite 1 broadly interrupted, yellow spot on fore coxa very small. Lower side of flagellar joints brownish ferruginous, fore coxa largely, middle one nearly entirely ferruginous. Tomentose hairs of hind metatarsus very short.

Breadth and length of head = 36 : 30. POL : OOL = 6 : 7. Punctures of frons finer. Orbital groove deeper and broader than on female and nearly reaching the middle of the outer eye margin. Flagellar joints a little longer than broad. Length (and breadth) proportions of antennal joints 1—7 = 8(5) : 3(3.5) : 5.5(4) : 6(4) : 5.5(4) : 5.5(4) : 5(4). Disc of pronotum hardly more convex than in female. Surface between mesonotum and scutellum continuous, without a furrow. Inner claw of fore tarsi deeply excised. Sternite 9 oval and pointed apically with a row of fine erect hairs longitudinally (Fig. 18). Genitalia (Fig. 39) resemble those of *gambiae*, but differ from those in some essential details: paramere without hairs apically, lamina volsellaris shorter, slender elongate lobe of paramere shaped like a beak, penis valve, etc.

Sculptural variation present only in the metapleural suture: it developed in 4, hardly distinct in 12 specimens (among 16 females) and perceptible in 3 specimens (among 8 males).

Variation in colours: Basis of mandible red, exceptionally partly black and red or black and yellow. The brownish black spot on labrum rather large (8 ♀ and 2 ♂) or minute (8 ♀). Clypeus usually with two black spots (14 ♀) and exceptionally entirely white or with one large black spot (2 ♀). Lower side of flagellum usually (11 ♀) or partly black, partly ferruginous, only rarely (4 ♀) entirely ferruginous, even black (1 ♀). Propodeum only exceptionally with a small reddish spot laterally (1 ♀). Abdomen without reddish spot (7 ♀), tergite 1 with a brownish spot laterally (8 ♀, 1 ♂), exceptionally also tergite 2 basally, as well as 3—4 medially brownish red translucent (1 ♀). Fore coxa usually tricolorous (black, yellowish white and ferruginous) (12 ♀), only rarely black and yellowish white (4 ♀). The black is more extensive over the clypeus in 3 males and nearly entirely black in 1 male.

Distribution. Australia.

Ceropales dayi spec. nov.

Specimens examined: 1 ♀, 2 ♂. Holotype. Kenya = "Kenya: Tsavo Natl. Park.", "9. 8. 76 Tsavo E. Tithamsii D. Quick", ♀ (British Museum Natural History, London). Paratypes: "Kenya D. Quicke Tsavo Natl Park August 1977" 1 ♂ (allotype) (London) and 1 ♂ (Hym. Typ. No. 3766, Budapest).

♀.—Length 8 mm. Ferruginous, frons partly, upper side of mouth—parts except the white spots and palpi, last antennal joints above, vertex across ocelli, occipital carina, mesonotum, scutellum except its spot medially, axilla between fore wing and scutellum, narrow streak on both sides of propodeal sulcus and epimeron medially, episternum above hind coxa partly, mesepisternum nearly entirely, subpleural area, excepting the sternal lobe, very narrow basal ring of the tarsal joints 2—5 on hind leg, black. Labrum, mandible, lower face entirely, antennal joints 1—2 below, a rather large spot on apex of the raised anterior margin of frons between sockets, excepting the ferruginous contour, a round spot on frons medially, a remarkable square spot on ocular sinus, a continuous line on outer eye margin up to vertex, broader below and narrower above, tubercle, basal hump, margin of pronotum excepting the hyaline lateral margin, tegula excepting the hyaline margin, spot on scutellum bordered by a ferruginous contour, postscutellum, lateral corners of propodeum, mesepisternum only above coxa, a continuous narrow band on tergites 1—5, 6 nearly entirely, fore coxa largely below, small spot on middle coxa basally, two lines of middle and one on hind coxae apically, spot on hind femur apically gradually narrowing line on fore and middle femora apically, as well as on fore and middle tibiae, and on tarsal joints 1—3 in front, interrupted on middle tibia, ivory white. The ferruginous ground colour becomes the darkest: nearly reddish-brownish ferruginous on propodeum and the lightest: nearly yellowish ferruginous on the abdomen. Wings slightly infuscated, veins brown, pterostigma yellowish brown. Body, especially propodeum and face covered with silky toment.

Head hardly broader than long (51 : 46), narrowed behind eyes. Ocelli in an acute angle, POL : OOL = 6.5 : 9. Frons finely reticulated and unpunctured, only with a very short sulcus below the middle white spot, with some fine and a row of punctures only along the eye margin near vertex; temple slightly thickened above mandible, orbital groove discernible as a shining line nearly over the one-third of the outer eye margin. Antenna about as long as length of thorax, distinctly shorter than the length of head and thorax together, only antennal joints 1, 3—5 remarkably longer than broad, length (and breadth) proportions of antennal joints 1—7 = 13(7) : 5(5) : 8(5) : 7(5) : 8(5) : 7(5.5) : 7(5.5). Pronotal disc strongly convex, thickened, steeply sloping down to mesonotum, basal hump elongated, lateral deepening reticulated, with some punctures only behind hump. Mesonotum with scattered fine and some deeper punctures. Both scutellum and postscutellum remarkably raised, latter impressed medially. Propodeum conspicuously flat, hardly raised behind spiracle, here with some coarse punctures; surface of propodeum not concave, with microscopically fine and transversely running rugulosity also laterally and with some deep punctures above the middle and hind coxae, sulcus broad basally and sharply pointed posteriorly reaching the middle of propodeum. Mesepisternum with rather deep and more or less dense punctures, especially before the posterior unpunctured area. Last abdominal segments strongly compressed laterally, pointed apically (Fig. 41), lower margin bent, then straight before apex, in lateral view. Claws normal, hind claws strongly rectangularly curved.

♂. Length 6.5—7.2 mm. Similar to the female, but differs from it in some details. Labrum white, with a pale brownish spot apically, postgena only partly black, apex of antenna not infuscated, last sternites with small white spots. Toment of hind metatarsus short, about as long as one-third of the breadth of joint and the row extends over the apical one-third of the joint. Breadth and length of head = 45 : 50. POL : OOL = 5 : 9. Orbital groove hardly perceptible. Length (and breadth) proportions of antennal joints 1—7 = 10(6) : 5(5) : 7(4.5) : 7(5) : 6.5(5) : 6.5(5) : 5.5(5). Sternite 9 longitudinally raised like a roof, lateral side convergent medially, then parallel up to broadly excised apex (Fig. 29). Apical lobe of paramere of male genitalia curved inside in an acute angle towards the middle with a stumpy top (Fig. 40).

I name this species in honour of the outstanding hymenopterologist Dr. MICHAEL CHARLES DAY, British Museum (Natural History), London.

Distribution. Kenya.

Ceropales ferrugio spec. nov.

Specimens examined: 2 ♀, 1 ♂. Holotype. Kenya = "nr. Mombasa, Kenya XII. 1971—I. 1972 CUNNINGHAM—v. S." ♀ (Coll. TOWNES in American Entomological Institute, Gainesville, Florida). Paratypes. With the same data as the holotype, 1 ♀ (Hym. Typ. No. 3767, Budapest); "Kenya D. Quicke Tsavo Natl Park August 1977" 1 ♂ (allotype) (London).

♀.—Length 8.3 mm. Ferruginous, mandible, except apex, labrum, lower face entirely, frons to the feeble torus below fore ocellus excepting the raised lower area before antennal sockets, temples nearly entirely, mouth parts, antennal joints 1—2 below, pronotal disc broadly, also lateral side excepting the concave deeper area, tegula except the hyaline margin, a spot below hind wing, scutellum, postscutellum, a large spot on posterior corners of propodeum and on lower corner of mesepisternum posteriorly, bands of tergites 1—5 apically, 1—2 more or less interrupted, tergite 6 nearly entirely, small spots on sternites 3—5 laterally, lower side of fore and middle coxae largely, outer side and partly below of hind coxa, a narrow spot on trochanter posteriorly, fore and middle femora partly, lower side of hind femur apically, outer side of fore and middle tibiae, tarsal joints of fore and middle legs partly, spurs, yellowish white. Flagellum pale ferruginous below. Articulations of some segments, e.g. lateral side of pronotum below, next to coxae, that between pronotum and propodeum laterally, black. Wings normal, hyaline, veins pale brown, pterostigma yellowish brown. Body, especially propodeum, mesepisternum, also ventrally covered with short silvery pubescence.

Head only 1.14 times broader than long (58 : 51), gradually narrowed behind eyes. Ocelli in an acute triangle, POL : OOL = 7 : 10. Frons mat, a transverse feeble torus divide it in to two flat area, a shorter one below fore ocellus and a longer area with a narrow sulcus; vertex with some fine scattered punctures laterally between eyes and ocelli; lower part of outer orbit thickened below close to mandible, with a shallow orbital groove, being shorter than about one-third of outer eye margin. Antenna as long as the length of head and thorax together, joints distinctly longer than the breadth of one, excepting pedicel, length (and breadth) proportions of antennal joints 1—8 = 12(9) : 4(6) : 10(7) : 10(7) : 10(7) : 9(7) : 9(7). Pronotum conspicuously convex on disc, very steeply curved to mesonotum, lateral side deeply impressed and smooth shining with some punctures near to basal hump. Mesonotum with deep and dense punctures on posterior two-thirds. Scutellum and postscutellum remarkably raised, scutellum densely but finely punctured, postscutellum impressed medially. Propodeum conspicuously flat over its entire length and slightly raised on lateral margins and on posterior corners; medial sulcus broad and rather long, hardly reaching the middle of segment, surface of propodeum with microscopically fine reticulation also laterally, on lateral margin with some coarse punctures behind spiracle. Metapleural suture not developed, mesepisternum with dense and deep punctures. Last abdominal segment strongly compressed laterally and sharply pointed apically (Fig. 43), lower margin straight in lateral view. Claws normal, hind claws rectangularly bent.

♂.—Length 6.5 mm. Similar to the female, but differs as follows. Vertex darker ferruginous and black between ocelli. Postgena black. Axilla between fore wing and scutellum partly, postnotum, medial sulcus of propodeum and posterior half of propodeum, lateral side before hind coxa broadly, epimeron, upper half of mesepisternum, except medially, broad bands of abdominal tergites 3—4 before the posterior yellowish bands and basis of tarsal joints 2—4 of hind legs narrowly, black. Yellowish

white bands of tergites 1—5 broader and also 1—2 continuous, spots on sternites 2—6 larger. Tomentose hairs of hind metatarsus conspicuously long, the breadth of joints of equal length and the row of hairs extends on the posterior half of joint. Head broader than long (44 : 39). POL : OOL = 5 : 8. Orbital groove developed only near mandible. Mesonotum scarcely, mesepisternum coarsely and closely punctured. Sulcus of propodeum narrower basally. Sternite 9 conspicuously oval and slightly raised longitudinally (Fig. 30). Genitalia remarkably broadened basally and apically; paramere elongated inside in a nearly right angle and arcuately rounded apically; penis valve resembles a spoon apically (Fig. 42).

Distribution. Kenya.

Ceropales gambiae spec. nov.

Specimens examined: 21 ♀, 7 ♂. Holotype. Gambia: "Gambia = Keneba, Malaise, ix—x. 1975 M. C. D. SPEIGHT" ♀ (British Museum, Natural History, London). Paratypes. With the same data 1 ♂ (allotype) (London) as well as 1 ♀ and 1 ♂ (London), 2 ♀, 1 ♂ (Hym. Typ. No. 3768—3770, Budapest). — Senegal = „Senegal Kedougou 1—7. vi. 81 Mal. trap", "WAHIS" 1 ♀ (Hym. Typ. No. 3771, Budapest); "Senegal Mbour 10—16. vii. 81 Mal. trap", "WAHIS" 1 ♀ (Coll. WAHIS); "Senegal Niokolou Badi 30. v—3. vi. 81 Mal. trap", "WAHIS" 3 ♀ (Coll. WAHIS) and 1 ♀ (Hym. Typ. No. 3772, Budapest). — Sierra Leone = "Freetown Sierra Leone May 1970 K33 D. F. OWEN" 1 ♂ (Coll. TOWNES). — Upper Volta = "Ouagadougou Afrique Occ. Fr. 4/VII 926" 1 ♀ (Hym. Typ. No. 3773, Budapest); "Haute Volta riv. Volta Noire 5 km E Boromo 18. X. 1979 A. PAULY réc." 2 ♀ (Coll. WAHIS) and (Hym. Typ. No. 3774, Budapest); "Haute Volta riv. Volta Rouge 15 km W. Kokholo 22. X. 1979 A. PAULY réc.", "Malaise trap" 2 ♀ (Coll. WAHIS). — Nigeria = "Nigeria: Benin M W State 1 IV 1975 J. T. MEDLER Coll." 1 ♀, 1 ♂ (London); "Nigeria: Ikenne W. State: Sep 19 74 Col. J. T. MEDLER" 1 ♀ (London) and 1 ♀, 1 ♂ (Hym. Typ. No. 3775—3776, Budapest); "Nigeria: Ilora W. State Aug. 1974 J. T. MEDLER Coll" 1 ♂ (London). — Cameroun = "Cameroun" (no further data) 2 ♀ (London). — Zaire = "Coll. Mus. Congo Kasongo VIII—1959 P. L. G. BENOFF" (Tervuren); ? "Bwamanda" 19. X. 83 PM LIONGO réc." 1 ♀ (Coll. WAHIS).

♀.—Length 5—7.2 mm. Black, lower face, labrum, basal half of mandible, inner eye margin, ocellar sinus with a sharp pointed apex apically, outer eye margin broader beneath, lower side of antennal joints 1—2, posterior margin of pronotum interrupted before pronotal tubercle, hump, tegula, a small round spot on scutellum, a larger one on postscutellum, lateral corners of propodeum, lateral streaks on tergites 1—4 emarginated in front, tergite 6 largely, lower and lateral sides of fore and middle coxae, a large spot on hind coxa ventro-apically, longitudinal streaks of fore and mid femora on outer side, also inside of fore one below, tibiae on outer side, streaks on middle tibiae nearly interrupted, outer side of tarsal joints largely and tibial spurs, white. Lower side of antennal joints 3—4, fore femur inside and fore tibia largely, as well as fore and middle tarsal joints largely, brownish ferruginous, apical part of mandible red. Wings normal, infuscated especially apically, pterostigma and veins brown. Body covered with silvery, clypeus, propodeum and ventral side of thorax especially with dense pubescence.

Head about one-fifth broader than long (50 : 43), strongly narrowed behind eyes. Ocelli in an acute angle, separated from each other by less than half distance to the nearest eye, POL : OOL = 4 : 10. Frons hardly shining, with very dense minute and also with larger scattered, and finer punctures beneath, deeper above, being the deepest on vertex, with a feeble torus between eyes reaching into ocular sinus at the pointed apex of the apical white mark; surface sharply curved down in lateral view. Orbital groove discernible only as a narrow shining line along about one-third of outer eye margin. Antenna slender, scape conspicuously compressed laterally, nearly oblong, hardly broader and thicker basally than apically, longer inside than on outer side; pedicel nearly quadrangular, antennal 3—12 about twice as long as broad,

length (and breadth) proportions of antennal joints 1—9 = 12 inside (8) : 4(6) : 9 (5.5) : 10(5.5) : 10(5.3) : 10(5) : 9(5) : 9(5) : 9(5). Pronotum only slightly thickened on disc, pronotal tubercle conspicuously convex and protruding, diameter of thorax here conspicuously broader than across tegulae (48.5 : 42), viewed from above (Fig. 13); basal hump remarkably convex, the hollow behind that finely and longitudinally wrinkled; punctures of disc denser than on head. Mesonotum, scutellum, mesepisternum next to tubercle with deep and dense punctures, the same fine and scattered below. Propodeum quite flat, median sulcus very broad basally and short, hardly reaching to the middle of segment, surface with microscopically fine rugosity. Metapleural suture well developed. Last abdominal segment strongly compressed laterally, lower margin slightly curved in lateral view (Fig. 45) and triangularly pointed apically. Claws normal.

♂. Length 4.8—5.5 mm. Similar to the female, though basal half of mandible and lower half of outer eye margin black, also a small spot on clypeus medially somewhat blackish, scutellum black; white spots and streaks on abdomen and legs smaller, middle and hind coxa nearly entirely black, only apically with a small white spot; the white streak on fore femur inside present only apically, the white line on middle tibia interrupted, hind spurs black. Antennal joints 6(8)—13 pale brownish ferruginous. White spots of tergites 4—5 often reduced. The row of tomentose hairs very short and extend over the apical third of the joint. Head broader than long (35 : 30), moderately thickened behind eyes. POL : OOL = 4 : 8. Frons with very fine sculpture and almost entirely hidden under the pubescence, outline less sharply curving down, also the raised torus between ocelli and ocular sinus less prominent. Antenna slender, scape and pedicel similar to those of female, length (and breadth) of antennal joints 1—7 = 7(6.5) : 3(5) : 6(3) : 5(3) : 5(3) : 5(3) : 5(3). Narrow orbital groove reaching nearly to the middle of outer margin. Disc of pronotum flat, pronotal tubercle conspicuously convex and protruding, diameter of thorax here distinctly broader than across tegulae (33 : 29), viewed from above; basal hump moderately convex. Punctures of mesonotum-mesepisternum somewhat more scattered. Sternite and genitalia of male resemble those of *ligea* and of *australensis*, but differ from them in several details. Sternite 9 (Fig. 14) flat, raised only basally, lateral sides nearly parallel and with a tuft of long hairs before apex. Outer side of the paramere of male genitalia with some scattered hairs, especially apically (Fig. 44), inside elongated like a beak (Fig. 44), lamina volsellaris longer, etc.

This species varies in the sculpture of frons: corresponding usually to the holotype, rarely the punctures and the transversal torus finer (Senegal 2 ♀, Gambia 1 ♀ and Cameroun 1 ♀). Posterior end of male sternite 9 in fact pointed and present in 2 males (Nigeria: Benin, Ilora), otherwise usually truncate owing to backward bending tip of the segment (Gambia 3 ♂, Nigeria: Ikene 1 ♂ and Sierra Leone 1 ♂). In colour: hind femur entirely black usually (Senegal: Kedougou 1 ♀ and Niokolou 2 ♀, Gambia 3 ♀, 3 ♂, Haute Volta Rouge 2 ♀, Nigeria 2 ♂, Sierra Leone 1 ♂, Cameroun 1 ♀), only upper half of hind femur reddish ferruginous (Haute Volta Noire 1 ♀, Nigeria: Ikene 1 ♂, and ? Zaire: Bwamianda 1 ♀) or hind femur nearly entirely reddish ferruginous (Senegal: Mbour 1 ♀, Gambia 1 ♀, Haute Volta Noire 1 ♀, Upper Volta: Ouagalougou 1 ♀, Nigeria 2 ♀ and Cameroun 1 ♀); fore femur usually partly reddish ferruginous on the specimens with black hind femur, also middle femur being partly reddish ferruginous, when the hind femur largely red. Clypeus usually white, rarely with a small or large black spot medially (Nigeria: Benin, Ilora 2 ♂, Zaire: Kasongo 1 ♂) and in exceptional cases largely black, together with mandible, though lower margin and a large spot on clypeus medially white (Sierra Leone 1 ♂). Pronotal tubercle rarely largely black, only with a medial white spot (Sierra Leone 1 ♂, Nigeria: Benin 1 ♂). Tergites 4—5 black entirely and also the other white spots reduced (Sierra Leone 1 ♂)

Distribution. Gambia, Senegal, Sierra Leone, Upper Volta, Nigeria, Cameroun and Zaire.

Ceropales haupti spec. nov.

Ceropales diversipes HAUPT, 1962, Bull. Res. Coun. Israel 11B: 53 ♂ (allotype)

Ceropales diversipes: 1966, PRIESNER, Israel J. Ent. 1: 151, 153 ♂ (as a syn. of *sabulicola* PRIESNER)

Specimen examined: 1 ♂. Holotype. Israel = "Allo-Type" red label, "Gewa Palestine 5-9. 1943 leg BYTINSKI-SALZ", "*Ceropales diversipes* HPT. ♂ HAUPT det. 1952" with HAUPTS writing, "*sabulicola* Pr. ♂ det. H. PRIESNER" with PRIESNERS writing, ♂ (Tel-Aviv University Zoological Museum, Tel-Aviv, Israel).

According to HAUPT (1962): "♂: 5 mm. Coloration and patterns similar to those of the ♀. Abdomen with interrupted yellow borders on tergites 1-4. Middle and hind legs red brown from the base of their femora. Wings as in the ♀." "Allotype: ♂, Gewa, 5. IX".

For corrections and additions to the original description please confer the key and the following notes. The light colour of the body white. Mandible black basally, labrum and clypeus dark brown, excepting the dark ferruginous lower margins, clypeus with 4 small white spots with obscure borders along upper margin, supraclypeal area white with two large triangular black spots below antennae. Tergite 7 emarginated at apex with a large white spot. Frons rather sharply curved down below fore ocellus. Pronotal disc flat, tubercle normal. Mesonotum with scattered and deeper, mesepisternum with denser and deeper punctures. Propodeum conspicuously flat over its entire length, and microscopically finely rugulose, medial sulcus short, resembling an equilateral triangle. Lateral side with a distinct metapleural suture beginning from the medial pit of suture between postnotum and propodeum laterally, which is up curving to lateral corner. Abdomen partly dark reddish translucent. Middle claws normal, with a minute tooth, (fore and hind claws missing). Sternite 9 raised longitudinally like a roof and somewhat resembles that of *juncoi* and *kriechbaumeri*, but differs especially by the weakly emarginated only lateral margin, by surface with scattered punctures, by the very narrow and deep apical excision (Fig. 17).

Since the holotype of the *diversipes* HAUPT is a synonym of *C. kriechbaumeri* MAGRETTI, I have named the male allotype in honour of the eminent specialist of Pompilidae, the late Dr. h. c. H. HAUPT.

Distribution. Israel.

Ceropales helvetica helvetica TOURNIER

Ceropales helvetica TOURNIER, 1889, Ent. genèv. 1: 38, 40 ♀

Ceropales nigripes COSTA, 1886, Rc. Accad. Sci. fis. mat. Napoli 25: 282 ♀ (nec CRESSON 1867) = *costae* by DALLA TORRE, 1895

Ceropales nigrita TOURNIER, 1889, Ent. genèv. 1: 39 ♂ as syn. by DE BEAUMONT, 1947

Ceropales nigripes: 1892, FOX, Trans. Am. ent. Soc. 19: 62

Ceropales helvetica: 1892, FOX, Trans. Am. ent. Soc. 19: 61

Ceropales costae: 1895, DALLA TORRE, Wien. ent. Ztg. 14: 90 as syn. by DE BEAUMONT, 1947

Ceropales helvetica: 1895, DALLA TORRE, Wien. ent. Ztg. 14: 91

Ceropales costae: 1897, DALLA TORRE, Cat. Hym. 8. Fossor.: 341

Ceropales helveticus: 1897, DALLA TORRE, Cat. Hym. 8. Fossor.: 343 ♀

Ceropales nigritus: 1897, DALLA TORRE, Cat. Hym. 8. Fossor.: 343 ♀

Ceropales helvetica: 1927, HAUPT, D. ent. Z. 1927, Beih.: 301-302 as a syn. of *albicinctus* ROSSI, 1790

- Ceropales scalaris* NOSKIEWICZ, 1930, Polskie Pismo ent. 9: 92 syn. by DE BEAUMONT, 1947
- Ceropales cribrata* GUSSAKOVSKIJ, 1931, Ezheg. zool. Mus. 32: 3, 10 ♀, ♂ (nec COSTA, 1881), syn. by DE BEAUMONT, 1947
- Ceropales nigrita*: 1931, GUSSAKOVSKIJ, Ezheg. zool. Mus. 32: 25 ♀
- Ceropales helvetica*: 1931, GUSSAKOVSKIJ, Ezheg. zool. Mus. 32: 25 ♀
- Ceropales minutus* HAUPT, 1938, Mitt. zool. Mus. Berl. 15: 604 ♂ ? syn. by DE BEAUMONT, 1947
- Ceropales helveticus*: 1947, DE BEAUMONT, Mitt. schweiz. ent. Ges. 20: 506, 509 Figs. 2, 7, 8, 14 ♀♂ (design. of lectotype)
- Ceropales helveticus*: 1954, MÓCZÁR, Folia ent. hung. 7: 147
- Ceropales helveticus*: 1956, MÓCZÁR, Fauna Hung. 13 (5): 76 ♀♂
- Ceropales helvetica*: 1956, MOREL, NOUVEL and RIBAUT, Bull. Soc. Hist. nat. Toulouse 91: 340
- Ceropales helvetica*: 1958, NOUVEL and RIBAUT, Faune terr. eau douce Pyrénées-Orient. 1: 18
- Ceropales helveticus*: 1960, WOLF, Boll. Mus. civ. Venezia, 13: 11 ♀
- Ceropales helveticus*: 1963, PRIESNER, Boll. Ist. Ent. Univ. Bologna 26: 50
- Ceropales (Ceropales) helveticus*: 1965, WOLF, Nachr. naturw. Mus. Aschaffenh. A. 72: 38 ♀♂
- Ceropales helveticus*: 1965, PRIESNER, Sitzungsber. Abt. I. 174: 78 ♀
- Ceropales helveticus*: 1969, PRIESNER, Naturkundliches Jb. Stadt Linz: 116, 119
- Ceropales helveticus*: 1970, WOLF and DINIZ, Mem. Estud. Mus. zool. univ. Coimbra, No. 311: 19 ♀♂
- Ceropales (Ceropales) helveticus*: 1970, WOLF, Atti Soc. ital. Sci. nat., Milano, 110: 410 ♀♂
- Ceropales helveticus*: 1971, WOLF, Acta faun. ent. Mus. natn. Pragae 1971 (Suppl. 3): 59 ♀
- Ceropales (s. s.) helveticus*: 1972: WOLF, Ins. Helv. Fauna 5 Hym. Pomp.: 167, 168 ♀♂
- Ceropales (Ceropales) helveticus*: 1978, TOBIAS, Opred. nasekom. Evrop. chasti S. S. S. R. III. Prepon. 1: 146
- Ceropales (Ceropales) helvetica*: 1986, WAHIS, Notes faun. Gembloux 12: 35

Specimens examined: 80 ♀, 41 ♂. Lectotype. Switzerland = "Peney Coll. TOURNIER" (=Geneva), "*C. helvetica* TOURN", "P. 4. VII. 86", "Typus" red label, "*Ceropales helvetica* TOURN. TOURNIER det." ♀ (Museum d'Histoire Naturelle, Genève). "*C. nigrita* TOURN" "Reculer 16. VIII. 85, Cⁿ TOURNIER" "Typus", "*Ceropales nigrita* TOURN, TOURNIER det", "Jura" 1 ♂ holotype (Geneva). — Greece = "O. Kreta, Iráklion (Cándia), 3. 5. 25 A. SCHULZ S. G.", "Type" red label, "*Ceropales* ♂ *minutus* HPT det HPT, 1929." (strongly damaged by *Anthrenus*, only anterior part of thorax, some legs and wings present) 1 ♂ holotype (Berlin). Non paratypic material: France = Carpentras 20—22 Aug 1935 J. DE BEAUMONT 2 ♀; Banyus-sur-mer Jun—Sep J. R. DENIS 3 ♀, 1 ♂, (Lausanne) and 2 ♀ (Budapest); Plateau St. Michel, Menton 7 Sep 1952 1 ♀ (Budapest). — Hungary = 1 ♀, 1 ♂ (no further data) (Wien); see MÓCZÁR (1954). — Romania = Agigea Apr—Sep 1966—1968 NAGY on *Daucus carota* 4 ♀, 5 ♂ (Budapest); Caraorman Jul—Aug 1968 NAGY 3 ♀ (Budapest). — Italy = Callian 23—31 Jul 1951 LINSSENMAIER, 1 ♀ (Lausanne); Sicily = Naxos 17 Mai 1961 J. GUSENLEITNER, 1 ♀ (Coll. GUSENLEITNER). — Greece = Crete: Herakleon 30 Jul 1971 1 ♀ (Wien) and 1 ♀ (Budapest); Omalos 18 Aug 1906 Biró L. 1 ♀ (Budapest). — Spain = Alicante 1 ♀, Cañada Valencia GINER MARI 1 ♀ (Madrid); Las Correderas (Jaen) 600 m 16 Jun 1961 1 ♀ (Budapest) and 1 ♂ (Leiden); Escoria MERCET 2 ♀ (Madrid); Lorca Murcia Aug 1943 G. MENOR, 1 ♀ (Budapest); Picasent Valencia GINER MARI, 2 ♀ (Madrid). — Morocco = Goulimine 5 May 1947 J. DE BEAUMONT, 1 ♀ (Lausanne); Tiznit Oued Massa 10 Jun 1947 J. DE BEAUMONT, 1 ♀ (Lausanne). — Algeria = La Calle 29 Sep 1910 CH. FERTON, 2 ♀ (Paris and Budapest). — Cyprus = Cheskes MAVROMOUSTAKIS, 1 ♂ (Budapest); Akrotizi 20 May 1938, 1 ♀ (Budapest); Farnagusta 6 Sep 1957, 1 ♀ MAVROMOUSTAKIS (Budapest); Limassol Sep. 1952, 1957 MAVROMOUSTAKIS, 3 ♀ 1 ♂ (Leiden) 2 ♂ (Buda-

pest) and 1 ♂ (Madrid); Yermasogla Hills 31 Aug. 1951 MAVROMOUSTAKIS, 1 ♂ (Leiden); Zakaki 20 May 1938, 1 ♀ (Budapest), Jun 1936, 1 ♀ (Leiden), 5 Jul 1936, 2 ♀ (Budapest and Leiden), Aug. 1935, 1 ♂ (Budapest). — Turkey = Anatolia, Antakya 1–7 Jun 1965, 1 ♀, 1 ♂, 25 May 1967 1 ♀, and 25 May 1970 (2 ♀, 1 ♂ Coll. GUSENLEITNER and 1 ♀ Budapest); Erdschias 9 Jun PENTHER, 1 ♀ (Wien); Ürgüp 9 Jun 1970 1 ♂ (Coll. GUSENLEITNER). — Sirie = Damascus Rte de Kissoue 2–18 May 1960 J. DE BEAUMONT, 1 ♀ (Lausanne). — Iraq = Darafarhan Sal'mnek u. 1 Oct 1927 ALEXANDROV, 1 ♀ (Leningrad). — Israel = Arugot 25 May 1981, 1 ♀, 'En Hedva 15 May 1985, 1 ♀ Q. ARGAMAN (Coll. Q. ARGAMAN); Giva at Olga 22 Jun 1981 Q. ARGAMAN, 1 ♂ (Coll. ARGAMAN) and 1 ♀ (Budapest); Herzliyya 21 Jun–Aug 1981 6 ♀, 3 ♂, Apr, Jul–Aug 1983 A. FREIDBERG, 7 ♀, 10 ♂ (9 ♀, 9 ♂ Tel-Aviv, 4 ♀, 4 ♂ Budapest) K. Mnymon 23 Aug 1982, 1 ♂ (Budapest), W. Hallaha 3 May 1983, 1 ♂ and M. Gillboa 18 June 1986 all Q. ARGAMAN, 1 ♂ (Coll. ARGAMAN) — Iran = Teher. Kamalabad 28 Aug 1955 F. SCHMID, 1 ♀ (Lausanne). — Russian S. S. R. (Europe) = Bogbo Astrachansk 12 Jul 1936 MELCSIRENKO, 1 ♂, Derbent, Dagestan 3. Jul 1925 KIRICSENKO, 1 ♀, Sarepta 21 Jun 1926 SHESTAKOV, 1 ♀, ?Kom-Kupf 15 May 1927 GUSSAKOVSKIJ, 1 ♀ (Leningrad). — Kazakh SSR: Balamurun Djulek, 1 ♀, Tsholak-Espe Juz. Betpak dala 48° 15' 68" 1–2 Jul 1936 GUSSAKOVSKIJ 1 ♀, Tartugay 3–15 Jun 1929 SHESTAKOV, 1 ♀ (Leningrad). — Turkmen SSR = Firjuza Zakasp 17 May 1928 GUSSAKOVSKIJ, 1 ♀ (Budapest); Tshili Kopetdag 6–8 May 1913 GOLBEK, 1 ♂ (Budapest). — Uzbek SSR = Farab z. Buchara 10 May 1914 GOLBEK, 1 ♀ (Leningrad). — Tadzhik SSR = Ur Kok-Bulak na Sur Garebl st. Gikaz 15 Jun 1930 GUSSAKOVSKIJ, 1 ♀ (Leningrad); KONTDARA 1100 m 13 Jun 1939 GUSSAKOVSKIJ, 1 ♂ (Budapest), Jul–Aug 1937–1939 GUSSAKOVSKIJ, 2 ♂, 1 ♀ (Leningrad and Budapest). — Mongolia = Bajan-chongor Aimak Ich bogd, 25 km S Bogd 1–24 Jul 1979 DORN, 1 ♀ (Coll. WOLF).

DE BEAUMONT (1947) synonymized *C. cribratus* GUSSAKOVSKIJ with *helveticus* TOURNIER on the basis of GUSSAKOVSKIJ's description. After examining GUSSAKOVSKIJ's material I subscribe to DE BEAUMONT's decision. Also DE BEAUMONT enumerated further synonyms of *helveticus* (= *nigritus* TOURN., *nigripes* COSTA, nec CRESSON, *costae* DALLA TORRE, *scalaris* NOSKIEVICZ and ? *minutus* HAUPT) owing to the variability of this species. DE BEAUMONT write (1947): "il me semble très probable que le *C. minutus* HAUPT (1930), . . . soit aussi un petit ♂ de cette espèce, à dessins jaunes peu développés et semblable en cela à *nigrita* TOURN." On the basis of the examination of the holotype of *minutus* HAUPT and lectotypes of *helvetica*, *nigrita* I agree with DE BEAUMONT's opinion.

Addition to the descriptions: The row of the tomentose and erect hairs of the hind metatarsus is distinctly shorter than the breadth of tarsus, and reaching not to half the length of joint. Sternite 9 longitudinally raised like a roof, deeply and narrowly excised apically, here slightly curved upwards and lateral side with one obtuse tooth before the medial part (Fig. 46). Male genitalia fairly broad and simple, paramere remarkably broad, gradually narrowing inwards and with a short lobe, resembling a beak (Fig. 47).

This species is very variable. Frons remarkably deeply and closely punctured especially in the southern countries (Algeria, Spain, France, Israel partly, Turkey), the punctures are deep and fairly scattered (southern part of European USSR, also in Cyprus). However, specimens (♀) both with shallower and deeper, as well as denser and more scattered punctures were captured at close-by localities (e.g. Hungary: Órszentmiklós and Zamárdifelső, 130 km). Also males were found both with deeper and with shallower punctures. Lower face usually (♀) entirely white (Spain, Sicily, Turkey, Israel, Iran), but brownish spot(s) or blackish longitudinal lines often occur on clypeus medially (Algeria, Spain, France, Hungary, Cyprus, Turkey, Israel). Sometimes the brownish black medial spot or line extends so, that the clypeus being largely black and only a small and round yellowish line present on the margin (Hungary: Kunfehértó, ♀), or this line appears only on both sides of the clypeus (France, 1 ♀, Greece: Herakleon 1 ♀), lastly the white colour may be reduced to two small spots laterally near to eye margin (Yugoslavia: Crkvenica, 1 ♀). The lower lateral margin of the clypeus of this female is dark ferruginous, also all coxae, trochanters ferruginous, and interest-

ingly enough also orbital groove distinct. Therefore, this female stands near to *karooensis* ARNOLD found in Africa. Labrum, mandible as well as supraclypeal area largely, sometimes entirely brownish black in a number of males (Spain, Cyprus, Hungary, Romania, Israel, Tadzhik SSR), but there are also males with largely whitish supraclypeal area (Cyprus, Russian SSR, Israel). Abdominal bands 1—4 (♀) or 1—4 (♂) usually broadly interrupted medially, only rarely 1 (Iran) or 1—4 (Tadzhik SSR) continuous. Exceptionally lower side of coxae (♀) partly ferruginous (on some specimens from Cyprus, Israel, Crete: Herakleon). Rarely middle coxa (♀) with basal white spot (Algerie, Turkey: Erdschias). Hind femur always ferruginous, only rarely infuscated; also hind tibia always infuscated and hind tarsi brownish or blackish at least on outer side. Middle and hind femora ferruginous (France, Crete, Turkey, Israel, Iran) and often all femora ferruginous (Morocco, Algeria, Spain, France, Sicily, Hungary, Romania, USSR, Cyprus, Iran, Israel). There are also small males with largely black hind femora (Israel), only the end posteriorly dark reddish-brownish, pronotal disc identical with that of *h. helvetica* (Morocco, Romania: Agigea, Limassol, Israel, Turkey: Ürgüp) and with frons hardly (Morocco) and normally punctured (Agigea, Israel, Ürgüp).

Distribution. Switzerland (TOURNIER, 1889). "Europe mérid., Taurie, Caucase at Turkestan" (DE BEAUMONT, 1947). Hungary, Yugoslavia (MÓCZÁR, 1954). Cyprus (WOLF, 1970). S. Frankreich, Portugal, Spanien, n. Italien, sw. Schweiz, s. Tschechoslowakei, s. Polen, Rumänien, Bulgarien; Morocco, asiat. Türkei, Gruzinische und Turkmenische SSR." (WOLF, 1971). Greece, Algeria, Cyprus, Sirie, Iraq, Israel, Iran, Russian SSR (Europe), Kazakh SSR, Uzbek SSR, Tadzhik SSR, Mongolia.

***Ceropales helvetica bogdoensis* MÓCZÁR ♂ nov.**

Ceropales (Ceropales) helvetica bogdoensis MÓCZÁR, 1977, Annl. hist.-nat. Mus. natn. hung. 69: 254 Pl. I. Fig. 6, Pl. 2. Fig. 2 ♀

Ceropales helveticus bogdoensis, 1981, WOLF, Mitt. zool. Mus. Berl. 57: 210 ♀

Specimens examined: 7 ♀, 7 ♂. Holotype. Mongolia = Central aimak, Bogdo ul, 31 May 1964 Z. KASZAB, ♀ (Budapest). —

Further material. Kazakh SSR = "Gartugaj 3—15. VI. 1929 A. SHESTAKOV", "*Ceropales cribrata* COST V. GUSSAKOVSKIJ det." with GUSSAKOVSKIJ writing 1 ♂ (Leningrad). — Russian SSR = ? S. Giva fer. Omong 10 Jul 1927, 1 ♀ (Leningrad). — Syria = Damas. Barze 2—18 May 1960 J. DE BEAUMONT, 2 ♀ (Lausanne and Budapest); Rte de Kissoue 2—18 May 1960 J. DE BEAUMONT, 1 ♀ (Lausanne); Rhozlaniyé 2—18 May 1960 J. DE BEAUMONT, 1 ♂ (Budapest). — Israel = Antipatris 29 Apr 1986 Q. ARGAMAN, 1 ♂ (Coll. ARGAMAN); Ben Ammi 1 Mar. 1981 Q. ARGAMAN, 1 ♂ (Coll. ARGAMAN); Herzliyya 19 Jul 1982 Malaise trap A. FREIDBERG, 1 ♀ (Tel-Aviv); Yavno 9 Sep 1982 Q. ARGAMAN, 1 ♂ (Budapest). — Morocco = 20 km N Tiznit 24 Mar 1987 J. GUSENLEITNER, 1 ♀, 1 ♂ (Coll. GUSENLEITNER); Uw. Midelt 16 Jul 1975 J. GUSENLEITNER, 1 ♂ (Budapest).

♂.—Length 3.3 mm. Similar to female, but differs from it in several respects. Labrum brown; clypeus black, with dark ferruginous lower margin, supraclypeal area, eye margin and a medial spot between antenna, white, frons without white spot. Lower side of antennal joints more extensively ferruginous towards the apex. Outer side of middle tibia nearly always with two yellowish white spots basally and apically (♀♂).

Frons quite smooth, shining with some punctures above the ocular sinus along the eye margin, frons with a shallow deepening below fore ocellus, frons convex, only moderately curved down, orbital groove narrow. Antennal joints slightly thickened towards the tip. Lateral deepening of pronotum smooth, not wrinkled. Medial sulcus of propodeum short, about as long as one-fourth length of declivous part (similarly to ♀). Metapleural suture not present. The row of the tomentose hairs of hind metatarsus nearly half as long as the breadth of joint and reaching nearly the middle of the joint.

The white marking is reduced in a very small specimen (Syria, ♂): head entirely black, thorax with small white spots on posterior margin of pronotum laterally and on postscutellum, abdomen nearly entirely black, minute white spots present only on first tergite laterally and the last one. The white marking extended exceptionally in specimens from Morocco (♀♂), on which face white nearly, and punctures of frons distinctly moderately.

Distribution. Mongolia (MÓCZÁR, 1977). Kazakh SSR, Russian SSR (?), Syria, Israel.

Ceropales indica spec. nov.

Specimens examined: 11 ♀, 2 ♂. Holotype. India = "Deesa 1.00." ♀ (British Museum, Natural History, London). Paratypes. "Deesa 12.99" and "NURSE Coll. 1915-34" 2 ♀ (London), 3 ♀ (Hym. Typ. No. 3777-3778 and 3806, Budapest) and with the same locality and label but "8.01" 1 ♀ (London); "Delhi 3. 5. XI. 29 Dr. ENSLIN" 1 ♀ (Hym. Typ. No. 3779, Budapest). — "Tuticorin, S. India 18-X-38", "B. M.-C. M. Expan. to S. India, Sept. Oct., 1938" 1 ♂ (allotype) (Hym. Typ. No. 3780, Budapest) and 1 ♂ (London). — Pakistan = "T. R. BELL Karachi. 15/8 03" "India T. M. BELL B. M. 1934-394" 1 ♀ (London).

Non-paratype material. India = Deesa Sep. 1901, 1 ♀ (London). — Pakistan = Karachi 13 Aug 1903 T. R. BELL, 1 ♀ (Budapest).

♀.—Length 4.7—6.5 mm, Black, lower face entirely, a spot between antennal sockets on the raised lower margin of frons, ocular sinus broadly, a square spot on frons medially, outer eye margin up to top of eyes, spots on the lower side of antennal joints 1—2, pronotal disc entirely, lateral tubercle, hump and lower apical tip of pronotum, tegula except its hyaline margin, large spot on scutellum, postscutellum, lateral corners of propodeum, apical band on tergite 1, lateral streaks on 2—4, last tergite largely, fore coxa below, a small spot below and a short line on the outer margin of the middle and hind coxae, the same on femora apically, upper side of fore tibia, two elongate spots on middle tibia basally and apically outside, tarsal joints of fore and middle legs and tibial spurs, white. Antennal joints ferruginous, moderately brownish infuscated, joints 3—4 and mandible apically lighter. Pronotum laterally in part, legs extensively ferruginous, excepting the black spots basally on fore and hind coxae. Hind tarsal joints moderately infuscated. Wings hyaline, hardly infuscated apically, veins brown, pterostigma yellowish brown. Body, especially propodeum, and thorax laterally with short silvery pubescence.

Head hardly broader than long (39 : 35), and narrowed behind eyes. Ocelli in an acute angle, POL : OOL = 5 : 9. Frons moderately bent below fore ocellus, shortly flat below fore ocellus and raised between antennal sockets, surface finely granulate, slightly shining with some scattered punctures. Vertex with some larger punctures laterally. Temple thickened below, but no distinct orbital groove developed. Antenna about as long as head and thorax together, all joints distinctly longer than broad, flagellar joints nearly of equal dimensions, except the first and the last ones, length (and breadth) proportions of antennal joints 1—8 = 8(6) : 5(4) : 7(4.5) : 7(5) : 6.5(5) : 6.5(5) : 6.5(5) : 6.5(5). Pronotal disc convex, thickened on lateral view (Fig. 21), concave lateral side with a row of distinct wrinkles. Mesonotum with sparse and distinct punctures. Scutellum convex, hardly impressed posteriorly. Postscutellum only moderately raised and impressed medially. Propodeum conspicuously flat in lateral view, posterior margin raised laterally, hardly longer than broad (measured across spiracles): 28 : 23, surface with microscopically fine, transversal rugulosity, median sulcus broad in front, short, about one-third as long as length of propodeum and transversely wrinkled. Metapleural sulcus not developed, rarely hardly discernible; mesepisternum with denser and rather deeper punctures than on mesonotum. Sternal

lobes pointed apically. Last abdominal segments elongated and pointed apically (Fig. 22), lower margin nearly straight, slightly curved above, in lateral view. Claws normal, hind claws rectangularly bent.

♂.—Length 4.1—5 mm. Similar to female, but differs in some details. Mandible black with a minute white spot basally. Clypeus with the trace of a minute pale brownish or a small blackish spot. Inner margin of the white spot on frons straight and nearly parallel. Antenna brownish black, lower side darker ferruginous, last joints lighter. Lower margin of pronotum laterally always, apical tip sometimes black. Tergite 5 with white lateral streaks, 6 black. All coxae extensively brownish black, hind femur entirely ferruginous. A row of tomentose hairs on hind metatarsus inside extends farther than half length of joint, the length of the hairs equals the breadth of the joint (Fig. 7).

Pronotal disc rather flat in lateral view, hardly thickened. Lateral deepening of pronotum wrinkled longitudinally. Punctures of mesonotum finer than in female. Postscutellum distinctly raised, nearly as high as scutellum in lateral view. Ratio of breadth and length of propodeum 29 : 22, propodeal sulcus also remarkably broad basally, but slightly longer, not reaching half the length of the segment. Metapleural sulcus not developed; mesepisternum with moderately dense punctures. Sternite 9 weakly raised like a roof longitudinally and very deeply excised apically, lateral margin emarginate (Fig. 48). Upper margin of the prolongation of paramere of genitalia bisinuate (Fig. 49).

The colour is not uniform on this species. The lateral edge of propodeum rarely ferruginous in parts (Deesa), abdominal segments sometimes more or less brownish ferruginous (Karachi, Deesa, Delhi), and coxae (especially the hind ones) brownish ferruginous (Deesa 1 ♀, Sep. 1901) (resembling *judicatrix* NURSE), metapleural sulcus discernible in traces.

Distribution. India, Pakistan.

Ceropales judicatrix NURSE

Ceropales judicatrix NURSE, 1902 J. Bombay nat. Hist. Soc. 14: 85 Fig. 15 ♀♂

Specimens examined: 3 ♀, 2 ♂. Lectotype. India = "Type" (round label with red margin), "Deesa 7.98", "♂", "Type", "Syntype" (round label with blue margin), "*Ceropales judicatrix* (NURSE)." "NURSE Coll. 1915-34", "B. M. Type Hym. 1971" ♂ (British Museum, Natural History, London). Paralectotypes. India: "Syntype" (round label with blue margin), "Deesa 8.01", "52", "P. CAMERON Coll. 1914-110", "*Ceropales judicatrix* NURSE" 1 ♂ (London); with the same locality and date but "♀" and "NURSE Coll. 1915-34" 1 ♀ (Hym. Typ. No. 3781, Budapest); "Syntype", "Deesa 7.98", "♀" "Type", "NURSE Coll. 1915-34" (head missing) 1 ♀ (London).

Non-paratypic material. Israel = Selomi 8 Mar 1981 Q. ARGAMAN, 1 ♀ (Coll. ARGAMAN).

The four specimens of the original material bear the label: "Syntype", only the first one has also a red type-label, consequently, it must be regarded as the lectotype (♂) and the other syntypes as paralectotypes.

NURSE's diagnosis can be complemented as follows: antennal joint 3 (♂) and also 4 (♀), partly 5 (♀) light ferruginous below. Labrum entirely (♂) or sometimes ivory-white, excepting the medial black spot. Posterior part of propodeum dark reddish laterally. Lateral corners of clypeus obtuse-angled, not rounded. Frons flat, with a fine frontal sulcus and curving down over its one-third length between fore ocellus and antennae (♀♂). Outer orbit slightly thickened, present as a shining line along the eye margin above mandible, not reaching the middle of eye. Disc of pronotum thickened, rather convex, in lateral view and rather steeply sloping to the mesonotum; lateral side of pronotum with longitudinal wrinkles. Propodeum conspicuously flat

over its entire length, in lateral view, surface finely, transversely rugulose with a rather deep and remarkably narrow sulcus, reaching at least nearly to the middle (♂) or beyond the middle of the declivous part; lateral side of propodeum with a remarkable and finely cross-wrinkled metapleural suture. Mesepisternum with larger and very deep punctures. Lower margin of the last abdominal segment curved (Fig. 53). All claws normal, middle claws with a short erect apical and with an acute subapical tooth, not bifid. The examination of the male genitalia and sternite 9 can settle the relationship between *judicatrix* and *indica*.

The one female (collected in Israel) differs from the typical form as follows. Flagellum black above, only joint 1 ferruginous below; tergite 2 black posteriorly; mandible brownish black in *judicatrix* basally and largely black in specimen from Israel; middle coxa still with a yellow spot basally; hind tibia not only apically, but largely infuscated; middle tarsi not yellowish ferruginous but brownish infuscated and hind ones not brown, but black.

Distribution. India (NURSE, 1902). Israel.

Ceropales juncoi GINER

- Ceropales cribratus juncoi* GINER, 1945, Eos, Madr. 21: 243 Fig. 10a, b, d ♀
Ceropales cribratus juncoi: 1947, DE BEAUMONT, Mitt. schweiz. ent. Ges. 20: 508
Ceropales sabulicola PRIESNER, 1955, Bull. Soc. ent. Egypte 39: 25 ♀ syn. n.
Ceropales sabulicola: 1960, PRIESNER, Polskie Pismo ent. 30: 66 ♀
Ceropales sabulicola: 1966, PRIESNER, Israel J. Ent. 1: 151—153 ♀
Ceropales cingulata N. nom. in collection (Berlin).

Specimens examined: 12 ♀, 4 ♂. Holotype. Spanish Sahara = "Tuisguirrentz Draa V. 44 Mateu", "Typus" red label, "*Ceropales* ssp. *juncoi* GINER det. GINER MARI, 1945", "Collection GINER MARI" ♀ (Consejo Superior de Investigaciones Científicas Instituto Español de Entomología, Madrid). — Egypt = "Magadla, 7. 8. 32." 1 ♀ lectotype of *C. sabulicola* PRIESNER (Hym. Typ. No. 3782, Budapest); "Aegypten: Fajun JUL. EHRENBERG", "*C. cingulata* N.", 1 ♀ paralectotype of *sabulicola* PRIESNER (Berlin); "Helwan 4. 11. 33 Halfa", "Egypt Min. Agric. (Egypt) Coll. FARAG", 1 ♀ paralectotype of *sabulicola* PRIESNER (Cairo); Kerdasa Egypt Dr. H. PRIESNER, (absent in orig. descr.), Paratype red label, *sabulicola* Pr. with PRIESNER's writing, 1 ♀ (Wien);

Further material. Morocco = Tiznit Sidi Moussa 3 May 1947, *sabulicola* det DE BEAUMONT, 1 ♀ (Lausanne); Port Lyautel Mehdia 24 May 1947 J. DE BEAUMONT, 1 ♂ (Lausanne). — Senegal = M'Bour 27 Oct 1979 B. SIGWALT, 1 ♂ (Paris); Kedougou 1—10 May 1981 Mal. trap, 1 ♀ (Coll. WAHIS). — Chad = N Djamena 29 Mar 1978 G. G. M. SCHULTEN, 1 ♀ (Amsterdam). — Sudan = Khor Arbaat Delta Apr—May H. B. JOHNSTON (*C. lawrencei* ARNOLD var.? det ARNOLD), 1 ♂ (London). — Somali = Bulo Burti Jan 1942, 1 ♀ (Cape Town). — Egypt = Ben Yusef (near Cairo) 15 Apr 1934 A. MOCHI, 1 ♀ (Coll. MOCHI). — Israel = Eilat 6 Sep 1974 A. FREIDBERG, 1 ♀ (Tel-Aviv). — Pakistan = Krchi (? = Karachi) Bombay Presidency pres. by E. COMBER 1910-255, 1 ♂ (Budapest).

PRIESNER did not designate the holotype and paratypes of his *sabulicola* sp. n. in description, consequently, I designate herewith as lectotype the first specimen enumerated by him "Magadla" (♀) (on locality-label, but in diagnosis "Megadla") and "Helwan" and Fajun as paralectotypes (♀) on the basis of PRIESNER's diagnosis and the examined original material.

According to DE BEAUMONT (1947): "GINER MARI a récemment décrit (1946)" (correctly 1945) "une ssp. *juncoi* de *cribratus*, provenant du Sahara espagnol; cette forme semble très différente de maroccana et je ne suis pas certain qu'elle se rattache réellement à *cribratus*". Owing to the help of Mrs E. MINGO (Madrid) I could examine the single female, consequently, the holotype of the "ssp. *juncoi*" and I can confirm DE

BEAUMONT's opinion: *juncoi* is not related to the bifid *Hemiceropales cribrata*, but is identical with *C. sabulicola* PRIESNER described in 1955. The differences between the holotype and the lectotype, the paralectotype are slight (frontal sulcus with shallower and narrower, more or less denser punctures in *juncoi*, this occur also in the females from Morocco; see later).

Some additions to the descriptions: Last tergite deeply emarginated (♂, Fig. 23). Last segment (♀) more pointed apically (Fig. 52), than on *kriechbaumeri*. All spurs of legs white (♂). Sternite 9 (Fig. 25), penis valve (Fig. 51) of the male genitalia rather similar to *kriechbaumeri*, but sternite 9 differs especially by the deeper excision apically by impunctate surface, and by the different penis valve (Figs. 50—51). The genitalia are easily separable, namely, paramere of *juncoi* is remarkably elongated inside apically (Fig. 50) and that of *kriechbaumeri* is conspicuously broadened apically (Fig. 56).

This species varies in the sculpture to a certain extent, e.g. frons less punctured as well as frontal sulcus hardly present (Morocco: Tiznit ♀), compared with the lectotype, or frons with a moderate torus and nearly as flat as in *africana* sp. n. (Senegal: M'Bour ♂, but not in female from Kedougou); propodeal sulcus sometimes shorter, nearly similar to that of *kriechbaumeri* (Egypt: Ben Yusef ♀ and Faioum ♀). The main feature of variation is in colour, e.g. basis of mandible sometimes entirely white (Senegal, Chad, Israel), or entirely black (Egypt, Sudan, Karachi). Penultimate tergite with two small lateral spots (Senegal, Chad, Israel, Karachi). The middle and hind coxae more extensively ferruginous than on lectotype (Senegal ♀, ♂ not!), Egypt: Fajun "*C. cingulata*" and what is more: abdomen dark reddish translucent in the latter old female. The light colour is reduced, also tergite 4—5 (♀) or 5—6 (♂) black, legs also darker ferruginous (Morocco ♀, ♂).

Distribution. Spanish Sahara (GINER MARI, 1945). Egypt (PRIESNER, 1955). Morocco, Senegal, Chad, Sudan, Somali, Israel, Pakistan.

Ceropales karoensis ARNOLD

Ceropales karoensis ARNOLD, 1937, Ann. Transv. Mus. 19: 83, 90 Figs. 58a b ♀♂

Specimens examined: 15 ♀, 13 ♂. Lectotype. Rep. of S. Africa = "Willowmore, Capland 20. 11. 09 Dr. BRAUNS", "*Ceropales karoensis* ARN. ♀ Type No. 438", "Type ♀ *Ceropales karoensis* G. ARNOLD" red label, ♀ (Transvaal Museum, Department of Entomology, Pretoria). Paralectotypes. With the same labels as the lectotype except: "♀", "20. 11. 09" and "No 438", instead of them: "♂", "10. IV. 1903" and "No 439" 1 ♂ (allotype); the date of the further paralectotypes are: "1. I. 1902" 1 ♂, "10. IV. 1903" 1 ♀ "2. 1911" 1 ♀, "12. 1912" 1 ♂, "Jan. 1918" 1 ♀ and 1 ♂, "25. XI. 1922" 1 ♀ and 1 ♂, "8. I. 1923" 1 ♀, 2 ♂ (Pretoria); "25. I. 1903" 1 ♂ and "12. 1912" 1 ♀ (Hym. Typ. No. 3783—3784, Budapest); "2. 1911" 1 ♂, "XI. 1912" 1 ♀, "I. 1915" 1 ♂ "Jan. 1918" 1 ♀ (Cape Town) all with the label "South African Museum ex National Museum Bulawayo 1981"; "Cape Province, Little Karoo, 38 miles east from Ceres, 17—25. XI. 1924", "S. Africa R. E. TURNER. Brit. Mus. 1924-518", "*Ceropales karoensis* ♀ ARN. det. A. G. ARNOLD" 1 ♀ and the same locality without det. label 1 ♀ (London).

Non-paratypic material. Rep. of S. Africa = Cape Prov., Worcester Jan 1934, R. E. TURNER, 1 ♀ (London); Grahamstown 20. Oct 1970 H. and M. TOWNES 2 ♀, 1 ♂ (Coll. TOWNES); Zulu 1. M fongosi W. E. JONES (*C. karoensis* ARNOLD det. ARNOLD), 1 ♂ (Cape Town). — Namibia = Swakopmund 26—30 Jan 1972 1 ♀ (Budapest) and 1 ♂ (London).

ARNOLD (1937) did not designate the holotype, and only the first listed specimen "Willowmore" in the description was labelled with "Type" (red label), consequently, I designate it as lectotype and the other examined specimens as paralectotypes owing to congruence with ARNOLD's diagnosis and the examined original specimens.

Addition to the description: Propodeal sulcus broad and short (Fig. 16). Metapleural suture distinct, or rarely less developed. The row of the tomentose hairs on hind meta-

tarsus inside (♂) extends only over one-third of the length of joint, the hairs are slightly longer than half the breadth of joint. Both sternite 9 and genitalia differ from those of *waltoni* and *multipicta*, in contrasted with ARNOLD's (1937) opinion, e.g. sternite 9 of *karooensis* (Fig. 54) is moderately raised like a flat roof over the whole surface, conspicuously broadened apex, where it is less emarginated, curved lateral side; it also differs by the paramere directed nearly rectangularly toward the middle of genitalia, by the nearly separated semilunar lobe inside (Fig. 55), etc.

Distribution. Rep. of South Africa (ARNOLD, 1937). Namibia.

Ceropales kriechbaumeri MAGRETTI

Ceropales kriechbaumeri MAGRETTI, 1884, Annali Mus. civ. nat. Genova 1: 571 ♀♂

Ceropales kriechbaumeri: 1892, FOX, Trans. Am. ent. Soc. 19: 61

Ceropales kriechbaumeri: 1945, DE SAEGER, Revue Zoo. Bot. afr. 39: 114 ♀♂

Ceropales sabulicola: 1960, PRIESNER, Polskie Pismo ent. 30: 66 ♂

Ceropales kriechbaumeri: 1895, DALLA TORRE, Wien. ent. Ztg. 14: 95

Ceropales kriechbaumeri: 1897, DALLA TORRE, Cat. Hym. 8 Fossor.: 343 ♀

Ceropales diversipes HAUPT, 1962, Bull. Res. Coun. Israel 11B: 53 ♀ syn. n.

Ceropales picturatus HAUPT, 1962, Bull. Res. Coun. Israel 11B: 53 ♂ syn. n.

Ceropales picturatus: 1966, PRIESNER, Israel J. Ent. 1: 153 ♂ (as syn. of *sabulicola* PRIESNER, 1966)

Ceropales elbanus PRIESNER nom. in coll. (Wien)

Specimens examined: 13 ♀, 21 ♂. Lectotype. Egypt="Coll^e P. MAGRETTI SUAKIN, GRUN, 1883", "Typus", "Museo Civico di Genova", "*Ceropales kriechbaumeri* MAGR." ♀ (Museo Civico di Storia Naturale "GIACOMO DORIA", Genova). — Israel="El Hamma Palestine 18.4.1941 BYTINSKI-SALZ", "Holotype" red label, "*Ceropales diversipes* HPT ♀ HAUPT det. 1952", *sabulicola* Pr. ♀ det. H. PRIESNER" (without abdomen), ♀ holotype (Tel-Aviv); Palestine Jul 1919, 1 ♂ (Budapest); "Palestine, Wadi Fukra 12. 6. leg BYTINSKI-SALZ", "Holo-Type" red label, "*Ceropales picturatus* HAUPT ♂, HAUPT det. 1953", "*deserticola* Pr. ♂ det. H. PRIESNER" ♂ holotype (Tel-Aviv). — Israel=Hefel Bah 9 May 1982 Q. ARGAMAN 1 ♂ (Coll. ARGAMAN). — Egypt="Gebel Elba, Egypt A. 27. 2. 38 Dr. H. PRIESNER", "Holotype", "*elbanus*" 1 ♂, not published (Wien); Further material: "Kum Oshim Rég. de Faioum 2. IV. 1958 leg. W. J. PULAWSKI Egypte", "Allotype" red label, "*C. sabulicola* Pr. det. H. PRIESNER" ♂ (Wien). — Upper Volta=Banfara 23—26 Mar 1984 M. MATTHEWS, 1 ♂ (Budapest); Koungny 22 Feb 1980 A. PAULY, 1 ♂ (Coll. WAHIS). — Nigeria=Benin MWState 1 Apr 1975 J. T. MEDLER, 1 ♀ (London). — Saudi Arabia=Abu Arish 23—29 Mar 1980 and Hot springs 23 Jan 1983 K. M. GUICHARD, 1 ♀, 1 ♂ (London); Bachra (Jeddah) 15 Apr 1980 K. GUICHARD, 1 ♀ (London); Taif Aquaba 9 Apr 1980 K. M. GUICHARD, 1 ♀ (London); Wadi Majarish (below Taif) 12 Dec 1983 K. GUICHARD, 1 ♂ (London). — Oman=Khabura 17—18 Feb 1978 D. WHITCOMBE, 1 ♀ (Budapest). — United Arab Emirates=Dubai, Al Awir 30 Apr—2 May 1984 mal. trap E. SUGDEN, 2 ♀, 2 ♂, (Coll. WASBAUER) and 1 ♂ (Budapest); Dubai, Nakhalai 23—28 Mar, 1 ♀ (Budapest) and 8—28 Apr 1984 mal. trap. E. SUGDEN 1 ♀, 6 ♂ (Coll. WASBAUER), 1 ♀, 3 ♂ (Budapest). — Qatar=Al Shahaniyeh 8 Aug 1980 C. G. ROCHE 1 ♀ (Budapest).

Thanks to Dr. R. POGGI I was able to examine two females deposited in MAGRETTI's collection (Genova Museum) as original material, though, originally three specimens were published by the author (1884). Only one specimen was labelled: „Typus“ from the original locality, „Suakin“, thus, I designate it as lectotype. The other specimen from Kassala proved to be a *Priesnerius* sp. having only curved and not rectangularly bent claws on the hind tarsus and also having a different colour pattern.

MAGRETTI's type specimen was obviously unknown by the various authors, therefore, it was cited as a different species (*C. sulciscutis* sensu ARNOLD, 1937, not Cameron, *C. diversipes* HAUPT and PRIESNER ♀, *C. picturatus* HAUPT and PRIESNER ♂).

C. diversipes HAUPT (♀) (holotype) and *picturatus* HAUPT (♂) (holotype) as well as "elbanus" nom. in coll. proved to be identical with *kriechbaumeri* MAGRETTI (lectotype) owing to sculpture, colour, sternite 9 and to the male genitalia, although, both *diversipes* and *picturatus* were synonymized with *sabulicola* PRIESNER by PRIESNER (1966); moreover, the holotype of *picturatus* was labelled as *deserticola* PRIESNER by PRIESNER himself.

Additions to the description: propodeum: Fig. 2; face: Fig. 58; sternite 8: Fig. 12. Temple thickened above mandible (♀) but no orbital groove developed. Last abdominal segment (♀) pointed apically (Fig. 5). Sternite 9 broadened medially and elongated (Fig. 26) with scattered punctures. Apical part of paramere conspicuously broadened and with a transverse medial darker line (Figs. 56—57).

This species is highly variable, in sculpture: metapleural suture is clearly discernible, and only rarely present in traces punctures of frons sometimes deeper; in colour of the legs: femora and tarsi, entirely ferruginous especially the middle and the hind ones, except the white streaks (U.A. Em.: Dubai 3 ♀), they are more brownish ferruginous (lectotype, Palestine: *picturatus* holotype, ♂, Egypt 1 ♂, Oman 1 ♀, Dubai 1 ♀ and 2 ♂) or brownish black (Qatar 1 ♀, Saudi Arabia 1 ♀, Palestine: *diversipes* holotype ♀ and 1 ♂, Dubai 6 ♂ Egypt "elbanus" 1 ♂) or black (Nigeria 1 ♀, Saudi Arabia 2 ♂ and Upper Volta 2 ♂); basis of mandible sometimes entirely black (Palestine: *diversipes* holotype ♀, "elbanus" 1 ♂ from Egypt); clypeus white (South Arabia and Palestine 2 ♂), at most brownish laterally and lower margin (Dubai 3 ♂) or with 1—3 pale brownish spots (Palestine, S. Arabia, Upper Volta 1—1 ♂, "elbanus" 1 ♂ from Egypt, Dubai 4 ♂), exceptionally, extensively black and broken into small blotches (Upper Volta 1 ♂), or nearly entirely black (corresponding to MAGRETTI's diagnosis of ♂) (Egypt: Faioum: allotype of *sabulicola* PRIESNER, Kum Oshim and Dubai 1—1 ♂).

Distribution. Egypt (MAGRETTI, 1884). ? Congo Belge (DE SAEGER, 1945). Upper Volta, Nigeria, Israel, Saudi Arabia, Oman, United Arab Emirates, Qatar.

***Ceropales lawrencei* ARNOLD ♀ nov.**

Ceropales Lawrencei ARNOLD, 1937, Ann. Transv. Mus. 19: 83, 93 Figs. 60a—b ♂

Ceropales kriechbaumeri sensu ARNOLD, 1937 Ann. Transv. Mus. 19: 89 ♀ partim, nec MAGRETTI, 1884

Specimens examined: 4 ♀, 2 ♂. Holotype. Mozambique: "Imhambane P. E. AFR. R. F. LAWRENCE Jan 1924", "Type ♂ *Ceropales Lawrencei* G. ARNOLD" red label, ♂ (South African Museum, Cape Town).

Non-paratypic material. Zimbabwe: N. E. Rhodesia, Upper Luangwa R. 27 Jul—13 Aug 1910 S. A. NEAVE (*C. Kriechbaumeri* MAGR. det ARNOLD), 1 ♀ (Budapest). — Botswana = Serowe Farmer's Brigade, Sep 1986 Per FORCHHAMMER, 2♀ (Coll. WASBAUER and Budapest). — Rep. of S. Africa = Natal N. R. i. 1979 R. MILLER, 1 ♀ (London); Transvaal KRUGER N. P. Pafuri Feb 1982 L. BAAK, 1 ♂ (London).

The data of the single specimen designated by author as type which also agree with the diagnosis of ARNOLD's description, is, therefore, the holotype.

Some additions to the original diagnosis (♂). Labrum pale brown. The light colour of head and thorax is more yellowish white, only that of abdomen ivory white. Posterior band of tergite 5 hardly interrupted. Spurs of middle and hind legs white. Frons nearly convex, only hardly broken below fore ocellus. Scutellum and post-scutellum strongly raised. Propodeum quite flat, similar to *helvetica*, in lateral view, median sulcus broad basally and extending beyond the middle of the segment (Fig. 24). The row of tomentose hairs of hind metatarsus about as long as half the breadth of the

joint and the row extends over the apical one-third of joint. Apical lobe of paramere of the genitalia broadly rounded and rectangularly curved towards the middle (Fig. 59). Claws normal, hind claws strongly, rectangularly bent.

♀.—Length 6.5–8 mm. Both in colour and in sculpture very similar to male. The differences are: labrum, mandible and clypeus entirely white. The original white colour restricted only to the hump on the right side of the pronotum, to tegulae, posterior corners of propodeum, the streaks of hind coxae laterally and to the last tergite of abdomen partly (specimen from Natal), the light colour is tinted by pale rose in some parts, obviously due to the cyanide in the killing bottle. End of the large white spot along ocellar sinus and on the outer eye margin above, remarkably truncate. Sternal lobe white, moderately long before the basis of middle coxa. The white band of the middle coxae posteriorly broader than on male, also the basis with a round white spot, the white line on the middle tibia broadly interrupted medially on female, hind tarsi darker brownish infuscated. The ferruginous colour sometimes (Luangwa) extends over the middle and hind coxae. Frons convex, hardly broken below anterior ocellus, ocelli also in an acute angle. Outer orbit thickened, but no orbital groove developed. The deepening of the lateral side of pronotum larger, with scattered, sometimes deep punctures. Last abdominal segment triangularly elongated (Fig. 27), but less pointed than in *kriechbaumeri* and with a straight lower margin, in lateral view.

Distribution. Mozambique (ARNOLD, 1937). Zimbabwe, Botswana, Rep. of S. Africa.

Ceropales ligea BINGHAM

Ceropales ligea BINGHAM, 1903, Fasc. malayensis Zool. 1: Appendix V ♀

Ceropales ligea: 1906, BINGHAM, Fasc. malayensis Zool. 3: 41 Plate A Figs. 4, 4a–4c ♀

Ceropales ligea: 1910, TURNER, Proc. zool. Soc. Lond. 1910: 339 ♀♂

Ceropales ligea: 1934, BANKS, Proc. Am. Acad. Arts Sci. 69: 114

Ceropales ligea: 1985, MÓCZÁR, Acta biol. Szeged. 31: 44 ♀♂

Ceropales versicolor GUSSAKOVSKIJ ssp. *shansiensis* YASUMATSU ♀ nom. in coll. (Fukuoka)

Specimens examined: 6 ♀, 1 ♂. Lectotype. Malaysia: Súngkei (British Museum, Natura History, London B. M. Type Hym. 18772) ♀ (erroneously as holotype, MÓCZÁR, 1985: 45).

Non-paratypic material. Pakistan=Sind: Malir, N. of Karachi 12 Jan 1975. L. SAFRAZ, 1 ♀ (New York). — Nepal=nr. Birganj Lothar 450 ft 5–12 Sep 1967 Malaise trap Can. Nepal Exped., 1 ♀ (Ottawa). — Taiwan=Formosa Tainan Mar 1909 SAUTER, 1 ♀ (Budapest); Takao May 1908 SAUTER, 1 ♂ (Coll. WAHIS). — China=? Manchuria: 917° D (Fukuoka). — Australia=Western Australia: Fitzroy River, Rte 1 14–17 May 1969 ALEXANDER and OTTE, 1 ♀ (Coll. TOWNES); Queensland: 27 1904 F. P. DODD 1 ♀ (Budapest).

Further additions to the original diagnosis: Temple distinctly broader than one-third of the greatest width of eye (6 : 15). Lower margin of last segment largely curved, but slightly concave close by apex (Fig. 60). Orbital groove reaching nearly to the half of the outer eye margin (♂). Thorax convex in lateral view (Fig. 4). Both sternite 9 and male genitalia (Figs. 61–62) especially resemble those of *australensis* (Fig. 39). Sternite 9 stumpy, scarcely longer than broad, flat and only basally raised in the middle and broadly rounded apically having a row and a tuft of erect hairs posteriorly (Fig. 61). Outer side of paramere in male genitalia with longer and scattered hairs laterally (Fig. 62).

A summary of the variation in colour of this species (see in details MÓCZÁR, 1985), e.g., on legs and mandibles: hind femur rarely dark brownish black entirely (Sri Lanka 2 ♂, India: Deesa 1 ♂); outer side of the middle femur and tibia, as well as inner side of the fore femur brownish ferruginous (Brisbane 4 ♀, Sri Lanka 5 ♀). Exceptionally also middle femur, fore femur medially on the outer side and fore and middle tibiae largely ferruginous with white lines and spots (Pakistan). Mandible as a

rule largely black (σ), or basal half white with a large black spot (W. Australia 1 σ); mandible often entirely white (Pakistan), at most with a minute black spot (in India 1 σ , in Sri Lanka 8 σ and in Australia 5 σ).

The sculpture and the colour of the specimen (?Manchuria) written and labelled by Yasumatsu as "Holotype *Ceropales versicolor* GUSSAKOVSKIJ ss. *shansiensis* YASUMATSU" correspond to *ligea*, though legs nearly entirely brown and brownish black, inner side of hind femur partly dark ferruginous, mandible extensively black with a very narrow whitish streak basally, and scutellum somewhat conically raised.

Distribution. Malaysia (BINGHAM, 1903). Burma, Australia (TURNER, 1910). The Philippines (BANKS, 1934). Sri Lanka, India, Indonesia (MÓCZÁR, 1985). Pakistan, Nepal, Taiwan, ? Manchuria.

Ceropales maliensis spec. nov.

Specimens examined: 5 σ , 1 σ . Holotype. Mali—"Mali 30 kms. south of Ansongo K. GUI-CHARD B. M. 1976-583" σ (British Museum, Natural History, London). Paratypes. With the same data as the holotype, 1 σ , 1 σ (allotype) (London) and 1 σ (Hym. Typ. No. 3785, Budapest). — Senegal—"Senegal: Diedieng nr. Kaolack 20 viii. 1979 A. PAULY réc", "Malaise trap", 1 σ (Coll. WAHIS). — Nigeria—"Niger 20 km S Tahoua 14° 45' N 5° 20' E 13. viii. 1987 Sterculiaceae 388 A PAULY réc.", 1 σ (Coll. WAHIS).

σ .—Length 6—6.5 mm. Black, with rich light colouration: a very narrow streak along the basis of mandible, labrum, the whole lower face, a quite broad spot on ocular sinus with truncate apex and with a twice sinuous inner margins, a spot between the antennal sockets and below fore ocellus, antennal joints 1—2 below, a broad line on outer eye margin reaching to vertex, broad band on pronotal disc including tubercle, basal hump, tegula except the hyaline outer margin, scutellum, postscutellum and lateral corners of propodeum, a spot on lower edge of mesepisternum just above the middle coxa, as well as surface below the articulation of the hind wing, remarkably broad bands on tergites 1—5 posteriorly, dilated on 1 and emarginated on 2—5 laterally, nearly the whole tergite 6, a spot on sternite 6 basally, on fore coxae largely below, a short line on the lower margin of the middle, as well as a larger spot on the hind coxae apically, a gradually smaller spot on fore, middle and hind femora apically outside, line on fore and middle tibiae outside, as well as on tarsal joints 1—3 the same continuous, the spots of hind tibia basally and apically, partly also on tarsal joints, white. Basis of tarsal joints 2—5 and apical half of joint 5 of hind legs, black, last joints of the middle legs dark brown. Mandible nearly entirely, antenna except the partly blackish last joints apically, and legs largely ferruginous. Only tarsal joints partly yellowish and fore coxae with a small black spot basally. Tibial spurs white. Mouthparts brown, palpi yellowish brown. Wings hyaline, not infuscated, veins brown, pterostigma yellowish brown. Body, especially propodeum, lateral and ventral sides of thorax with short silvery pubescence.

Head distinctly (1.2 times) broader than its length (52 : 42), narrowing behind eyes. Ocelli in a slightly acute angle, POL : OOL = 8 : 10. Frons distinctly bent below fore ocellus, the short upper area and the lower long area flat, the latter with a hardly discernible sulcus, surface with scattered fine punctures. Temple slightly thickened above mandible with a short shining line resembling the orbital groove of another species. Antenna about as long as the length of head and thorax together, joints distinctly longer than the breadth of one, except 2, length (and breadth) proportions of antennal joints 1—5 = 10(8) : 4(5) : 9(6) : 9(6) : 9(6). Pronotal disc remarkably thickened, convex in lateral view, with fine punctures, lateral side deeply impressed, smooth, shining just below tubercle, hardly concave and longitudinally wrinkled behind basal hump. Mesonotum with deep and dense punctures, especially in posterior half. Scutellum convex. Postscutellum strongly raised and impressed medially.

Propodeum conspicuously flat over its whole length, about one-fourth (1.48 times) broader than its breadth (40 : 27), surface with microscopically fine transverse rugulosity lateral margin broadly rounded and deeply, densely punctured behind spiracle, median sulcus broad and short, about one-third the length of propodeum. Metapleural suture not developed, discernible only partly and in traces metapleura with moderate punctures only on lower part. Punctures of mesepisternum slightly denser than those of mesonotum. Sternal lobe pointed and white. Last segments strongly compressed laterally, rather stumpy (Fig. 28). Claws normal, on hind legs rectangularly curved.

♂.—Length 4.1 mm. Similar to female. Inner margin of the white broad spot on ocular sinus only on upper half sinuous, the line on outer margin of eye interrupted on orbital groove, bands of tergites 2—5 are more or less interrupted, posterior margin of sternite 9 yellowish brown, a very narrow streak yellowish white on hind trochanter, the interrupted line of hind tibia reduced to a larger and a smaller spot basally, and apically respectively. Antenna brown above. Basal half of mandible black. Legs largely brown, fore and middle femora partly, hind tibia darker brownish ferruginous, coxae entirely black except the white spots, middle tibial spurs white, hind ones yellowish brown. Fore wing infuscated apically. Tomentose hairs of hind metatarsus nearly as long as two-thirds of the breadth of joint and the row extends over half the length of joint.

Head hardly broader than long (35 : 31). POL : OOL = 5 : 6.5. Orbital groove narrow, as long as one-third the length of outer eye margin. Antenna at most as long as length of thorax, flagellar joints hardly longer than broad, length (and breadth) proportions of antennal joints 1—6 = 6(5) : 4(3) : 5(3.5) : 5(3.5) : 4(3.5) : 4(3.5). Sternal lobe not developed. Spurs of hind tarsi yellowish brown (♂). Sternite 9 raised like a roof longitudinally, surface densely punctured, lateral margins slightly divergent up to middle, than arcuately convergent and with a very small excision apically (Fig. 63). Genitalia resembles those of *helvetica* (Fig. 47) by the apically broadened parameres, but essentially differ in several details (Fig. 64).

Distribution. Mali and Senegal.

Ceropales multipicta ARNOLD stat. nov.

Ceropales karooensis race *multipictus* ARNOLD, 1937, Ann. Transv. Mus. 19: 91 ♀♂ partim.

Specimens examined: 10 ♀, 3 ♂. Lectotype. Namibia = "Okahandja. 19—29. xii. 1927", "S. W. Africa. R. E. TURNER. Brit. Mus. 1928-53.", "Type ♀ *Ceropales karooensis* r. *multipictus* ARN. G. ARNOLD" red label, "B. M. Type Hym. 19781a" ♀ (British Museum, Natural History, London). Paralectotype. The same locality, date and the second label, but without det. label, ♂ (allotype) (London).

Non-paratypic material. Namibia: Okahandja 2—4 Feb 1972, 1 ♀ (Budapest). — Botswana = Serowe Farmer's Brigade Per FORCHHAMMER Sept 1986 3 ♀ (Washington), 3 ♀, 1 ♂ (Budapest) and Nov 1987 2 ♀, 1 ♂ (Washington).

Thanks to M. C. Day I could examine the whole original material. In the original description ARNOLD wrote: "Okahandja, South-West Africa, 3 ♀♀, 4 ♂♂ (R. E. TURNER) . . . Four other specimens from the same locality represent a variety of this race . . .". Only 2 ♀ and 1 ♂ were labelled by ARNOLD. I designate 1 ♀ as lectotype and 5 ♀, 5 ♂ as paralectotypes. The lectotype ("Type" det ARNOLD) and 1 ♂ (without label) correspond to the diagnosis, but the other 5 ♀ (only one ♀ of them with label: "*C. karooensis* r. *multipictus* var. —♀ det G. ARNOLD") and 3 ♂ (only 1 ♂ with the

ARNOLDS "Type ♂" label) represent a new *Priesnerius* sp. owing to the only slightly curved and not rectangularly bent claws of the hind legs (♀♂), to the distinctly shorter hind tibia and tarsi (♂), to sternite 9 and the male genitalia, to the different colour pattern, etc.

The ARNOLDS diagnosis corresponds to the lectotype except in some unimportant characters, as follow: ♀: "the upper side of the hind tibiae" not white, but dark brown; apical bands on tergites 4—5 not continuous but interrupted (in specimen collected 1972 only tergite 5 interrupted); clypeus with some small brownish blotches on lectotype, as well as in other female; two triangular brownish spots below antennae (on lectotype), entirely white in the other female.

In addition to the description, ♀: labrum largely brown, basis of mandible black (lectotype) rarely white and labrum only with a small brownish spot or white, mandible entirely white in the second female, also 1 ♀ (Botswana); frons convex, finely granulated owing to the very dense and minute punctures, sometimes also with deeper punctures. Ocelli in an acute angle. Orbital groove remarkably broad and deep, at least as long as half the length of outer eye margin sometimes white. Pronotum, mesonotum slightly shining only with fine punctures. Propodeal sulcus broad basally and rather deep, reaching nearly to the middle of the segment. Mesepisternum rather deeply, densely but not closely punctured. Metapleura sometimes deeper punctured similarly to *waltoni*, suture indistinct. Last segments: Fig. 67. Inner spur of hind tarsus brown basally, others white. Claws normal and rectangularly bent on hind tarsus.

♂. Similar to the female but labrum dark brownish red translucent. The yellow marking of face reduced to a small triangular spot below antennae and to a spot in ocular sinus: the yellow streak along the lower part of the inner eye margin very narrow. Lower side of flagellum brownish ferruginous. Hind legs nearly entirely brown. Apical bands of tergites 1—5 narrowly interrupted. Tomentose hairs of hind metatarsus about one-third as long as the breadth of joint and the row extends nearly one-third the length of the joint.

Frons slightly shining, finely granulated with some punctures and with a narrow but rather deep frontal sulcus. Propodeal sulcus shorter, reaching nearly to the middle of the segment. Mesepisternum with dense and deep punctures. Hind tibial spurs brown. Sternite 9 and genitalia resemble those of *karooensis* (Figs. 54—55) and *waltoni* (Figs. 72—74), but differ in detail, e.g. sternite 9 with normal roof-shaped surface, moderately narrowed lateral margin towards the basis, the hardly emarginate apical end which bends downwards (Fig. 65), paramere of genitalia with one nearly separated semilunar lobe inside and directed at right angle to genitalia, penis valve, etc. (Fig. 66).

This taxon differs both morphologically (by the longer frontal sulcus, the finer punctures of frons and mesepisternum, the indistinct metapleural suture, etc.) and in colour (by scarcely or not interrupted bands of tergites, etc.) from *karooensis*, therefore I propose to treat it as a valid species.

Distribution. Namibia (ARNOLD, 1937). Botswana.

Ceropales spinolai nom. nov., ♀ nov.

Ceropales interrupta SPINOLA, 1838, Anns Soc. ent. Fr. 7: 463 ♂

Ceropales interrupta: 1895, DALLA TORRE, Wien. ent. Ztg. 14: 91

Ceropales interrupta: 1897, DALLA TORRE, Cat. Hym. 8. Fossor.: 343 ♂

Ceropales interrupta: 1947, DE BEAUMONT, Mitt. schweiz. ent. Ges. 20: 505 (= ?
= *C. cribratus* COSTA)

Specimens examined: 1 ♀, 1 ♂. Holotype. Egypt: "Museo di Zoologia della Universita Torino — Italia", without locality label, 1 ♂ (Torino).

Non-paratypic material. Guinea = Niger Say 22 Mar 1978 G. Popov 1 ♀ (London).

SPINOLAS name is a homonym with *Ceropales interrupta* SAY, 1837, therefore, I rename it as "*spinolai*". Thanks to Dr. A. ROLANDO I could examine the single male of the *interrupta* SPINOLA from SPINOLAS collection. Unfortunately, it has no locality label below the specimen, similarly to the other SPINOLAS original material, also the head was missing. In spite of this, I could identify it with the SPINOLAS description, this one-and-a-half-hundred-year old specimen proved to be the holotype.

DE BEAUMONT (1947) published: "SPINOLA a décrit d'Égypte deux espèces qui n'ont pas été citées depuis lors; le *Ceropales interrupta* pourrait bien être le *C. cribratus* . . . N'ayant pas vu de matériel de provenance égyptienne, je ne puis rien affirmer à ce sujet". This is all the more astonishing, since I could identify a single male with it among the about 250 specimens of *helvetica*-group deriving only from Africa. The identity of both sexes is evident on the basis of the same conspicuously concave propodeal disc, of the coarsely punctate thorax and of the same colour pattern of the body.

I list here only some diverging characters of the female compared to the male: labrum yellow entirely (according to the diagnosis); coxae nearly entirely black, trochanters-metatarsi and spurs nearly entirely ferruginous; metapleural suture well developed, last tergite medially emarginated, sternite 9 broadly truncated apically.

♀.—Length 8.3 mm. Black, the following parts white: mandible, except the ferruginous apical two-thirds, lateral corners of labrum, clypeus, supraclypeal area, except a black spot below antennae, inner and outer eye margins, a medial spot on frons, lower side of antennal joints 1—2, whole posterior margin and basal hump of pronotum, tegula, a smaller and a larger spot on scutellum and postscutellum, lateral corners of propodeum, a small streak on mesepisternum just above the middle coxa, interrupted bands of tergites 1—5, a large spot on 6, lower side of fore coxa largely, a small spot on middle coxa basally, a broader band on middle and hind coxae apically, a very narrow stripe on trochanters inside apically, streaks on femora and tibiae at apex, smaller spots on femora and tibiae basally, outer side of fore and middle metatarsi, and spurs of middle and hind tibiae. Flagellum, except the slightly infuscate side, the rest of the middle and hind trochanters, of femora, tibiae and tarsi, ferruginous. Fore trochanter, hind last tarsal joint, lower side of hind coxa basally, brown. Wings hyaline, veins brown, pterostigma light brown. Nervature similar to that of *variolosa* ARNOLD. Lower face of propodeum, mesepisternum and coxae with a dense, fine and silvery pubescence.

Head distinctly broader than long (52 : 43), the shorter distance of face between eyes below antennae and the greater one on vertex = 15 : 28. Head remarkably narrowed behind eyes. Ocelli in an acute angle, close to each other than to the nearest point of eye (7 : 10). Frons sharply curved down at the low transverse torus between eyes. Fore ocellus lies in a depression. Frons coarsely and closely punctured above the antennae, interspaces, for the greater part, narrower than punctures, vertex less densely punctured. Outer orbit slightly thickened, without a groove, only a hardly shining line visible. Antenna short, all joints shorter than twice the breadth, of one length (and breadth) proportions of antennal joints 1—9 = 10(8) : 5(5) : 8(5) : 9(5) : 9(5.5) : 8(5.5) : 8(5.5) : 7(5.5) : 7(5.5). Pronotum with rather deep but especially laterally with shallower punctures than on vertex. Mesonotum, mesepisternum and scutellum with deep punctures, interspaces as large as punctures at some places. Middle part of propodeum remarkably concave, very finely and transversely rugulose, median sulcus not extending as far as to the middle of the segment. Lateral side of propodeum with scattered punctures, only above smooth and shining, metapleural-epinotal suture

hardly perceptible only basally near to the pit. Metepimeron largely smooth and shining below the origin of the hind wing. Lower margin of last segment straight and broadly truncated apically (Fig. 68). Fore femur impressed on the outer side basally. Claws normal, with subapical tooth on fore and middle tarsi and rectangularly curved on the hind tarsus.

This species is closely related to *variolosa* ARNOLD, but it differs from latter by some important characters given in the key.

Distribution. Egypt, (SPINOLA, 1838). Guinea.

Ceropales variolosa ARNOLD

Ceropales variolosus ARNOLD, 1937, Ann. Transv. Mus. 19: 82, 87 Figs. 56 a, 56 b ♀

Ceropales variolosus: 1951, ARNOLD, Bull. Br. Mus. nat. Hist. 2: 183 Fig. 65 ♂

Ceropales fulvus HAUPT, 1962, Bull. Res. Coun. Israel (Sec. B Zool.) 11B: 32 ♀♂

syn. n.

Ceropales fulvus: 1966, PRIESNER, Israel J. Ent. 1: 151, 152 ♀

Specimens examined: 11 ♀, 7 ♂. Holotype. Uganda: "Type" (round label with red circle), "Uganda Madi-V-1927 G. D. H. CARPENTER", "Type ♀ *Ceropales variolosus* G. ARNOLD", "B. M. Type Hym. 19.784" ♀ (British Museum, Natural History, London). — Jordan = "Jericho Palestine 20. 7. 1946 leg. BYTINSKI-SALZ (=Arihā), "Holotype" and "Typus" red labels, *Ceropales fulvus* HAUPT ♂ HAUPT det. 1952" 1 ♂ holotype (Tel-Aviv).

Further material. Tunisia: Tozeur 14 Jul 1979 J. GUSENLEITNER, 1 ♂ (Coll. WOLF). — Israel = Eju Audja 27 Jul 1970 BYTINSKI-SALZ 1 ♀, 1 ♂ (Budapest); Ma'ale Edomim 19 Jul 1976 A. FREIDBERG, 1 ♀ (Tel-Aviv); "Wadi Kelt, Palestine 5.4. 1947 leg. BYTINSKI-SALZ", "*Ceropales fulvus* HPT ♀ det HAUPT 1052" ♀ paratype (Halle). — Jordan = Jericho Palestine 26. V. 1943 leg. BYTINSKI-SALZ, "Allotypus" red label, "*Ceropales fulvus* HAUPT ♀ HAUPT det. 1953" with HAUPT'S writing (really ♂!, erroneously also in original description as ♀), 1 ♂ paratype (Tel-Aviv). — S. Jemen = Aden, 1 ♀ (London). — Zaire = (*C. variolosus* ARN. ♀ det. M. C. DAY, 1984) "Lufira R, Katanga 17. 8. 07 3,500 ft", "NEAVE Coll. 1907-230", "*Ceropales* ♂ n. sp. — (♀ wanted) det. G. ARNOLD", 1 ♂ (London). — Nigeria = Ildra W State Aug 1974 J. T. MEDLER, 1 ♀ (London). — Togo = Sokodé Dez 1982 A. PAULY, 1 ♀ (Coll. WAHIS). — Ghana = Accra Aug—Sep 1941 K. M. GUICHARD 1 ♀ (Cape Town); "Gold Coast Accra Aug—Sep 1941 K. M. GUICHARD", "Allotype *Ceropales variolosus* ARN. ♂ det. G. ARNOLD" with ARNOLD'S writing, 1 ♂ (London). — Guinea = Niger, Say, 22. 3. 78 G. POPOV, 1 ♂ (Budapest). — Senegal = Bandia 5 Mar and 11 Apr 1980 B. SIGWALT, 2 ♀ (Paris and Budapest); M'bour 27 Apr—7 May 1981 Malaise trap, 1 ♀ (Coll. WAHIS).

ARNOLD'S description is identical with the female referred to by him from "Madi, Uganda" therefore, this specimen represents the holotype. Later (1951) ARNOLD also published the male of this species on the basis of 2 ♂ (and 1 ♀) collected in the same place and date (Accra, 1941). The female (preserved in Cape Town) and the allotype male (preserved in London) well correspond to the description, but the other "male" (preserved in Cape Town) represents in fact a specimen of *Hemiceropales punctulata bulawayoensis* BISCHOFF ♂ (MÓCZÁR, 1986), bearing ARNOLD'S label: "*Ceropales variolosus* ARNOLD ♀ det. ARNOLD", which is a misidentification.

The holotype and also the examined paratypes of *C. fulvus* HAUPT correspond to the original diagnosis and it also agrees with *C. variolosa* ARNOLD, consequently, it is a synonym.

Further additions to the original diagnosis, besides the characters given in key: postscutellum as high as scutellum (♀) in lateral view, metapleural suture well developed (Fig. 6). Pleuron between the pit and the articulation of the hind wing wrinkled diagonally. Lower margin of last segment (♀) slightly concave and acute apically, in lateral view (Fig. 69). Tomentose hairs of the hind metatarsus (♂) short, only one-

third of the length of joint and the row extends over the entire length of joint inside. Sternite 9 oval (♂, Fig. 70) and remarkably yellow apically with a steeply raised longitudinal keel before apex. Paramere of the male genitalia elongated acutely inwards and with very fine hairs outside (Fig. 71).

The ferruginous colour of this species is at places darker or brownish and the black streaks are more extended (Ghana, allotype ♂); propodeum medially and ventrolaterally, pleuron₃, scutellum, postscutellum with larger black spots (Zaire ♂). On the other hand, the largely ferruginous and yellow coloured specimens only with very few black streaks mostly on sutures below tegulae, propodeal sulcus, etc. (*C. fulvus* from Jordan and Israel).

Distribution. Uganda (ARNOLD, 1937). Ghana, French Sudan (ARNOLD, 1951). Tunisia, Israel, Jordan, Jemen, Zaire, Nigeria, Togo, Guinea, Senegal.

***Ceropales waltoni* ARNOLD stat. and ♂ nov.**

Ceropales karoensis race *Waltoni* ARNOLD, 1937, Ann. Transv. Mus. 19: 92 ♀

Specimens examined: 8 ♀, 6 ♂. Holotype. Rep. of S. Africa = Resolution, Grahamstown, Miss WALTON Jan.—Apr. 1928", "Type ♀ *Ceropales karoensis* race WALTONI ARN. G. ARNOLD" ♀ (South African Museum, Cape Town).

Non-paratypic material. Rep. of Africa = Cape Prov. JEFFREYS Baai 1 Mar 1974 M. & T. SIMON THOMAS, 1 ♀ (Amsterdam); Grahamstown 20 Oct 1970 H. & M. TOWNES 1 ♀ (Coll. TOWNES) and 12—30 Nov Fred Gess 2 ♂ (Coll. TOWNES and Budapest); Orange Bothaville 20 May 1899 Dr. BRAUNS, 1 ♂ (Budapest). — Lesotho = Basutoland, Mamathes 22 Nov 1945 C. JACOT-GUILLARMOD, 1 ♀ (Budapest). — Botswana = Serowe Feb—Mar, Aug 1984 Malaise P. FORCHHAMMER, 2 ♀ (London), 1 ♀ (Budapest). — Zimbabwe = Harare, Chichawasha Jun 1982 A. WATSHAM, 1 ♂ (London). — Zaire = Leopoldville (= Kinshasa) S. A. M., 1 ♀ (Cape Town). — Namibia = Kuiseb R nr Gobabeb 25—28 Jul 1983 Nat. Coll. Kuiseb Survey, 1 ♀, 1 ♂ (Pretoria) and 1 ♂ (Budapest).

♂.—Length 4.1—6 mm. Black a small triangular spot below antennae, a reduced spot between antennal sockets, lower side of the antennal joints 1—2, a narrow line along the inner eye margin extending only to the middle of the ocular sinus, a spot as well as a narrow line along the outer eye margin above, posterior margin, basal hump and top of the tubercle of pronotum, tegula basally, postnotum, lateral corners of propodeum, a narrow and transverse streak on each side of the apical margin of tergites 1—2, a larger spot of tergite 7 medially, a small spot basally and a line apically of fore tibia underneath, white. Middle femur with a pale brownish and small spot apically. Lower side of flagellum largely, fore femur partly ferruginous. Mandible dark red apically, middle tibia dark brownish. Tomentose hairs on hind metatarsus nearly equal with the breadth of joint, the row extends to half the length of joint apically.

In sculpture it is similar to the female. Orbital groove hardly shorter than half the length of outer eye margin, punctures distinctly denser, coarser than on female, especially on frons, thorax, coxa and on the lower part of hind femur. Sternite 9 almost semicircularly emarginated apically (Fig. 72) and recurved inwards similar to that of *karoensis* and raised like a roof longitudinally. Lateral margin nearly straight and gradually divergent towards the apex. Genitalia (Fig. 73) remarkably stumper and thicker than those of *karoensis*, paramere with two semilunar lobes (Fig. 74) inside, etc.

On the basis of the sculptural difference (see in key) and of the genitalia I regard it as a valid species.

Distribution. Rep. of S. Africa (ARNOLD, 1937). Lesotho, Botswana, Zimbabwe, Zaire.

Summary

12 species are revised and 9 species described as new: *Ceropales africana* ♀♂, *C. angolaensis* ♀, *C. dayi* ♀♂, *C. ferrugo* ♀♂, *C. gambiae* ♀♂ and *C. maliensis* ♀♂ (from tropical Africa), *C. haupti* ♂ and *C. indica* ♀♂ (from Asia) and *C. australensis* ♀♂ (from Australia). New females of *C. lawrencei* ARNOLD and *C. spinolai* nom. nov., as well as new males of *C. waltoni* ARNOLD and *C. helvetica bogdoensis* MÓCZÁR are described for the first time. *C. spinolai* nom. nov. for the homonym *C. interrupta* SPINOLA. Lectotypes are designated and holotypes are confirmed. On the basis of the original material new synonyms are established: *C. diversipes* HAUPT ♀ and *picturatus* HAUPT ♂ jun. syn. = *C. kriebbaumeri* MAGRETTI; *C. fulvus* HAUPT ♀♂ jun. syn. = *variolosa* ARNOLD, and *C. sabulicola* PRIESNER ♀♂ jun. syn. = *juncoi* GINER. A key and new distributional data are given.

Zusammenfassung

In Fortsetzung der früher revidierten *Ceropales fulvipes*-, *ruficornis*-, *variegata*-, *maculata*- and *albicornis*-Gruppen (MÓCZÁR, 1986, 1987) werden hier in der *Helvetica*-Gruppe weitere 12 Arten revidiert und 9 neu beschrieben: *Ceropales africana* ♂♀, *C. angolaensis* ♀, *C. dayi* ♀♂, *C. ferrugo* ♀♂, *C. gambiae* ♀♂ und *C. maliensis* ♀♂ (aus dem tropischen Afrika); *C. haupti* ♂ und *C. indica* ♀♂ (aus Asien) und *C. australensis* ♀♂ (aus Australien). Weibchen der Arten *C. lawrencei* ARNOLD und *C. spinolai* nom. nov., ebenso Männchen der Arten *C. waltoni* ARNOLD und *C. helvetica bogdoensis* MÓCZÁR werden neu beschrieben. Für *C. interrupta* SPINOLA, 1838 als homonym von *C. interrupta* SAY, 1837 wird *spinolai* nom. nov. eingeführt. Lectotypen von *C. judicatrix*, *karoensis*, *kriebbaumeri*, *ligea*, *multipicta* wurden designiert und folgende Holotypen bestätigt: *C. juncoi*, *lawrenci*, *spinolai*, *variolosa* und *waltoni*. An Hand des Typenmaterials wurden neue Synonyme festgestellt: *C. diversipes* HAUPT ♀ und *C. picturatus* HAUPT ♂ jun. syn. = *C. kriebbaumeri* MAGRETTI; *C. fulvus*, HAUPT ♀♂ jun. syn. = *variolosa* ARNOLD und *C. sabulicola* PRIESNER ♀♂ jun. syn. = *juncoi* GINER. Ein Bestimmungsschlüssel aller bisher bekannten Arten wird vorgelegt und zahlreiche Verbreitungsangaben bekanntgegeben.

Резюме

В продолжении прежней ревизии групп *Ceropales fulvipes*, *C. ruficornis*, *C. variegata*, *C. maculata* и *C. albicornis* (MÓCZÁR, 1986, 1987) проводили ревизию 12 других видов группы: *Helvetica* и переописание следующих 9 видов: *Ceropales africana* ♂♀, *C. angolaensis* ♀, *C. dayi* ♀♂, *C. ferrugo* ♀♂, *C. gambiae* ♀♂ и *C. maliensis* ♀♂ (из тропической Африки); *C. haupti* ♂ и *C. indica* ♀♂ (из Азии) и *C. australensis* ♀♂ (из Австралии). Переописывались самки видов *C. lawrencei* ARNOLD и *C. spinolai* nom. nov., а также самцы видов *C. waltoni* ARNOLD и *C. helvetica bogdoensis* MÓCZÁR. Для *C. interrupta* SPINOLA, 1838 как гомоним для *C. interrupta* SAY, 1837 введено название *spinolai* nom. nov. Обозначены лектотипы для *C. judicatrix*, *karoensis*, *kriebbaumeri*, *ligea*, *multipicta* и подтверждены следующие голотипы: *C. juncoi*, *lawrenci*, *spinolai*, *variolosa* и *waltoni*. На основе типовых экземпляров установлены новые синонимы: *C. diversipes* HAUPT ♀ и *C. picturatus* HAUPT ♂ jun. syn. = *C. kriebbaumeri* MAGRETTI; *C. fulvus* HAUPT ♀♂ jun. syn. = *variolosa* ARNOLD и *C. sabulicola* PRIESNER ♀♂ jun. syn. = *juncoi* GINER. Дается определительная таблица для всех известных до сих пор видов и приводятся многочисленные данные об их распространении.

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Figs. 1—10: Fig. 1. *Ceropales africana* spec. nov., head in lateral view. — Fig. 2 = Propodeum of *C. kriechebaumeri* MAGRETTI, ♀. — Fig. 3. *C. karoensis* ARNOLD ♀, head in lateral view. — Fig. 4. *C. ligea* BINGHAM, ♀, upper half of head and thorax in lateral view. — Fig. 5. *C. kriechebaumeri* ARNOLD, ♀, last abdominal segments. — Fig. 6. *C. variolosa* ARNOLD, ♀, lateral side of thorax. — Fig. 7. *C. indica* sp. n., ♂, hind metatarsus. Figs. 8—10. *Ceropales* sp., claws. — Fig. 8 = middle leg. — Fig. 9 = last tarsal joint and inner claw of fore leg. — Fig. 10 = hind leg

Figs. 11—18: Figs. 11—12. Sternite 8 of ♂. — Fig. 11 = *Ceropales africana* spec. nov. — Fig. 12 = *C. kriechebaumeri* MAGRETTI. — Figs. 13—14. *C. gambiae* spec. nov., ♀. — Fig. 13 = head, pro- and mesonotum. — Fig. 14 = ventral side of sternite 9, on right the same partly, in lateral view. — Fig. 15. *C. angolaensis* spec. nov., ♀, right side of pronotum laterally with hump and with fore coxa. — Fig. 16. *C. karoensis* ARNOLD, ♀, propodeum. — Figs. 17—18. Sternite of ♂. — Fig. 17 = *C. haupti* spec. nov. — Fig. 18 = *C. australensis* spec. nov. in lateral view and on ventral side partly

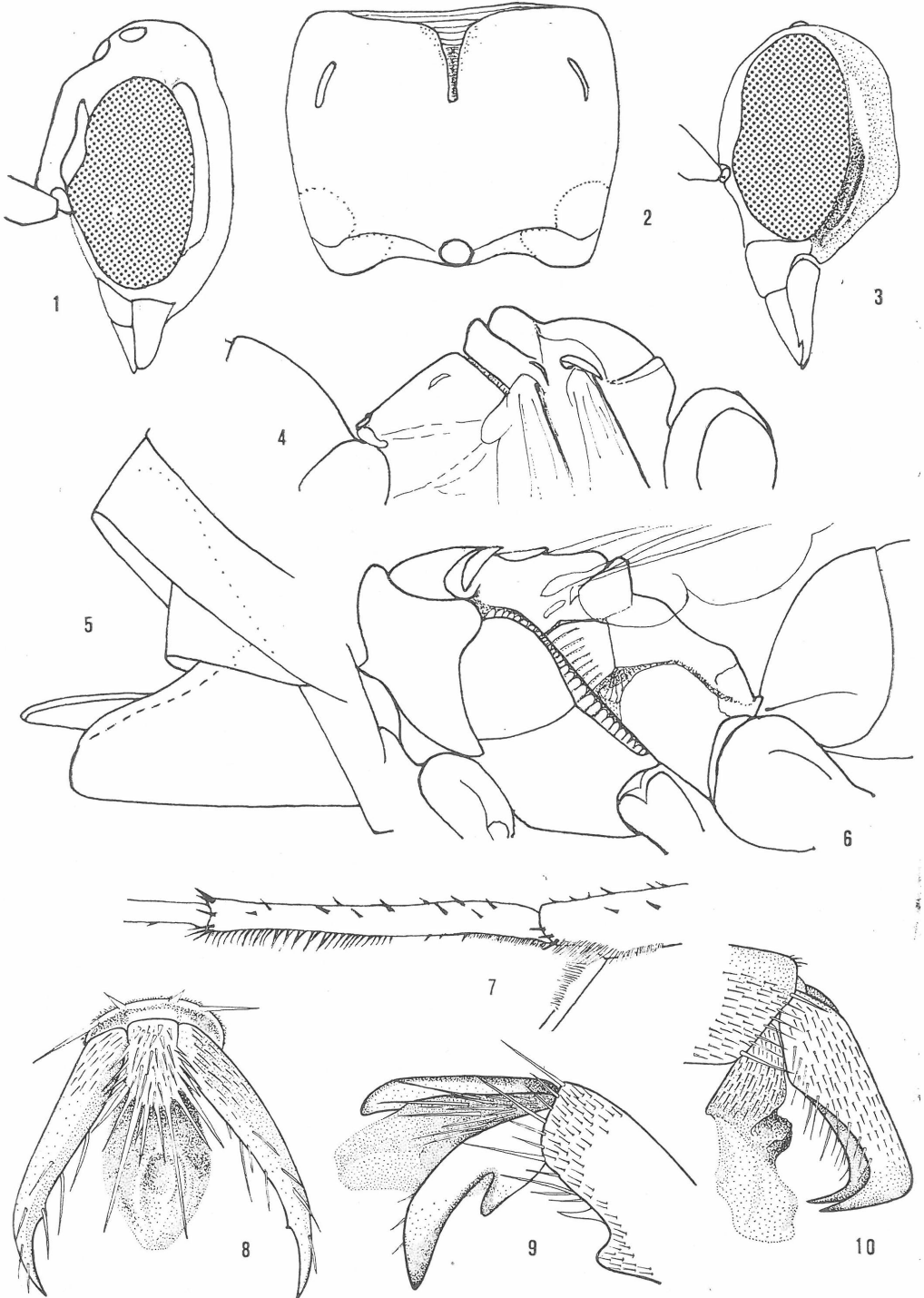


Fig. 1–10 (s. S. 45)

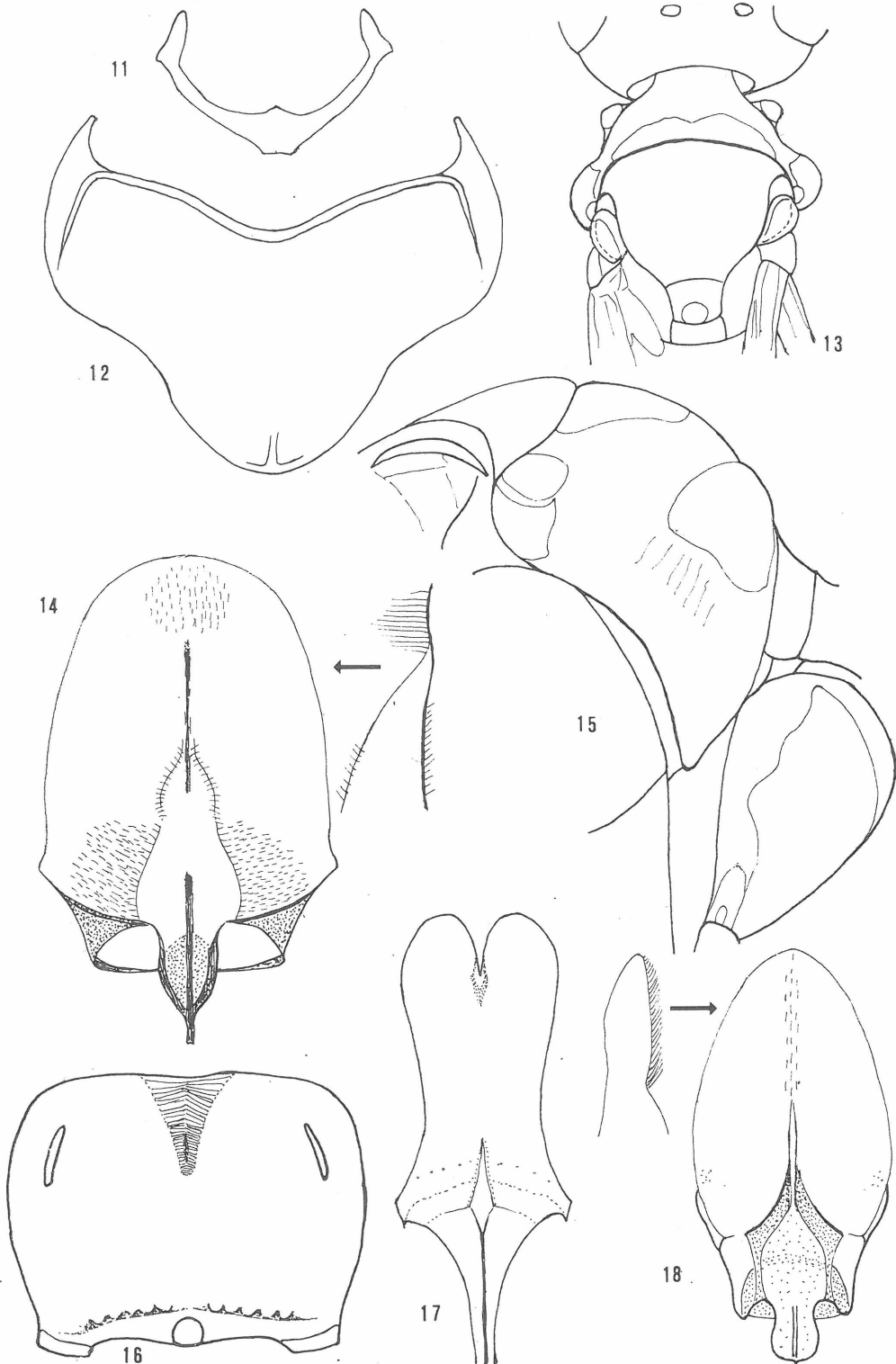
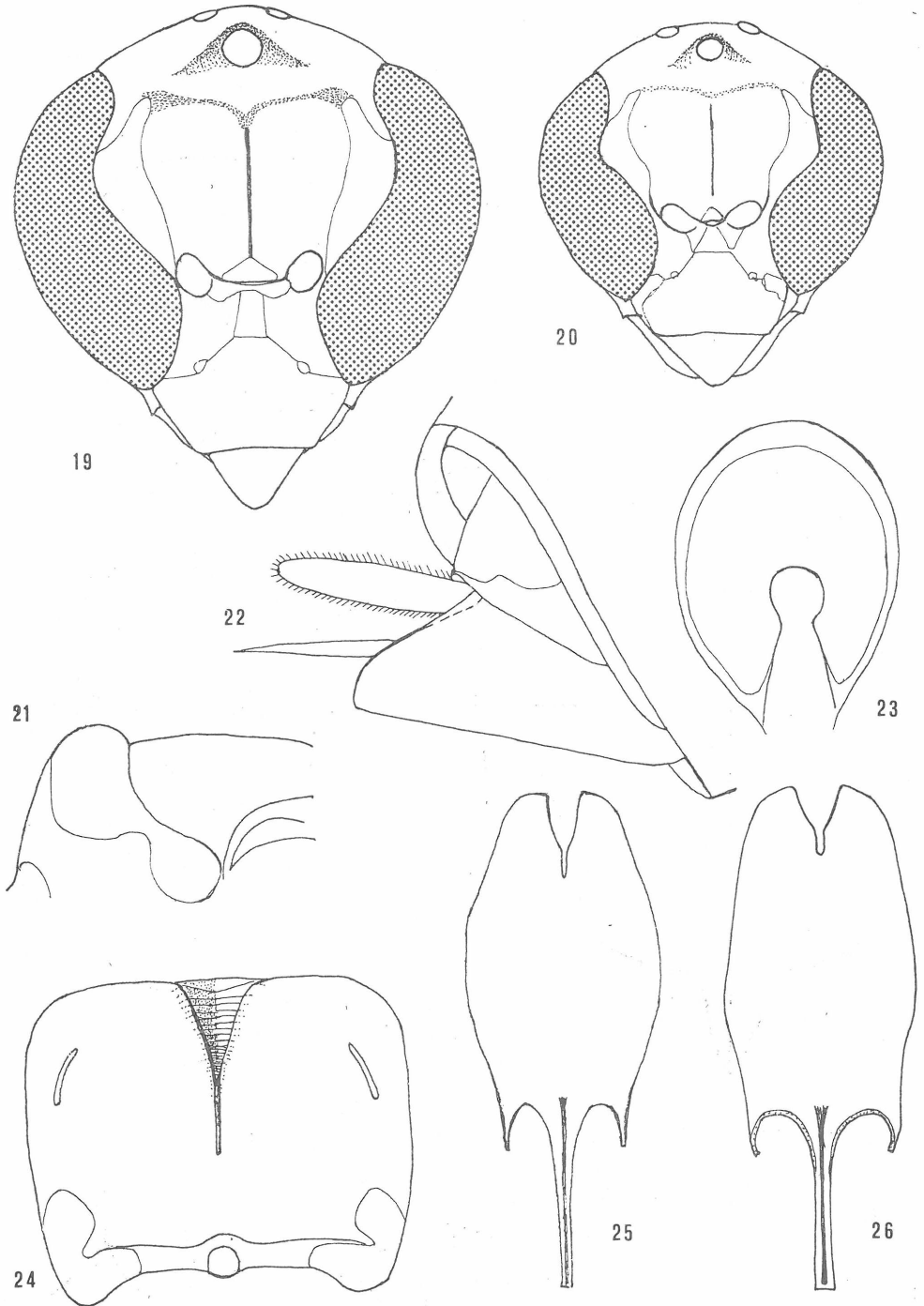
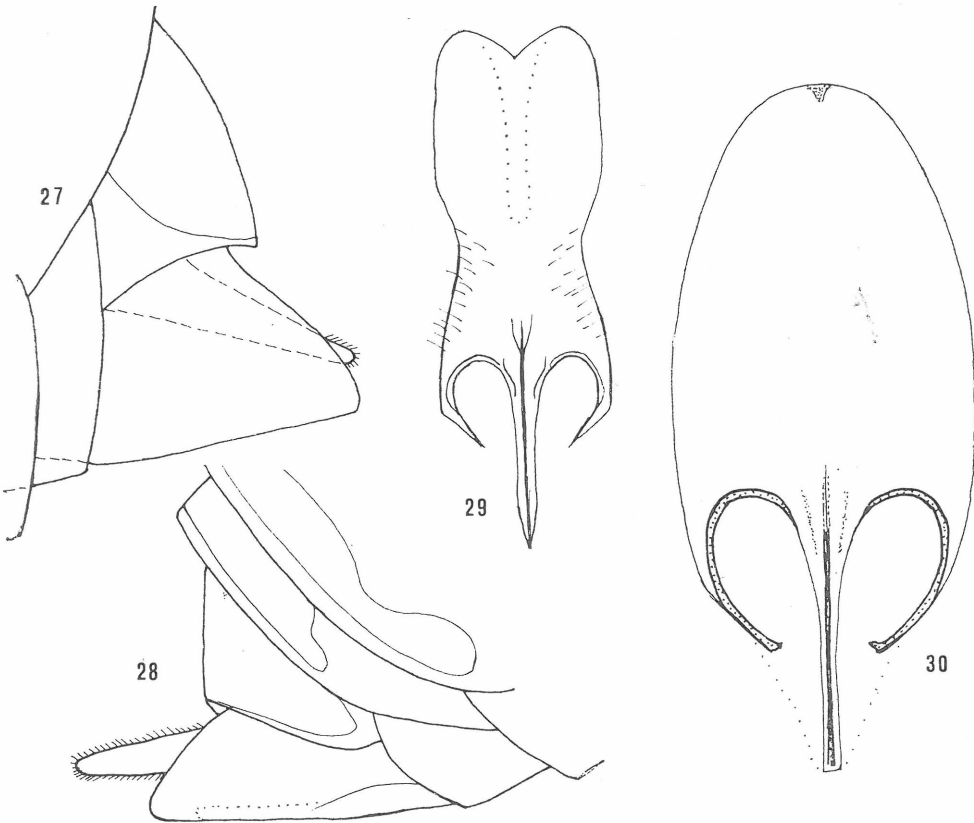


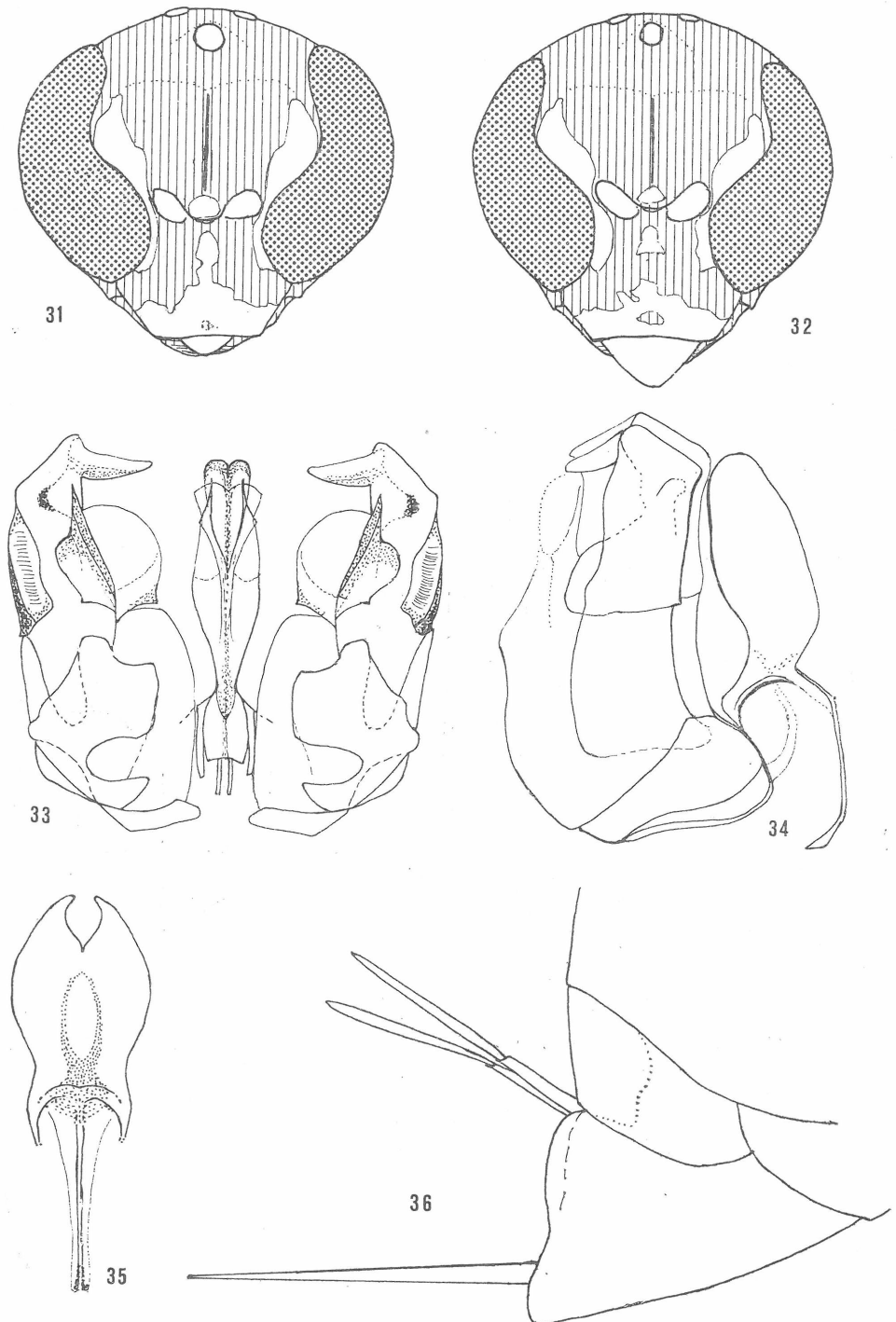
Fig. 11-18 (s. S. 45)



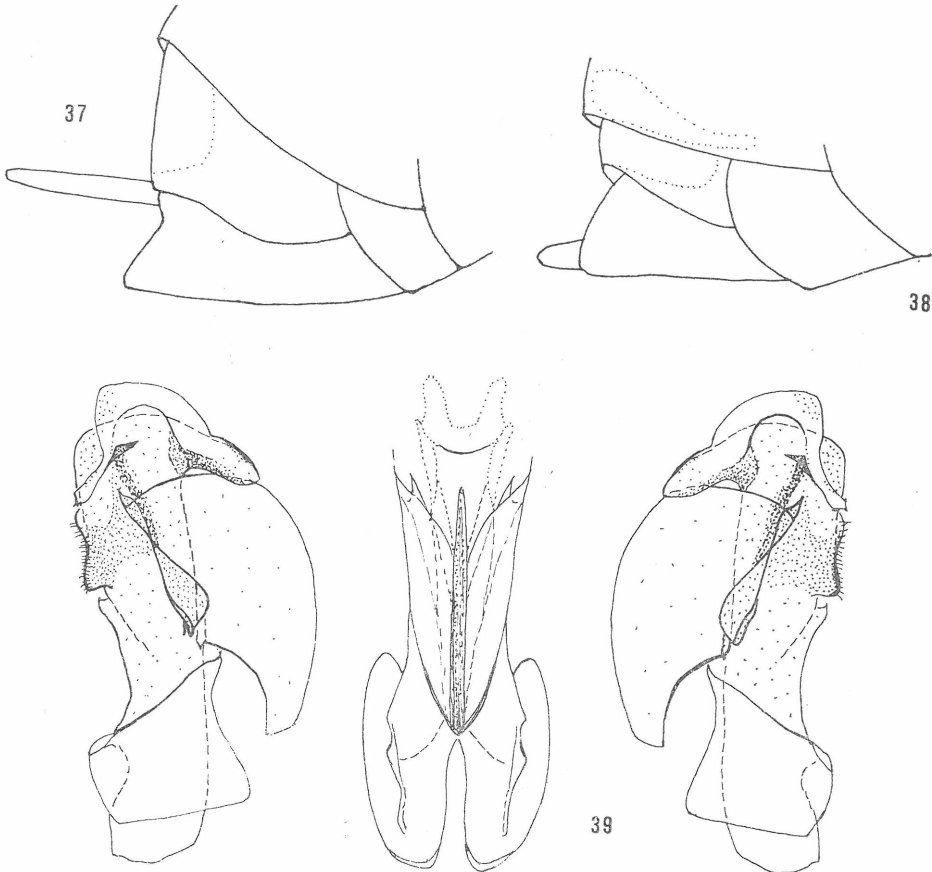
Figs. 19—26: Figs. 19—20. Head of *Ceropales africana* spec. nov. ♀ and ♂. — Figs. 21—22. *C. indica* spec. nov. ♀. — Fig. 21=pronotum and mesonotum in lateral view. — Fig. 22 =last abdominal segments in lateral view. — Fig. 23. *C. juncoi* GINER ♂, last tergite. — Fig. 24. *C. lawrencei* ARNOLD, ♀, propodeum. — Figs. 25—26. Sternite 9 of ♂. — Fig. 25 = *C. junco* GINER. — Fig. 26 = *C. krieckbaumeri* MAGRETTI
 DOI: 10.21248/contrib.entomol.39.1.9-61



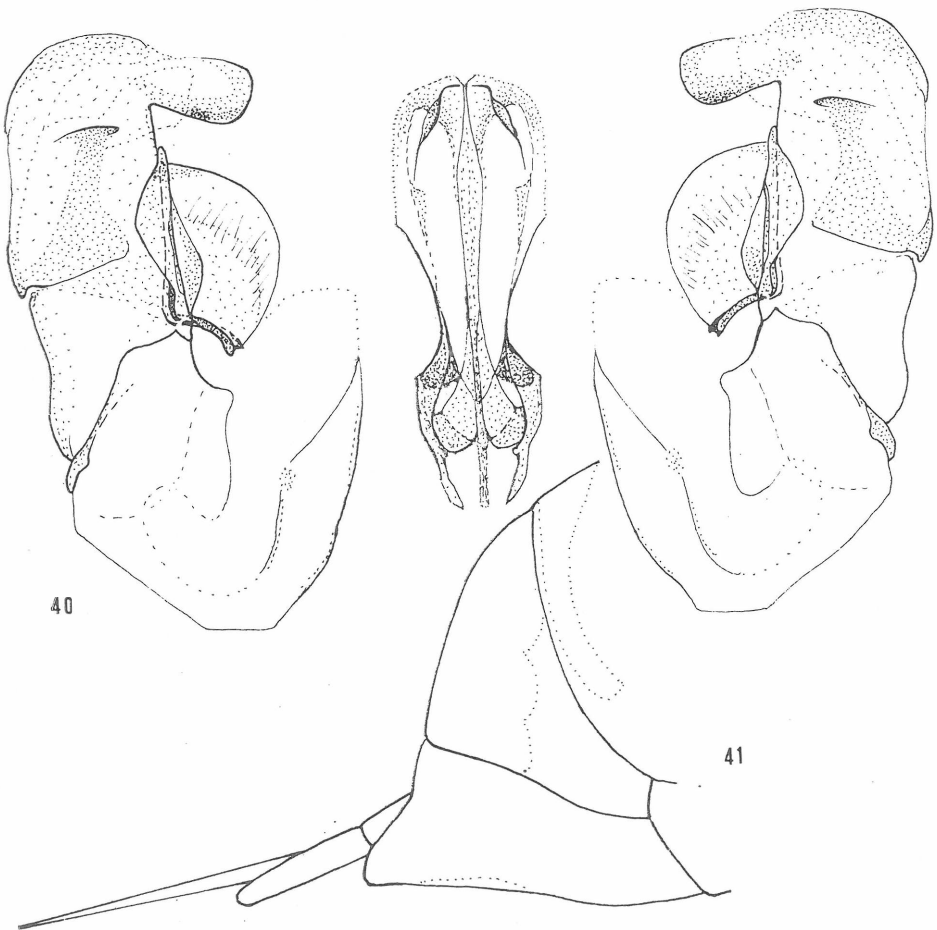
Figs. 27–30: Figs. 27–28. Last abdominal segments of ♀. — Fig. 27 = *Ceropales lawrencei*. — Fig. 28 = *C. maliensis* spec. nov. — Figs. 29–30. Sternite 9 of ♂. — Fig. 29 = *C. dayi* spec. nov. — Fig. 30 = *C. ferrugo* spec. nov.



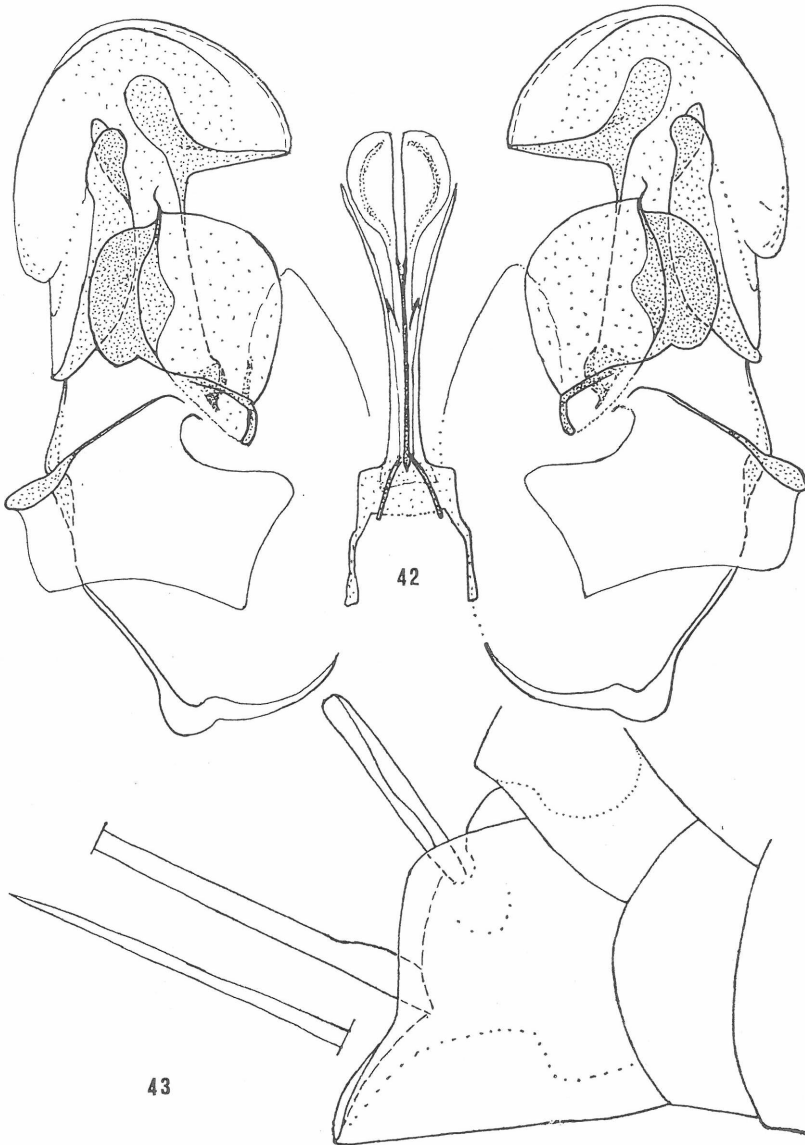
Figs. 31–36: *Ceropales africana* spec. nov. ♂. — Fig. 31–32=head of a specimen from Angola and Zambia. — Fig. 33=genitalia without basal ring, ventral view. — Fig. 34=genitalia with basal ring, ventral view. — Fig. 35=sternite 9, in ventral view. — Fig. 36=last abdominal segments of ♀, in lateral view



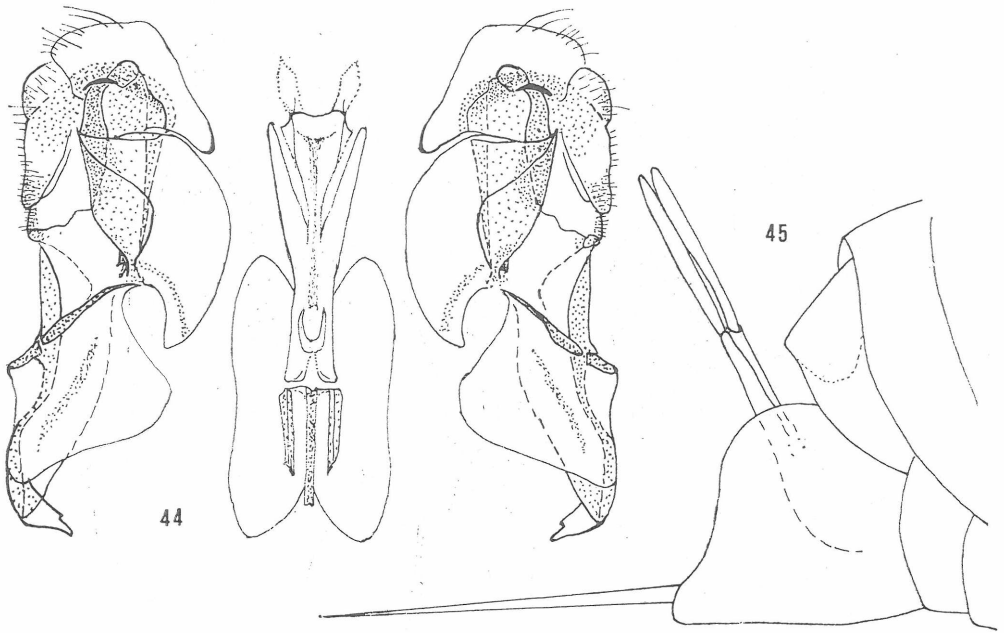
Figs. 37–39: Fig. 37. *Ceropales angolaensis* spec. nov. ♀, last abdominal segments.
– Figs. 38–39. *C. australensis* spec. nov. – Fig. 38=last abdominal segments of ♀.
– Fig. 39= male genitalia in ventral view



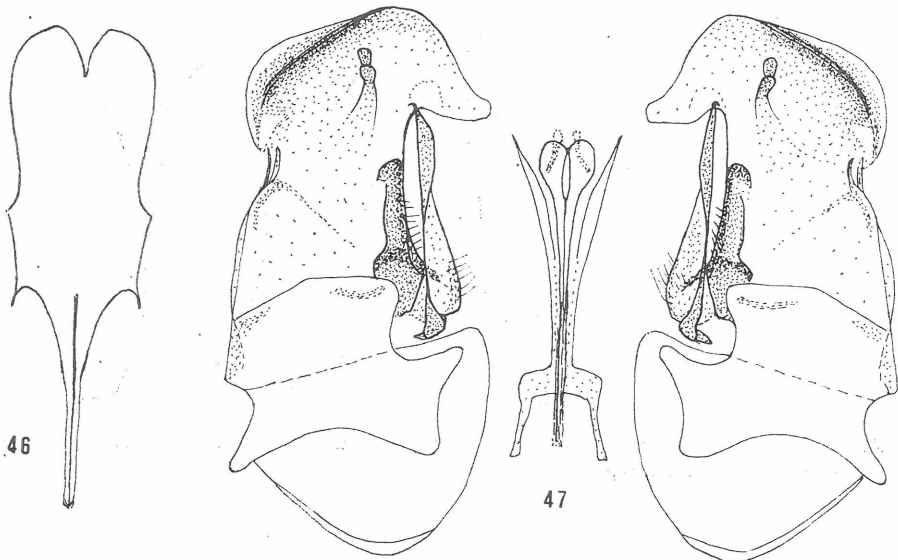
Figs. 40—41: *Ceropales dayi* spec. nov. — Fig. 40 = male genitalia, in ventral view. — Fig. 41 = last abdominal sternites of ♀, in lateral view



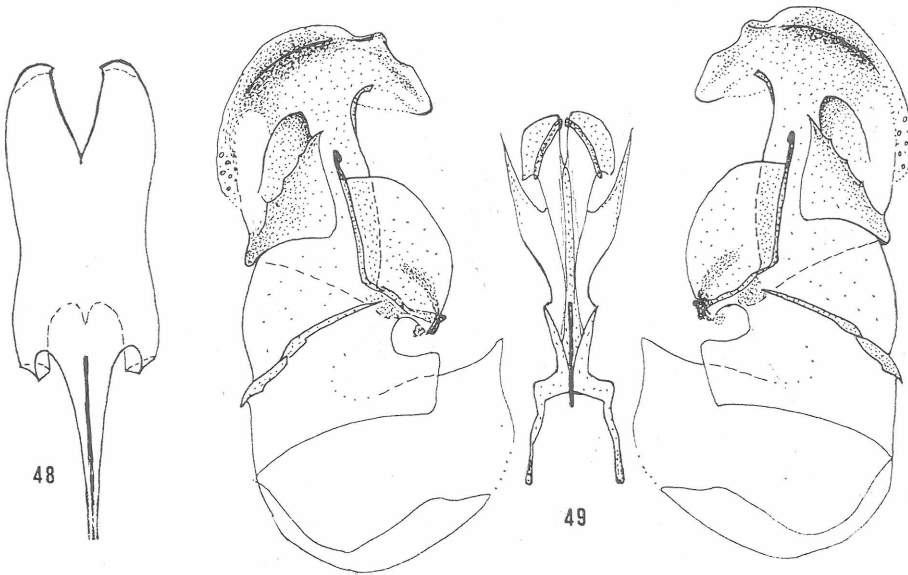
Figs. 42—43: *Ceropales ferrugo* spec. nov. — Fig. 42 = male genitalia, in ventral view. — Fig. 43 = last abdominal segments



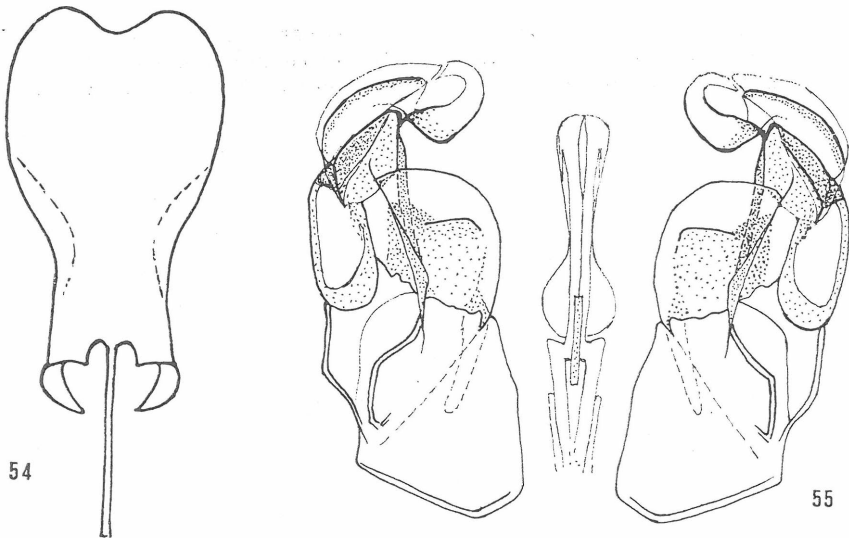
Figs. 44–45: *Ceropales gambiae* spec. nov. – Fig. 44 = male genitalia. – Fig. 45 = last abdominal segments of ♀



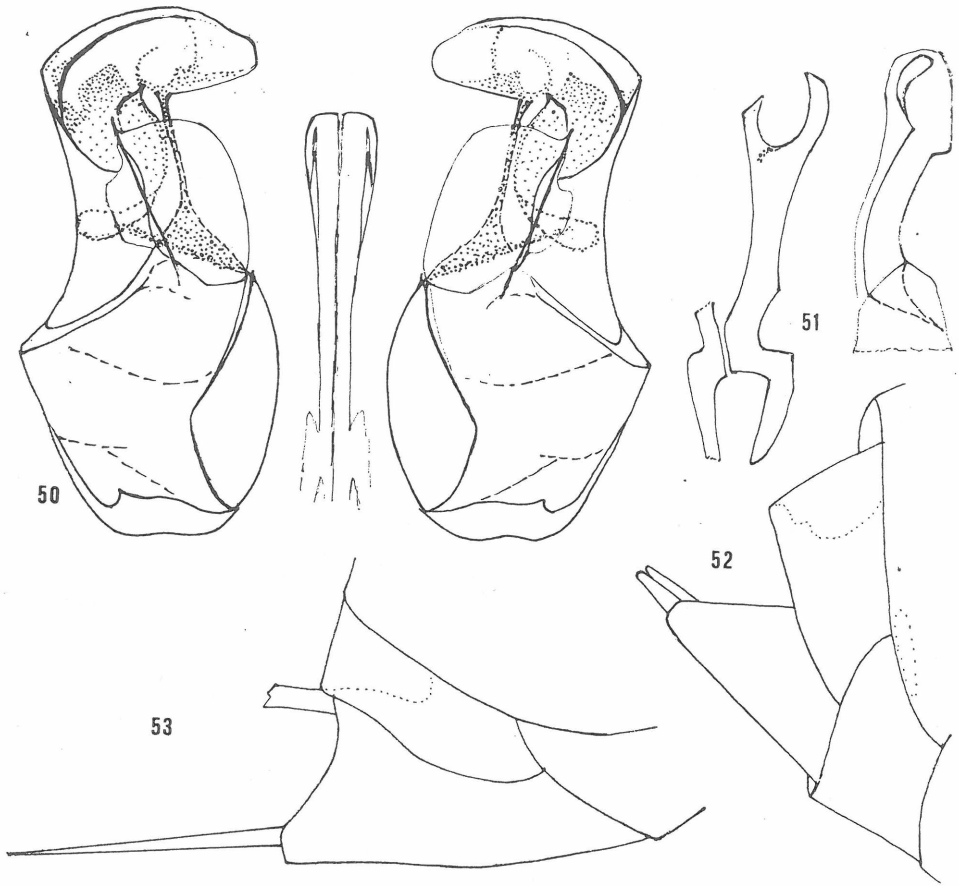
Figs. 46–47: *Ceropales helvetica* TOURNIER, ♂. – Fig. 46 = sternite 9. – Fig. 47 = male genitalia



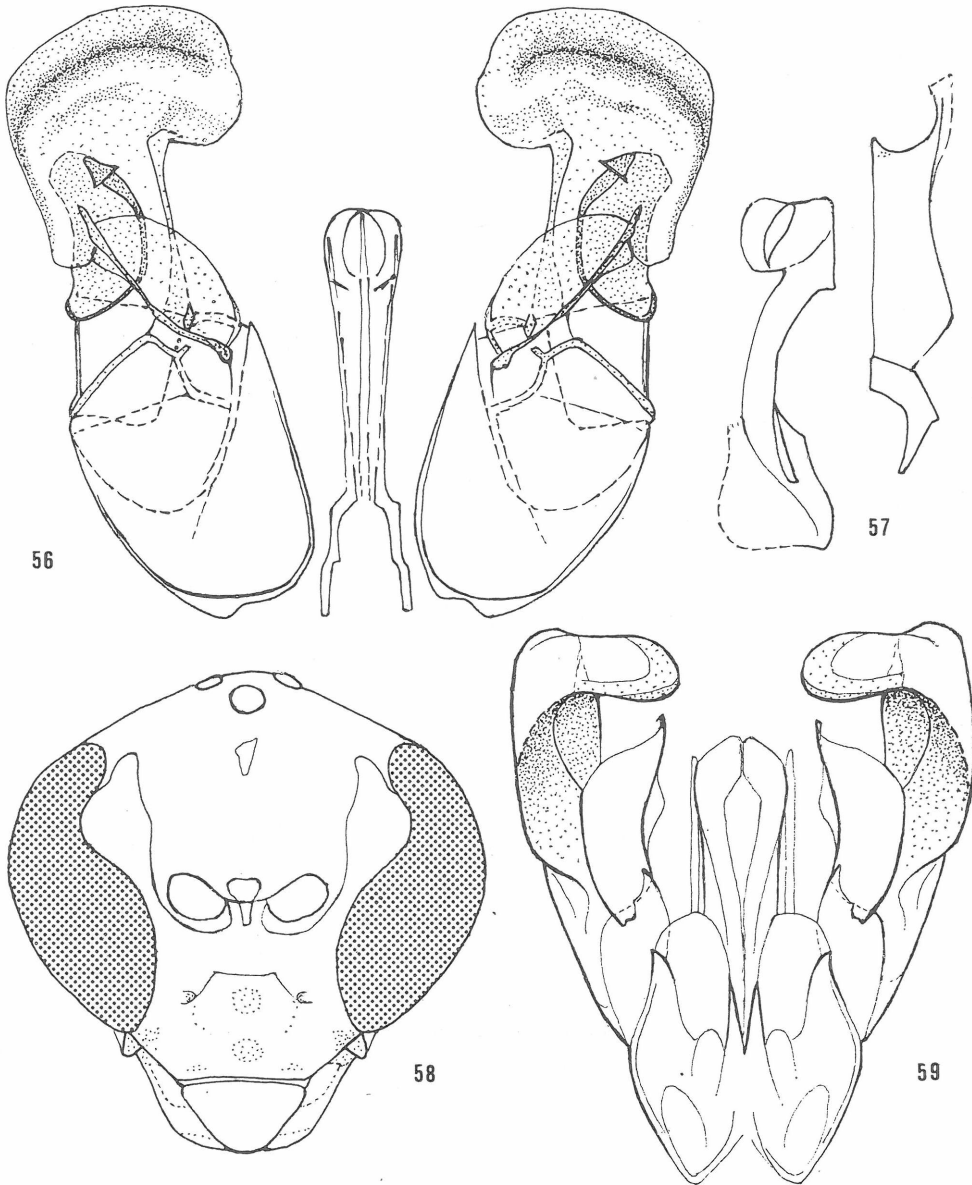
Figs. 48—49: *Ceropales indica* spec. nov., ♂. — Fig. 48 = sternite 9. — Fig. 49 = male genitalia



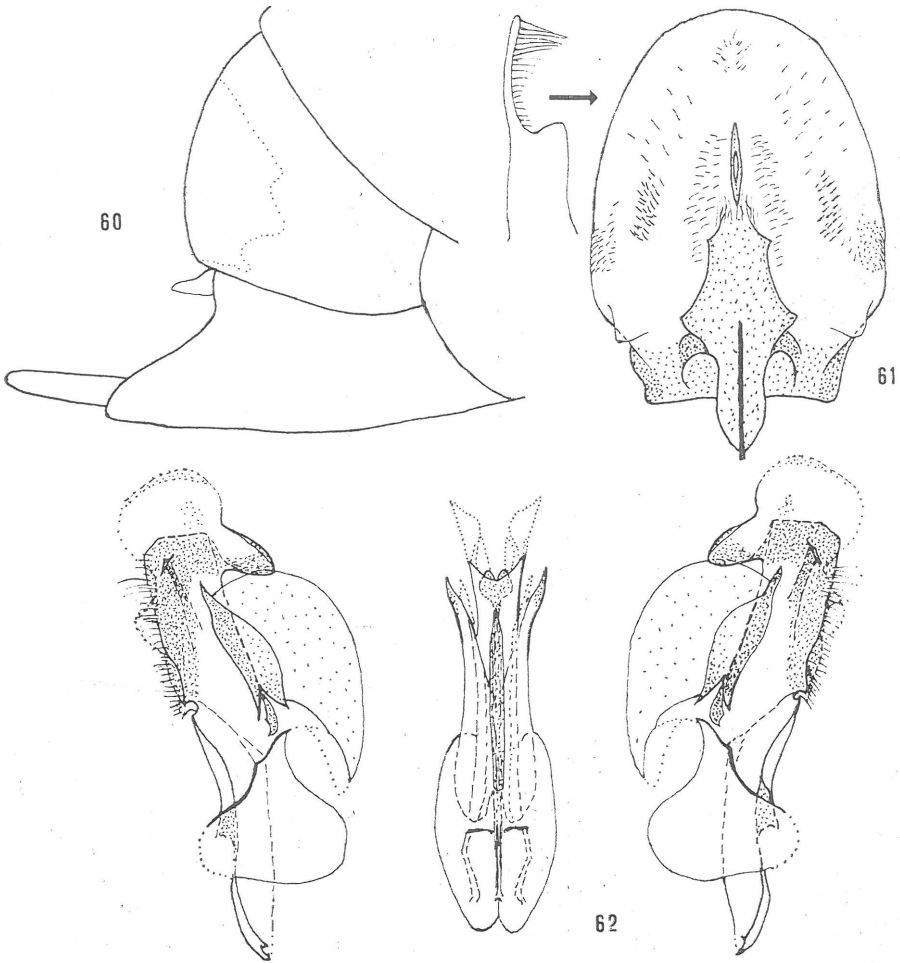
Figs. 54—55: *Ceropales karoensis* ARNOLD, ♂. — Fig. 54 = sternite 9. — Fig. 55 = male genitalia



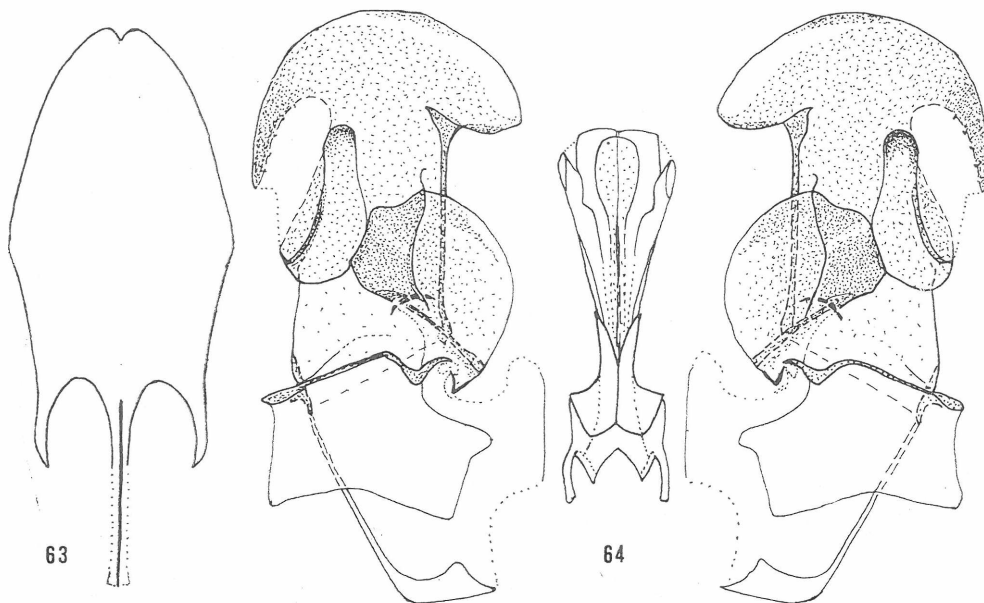
Figs. 50—53: Fig. 50—52. *Ceropales juncoi* GINER. — Fig. 50= male genitalia. — Fig. 51 =two parts of the penis valve partly and entirely in lateral view. — Fig. 52=last abdominal segments of ♀. — Fig. 53. *C. judicatrix* NURSE, ♀, last abdominal segments



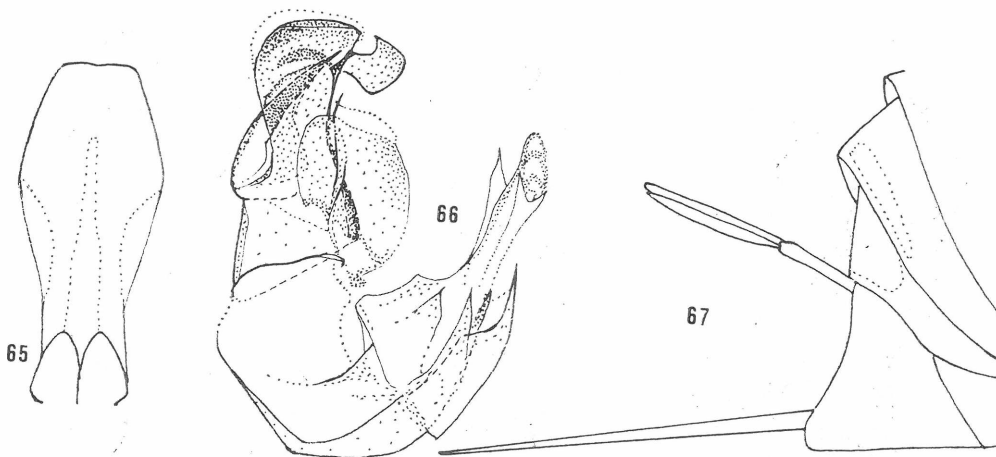
Figs. 56–59: Figs. 56–58. *Ceropales kriechbaumeri* MAGRETTI. – Fig. 56 = male genitalia. – Fig. 57 = the two parts of the penis valve in lateral view. – Fig. 58 = face in frontal view. – Fig. 59 = *C. lawrencei* ARNOLD, male genitalia



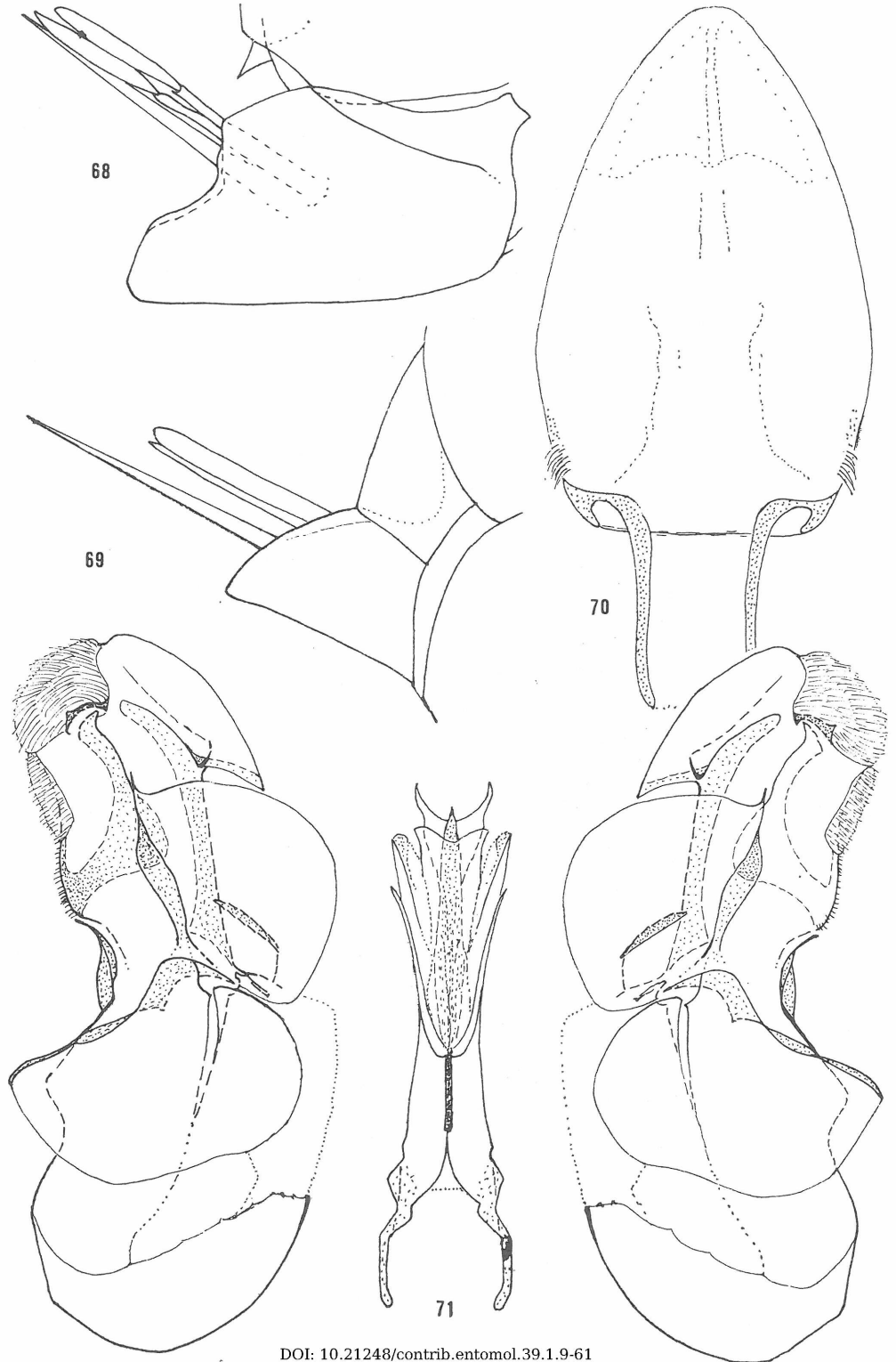
Figs. 60–62: *Ceropales ligea* BINGHAM. — Fig. 60=last abdominal segments of ♀. — Fig. 61=sternite 9 in ventral view and apex in lateral view. — Fig. 62=male genitalia

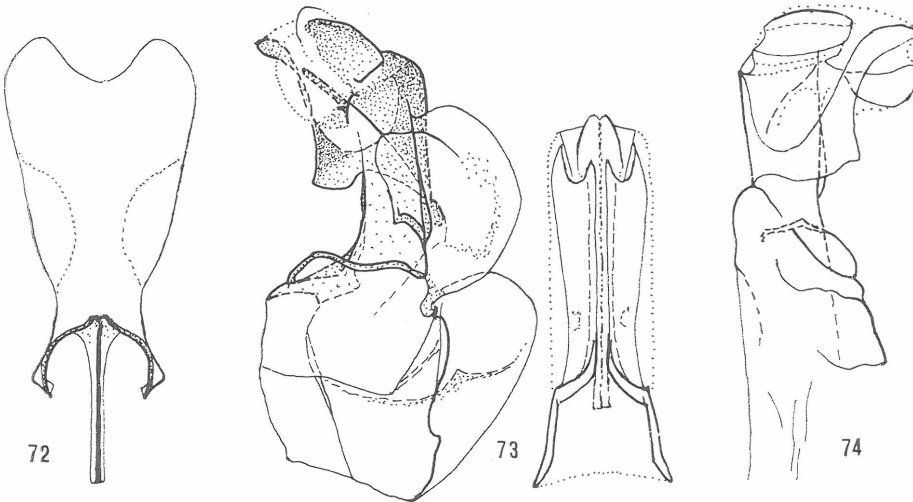


Figs. 63—64: *Ceropales maliensis* spec. nov. ♂. — Fig. 63=sternite 9. — Fig. 64=genitalia, in ventral view



Figs. 65—67: *Ceropales multipicta* ARNOLD. — Fig. 65=sternite 9. — Fig. 66=left side of the male genitalia in ventral view together with the penis valve, partly in lateral view. — Fig. 67=last abdominal segments of ♀





Figs. 68—71: Fig. 68. *Ceropales spinolai* nom. n. ♀, last abdominal segment with a part of the penultimate one, from above. — Figs. 69—71. *Ceropales variolosa* ARNOLD. — Fig. 69=last abdominal segments of ♀. — Fig. 70=sternite 9 ♂, in ventral view. — Fig. 71=male genitalia, in ventral view

Figs. 72—74: *Ceropales waltoni* ARNOLD, ♂. — Fig. 72=sternite 9. — Fig. 73=right side of genitalia and penis valve. — Fig. 74=left side of genitalia partly, inside view

Besprechungen

Grape Pest Management. Coop. Ext. Univ. California. Divis. Agric. Nat. Ress. — Oakland 1982. — 312 S. (Publication 4105). — Preis 25.00 \$.

Das vorliegende Buch verstehen die Verfasser als Anleitung zum integrierten Pflanzenschutz im Weinbau (Integrated Pest Management/IPM).

Es soll landesweit (im USA-Staat Kalifornien) den Produzenten und Beratern über alle wichtigen Schaderreger Auskunft geben. Neben einleitenden Abschnitten ist das Buch in 9 Sektionen gegliedert. Hauptbestandteil des ersten Kapitels ist ein Kalendarium, in dem die wichtigsten Maßnahmen im Weinbau u. a. mit Hinweisen zur optimalen Terminisierung von Überwachungs- und Bekämpfungsmaßnahmen verzeichnet sind. Das Kalendarium ist phänologisch spezifiziert auf die fünf bedeutsamen Weinanbauggebiete Kaliforniens. In den weiteren Sektionen wurden die Krankheiten, die Hauptschadinsekten und -milben, die weniger wichtigen Schadinsekten und -milben, die Schaderreger in der Lagerhaltung, die Nematoden, die Vertebraten und die Unkräuter beschrieben. Für jede Krankheit werden die Symptome, der Entwicklungszyklus und Empfehlungen zur gezielten Bekämpfung dargestellt. Das Buch ist mit sehr guten Mikro- und Makrofotos, mit Luftbildern sowie instruktiven Schwarz-Weiß-Zeichnungen vorzüglich ausgestattet. Ein Glossar am Ende der Kapitel unterstützt das gute Verständnis der Ausführungen.

G. LUTZE

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