

One male, the holotype, JUAN FERNANDEZ: Mas-a-tierra; B. Cumberland, 4.iii.1951 (*F. G. Kuschel*), B.M. 1954-57. This species is dedicated to its collector, Fr. Kuschel.

Delphacodes selkirki Muir. (Fig. 8, A-C)

Segata selkirki Muir, 1924, in Bergroth, *Nat. Hist. Juan Fernandez* 3 (Zool.): 401.

Fuscous; carinae and margins of head, about four transverse bands across median portion of frontal disc, pronotum, mesonotum, antennae, rostrum except at apex, femora except marginally, tibia at base and apex, lateral spines of post-tibiae, calcar and tarsi (except at base), testaceous. Brachypterous tegmina hyaline, a suffusion at base brown, a spot at middle of apical margin and another at apex of clavus, and a suffusion across intervening cells between these spots fuscous; apical margin distad of this suffusion pallid yellow.

Post-tibiae with two spines laterally, five at apex, basal metatarsal segment seven-spined; second segment four-spined; calcar with twenty-three even minute teeth along edge.

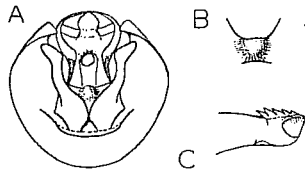


FIG. 8.—*Delphacodes selkirki* Muir. A, Male genitalia, posterior view; B, armature of diaphragm; C, apex of aedeagus, left side.

Anal segment of male short, ring-like, lateroapical angles each produced ventrad in a long, moderately stout spine, bent ventrad, then ventrolaterad and finally curved ventromesad at apex. Pygofer in posterior view about as broad as deep, laterodorsal angles strongly produced and incurved; diaphragm broad at sides, narrow medially; surface hollowed out submedially, armature smooth, projecting caudad in a knob-like boss. Aedeagus short and broad, narrowed distad with dorsal margin straight, ventral margin sinuate; orifice terminal, deeper on left side, upper rim a little projecting and surmounted by an incomplete crown of eight or nine teeth. Genital styles moderately elongate, broad at base, sinuately tapering to near apex, where they are a little expanded and obliquely truncate.

Male: Length, 3.1 mm.

Female: Length, 3.0 mm.

Two brachypterous males and eleven brachypterous females, JUAN FERNANDEZ: Mas-a-tierra; 200 m., P. del Yunque, 9.ii.1952, B.M. 1954-57; Miradero, 300 m., 10.13.iii.1951; B. Cumberland, 4.i.1952; two specimens bearing only the labels "5" and "9" respectively (*F. G. Kuschel*).

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 MUIR, F. A. G., 1919, Notes on the Delphacidae in the British Museum Collection. *Canad. Ent.* 51: 6-8.
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THE MEGAPODAGRIIDAE AND AMPHIPTERYGIDAE (ODONATA) OF THE AFRICAN CONTINENT.

By Lt.-Col. F. C. FRASER, I.M.S., Retd., F.R.E.S.

SPECIES belonging to the families Megapodagriidae and Amphipterygidae have a wide and extremely broken distribution and must be regarded as archaic remnants of a once world-wide circumtropical fauna. Present day species are to be found in the neotropics of Central and South America and the tropics of S.E. Asia, Papua, Australia and Madagascar; fossil species have been described from the Eocene and Miocene of North America.

The African continent is singularly poor in species of both families, only two belonging to the Megapodagriidae and a single species to the Amphipterygidae being known; this paucity compares strikingly with the fauna of the neighbouring island of Madagascar, from where not less than 22 species of Megapodagriidae have been reported. None of the three genera to which these species belong is represented in Africa, although *Neurolestes trinervis* Selys, one of the two African species, is closely related to them.

Recently all three African species of the Amphipterygidae and Megapodagriidae have been received by me. Mr. John Cowley has generously presented me with a male of *Neurolestes trinervis* and a female of *Pentaplebia stahli* Förster, whilst Mr. Elliott Pinhey has given me a female of *Coryphagrion grandis* Morton; the original type of this species, a female, has been presented by me to the British Museum. In addition to these specimens, a female of *Neurolestes trinervis* Selys in the collections of the Centre Faunistique, Paris, has been sent to me for study and Mr. Jorgen Dahl, of the Copenhagen University Museum, has sent me specimens of the nymph of *Pentaplebia stahli* Förster, which he collected in the Cameroons, West Africa, and which had fortunately retained all details of the venation of the wings and so were easily identifiable.

I am especially indebted to Mr. John Cowley for the loan of photographs of the habitats and coloured figures of *Neurolestes trinervis* and *Pentaplebia stahli*, as well as lengthy notes about the nature of the habitats and details of venation of specimens in his collection and for the generous gift of examples of each. As only a single male of *P. stahli* is known, the type in the Ann Arbor, Michigan University collection, I had to rely on Mrs. Leonora Gloyd for figures of the anal appendages which she very kindly executed for me. Little is known of the ecology of *Coryphagrion grandis*, but Mr. Elliot Pinhey of the Coryndon Museum, Nairobi, has given me notes on the habitats and flight of the species, as well as presenting me with a female specimen. To all these specialists I wish to express my deep appreciation and thanks for their co-operation without which this paper could not have been written.

Coryphagrion grandis Morton. (Fig. 1 and 5, c.)

Coryphagrion grandis Morton, 1924, *Entomologist* 57: 218. (Type).
 Kimmins, 1931, *Ann. Mag. nat. Hist.* (10) 7: 215. (Allotype).

The type was said to have been taken in forest far from any water, several others having been seen but not captured. This would suggest that the breeding

places are of unusual character and, secondly, that the insect is difficult to capture. Mr. Pinhey has taken the species in the Kimboza forest, Morogoro, Tanga territory, x.51, and Mr. Van Someren in the Shimba Hills, North of Mombasa, iii.41. The former has sent me the following notes:—" *C. grandis* occurs near the coast on the Tanganyika-Kenya border and also near Morogoro in East-Central Tanganyika: always in rather dense forest; flight slow but capable of sudden quick movement to dodge obstacles (or a net!); generally I have seen it perching on twigs or lianas at about 6-10 ft. in spots where the sun has penetrated; but one or two females were fluttering close to the ground. At the height of the dry season they can be seen still on the wing although the only water available may be a mere trickling forest stream. There is no standing water in rock-holes; vegetation is very dry and there are no Bromeliads, only certain palms and a few banana plants. It is just possible, I suppose, that the adults had survived 3 or 4 months and that the larvae could race through their cycle in a short time in the wet season—otherwise they would be desiccated! These forests are not comparable to those of high rainfall as in West Africa, or Asia and America. Perhaps, after all, they breed in mud or in the streams? There is no vegetation in the streams and I dredged up very few larvae, mostly *Libellulines*."

This suggests to me that *Coryphagrion* aestivates in the same way as species of *Lestes* in the Oriental region which, at the beginning of the monsoon rains, return to water, oviposit and pass through their complete life cycle in paddy fields in the short space of four months. The extremely long abdomen would be a cumbersome instrument for oviposition in mud and I see no reason why it should be developed to such great length for ovipositing in streams. The comparison with the neotropical *Pseudostigma* is so close that I think there can be no doubt that a similar method of ovipositing is resorted to, viz. that of depositing the eggs in the bracts of plants or palms and this probably at the advent of the rains in the wet season. Heavy dews would keep these receptacles full for a period of six months and quite long enough for the insect to complete its nymphal life. I have measured the combined length of the male and female *in cop.*, which is 8.5 inches (217 mm.), which compares with that of *Mecistogaster lucrelia* (Drury), the longest of the Amazonian *Pseudostigmas*, 9.5 inches (225 mm.). I regard the close similarity of these measurements as very significant.

Neurolestes trinervis Selys. (Figs. 2 and 4).

Neurolestes trinervis Selys, 1884, *C.R. Soc. ent. Belg.* 29: cxliv. 1886, *Id.*, *Mem. Cour.* 38: 71.

Kirby, 1890, *Cat. Odon.*: 124.

Karsch, 1896, *Ent. Nachr.* 22: 21.

Martin, 1907, *Mem. Soc. exp. Hist. nat.* 23: 428.

Munz, 1919, *Mem. Amer. ent. Soc.* 3: pl. 10. 62.

Kennedy, 1920, *Ohio J. Sci.* 21: 129, pl. 10.

Mr. Cowley has sent me details of venation of 4 males and a female, and I include in these those of a female in the Paris collection.

Antenodals 3 (4 in 2 hind wings); cubito-anals 3 to 5 in all wings, generally only 4, one or two of which may be proximal to the level of the antenodals; postnodals 10 to 21 in fore wings, 17 to 10 in the hind; origin of Riii from the 7th to 9th postnodals in fore

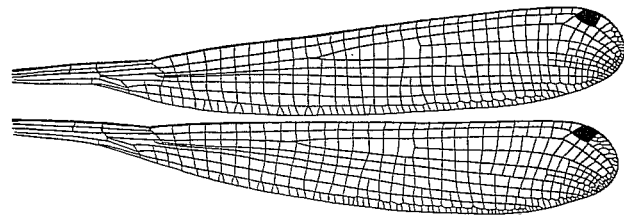


FIG. 1.

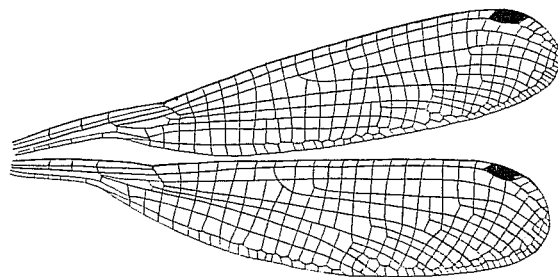


FIG. 2.

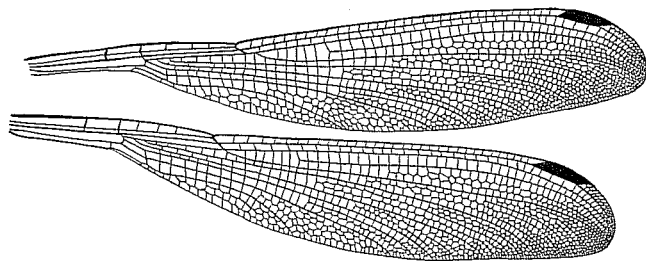


FIG. 3.

FIGS. 1-3.—Wings of (1) *Coryphagrion grandis* Morton; (2) *Neurolestes trinervis* Selys; (3) *Pentaphtebeia stahli* Förster.

wings, 8th to 7th in the hind; origin of IRii at level of 9th to 11th postnodals in fore wings, 8th to 10th in the hind. The pterostigma is unbraided and Rii not angulated distally, as is the usual formation in the Megapodagriidae. IRiii arises constantly at the subnodus and Riv+V one cell before; finally two intercalaries always present between the main longitudinal veins from IRiii to MA.

With regard to the colours in life, the collector, Monsieur R. Borelly, has sent a coloured sketch executed by his wife which shows that the pale colours on the face, coxae, and sides of segments 2 to 7 are yellow, pale greenish-yellow on the sides of thorax, whilst the transverse stripe on the vertex of head and the antehumeral stripes are brick-red. In the female, these colours are similar

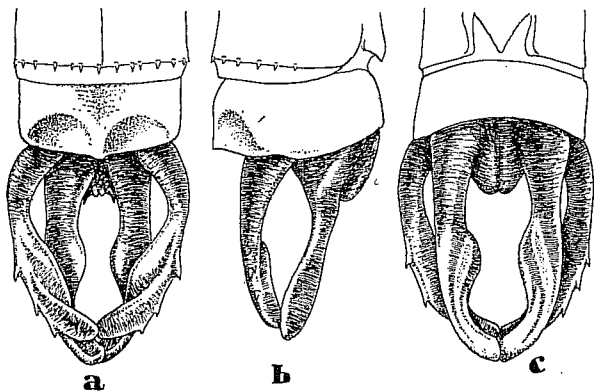


FIG. 4.—Male anal appendages of *Neurolestes trinervis*. (a) Dorsal view, (b) right lateral, (c) ventral.

except for the two latter, which are a beautiful olive-green. The dorsum of segment 9 is pale azure blue with a moderately broad apical black annule; in the female this segment appears to be greenish-yellow with the mid-dorsal carina finely black, but in old adults it probably changes to blue, as in the male. In the type, the antehumeral stripes are said to be broadly interrupted at the middle and upper thirds, but this is seen to be the case only in the female taken by Borelly, whilst the Paris female shows only a slight narrowing at this level. In the males examined these stripes are complete, although greatly and abruptly narrowed above (only on one side of one male is the stripe broken up into a lower stripe and an upper triangular spot).

Of this species M. R. Borelly says that it is very rare and taken in forest. The type came from Old Thal, Cameroons, and all other specimens have come from the same montane area; 1 male from N'Kingsamba, 900 m., xii.36; 1 female and 2 males from Dehane, ii-iii.37 and the Paris specimens from

Evodoula, xi.51. I have figured here, for the first time, the anal appendages and it will be seen that the Selysian description is not quite accurate; thus the superiors are much more curved than the inferiors and bear three robust spines on their outer border; the inferiors are nearly parallel and present a medial swelling on their inner border—the whole appendage is shaped like the strongly extended foot with the toes strongly flexed of a ballet danseuse, the medial swelling representing the heel.

The relationships of the above two species and their correct place in the Order are easy to assess in the case of *N. trinervis*, but equally difficult in that of *C. grandis*. *N. trinervis* is undoubtedly closely related to the Madagascan *Nesolestes*, except the triplicating of the antenodals (but this is probably an acquired speciality). It is of interest to note that the extra antenodal, the most proximal one, is of the same strength as the primaries. Of greater interest are the accessory cubito-anals, which suggest an increasing tendency for the origin of the anal vein to move nearer the base of the wing. The apices of the wings are more rounded than is usual and the hind wing is definitely broader than the fore.

Morton, in a careful analysis of the characters of *Coryphagrion*, suggested that it was nearest *Megapodagrion*. This may be so, judged by the characters listed by Calvert, but there are serious difficulties to accepting this placing. Thus, there are no long intercalaries which are a generic character for *Megapodagrion*, and indeed for the whole of the family; the pterostigma is strongly braced and Rii is angulated at the meeting with that brace—both characters foreign to the Megapodagriids. The greater part of the venation lies closer to the Protoneuridae than to the Megapodagriidae, but the present anal vein excludes it from the former family. The shape of the wings, their venational characters and the extraordinarily long abdomen are identical to those of the Pseudostigmatinae, especially the genus *Mecistogaster*, and I have suggested a similar method of oviposition. The penis, figured by Kimmins, is extremely simple in structure but has a greatly hypertrophied internal fold (not shown by Kimmins) and, apart from this character, is closely similar to that of the Central American *Thaumtoneura inopinata* McLachlan (which is another problem species in the Odonata). Although I have here retained *Coryphagrion* in the Megapodagriidae, I believe it to be very doubtfully placed in the family.

Pentaplebia stahli Förster. (Figs. 3 and 5, a).

Pentaplebia stahli Förster, 1909, *Jb. nassau. Ver. Naturk.* 62: 213.

No further descriptions of this rare species have been published since Förster first described it and no figures have been made of its venation or genitalia, which I am now able to supply. Two errors in Förster's description must first be pointed out. In the first line on p. 213 he gives the length of the abdomen as 23 mm., but in the second paragraph, as 42 mm.; the latter is the correct measurement. On line 5 he states that there are 52 to 54 antenodals, but postnodals was obviously meant. Mr. Cowley has given me particulars of the venation of three females collected by Monsieur Borelly, as follows:

Two complete antenodals (the primaries); secondary (incomplete antenodals running from the costa to subcosta) 2 to 4 in the fore wings, 3, 3, 2 and 4 in the hind; no accessory cubito-anals; postnodals vary in fore wings from 39 to 47 and in the hind from 34 to 40;

Riii takes origin nearest postnodal 5 to 9 in forewings and nearest the 5th to 7th in the hind; 2 to 3 intercalaries between the anal vein and posterior border of wing; 2 rows of cells between the costa and Ri distal to the pterostigma, increasing to 3 rows apically.

A coloured sketch of the living female by Madame Borelly, which accompanied the three females, shows some characters which were absent in Förster's specimens. The thorax shows some pale green markings as follows: Linear antehumeral stripes; a posthumeral linear stripe incomplete in its lower half; a broader stripe extending from between the wing roots to the middle coxae and lastly a narrow stripe on the anterior border of the metepimeron which is confluent below with the median stripe; the ground colour between these

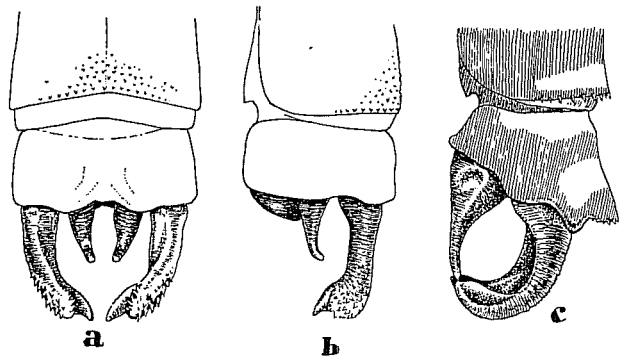


FIG. 5.—Male anal appendages of (a) *Pentaplebia stahli*; (b) the same, left lateral aspect; (c) *Coryphagrion grandis*, left lateral aspect.

stripes is a dark chocolate-brown. The abdomen is pale yellow below, reddish or ferruginous on the sides and dull reddish on the dorsum, deepening to dark reddish-brown at the apical ends of the segments and finally to black at the intersegmental nodes. Segment 9 is azure blue for almost its apical half (but green in the female Mr. Cowley has presented to me, probably from *post-mortem* decomposition). The presence of this blue annule in the female makes it certain that segment 9 is partly and probably entirely blue in the male, although this is not mentioned by Förster. Förster also does not mention the fact that the superior anal appendages are coated on the outer side of the apex with numerous spines, which are most robust on the border of the sulcus separating the apex from the inner beak-like spine (fig. 5, a, b).

In a small collection of Odonate nymphs sent to me for study by Mr. Jørgen Dahl, of the Copenhagen University Museum, I have seen nymphs of at least two instars belonging to *P. stahli*, the identification being made from the venation of the wingpads in which every vein was clearly visible, so much so that even the minute double row of cells following the pterostigma could be seen with clarity. This nymph is comparable with the bizarre *Rimanella arcana* (Need-

ham) and the two may be considered as the most remarkable forms so far found in the Order. Its description follows:

Total length 23 mm. Body 18 mm. Appendages 5 mm. (Fig. 6.)

Head pentagonal, eyes globular, bordered anteriorly and externally along the lower border by a narrow plaque which is fringed with closely-set, short vibrissae; similar vibrissae border the labrum anteriorly to form an almost continuous fringe across the front of the head; antennae 6-segmented, the penultimate basal segment greatly enlarged and compressed and again fringed, as in the case of the eyes and labrum, thus completing the continuity of the fringe. Three dark spots on the mid-line of head, a small quadri-

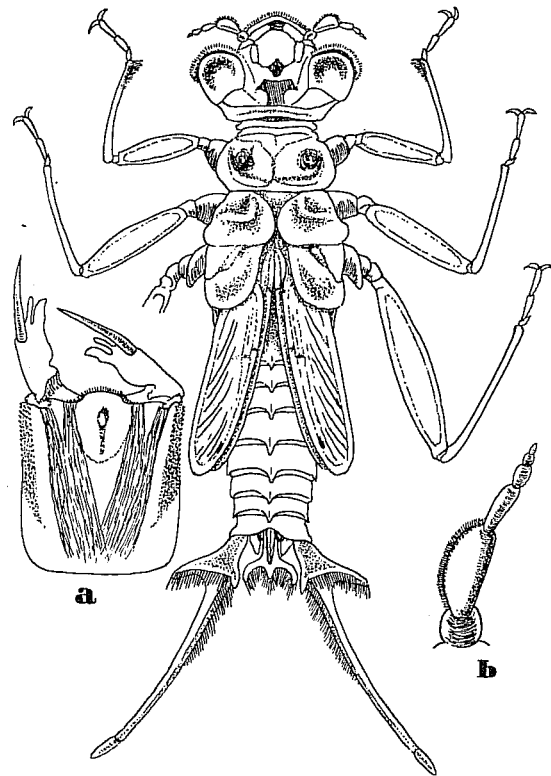


FIG. 6.—Nymph of *Pentaplebia stahli*. (a) Labrum, (b) antenna.

lateral spot on the epistome, an arrow-head-shaped spot on the vertex and a much larger T-shaped spot on the occiput. Prothorax and thorax massive and irregularly ridged and furrowed, the former bearing a large conical obtuse spine on each side of dorsum. Wing-pads large, extending to the sixth segment of abdomen (but the latter may have shrunk in which case they would extend only to the fifth), venation in wings very clearly defined so that the number of postnodals can be counted and the pterostigma clearly seen. *Legs* rather long, splayed out from the body and markedly flattened, the femora especially, which are dilated fusiformly and deeply and widely hollowed on the upper surface; no armature or setae visible (but may have been shed); tibiae slim, the anterior ones having a distal cleansing-comb. *Abdomen* short and stout (so short as to be quite disproportionate to the rest of the body, so that it is possible the specimen has shrunk and telescoped from long immersion in alcohol?). Each segment, except the two basal and the apical, bearing a robust mid-dorsal spine which overlaps on to the following segment; lateral spines absent. Caudal appendages much like those of *Rimanella arcana* Needham, the lateral ones triquetral, prolonged as long tapering spines but with the base expanded trumpet-shaped with a robust spine on the inner side and obtusely pointed on the outer, the posterior border thickly fringed with long hairs, which extend also for some distance along the shaft of the appendage on its inner side. (When first examined these hairs had agglutinated so as to resemble stout spines for which they were at first mistaken.) A distinct node visible at the apical end of shaft. Medial or dorsal appendage greatly abbreviated, so that it appears as if the nymph has only two appendages, as in *Chlorocypha* nymphs; shortly stalked, then expanded into a trident, the lower and external arms of which are slightly the longer and directed downwards; the medial, shorter arm directed straight to the rear and all fringed with long thickly-set hairs. The medial appendage, viewed from behind, is seen to form an equilateral triangle with the apical spines at the angles. Labial mask broadly rectangular, Gomphine-shaped, the medial fissure closed and vestigial and visible only by its greater translucency. Body of the labium slightly longer than broad, its sides beset with a long field of tiny close-set spines; midlobe convex, short, projecting but slightly and fringed with short closely-set teeth. Lateral lobes without setae but with long movable hook and two elongated teeth at the apex, the inner the more robust, claw-shaped, the outer unguilate.

This nymph bears a close resemblance to that of *Rimanella*, but the latter has the external appendages longer and finer and differs in many other characters. It is best compared with the nymphs of *Diphlebia* and *Philoganga*, which it resembles by its stunted size, large head and flattened limbs. In these nymphs the curious orbital ridges are also present, but the fringe of hairs is replaced by a row of spines. The caudal appendages are entirely different and it is evident that specialisation of the nymph has advanced far beyond that of the imago. The venation of *Pentaplebia stahli* is remarkably similar to that of *Diphlebia*, but is of a closer reticulation. It is of a slimmer build, its thorax being of only half the bulk of *Diphlebia*, its head narrow and more Coenagrine in shape, whereas that of *Diphlebia* is broader, more compact and distinctly Gomphine-shaped. The face is naked in *P. stahli* but very hairy in *Diphlebia*. Nevertheless, there can be no doubt of the close relationship existing between the two genera, nor of its place in the family Amphipterygidae. The extremely depressed shape of the nymph indicates that it lies flush on stones or rocks in rapid swirling waters and the formation of the caudal appendages are clearly designed as anchoring devices to prevent its being swept away by the strong current. One can only conjecture as to the purpose served by the anterior fringe on the head; the hairs may be tactile or they may assist the nymph to hold its ground in the strong current by capillary suction.

SOME NEW HIMALAYAN CURCULIONIDAE (COLEOPTERA).

By Sir GUY A. K. MARSHALL, K.C.M.G., D.Sc., F.R.S., F.R.E.S.

THE types of the five new species described below are all in the collection of the British Museum (Natural History).

Subfamily BRACHYDERINAE.

Leptomias undulans sp. n.

♂♀. Derm dull black, with fairly dense grey scales; when partly abraded the scales are denser in the punctures on the elytra, giving a mottled appearance.

Head with very fine dense punctures that are more or less longitudinally confluent, and with a short median stria continuous with that on the rostrum; eyes strongly convex. *Rostrum* longer than broad (4:3), almost parallel-sided, but very slightly sinuate laterally; dorsal area broad, nearly flat, with irregular variable longitudinal striolae and a deep median sulcus. *Antennae* black, the scape hardly reaching the middle of the eye; funiculi with segment 1 longer than 2, the distal segments longer than broad. *Prothorax* as long as broad or slightly transverse, somewhat rounded laterally, widest a little behind the middle, shallowly constricted at the apex, which is narrower than the base; the dorsum coriaceous, with a fine indistinct median stria and some small variable impressions, becoming rugulose on the pleurae; no setae. *Scutellum* distinct. *Elytra* much wider than the prothorax in both sexes, narrowly elliptical in male with the apices separately rounded, somewhat wider in female with the apices forming a densely setose short obtuse process; the shallow striae with the widely spaced punctures each contained in a rounded depression, giving an undulating effect to the whole surface; the intervals only slightly wider than the punctures and also undulant, all of equal height and without setae, except along the lateral and apical margins where the setae are rather dense, short and suberect. *Legs* rather long and slender, black, with grey scales; the front tibiae somewhat incurved at the apex and strongly denticulate beneath in both sexes, the denticulations smaller on the posterior pairs.

Length 9-11 mm.

S.E. TIBET: Zayul, Atakang, 8000 ft., 1♂, 1♀, vi. 1933 (*F. Kingdon Ward* and *R. J. H. Kaulback*—type); Zayul, Mudung, 7500 ft., 1♀, v. 1933; Rong Tö Valley, 6500-7000 ft., 1♂, 2♀, v. 1933; Lohit Valley, 1000-3000 ft., 2♂, iii. 1933 (*F. K. W.* and *R. J. H. K.*).

A very distinct species on account of the unusual undulating surface of the elytra.

Leptomias clavivorus sp. n.

♂♀. Dull black, with fuscous scaling having a slight bronze reflection and with scattered grey scales, which are more numerous along the suture and at the apex; the scales appear to be very easily abraded, especially on the head and pronotum; underside with dense grey scales, the metasternum and two basal ventrites with dense subrecumbent silvery hairs in male, which are greatly reduced in female.

Head with numerous small separated punctures, the frons transversely convex, without any median stria; eyes moderately convex. *Rostrum* longer than its apical width (8:6) in male, slightly shorter in female, almost parallel-sided, not widened at the genae; dorsal area broad, flat or very shallowly depressed in the middle, with punctures somewhat stronger than those on the head and sometimes more or less confluent, with a deep median