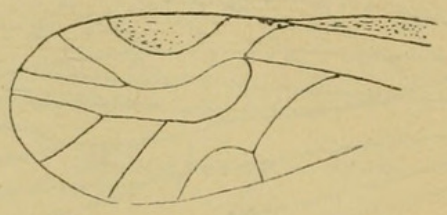
CORRODENTIA.

Psocus acourti, sp. n. (Fig. 50.)

Wing about 3 mm. long, pale grey with fuscous veins; stigma pale luteous.

Fig. 50.



Psocus acourti, sp. n.

H. 836. Essentially similar to modern species.

LVIII.—*Records and Descriptions of Indian* Acrididæ (*Orthoptera*). By B. P. UVAROV, F.E.S., Assistant Entomologist, Imperial Bureau of Entomology.

THE present paper is based upon a part of the collection of Orthoptera sent long ago by the Agricultural Research Institute, Pusa, Bengal, to the late W. F. Kirby, and only partially worked out by that specialist while compiling the corresponding volume of the 'Fauna of British India.' I. Bolivar, in his recent publication on the Indian Acrididæ *, has already mentioned that this book, which ought to be a standard work for the study of the Indian Fauna, contains many errors, owing probably to the fact that the manuscript was not completed at the time of Kirby's death. A few of these mistakes are obvious even from the descriptions and drawings, and they have been corrected by Bolivar in the paper referred to, but the clearing up of many questions of systematics and synonymy is quite impossible without studying the type-specimens. I should say, even, that the serious study of Indian Orthoptera is almost impossible anywhere else except in the British Museum, since the majority of known Indian species have been described by

* "Contribucion al conocimento de la fauna Indica. Orthoptera (Locustidæ vel Acrididæ)," Rev. R. Acad. Cien., Madrid, t. xvi. no. 6, 7, 8, & 9, pp. 278–412.

Walker and the correct location of Walker's species is possible only by studying the types, his descriptions being, in most cases, useless. Most authors, therefore, simply ignore Walker's species, which results in multiplying synonyms. Thus, the study of the collection now before me revealed that many species described by Brunner v. Wattenwyll, I. Bolivar, etc., are doubtless synonymous with species of Walker's, and further descriptions of new Indian Orthoptera, regardless of Walker's species, will only add to the confusion in nomenclature and synonymy, which is already too great in Orthoptera.

The identification of the part of Pusa collection which has not been worked out by Kirby has enabled me to describe a number of new forms, the types of which are incorporated in the British Museum collection.

Subfamily *Acridinæ*.

1. *Acrida exaltata*, Walker.

1859. *Truxalis exaltata*, Walker, Ann. & Mag. Nat. Hist. (3) iv. p. 222.
1893. *Tryxalis brevicollis*, Bolivar, Ann. Soc. Ent. Fr. lxx. p. 588.
1902. *Acrida lugubris*, Burr, Trans. Ent. Soc. London, pp. 157, 170.

W. F. Kirby, in the 'Fauna of British India' (Orthoptera, Acrididæ, 1914, p. 99), correctly synonymized *brevicollis*, Bol., with *exaltata*, Walk., since the only difference between these two species, according to Bolivar himself, is in the coloration of the wings. The large series of specimens before me shows most clearly that this character is subject to individual variability, and it is easy to find all the gradual transition-forms between the two extremes; Burr's species has the most infumated wings, while *exaltata*, Walk., is intermediate between it and *brevicollis*, Bol., which has the wings entirely hyaline. The difference between *exaltata*, Walk., and the South European *turrita*, L., is also very minute, and it is possible that *exaltata* is but a geographical form of *turrita*.

This species seems to be very common in India, since the Pusa collection contains a large number of specimens from different localities.

2. *Acridella nasuta*, L.

Bilaspur, Central Provinces, ii. 1907; Surat, Bombay, 12. vi. 1904.

The Indian specimens are quite typical.

3. *Gelastorrhinus sagitta*, Uvarov.

Pusa, 21. ix. 1907, 2 ♀ ♀.

This species was described by me from Amu-Darya, Transcaspia, and the Indian specimens now before me undoubtedly belong to it.

4. *Gelastorrhinus semipictus*, Walker.

W. F. Kirby correctly placed *G. tryxaloides*, Bol., as a synonym of this species; it is quite probable that *G. albolineatus*, Br. W., and *G. selache*, Burr, are also mere synonyms of *semipictus*.

5. *Aswatthamanus cylindricus*, Kirby.

1914. *Aswatthamanus cylindricus*, Kirby, Fauna Br. India, Acrid. p. 101.
1914. *Lefroya acutipennis*, Kirby, *l.c.* p. 219.

There is not the slightest doubt that Kirby described the same species (and probably the same specimens) under two different names. Though the type of *Lefroya* is not in the Museum, the description of it completely agrees with the type-specimens of *Aswatthamanus*, and I feel justified in regarding them as conspecific. I have before me several specimens from Pusa and Chapra, Bengal.

6. *Aulacobothrus luteipes*, Walker.

1871. *Stenobothrus luteipes*, Walker, Cat. Derm. Salt. Brit. Mus. v., Suppl. p. 82.
1902. *Aulacobothrus tæniatus*, Bolivar, Ann. Soc. Ent. Fr. lxx. p. 600.
1914. *Stauroderus bicolor*, Kirby (*nec* Charp.), Fauna Br. Ind., Acrid. p. 127, fig. 93.

The description of *tæniatus*, Bol., leaves no doubt as to its identity with *luteipes*, Walk., when compared with the type of the latter.

This must be a very common species, since it is represented by numerous specimens from Pusa, Chapra, Batajhari (Central Provinces), Simla, 7000′, and Cuttuck (Bengal). There are also in the British Museum specimens from Ceylon and Baltistan.

7. *Aulacobothrus decisus*, Walker.

1871. *Stenobothrus decisus*, Walker, Cat. Derm. Salt. Br. Mus. v., Suppl. p. 80.
1902. *Aulacobothrus socius*, Bolivar, Ann. Soc. Ent. Fr. lxx. p. 598.

The synonymy is established on the ground of comparison of Bolivar's description of *socius* with the original type of

decisus, and is beyond any doubt. There are two males in Pusa collection, taken at Kholapur Peta, Kolaba Distr., Bombay Prov., 16. v. 1904.

8. *Aulacobothrus bolivari*, sp. n.

♂. More robust than *luteipes*, Walk., which it resembles at first glance. Antennæ distinctly longer than head and pronotum together, filiform. Frontal ridge convex, without any trace of an impression near ocellum, sparsely impresso-punctate. Temporal foveolæ small, shallow, elongato-rhomboidal, not sharply defined. Fastigium of vertex scarcely reclinate, distinctly marginated, with an ovoidal impression; lateral carinulæ converging between the eyes and prolonged into two parallel occipital carinulæ, not reaching pronotum; the feeble median carinula begins beyond the middle of the impression and reaches the pronotum. Pronotum rounded, gradually narrowed anteriorly; median carina well-developed, almost straight in profile, intersected just behind its middle by the hind transverse sulcus; lateral carinæ strongly convergent between the fore margin of pronotum and the first transverse sulcus, which intersects them, but does not reach the median carina; from the first sulcus backwards the lateral carinæ are strongly divergent, straight, and reach the hind margin of pronotum, being interrupted in the middle by the hind sulcus; hind angle of pronotal disc obtuse, rounded at the apex; lateral lobes minutely rugulose, with an oval impression in the middle of upper margin, with fore and hind margins straight, lower margin very obtusely angulate behind its middle, fore angle very obtuse, hind angle a little more than 90°, both angles rounded at the apex. Elytra reaching behind the knees, with apical third attenuate; mediastinal area reaching to the middle of elytra, with a dilatation in its middle, with a false vein and a few oblique veinlets; scapular area reaching the apical third of elytra, dilated, especially beyond its middle, with regular oblique veinlets; externo-medial area narrow, gradually widened towards the apex; discoidal area as wide as the interulnar, irregularly though not densely venulated, with cells in part disposed in two rows; fore and middle radial veins straight, the latter bifurcate in the apical third; hind radial slightly bent backwards, bifurcate about the middle of elytra; hind ulnar and dividing veins straight. Wings scarcely shorter than elytra, twice as long as broad. Hind tibiæ armed with four apical spurs, the two outer being about half as short as the upper inner one,

while the latter itself is but a little longer than half the lower inner spur. Supra-anal plate oval, with apex subacute, and with a basal longitudinal impression. Cerci short, conical. Subgenital plate short, rotundate.

General coloration brownish. A paler stripe runs from the apex of the fastigium, through the middle of the pronotum and axillar field of elytra. Lateral keels of pronotum concolorous. Elytra infumate, except the axillar field, with oblique narrow whitish stigma beyond the middle; all veins dark brown. Wings slightly sulphurous at the base, feebly, but distinctly infumate, gradually darkened towards the tips. Hind femora unicolorous externally, with two scarcely perceptible greyish bands on the upperside; upper and lower carinæ of the area externomedia with a few grey points; inner side yellowish; knees with semilunar grey spots externally and internally. Hind tibiæ orange-yellow; their spines black-tipped.

	♂ (type). mm.	♀ (paratype). mm.
Length of body	18	23
„ pronotum	4	5
„ elytra	15	19
„ hind femora ..	12	15

The female differs from the male by its more robust stature, shorter antennæ, and the coloration of the elytra, which are not strongly infumate throughout, but bear three rather indefinite dark spots along the middle; the venation of the wings is practically the same as in the male, the considerable width of the discoidal area and the presence of an irregular false vein in the same being very characteristic for both sexes. The species is easily recognised by this character alone.

The type ♂ is from Chapra, Bengal; the paratypic female is from Koilpati, Madras, 17. vii. 1907; several more specimens are without precise locality.

I have much pleasure in dedicating this species to Prof. I. Bolivar, who has done so much for the study of Orthoptera, and those of India particularly.

The genus *Aulacobothrus*, Bol., probably replaces in India the Palæarctic genus *Stenobothrus* (divided now into several genera), and a revision of the species is very badly wanted, but I have not yet enough material before me to undertake it; there are in the Pusa collection two or three more species which are not yet described, but represented by single or damaged specimens only, and I prefer to abstain from describing them until further material is available for study.

9. *Leva indica*, Bol.

Pusa, 13. ix. 1908, on grass; Koiloasi, Madras, 21. vii. 1907.

10. *Leva cruciata*, Bol.

Several specimens without locality.

To the genus *Leva* belongs also *Stenobothrus apicalis*, Walk., which is conspecific with *Stenobothrus turbatus*, Walk., and with *Leva soluta*, Bol.; *Stenobothrus mundus*, Walk., and *St. epacromoides*, Walk., are also species of *Leva*. A revision of this genus is also necessary, but more material is wanted for this purpose.

11. *Ceracris nigricornis*, Walker.

1870. *Ceracris nigricornis*, Walker, Cat. Derm. Salt. iv. p. 791. no. 1.
1893. *Duronia versicolor*, Brunner, Ann. Mus. Civ. Genova, xxxiii. p. 126.
1914. *Ceracris versicolor*, Kirby, Fauna Brit. India, Acrid. p. 111.

The type-specimen of Walker's *nigricornis* is in very poor condition, having been in spirit. Nevertheless, I do not hesitate to identify with it the seven specimens (3 ♂ ♂, 4 ♀ ♀) from Lebong, 5000′, ix. 1908, which agree perfectly with the type in all characters, apart from the coloration, which is much bleached in the type. The comparison of these specimens, as well as of the type with the good description of *Duronia versicolor*, Br. Watt., leaves no doubt as to their identity. As *Duronia deflorata*, Br. W., also belongs to the genus *Ceracris*, and both *deflorata* and *versicolor*, according to Bolivar, belong to his genus *Kuthya* *, we must necessarily treat *Kuthya* as a mere synonym of *Ceracris*. Bolivar has evidently been misled by Walker's statement in the diagnosis of this genus, "lateral furrows triangular," which seems to indicate that the genus possesses the fastigial foveolæ. The study of the type, however, enables me to state that there is no trace of foveolæ, and Walker's words probably apply to the triangular lateral surfaces enclosed between the margin of the fastigium, eye, and ocellum, which are rather impressed in the type, owing to its preservation in spirit. The careful description of the genus *Kuthya* given by Bolivar applies entirely to *Ceracris*, and their identity is beyond any doubt.

* Trab. Mus. Nac. Madrid, Ser. Zool. no. 20, 1914, p. 78.

12. *Ceracris deflorata*, Br. Watt.

1893. *Duronia deflorata*, Br. Watt., Ann. Mus. Genova, xxxiii. p. 126.
1914. *Ceracris deflorata*, Kirby, Fauna Br. India, Acrid. p. 112.
1914. *Phlæoba cinctalis*, Kirby, *l. c.* p. 105. no. 120.

The identity of *cinctalis*, Kirby, with *deflorata*, Br. Watt., is hardly in doubt, since the most careful examination of the type reveals no difference from Brunner's description. It is strange that Kirby, who redescribed the genus *Ceracris*, Walk., and quite correctly included in it *deflorata*, Br. Watt., put his *cinctalis* in the genus *Phlæoba*, with which it has very little relationship.

A number of specimens from Pusa and Chapra.

To the same genus *Ceracris* belong also *Kuthya læta*, Bol. (*l. c.* p. 79), from China, and *Parapleurus armillatus*, Karny (Suppl. Entom. iv. 1915, p. 83), from Formosa, the former being very close to, if not identical with, *deflorata*, Br. W. A revision of this genus will be given by me elsewhere.

13. *Phlæoba angustidorsis*, Bol.

Lebong, 5000′, ix. 1908, 1 ♂, 5 ♀ ♀.

One specimen has been erroneously named by Kirby as *Ph. panteli*, Bol. It is very probable that this species is identical with *Phlæoba antennata*, Br. Watt., in which case the latter name must be applied to it.

14. *Phlæoba infumata*, Br. Watt.

Pusa, 7. viii. 1907, 10–26. viii. 1906 ; Cuttuck, xi. 1905.

15. *Phlæoba panteli*, Bol.

Pusa, 21. viii. 1907, 1 ♂ ; 16. iii. 1908, 1 ♀.

The synonymy of this species, given by Kirby in the 'Fauna,' is right.

Subfamily *Locustinæ*.

16. *Lerina œdipodioides*, Bol.

Several specimens without precise locality.

The position of this genus seems to me rather doubtful, since its distinctly reclinate front and its elytra, hyaline and sparsely venulated throughout, do not agree with the characters of Locustinæ, and seem to indicate a relationship with *Æolopus*.

17. *Gastrimargus transversus*, Thunbg.

Pusa, 23. ix. 1906.

It seems probable that this species is identical with *marmoratus*, Thunbg., and *musicus*, F., but I abstain from establishing this synonymy until it is possible to examine a large series of specimens.

18. *Œdaleus senegalensis*, Krauss.

1877. *Pachytylus senegalensis*, Krauss, Sitz. Akad. Wiss. Wien, Mat.-Nat. Classe, lxxvi. (1), p. 56, pl. i. fig. 9.
1884. *Pachytylus mlokozievetzi*, Bolivar, Bull. Soc. Ent. Belg. xxviii. p. cv.
1887. *Œdaleus senegalensis*, var. C, Saussure, Addit. ad Prodr. Œd. p. 42.

I had the opportunity, while working in the Caucasian Museum, Tiflis, of studying very extensive series of *Œdaleus mlokozievetzi*, Bol., which was described from Transcaucasia; the species is distributed all over Eastern Transcaucasia, Persia, and Mesopotamia. The specimens from the latter locality, which are identical with those from Transcaucasia, are now before me and their comparison with African specimens of *Œ. senegalensis*, as well as with Indian examples in the Pusa collection, enables me to establish the above synonymy. The range of distribution of *Œ. senegalensis* consequently coincides with the Desert subregion of the Palæarctic region, and partly extends beyond its limits.

19. *Œdaleus abruptus*, Thunbg.

This is probably one of the commonest grasshoppers in India, and is represented in the Pusa collection by a large series of specimens from different localities. Several specimens are labelled as taken from cultivated plants, so that the species may be occasionally injurious to crops.

20. *Heteropternis respondens*, Walk.

Pusa, 12. xi. 1904, 1 ♀ ; Shevaroys, Madras, 26. viii. 1907, 1 ♂.

It is difficult to understand on what grounds Kirby included *H. partita*, Walk., in the Indian fauna (Fauna Br. India, p. 142), since there is no specimen of this species in British Museum from Ceylon; the type of *partita* is from an unknown locality, and it is conspecific with types of *Epacromia thoracica*, Walk., from Sierra Leone.

21. *Pternoscirta cinctifemur*, Walk.

Khasi Hills, Assam, 1000–3000′, 17. iii. 1907; Shevaroys, Madras, 4000′, 24. viii. 1907; Nilgiris, Madras, iv. 1904.

22. *Dittopternis venusta*, Walk.

Shevaroys, Madras, 4000′, 24. viii. 1907.

23. *Trilophidia aspera*, Walk.

1870. *Epacromia aspera*, Walk. Cat. Derm. Salt. iv. p. 775.
1884. *Trilophidia annulata*, Saussure (*nec* Thunberg), Prodr. Œdip. p. 157.

Kirby (Fauna Br. Ind. p. 150) regards this species as synonymous with *cristella*, Stål, which is, however, wrong, since *cristella*, according to the original description, has the prozona of the pronotum without lateral tubercules, and in *aspera* these are well-developed.

The specimens in the collection are from Pusa, Chapra, and Lebong, 5000′.

24. *Trilophidia annulata*, Thunbg.

To the synonyms of this species given by Kirby (Fauna Br. Ind. p. 140) must be added also *Epacromia turpis*, Walk., and *Trilophidia annulata*, var. *ceylonica*, Sauss.; the full explanation of this synonymy will be given by me in another paper.

The specimens were taken at Koilpati, Madras.

25. *Morphacris fasciata*, Thunbg.

1815. *Gryllus fasciatus*, Thunberg, Mém. Acad. Pétersb. v. p. 230.
1815. *Gryllus sanguineus*, Thunberg, *l. c.* p. 231.
1815. *Gryllus sulcatus*, Thunberg, *l. c.* p. 234.
1839. *Œdipoda strigata*, Serville, Ins. Orth. p. 726. no. 7.
1853. *Œdipoda venusta*, Fieber, Lotos, iii. p. 123. no. 7.
1870. *Morphacris adusta*, Walker, Cat. Derm. Salt. B.M. iv. p. 790 (larva).
1888. *Cosmorhyssa costata*, Saussure, Addit. ad Prodr. Œdip. p. 37. no. 3.
1910. *Morphacris citrina*, Kirby, Syn. Cat. Orth. iii. p. 219. no. 4.

After a careful examination of large series of *Morphacris* from its whole area of distribution, which includes the whole of Africa and Southern Asia (with Ceylon), contained in the British Museum, I am fully convinced that all the above-quoted "species" are based on variations in the coloration, especially that of the wings, since the structural characters given, for instance, by Saussure as peculiar to his *costata*, prove to be inconstant when a series of specimens taken at the same locality are studied. As for the coloration of the wings, it varies just to the same extent as in

many other Locustinæ, such as species of *Œdipoda*, *Mioscirtus wagneri*, Er., etc., among which forms with yellow wings and those with rose or sanguineous wings occur together. In the British Museum collections there are series of *Morphacris* from Uganda and other African localities taken at the same place and on the same day, amongst which not only the two known colour-forms (with red and with yellow wings) are represented, but an intermediate one which has the disc of the hind wings orange, also occurs. This latter form has not yet been described, and I propose here to call it ab. *aurantiaca*, nov., its only difference from other forms being the orange-red coloration of the wings; as the type I designate one male from Kaig, Sudan, 27. i. 1904 (*C. Singer*).

This difference in wing-coloration seems to be influenced by climatic conditions, and in dry localities the form with red wings (typical form) prevails, as in South Africa, while in West Africa, India, and Ceylon it is entirely replaced by the yellow-winged form (ab. *sulcata*, Thunbg.); there are no records, as yet, of the red-winged form from the latter localities.

Specimens in the Pusa collection all belong to ab. *sulcata*, Thunbg.; they have been taken in Nainpur, Central Provinces, iii. 1907; and Jalalpur, Surat, Bombay, on sugarcane, 28. v. 1904.

26. *Locusta migratoria*, L.

One specimen without precise locality.

The figure and description of *Locusta danica*, L., in Kirby's book (Fauna Br. Ind. p. 176, fig. 104) undoubtedly represents *L. migratoria*, though the *danica* form is also not uncommon in India.

27. *Acrotylus humbertianus*, Saussᵉ.

Pusa, on lentils, 19. ii. 1907; Chapra, Bengal; Keitni, Central Provinces, ii. 1907; Shevaroys, Madras, 4000′, on coffee, 24. viii. 1907; Bulsar, Bombay, sand-dunes, 16. v. 1904.

The habitus of this species is rather inconstant, and it is possible to distinguish two or three forms, which are, however, connected by intermediate ones; the specimens from Pusa are especially slender. It is possible that examination of larger series will give grounds for dividing the species into geographical forms, but my material is not sufficient for this purpose.

Pusa, gen. nov.

Head more elongate than in any other genus of Locustinæ. Front strongly reclinate; frontal ridge not reaching the clypeus, compressed laterally between the antennæ. Fastigium of vertex hexagonal, slightly inclined, forming a rotundate angle with the frontal ridge; foveolæ not developed; upper surface concave, with raised margins. Eyes strongly protruding sideways, almost hemispherical, slightly higher than long. Antennæ filiform, slightly thickened in the apical third. Pronotum rounded, narrowed and not strongly constricted anteriorly; median carina feeble, interrupted by three deep transverse sulci; metazona about as long as prozona, slightly raised, coriaceous; lateral carinæ undeveloped; lateral lobes as long as high, with fore angle obtuse and hind angle near 90°, widely rounded. Prosternum with anterior margin raised, the surface convex, gradually sloping backwards. Mesosternum with fore margin straight; mesosternal lobes almost twice as broad as long, with hind inner angles obtuse, rounded; interspace transverse, only slightly narrower than the lobes. Metasternal lobes a little longer than wide, rounded posteriorly; interspace longer than wide, more so in male. Elytra narrow, almost entirely hyaline, except the basal fifth part, where they are subcoriaceous, though still rather sparsely venulated; costal area feebly expanded basally, gradually narrowing apically, and not reaching the apical third of elytra; scapular area reaching the base of apical third, coriaceous basally, but entirely hyaline, with very few transverse veinlets in the apical two-thirds; discoidal area parallel-sided, hyaline, except near the base, with the transverse veinlets irregular, but not dense, with a well-developed false vein; interulnar area slightly narrower than discoidal, irregularly, though not densely, venulated, with cellules placed in two rows, the false vein being developed, though irregular and interrupted; all areas of the apical half of elytra with well-developed false veins and transverse veinlets forming elongate cellules. Wings hyaline, scarcely shorter than elytra, rather narrow. Hind femora very slender, with upper keel almost straight, not denticulate; knee-lobes rounded. Hind tibiæ quadrangular in transverse section, feebly incurved and distinctly widened apically, armed with 8 outer and 10 inner spines, without outer apical spine; the inner apical spurs are longer than the outer ones, especially the lower inner, which is twice as long as the outer spurs, and bears a tuft of whitish hairs

beneath. Hind tarsi long; third joint as long as two basal joints together, second subequal to one-third of the first; claws as long as the second joint, with basal dilatation; pulvilli absent. Male supra-anal plate longer than its basal width, convex, with broad shallow median sulcus in the basal half and two oblique transverse curved carinæ, running from the hind angles to the sides of the median sulcus; cerci slightly longer than supra-anal plate, cylindrical in basal half, gradually narrowing apically, with obtuse, feebly incurved tips; subgenital plate obtuse, longer than wide. Supra-anal plate of female triangular, longer than wide, with apex very widely rotundate, almost truncate; cerci short, compressed, triangular; upper valves of ovipositor rather long, strongly recurved; lower valves armed with very strong, obtuse basal tooth; subgenital plate very elongate.

Genotype: *Pusa lævis*, sp. n.

This new genus in its general facies somewhat recalls *Sphingonotus*, if seen from above, but in profile it looks very unlike any other genus of Locustinæ, owing to its very obliquely sloping face. This latter character, as well as the venation of the elytra, seems to indicate its position amongst the Acridinæ, and not in the Locustinæ, but the structure of the sternum and pronotum agrees better with Locustinæ. In fact, the characters of the genus *Lerina*, Bol., and this new one make it very difficult to draw a line between these two subfamilies.

28. *Pusa lævis*, sp. n.

♂. Antennæ longer than head and pronotum together. Face smooth, impunctate; frontal ridge sulcate and parallel between fastigium and ocellum, with the carinæ scarcely perceptible and very strongly divergent below the ocellum, not reaching the clypeus; fastigium longer than wide, with its sides parallel. Pronotum only feebly constricted anteriorly; metazona almost flat, scarcely raised above the prozona. Elytra extending well beyond hind kness. Face and body covered with sparse hairs.

General coloration buff. A pale stripe runs from the face along the lower part of cheeks, lateral lobes of pronotum, and pleuræ; another blackish stripe runs above the pale one, gradually fading upwards. Head and pronotum above with indefinite brownish marmoration. Elytra with radial veins and rows of feeble spots in scapular and discoidal areas brown; a few scarcely perceptible grey spots in cells of the

apical half. Wings hyaline, veins bluish, except on the apical part where they are brown. Hind tibiæ bluish.

	♂ (type). mm.	♀ (paratype). mm.
Length of body	16	21·5
„ head	3	3·5
„ pronotum	3·25	4
„ elytra.....	16·5	20·5
„ hind femur ..	9·5	12
„ „ tibia	8	10

The type-specimen is from Pusa, Bengal, 25. viii. 1908; 15 paratypic specimens (2 males and 13 females) are partly from the same locality, partly without any precise data.

The whole series is rather uniform in habitus, size, and coloration; the darker-coloured specimens have grey bands on the hind femora, which are entirely absent in specimens of lighter general coloration; in the latter the elytra are often without any spots.

29. *Pusa rugulosa*, sp. n.

♂. Differs from the above-described *P. lævis* by the following characters: habitus more robust; face and body more densely hirsute; face rugulose, with numerous, though not dense, impressed points; front less strongly reclinate; pronotum more constricted anteriorly, with metazona convex and distinctly raised above prozona; elytra scarcely extending beyond hind knees; hind femora thicker; general coloration greyish, with but very indistinct pale and dark lateral stripes, but with better-pronounced grey bands on the upperside of hind femora; hind tibiæ bluish grey.

	♂ (type). mm.	♀ (paratype). mm.
Length of body	15·5	21·5
„ head	3	3·5
„ pronotum	3	3·5
„ elytra.....	13·5	18
„ hind femur ..	9	11
„ „ tibia	7·5	8·5

The typical male is from an unknown locality; the paratypic series consists of 2 ♂♂ and 10 ♀♀, partly from Pusa, partly without precise data. Though this species is very closely related to the preceding one, I think myself justified in regarding them as distinct; the characters given in the description of *rugulosa* are constant in the series before me and quite sufficient for separating the two species. The coloration of the females of *rugulosa* differs from that of

lævis still more than in males, since none of the females of *rugulosa* before me has distinct lateral stripes, which are quite characteristic for *lævis* and may be seen in males of *rugulosa* as well. The chief distinctions are, however, not in coloration, but in general habitus, sculpture of face, length of elytra, and shape of hind femora.

Subfamily *Pyrgomorphinæ*.

Pterorthacris, gen. nov.

Body cylindrical. Antennæ filiform, rounded, except joints 3–5, which are distinctly depressed and very feebly dilated. Head conical, less elongate than in *Orthacris*, Bol.; front in profile almost straight, scarcely protruding between antennæ; frontal ridge between antennæ compressed, deeply sulcate, gradually lowered towards ocellum ; below the latter it is expressed only as a shallow sulcus with scarcely raised, obtuse margins and does not reach the clypeus ; lateral facial carinæ well-developed, divergent downwards, slightly convex ; fastigium of vertex in profile much shorter than an eye ; its surface forming a straight angle with frontal carina, convex ; seen from above it is a little longer than broad, with apex circular, intersected by deep and narrow longitudinal sulcus, and separated from the rest by a semicircular, not sharply defined, impression ; margins of fastigium between the eyes subparallel ; the whole of this part of the fastigium slightly convex, with a scarcely perceptible median carina ; its level slightly raised above the fore part and slightly lower than occiput. Eyes almost hemispherical. Pronotum entirely rounded, narrowed anteriorly, with a few rather large and low scattered callous tubercles ; median carina feebly developed in metazona only ; pronotal disc intersected by two deep narrow sulci and a faintly indicated anterior sulcus ; metazona shorter than prozona ; anterior margin with a slight excavation in its middle ; posterior margin widely rounded ; lateral lobes longer than high, narrowed anteriorly. Prosternum armed with a conical tubercle. Sternum compressed, elongate ; its fore margin feebly convex ; mesosternal lobes distinctly longer than wide, subtriangular, with the inner margins rounded, meeting each other near the apices, which are acute, rounded ; hind margins of mesosternal lobes concave ; interspace very narrow-triangular, with all margins concave. Metasternal foveolæ large, rather closely approximated ; metasternal lobes contiguous. Elytra fully developed, lancet-shaped,

gradually narrowed towards apex, which is rather narrowly rounded. Wings fully developed, rather narrow, with the base coloured. Fore and middle femora thickened. Hind femora with all the keels rounded, but distinct; lower keel straight, upper convex; the lower knee-lobes with a rounded basal dilatation, with the rest of lower margin straight; their apical angles about 90°, rounded. Hind tibiæ quadrangular in transverse section, widened towards apex, with apical spines on both sides. All legs with large pulvilli. Male anal segment deeply and acutely triangularly incised in its middle, with two protruding triangular lobes at the sides of this incision; supra-anal plate about twice as long as broad, lanceolate, with sides straight and apex widely rounded. Cerci compressed, not reaching the apex of anal plate, distinctly incurved in apical third; seen in profile dilated basally, with sides beyond this dilatation parallel, rounded at the apex. Subgenital plate compressed laterally, with hind margin almost vertical; it is as long as the supra-anal plate.

Genotype: *Pterorthacris subcallosa*, sp. n.

This new genus belongs to the section *Orthacres* of the subfamily Pyrgomorphinæ and is rather closely related to the wingless *Orthacris*, being at once recognised by the presence of wings and numerous other characters indicated in description.

30. *Pterorthacris subcallosa*, sp. n.

♂. Antennæ distinctly longer than head and pronotum together. Head with a few very low and indistinct callosities behind the eyes. Pronotum impresso-punctate, bearing on each side two irregular rows of low shining callosities along the disc; the inner of these rows consists of three very feebly developed callous spots, placed at equal intervals from each other, the hindmost of them just before the typical sulcus; the outer row corresponds to the lateral carinæ; it begins with two very feeble and small shining spots, the first of which is placed at the very fore margin; three other larger and more convex callosities form the rest of the row, the hind tubercle being placed before the typical sulcus; lateral lobes with two small callous spots about the middle of prozona, the hinder one being placed higher than the front one, and with two larger callosities, placed one above and slightly behind the other, between the second and typical sulcus.

General coloration yellowish green. Antennæ dark brown, black towards apex; base pale beneath; basal joints with

pale anterior angles ; all joints, except 2–3 apical ones, with narrow pale apical rings. Face pale, the stripe of the same coloration running through the lower part of the cheeks and lower third of lateral pronotal lobes, where this stripe is shining and smooth, while the rest of the lobes is impresso-punctate. Sides of fastigium blackish green ; an indefinite stripe of the same colour, but of lighter shade, running from behind the eyes, above the lower pale stripe—it is darker near the eyes and gradually fades posteriorly, so that on the pronotal lobes it merges into the ground-colour. Elytra green, subcoriaceous in basal third and hyaline, with greenish veins apically. Wings with their bases rose. Hind tibiæ reddish, except a pale stripe along the lower part of externo-median area and pale inner lower carina ; inner knee-lobes entirely black, the outer ones with only the lower parts black. Hind tibiæ greyish green, paler towards apex, with a black spot at the base beneath, and with black apices. Abdomen dirty yellow, with sparse hairs, forming a denser tuft at the base of subgenital plate.

	mm.
Length of body	28
„ head	4·5
„ pronotum	6
„ elytra.....	21·5
„ wings.....	19·5
„ hind femur ..	13
„ „ tibia	11

The type of this species is unique ; it is labelled Pusa, Bihar, 1907, and bears Kirby's label "*Pyrgomorpha conica*, Oliv."

Subfamily *Catantopinæ*.

31. *Oxya turanica*, Uvar.

The collection contains several unlabelled specimens of this species, which was described by me from Transcaspia *.

32. *Spathosternum prasiniferum*, Walk.

To the already-known synonyms of this species must be added :—

1871. *Stenobothrus simplex*, Walker, Cat. Derm. Salt. B.M. v., Suppl. p. 82.
1871. *Stenobothrus rectus*, Walker, *l. c.* p. 83.
1914. *Gymnobothrus* (?) *simplex*, Kirby, Fauna Br. Ind., Acrid. p. 114. no. 132.

* Horæ Soc. Entom. Ross. xl. no. 3, 1912, p. 28, pl. i. figs. 4, 5.

This species is represented in the Pusa collection by a very large series of specimens from different localities; it is rather variable in coloration, but the morphological characters are fairly constant.

Tapinophyma, gen. nov.

Size medium for the subfamily. General form subcylindrical. Antennæ rather short, flattened dorso-ventrally, feebly dilated in the middle part. Head obtusely conical, shorter than pronotum; frontal ridge in profile distinctly convex, thick, flat, but with the median part distinctly depressed and very densely punctured, while its lateral margins are perfectly smooth, slightly raised, rather broad and very obtuse, scarcely diverging downwards; lateral facial carinæ irregular, strongly convex, smooth, while the whole face is strongly and densely punctured. Fastigium of vertex very short and very obtuse; its upper surface convex, very feebly marginated anteriorly, impresso-punctate, with thick but low middle carina, gradually disappearing about the middle of occiput: margins of fastigium very thick, obtuse, and perfectly smooth. Eyes egg-shaped, strongly narrowed towards apex, which is almost acute; fore margin almost straight, very oblique, upper (hind) margin convex. Pronotum subcylindrical; disc slightly convex, rugulose, with irregular longitudinal carinulæ in apical and basal parts; three transverse furrows, of which the first is as distant from the fore margin as the third is from the hind margin, while the distance between them is shorter; and the second furrow is placed twice as near to the first as it is to the third. Median keel of pronotum distinctly raised, rather thick, smooth, straight in profile; lateral keels low, but thick, shining, straight, feebly diverging backwards. Lateral lobes of pronotum slightly convex, very strongly and rugosely punctured, longer than wide. Prosternal tubercle not unlike that of *Platyphyma*, strongly bent backwards, its lower surface very broad, concave, trapezoidal, with lateral margins raised and hind margin feebly excavated, lying on mesosternum. Pectus elongate, impresso-punctate; mesosternal lobes about as broad as long, with inner margins angulato-convex, touching each other in the middle, with hind angles obtuse, rotundate; metasternal lobes longer than wide, contiguous throughout along a straight line. Elytra not reaching the apex of abdomen. Wings developed. Fore femora rounded; middle femora laterally compressed, carinated, widened towards the apex; hind femora long and

strong, with long filiform part; their knee-lobes short, rounded. Hind tibiæ strong, carinated throughout beneath, while the upper margins are entirely rounded; armed with 15 spines inwardly and 11 larger spines outwardly, including the apical spines, which are present on both sides. All tarsi with large pulvilli. Supra-anal plate of female very narrow and elongate, lanceolate; cerci short, somewhat compressed laterally; subgenital plate long; valvæ of ovipositor elongate, upper ones sinuate, the lower armed with basal tooth.

Genotype: *Tapinophyma pulvinata*, sp. n.

33. *Tapinophyma pulvinata*, sp. n.

♀. Antennæ scarcely reaching the middle of pronotum. Face rugosely punctate, except frontal and facial carinæ; cheeks punctate in lower part and smooth, with irregular rows of fine impressed points elsewhere. Vertex and occiput transversely rugulose. Pronotum and pleuræ rugulose.

General coloration very much recalling that of the Palæarctic *Chortippus pulvinatus*, F. W.; yellowish grey, with a pale callous stripe in the scapular area, with fawn-coloured radial veins. Hind femora and tibiæ unicolorous, the latter slightly bluish and rather densely haired.

	mm.
Length of body	41
„ antennæ	7·5
„ head	5·5
„ pronotum	7
„ elytra.....	25
„ hind femur ..	21
„ „ tibia	18

The type is without precise locality-label; one paratypic female is from Pusa, 4. iv. 1906, on oats.

Paraconophyma, gen. nov.

In habitus very like the Central-Asiatic Alpine genus *Conophyma*, Zub., and undoubtedly related to it.

Antennæ filiform, of medium length. Head short, rather thick, with eyes large, prominent laterally. Front very oblique in male, less so in female; frontal ridge raised, gradually lowered towards clypeus, more or less impressed, with raised lateral carinæ, feebly divergent downwards. Fastigium of vertex reclinate, strongly sulcate, and elongate, with the lateral carinæ extending behind the eyes, sloping towards the frontal ridge, with apex (seen in profile) widely

rounded; temporal foveolæ developed, about as long as broad, more or less distinctly margined. Pronotum rather thick, rugulose; median keel thick, but low, interrupted by at least one (the hind) transverse sulcus; prozona more than twice as long as metazona, the latter emarginate behind; lateral keels very obtuse, reaching at least the first sulcus, but in some species extending to the third sulcus; lateral lobes more or less polished in prozona, except the margins which are rugulose, and always rugulose in metazona; they are scarcely longer than high, rounded, with lower margin sinuate. Prosternum armed with a short conical tubercle. Mesosternal lobes and their interspace quadrate in male, transverse in female. Metasternal lobes separated in both sexes, more widely in female. Meso- and metanotum about as thick as pronotum and distinctly thicker than abdominal segments; the whole abdomen more or less rugulose, with a low median carina running throughout. Elytra lateral, lanceolate, reaching the first abdominal segment. All femora short, thickened. Hind tibiæ rounded, gradually thickened apically; armed with 9 outer and 9 inner spines, including the apical ones; spurs of tibiæ unequal in length, the inner pair being distinctly longer than the outer one.

♂. Anal segment emarginate behind, with a pair of more or less prominent teeth. Supra-anal plate trapezoidal, with a median apical tooth, with lateral angles protruding or rounded; sulcate basally. Cerci feebly compressed, longer than supra-anal plate, strongly narrowed posteriorly and very acutely pointed. Subgenital plate small, vertical, rounded.

♀. Anal segment with a median emargination, but without teeth. Supra-anal plate obtusely triangular, longer than its basal width, distinctly divided into two parts by a transverse sulcus; surface more or less rugulose. Valvæ of ovipositor moderately long; the upper pair shorter than the lower, which is dentate basally.

Genotype: *Paraconophyma polita*, sp. n.

The nearest relative of this new genus is *Conophyma*, Zub., from which it differs by the presence of rudimentary elytra, larger eyes, narrower fastigium, the presence of fastigial foveolæ, less dilated pectus, etc.

The Pusa collection contains three very distinct species of this genus, one of which is identical with Walker's *Caloptenus scaber*; *Caloptenus nepalensis*, Walk., also belongs to *Paraconophyma*, and neither of these species has anything to do with the genus *Mesambria*, Stål, in which Kirby included them (Syn. Cat. Orth. iii. p. 440; Fauna Brit. Ind., Acrid. p. 220).

Key to Species of the Genus Paraconophyma, *Uvar.*

1 (6). Median keel of pronotum interrupted by one hind sulcus only. Lateral keels straight, gradually diverging backwards, extending beyond the first sulcus. Hind femora without dark transverse bands.

2 (5). Lateral keels of pronotum smooth, reaching third sulcus. Disc of pronotum (except of metazona, which is more closely and deeply rugose than the rest of the disc), pleuræ, mesonotum, metanotum, and tergites of abdomen covered with large, but sha low impressions. Pronotum with hind emargination widely rounded. Elytra uniformly rugulose throughout. Hind femora unicolorous.

3 (4). Hind femora not denticulate along the upper carina. Lateral lobes of pronotum shining throughout, with but sparse impressed points, which in metazona are more numerous, but minute; whole surface of the lobes black, except a broad yellow border along the lower margin. Elytra not reaching the first abdominal segment. (Supra-anal plate of male with the lateral angles acutely attenuate. Hind tibiæ olive-green.) ..... *polita*, sp. n.

4 (3). Hind femora with upper carina denticulate. Lateral lobes of pronotum polished only in the middle part, the rest being more or less rugulose, especially the metazona; their whole surface is pale, with a black oblique spot in the middle, which does not extend on to the metazona. Elytra extending beyond the base of the first abdominal segment ..... *nepalensis*, Walk.

5 (2). Lateral keels of pronotum more feebly developed, as coarsely punctate as the whole pronotum, not reaching the third sulcus. Disc of pronotum, pleuræ, mesonotum, metanotum, and abdominal tergites very coarsely and deeply rugulose throughout. Pronotum with hind emargination obtusely angulate. Elytra with upper half rugulose, while their lower part is perfectly polished, with but scarcely distinct impressions. Hind femora with longitudinal dark band. (Lateral lobes of pronotum with large deep puncturation, which is less close in the middle part; pale, with an oblique black patch, not extending on to metazona. Hind tibiæ pale reddish. Supra-anal plate of male with hind angles obtuse, not prominent.). . *punctata*, sp. n.

6 (1). Median keel of pronotum interruped by two or even three sulci. Lateral keels developed

before the first sulcus only and distinctly convergent behind; sometimes they are also perceptible in the hind part of pronotum as well, where they are strongly divergent. Puncturation of pronotal disc, pleuræ, mesonotum, metanotum, and abdominal tergites very coarse and strong. (Elytra with upper part rugulose and lower polished. Hind tibiæ muddy green, with a pale sub-basal ring. Supra-anal plate of male with hind angle straight, sharp.) ..... *scabra*, Walk.

34. *Paraconophyma polita*, sp. n.*

♂. General coloration brownish. Face of lighter shade, but darkened towards fastigium. Head laterally with two broad shining black postocular bands, prolonged across the lateral lobes of pronotum. Occiput with a triangular, posteriorly widened, castaneous stripe along the middle, running across the pronotal disc, constricted near the first sulcus and dilated behind; this stripe is bordered laterally with two buff stripes, convex on the pronotum. Lateral lobes of pronotum with lower margin yellow-bordered. Pleuræ black, with an oblique stripe on metapleuræ and a rounded spot on the lower angle of mesopleuræ yellow. Meso- and metanotum brownish with sides black; abdomen with median keel buff, with a black median stripe, included between two buff stripes, with polished black lateral fasciæ. Elytra reddish brown, with the lower margin darkened. Pectus and abdomen beneath olive-green. Hind femora of the same colour, brownish on the upperside; knees with dark semilunar spots. Hind tibiæ olive-green.

♀ (paratype). Of the same general coloration as male, but all colours more dull and not so distinct; the median abdominal dark fascia is especially feebly developed.

	♂ (type). mm.	♀ (paratype). mm.
Length of body	13	19
„ antennæ.....	6·5	7
„ pronotum	3	4·5
„ elytra.....	2·5	3·5
„ hind femur ..	8	11

This species is represented in the Pusa collection by 3 ♂♂ and 3 ♀♀, from an unknown locality in India.

The morphological characters of the whole series are uniform, while the coloration varies slightly, the above-described male and female representing the extreme forms.

* In the description of this species, and of others of the same genus, I do not repeat the characters already given in the key or those common to all the species, which are included in the description of the genus.

35. *Paraconophyma nepalensis*, Walk.

This species may be easily recognized by the aid of the foregoing key, together with the description of its coloration given by Kirby and Walker, and I do not think it necessary to give a new description of it, especially as the type is unique and very bleached. Its dimensions are as follows:—

	♀ (type). mm.
Length of body	20
„ pronotum	5·5
„ elytra	4
„ hind femur ..	12

36. *Paraconophyma punctata*, sp. n.

♂. Brownish black. Head with postocular fasciæ running across the lateral lobes of pronotum, but interspersed with brown and not sharply defined. Occiput black, with indistinct pale brown lateral fasciæ, prolonged on to pronotal disc, but very feebly defined. The median fascia of pronotum blackish brown, indefinite. Lateral lobes pale beneath. Pleuræ yellow, with hind part of mesopleuræ brownish. Meso- and metanotum blackish, with reddish-yellow indefinite marmoration. Abdomen with the median carina fawn, included in a reddish-yellow fascia, interspersed with black; lateral fasciæ black. Elytra fawn in upper part and black below. Pectus and abdomen beneath olive-yellow. Hind femora with an irregular longitudinal black fascia along the middle of the externo-median area; inner side with an irregular brownish-black stripe along the apical half of the upper carina; knees brown, with lobes pale. Hind tibiæ reddish yellow, with brownish bases.

♀ (paratype). Of the same type of coloration as the male, but all fasciæ on the upperside still more indefinite.

	♂ (type). mm.	♀ (paratype). mm.
Length of body	16	20
„ antennæ	6	7
„ pronotum	3·5	5
„ elytra	3	4
„ hind femur ..	9	12

Described from one male and two females in the Pusa collection, without locality.

37. *Paraconophyma scabra*, Walk.

Walker's type (♀) is rather discoloured, but the description of Walker and Kirby, together with the characters

given in the key, is quite sufficient to distinguish this morphologically very distinct species. In the series from Pusa collection, which includes one male and four females, the coloration is slightly variable ; two females are almost unicolorous on the upperside, while all other specimens present faintly developed longitudinal fasciæ on the occiput and pronotum, as described for *P. polita*, Uv., but not extending on to the abdomen, where the lateral black fasciæ are also scarcely developed. Hind femora in lighter-coloured specimens bear in the externo-median area two indefinite transverse fasciæ, while in darker specimens they are almost entirely clouded with two round pale spots along the lower margin ; upperside with two or three dark transverse fasciæ ; inner surface olive-yellow, more or less clouded with blackish. Hind tibiæ muddy green, with a lighter-coloured subbasal ring.

	♂. mm.	♀ (type). mm.
Length of body	16	22·5
„ antennæ	7	(broken)
„ pronotum	3·75	4·5
„ elytra.....	3·25	4
„ hind femur ..	9	12

38. *Coptacra ensifera*, Bol.

Bombay Prov., Belgaum, 2500′, 12. viii. 1910.

Described from Madura, Madras, but evidently distributed all over India.

39. *Apalacris varicornis*, Walk.

Lebong, 5000′, ix. 1908, 1 ♂.

The genus *Apalacris*, Walk., is closely related to *Coptacra*, St., but differs from it in the following characters : Antennæ (at least in male, which sex alone is known) very long, only very feebly flattened, but not at all dilated basally, the third joint being narrower than the second ; the whole vertex (not fastigium only) distinctly sloping ; elytra obliquely rotundate, but not truncate apically ; male supra-anal plate acutely triangular, much longer than broad, with sides straight, apex rounded, surface flat ; male cerci conical, straight, shorter than supra-anal plate ; male subgenital plate vertical, short.

The type-specimen of *A. varicornis*, Walk., is almost entirely discoloured ; a fresh male before me, quite identical with the type in all morphological characters, is coloured as follows :—

General coloration brownish olive-green. Antennæ black, brownish basally. Face reddish brown. Pronotal disc blackish. Elytra brownish, except the basal part, which is olivaceous; fore and hind margins with irregular and scarcely distinct small darker marginal spots. Wings infumate apically, with veins brownish. Hind femora yellow externally, with base and two transverse fasciæ shining black; lower outer sulcus black, with yellow præapical ring; inner side red with a black præapical ring, followed by yellow one; upperside yellow, with base, two fasciæ, and spinules along the upper carina black; knees brown, reddish beneath. Hind tibiæ red, with tips of spines black.

40. *Eucoptacra saturata*, Walk.

Chundwara, Centr. Prov., iii. 1907, 1 ♂, 1 ♀.

There is no doubt that *saturata*, Walk., is conspecific with *strigifer*, Walk., but I am not sure whether *obliterans*, Walk. (=*sinensis*, Walk.), belongs to the same species, since the shape of the male supra-anal plate is not quite identical in the type-specimens; I think, therefore, that the synonymy suggested by I. Bolivar (*l. c.* p. 404) cannot be accepted without further study of the genus, with an examination of all types of Stål and Walker, as well as of large series of fresh specimens, which are not at my disposal at present.

41. *Eucoptacra binghami*, sp. n.

♂. Distinctly larger than *E. saturata*, Walk. Antennæ half as long again as head and pronotum, feebly flattened and dilated beyond the middle, attenuate apically. Head rugulose; frontal ridge flat, impresso-punctate, gradually narrowing towards clypeus, not reaching the latter, between antennæ three times as broad as vertex between eyes. Fastigium of vertex convex, strongly punctate, with sides convex, without distinct foveolæ, between eyes sulcate and bicarinate. Pronotum compressed laterally, rugulose, obtusely tectiform; median carina low, smooth, intersected by three sulci; metazona about as long as prozona, acutely angulate behind; lateral lobes with lower margin strongly sinuate; fore angle of lobes about 90°, not rounded. Elytra extending behind the knees, subparallel, obliquely truncate apically, with an oblique, narrow, callous fascia, formed by irregular venules, about the middle; this fascia divides the elytron into two parts, the basal part being more densely and irregularly venulated than the apical, the cells of which are all uniform, elongate. Hind femora serrulate along the

upper keel. Anal segment with two sharp and long dents, which have the inner side circularly emarginate and the outer one straight, perpendicular to the outer part of the hind margin of the anal segment. Supra-anal plate, if measured without hind projection, as long as broad; feebly concave, with a slight basal sulcus; its sides parallel from base to the middle, widely rounded beyond the middle, forming very obtuse angles with the apical projection; the latter longer than broad, concave, with margins subparallel and apex rotundato-angulate. Cerci compressed, excavate interiorly, strongly punctate exteriorly, with apices still more compressed, acutely attenuate, decurved. Subgenital plate very short, almost truncate apically, with a tuft of hairs on the upperside.

General coloration brown. Antennæ reddish brown. Pronotum very dark brown, except the hind third part of the lateral lobes, which is pale. Elytra infumate, with numerous irregular oblique brownish fasciæ; the above-described narrow callous fascia in the middle of the elytra is whitish. Wings feebly infumate, darkened apically. Pleuræ blackish. Hind femora with the externo-median area pale, with an indefinite dark stripe along the middle, not extending beyond the basal half, with scattered grey points in oblique ridges, darkened apically; upper external area reddish, with three grey transverse fasciæ, which (except the basal one) are prolonged on to upper internal area; on the latter there is also a præapical fascia; lower exterior area black, reddish apically; inner side red; knees reddish, with lobes yellowish. Hind tibiæ red.

The paratypic females differ from the male in their larger size, comparatively shorter antennæ, unicolorous pronotal lobes, darker-coloured elytra, with the dark fasciæ less pronounced and the narrow callous fascia more so; hind tibiæ with an indistinct longitudinal stripe on the outside.

	♂ (type).	♀ (paratype).
	mm.	mm.
Length of body	22·5	30
„ antennæ	12	14
„ pronotum	5·5	7·5
„ elytra	22	29
„ hind femur ..	15	19

Described from a male and two females taken by Col. C. T. Bingham in Burma; one of the females is from Rangoon, 28. v. 1908, and the two other specimens are without more precise indication of locality. The Pusa collection contains one male, without locality.

HYGRACRIS, gen. nov.

Slightly recalls in habitus the genus *Catantops*. Antennæ filiform. Front very oblique in male, less so in female; frontal ridge subparallel, with margins obtuse; fastigium of vertex sloping towards the frontal ridge; impressed from above, widened anteriorly, obtusely marginated, side-margins very thick, obtuse. Distance between the eyes a little broader than the width of the frontal ridge between the antennæ: eyes oblique, oval. Pronotum almost conical, especially in female; without lateral keels, but its disc somewhat flattened (more so on metazona); median keel feeble, in male almost undeveloped on prozona and perceptible on metazona only, interrupted by three feeble transverse sulci; metazona much shorter than prozona, obtusely angulate behind; lateral lobes longer than high, narrowed anteriorly, with the lower margin obtusely angulate in the middle, fore margin oblique, straight, forming a very obtuse, rounded angle with the lower margin, hind margin excavate near the straight hind angle, oblique and straight from there upwards. Prosternal tubercle hairy, large, in the apical half thickened and bent backwards, with obtusely conical apex; hind part of prosternum adjacent to mesosternum inflated in the middle, in shape of an obtuse tubercle directed forwards, touching the apex of prosternal tubercle. Mesosternum also slightly projecting forwards; its lobes subtransverse, with the inner margins rounded, divergent; hind angles obtuse, rounded; interspace rather broad. Metasternal lobes contiguous in male and separated in female. Elytra developed, strongly narrowed towards the apex, coriaceous in the basal half and subhyaline apically; veins straight. Wings developed, narrow. Fore and middle tibiæ somewhat thickened. Hind femora rather long, moderately thickened basally, gradually narrowed apically; outer carinæ obtuse, the upper one entirely undeveloped in basal half; upper margin not dentate; knees armed with five sharp spines: one upper, two lateral ones, and two on the lower lobes, the latter being especially strong and sharp. Hind tibiæ rounded in the basal third, but very strongly dilated and flattened on the upperside towards the apex, outer margin much laminated between the spines, which are themselves compressed laterally; inner margin with a fringe of dense hairs between the spines; seven outer spines and ten inner ones; no outer apical spine; inner pair of spurs much larger than the outer pair. First joint of hind tarsi much flattened, second

small, third long, thickened apically. Pulvilli of all tarsi large, rounded.

♂. Anal segment widely and deeply emarginated posteriorly. Supra-anal plate longer than broad, oval; basal half excavate, smooth, sharply separated from the apical half, which is slightly raised, very finely transversely striolate; a rather deep median sulcus, not reaching the apex; the latter obtuse. Cerci cylindrical, straight, longer than the supra-anal plate; apex bituberculate, the inner tubercle being thick and conical, and the outer much thinner, slightly longer, cylindrical, feebly bent outwardly. Subgenital plate hairy, horizontal, bottle-shaped, with the apex obtuse. Last three sternites with a tuft of hairs.

♀. Supra-anal plate triangular, with the apex obtuse; divided into two parts by a transverse postmedian sulcus; with a shallow longitudinal sulcus. Cerci cylindrical, slightly curved outwardly. Subgenital plate with the apex triangular, armed with two teeth, rotundately emarginate between them. Valves of ovipositor long, almost straight, sharply and minutely serrate.

Genotype: *Hygracris palustris*, sp. n.

42. *Hygracris palustris*, sp. n.

♂. Face smooth, with a few impressed points; frontal ridge subparallel-sided, sulcate, almost reaching the clypeus, with margins thick, obtuse. Occiput smooth, though not shining, with two irregular lateral impressions. Disc of pronotum impresso-punctate, more densely so on metazona; lateral lobes on metazona densely punctate throughout, on prozona in lower part only, while the upper part is polished. Pleuræ rugulose.

General coloration brownish olivaceous. Elytra and wings orange-reddish anteriorly. Hind femora with three indistinct dark fasciæ and dark knees; knee-lobes paler. Hind tibiæ blackish green with yellowish subbasal ring.

Paratypic female lighter-coloured than the male, with wings slightly bluish.

	♂ (type). mm.	♀ (paratype). mm.
Length of body	32	39
„ pronotum	8	10·5
„ elytra	28 ? (broken)	32 ? (broken)
„ hind femur ..	21	26
„ „ tibia	19	24

The type is from Pusa, Bengal, "taken in damp soil,"

1. iii. 1905; another male is from Waini, Durbhanga, Bengal, 11. iii. 1905 ; three females without locality.

This is a very striking insect, which may be easily recognised by the numerous peculiar characters given above. The structure of the hind legs leaves no doubt that it can and does swim ; the shape of the ovipositor, which is of the same type as in *Chrysochraon* or *Oxya*, suggests that *Hygracris palustris* lays its eggs in the stems of some plant, as *Chrysochraon* does. Biological observations on this insect should be very interesting.

EUPREPONOTUS, gen. nov.

A member of the group Euprepocnemini, related to the genus *Belonocnemis*, Bol., though very distinct from it.

♂. Antennæ long, somewhat flattened and dilated in the middle, but very feebly. Face feebly reclinate. Lateral ocelli close to eyes, but distant from margins of fastigium and from base of antennæ. Vertex feebly reclinate, fastigium prominent anteriorly, hexagonal, distinctly concave, the margins raised, smooth, cheeks below eyes with obtuse shining vertical keels. Pronotum almost cylindrical, feebly compressed laterally ; its disc slightly convex, more so on prozona; median keel low, obtuse, interrupted by three deep transverse sulci ; lateral keels on prozona very obtuse, smooth, deeply cut by three sulci, on metazona undeveloped altogether; metazona distinctly shorter than prozona, very obtusely rounded behind ; lateral lobes transversely convex, very deeply cut by transverse sulci, the first of which runs obliquely towards the fore margin, while the second and third are almost straight and vertical, connected with each other by an oblique longitudinal sulcus just below the middle; a sublateral longitudinal keel, obtuse and shining, is to be seen between the two hind sulci. Prosternal spine cylindrical, slightly inclined backwards, with the apex obtuse. Mesosternal lobes about as long as broad, with inner and hind margins straight ; interspace distinctly narrower than one of the lobes, slightly broadened behind. Metasternal lobes not separated. Elytra and wings fully developed. Hind femora distinctly incrassate basally, with apical part attenuate; upper carina serrulate. Hind tibiæ with ten spines on both sides, without an outer apical spine ; spurs subequal in length to each other. Hind tarsi almost as long as half the tibia ; second joint subequal to one-third of the first joint, distinctly longer than broad. Pulvilli large, rounded. Abdomen cylindrical, with the two apical segments strongly inflated. Cerci large, foliaceous, widely

rounded, bent downwards apically. Last abdominal tergite very large. Subgenital plate transverse, very obtuse.

Genotype: *Eupreponotus inflatus*, sp. n.

43. *Eupreponotus inflatus*, sp. n.

Antennæ distinctly longer than head and pronotum together. Frontal ridge subparallel-sided, narrowed near fastigium and feebly constricted below ocellum; slightly excavated below ocellum; coarsely impresso-punctate throughout; its margins raised, shining, obtuse. Facial keels raised, smooth, almost straight. Subocellar keels obtuse, low, smooth, with a few very feeble impressions. Pronotum not punctured, but opaque on its whole surface except along the lateral keels and shoulders of metazona, which are rugosely impresso-punctate. Lateral lobes slightly higher than long, opaque; their lower margin with a widely rounded coxal angle, oblique and feebly concave before it; fore angle obtuse, rounded; hind angle a little more than 90°, rounded. Elytra extending beyond the hind knees, rather narrow, not densely venulated.

General coloration fawn, with dull black and pale markings. Face velvety olive-brown, with keels and frontal ridge shining; cheeks fawn, shining, with darker clouding; vertex and occiput fawn, with a velvety-black longitudinal fascia, prolonged on to the pronotum, where it is included between two half as broad light fawn stripes; median carina of pronotum fawn, shining; lateral lobes velvety fawn with a stripe along the upper margin, between the lateral and sublateral keels, all sulci and a narrow stripe along the hind margin, black; all margins of pronotum pale, shining. Elytra hyaline, with veins brown; anal field blackish brown; base of mediastinal and discoidal areas, as well as a longitudinal stripe along the axillar vein, yellowish. Hind femora fawn, with three irregular black fasciæ (not reaching the lower margin) in the externo-median area; upperside almost unicolorous; inside yellowish, with a reddish shade in the basal half, an indefinite spot at the middle of the upper carina, and a postmedian transverse fascia black; the latter fascia extending on to the lower surface of the femora; knees with semilunar black spots and light lobes. Hind tibiæ red. Hind tarsi brownish red.

	♂. mm.
Length of body	28·5
,, pronotum	6
,, elytra	26·5
,, hind femur ..	18

The type is unique, and the exact place of capture is unknown.

This insect is easily separated from all other members of the Euprepocnemini by the extremely peculiar shape of the last abdominal segments (recalling somewhat the genus *Prumna*, Motch., of the Podismini) and of the cerci. The type of its coloration, and especially the deep velvety coloration of the head and pronotum, is also very striking, and should make the insect easily recognisable.

LIX.—*On the Mite* (Acarapis woodi, *Rennie*) *associated with Isle of Wight Bee Disease.* By Stanley Hirst.

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The discovery of the constant presence of a mite in bees suffering from Isle of Wight disease is of considerable interest. The first scientific account of the mite and its relations with the disease has been published by the discoverers (Dr. Rennie, P. B. White, and Miss Elsie J. Harvie) *. The present note deals with the affinities of the mite, and gives a detailed account of its external structure. My best thanks are due to the Rev. G. H. Hewison and Mr. W. Herrod-Hempsall for giving me bees infected with *Acarapis woodi*.

Genus Acarapis, Hirst, 1921.

Acarapis, Hirst, Proc. Zool. Soc. 1921, p. 357.

Closely allied to *Tarsonemus*, but differing as follows:—Second and third legs of larval stage very short (almost rudimentary) and without either claws or pulvillus (whereas in the larva of *Tarsonemus* these legs are about as long as the first and provided with paired claws and a pulvillus). Female lacking the club-shaped pseudostigmata that are present in *Tarsonemus*, and with the fourth leg shorter and wider and provided with more numerous hairs (in this last respect somewhat resembling the fourth leg of *Scutacarus*).

* Trans. Roy. Soc. Edinburgh, lii. part 4, March 1921, pp. 737–779, 3 pls.