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New taxa and distribution records of Tettigoniidae from India

(Orthoptera: Ensifera)

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Abstract

A list of species of Indian Tettigoniidae from the collection of the Zoological Survey of India, Calcutta, is given, together with notes on some Tettigoniidae types in the Musée National d'Histoire Naturelle de Paris. One new genus, three new subgenera, and ten new species are described: *Mirollia compressa* sp. n., *Indogneta* gen. n., *Indogneta lata* sp. n., *Holochlora curvicerca* sp. n., *Holochlora longiloba* sp. n., *Tapiena latifolia* sp. n., *Letana mursinga* sp. n. (Phaneropterinae); *Alloateratura* subgen. n., *Alloateratura (Indoteratura) erecta* sp. n., *Nefateratura* subgen. n., *Alloateratura (Nefateratura) terminata* sp. n., *Parakuzicus* subgen. n., *Kuzicus (Parakuzicus) cervicus* sp. n., *Kuzicus (Parakuzicus) excavatus* sp. n. (Meconematinae). Three new combinations are proposed: *Letana rufonotata* (SERVILLE, 1839) comb. n. from *Elinuaea* (Phaneropterinae); *Alloateratura (Nefateratura) mesembrina* KEVAN, 1993 comb. nov. from *Alloateratura (Alloateratura)*, *Kuzicus (Parakuzicus) forficata* (BOLÍVAR 1900) comb. nov. from *Xiphidiopsis* (Meconematinae). One lectotype is designated: *Indokuzicus militaris* (BOLÍVAR, 1900) (Meconematinae). Additional descriptions of some insufficiently known species are provided.

Introduction

The collection of the Zoological Survey of India holds a number of Tettigoniidae that have been collected by collaborators of the Institute in a variety of localities throughout India over several years. In contrast to the Grylloidea (CHOPARD 1969, VASANTH 1993) or Acridoidea (TANDON 1976, BHOWMIK 1985, 1986), there has never been a summarising report on the Tettigoniidae of India. A plan of the late G.M. HENRY to write the Tettigoniidae volume for the "Fauna of India" was never completed after his retirement from the Colombo Museum (PRIYANTHA WIJESINGHE, pers. comm.). The Indian tettigoniid fauna is thus still largely unknown and several new taxa and new records are to be expected.

Some years ago, the authors of this article thus started a collaboration to promote knowledge of the Indian tettigoniid fauna. First results were published in INGRISCH & SHISHODIA (1998). In the present paper we give a list of species held in the collection of the Zoological Survey of India not previously reported, together with the description of 15 new taxa and additional notes and descriptions of 11 insufficiently known species.

Moreover, one of the authors (SI) had the opportunity to study some of SERVILLE'S (1831, 1839) and BOLÍVAR'S (1900) Tettigoniidae types from South India in the collection of the "Musée National d'Histoire Naturelle de Paris" under the PARSYST programme. Some results of that study are included in the present paper.

Most of the material on which the present study is based – including the types of new species – is deposited in the collection of the Zoological Survey of India, Calcutta (ZSI); further material is preserved in the Pune collection, Western Regional Station, Zoological Survey of India (PUNE), and in the Musée National d'Histoire Naturelle de Paris (MNHN).

List of species

Phaneropterinae

Zulpha perlaria (WESTWOOD, 1848)

Phaneroptera perlaria WESTWOOD, 1848, Cab. Oriental. Entom.: 33.

Distribution: Oriental Region.

Locality: 1♂, N. Andaman, H.E.P.A., Kalpong, 27.II.1997, K. Chandra (ZSI).

Elimaea (Orthelimaea) insignis (WALKER, 1869)

Phaneroptera insignis WALKER, 1869, Cat. Derm. Salt. Brit. Mus. 2: 344.

Distribution: India, Assam, Nepal, China.

Localities: 1♂, Manipur, Bangmual, New Chena Chandpur, 19.IX.1975, M.S. Shishodia; 1♀, Manipur, Song Song area, Mao, 5762', 13.IV.1975, M.S. Shishodia (ZSI).

Elimaea (Orthelimaea) securigera BRUNNER V. W., 1878

Elimaea securigera BRUNNER V. W., 1878, Monogr. Phanerop.: 93.

Distribution: India, Simla, Sri Lanka.

Locality: 1♂, Orissa, Mayurbhanj, P.W.D. Insp. Bungalow, 12.VIII.1972, S.K. Mitra (ZSI).

Elimaea (Elimaea) subcarinata (STÅL, 1861)

Phaneroptera subcarinata STÅL, 1861, Kong. Svensk. Freg. Eug. Resa, Orth.: 319.

Distribution: From South China (Hong Kong) to central Thailand and Bangladesh.

Localities: 1♂, Mizoram, Champhai, 30.X.1991, J.K. Jonathan; 1♂, Mizoram, Dampa Sanctuary, 9.IX.1995, M.S. Shishodia (ZSI).

Elimaea melanocantha (WALKER, 1869)

(Figs 1-4)

Phaneroptera melanocantha WALKER, 1869, Cat. Derm. Salt. Brit. Mus. 2: 341.

Distribution: South India.

Localities: 1♂, Tamil Nadu, Bamatir Thom, Dare, 18.IX.1992, S.S. Saha & party (ZSI); 1♂, Erivakulam NP Survey 1994: Kerala, Rajamalai, Stn. no. E/4182, 6.IV.1994, R.M. Sharma (PUNE).

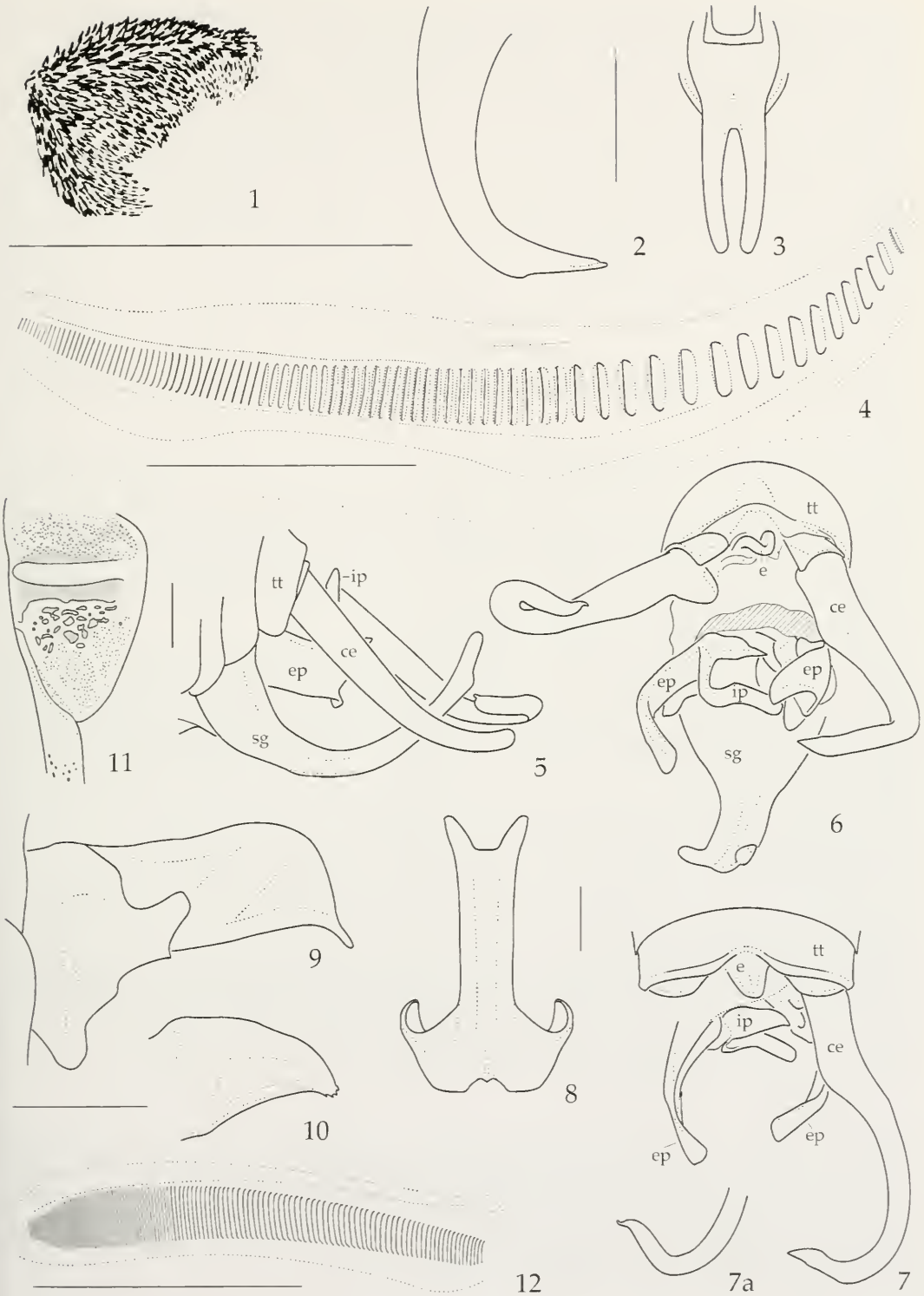
Discussion. The species of the genus *Elimaea* occurring in Thailand, Malaysia and Indonesia were recently reviewed (INGRISCH 1998b). In *E. melanocantha* the anterior femora are curved as in phasmids, and the

Figs 1-4. *Elimaea melanocantha* (WALKER, 1869) male: 1 spinose area of phallus; 2 left cercus dorsal; 3 subgenital plate; 4 stridulatory file on underside of left tegmen.

Figs 5-12. *Mirollia compressa* sp. n. male, holotype: 5 apex of abdomen in lateral view; 6 do. in apical view; 7 do. in dorsal view; 7a left cercus in ventral view; 8 subgenital plate; 9 left phallus sclerite in lateral view; 10 do. in apical view; 11 stridulatory area of left tegmen; 12 stridulatory file on underside of left tegmen.

Abbreviations: ce cercus, e epiproct, ep external branch of phallus sclerite, ip internal branch of phallus sclerite, sg subgenital plate, tt tenth abdominal tergite.

Scale bars always 1 mm.



phallus is membranous. It might thus be included in the subgenus *Elima* s.str. In contrast to other species of that subgenus studied, the phallus of *E. melanocantha* bears a field of densely arranged, short, dark spinules (Fig. 1). Moreover, the radius sector of the tegmina is branched behind the middle; this is in contrast to the situation in *Elima* s. str. but agrees with the subgenus *Rhaebelima*. However, the phallus lacks the pair of conchate sclerites found in typical *Rhaebelima* species. The subgeneric affinity of *E. melanocantha* should be reassessed when more Indian *Elima* species have been studied in detail.

E. melanocantha is striking for the stridulatory area of the male tegmina. The stridulatory vein of the left tegmen is strongly bulging; the dorsal field of both tegmina is widened just behind the stridulatory area and provided with a series of parallel transverse veinlets. The stridulatory file on the underside of the left tegmen is concavely curved, and bears about 84 teeth which are large and widely spaced in about the basal half, densely arranged and gradually reduced in size in the apical half of the vein (Fig. 4).

Mirollia compressa sp. n.

(Figs 5-12; 67)

Holotype. ♂, Mizoram, Lawngtlai, Chhintuipui, 9.IV.1994, S.K. Gosh (ZSI).

Description

Fastigium verticis narrower than scapus, narrowing towards apex, dorsally furrowed, in lateral view sinuate, separated by a wide shallow groove from acute-angular fastigium frontis. Pronotum with disc rounded, apical area flat and shouldered; anterior and posterior margins sub-truncate in middle; principle sulcus Y-shaped, crossing midline in middle of pronotum; medial carina strong anterior to principle sulcus, behind sulcus weak and restricted to middle of metazona; paranota slightly longer than high, humeral sinus distinct. Tegmen with a network of large irregular cells, but course of principle veins distinct. Anterior tibia with ventro-apical spinules at both sides; tibial tympana covered on internal side by a conchate projection, on external side free. Knee lobes of all legs obtuse.

Male. Tegmen with stridulatory area ovoid; stridulatory vein projecting; stridulatory file on underside of left tegmen with about 130 narrow, very densely placed teeth, half of them concentrated in the basal third of the vein. Tenth abdominal tergite transverse, apex strongly emarginated in middle. Epiproct triangularly rounded with a medial furrow. Cerci long, basal area widened and on inner side densely covered with short hairs; apical area strongly curved and gradually tapered to acute apical tooth. Subgenital plate with broad basal and narrow apical part; narrow part with sub-parallel margins; apical angles conical, projecting, widely emarginated in between with bottom of emargination almost straight. Phallus with two pairs of large complex sclerites: external pair compressed, band-shaped, broad, external surface in basal half covered by membrane; apical third curved, somewhat twisted, with converging margins, apex obtuse, minutely denticulate; internal pair at base a little higher than external pair, strongly curved mediad in basal area and divided at bend into two widely spaced lobes; dorsal lobe laterally compressed in basal two-thirds, then twisted and dorso-ventrally compressed in apical third; apical margin with a few acute teeth; ventral lobe compressed, apex rounded.

Coloration. Yellowish brown (probably green when alive). Tegmen in stridulatory area with a roughly circular brown spot in which cells are dark brown, veins light brown; lateral field in areas behind media and apical of radius sector with small brown dots forming more distinct spots in centres of cells. Anterior tibia in genicular region with two brown strokes running to and along margins of tympana.

Measurements of male (length in mm): body 13; pronotum 4.5; tegmen 22; tegmen-width 5.0; anterior femur 3.7; medial femur 5.5; postfemur 12.5; posttibia 13.5.

Female unknown.

Discussion. The general principle of the phallus with a uni-branched external pair and a bi-branched internal pair of sclerites agrees with the situation in *M. fallax* BEI-BIENKO, 1962, *M. composita* BEI-BIENKO, 1962, *M. hexapinna* INGRISCH, 1998a, and *M. ranongi* GOROCHOV, 1999, the shapes of the sclerites, however, are quite different. They are only similar to those of *M. fallax* as redescribed in GOROCHOV (1999) but the external pair of sclerites lacks denticles at the dorso-apical margin before the apex whilst the internal pair has longer branches and the dorsal branch has a differently shaped apex.

In general characters the new species is also similar to *M. fallax* and *M. composita*. It differs from both in more strongly sinuate cerci (compared with *M. fallax* they are also longer) and in the apex of the subgenital plate. Although the apex of the subgenital plate is broad-obtusely emarginated as in both other species, the emargination appears narrower because the apico-lateral cones are only weakly deviating posteriorly. From *M. composita*, it differs also in the narrow apical area of the subgenital plate with the margins almost parallel (not diverging posteriorly).

The shapes of the subgenital plate and the cerci are similar to those of *M. hexapinna*, but the cerci are more strongly curved at apex and the subgenital plate has the narrow apical area with almost parallel rather than diverging lateral margins.

The new species differs from the other *Mirollia* species found in North East India, as follows: From *M. longipinna* INGRISCH & SHISHODIA, 1998, by the apex of the subgenital plate which is broad-obtusely rather than long, acute-triangularly emarginated, by the cerci which are more strongly curved in apical area, and by the shapes of the two pairs of phallus sclerites (not one pair). From *M. bigemina* INGRISCH, 1998a, by the apex of the subgenital plate as before, by the cerci which are simply sinuately curved (not acute-angularly recurved before apex), and by the shape of the phallus sclerites.

Etymology. The name of the new species refers to the compressed phallus sclerites.

Ducetia japonica (THUNBERG, 1815)

Locusta japonica THUNBERG, 1815, Mem. Acad. St. Petersburg. 5: 282.

Distribution: South and East Asia to Australia; widespread in the Oriental Region.

Locality: 1♂, W.B., Chilapata, Jalpaiguri Dist., 14.X.1987, S.K. Tandon (ZSI).

Isopsera pedunculata BRUNNER v. W., 1878

Isopsera pedunculata BRUNNER v. W., 1878, Monogr. Phanerop.: 220.

Distribution: Described from Rangoon, Calcutta and Assam.

Locality: 1♂, H.P., Mandi Dist., 31.VIII.1986, R.K. Sharma; 1♂, Delhi, Hanuman's Tomb, 14.II.1995, J.P. Sati (ZSI).

Isopsera sp. (female of *I. pedunculata* BRUNNER v. W., 1878 ?) (Fig. 13)

Locality: 1♀, J. & K., P.W.D. Rest House, Jhejjar, 6.IV.1964, R. Tilak (ZSI).

Discussion. The female of *I. pedunculata* is still undescribed. The female from Jhejjar agrees in general characters with two males of *I. pedunculata* examined. However, there are several *Isopsera* species reported from India. The identity of the female studied is thus not certain because it was not collected together with males. The subgenital plate of the female is illustrated (Fig. 13).

Isopsera stylata BRUNNER v. W., 1878

Isopsera stylata BRUNNER v. W., 1878, Monogr. Phanerop.: 219.

Distribution: India (Calcutta), China (Yunnan).

Locality: 1♂, H.P., Mabibsl, Loc. Pandoh, Mandi, 9.X.1986, S. Chander (ZSI).

Indogneta gen. n.

Type species: *Indogneta lata* sp. n.

Description

Fastigium verticis of about equal width with scapus, evenly curved over entire length, separated from fastigium frontis by a narrow furrow; fastigium frontis also wide with apex truncate. Pronotum with disc rounded in anterior two-thirds, flat in posterior third; paranota higher than long, anterior margin concave; humeral sinus distinct. Tegmen sub-transparent, with almost parallel margins, ventral (= anterior) margin weakly convex, apex rounded; costa present, short, inconspicuous; subcosta and radius parallel, in apical half slightly diverging; with a dense network of veinlets. Anterior coxa with spine. Anterior tibia with dorsal margins angularly rounded, dorsal surface indistinctly furrowed in middle, rounded in basal area, flat in apical area; with spines on dorso-external and both ventral margins, with apical spur at all four angles. Tibial tympana open on both sides. Middle tibia with spines on dorso-internal and both ventral margins, with apical spur at all four angles. Prosternum unarmed; mesosternal lobes triangular, metasternal lobes triangularly rounded.

Male. Tenth abdominal tergite unmodified. Epiproct triangular. Cerci and subgenital plate unremarkable. Styli present. Phallus membranous.

Discussion. The new genus resembles *Isopsera* BRUNNER v. W., 1878 in general aspects, but differs strikingly by the wide fastigium verticis which is not step-like declined but evenly curved and separated by a narrow furrow from the equally wide fastigium frontis. Minor differences – which, however, do not apply to all *Isopsera* species – are observed in the more parallel-sided tegmina, the unmodified male cerci, and the presence of spines on the dorso-external margin of the anterior tibia. The shape of the fastigium verticis resembles that of some *Casigneta* BRUNNER v. W., 1878 species (see KARNY 1926). From that genus, *Indogneta* differs in the tibial tympana which are fully open on both sides.

Etymology. The name of the new genus was derived by merging the stems of India and Casigneta.

Indogneta lata sp. n. (Figs 14-22; 69-70)

Holotype. ♂, Mizoram, Aibawk, 17.XI.1995, M.S. Shishodia (ZSI).

Paratype. 1♂, S. Andaman, Humphrygunj, 3.III.1964, B.S. Lamba (ZSI).

Description

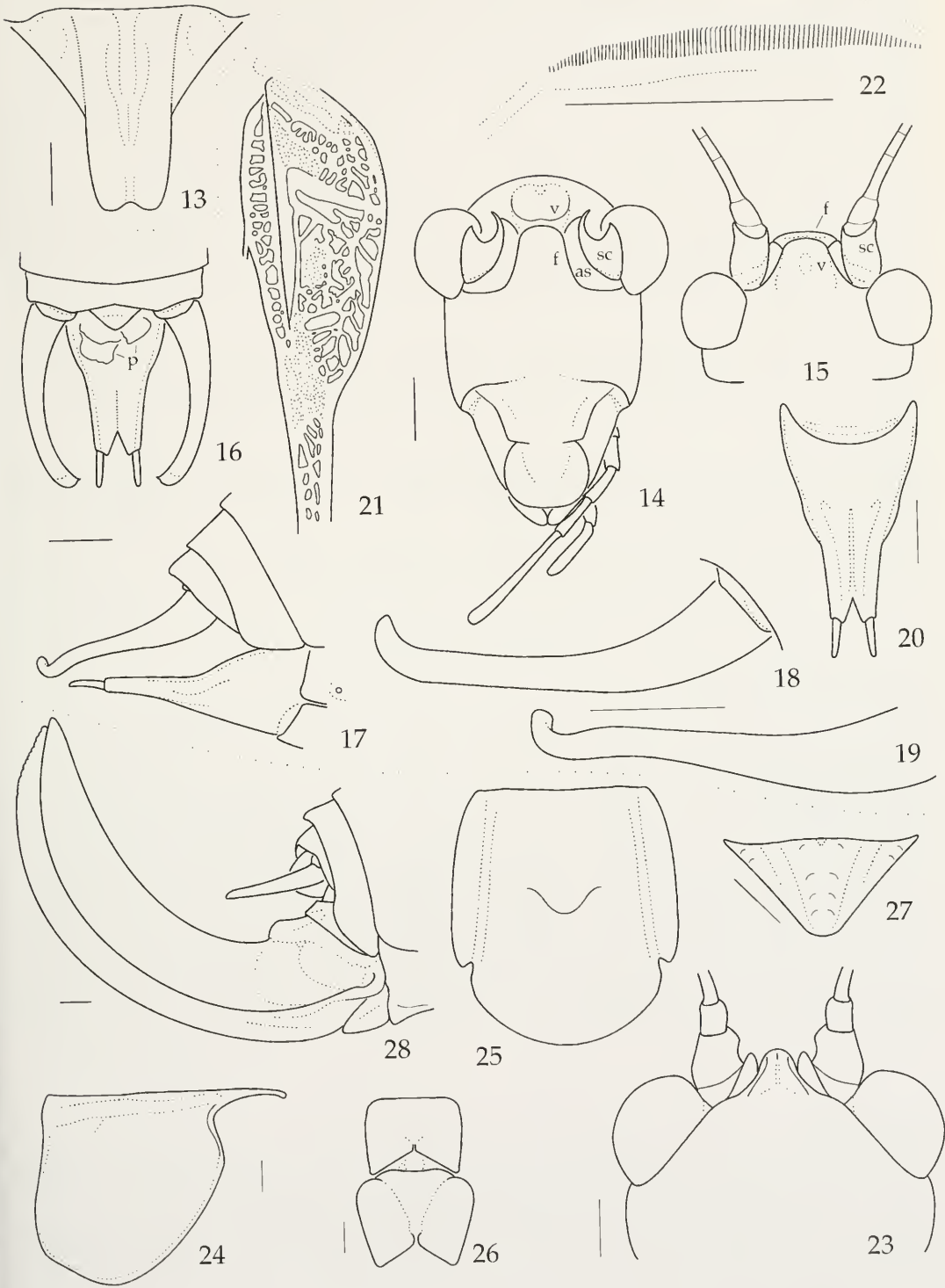
Fastigium verticis slightly wider than scapus with dorsal surface longitudinally rounded and with a shallow ovoid groove in middle, almost angularly bent to lateral surfaces; apex truncate, separated by a deep, narrow furrow from fastigium frontis. Maxillary palpi very long and thin; fifth (= apical) segment longer than third and fourth together. Pronotum with disc broadly rounded, apical area almost flat, shouldered; anterior margin slightly concave, posterior margin rounded; transverse sulcus U-shaped, crossing midline of pronotum in first half of sixth tenth of pronotum length. Paranota higher than long; anterior margin concave, ventral margin almost straight but descending posteriorly, posterior margin rounded; humeral sinus distinct. Tegmen largely surpassing hind knees; hind wings caudate. Radius sector branching before middle of tegmen, furcate, radius stem with two (or one) more branches; costa short,

Fig. 13. *Isopsera* sp. (cf. *pedunculata* BRUNNER v. W., 1878) female: subgenital plate.

Figs 14-22. *Indogneta lata* sp. n. male, holotype: 14 frons; 15 head in dorsal view; 16 apex of abdomen in dorsal view (p = apex of phallus); 17 do. in lateral view; 18 right cercus in dorso-lateral view; 19 do. in lateral view; 20 subgenital plate; 21 stridulatory area of left tegmen; 22 stridulatory file on underside of left tegmen.

Figs 23-28. *Tapiena latifolia* sp. n. female, holotype: 23 head in dorsal view; 24 pronotum in lateral view; 25 do. in dorsal view; 26 meso- and metasterna, 27 subgenital plate; 28 ovipositor.

Abbreviations: as antennal scrobae, f fastigium frontis, p phallus, sc scapus, v fastigium verticis.



curved, distinct; transverse veinlets rather regular and narrowly spaced. Anterior femur with spines on ventro-internal margin; middle femur with spines in apical area of ventro-external margin; postfemur with spines on both ventral margins; middle femur much longer than anterior femur. Genicular lobes of anterior and medial femur obtuse or triangular and with a minute ventral spinule; genicular lobes of postfemur bi-spinose. Anterior tibia with three to five dorso-external, without dorso-internal, four ventro-external, and four to five ventro-internal spines; dorso-internal margin without apical spur, the other three margins with small apical spur.

Male. Tegmen with stridulatory area elongate ovoid; stridulatory vein narrow, distinctly swollen on dorsal side; on ventral side little swollen. Stridulatory file on underside of left tegmen with about 86-106 narrow, densely arranged teeth. Tenth abdominal tergite transverse. Epiproct triangular with apex rounded. Cerci narrow, conical in basal area, cylindrical in middle, compressed and sinuately curved before apex; apex obtuse with a minute spinule at proximal angle. Subgenital plate elongate-triangular, in apical half with two broad, rounded, lateral and a narrow medial carina; apex triangularly emarginated; styli slightly longer than emarginated area. Phallus membranous.

Female unknown.

Coloration. Uniformly brown (discoloured, probably green when alive). Tegmen with stridulatory area blackish brown except for translucent areas, contrasting against light veins.

Measurements of male (length in mm): body 21; pronotum 4.2-4.5; tegmen 31.5; tegmen-width 6.0; hind wing projecting 4.5-5.5; anterior femur 5.5; medial femur 8.7; postfemur 21; posttibia 23.

Discussion. The new species differs from species of the genus *Isopsera* BRUNNER V. W., 1878 by the wide fastigium verticis, and from species of the genus *Casigneta* BRUNNER V. W., 1878 by the tibial tympana which are fully open on both sides.

Etymology. The name of the new species refers to the wide fastigium verticis.

Holochlora curvicerca sp. n.

(Figs 29-35; 66)

Holotype. ♂, Meghalaya, Shillong, Nongthymmai, 15.VII.1972, R.S. Giri (ZSI).

Description

Fastigium verticis much narrower than scapus, dorsal surface strongly sinuate, with a deep dorsal furrow; separated from fastigium frontis by a wide and deep furrow. Pronotum with disc broadly rounded, apical area almost flat, shouldered; anterior margin slightly concave, posterior margin rounded; transverse sulcus weak, forming a wide U near end of fifth tenth of pronotum length; paranota higher than long, posterior margin rounded; humeral sinus distinct. Mesosternal lobes triangular, metasternal lobes rounded. Tegmen largely surpassing hind knees; radius sector branching slightly before middle of tegmen length, forked, radius stem with three more lateral branches (Fig. 66). Anterior coxa with spine. Anterior femur with spinules on ventro-internal margin, mesofemur on ventro-external margin, postfemur on both ventral margins. Genicular lobes of pro- and mesofemur obtuse, of postfemur bi-spinose. Tibial tympana conchate on internal, open on external surface. Anterior tibia dorsally furrowed, with one or two dorso-external spines and two to three ventral spines at both margins, and both dorsal and both ventral margins with one small apical spur.

Figs 29-35. *Holochlora curvicerca* sp. n. male, holotype: 29 apex of abdomen in lateral view; 30 do. in dorsal view; 31 subgenital plate; 32 left cercus in dorso-apical view; 33 right cercus in ventral view; 34 stridulatory area of left tegmen; 35 stridulatory file on underside of left tegmen.

Figs 36-41. *Holochlora longiloba* sp. n. male, holotype: 36 apex of abdomen in lateral view; 37 do. in dorsal view; 38 do. in ventral view; 39 right cercus; 40 stridulatory area of left tegmen; 41 stridulatory file on underside of left tegmen.

Abbreviations: ce cercus, sg subgenital plate, tt tenth abdominal tergite.



Male. Tegmen with stridulatory area elongate, stridulatory vein distinctly swollen. Stridulatory file on underside of left tegmen with about 35 rather large and spaced teeth. Tenth abdominal tergite with a pair of elongate, conical, medial projections that are touching each other except before apex; apices rounded. Epiproct rounded, surface almost flat. Cerci robust, strongly bent mediad shortly before middle of length; behind bend apical half of cercus dorso-ventrally compressed with apical margin strongly, proximal margin slightly convex; apex bidentate. Subgenital plate elongate; roughly triangular in basal two-thirds, apical half divided into two narrow (cylindrical but somewhat compressed) projections; styli thin. Phallus membranous.

Female unknown.

Coloration. Uniformly yellowish brown (discoloured, probably green when alive).

Measurements of male (length in mm): body 25; pronotum 6.8; tegmen 47; tegmen-width 9.5; hind wing projecting 5; anterior femur 7; postfemur 30; posttibia 32.

Discussion. The new species is remarkable in the male cerci which are already bent in the middle or slightly before and have the apical half compressed while in many other species they are merely curved at the apex. Otherwise the new species resembles *H. tumida* INGRISCH & SHISHODIA, 1998, from which it differs, apart from the cerci, by the apical lobes of the tenth abdominal tergite of the male which are longer and approximated rather than separated from each other, and by the stridulatory file on the underside of the left tegmen which has the socket widened but not as extreme as in *H. tumida*.

Discussion. Strongly curved cerci are also found in *H. signata* BRUNNER V. W., 1891, *H. bogoriensis* KARNY, 1926, *H. annulicornis* KARNY, 1926, and *H. ebneri* KARNY, 1926. The new species differs, however, strikingly by the apical half of the cercus being compressed and by the prolonged (not shortened) lobes of the tenth abdominal tergite. The abdominal terminalia of the new species are similar to those of *H. cuisinieri* CARL, 1914 from Vietnam. They differ in the lobes of the tenth abdominal tergite being more separated from the lateral area of the tergite and less strongly curved ventrad at apex, by the subgenital plate with the narrow apical area shorter and divided from the apex for less than half the length of the subgenital plate (not more than half). Moreover, the cerci are curved mediad or dorso-mediad (not ventro-mediad). The cerci of the type of *H. cuisinieri* (examined by SI) are not as narrow as in CARL'S (1914) fig. 10 which probably shows the view at the rim.

Etymology. The name of the new species refers to the curved cerci.

Holochlora longiloba sp. n.

(Figs 36-41; 65)

Holotype. ♂, N. Tripura, Ambassa, 25.V.1992, B.C. Das (ZSI).

Description

Fastigium verticis much narrower than scapus, dorsal surface sinuate, with a deep dorsal furrow; separated from fastigium frontis by a wide and deep furrow. Pronotum with disc broadly rounded, apical area sub-flat and shouldered; anterior margin slightly concave, posterior margin rounded; transverse sulcus weak, cutting midline in second half of sixth tenth of pronotum length; paranota higher than long, posterior margin rounded; humeral sinus distinct. Mesosternal lobes triangular, metasternal lobes rounded. Tegmen largely surpassing hind knees; radius sector branching slightly before middle of tegmen length, forked on left tegmen (unforked on right tegmen), radius stem with three (or four) more lateral branches. Anterior coxa with spine. Anterior femur with spinules on ventro-internal margin, mesofemur on ventro-external margin, postfemur on both ventral margins. Genicular lobes of pro- and mesofemur obtuse or with two minute spinules, of postfemur bi- or three-spinose. Tibial tympana conchate on internal, open on external surface. Anterior tibia dorsally furrowed, with one dorso-external, five ventro-internal and one or two ventro-external spines, and both dorsal and both ventral margins with one small apical spur.

Male. Tegmen with stridulatory area elongate; stridulatory vein slightly swollen on dorsal, distinctly swollen on ventral side. Stridulatory file on underside of left tegmen with about 50 rather narrow, spaced teeth. Tenth abdominal tergite with little more than basal quarter entire, otherwise split into two broad

lobes with convex dorsal and concave ventral surfaces; dorsal surface and internal margins strongly setose; apex of lobes broadly rounded; ventral surface with a low swelling before apex. Cerci conical, rather small, apex abruptly curved mediad, acute. Subgenital plate with strongly converging lateral margins in apical half; apical half narrow with rounded lateral carinae, about apical fifth of subgenital plate divided; styli small. Phallus membranous.

Female unknown.

Coloration. Uniformly yellowish brown with traces of green on tegmen and postfemur (discoloured, probably green when alive).

Measurements of male (length in mm): body 20; pronotum 5.8; tegmen 34; tegmen-width 7.5; hind wing projecting 4.5; anterior femur 6.3; postfemur 25.5; posttibia 28.5.

Discussion. The new species belongs to the *H. venosa* group and resembles *H. nigrotympana* INGRISCH, 1990b. It differs from that species as well as from *H. venosa* STÅL, 1873, *H. japonica* BRUNNER V. W., 1878, and *H. semirotunda* XIA & LIU, 1990, by the tenth abdominal tergite which has distinctly longer apical lobes without a projection on the lateral margin (as in *H. japonica*) or a ventral tooth (as in *H. venosa* and *H. nigrotympana*); in lateral view a weak swelling is barely visible on the ventral surface. The abdominal terminalia of the new species are superficially similar to those of *H. fuscospinosa* HEBARD, 1922 (from the Philippines). They differ in stouter cerci and a (in lateral view) thicker subgenital plate.

Etymology. The name of the new species refers to the long lobes of the terminal tergite.

Tapiena latifolia sp. n.
(Figs 23-28; 68)

Holotype. ♀, Tamil Nadu, Bamatir Thom, Tirunelveli Dist., 18.IX.1992, S.S. Saha & party (ZSI).

Description

Head (with frons and vertex), pronotum, pleurae and tegmina densely and regularly covered with impressed dots, the same pattern less regularly on femora.

Fastigium verticis conical, at base of sub-equal width with scapus, at apex distinctly narrower; with a narrow dorsal furrow; apex rounded; separated by a transverse furrow from fastigium frontis. Fastigium frontis with apex truncate. Vertex with posterior area flattened. Pronotum: disc flattened with lateral angles rounded-angular; anterior margin sub-truncate (very faintly concave), posterior margin rounded; transverse sulcus crossing midline in about middle of pronotum. Paranota barely higher than long (88:85), humeral sinus distinct. Tegmen widened and with sub-parallel margins; apical quarter conical, with approaching margins, apex rounded; radius sector branching little before middle of tegmen, forked, radius with two more lateral branches; dorsal field of right tegmen (in situ covered by left tegmen) in widened basal area with a small transparent field divided by nine to ten transverse veinlets of which the stronger four basal veinlets bear rows of small teeth at top (stridulatory files?). Hind wings little projecting. Meso- and metasternal lobes angular. Anterior coxa without spine. Tibial tympana open on external, conchate on internal side. Anterior tibia with dorsal angles angular; without dorsal spines and with two to three ventro-external and four ventro-internal spines, and with dorso-external, ventro-external and ventro-internal apical spurs, without dorso-internal spur.

Male unknown.

Female. Tenth abdominal tergite transverse. Epiproct with dorsal surface weakly swollen, apex angularly rounded. Paraprocts acutely angular with apical angle obtuse. Cerci faintly curved, narrow, behind basal two-thirds abruptly but not strongly constricted, apex obtuse. Ovipositor large, falcate, ventral valves serrulate near apex, dorsal valves indistinctly serrulate in apical half; dorsal valves at base above ventral margin with a deep pit; dorsal margin of ventral valves covering that pit greatly swollen at base. Subgenital plate triangular with midline swollen, apex rounded.

Coloration. Green when alive (examined specimen discoloured brown with traces of green). Frons reddish brown, genae and vertex green. Pronotum with lateral angles brown. Tegmen with media brown in basal area.

Measurements of female (length in mm): body 28; pronotum 7.9; tegmen 39.0; tegmen-width 13.5; postfemur 25.0; ovipositor 13.0.

Male. Tegmen with stridulatory area elongate, stridulatory vein distinctly swollen. Stridulatory file on underside of left tegmen with about 35 rather large and spaced teeth. Tenth abdominal tergite with a pair of elongate, conical, medial projections that are touching each other except before apex; apices rounded. Epiproct rounded, surface almost flat. Cerci robust, strongly bent mediad shortly before middle of length; behind bend apical half of cercus dorso-ventrally compressed with apical margin strongly, proximal margin slightly convex; apex bidentate. Subgenital plate elongate; roughly triangular in basal two-thirds, apical half divided into two narrow (cylindrical but somewhat compressed) projections; styli thin. Phallus membranous.

Female unknown.

Coloration. Uniformly yellowish brown (discoloured, probably green when alive).

Measurements of male (length in mm): body 25; pronotum 6.8; tegmen 47; tegmen-width 9.5; hind wing projecting 5; anterior femur 7; postfemur 30; posttibia 32.

Discussion. The new species is remarkable in the male cerci which are already bent in the middle or slightly before and have the apical half compressed while in many other species they are merely curved at the apex. Otherwise the new species resembles *H. tumida* INGRISCH & SHISHODIA, 1998, from which it differs, apart from the cerci, by the apical lobes of the tenth abdominal tergite of the male which are longer and approximated rather than separated from each other, and by the stridulatory file on the underside of the left tegmen which has the socket widened but not as extreme as in *H. tumida*.

Discussion. Strongly curved cerci are also found in *H. signata* BRUNNER V. W., 1891, *H. bogoriensis* KARNY, 1926, *H. annulicornis* KARNY, 1926, and *H. ebneri* KARNY, 1926. The new species differs, however, strikingly by the apical half of the cercus being compressed and by the prolonged (nor shortened) lobes of the tenth abdominal tergite. The abdominal terminalia of the new species are similar to those of *H. cuisinieri* CARL, 1914 from Vietnam. They differ in the lobes of the tenth abdominal tergite being more separated from the lateral area of the tergite and less strongly curved ventrad at apex, by the subgenital plate with the narrow apical area shorter and divided from the apex for less than half the length of the subgenital plate (not more than half). Moreover, the cerci are curved mediad or dorso-mediad (not ventro-mediad). The cerci of the type of *H. cuisinieri* (examined by SI) are not as narrow as in CARL'S (1914) fig. 10 which probably shows the view at the rim.

Etymology. The name of the new species refers to the curved cerci.

***Holochlora longiloba* sp. n.**
(Figs 36-41; 65)

Holotype. ♂, N. Tripura, Ambassa, 25.V.1992, B.C. Das (ZSI).

Description

Fastigium verticis much narrower than scapus, dorsal surface sinuate, with a deep dorsal furrow; separated from fastigium frontis by a wide and deep furrow. Pronotum with disc broadly rounded, apical area sub-flat and shouldered; anterior margin slightly concave, posterior margin rounded; transverse sulcus weak, cutting midline in second half of sixth tenth of pronotum length; paranota higher than long, posterior margin rounded; humeral sinus distinct. Mesosternal lobes triangular, metasternal lobes rounded. Tegmen largely surpassing hind knees; radius sector branching slightly before middle of tegmen length, forked on left tegmen (unforked on right tegmen), radius stem with three (or four) more lateral branches. Anterior coxa with spine. Anterior femur with spinules on ventro-internal margin, mesofemur on ventro-external margin, postfemur on both ventral margins. Genicular lobes of pro- and mesofemur obtuse or with two minute spinules, of postfemur bi- or three-spinose. Tibial tympana conchate on internal, open on external surface. Anterior tibia dorsally furrowed, with one dorso-external, five ventro-internal and one or two ventro-external spines, and both dorsal and both ventral margins with one small apical spur.

Male. Tegmen with stridulatory area elongate; stridulatory vein slightly swollen on dorsal, distinctly swollen on ventral side. Stridulatory file on underside of left tegmen with about 50 rather narrow, spaced teeth. Tenth abdominal tergite with little more than basal quarter entire, otherwise split into two broad

lobes with convex dorsal and concave ventral surfaces; dorsal surface and internal margins strongly setose; apex of lobes broadly rounded; ventral surface with a low swelling before apex. Cerci conical, rather small, apex abruptly curved mediad, acute. Subgenital plate with strongly converging lateral margins in apical half; apical half narrow with rounded lateral carinae, about apical fifth of subgenital plate divided; styli small. Phallus membranous. Female unknown.

Coloration. Uniformly yellowish brown with traces of green on tegmen and postfemur (discoloured, probably green when alive).

Measurements of male (length in mm): body 20; pronotum 5.8; tegmen 34; tegmen-width 7.5; hind wing projecting 4.5; anterior femur 6.3; postfemur 25.5; posttibia 28.5.

Discussion. The new species belongs to the *H. venosa* group and resembles *H. nigrotympana* INGRISCH, 1990b. It differs from that species as well as from *H. venosa* STÅL, 1873, *H. japonica* BRUNNER V. W., 1878, and *H. semirotunda* XIA & LIU, 1990, by the tenth abdominal tergite which has distinctly longer apical lobes without a projection on the lateral margin (as in *H. japonica*) or a ventral tooth (as in *H. venosa* and *H. nigrotympana*); in lateral view a weak swelling is barely visible on the ventral surface. The abdominal terminalia of the new species are superficially similar to those of *H. fuscospinosa* HEBARD, 1922 (from the Philippines). They differ in stouter cerci and a (in lateral view) thicker subgenital plate.

Etymology. The name of the new species refers to the long lobes of the terminal tergite.

Tapiena latifolia sp. n.
(Figs 23-28; 68)

Holotype. ♀, Tamil Nadu, Bamatir Thom, Tirunelveli Dist., 18.IX.1992, S.S. Saha & party (ZSI).

Description

Head (with frons and vertex), pronotum, pleurae and tegmina densely and regularly covered with impressed dots, the same pattern less regularly on femora.

Fastigium verticis conical, at base of sub-equal width with scapus, at apex distinctly narrower; with a narrow dorsal furrow; apex rounded; separated by a transverse furrow from fastigium frontis. Fastigium frontis with apex truncate. Vertex with posterior area flattened. Pronotum: disc flattened with lateral angles rounded-angular; anterior margin sub-truncate (very faintly concave), posterior margin rounded; transverse sulcus crossing midline in about middle of pronotum. Paranota barely higher than long (88:85), humeral sinus distinct. Tegmen widened and with sub-parallel margins; apical quarter conical, with approaching margins, apex rounded; radius sector branching little before middle of tegmen, forked, radius with two more lateral branches; dorsal field of right tegmen (in situ covered by left tegmen) in widened basal area with a small transparent field divided by nine to ten transverse veinlets of which the stronger four basal veinlets bear rows of small teeth at top (stridulatory files?). Hind wings little projecting. Meso- and metasternal lobes angular. Anterior coxa without spine. Tibial tympana open on external, conchate on internal side. Anterior tibia with dorsal angles angular; without dorsal spines and with two to three ventro-external and four ventro-internal spines, and with dorso-external, ventro-external and ventro-internal apical spurs, without dorso-internal spur.

Male unknown.

Female. Tenth abdominal tergite transverse. Epiproct with dorsal surface weakly swollen, apex angularly rounded. Paraprocts acutely angular with apical angle obtuse. Cerci faintly curved, narrow, behind basal two-thirds abruptly but not strongly constricted, apex obtuse. Ovipositor large, falcate, ventral valves serrulate near apex, dorsal valves indistinctly serrulate in apical half; dorsal valves at base above ventral margin with a deep pit; dorsal margin of ventral valves covering that pit greatly swollen at base. Subgenital plate triangular with midline swollen, apex rounded.

Coloration. Green when alive (examined specimen discoloured brown with traces of green). Frons reddish brown, genae and vertex green. Pronotum with lateral angles brown. Tegmen with media brown in basal area.

Measurements of female (length in mm): body 28; pronotum 7.9; tegmen 39.0; tegmen-width 13.5; postfemur 25.0; ovipositor 13.0.

Discussion. The new species resembles *T. acutangulata* (BRUNNER V. W., 1878) from Assam especially with regard to the flattened vertex, the flat disc of pronotum (which is, however, faintly tapered anteriorly) and the head and pronotum being densely covered by impressed dots. It differs from that species by larger size, distinctly wider tegmina (length to width 39:13.5 mm in contrast to 37:10 mm) with tapering apical area, and by the reddish brown frons. The anterior tibiae have the dorsal surface flat or indistinctly sulcate (not rounded), the meso- and metasternal lobes are shorter and the ovipositor is longer (13 against 8 mm).

The new species also agrees in many points with the description of *Turpilia ambigua* BOLIVAR, 1900. It differs in the tibial tympana which are conchate on the internal side (not open on both sides), by the anterior femur bearing spines on the ventro-internal and the medial femur on the ventro-external margin (not inermis), and by a distinctly longer ovipositor.

Etymology. The name of the new species refers to the wide tegmina.

Trigonocorypha unicolor (STOLL, 1787)

(Fig. 145)

Gryllus (*Tettigonia*) *unicolor* STOLL, 1787, Represent. Spectr.: 13.

Locusta crenulata THUNBERG, 1815, Mem. Acad. St. Petersb. 5: 280.

Distribution: India.

Locality: 1♂, W.B., Basdhani, Calcutta, 4.XII.1955, A. Surota & S. Ali (ZSI).

Discussion. This large species is characterised by the crenulate lateral margins of the pronotum. The stridulatory file on the underside of the left tegmen is large and bears about 125 teeth.

Letana linearis (WALKER, 1869)

Letana linearis WALKER, 1869, Cat. Derm. Salt. Brit. Mus. 2: 278.

Distribution: Himalayan Range.

Locality: 1♂, U.P., Mukteswar, Nainital Dist., 3.VII.1989, R.K. Varshney (ZSI).

Letana bulbosa INGRISCH, 1990

Letana bulbosa INGRISCH, 1990a, Entomol. Scand. 21: 254.

Distribution: Previously known only from the type locality in Bengal. This is the first record for South India.

Locality: 1♀, Erivakulam NP Survey 1995: Kerala, Meenthotti, Cruswell Bank, Stn. no. E/4186, 27.II.1995, R.M. Sharma (PUNE).

Letana rufonotata (SERVILLE, 1839) comb. n.

(Figs 42-50, 60-61)

Phaneroptera rufonotata SERVILLE, 1839, Hist. nat. Ins. Orth., Paris, 416.

Elinacea rufonotata KIRBY 1906, Syn. Cat. Orth. 2: 395; INGRISCH 1998b, Tijd. Entomol. 141: 69.

Holotype. ♂, India, Bombay, ex coll. Roux, labelled "1/96" (MNHN).

Other material studied: 1♀, labelled "1/96" (MNHN).

Diagnosis. Male. Stridulatory file on underside of left tegmen with about 75 teeth that are narrow and densely arranged in basal third, large and separated from each other in central and apical areas. Ninth abdominal tergite prolonged, widened behind base, apex convex. Supraanal plate rhombic, lateral appendages short, obtuse. Cerci curved in dorsal view. Subgenital plate – as usual in genus – divided into two lobes embracing an empty space and curved twice such that the apices are pointing craniad; outline

as in Figs 42-45. Phallus with a black, spinose, rounded and slightly elevated sclerite that is split at base and widened to a transverse plate at apex.

Female. Subgenital plate with central area elevated; apex sub-truncate (slightly convex). Ovipositor falcate, margins in apical areas dentate.

Measurements (length in mm): body ♂ 15, ♀ 18; pronotum ♂ 3.2, ♀ 3.8; tegmen ♂ 25.0, ♀ 29.0; postfemur ♂ 18.5, ♀ 18.0; ovipositor 7.0.

Discussion. The types of SERVILE (1839) are usually unlabelled; but in the MNHN there is a male labelled "*Phaneroptera rufonotata*" by Blanchard that agrees with regard to origin and characters with the original description given by SERVILE (1839) and can be regarded with sufficient certainty as the type of that species.

Phaneroptera rufonotata was discussed under *Elimaea* by BRUNNER V. W. (1878) and combined with that genus by KIRBY (1906). The general and the genitalic characters place it, however, in the genus *Letana* WALKER, 1869. *E. rufonotata* is not conspecific with any of the species treated in the revision of that genus by INGRISCH (1990a).

Letana mursinga sp. n.
(Figs 51-59; 71-72)

Holotype. ♂, Kameng, NEFA, Kalaktang, Mursing, 2288 m, 5.IX.1961, S. Biswas (ZSI).

Description

Fastigium verticis compressed, dorsally furrowed; separated by a step from fastigium frontis. Pronotum short, first transverse sulcus sub-interrupted in middle; second transverse sulcus U-shaped; anterior margin concave; posterior margin distorted in examined specimen (faintly bilobate?). Paranota longer than high, ventral margin rounded; humeral sinus weak. Brachypterous; tegmina not completely covering abdomen, wide at base and tapered towards rounded apex. Hind wings of almost same length as tegmina. Anterior coxa with a very small tubercle at dorsal margin. Tibial tympana open. Anterior tibia with two to three ventro-external and four ventro-internal spines (no dorsal spines) and with apical spurs at all four angles.

Male. Stridulatory area of tegmen large, projecting mediad, $1.3 \times$ longer than wide and about two-fifth the length of the tegmen. Stridulatory vein on underside of left tegmen with about 130 teeth progressively reduced in size and more densely packed from base towards apex. Ninth abdominal tergite largely projecting posteriorly, apex broadly rounded but faintly concave in middle. Supraanal plate (fused tenth abdominal tergite and epiproct) with a roughly circular disc (but with margins irregular) and large lateral appendages with stiffened proximal and membranous distal margins, apex of appendages black, rounded, spinulose. Cerci weakly curved in dorsal, almost straight in lateral view; slightly constricted in middle and slightly widening again towards apex; apex rounded, with a small acute tooth at internal side. Subgenital plate divided to almost base, bent dorsad and then proximad thus that its apex is hidden under the projection of the ninth abdominal tergite; very apices of lobes divided into two short branches, the external a little longer than the internal one. Phallus with a saw-blade-shaped sclerite above (of about same shape as in *L. brachyptera* INGRISCH, 1987 and *L. emanueli* INGRISCH, 1990a).

Coloration. Yellowish brown with red dots (general colour green when alive?). Antenna: scapus with two brown bands (one on dorsal, one on internal surface); flagellum dark brown. Tegmen with a dark brown dorsal band. Legs with brown dots and flecks, especially on dorsal area of anterior tibia; ventral area of posttibia, a sub-basal dorsal stroke on mid and hind tibia and dorsal area of hind knees dark brown. Measurements of male (length in mm): body 13; pronotum 3.0; tegmen 6.0; stridulatory area length 2.3; do. width 1.9; postfemur 15.0.

Discussion. The new species resembles *L. brachyptera* INGRISCH, 1987 and *L. emanueli* INGRISCH, 1990a (both from Nepal). It differs in the stridulatory area of the left tegmen being less than 1.5 times longer than wide rather than about twice longer than wide; by the supraanal plate which has rounded rather than angular apico-lateral angles. The apex of the ninth abdominal tergite, which is weakly convex, agrees with the condition in *L. brachyptera* but differs from that in *L. emanueli* (slightly concave); the cerci which are a little widening apicad agree with those of *L. emanueli* but differ from those of *L. brachyptera*.

It differs from *L. navasi* BOLÍVAR, 1914, in the ninth abdominal tergite which is distinctly projecting posteriorly, the supra-anal plate which has long lateral appendages, the apices of the lobes of the subgenital plate which have the lateral angles distinctly projecting, and in the stridulatory file on the underside of the left tegmen with a simple rather than strongly modified basal area.

Etymology. The name is taken from the type locality.

Letana sp. 1

(Fig. 64)

Locality: 1♀, U.P., Pilibit Distr., Khakra, 27.VII.1989, R.K. Varshney (ZSI).

Description. Female. Tenth abdominal tergite transverse. Epiproct rounded, with a faint medial furrow at base. Cerci conical, faintly curved, apex pointing. Ovipositor falcate, dorsal margin serrulate in apical half (ventral valves broken in examined specimen). Subgenital plate triangular with medial fold, apex faintly emarginated.

Coloration. Brown with red dots (probably green when alive). Tegmen with indistinct brown dorsal band.

Measurements of female (length in mm): body 21; pronotum 4.0; tegmen 27.0; hind wings projecting 5.0; postfemur 18.5; ovipositor 5.5.

Discussion. The female at hand is close to *Letana inflata* (BRUNNER V. W., 1878) and *L. bulbosa* INGRISCH, 1990a without completely agreeing. It might also belong to *L. intermedia* INGRISCH, 1990a, the female of which is unknown. Without a corresponding male the identification cannot be certain. A drawing of the subgenital plate is included; it may help identification when the species of the genus *Letana* are better known.

Letana sp. 2

(Figs 62-63)

Locality: 1♀, Maharashtra, EIR Survey, Kolhapur, 19.II.1998, A.K. Hazra (ZSI).

Description. Female. Tenth abdominal tergite transverse, apex slightly projecting in middle area. Epiproct rounded, with faint medial furrow at base. Cerci conical, faintly curved, apex pointing. Ovipositor falcate, dorsal margin serrulate in apical half, ventral valves near apex. Subgenital plate with central area elevated; lateral margins angular in basal half; apex with a pair of conical projections, roundly emarginated in between.

Coloration. Green with red and black dots; antennae annulated. Tegmen with brown dorsal band; dorsal field also with two black spots, one at base, the other at end of widened basal area (indistinct!).

Measurements of female (length in mm): body 17; pronotum 3.8; tegmen 24.5; hind wings projecting 3.0; postfemur 20.0; ovipositor 7.0.

Figs 42-50. *Letana rufonotata* (SERVILLE, 1839) male, holotype: 42 apex of abdomen in dorsal view; 43 do. in lateral view; 44 do. in ventral view (subgenital plate and apex of cerci); 45 apex of subgenital plate; 46 supra anal plate in apical view; 47 do. in lateral view; 48 phallus sclerite in dorsal view; 49 do. in lateral view; 50 stridulatory file on underside of left tegmen.

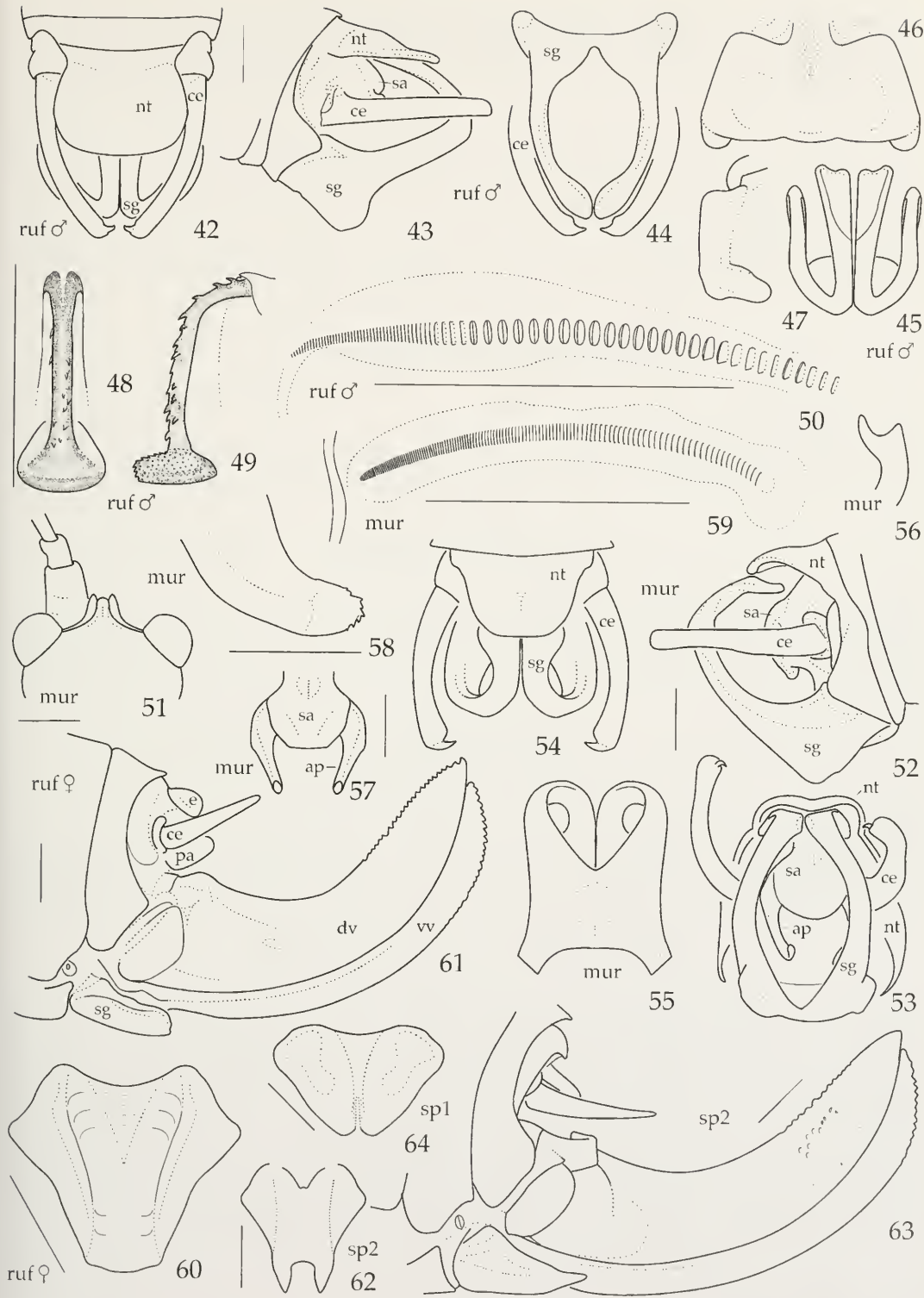
Figs 51-59. *Letana mursinga* sp. n. male, holotype: 51 head in dorsal view; 52 apex of abdomen in lateral view; 53 do. in apical view; 54 do. in dorsal view; 55 subgenital plate in ventral view; 56 apex of left lobe of subgenital plate in dorsal view; 57 supra anal plate in apical view; 58 left appendage of supra anal plate in lateral view; 59 stridulatory file on underside of left tegmen.

Figs 60-61. *Letana rufonotata* (SERVILLE, 1839) female: 60 subgenital plate; 61 ovipositor.

Figs 62-63. *Letana* sp. 2: 62 subgenital plate; 63 ovipositor.

Fig. 64. *Letana* sp. 1: subgenital plate.

Abbreviations: ap lateral appendage of supraanal plate, ce cercus, dv dorsal ovipositor valve, e epiproct, nt ninth abdominal tergite, pa paraproct, sa supraanal plate, sg subgenital plate, vv ventral ovipositor valve.



Discussion. The subgenital plate of the studied female does not match that of any *Letana* species known to occur in the same area: *L. bulbosa* INGRISCH, 1990a, *L. atomifera* BRUNNER v. W., 1878, or *L. infurcata* INGRISCH, 1990a. The females of other species are yet undescribed. Identification can thus not be certain without a corresponding male.

Himertula kinneari (UVAROV, 1923)

Himerta kinneari UVAROV, 1923, J. Bombay Nat. Hist. Soc. 29: 661.

Distribution: India, Nepal, Bhutan.

Locality: 1♀, U.P., Garha, Pilibhit Dist., 22.VII.1989, R.K. Varshney; 1♂, U.P. Kaladhungi, Nainital Dist., 2.VIII.1989, R.K. Varshney (ZSI).

Phaneroptera gracilis BURMEISTER, 1838

Phaneroptera gracilis BURMEISTER, 1838, Handb. Ent. 2: 690.

Distribution: Tropical regions from Africa to Australia.

Locality: 1♂, 1♀, Orissa, Taptapani, Ganjam Dist., 14.III.1974, R.K. Kacker; 1♂, U.P., Pilibit Distr., Khakra, 27.VII.1989, R.K. Varshney (ZSI).

Khaoyaiana nitens INGRISCH, 1990

Khaoyaiana nitens INGRISCH, 1990b, Senckenbergiana biol. 70: 107.

Distribution: Previously recorded from Thailand, China and Bhutan.

Locality: 1♀, Meghalaya, W. Garo Hills, Tura, 1.III.1991, M.C. Gosh (ZSI).

Pseudophyllinae

Chloracris brunneri BEIER, 1954

Chloracris brunneri BEIER, 1954, Revis. Pseudophyll., Madrid: 64.

Distribution: Indochina, Bangladesh, NE India (Sikkim).

Locality: 1♀, Meghalaya, E. Garo Hills, Williamnagar, 29.V.1990, M.S. Shishodia (ZSI).

Phyllomimus sp. 1 (cf. *detersus* (WALKER, 1869))

Locality: 1♀, N. Andaman, Mayabunder, 3.II.1998, Raja Ram (ZSI).

Discussion. *P. detersus* is thought to be a widespread species in the Oriental Region, occurring from India and China to the Philippines and the Moluccas (BEIER 1962). One of us (SI) recently had the opportunity to re-examine the types of *P. detersus* (WALKER, 1869) and *P. sinensis* (WALKER, 1869), the latter synonymised with *P. detersus* by KIRBY (1906) (details will be published elsewhere). Both types (males) have strikingly different stridulatory files and both taxa are certainly not synonymous. Other taxa currently listed in the synonymy of *P. detersus* (BEIER 1962, NASKRECKI & OTTE 1999) and described after the female sex by STÅL (1873), PICTET & SAUSSURE (1892) and BRUNNER v. W. (1895) might also prove to be valid species. It is likely that the species superficially similar to *P. detersus* have restricted distributions as they are unable to fly. Thus, at present, it is impossible to identify females of the *detersus* group when they are not collected together with males. A revision of the genus should consider the male stridulatory files.

Phyllomimus sp. 2 (cf. *nodulosus* BOLÍVAR, 1900)

Distribution: South India (Madura).

Locality: 1♀, Erivakulam NP Survey 1995: Kerala, Annamudi, Stn. no. E/4184, 28.II.1995, R.M. Sharma (PUNE).

Discussion. The studied female differs in the following points from the description given in BEIER (1962): the fore femora have both ventral margins weakly crenulate (hardly visibly) rather than denticulate; the tegmina have the radius sector branching behind the middle of the tegmen not in the middle; the supraanal plate lacks a terminal emargination; the hind femora are not saw-blade shaped in the basal area (but the five separate teeth in the apical area are present); the ovipositor is slightly shorter (16 mm) and almost straight. As the individual variation is unknown, we are not certain whether that female belongs to *P. nodulosus* or represents an undescribed species.

Parasanaa donovani (DONOVAN, 1834)

Gryllus donovani DONOVAN, 1834, Nat. Repos. 2.

Distribution: India.

Locality: 1♂, Rajasthan, Sanadhara, 7.IX.1984, S.K. Tandon & M.S. Shishodia (ZSI).

Mecopodinae

Mecopoda elongata (LINNÉ, 1758)

Gryllus (Tettigonia) elongata LINNÉ, 1758, Syst. Nat. [10]1: 429.

Distribution: Oriental Region.

Locality: 1♂, H.P., Mabibsl, Loc. Pandoh, Mandi, 9.X.1986, S. Chander (ZSI).

Meconematinae

Axizicus andamanensis (KEVAN, 1993)

Alloteratura andamanensis KEVAN, 1993, Tropical Zoology 6: 266.

Distribution: Andaman Islands.

Locality: 1♂, 1♀, L. Andaman, Govt. High School, Nut Bay, 23.I.1988, M.S. Shishodia (ZSI).

Alloteratura HEBARD, 1922

Alloteratura HEBARD, 1922, Proc. Acad. Nat. Sci. Philad. 74: 249. – Type species: *Alloteratura bakeri* HEBARD, 1922

In contrast to the African Meconematinae, the Asian Meconematinae were until recently arranged in few genera, the majority of the species in *Xiphidiopsis* REDTENBACHER, 1891 and *Alloteratura* HEBARD, 1922 (KEVAN & JIN 1993). Both genera, but especially *Xiphidiopsis* comprised a large number of sometimes unrelated species. Recently GOROCHOV (1993, 1998) divided that group and introduced several new generic names, all genera became very restricted on the basis of morphological or genitalic characters.

The genus *Alloteratura* is characterised by the strong reduction of the terminal segment of the maxillary palpi which is much shorter than the penultimate segment (see e.g. figs. 268-269 in GOROCHOV 1993). We studied two species that agree in many characters with *Alloteratura* but have the two last segments of the maxillary palpi of equal length.

Indoteratura subgen. n.

Type species: *Alloteratura* (*Indoteratura*) *erecta* sp. n.

Diagnosis and discussion. *Indoteratura* agrees with *Alloteratura* in many general and genitalic characters. Fastigium verticis not compressed. Pronotum in lateral view widely notched between paranota and hind part of disc. Auditory spiracle large. Fore and middle tibiae with rather short spines. Tenth abdominal tergite of male simple, without projections or extreme emarginations. Phallus with a large genital sclerite. *Indoteratura* differs from *Alloteratura* by the head being orthognathous, the auditory spiracle not partly covered by the pronotum, and especially by the long last segment of the maxillary palpi which is of about equal length with the penultimate segment.

Included species: Only the type species is known so far.

Etymology. The name of the new subgenus is a combination of the supposed distribution and the generic name *Teratura*.

Alloteratura (*Indoteratura*) *erecta* sp. n.
(Figs 73-82, 129)

Holotype. ♂, Arunachal Pradesh, Sri Sailam, Prakasan, 22.IX.1998, S.K. Mondol (ZSI).

Paratype. ♂, Arunachal Pradesh, Mannanur, Mehbubnagar, 24.IX.1998, S.K. Mandal (ZSI).

Description

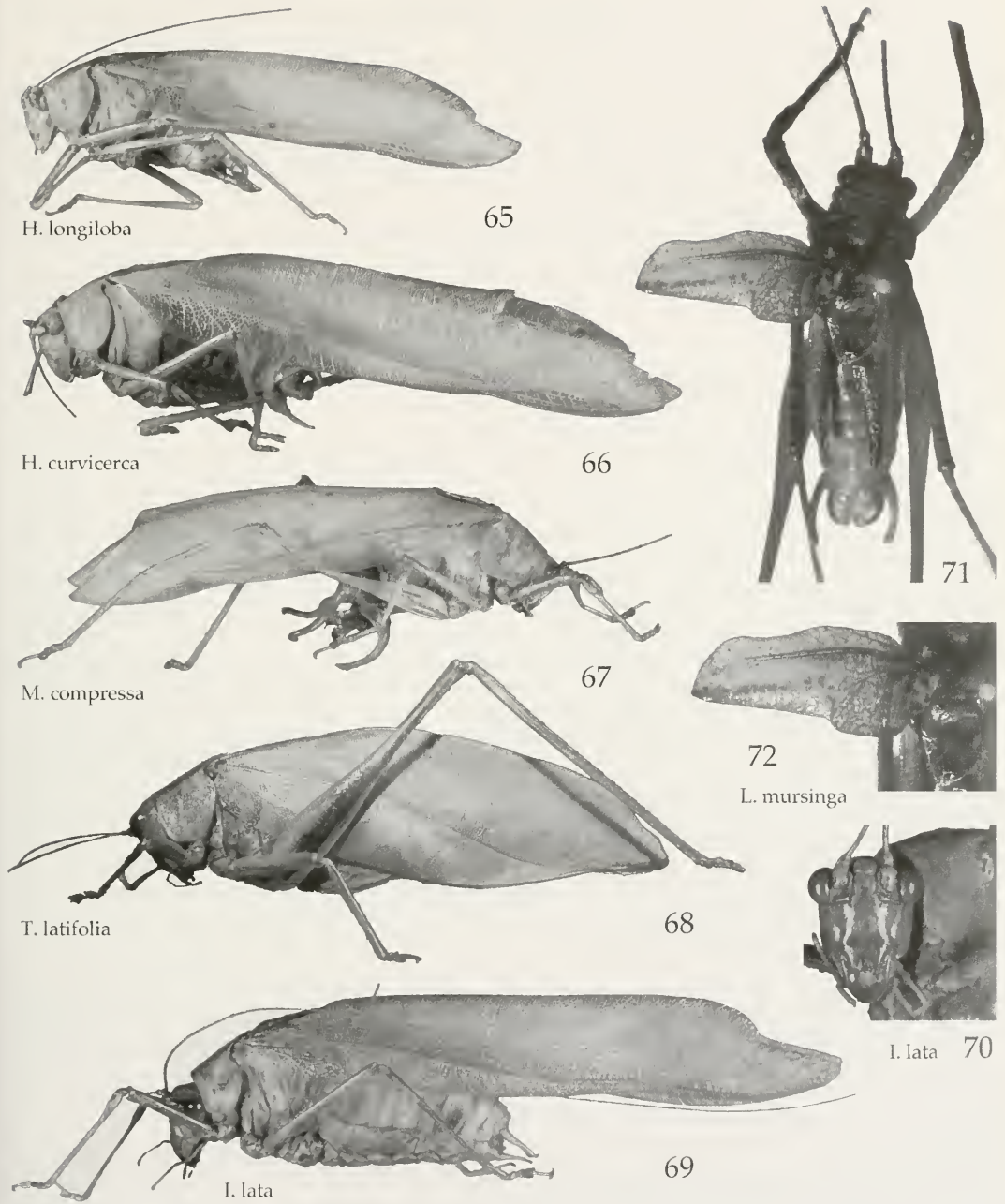
Fastigium verticis conical, dorsally furrowed, apex obtuse. Pronotum prolonged posteriorly, covering stridulatory area of tegmen; disc almost flat in middle, slightly convex in anterior and posterior areas; anterior margin slightly convex, posterior margin triangularly rounded; transverse sulcus very weak; paranota with posterior margin slightly sinuate, humeral sinus absent or hardly indicated. Thoracic auditory spiracle free, kidney-shaped, about twice as long as wide (2.0-2.3 ×). Tegmen narrow, surpassing hind knees; hind wings caudate, reaching about middle of stretched posttibia. Prosternum unarmed; mesosternum with a pair of short obtuse tubercles; metasternal lobes triangular with anterior area swollen. Anterior coxa with spine. Tibial tympana open on both sides. Anterior tibia with dorsal margins rounded, without spines or apical spurs; ventral margins with four large spines and one apical spur on each side. Postfemur with ventral margins unarmed; hind knee lobes obtuse.

Male. Tegmen with stridulatory area small; stridulatory vein on underside of left tegmen with about 87-88 small teeth. Tenth abdominal tergite slightly globose with apical margin sinuate and roundly emarginated in middle. Epiproct small, rounded, dorsally furrowed. Cerci dorso-ventrally compressed and broad with dorsal surface convex, ventral surface concave, with a triangular baso-internal tooth, a conical, obtuse, sub-apico-lateral tooth, and triangular apical area. Subgenital plate with sub-parallel lateral margins, deeply divided by a membranous zone from base almost to apex; apex broadly truncate; styli small. Phallus sclerite forming a pair of spoon-shaped structures at base that fuse to a narrow, erect stiletto with compressed and in lateral view widened apex.

Coloration (not well preserved). Pale yellowish brown (probably green when alive). Frons with four brown strokes in dorsal area; clypeus with two brown strokes extended to ventral area of frons; labrum and labial palpi brown, mandibles and maxillary palpi light. Pronotum and anterior legs with brown spots. In paratype, vertex with white bands behind compound eyes, continued along lateral margins of disc of pronotum.

Measurements of males (length in mm): body 9; pronotum 3.2-3.3; tegmen 15.0; tegmen and hind wings 16.0; postfemur 8.5-9.0.

Discussion. The abdominal terminalia of the new species are a little similar to those of *Alloteratura hebardii* GOROCHOV, 1998. The tenth abdominal tergite is very similar in both species. The cerci are dorso-ventrally compressed whilst their ventral side is concave in the new species, but laterally compressed, with their internal side concave in *A. hebardii*; in the latter the narrow apical projection is curved dorsad in contrast to *A. erecta*. The subgenital plate has almost parallel lateral margins in *A. erecta*, but is distinctly narrowed



Figs 65-72. 65 *Holochlora longiloba* sp. n. male, holotype; 66 *Holochlora curvicerca* sp. n. male, holotype; 67 *Mirollia compressa* sp. n. male, holotype; 68 *Tapiena latifolia* sp. n. female, holotype; 69 *Indogueta lata* sp. n. male, holotype; 70 do. frons; 71 *Letania mursinga* sp. n. male, holotype; 72 do. wings.

posteriorly in *A. hebardi*. The phallus sclerite consists of a pair of basal “spoons” and a compressed medial projection in both species, the shapes, however, differ between them.

Etymology. The name of the new species refers to the elevated phallus sclerite.

Nefateratura subgen. n.

Type species: *Alloteratura* (*Nefateratura*) *terminata* sp. n.

Diagnosis and discussion. *Nefateratura* agrees with *Indoteratura* in most general characters. It differs in the tenth abdominal tergite in the male which bears a large, unpaired, apical projection and in even simpler and long cerci without or with at most faint indications of teeth or projections. From *Alloteratura* s. str. the new subgenus differs in the long apical segment of the maxillary palpi and in the large, unpaired, apical projection of the tenth abdominal tergite.

Included species. Apart from the type species, *Alloteratura* (*Nefateratura*) *mesembrina* Kevan, 1993, comb. nov. is included in the new subgenus.

Etymology. The name of the new subgenus combines the locality of the type species with the generic name *Teratura*.

Alloteratura (*Nefateratura*) *terminata* sp. n.
(Figs 83-92, 130)

Holotype. ♂, Kameng, NEFA, Dirong, Dzong, Milan Khang Valley, 2135m, 4.VIII.1961, S. Biswas (ZSI).

Description

Fastigium verticis conical, apex obtuse; dorsal surface with a medio-longitudinal furrow. Pronotum posteriorly extended, covering stridulatory area of tegmen; disc slightly convex; anterior margin slightly convex, posterior margin rounded; paranota longer than high with posterior margin sinuate, humeral sinus hardly indicated. Thoracic auditory spiracle free, elongate, about three and a half times longer than wide (18:5). Prosternum unarmed. Fully winged; tegmina narrow, extending far beyond hind knees; hind wings projecting (1.5 mm). Anterior coxa without spine. Tibial tympana open on both sides. Anterior tibia with dorsal margins rounded and without spines or apical spurs; ventral margins with four large spines and one apical spur at each side. Postfemur with ventral margins unarmed; hind knee lobes obtuse.

Male. Stridulatory area of left tegmen without venation except for stridulatory vein. Stridulatory vein on underside of left tegmen with about 45 well separated teeth. Tenth abdominal tergite with a large projection that is divided at apex into two obtuse, diverging lobes. Cerci long, curved, simple, apex obtuse. Subgenital plate with apical margin truncate; styli present. Phallus with a long, tube-shaped process, reaching to about apex of tenth abdominal tergite and surpassing subgenital plate, compressed in apical area; with a curved, acute, dorsal, preapical projection.

Coloration. Uniformly brown (discoloured, probably green when alive). Vertex with a pair of white bands behind compound eyes, continued along lateral margins of disc of pronotum.

Measurements of male (length in mm): body 12; pronotum 3.5; tegmen 16.5; postfemur 9.5.

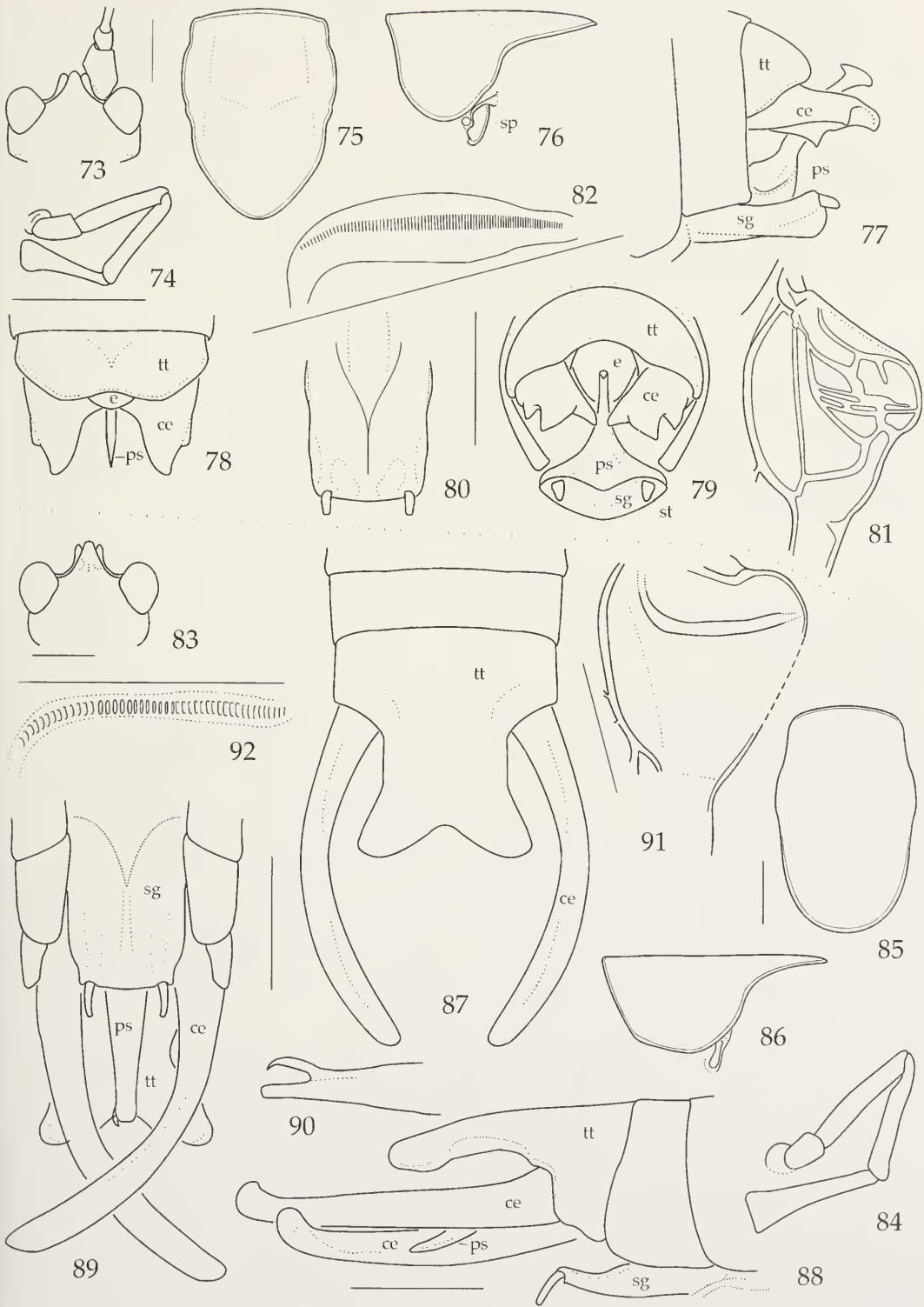
Discussion. The new species resembles *Alloteratura mesembrina* KEVAN, 1993, from South India (South Karnatak), Ammatti. It differs in the apical projection of the tenth abdominal tergite being much longer, the cerci being more slender and less strongly curved, and especially by the characteristic shape of the phallus sclerite (epiphallus) (compare Fig. 90 with KEVAN & JIN 1993, fig. 5c).

Etymology. The name of the new species refers to the projecting last abdominal tergite.

Figs 73-82. *Alloteratura* (*Indoteratura*) *erecta* sp. n. male, holotype: 73 head in dorsal view; 74 right maxillary palpus; 75 pronotum in dorsal view; 76 pronotum and auditory spiracle in lateral view; 77 apex of abdomen in lateral view; 78 do. in dorsal view; 79 do. in apical view; 80 subgenital plate; 81 stridulatory area of left tegmen; 82 stridulatory file on underside of left tegmen.

Figs 83-92. *Alloteratura* (*Nefateratura*) *terminata* sp. n. male, holotype: 83 head in dorsal view; 84 right maxillary palpus; 85 pronotum in dorsal view; 86 pronotum and auditory spiracle in lateral view; 87 apex of abdomen in dorsal view; 88 do. in lateral view; 89 do. in ventral view; 90 phallus sclerite in lateral view; 91 stridulatory area of left tegmen; 92 stridulatory file on underside of left tegmen.

Abbreviations: ce cercus, e epiproct, ps phallus sclerite, sg subgenital plate, sp auditory spiracle, st stylus, tt tenth abdominal tergite.



Kuzicus GOROCHOV, 1993

Kuzicus GOROCHOV, 1993, Zoosyt. Rossica 2: 71.

Type species: *Teratura suzukii* MATSUMURA and SHIRAKI 1908

The genus *Kuzicus* is characterised by large paired projections of the last abdominal tergite in the male and a large unpaired phallus sclerite (epiphallus after GOROCHOV 1993) with modified apex. *Kuzicus* species were so far recorded from China to the Malay Peninsula with a single species from NE India (Manipur). In South India there exist several species that are close to *Kuzicus* and have a similarly modified phallus sclerite, but differ in the short paired projections of the last abdominal tergite in the male and especially the modified male cerci that consist of a medial and a lateral branch. A new subgenus is proposed for them.

Parakuzicus subgen. n.

Type species: *Kuzicus* (*Parakuzicus*) *cervicus* sp. n.

Diagnosis and discussion. *Parakuzicus* agrees with *Kuzicus* in general morphology and in the possession of a large epiphallus which is of similar shape as in some *Kuzicus* species. It differs in the medio-apical projections of the tenth abdominal tergite being rather short (not long), but especially by the male cerci which are divided from base into a medial and a lateral branch of roughly equal length.

Kuzicus (*Parakuzicus*) *cervicus* sp. n.
(Figs 93-101, 131)

Holotype. ♂, Tamil Nadu ("Madras Dist."), Kottur, 3700 ft, Arcot, N. (ZSI).

Description

Fastigium verticis conical, apex obtuse, dorsal surface with a shallow, ovoid impression. Pronotum extended posteriorly, covering stridulatory area of tegmen; disc slightly convex, rather flat in middle; anterior margin slightly convex, posterior margin triangularly rounded; transverse sulcus hardly perceptible, V-shaped; paranota longer than high with posterior margin sinuate, humeral sinus hardly indicated. Thoracic auditory spiracle free, kidney-shaped, about two and a half times longer than wide. Prosternum unarmed; mesosternum with a pair of short obtuse tubercles; metasternal lobes with anterior area swollen. Tegmen just reaching (not surpassing) hind knees; hind wings circa 0.2 mm projecting. Anterior coxa with a spine. Tibial tympana open on both sides. Anterior tibia with dorsal margins unarmed and without apical spurs; ventral margins with four large spines and one apical spur at each side. Postfemur with ventral margins unarmed; hind knee lobes obtuse.

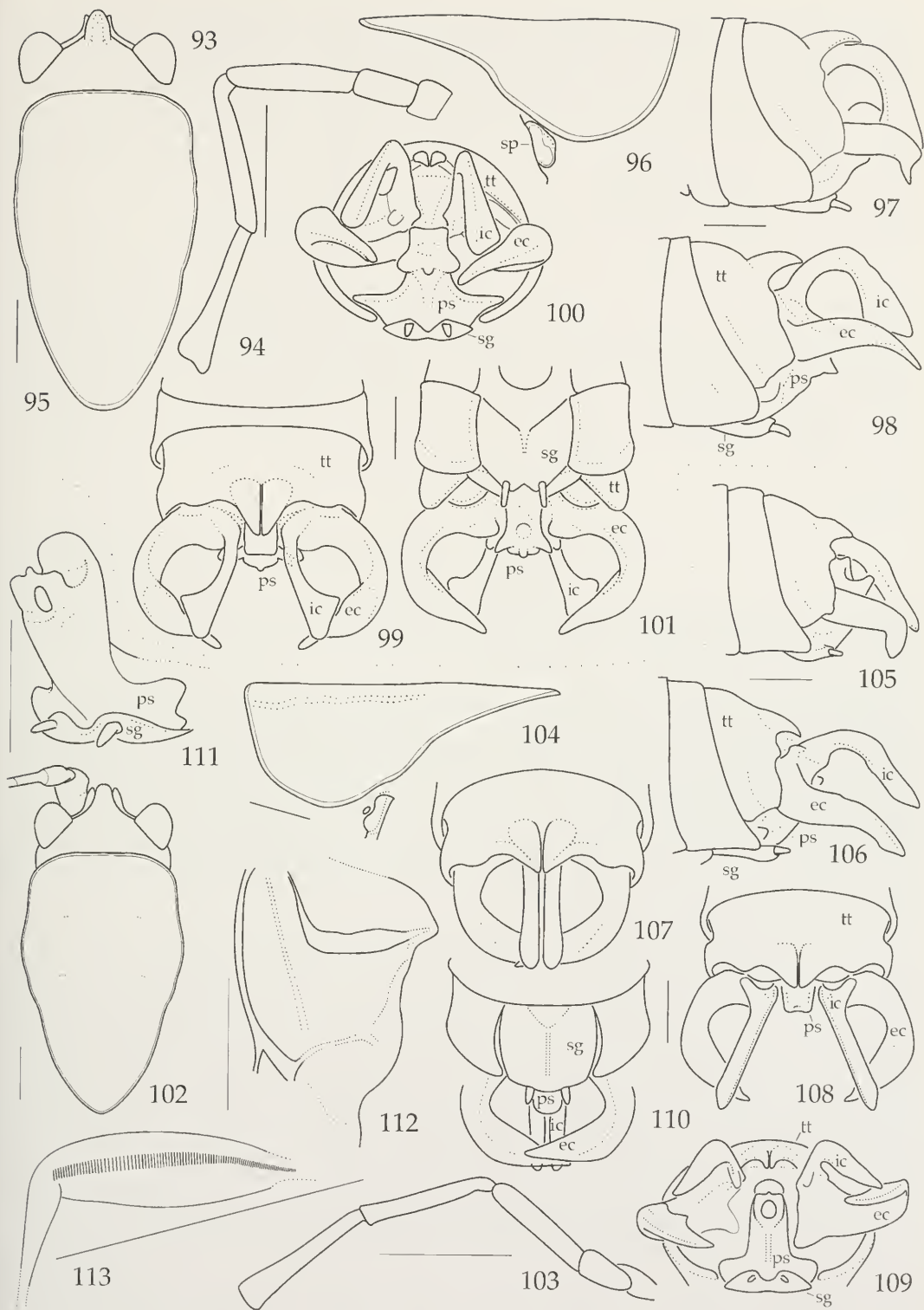
Male. Tenth abdominal tergite with a pair of short, conical, slightly curved and sub-acute, apico-medial projections. Cerci large; medial branch large, compressed and semi-circularly curved, triangularly widened

Figs 93-101. *Kuzicus* (*Parakuzicus*) *cervicus* sp. n. male, holotype: 93 head in dorsal view; 94 left maxillary palpus; 95 pronotum in dorsal view; 96 pronotum and auditory spiracle in lateral view; 97-98 apex of abdomen in lateral view; 99 do. in dorsal view; 100 do. in apical view; 101 do. in ventral view.

Figs 102-113. *Kuzicus* (*Parakuzicus*) *excavatus* sp. n. male, holotype: 102 head and pronotum in dorsal view; 103 left maxillary palpus; 104 pronotum and auditory spiracle in lateral view; 105-106 apex of abdomen in lateral view; 107-108 do. in dorsal view; 109 do. in apical view; 110 do. in ventral view; 111 phallus sclerite and subgenital plate in oblique apical view; 112 stridulatory area of left tegmen; 113 stridulatory file on underside of left tegmen.

(97, 105, 107, 110 apex of abdomen in situ with internal branches of cerci touching each other; 98-101, 106, 108-109 do. with cerci spread apart).

Abbreviations: ec external branch of cercus, ic internal branch of cercus, ps phallus sclerite, sg subgenital plate, sp auditory spiracle, tt tenth abdominal tergite.



in apical area, apex truncate, at base with a small conical projection; lateral branch of cercus with base widened to form a plate; curved laterad in basal area, otherwise curved mediad; circa apical half compressed and with a small lamella at dorso-proximal margin; apical quarter with converging margins, apex sub-acute. Subgenital plate semi-ovoid, sclerotised laterally but membranous in middle, with two thin cylindrical styli. Phallus with a stout sclerotised process which surpasses apex of subgenital plate; this sclerite wide at base, then strongly constricted to a beam-like structure with widened apex; ventral surface with a weak medial carina, a sub-apical groove and a pair of compressed, conical projections just before apex; apex truncate, surface grooved.

Coloration. Uniformly brown (discoloured, probably green when alive). Vertex with a pair of white bands behind compound eyes, continued along lateral margins of disc of pronotum.

Measurements of male (length in mm): body 12; pronotum 5.0; tegmen 12.5; postfemur 11.0.

Discussion. The new species is very similar to *K. forficata* (BOLÍVAR, 1900) as redescribed in KEVAN & JIN (1993). It differs in the paranota being longer than high (measured just below the humeral sinus) (not about as high as long), by the tenth abdominal tergite of the male which has the medio-apical projections longer and distinctly projecting behind apical margin, by the cerci in which the medial branch is more strongly curved and in lateral view distinctly narrower, and the lateral branch more robust and almost regularly curved throughout (not suddenly curved), and by the apex of the epiphallus which is quite different in both species (compare Figs 100-101 with Figs 117-118).

Etymology. The name of the new species refers to the horned cerci.

Kuzicus (Parakuzicus) excavatus sp. n.
(Figs 102-113, 132)

Holotype. ♂, Eastern Ghat Survey, Kolli Hills, 8.VIII.1986, Mani & party (ZSI).

Description

Fastigium verticis conical, apex obtuse, dorsal surface with a hardly impressed longitudinal sulcus. Pronotum extended posteriorly, covering stridulatory area of tegmen; disc slightly convex, rather flat in middle; anterior margin slightly convex, posterior margin triangularly rounded; transverse sulcus hardly perceptible, V-shaped; paranota longer than high with posterior margin sinuate, humeral sinus hardly indicated. Thoracic auditory spiracle free, elongate, about three times longer than wide (11:3.5). Proster-num unarmed; mesosternum with a pair of short obtuse tubercles; metasternal lobes damaged in studied specimen. Fully winged; tegmen surpassing hind knees, hind wings caudate (1 mm projecting). Anterior coxa with spine. Tibial tympana open on both sides. Anterior tibia with dorsal margins unarmed, without apical spurs; ventral margins with four large spines and one apical spur at each side. Postfemur with ventral margins unarmed; hind knee lobes obtuse.

Male. Tenth abdominal tergite with a pair of short, conical, slightly curved and sub-acute, apico-medial projections. Cerci large; medial branch compressed and semi-circularly curved, somewhat constricted behind middle, apical area conical and apex sub-acute; at very base of medial branch with a small conical internal process; lateral branch of cercus with curved base forming a semi-circle; basal half with external surface convex, internal surface flat or faintly concave; apical half somewhat compressed and with a lamellar dorso-internal projection which is ending abruptly or in a small tooth, apical area triangular with tip sub-obtuse. Subgenital plate semi-ovoid, sclerotised laterally but membranous in middle, with two thin cylindrical styli. Phallus with a stout, sclerotised process which surpasses apex of subgenital plate; this sclerite wide at base, then strongly narrowed to a beam-like structure with apical area curved dorsad, apex rounded and bulging; posterior surface of apical area with a lamellar projection that has the ventral surface grooved and the apex truncate.

Coloration. Uniformly brown (discoloured, probably green when alive). Vertex with a pair of white bands behind compound eyes, continued along lateral margins of disc of pronotum.

Measurements of male (length in mm): body 11; pronotum 4.8; tegmen 14.0; postfemur 10.0.

Discussion. *K. excavatus* differs from *K. cervicus* in longer tegmina surpassing the hind knees, in the projections of the tenth abdominal tergite being shorter, the medial branch of the cerci being not widened

at apex, and especially in the phallus sclerite with distinctly excavated apex (not roughly rhomboid and truncate) and with a groove on the ventro-apical surface just before apex.

From *K. forficata* (BOLÍVAR, 1900), it differs in the cerci which have the external branch behind the curvation shorter and not sinuate and the internal branch less widened (in lateral view), and especially by the shape of the apical area of the phallus sclerite (compare Figs 109, 111 with Figs 117-118).

Kuzicus (Parakuzicus) forficata (BOLÍVAR, 1900) comb. nov.
(Figs 114-118)

Xiphidiopsis forficata BOLÍVAR, 1900, Ann. Soc. entom. France 68: 782.

Distribution: South India, Madura.

Locality: 1♂, Tamil Nadu, Singla Themi, 28.VIII.1992, S.S. Saha (ZSI).

Discussion. This species was redescribed and the diagnostic characters figured in KEVAN & JIN (1993). The abdominal apex and the phallus sclerite are figured here in greater detail (Figs 114-118). The male abdominal terminalia agree completely with *Kuzicus (Parakuzicus)* and it is thus transferred here from *Xiphidiopsis*.

Indokuzicus militaris (BOLÍVAR, 1900)
(Figs 119-124)

Xiphidiopsis militaris BOLÍVAR, 1900, Ann. Soc. entom. France 68: 781.

Distribution: South India (Madura).

Syntypes studied: 1♂, 1♀, India orientalis, P. Castets (MNHN).

Discussion. The genus *Indokuzicus* was established by GOROCHOV (1998) for the single species *Xiphidiopsis militaris* BOLÍVAR, 1900. It differs from *Kuzicus* by the truncate apex of the last abdominal tergite in male and the peculiar shapes of the male cerci and the phallus sclerite that were redescribed and figured by GOROCHOV (1998) from a syntype in the Museo Nacional de Ciencias Naturales Madrid. The subgenital plate was said to have a strongly curved apex and lacks styli (GOROCHOV 1998). In MNHN Paris there are two more syntypes, a male and a female, the male was originally labelled by BOLÍVAR as "Type". It is selected here as the lectotype. This male agrees with the original diagnosis and with the re-description given by GOROCHOV (1998). However, although the male subgenital plate has the apex strongly curved (artefact?), it bears styli [one of both styli broken in the male labelled "Type" but the insertion area distinct]. A second male in the MNHN Paris, listed as a syntype of *X. militaris* in PARIS (1993) and arranged with the type series of *X. militaris*, belongs to *Kuzicus (Parakuzicus) forficata* (BOLÍVAR, 1900).

Xiphidiopsis (Xiphidiopsis) ocellata BEI-BIENKO, 1971
(Figs 125-128)

Xiphidiopsis ocellata BEI-BIENKO, 1971, Entomol. Obozr. 50: 827-848 (translated in Ent. Rev. 50: 476).

Distribution: So far only known from South India, Anamalai Hills.

Locality: 1♀, Tamil Nadu, Singlathoni, 28.VIII.1991, S.S. Saha & party (ZSI).

Discussion. This species is so far only known in the female sex. It is characterised by the strong modification of the last abdominal tergites of the female. The eight abdominal tergite has an extremely narrow dorsal area which is practically hidden under the seventh abdominal tergite, while the lateral areas are extended ventrad into angular plates with bulging margin and rounded angles. The ninth abdominal tergite has the latero-posterior angles narrowly projecting onto the base of the ovipositor. The tenth abdominal tergite is reduced and the cerci are inserted in a large membranous zone near the base of the ovipositor. The studied female is slightly larger than the measurements given in BEI-BIENKO (1971).

Measurements of female (length in mm): body 13; pronotum 4.3; tegmen 19.5; postfemur 11.0; ovipositor 8.0.

Conocephalinae

Pseudorhynchus spec. (cf. *inermis* (KARNY, 1907) ?)

Locality: 1♀, Manipur, Tamenglong, 1280m, 24.XI.1992, A.K. Mondol (ZSI).

Discussion. The Oriental species of *Pseudorhynchus* are in need of revision. *P. inermis* was so far only known from New Guinea. The examined female agrees with the description and measurements in BAILEY (1979) but differs in a longer postfemur. The ovipositor length agrees with the values in BAILEY (1979) but not KARNY (1907). The examined female is also similar to *P. flavolineatus* REDTENBACHER, 1891 (known from India, Cambodia and Thailand). It differs in a longer postfemur, longer ovipositor, and in the postfemur having spines on both ventral margins.

Measurements of female (in mm): body 41; fastigium verticis 5.0; pronotum 8.7; tegmen 54; postfemur 26.5; ovipositor 28.

Pyrogocorypha velutina REDTENBACHER, 1891

Pyrogocorypha velutina REDTENBACHER, 1891, Monogr. Conoceph.: 372, 374.

Distribution: South East Asia.

Locality: 1♂, Ar. P., Itanagar, C.B. Prasad (ZSI).

Euconocephalus nasutus (THUNBERG, 1815)

Conocephalus nasutus THUNBERG, 1815, Mem. Acad. St. Petersb. 5: 273.

Distribution: East and South East Asia.

Locality: 1♀, Mizoram, W. Phaileng, 11.X.1998, M.S. Shishodia (ZSI).

Euconocephalus pallidus (REDTENBACHER, 1891)

Conocephalus pallidus REDTENBACHER, 1891, Monogr. Conoceph.: 383, 414.

Distribution: Oriental Region.

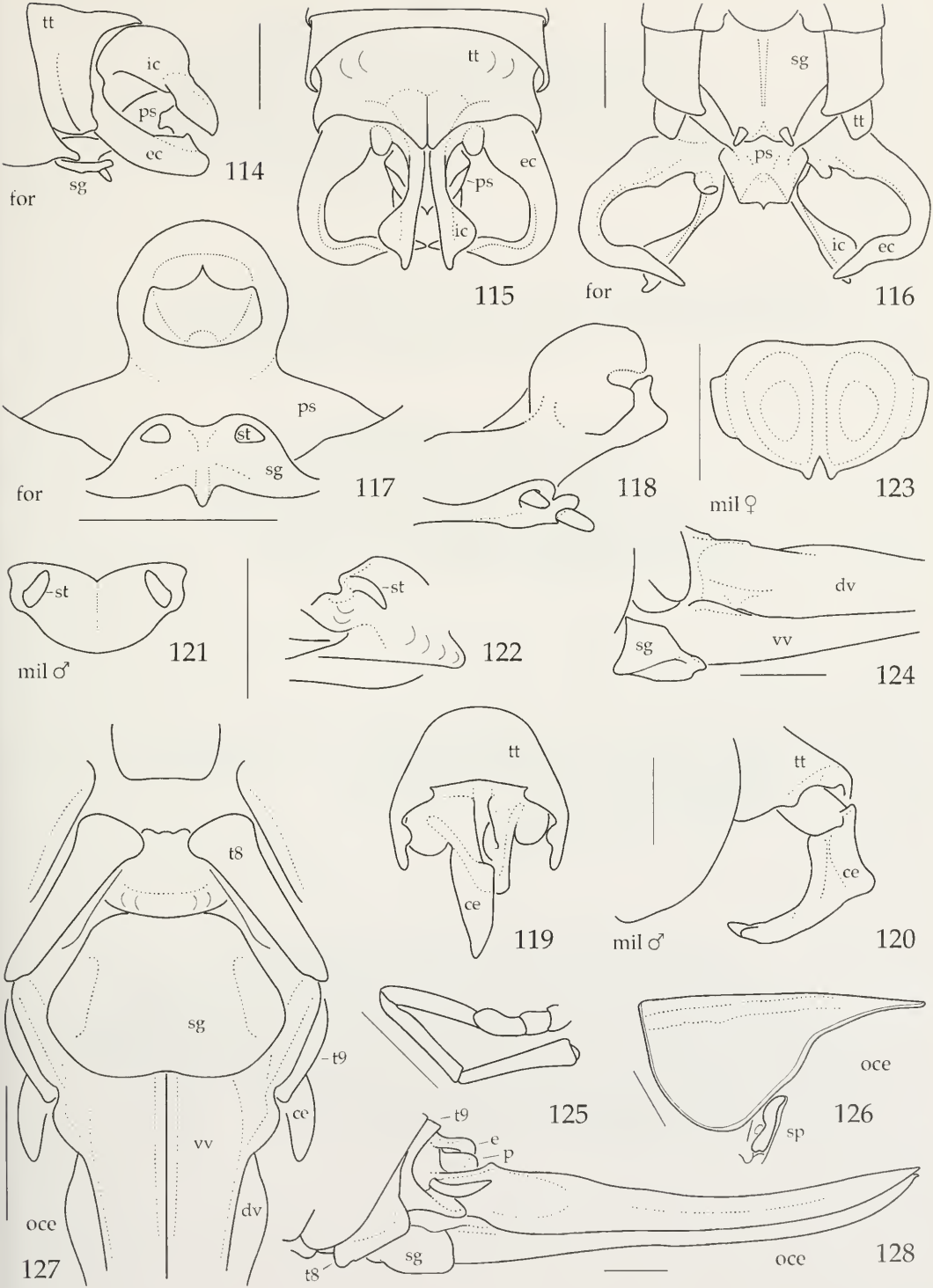
Locality: 1♀, Mizoram, Kawnpui, 13.XI.1995, M.S. Shishodia (ZSI).

Figs 114-118. *Kuzicus* (*Parakuzicus*) *forficata* (BOLÍVAR, 1900): **114** apex of abdomen in lateral view; **115** do. in dorsal view; **116** do. in ventral view; **117** phallus sclerite and subgenital plate in apical view; **118** do. in oblique lateral view. (**115** apex of abdomen in situ with internal branches of cerci touching each other; **116** do. with cerci spread apart).

Figs 119-124. *Indokuzicus militaris* (BOLÍVAR, 1900): **119-122** male, lectotype: **119** apex of abdomen in apical view; **120** do. in lateral view; **121** subgenital plate in ventral view; **122** do. in lateral view; **123-124** female, paralectotype: **123** subgenital plate; **124** ovipositor.

Figs 125-128. *Xiphidiopsis* (*X.*) *ocellata* BEI-BIENKO, 1971 female: **125** left maxillary palpus; **126** pronotum in lateral view; **127** apex of abdomen in ventral view; **128** apex of abdomen and ovipositor in lateral view.

Abbreviations: ce cercus, dv dorsal ovipositor valve, e epiproct, ec external branch of cercus, ic internal branch of cercus, p paraproct, ps phallus sclerite, sg subgenital plate, sp auditory spiracle, st stylus, t8 eight abdominal tergite, t9 ninth abdominal tergite, tt tenth abdominal tergite, vv ventral ovipositor valve.



Euconocephalus indicus (REDTENBACHER, 1891)

Conocephalus indicus REDTENBACHER, 1891, Monogr. Conoceph.: 382, 408.

Distribution: Oriental Region.

Localities: 1♂, Mizoram, W. Phaileng, 11.X.1998, M.S. Shishodia; 1♂, Meghalaya, W. Garo Hills, Tura, 15.III.1991, A.K. Hazra (ZSI).

Ruspolia lineosus (WALKER, 1969)

Conocephalus lineosus WALKER, 1969, Cat. Derm. Salt. Brit. Mus. 2: 318.

Conocephalus fuscipes REDTENBACHER, 1891, Monogr. Conoceph.: 385.

Distribution: East and South East Asia.

Localities: 1♂, Assam, Goalpara Dt., 8.VI.1973, R.P. Mukherjee; 1♀, H.P., Kulu, Manali, 2000 m, 30.X.1994, S.K. Tandon & S.K. M. (ZSI).

Ruspolia interruptus (WALKER, 1969)

Conocephalus interruptus WALKER, 1969, Cat. Derm. Salt. Brit. Mus. 2: 318.

Conocephalus brevipedis REDTENBACHER, 1891, Monogr. Conoceph.: 425.

Distribution: India, Himalayas, Japan.

Locality: 1♂, Rajasthan, W.L.S., Abu Road, 1225m, 9.IX.1984, S.K. Tandon & M.S. Shishodia (ZSI).

Conocephalus maculatus (LE GOUILLOU, 1841)

Xiphidium maculatus LE GOUILLOU, 1841, Rev. Zool. 1841: 294.

Distribution: Tropical regions from Africa to Australia.

Localities: 1♂, 1♀, Orissa, Taptapani, Ganjam Dist., 14.III.1974, R.K. Kacker; 1♀, W.B., Narendrapur, 24 Parganas (South), 22.III.1979, S.K. Mondal; 1♀, Ar. P., Sonajuli, Chessa, Papumpara, 20.X.1996, S.K. Mandal (ZSI).

Conocephalus honorei (BOLÍVAR, 1900)

Figs 134-136

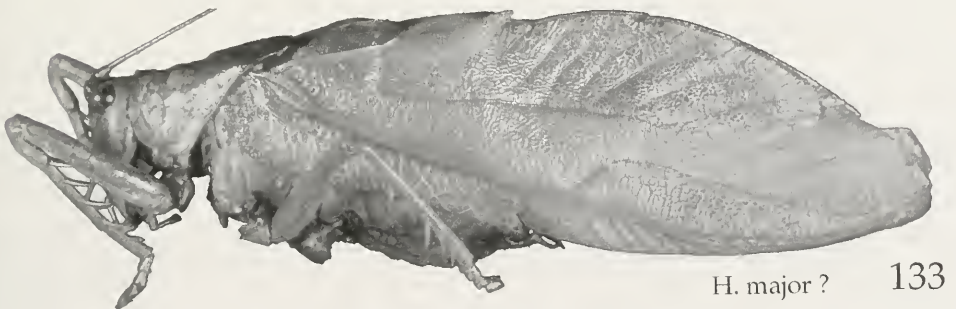
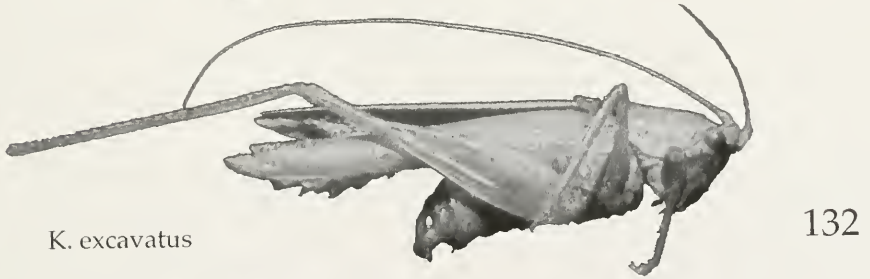
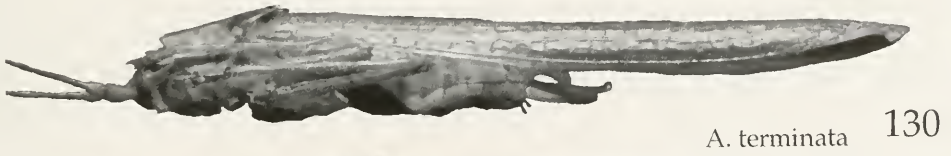
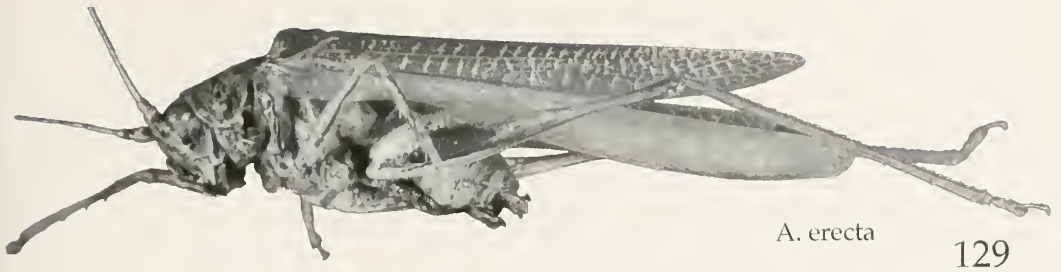
Xiphidium honorei BOLÍVAR, 1900, Ann. Soc. Ent. France 68: 779.

Distribution: South India (Madura).

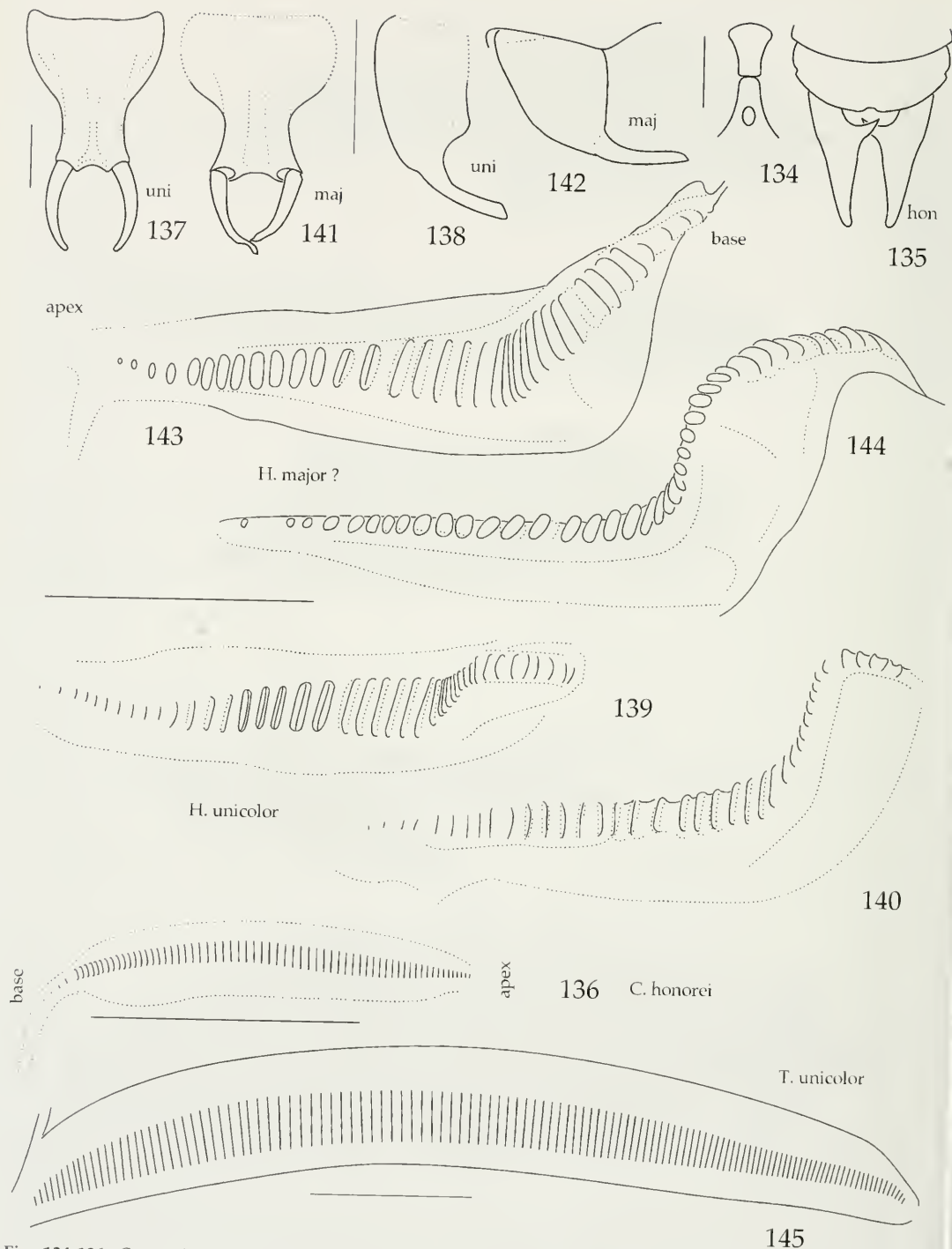
Locality: 1♂, Karnataka, Rajamalai, Naikollimalai, 4.IV.1994, K.C. Gopi & party (ZSI).

Discussion. This brachypterous species is only known from South India. It was described after two males and one nymph (MNHN Paris) and 1 female (MNCN Madrid) (PARIS 1993). The specimens in MNHN were examined by one of us (SI). Additional information on the stridulatory file and the male terminalia is given below.

Male. Stridulatory file on underside of left tegmen with about 67 teeth. Tenth abdominal tergite obtuse-angularly produced posteriorly, apex short, narrowly emarginated in middle, with faint medial carina. Epiproct rounded. Cerci with a large acute internal tooth just before middle; cercus behind internal tooth conical, apex obtuse. Subgenital plate with apex sub-truncate; styli present.



Figs 129-133. 129 *Alloteratura* (*Indoteratura*) *erecta* sp. n. male, holotype; 130 *Alloteratura* (*Nefateratura*) *terminata* sp. n. male, holotype; 131 *Kuzicus* (*Parakuzicus*) *cervicus* sp. n. male, holotype; 132 *Kuzicus* (*Parakuzicus*) *excavatus* sp. n. male, holotype; 133 *Hexacentrus* spec. (cf. *major* REDTENBACHER, 1891 ?) male.



Figs 134-136. *Conocephalus honorei* (BOLÍVAR, 1900): 134 fastigium in frontal view; 135 apex of abdomen in dorsal view (male, syntype); 136 stridulatory file on underside of left tegmen (male from Karnataka).
Figs 137-140. *Hexacentrus unicolor* SERVILE, 1831 male, syntype from Java: 137 subgenital plate; 138 left cercus; 139 stridulatory file on underside of left tegmen in ventral view; 140 do. in oblique lateral (apical) view.

Hexacentrus unicolor SERVILLE, 1831
(Figs 137-140)

Hexacentrus unicolor SERVILLE, 1831, Ann. Sci. nat. Paris 22:146.

Distribution: East and South East Asia.

Localities: 1♂, Gt. Nicobar, Campbell Bay, Kopenhut, 24.X.1997, S.K. Mondol, 1♂, W. Sikkim, Rishi, 520m, 15.IV.1959 (Indo-Swiss Sikkim Expedition 1959), A.G.K. Menon (ZSI).

Discussion. The species of the genus *Hexacentrus* are in need of revision. In the MNHN Paris there is a male from Java that could be regarded as one of the syntypes of *H. unicolor*. It is labelled (probably by Blanchard as Serville did not label his specimens) "*Hexacentrus unicolor*; Java, M. Marc" and "1106/96". This specimen agrees with what is commonly thought to be *H. unicolor*, for example in the revision of REDTENBACHER (1891). The stridulatory file, subgenital plate and a cercus of this specimen are figured (Figs 137-140). The stridulatory file that is characterised by a high step behind the basal area was already described by HELLER (1986) for a Malaysian population. It fully agrees with that of the specimen from Java.

Hexacentrus spec. (cf. *major* REDTENBACHER, 1891 ?)
(Figs 133, 141-144)

Distribution: East India.

Locality: 1♂, Orissa, H.S.M. Rest House, 18.IX.1972, S. Khera (ZSI).

Holotype (♀). East Indies "Ostindia" (lost?, formerly "Museum Calcutta").

Discussion. This species was so far only known from the female type from "East Indies" (Museum Calcutta). The examined specimen is not well preserved. It agrees with the short description given by REDTENBACHER (1891) in most respects, especially in the size, rugae on the paranota of the pronotum, disc of the pronotum with two brown lines, and the spines at anterior and mesofemora; the hind legs missing. That male is striking for the absence of a brown dorsal band on pronotum and tegmen; faint traces are present behind the stridulatory area; for the female type it was said "pronotum with two brown lines that are slightly diverging posteriorly [translated from Latin]". The female type is obviously lost. It is not in the Zoological Survey of India, Calcutta as stated in the original description.

Description

Pronotum saddle-shaped, disc rounded, slightly depressed behind first transverse sulcus; with three transverse sulci, second and third ones restricted to disc; apical area raised, flat and faintly rugose with indication of medial carina; paranota with weak rugae along and parallel to anterior and ventral margins, humeral sinus absent. Disc of pronotum with two brown lines indistinct except at both ends, lines slightly concave before first transverse sulcus, strongly constricted between first and second transverse sulcus, convex between second and third transverse sulcus, step-like widened behind third transverse sulcus, short distance parallel, then diverging, obsolete shortly after ascending to flat apical area. Legs with spines as described by REDTENBACHER (1891).

Male. Tegmen moderately wide; stridulatory area large, mirror on left tegmen almost twice as long as wide (4.0:2.1 mm); stridulatory file on underside of left tegmen on stout socket, with very high bend behind basal third, with about 35 teeth (Fig. 143-144), file resembles that of *H. unicolor* SERVILLE, 1831. Cerci broad, short-conical, apex with a narrow, barely compressed and slightly curved projection with obliquely truncate apex. Subgenital plate broad in basal half, narrow and with concave lateral margins in apical half; apex truncate with dorsal margin roundly expanded around bases of styli at both sides.

Measurements of male (in mm): body 21.5; pronotum 7.5; tegmen 34; tegmen-width 12; stridulatory area length 6, width 5.

Figs 141-144. *Hexacentrus* cf. *major* REDTENBACHER, 1891 ? male: **141** subgenital plate; **142** left cercus; **143** stridulatory file on underside of left tegmen in ventral view; **144** do. in oblique lateral (apical) view.
Fig. 145. *Trigonocorypha unicolor* (STOLL, 1787): stridulatory file on underside of left tegmen.

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Zusammenfassung

Es wird eine Artenliste indischer Tettigoniidae aus der Sammlung des "Zoological Survey of India, Calcutta" vorgestellt, zusammen in Anmerkungen zu einigen Tettigoniidae Typen im "Musée National d'Histoire Naturelle, Paris". Eine neue Gattung, drei neue Untergattungen und zehn neue Arten werden beschrieben. Drei neue Kombinationen werden vorgeschlagen. Für eine Art wird ein Lektotypus festgelegt. Einige ungenügend bekannte Arten werden ergänzend beschrieben.

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