Remarkable examples of convergence and new taxa of Gryllini (Orthoptera: Gryllidae)

A.V. Gorochov

Gorochov, A.V. 2001. Remarkable examples of convergence and new taxa of Gryllini (Or-thoptera: Gryllidae). Zoosystematica Rossica, 9(2), 2000: 316-350.

Some remarkable examples of convergence in different taxa of Gryllini are considered. 5 new genera, 4 new subgenera, 29 new species, 3 new subspecies, and previously unknown males of *Gymnogryllus kuznetzovi* Gor. and *Hemigryllus ?perspicillaris* (Ingr.) are described. The following changes of status and new synonymies are established: *Gryllus* subg. *Homaloblemmus* Sauss., stat. n.; *Velarifictorus* subg. *Buangina* Otte & Alex., stat. n. = *Birubia* Otte & Alex., syn. n. = *Jarrita* Otte & Alex., syn. n.; *Loxoblemmus* Sauss. = *Pezoloxoblemmus* Karny, syn. n. = *Comidogryllus* Otte & Alex., syn. n.; *Velarifictorus* flavifrons (Chop.) = *Scapsipedus sikkimensis* Bhowmik, syn. n. = *V. yunnanensis* Liu & Yin, syn. n. The neotype of *Tarbinskiellus portentosus* (Licht.) and the lectotype of *T. terrificus* (Walk.) are designated. The systematic position of some other taxa of Gryllini is discussed.

A.V. Gorochov, Zoological Institute, Russian Academy of Sciences, Universitetskaya nab. 1, St. Petersburg 199034, Russia.

The material used in this paper is deposited in the following institutions: Zoological Institute, Russian Academy of Sciences, St.Petersburg (ZIAS); Natural History Museum, London (BMNH); Museum für Naturkunde der Humboldt-Universität, Berlin (MNHU); Museo National de Ciencias Naturales, Madrid (MNCN); Forschungs-Institut und Natur-Museum "Senkenberg", Frankfurt am Main (FNSF); Museum National d'Histoire Naturelle, Paris (MNHN).

Genus Velarifictorus Randell, 1964

This enormous genus comprises 3 (or more) subgenera: *Velarifictorus* s. str. with numerous African and Asian species, *Buangina* Otte & Alexander, 1983, stat. n. from Australia and New Guinea, and *Pseudocoiblemmus* subgen. n. There are also several related genera (*Gryllopsis* Sauss., *Aritella* Otte & Alex. and some other insufficiently studied Australian genera) which are possibly only subgenera of *Velarifictorus*.

All species of *Velarifictorus* are clearly characterized by the similar male genitalia: the epiphallus is rather short, with a pair of hind lateral processes and unpaired median projection between them; the ectoparameres are simple, elongate (but not very narrow), and more or less curved, with the small mesal lobe connected with the ectoparamere by 1 rather narrow sclerotized ribbon (additional sclerotized ribbon is absent); the endoparameres are not very long and with a large proximal apodeme; the spermatophore sac is more or less small and with almost straight proximal half of virga (Figs 25-33, 36-50, 60a-d, 61a-d).

Subgenus Pseudocoiblemmus subgen. n.

Type species Velarifictorus (Pseudocoiblemmus) brevifrons sp. n.

Diagnosis. Medium-sized or rather large crickets. Head large, with normal (not enlarged) mouthparts; in male, head modified, with more or less oblique face and rostral process of various shape (Figs 1-3, 5, 7-10, 12-14); in female, head slightly or hardly modified (Figs 6, 11). Pronotum more or less widening in front in male and subparallel-sided in female. Fore tibiae with elongate (not large) outer tympanum only. Tegmina more or less shortened (only f. brachyptera), with male stridulatory apparatus provided with 2 (sometimes 3) oblique veins, slightly curved chords, rather large mirror, and narrow apical area (Figs 4, 15). Male genitalia with small hind median projection of epiphallus directed downwards (Figs 28, 32, 33), short endoparameres, and long additional apodeme at their distal (hind) half (Figs 25-33).

Included species. Type species and Loxoblemmus longifrons Chopard, 1969.

Velarifictorus (Pseudocoiblemmus) brevifrons sp. n.

(Figs 1-6, 29-35)

Holotype. o, Cambodia, prov. Rattanakiri, env. of Banlung, secondary forest, 1-2.III.1998 (collected as larva, imago in VI.1998), A. Gorochov (ZIAS).

Paratypes. Cambodia: 3σ , 2φ , same data as holotype (ZIAS). Vietnam, prov. Gia Lai: 10σ , 11φ , 20 km N of Kannack, Buon Luoi, 24.III-10.V.1995, A. Gorochov (ZIAS).

Description. Male (holotype). Head with rather short and almost truncate rostral process; face distinctly concave in front (Figs 1-3); rostrum between antennal cavities almost 1.6 times as wide as scape; scape and mouthparts unmodified; median part of clypeal suture obliterate; maxillary palpi very long (their apical segment almost 0.7 times as long as fore tibia); coloration of head dark brown (almost black) with small yellowish spots around ocelli, light brown mouthparts (except for dark anteclypeus, slight darkenings on postclypeus and labrum, and brownish maxillary palpi), and brown genae under eyes; antennae uniformly brown. Pronotum slightly widened in front, uniformly dark brown (almost black). Legs from brown to dark brown, without distinct pattern. Tegmina extending to 7th abdominal tergite; their dorsal part as in Fig. 4, light greyish with darkened basal part; their lateral area with 6-7 subparallel longitudinal veins, dark brown with rather narrow whitish band along lower edge. Abdomen and cerci from brown to dark brown; genitalia as in Figs 29-32.

Variations. Shape of head only slightly varied (Fig. 5) (allometric variability slight). Sometimes coloration darker (almost black) or with slightly lighter tegmina; sometimes hind median projection of epiphallus (directed downwards) slightly wider (Fig. 33).

Female. Similar to male, but head less modified than in male (Fig. 6). Tegmina extending to hind part of 1st abdominal tergite, with oblique lateral edges, only hardly overlapping; their dorsal and lateral areas both with 6-7 subparallel longitudinal veins; coloration of tegmina dark brown with lighter longitudinal stripe along lateral edge of dorsal part. Lower part of body almost light brown; ovipositor typical of this genus; copulatory papilla as in Figs 34, 35. Length (mm). Body: σ 16-22, φ 15-21; pronotum: σ 3.7-4.3, φ 3.3-4.2; tegmina: σ 7.5-9.5, φ 2.5-3; hind femora: σ 12-14, φ 11-14; ovipositor 9.5-13.5.

Comparison. This species is very similar to Coiblemmus compactus (Chop.) from Sri Lanka in the general appearance. Their male heads are almost identically modified (Figs 2, 17), but the rostral process of C. compactus is slightly longer and with the characteristic rounded membranous area under the median ocellus (Fig. 16) (in the new species, this process is without any membranous areas, see Fig. 1). The male tegmina of both species are similar also, but there are some differences in the shape of chords, mirror, and apical area (Figs 4, 19). The differences in the structure of the male genitalia are considerable: the epiphallus of C. compactus is without hind median projection (Fig. 24) characteristic for Pseudocoiblemmus, the endoparameres are much longer and without distinct distal apodemes, the spermatophore sac is large and with distinctly concave proximal half of virga (Figs 21-23). These genital distinctions show generic level of divergence. The females of these species are also very similar: their rostral processes are very similar, and their ovipositors are similar also. There are some distinctions in the coloration only: C. compactus is slightly spotted. It is a remarkable example of convergence in different genera as all other species of *Velarifictorus* and related genera have dissimilar appearance.

Velarifictorus (Pseudocoiblemmus) longifrons (Chopard, 1969), comb. n.

(Figs 7-15, 25-28)

Loxoblemmus longifrons Chopard, 1969.

Holotype. of, Thailand, "Upper Pran R., W.R.S. Ladell, 12.IV.1926" (BMNH).

Material examined. Thailand: 17 or, 13 9, 50 km SW of Phetchaburi (northern Malacca), env. of Nat. park Kaeng Krachan (near reservoir), 30.VII-5.VIII. 1996, A. Gorochov (ZIAS).

Note. The examination of the holotype and some additional material shows that this species is characterized by the strong allometric variability in the shape of the male head (Figs 8-10, 12-14). *V. longifrons* differs from *V. brevifrons* in the longer and angular rostral process of male head (a more or less similar process is present also in some African species of the genera *Sciobia* Burm. and *Paraloxoblemmus* Karny, a convergence), oblique (but not concave) face in both sexes (Figs 7-14), slightly longer tegmina of male (Fig. 15) and



Figs 1-20. Velarificitorus and Coiblemmus. 1-6, V. brevifrons sp. n. (1-4, holotype); 7-15, V. longifrons (Chop.) (9, 13, holotype); 16-20, C. compactus (Chop.) (17, holotype from BMNH). Rostrum of male head from below and slightly in front (1, 7, 16) (membranous area dotted); head of male (2, 8-10, 17) and female (6, 11) from side; rostrum and eyes of male (3, 5, 12-14, 18) and female (20) from above; dorsal part of male tegmen (4, 15, 19).

female, narrow hind median projection of epiphallus (Fig. 28) which is more distinct (almost angular) from above (Fig. 25), wider hind lateral processes of epiphallus (Fig. 27), and small details of the shape of ectoparameres (Fig. 26). The colorations of both species are similar, but small males have the only small light spot around median ocellus (as in female and *V brevifrons*), and the larger males have a longitudinal light stripe from lower part of frons to middle or apical parts of frontal process.

Length (mm). Body: σ 18-31, φ 20-25; pronotum: σ 3.7-4.7, φ 4.6-5; tegmina: σ 7.5-9.5, φ 3-5; hind femora: σ 12-15, φ 14.5-16.5; ovipositor 12-15.

Subgenus **Buangina** Otte & Alexander, 1983, stat. n.

= Birubia Otte & Alexander, 1983, syn. n.

= Jarrita Otte & Alexander, 1983, syn. n.

Diagnosis. Medium-sized or rather small crickets. Head rather large, with normal mouthparts, globular (unmodified), similar in both sexes (Fig. 51). Pronotum with parallel sides or slightly narrowing in front. Fore tibiae usually with elongate outer tympanum only, but in f. macroptera sometimes additionally with very small rounded inner tympanum. Tegmina similar to those of *Pseudocoiblemmus*, but apical area varied (f. frachyptera and f. macroptera). Male genitalia with more or less long and rather high hind median projection of epiphallus directed backwards, not short (but not very long) endoparameres, and not long additional apodeme at their distal (hind) half (Figs 36-41).

Included species. Most of the Australian species included by Otte & Alexander (1983) in their genera Buangina, Birubia, and Jarrita (except for Gryllulus scutellatus Chop., Buangina kittana Otte & Alex., B. nullaga Otte & Alex., B. urunga Otte & Alex., Birubia gay-



Figs 21-35. Coiblemmus and Velarifictorus. 21-24, C. compactus (Chop.); 25-28, V. longifrons (Chop.); 29-35, V. brevifrons sp. n. Male genitalia from above (21, 25, 29), from below (22, 26, 30), and from side (23, 27, 31); epiphallus from behind (24, 28, 32, 33); copulatory papilla of female from above (34) and from side (35).

andi Otte & Alex., and Jarrita caribonga Otte & Alex.; their placement in this subgenus is dubious and they are in need of additional examination of the male genitalia; the last 2 species may belong to the genus *Mitius* Gor.), and also the New Guinean *Velarifictorus novaeguineae* Gorochov, 1988.

Note. The Australian representatives of this subgenus show great similarity in the general appearance to some African and Eurasian species of *Modicogryllus* Chop. including the al-

most angular clypeal suture of head (Fig. 51); this character is unusual of other species of *Velarifictorus*.

Subgenus Velarifictorus s. str.

Diagnosis. Rather large to rather small crickets. Head from rather large to very large, in male usually with enlarged (sometimes strongly) mouthparts, but in female and sometimes in male with normal mouthparts (in this

ZOOSYST. ROSSICA Vol. 9



Figs 36-50. Velarifictorus. 36-38, V. diminuens (Walk.); 39-41, V. novaeguineae Gor. (holotype); 42-45, V. vietnamensis sp. n. (holotype); 46-50, V. flavifrons (Chop.) (46-49, holotype; 50, specimen from Vietnam). Male genitalia from above (36, 39, 42, 46), from below (37, 40, 43), from side (38, 41, 44, 48), and from below, but without rami, spermatophore sac, and valvae (47); hind median projection of epiphallus from behind (45, 49); distal part of right ectoparamere from below and slightly behind (50).

case, heads of both sexes similar); upper half of head almost globular (unmodified) (Figs 52-56). Pronotum with parallel sides or widening in front. Tympana and tegmina similar to those of *Buangina*. Male genitalia with more or less long (but not high) hind median projection of epiphallus directed backwards (sometimes this projection with paired lower lobes or median lower lamellar keel); endoparameres and apodeme at their distal (hind) half similar to those of *Buangina* (Figs 42-49, 60a-c, 61a-c). *Note.* This subgenus is very similar to *Buangina* and sometimes almost indistinguishable from it externally (especially from the species with not angular clypeal suture, *V. no-vaeguineae*).

Velarifictorus (Velarifictorus) vietnamensis sp.n.

(Figs 42-45, 52-54)

Holotype. of, **Vietnam**, *prov. Gia Lai*, 50-60 km N of Kannack, Kon Cha Rang, 1000-1200 m, 14-20.IV.1995, A. Gorochov (ZIAS).

Paratypes. Vietnam: $3 \sigma', 4 \varphi$, same data as holotype (ZIAS); $1 \sigma', 1 \varphi$, "Vietnam" (without locality), L. Medvedev or I. Darevsky (ZIAS).

Description. Male (holotype). Mediumsized. General appearance typical of this subgenus. Head with distinctly (but not very strongly) enlarged mouthparts; its coloration dark brown with light brown lower part of head (excepting darkish labrum), scape of antennae (with dark spot on inner side; rest of antennae greyish brown), and characteristic colour pattern on rest of head (Figs 52, 53). Pronotum parallel-sided; its disc more or less light brown with numerous dark and darkish small spots; pronotal lateral lobes dark brown (almost black) in upper half and light brown (with dark stripe along lower edge) in lower half. Tegmina almost extending to 6th abdominal tergite, slightly shortened (f. brachyptera); their venation typical of this subgenus: 2 slightly Sshaped oblique veins, rather small mirror (of subequal width and length) with normal dividing vein, partly reduced apical area of dorsal part (this area almost half as long as mirror), 7 branches of Sc in lateral part; dorsal part of tegmina more or less brownish (not very dark); lateral part transparent with wide dark brown stripe along upper edge. Legs light brown with several small darkenings, including characteristic darkish stripe along lower side of hind tibiae; tympanal organ with only outer oval tympanum. Abdomen darkish above and lightish beneath; cerci brownish, rather light; genital plate with darkish spots; genitalia as in Figs 42-45.

Variations. Sometimes mouthparts of male less enlarged than in holotype, but always larger than in female.

Female. Similar to male, but head with normal mouthparts and slightly lighter: with light areas on frons along clypeal suture, on lateral parts of anteclypeus, and sometimes along lateral edge of vertex (Fig. 54). Tegmina strongly shortened (f. brachyptera), extending to hind part of 2nd abdominal tergite, with rounded hind edge, rather confused venation of dorsal part, and 5-7 branches of Sc in lateral part; coloration of lateral part as in male and of dorsal part dark brown with distinct light stripe along lateral edge.

Length (mm). Body: σ' 14-16, \wp 15-18; pronotum: σ' 2.7-3, \wp 3-3.4; tegmina: σ' 6-7, \wp 3.8-4.6; hind femora: σ' 10-11.5, \wp 11-12; ovipositor 10.8-11.7.

Comparison. The new species is most similar to *V. flavifrons* (Chop.), but *V. vietnamensis* is smaller, with slightly shorter tegmina in f. brachyptera and small distinctions in the male genitalia: the hind median projection of epiphallus and the notch between its lower lobes narrower, and the distal part of ectoparameres shorter and without characteristic tubercle at the base of the narrow apical part (for comparison see Figs 42-50).

Velarifictorus (Velarifictorus) flavifrons Chopard, 1966 (Figs 46-50)

= Scapsipedus sikkimensis Bhowmik, 1967, syn. n.

= Velarifictorus yunnanensis Liu & Yin, 1993, syn. n.

Holotype. o', Nepal, "Exp. Jannu, Nepal oriental, Dreux, IV-V-1959", "type" (MNHN).

Material examined. India, Assam: 1 o^{*}, Kairkhana, 26.II.1912, C. von Wick (ZIAS). Vietnam: prov. Sonla: 6 o^{*}, 1 o^{*}, env. of Song Ma, 400-600 m, 3-14.V.1986, A. Gorochov (ZIAS); 2 o^{*}, 3 o^{*}, town Sonla, at light, 1-2.V.1986, A. Gorochov (ZIAS); prov. Vinh Phu: 2 o^{*}, Tam Dao, 800-900 m, 17-31.V.1995, A. Gorochov (ZIAS).

Note. The examination of the holotype and the above-mentioned material shows that V. flavifrons is widely distributed from Nepal to northern Vietnam. This species was described from Nepal, northern India and southern China under 5 names: V. flavifrons, Scapsipedus sikkimensis, S. lohitensis Tandon & Shishodia, 1972, V. dehradunensis Tandon & Shishodia, 1974 (the latter two names were synonymized with S. sikkimensis previously, see Otte, 1994: 17), and V. yunnanensis.

Velarifictorus (Velarifictorus) leonidi sp. n. (Figs 60a-f)

Holotype. o', Thailand, prov. Trat, Chang I. (Siam bay), low mountains near sea, forest, 5-20.XI.2000, A. Gorochov & L. Anisyutkin (ZIAS).

Paratypes. 2 o', 1 9, same data as holotype (ZIAS).

Description. Male (holotype). Large. General appearance very similar to that of V. elephas Gor., V. bubalus Gor., and V. horridus Ingr. Head very large, with strongly enlarged mandibles and other mouthparts; its structure



Figs 51-59. Velarifictorus and Scapsipedoides. 51, V. pikiara (Otte & Alex.); 52-54, V. vietnamensis sp. n.; 55, 56, V. elephas Gor.; 57-59, S. macrocephalus Chop. Head of male in front (51, 52, 55, 57); head of male (53, 56, 58) and female (54, 59) from side.

very similar to that in Figs 55, 56, but with less distinctly rounded concavities under eyes; upper part of head dark brown with light ocelli, light brown genae, spots between lateral ocelli, eyes, and antennal cavities, spots under lateral parts of latter cavities, and narrow median vertical stripe under median ocellus (lower half of this ocellus surrounded by light border); lower part of head light brownish with slightly darkened anteclypeus; scape light brown; rest of antennae brown, rather dark. Pronotum distinctly widening in front, dark brown with light brown lower half of lateral lobes. Tegmina extending to apex of 7th abdominal tergite (f. brachyptera), with brown (rather dark) dorsal part and narrow upper part of lateral area (wider lower part of this area light); venation as in V. bubalus (Gorochov, 1991: Fig. 21).

Legs light brown with small darkish spots on upper part of femora and slightly darkened tibiae and tarsi; outer tympana rather long, but inner ones very small. Abdomen brown, rather dark, but with slightly lighter cerci, light sternites, and partly light genital plate; abdominal apex unmodified; genitalia as in Figs 60a-d.

Variations. Mouthparts sometimes slightly smaller (in smaller males); light median vertical stripe under median ocellus sometimes rather wide; lateral area of tegmina sometimes with some darkenings at middle part.

Female. Similar to male, but head with normal mouthparts (almost intermediate between those in Figs 54 and 59). Coloration of head distinguished from that of male by presence of wide lightish stripe along clypeal suture (on frons) and practically light anteclypeus. Tegmina extending to apex of 1st abdominal tergite (f. brachyptera), hardly overlapping by their medial edges, with round apex and more or less large lateral area (slightly larger than dorsal part of tegmina); coloration of tegmina dark brown with light lower half of lateral area and narrow stripe along lateral edge of dorsal part. Tergites of abdomen brown with darkenings along hind edge and numerous dark small spots; ovipositor long (0.9 times as long as hind femur); copulatory papilla as in Figs 60e, 60f.

Length (mm). Body: σ 22-25, φ 22.5; pronotum: σ 4.3-4.5, φ 4.7; tegmina: σ 11-12.5, φ 5.5; hind femora: σ 16.5-17.5, φ 17.2; ovipositor 15.5.

Comparison. This new species is most similar to *V. horridus*, especially in the structure of the male genitalia, but differs in the presence of light spots near lateral ocelli, more or less darkened male anteclypeus, and some details of the male genitalia (hind median process of epiphallus much shorter, hind lateral lobes of epiphallus distinctly longer, narrow proximal lateral part of ectoparameres somewhat shorter). From *V. bos* Gor., it differs clearly in the narrower copulatory papilla.

Etymology. This species is named in honour of one of collectors, Leonid N. Anisyutkin.

Velarifictorus (Velarifictorus) cuon sp. n. (Figs 61a-g)

Holotype. o, Thailand, prov. Nakhon Ratchasima, env. of Nat. park Khao Yai, 500-1000 m, primary forest, 26.X-4.XI.2000, A. Gorochov & L. Anisyutkin (ZIAS). Paratype. 9, same data as holotype (ZIAS).

Description. Male (holotype). Almost medium-sized. Head large, with enlarged mouthparts (almost as in Figs 52, 53) and oblique concavities under eyes more or less similar to rounded concavities of V. elephas (Figs 55, 56); upper part of head dark brown with light ocelli, large spots between lateral ocelli, antennal cavities, and eyes, round spot contacting with lower edge of median ocellus, and indistinct narrow median vertical stripe under this ocellus; lower part of head light brown with slightly darkened subgenae and dark brown anteclypeus. Pronotum somewhat widening in front, dark brown with light brown stripe along lower edge of lateral lobes. Tegmina extending to middle part of 8th abdominal tergite (f. brachyptera), with coloration similar to that of the holotype of *V. leonidi*; venation as in Fig. 61g. Legs and abdomen also similar to those of V. leonidi, but the genitalia clearly differing (Figs 61a-61c).

Female. Structure and coloration similar to those of female of *V. leonidi*, but mouthparts

hardly smaller (more similar to those in Fig. 54), tegmina extending to middle part of 1st abdominal tergite (f. brachyptera), not contacting with each other, with almost angular apex and lateral area hardly larger than dorsal part, coloration of tegmina almost uniformly brown (rather dark), ovipositor distinctly shorter (0.7 times as long as hind femur), and copulatory papilla sharply different (Figs 61e, f).

Length (mm). Body: σ 17, φ 18; pronotum: σ 3, φ 4; tegmina: σ 8, φ 3; hind femora: σ 13, φ 14.8; ovipositor 10.

Comparison. This new species is similar to the previous species and all other related species (*V. elephas, V. bubalus, V. bos, V. horridus*), but differs sharply in the male genitalia and female copulatory papilla.

Genus Scapsipedoides Chopard, 1936

This genus shows a very remarkable example of convergence with some species of the subgenus Velarifictorus in the structure of the male head, which may be very large and with strongly enlarged mouthparts (Figs 57-59). But the male genitalia of Scapsipedoides are very characteristic: the hind median projection of epiphallus is absent, the ectoparameres are partly reduced (only the proximal parts of them, fused with the proximal part of epiphallus, and the isolated mesal lobes present), and the spermatophore sac is without distinct apodeme (Figs 62a-c); the structure of the genitalia testify that Scapsipedoides and Velarifictorus are unrelated genera. It is possible that the large male mouthparts (especially mandibles) participate in both genera in the agonistic behaviour.

Genus Gryllus Linnaeus, 1758

This genus comprises 2 subgenera: Gryllus s. str. with numerous species very widely distributed (from Old to New World) and Homaloblemmus Saussure, 1877, stat. n. (2 African species). Homaloblemmus was synonymized with Gryllus by Otte & Cade (1984), but it differs from the nominotypical subgenus in the distinctly modified male head (widened, with characteristic rostral process and concave face) (Figs 63, 64, 68, 69), slightly modified female head (its shape is more or less similar to that of Velarifictorus brevifrons and Coiblemmus com*pactus*, a convergence) (for comparison see Figs 2, 6, 17, 75), and small details of the male genitalia: wide distal part of ectoparameres and narrow their mesal lobe, large apodeme of spermatophore sac (Figs 65-67, 71-73).



Figs 60-62. Velarifictorus and Scapsipedoides. 60, V. leonidi sp. n. (holotype); 61, V. cuon sp. n.; 62, S. macrocephalus Chop. Male genitalia from above (a), from below (b), and from side (c); distal part of ectoparamere obliquely from partly behind and partly below (d); copulatory papilla from side (e) and from above (f); dorsal part of male tegmen (g).

•



Figs 63-80. *Gryllus* and *Conatrullus* gen. n. 63-67, *G. zambesi* (Sauss.); 68-75, *G. rhinoceros* sp. n.; 76-80, *C. andreji* sp. n. (holotype). Head of male from above (63, 68, 79); head or head and pronotum of male (64, 69, 80) and female (75) from side; epiphallus and ectoparameres from above (65) and from side (66); left ectoparamere from below (67); dorsal part of male tegmen (70); male genitalia from above (71, 76), from below (72, 77), and from side (73, 78); fore part of female body from above (74).

Gryllus (Homaloblemmus) rhinoceros sp. n. (Figs 68-75)

Holotype. o', Mozambique, "Nyassa-See. Langenburg. II.98. Fülleborn S." (MNHU).

Paratype. 9, same data as holotype (MNHU).

Description. Male (holotype). Large. Dark brown with reddish brown mandibles, slightly lighter hind coxae, base of hind femora, and lower part of abdomen, light brown tegminal dorsal part (with dark apical area and spot in region of chords), very narrow whitish stripe along fore half of lower edge of tegminal lateral part. Head with almost conical rostral part; face under rostrum wrinkled; disposition of ocelli in form of distinct triangle; mouthparts and anteclypeus very large, but paired lateral inflations of anteclypeus small (Figs 68, 69). Pronotum widening in front. Tegmina shortened (f. brachyptera), extending to apex of 4th abdominal tergite; venation of their dorsal part as in Fig. 70. Legs typical of this genus, but rather long; fore tibiae with only medium-sized outer tympanum. Abdomen normal (without any distinct modifications); genitalia as in Figs 71-73.

Female. Similar to male, but smaller, slightly lighter, and with slight reddish spots on frons under rostrum. Shape of head slightly modified, with not very large mouthparts and anteclypeus (Fig. 75). Tegmina very short, not contacting with each other, extending to base of 1st abdominal tergite, with rather oblique distal edge of dorsal part (Fig. 74); their dorsal part light brown and their lateral part distinctly darker. Abdomen (including ovipositor) normal of this genus.

Length (mm). Body: of 29.5, \$25; pronotum: of 6, \$5.1; tegmina: of 10.5, \$2.9; hind femora: of 17.5, \$16; ovipositor 16.5.

Comparison. The new species is very similar to G. (H.) zambesi (Sauss.), but G. (H.) rhinoceros is slightly lighter (without black parts), with a simple conical rostrum of the male head (in G. zambesi, rostrum with 2 distinct teeth), small lateral inflations of male anteclypeus (in G. zambesi, these inflations are large and very distinct, very similar to those of the unrelated Loxoblemmus monstrosus Stål, a convergence) (for comparison see Figs 63, 64, 68, 69), longer proximal lateral part of ectoparameres, and somewhat dissimilar shape of epiphallus (Figs 65-67, 71-73).

Genus Conatrullus gen. n.

Type species Conatrullus andreji sp. n.

Diagnosis. Small apterous crickets without tympanal organs. Head of male with characteristic unpaired cone-like projection at frons

near clypeal suture and with usual of this tribe rostrum and mouthparts (Figs 79, 80). Male pronotum distinctly widening in front. Legs rather short and strong; hind tibiae with 3 pairs of spines in addition to 6 spurs (apical spines). Abdomen of male without distinct modifications. Male genitalia with small, acute median hind projection of epiphallus between a pair of longer lateral processes (Fig. 76); ectoparameres with rather large mesal lobes provided with long apical process (Fig. 77); these processes and distal part of virga distinctly exposed behind hind median projection of epiphallus (Fig. 76); endoparameres arched, not very long, with medium-sized proximal apodeme and with indistinct distal one; spermatophore sac medium-sized, without distinct apodeme, and with rather wide base of virga (Fig. 78).

Included species: only the type species.

Comparison. This genus is slightly similar to several above-mentioned taxa (*Pseudocoiblemmus*, *Coiblemmus*, *Homaloblemmus*) which have an independently developed projection (or process) at the male head, but *Conatrullus* differs from all other genera of this tribe in the absence of wings and tympanal organs as well as characteristic features of the male genitalia listed above.

Conatrullus andreji sp. n.

(Figs 76-80)

Holotype. o', Papua-New Guinea (without other data) (ZIAS).

Paratype. o', same data as holotype (ZIAS).

Description. Male (holotype). Head and thorax distinctly shining; abdomen slightly shining; legs and antennae pubescent, but not strongly. Coloration uniformly brown, but head dark brown, except for slightly lighter mouthparts and indistinct band along hind edge; lateral part of pronotum also almost dark brown. Shape of head as in Figs 79 and 80; clypeal suture almost straight; anteclypeus narrow, but wide; ocelli small; rostrum between antennal cavities almost 1.7 times as wide as scape. Pronotum distinctly transverse, with concave hind edge of disc. Genitalia as in Figs 76-78.

Variation. Face under median ocellus reddish brown; upper part of thorax and abdomen slightly spotted.

Female unknown.

Length (mm). Body 8.5-9.5; pronotum 1.8-1.9; hind femora 5.5-5.7.

Etymology. This species is named in memory of the young orthopterist Andrej Ju. Woznessensky tragically lost in February 2000.



Figs 81-92. Gialaia, σ' (holotype). 81-86, G. ottei Gor.; 87-92, G. nhatrangi sp. n. Genitalia from above (81), from below (82), and from side (83, 90); left tegmen (84, 91); hind part of pronotum and pterothorax from above (85, 87); left hind tibia from above (86, 92); epiphallus, ectoparemeres, and virga from above (88) and from below (89).

Genus Gialaia Gorochov, 1994

This genus consists of 2 subgenera: *Gialaia* s. str., with several species from tropical Asia and Africa, and *Eugialaia* subgen. n. The genus shows a very remarkable example of convergence with the genus *Odontogryllodes* Chop. (Landrevinae) as both these unrelated taxa have similar male hind tibiae with characteristically inflated (glandular) inner spines (Figs 86, 92, 97, 106, 110, 113). A recently described species of the subgenus *Gialaia* from Tanzania has male hind tibiae with inflated inner and outer spines (Gorochov & Kostia, 1999).

Gialaia (Gialaia) nhatrangi sp. n. (Figs 87-92)

Holotype. J, Vietnam, prov. Phykhanh, env. of Nhatrang (among dry leaves on forest floor), 11.VIII.1996, T. Sergeeva (ZIAS).

Paratypes. 2 9, same data as holotype, but 27.VI-11.VIII.1996 (ZIAS).

Description. Male (holotype). Rather small, dark brown. Head slightly flattened dorsoventrally, hardly narrower than pronotum, shining, almost black, with light brown narrow vertical line under median ocellus and dark brown mouthparts and antennae; width of rostrum between antennal cavities almost equal to width of scape; eyes not large (head between eyes al-



Figs 93-102. Gialaia and Apterosvercus (holotype). 93, G. khaoyai sp. n., σ' ; 94, G. thai sp. n., σ' ; 95-97, G. tamdao sp. n., σ' ; 98, 99, G. koncharangi sp. n., φ ; 100, A. tembelingi sp. n., φ ; 101, 102, G. microptera Gor., φ (holotype). Epiphalus, ectoparameres, and virga from above (93a, 94a, 95a), and from below (93b, 94b, 95b); male genitalia from side (93c, 94c, 95c); base of virga from behind (93d, 94d); hind part of pronotum and pterothorax from above (96, 99, 101); left hind tibia of male from above (97); head from side (98, 100); left tegmen (102).

most 1.5 times as wide as eye). Pronotum with convex lateral margins, shining, setaceous, dark brown (blackish). Tegmina dark brown, shining, strongly shortened, extending to base of 1st abdominal tergite, with medial parts hardly overlapping (Fig. 87); tegminal venation as in Fig. 91. Tergites of pterothorax and abdomen dark brown, those of thorax shining, those of abdomen pubescent and setaceous; lower part of body, legs, and cerci more or less uniformly brown. Hind tibiae with strongly inflated inner spines and normal outer spines (Fig. 92). Genitalia as in Figs 88-90.

Female. Very similar to male (including tegmina), but with normal inner and outer spines of hind tibiae.

Length (mm). Body: $\sigma' 9.5$, $\varphi 8.5$ -10.5; pronotum: $\sigma' 2$, $\varphi 2$ -2.2; tegmina: $\sigma' 1$, $\varphi 1.1$; hind femora: $\sigma' 6.3$, $\varphi 6$ -6.6; ovipositor 4.9-5.1.

Comparison. G. nhatrangi is very similar to G. ottei Gor. (Figs 81-86), but differs from it and from G. microptera Gor. (Figs 101, 102) in



Figs 103-113. *Gialaia* and *Odontogryllodes*. 103-106, *G. monochroa* sp. n.; 107-112, *G. dichroa* sp. n.; 113, *O. stemus* Gor. (holotype). Male genitalia from above (103), from below (104), and from side (105, 109); hind tibia of male from above (106, 110, 113); epiphallus, ectoparameres, and endoparameres from above (107) and from below (108); apical part of ovipositor from side (111, 112).

the larger, hardly overlapping tegmina and fine distinctions in the male genitalia.

Gialaia (Gialaia) tamdao sp. n.

(Figs 95-97)

Holotype. of, Vietnam, prov. Vinh Phu, Tamdao, 800-900 m, primary forest (among dry leaves on forest floor), 17-31.V.1995, A. Gorochov (ZIAS).

Paratypes. 1 σ , 5 φ , same data as holotype, but 17.V-11.VI.1995 (ZIAS).

Description. Male (holotype). Similar to G. nhatrangi and G. ottei, but coloration practically uniformly black (except for brown to dark brown mouthparts), tegmina very strongly shortened, lateral, scale-like, almost without traces of venation (Fig. 96), hind tibiae with slightly inflated inner spines (Fig. 97). Genitalia as in Figs 95a-c.

Female. Differs from male in having all inner and outer spines of hind tibiae normal.

Length (mm). Body: $\sigma' 9.5$, $\varphi 8.5$ -10; pronotum: $\sigma' 2.2$, $\varphi 2$ -2.2; tegmina: $\sigma' 0.3$, $\varphi 0.3$ -0.4; hind femora: $\sigma' 6.6$, $\varphi 6.5$ -6.8; ovipositor 5.2-5.4. *Comparison.* This species differs from all species of *Gialaia* in the black coloration, very small tegmina, characteristic spines of male hind tibiae, and longer ovipositor (hind femur almost 1.2 times as long as ovipositor vs. about 1.4 times in *G. microptera*).

Gialaia (Gialaia) khaoyai sp. n.

(Figs 93a-d)

Holotype. o, Thailand, prov. Nakhon Ratchasima, env. of Nat. park Khao Yai, 500-1000 m, primary forest (among dry leaves on forest floor), 26.X-4.XI.2000 (collected as larva, imago in II.2001), A. Gorochov & L. Anisyutkin (ZIAS).

Paratypes. 1 or, 1 9, same data as holotype (ZIAS).

Description. Male (holotype). Similar to G. tamdao in structure of tegmina, but distinctly smaller, coloration dark brown, hind tibiae with more inflated inner spines (almost as in G. nhatrangi and G. ottei), genitalia with somewhat shorter epiphallus and rather large sclero-tization at base of virga (Figs 93a-d).

Variation. Paratype somewhat lighter (brown).

Female. Similar to male (coloration as in holotype), but tibial spines not inflated. Ovipositor rather long (hind femur almost 1.2 times as long as ovipositor).

Length (mm). Body: σ 6.5-7, φ 7.5; pronotum: σ 1.4-1.5, φ 1.5; tegmina: σ 0.3-0.35, φ 0.3; hind femora: σ 4.5-4.9, φ 5; ovipositor 4.

Comparison. The distinctions from G. tamdao are listed above. This new species differs from G. nhatrangi and G. ottei in the very small tegmina, and from G. microptera in the longer ovipositor.

Gialaia (Gialaia) thai sp. n.

(Figs 94a-d)

Holotype. c^{*}, Thailand, prov. Nakhon Ratchasima, env. of Nat. park Khao Yai, 500-1000 m, primary forest (among dry leaves on forest floor), 26.X-4.XI.2000 (collected as larva, imago in III.2001), A. Gorochov & L. Anisyutkin (ZIAS).

Description. Male (holotype). Similar to G. tamdao and G. khaoyai in structure of tegmina, but size intermediate between these species, coloration brown almost as in male paratype of G. khaoyai, hind tibiae with slightly inflated inner spines (as in G. tamdao), genitalia with comparatively short epiphallus more or less similar to that of G. khaoyai and a pair of small, narrow sclerotizations near base of virga, which are similar to those of G. ottei, G. nhatrangi, and G. tamdao (Fig. 94a-d).

Female unknown.

Length (mm). Body 8; pronotum 1.7; tegmina 0.4; hind femora 5.1.

Comparison. G. thai differs from G. ottei and G. nhatrangi in the very short tegmina, from G. tamdao in the shorter epiphallus with not deep proximal notch and smaller apodeme of spermatophore sac in the male genitalia, from G. khaoyai in the less inflated inner spines of the male hind tibiae and smaller sclerotizations near the base of virga in the male genitalia, and from G. microptera in the smaller size, lighter coloration, and slender legs (hind femur almost 2.7 times as long as high vs. almost 2.4 times in G. microptera).

Gialaia (Gialaia) koncharangi sp. n.

(Figs 98, 99)

Holotype. 9, Vietnam, prov. Gia Lai, 50-60 km N of Kannack, Kon Cha Rang, 1000-1200 m, primary forest (among dry leaves on forest floor), 17.IV.1995, A. Gorochov (ZIAS).

Description. Female (holotype). Similar to G. microptera, G. tamdao, and G. khaoyai in structure of body (Fig. 98) and size of tegmina (Fig. 99), but ovipositor longer (hind femur almost 1.1 times as long as ovipositor). Colora+ tion dark brown. Hind tibiae with not inflated spines.

Male unknown.

Length (mm). Body 10.5; pronotum 2.1; tegmina 0.2; hind femora 7.2; ovipositor 6.4.

Comparison. G. koncharangi differs from G. nhatrangi and G. ottei in the very short tegmina, from G. microptera in the distinctly longer ovipositor, from G. tamdao in the lighter coloration, from G. khaoyai and G. thai in the larger size.

Subgenus Eugialaia subgen. n.

Type species Gialaia (Eugialaia) monochroa sp. n. Diagnosis. Very similar to the subgenus Gialaia including characteristic inflated (glandular) inner spines of hind tibiae, but wings in all known species absent and male genitalia with distinct median process between hind (distal) lateral processes of epiphallus (Figs 103-105, 107-109).

Included species. Type species, G. (E.) dichroa sp. n., and G. (E.) calva sp. n.

Gialaia (Eugialaia) monochroa sp. n.

(Figs 103-106)

Holotype. o, Papua-New Guinea, "D. N. Guinea, Hunsteinspitze, 6.III.13, Kais. Augustafl. Exp. Bürgers S. G." (MNHU).

Paratypes. 2 of (nymphs), same data as holotype, but "24.II.13" (MNHU).

Description. Male (holotype). Small, with shining head and strongly pubescent other parts of body. Head uniformly reddish brown, almost globular, with rather short mouthparts; rostrum between antennal cavities slightly wider than scape; antennae and palpi brown with reddish brown antennal base. Thorax and abdomen almost uniformly brown (tergites slightly darker than sternites); cerci brownish; legs uniformly reddish brown, rather light; hind tibiae with 2 strongly inflated inner spines and normal other spines (all outer and 1 proximal inner) (Fig. 106). Genitalia as in Figs 103-105.

Female unknown.

Length (mm). Body 7.6; pronotum 1.5; hind femora 5; hind tibiae 3.4.

Gialaia (Eugialaia) dichroa sp. n.

(Figs 107-112, 114)

Holotype. o, Papua-New Guinea, "D. N. Guinea, 350 m, Etappenbg., 28.X-XI.12, Kais. Augustafl. Exp. Bürgers S.G." (MNHU).



Figs 114-122. Head in front (114-120) and from side (121, 122). 114, Gialaia dichroa sp. n. (holotype); 115, Goniogryllus potanini B.-Bien. (holotype); 116, Hemitrullus banlungi sp. n. (holotype); 117, H. alboapex sp. n. (holotype); 118, H. ni-groapex sp. n.; 119, H. perspicillaris (Ingr.) (holotype); 120, H. changi sp. n. (holotype); 121, H. alboapex (holotype); 122, H. perspicillaris (holotype).

Paratypes. **Papua-New Guinea**: 2 9, same data as holotype, but "28.X-XI.12" and "16-18.XI.12" (MNHU); 1 9, "D. N. Guinea, 292, Lordberg, 7.XII.12, Kais: Augustafl. Exp. Bürgers S.G." (MNHU).

Description. Male (holotype). Similar to G. monochroa, but coloration less uniform [head reddish brown with black upper part (Fig. 114), brown hind part of genae and band along hind edge of vertex; antennae and palpi brown with reddish antennal base; thorax and abdomen brown with reddish tinge on pronotum and

dark brown short stripes on lateral parts of some other tergites (sternites lighter than tergites, but genital plate dark brown); cerci and legs brownish with slight darkish strokes on outer side of hind femora], mouthparts slightly longer, hind tibiae with 3 more strongly inflated inner spines and normal other spines (all outer and 1 proximal inner) (Fig. 110). Genitalia as in Figs 107-109.

Female. Similar to male, but head with hardly shorter mouthparts and slightly larger or

smaller black upper spot; ovipositor with apex of lower valvae truncate in specimens from "Etappenbg." (Fig. 111) and acute in specimen from "Lordberg" (Fig. 112).

Length (min). Body: $\sigma' 9$, $\varphi 8-8.8$; pronotum: $\sigma' 1.7$, $\varphi 1.7-1.8$; hind femora: $\sigma' 5.6$, $\varphi 5.4-5.7$; hind tibiae: $\sigma' 3.8$, $\varphi 3.6-3.8$; ovipositor 5-5.4.

Comparison. The new species differs from *G. monochroa* in the above-named characters and the distinctly longer and narrower median process of hind edge of epiphallus in the male genitalia.

Gialaia (Eugialaia) calva sp. n.

Holotype. 9, Papua-New Guinea, "D. Neu-Guinea, Sepik Berg, 1570 m, XI.10, L. Shultze S." (MNHU).

Description. Female (holotype). Very small, almost without pubescence. Head hardly flattened dorsoventrally, shining, black with brown mouthparts and light brown antennae; rostrum between antennal cavities slightly wider than scape. Pronotum uniformly reddish, rather light, transverse, with parallel sides and yellowish setae along fore and hind edges, subequal in width to head. Other parts of thorax and base of abdomen (1.5 segments) reddish, rather light; rest of abdomen darkish, from reddish brown in fore half to brown in hind half; cerci brownish. Legs light brown (almost yellowish) with darkish (brownish) oblique strokes on outer side of hind femora; these strokes fused with each other in several places and forming 3 darkened spots (2 short spots on distal half of upper surface of femur: near apex and near middle; 1 narrow longitudinal spot on lower half of outer surface of femur, but with not very narrow light stripe between this spot and lower edge of femur); hind tibiae with 3 pairs of scarcely curved and not inflated spines. Ovipositor similar to that of G. dichroa, but somewhat shorter.

Male unknown.

Length (mm). Body 7.1; pronotum 1.4; hind femora 4.6; hind tibiae 3.2; hind metatarsi 1.75; ovipositor 3.9.

Comparison. G. calva differs from G. monochroa and G. dichroa in the slight pubescence of body, coloration, smaller number of spines of hind tibiae, and shorter ovipositor.

Genus Hemitrullus gen. n.

Type species *Hemitrullus (Hemitrullus) changi* sp. n. *Diagnosis*. Rather small crickets. Head normal, globular, with black upper part and a pair of very characteristic yellowish (or whitish) stripes along fore and upper edges of eyes

(Figs 116-120); rostrum between antennal cavities slightly wider than scape. Pronotum with almost square disc. Tegmina partly shortened (Figs 123e, 124d) or scale-like (Figs 126, 131); male tegmina with (Fig. 123e) or without (Figs 124d, 126, 131) stridulatory apparatus. Hind wings absent. Legs typical of this tribe, with only elongate outer tympana only or without any tympana; spines of hind tibiae normal in both sexes. Male genitalia with varying epiphallus, elongate ectoparameres almost fused with mesal lobes, arched endoparameres with small apodemes at proximal part, and large or very large spermatophore sac almost without apodeme (Figs 123a-c, 124a-c, 125, 130a-c, 132a-c). Ovipositor long, with denticulate apex of its upper valvae (Figs 123g, 128).

This genus is divided into 3 subgenera (*Hemitrullus* s. str., *Atrullus* subgen. n., *Peratrullus* subgen. n.), which are strongly distinguished from each other by the structure of tegmina and genitalia in males. It is not improbable that these subgenera are actually 3 related genera.

Comparison. The new genus is most similar to Goniogryllus Chop. in the coloration of head (Fig. 115) and general appearance, but Goniogryllus well differs in the smooth apex of ovipositor and some other characteristics. The similarity of head coloration in these genera as well as in some other unrelated representatives of Gryllini, as Teleogryllus occipitalis (Serv.), T. mitratus (Burm.), T. emma (Ohm. & Mats.), Velarifictorus hiulcus (Karsch), several species of Tugainus Gor. and Cryncus Gor., is a result of convergence.

Subgenus Hemitrullus s. str.

Diagnosis. Male tegmina partly shortened, but with developed stridulatory apparatus provided with rather numerous oblique veins (mirror and apical area strongly reduced) (Fig. 123e); female tegmina scale-like (Fig. 123f). Fore tibiae with elongate outer tympana, but without inner ones. Basal half of male abdomen with special gland on tergites (Fig. 123d). Male genitalia with narrow epiphallus provided with 3 hind lobes (median lobe rather narrow, triangular), long ectoparameres without traces of mesal lobes, long endoparameres fused with each other by their proximal parts, very large spermatophore sac, and strongly arched proximal part of virga (Figs 123a-c).

Included species. Type species only.

Note. The special gland on abdominal tergites of male under tegmina is also present in some unrelated cricket genera (convergence): *Mnesibulus* Stål (Podoscirtinae) and *Petaloptila* Pant. (Gryllomorphinae).



Figs 123, 124. *Hemitrullus* gen. n. 123, *H. changi* sp. n. (holotype); 124, *H. banlungi* sp. n. (holotype). Male genitalia from above (a), from below (b), and from side (c); part of thorax and part of abdomen of male without or with tegmina from above (d); dorsal part of male tegmen (e); female pterothorax from side (f); apex of ovipositor from side (g).

Hemitrullus (Hemitrullus) changi sp. n.

(Figs 120, 123a-g)

Holotype. o', Thailand, prov. Trat, Chang I. (Siam Bay), low mountains near sea, forest (among dry leaves on forest floor), 5-20.XI.2000 (collected as larva, imago on 25-30.XI.2000), A. Gorochov & L. Anisyutkin (ZIAS).

Paratypes. 5 σ , 5 φ , same data as holotype (all collected as larvae, imago on 25.XI.2000-5.II.2001) (ZIAS).

Description. Male (holotype). Head black in upper part and lighter in lower part, with yellowish stripes along fore and upper edges of eyes continued to hind part of vertex, light brown genae and stripes along hind part of eyes from genae to upper part of eyes (there is a black area along upper-hind edge of eyes between these stripes and previous stripes), dark brown mandibles, and light brown (with darkish spots) clypeus and labrum; palpi greyish with dark apical segment; antennae dark brown

with lighter spots on scape and base of flagellum. Pronotum dark brown with slight lightish stripes along lateral edges of disc. Tegmina extending to 7th abdominal tergite, with dark brown basal area of dorsal part and lateral area (but with narrow light stripe along lower edge of this area), darkish distal and medial regions of dorsal part, and almost transparent areas between oblique veins and between oblique veins and diagonal vein; venation of dorsal part as in Fig. 123e. Fore and middle legs spotted; hind legs almost uniformly brown with scarcely lighter proximal part of femora and somewhat darker apex of femora and tibiae. Abdominal tergites and cerci dark brown with characteristic light brown gland on 3rd-5th tergites (Fig. 123d); abdominal sternites and genital plate slightly lighter; genitalia as in Figs 123a-c.

Variations. Disc of pronotum sometimes with more or less distinct lightish spots on middle part; abdominal sternites sometimes dark brown (as tergites).

Female. Similar to male, but tegmina extending to apex of mesonotum, with dark lateral area and light dorsal part (Fig. 123f), abdomen with almost unicolorous dark brown tergites and slightly lighter sternites. Ovipositor distinctly longer than hind femur; apex of ovipositor as in Fig. 123g.

Length (mm). Body: $\sigma' 11-14$, $\varphi 11-13$; pronotum: $\sigma' 2.2-2.4$, $\varphi 2.3-2.5$; tegmina: $\sigma' 5.5-5.8$, $\varphi 0.8-0.9$; hind femora: $\sigma' 8-8.5$, $\varphi 8.3-9$; ovipositor 10.2-11.

Subgenus Atrullus subgen. n.

Type species: Hemitrullus (Atrullus) banlungi sp. n.

Diagnosis. Tegmina strongly shortened, but their medial parts slightly overlapping; stridulatory apparatus absent (tegmina of both sexes very similar); venation of tegmina with only several longitudinal veins (Fig. 124d). Fore tibiae without tympana. Abdomen of male without any glands. Male genitalia with rather wide epiphallus provided with 5 hind lobes (median lobe almost as in previous subgenus), short ectoparameres with distinct medial projection (traces of mesal lobes), endoparameres more or less similar to those of previous subgenus, not very large spermatophore sac, and weakly arched proximal part of virga (Figs 124a-c).

Included species. Type species only.

Note. The tegminal venation of this subgenus is very similar to that of the genus Agryllus Gor. (Gorochov, 1994: Fig. 31), which is related to the genera Acanthoplistus Sauss. and Mimicogryllus Gor., but not to Hemitrullus.

Hemitrullus (Atrullus) banlungi sp. n. (Figs 116, 124a-d)

Holotype. c^{*}, Cambodia, prov. Rattanakiri, env. of Banlung, secondary forest (among dry leaves on forest floor), 1-2.III.1998 (collected as larva, imago on 21-31.III.1998), A. Gorochov (ZIAS).

Paratypes. 1 o', 2 9, same data as holotype (ZIAS).

Description. Male (holotype). Head almost black in upper part and brown or brownish in lower part, with yellowish, comparatively short stripes along upper edge of eyes (from antennal cavities to middle part of upper edge of eyes) and some other small spots (Fig. 116). Antennae darkish with lightish upper part of scape. Pronotum more or less uniformly dark brown, setaceous. Tegmina extending to base of 1st abdominal tergite (Fig. 124d), with 9-10 almost straight longitudinal veins and without transverse veinlets, greyish brown. Legs brown, rather light, with darkening near apex of hind femora. Tergites of pterothorax and abdomen also greyish brown, setaceous; their sternites only slightly lighter; cerci, anal and genital plates dark brown. Genitalia as in Figs 124a-c.

Variation. Paratype with fore and middle legs slightly spotted, middle part of tegmina and genital plate lighter (first greyish, second almost light brown).

Female. Similar to male, but yellowish stripes along upper edge of eyes continued behind eyes. Ovipositor distinctly longer than hind femora; apex of ovipositor similar to that of *H. changi*.

Length (mm). Body: σ' 11-12, φ 11.5-12; pronotum: σ' 2.4-2.6, φ 2.7-2.8; tegmina: σ' 1.4-1.7, φ 1.5-1.7; hind femora: σ' 8-8.5, φ 9-9.5; ovipositor 11-12.5.

Subgenus Peratrullus subgen. n.

Type species Hemitrullus (Peratrullus) alboapex sp. n. Diagnosis. Tegmina scale-like, without stridulatory apparatus, similar in both sexes; venation of tegmina indistinct (Figs 126, 131). Fore tibiae without tympana. Abdomen of male with special gland on apical tergites (Figs 127, 129, 133, 134). Male genitalia with rather wide epiphallus provided with 2 hind lobes (median lobe absent), long ectoparameres with more or less distinct mesal lobes, rather short endoparameres not fused with each other (their proximal parts separated from each other by membranous interval), not very large spermatophore sac, and almost straight proximal part of virga (Figs 125, 130a-c, 132a-c).



Figs 125-134. *Hemitrullus* gen. n. 125-127, *H. ?perspicillaris* (Ingr.); 128, *H. perspicillaris* (holotype); 129, 130, *H. al-boapex* sp. n. (holotype); 131-134, *H. nigroapex* sp. n. Epiphallus without apodemes from above (125); male pterothorax from side (tegmen dotted) (126, 131); hind part of male abdomen from above (127, 129, 133) and structure of its apex (134); apex of ovipositor from side (128); male genitalia (130, 132) from above (a), from below (b), and from side (c).

Included species. Type species, H. (P.) nigroapex sp. n., and possibly Cophogryllus perspicillaris Ingrisch, 1987.

Note. This subgenus is similar to the African genus *Cophogryllus* Sauss. in general appearance, but differs from it and from some other unrelated species ascribed now to the latter genus in the strongly setaceous body, very characteristic coloration of head, and peculiar structure of male genitalia.

Hemitrullus (Peratrullus) alboapex sp. n.

(Figs 117, 121, 129, 130a-c)

Holotype. o', Vietnam, prov. Gia Lai, 20 km N of Kannack, Buon Luoi, primary forest (among dry leaves on forest floor), 1-10.V.1995, A. Gorochov (ZIAS).

Paratypes. Vietnam, prov. Gia Lai: 1 of, 2 Q, same data as holotype (ZIAS); 2 of, 40 km N of Kannack, Tram Lap, primary forest (among dry leaves on forest floor), 20-24.IV.1995, A. Gorochov (ZIAS).

Description. Male (holotype). Head almost black in upper part and brown in lower part, with yellowish, comparatively long stripes along upper edge of eyes (from antennal cavities to hind part of upper edge of eyes) and some other small spots and stripes (but area along upper-hind edge of eyes between mentioned yellowish stripes and light stripes on genae black, as in H. changi) (Fig. 117, 121); antennae with lightish upper part of scape and base of flagellum, with darkish remaining parts. Pronotum uniformly dark brown, setaceous. Tegmina very small, more or less covered by pronotum and almost uniformly brownish. Legs brown with darkish upper part of tibiae, fore and middle femora, and lightish small spots on upper part of hind femora. Tergites of pterothorax and abdomen dark brown, setaceous, but upper part of 7th-9th abdominal tergites and small (narrow) hind part of 6th abdominal tergite without any pubescence, very light (yellowish white); 7th abdominal tergite without any distinct projections (these parts of 6th-9th tergites form the abdominal gland; anal plate very light also, but with pubescence on lateral and hind parts (Fig. 129); sternites, genital plate, and cerci brownish. Genitalia with shallow arched apical notch of epiphallus, narrow proximal and not acute distal parts of ectoparameres, distinct mesal lobes (Figs 130a-c).

Variation. Sometimes yellowish stripes along upper edge of eyes continued behind eyes, and hind part of vertex with several yellowish short longitudinal stripes.

Female. Similar to male, but abdominal tergites slightly lighter, brown with dark dots and blackish hind edge of 2-3 apical tergites (excepting rather narrow median part), without any very light and bald parts. Length of ovipositor almost equal to length of hind femur; apex of ovipositor very similar to that in Fig. 128.

Length (mm). Body: σ' 11-12, ♀ 11-11.5; pronotum: σ' 2.2-2.5, ♀ 2.3-2.5; tegmina: σ' 0.4-0.5, ♀ 0.4; hind femora: σ' 7.4-8, ♀ 8-8.5; ovipositor 8.5-9.

Comparison. H. alboapex is very similar to the species provisionally determined here as H. perspicillaris. The differences between them are listed below.

Hemitrullus (Peratrullus) ?perspicillaris (Ingrish, 1987)

(Figs 119, 122, 125-128)

Material. Thailand: 3 of, 6 9, prov. Nakhon Ratchasima, env. of Nat. park Khao Yai, 500-1000 m, primary forest, among dry leaves on forest floor, 26.X-4.XI.2000 (all collected as larvae, imago on 1.1-5.II.2001), A. Gorochov & L. Anisyutkin (ZIAS).

Description. Male (nov.?). Very similar to H. alboapex, but distinctly smaller, eyes slightly larger, light stripes and spots on head somewhat larger also (light rings around eyes not interrupted by dark areas near hind edge of eyes) (for comparison see Figs 117, 119, 121, 122), tegmina exposed (Fig. 126), abdominal gland includes also hind half of 6th tergite and with characteristic paired darkenings on bald part of 9th tergite (Fig. 127), epiphallus with deep triangular hind notch (Fig. 125).

Female. Similar to male. Distinguished from female of *H. alboapex* by smaller size, mentioned features of head coloration, and shorter ovipositor (slightly shorter than hind femur).

Length (mm). Body: $\sigma' 9-10$, $\varphi 9-11$; pronotum: $\sigma' 1.7-1.9$, $\varphi 1.8-2$; tegmina: $\sigma' 0.4-0.5$, $\varphi 0.4-0.5$; hind femora; $\sigma' 6-6.5$, $\varphi 6.5-7$; ovipositor 6-6.3.

Note. The holotype of *H. perspicillaris* (female from the same locality, but collected 7-8.IV.1985, examined, preserved in FNSF) is very similar to these specimens in the general appearance (including coloration of head), but larger (as *H. alboapex*) and with ovipositor slightly longer than hind femur (?).

Hemitrullus (Peratrullus) nigroapex sp. n.

(Figs 118, 131-134)

Holotype. o', Cambodia, prov. Rattanakiri, env. of Banlung, secondary forest (among dry leaves on forest floor), 1-2.III.1998 (collected as larva, imago on 21-31.III.1998), A. Gorochov (ZIAS).

Description. Male (holotype). Similar to both previous species of this subgenus, but yellowish stripes along upper edge of eyes shorter (Fig. 118) and hind part of vertex without any light stripes, tegmina (Fig. 131) slightly darker (brown), legs also slightly darker and more unicolourous, abdominal gland very characteristic upper part of 7th, 8th, and 9th abdominal tergites almost without pubescence, from dark brown (7th) to almost black (8th and 9th), 7th abdominal tergite with short hind median projection (Fig. 134), anal plate blackish (Fig. 133), cerci dark brown, genitalia with very deep apical notch of epiphallus, ectoparameres with wider proximal and acute distal parts, mesal lobes weakly distinct (almost not separated), and their apex very narrow and rather long (Figs 132a-c).

Female unknown.

Length (mm). Body 12; pronotum 2.4; tegmina 0.5; hind femora 8.8. .



Figs 135-146. Apterosvercus and Loxoblemmus. 135, L. globiceps sp. n.; 136-139, A. sylvestris sylvestris Gor.; 140-143, A. aequatorialis sp. n. (140-142, holotype); 144, A. tembelingi sp. n.; 145, 146, L. vividus (Sjöst.). Head of male from side (135a); dorsal part of male tegmen (135b); male genitalia from above (135c, 136), from below (137), and from side (135e, 138, 142); epiphallus, ectoparameres, endoparameres, and virga from below (135d, 141, 146) and from above (140, 145); apex of ovipositor from side (139, 143, 144).

Comparison. The distinctions from both previous species of this subgenus are named above (most important of them are coloration of head and abdominal gland as well as structure of this gland and the male genitalia).

Genus Apterosvercus Gorochov, 1991

This genus includes A. sylvestris Gorochov, 1991 described from Vietnam (prov. Gia Lai), 2 new species, and possibly Cophogryllus bodenklossi Chopard, 1929 from Mentawai Islands. Apterosvercus is very similar to the preceding apterous or almost apterous genera, but it is related to the genus Loxoblemmus Sauss., as the male genitalia of Apterosvercus and Loxoblemmus are almost identical (Figs 136-138, 140-142, 145, 146, 151-153). The main distinctions from Loxoblemmus are the absence of wings and tympanal organs, normal globular head in both sexes, very large eyes (Fig. 100), and characteristic coloration: black or blackish head and almost uniformly brown or reddish other parts of body.

Apterosvercus sylvestris rattanakiriensis subsp. n.

Holotype. of, Cambodia, prov. Rattanakiri, env. of Banlung, secondary forest (among dry leaves on forest floor), 1-2.III.1998, A. Gorochov (ZIAS).

Paratypes. Cambodia, prov. Rattanakiri: 1 σ' , 4 φ , same data as holotype (ZIAS); 3 φ , 40-50 km E of Banlung, secondary forest (among dry leaves on forest floor), 25-28.II.1998, A. Gorochov (ZIAS).

Description. Male (holotype). Differs from nominotypical subspecies in slightly larger size and darker pronotum with uniformly dark brown (almost black) lateral lobes (in *A. sylvestris sylvestris*, these lobes with more or less distinct lighter stripe along lower edge) (see also Gorochov, 1991: 14-15).

Female. Similar to male (including coloration), but somewhat larger. Ovipositor slightly longer than hind femur (in nominotypical subspecies, ovipositor shorter than hind femur).

Length (mm). Body: σ 10-11, φ 10-12; pronotum: σ 2, φ 2.3-2.5; hind femora: σ 7-7.2, φ 7.8-8.4; ovipositor 8.2-9.

Apterosvercus aequatorialis sp. n.

(Figs 140-143)

Holotype. of, Sumatra, prov. West Sumatra, 20 km E of Sasak, env. of Nat. park Harau Valley, equator, 600 m, primary forest (among dry leaves on forest floor), 24-26.XI.1999, A. Gorochov (ZIAS).

Paratypes. 3 σ , 2 φ , 6 nymphs, same data as holotype (ZIAS).

Description. Male (holotype). Very small, apterous, without tympanal organs. Head almost round, shining, without any projections, with rather small mouthparts and very large eyes, black, with dark brown antennae, postclypeus, labrum, and brownish grey palpi excepting light (almost whitish) apex and subapical segment of maxillary palpi. Pronotum with subparallel (but slightly arched) lateral margins of disc, uniformly reddish with black large setae; coloration of rest of thorax and abdomen similar to that of pronotum, but black setae more or less smaller, more numerous, and only on tergites. Legs rather short; hind femora strong; hind tibiae with 4 pairs of spines (excepting 6 apical spurs) and 1 rather small outer proximal spine; coloration of legs uniformly reddish with brownish pubescence and more or less dark upper surface of tibiae (especially distinct in hind tibiae). Apical part of abdomen including cerci without any distinct modifications, more or less brown; genital plate practically without apical notch; genitalia as in Figs 140-142.

Variations. Sometimes apical part of femora darkish and base of cerci lighter than rest, of them.

Female. Similar to male, but usually with distinct darkish hind edge of abdominal tergites. Genital plate yellowish, with roundly truncated hind edge; ovipositor with rather long apical part of lower valvae (Fig. 143).

Length (mm). Body: σ 7.5-8, φ 8-9; pronotum: σ 1.6-1.8, φ 1.7- 1.9; hind femora: σ 5.2-5.5, φ 5.5-5.8; ovipositor 5-5.3.

Comparison. This species is similar to A.? bodenklossi, but A. aequatorialis differs from it in the more uniform coloration of head (without rufous spots or bands), lighter maxillary palpi, and longer ovipositor. The new species is distinguished from A. sylvestris by the smaller size, uniformly reddish pronotum, absence of apical notch at the median hind projection of epiphallus, shorter proximal part of endoparameres, narrower distal apodeme of endoparameres, and shorter apical part of lower valvae of ovipositor (for comparison, see Figs 136-143).

Apterosvercus tembelingi sp. n.

(Figs 100, 144)

Holotype. 9, Malaysia, Pahang, Kuala Tahan near river Tembeling, env. of Nat. park Taman Negara, primary forest (among dry leaves on forest floor), 12-16.VII.1996, A. Gorochov (ZIAS).

Paratype. of (nymph), same data as holotype (ZIAS).



Figs 147-157. Loxoblemmus, c^{*}. 147-150, L. vividus (Sjöst.); 151-154, L. peraki sp. n.; 155-157, L. obtusus Sauss. (holotype). Head from below and slightly in front (147, 155), from above (148, 156), and from side (149); dorsal part of tegmen (150, 154, 157); genitalia from side (151), from above (152), and from below (153).

150

Description. Female (holotype). Similar to A. aequatorialis, but head slightly larger (hardly wider than pronotum) and with light brown proximal part of antennae, rostrum between antennal cavities about 1.3 times as wide as scape, pronotum darker (reddish brown) and with not strong blackish setae, tergites of pterothorax and abdomen dark brown with narrow lightish stripe along hind edge of 1st abdominal tergite, legs more uniform, practically without darkened areas, ovipositor distinctly shorter (hind femora almost 1.6 times as long as ovipositor).

Male (imago) unknown.

Length (mm). Body, φ 8.5; pronotum, φ 1.8; hind femora, φ 6.7; ovipositor 4.2.

Comparison. A. tembelingi differs from all other congeners in the coloration and shorter ovipositor (in A.? bodenklossi, the hind femur is about 1.3 times as long as ovipositor and in all other congeners the ovipositor is longer).

Genus Loxoblemmus Saussure, 1877

= Pezoloxoblemmus Karny, 1907, syn. n.

= Comidogryllus Otte & Alexander, 1983, syn. n.

The male head varies in this large genus (distributed from Africa to Australia) from rounded (Fig. 135a) or almost rounded (with hardly oblique face, see Fig. 149) to distinctly oblique with characteristic rostral projection:

57

rounded, angular, or almost truncate (sometimes also with additional projections). These modifications of the male head are secondary sexual ones and connected with the agonistic behavior (Gorochov, 1983a: Fig. 2). They are insignificant for the generic taxonomy. For example, L. vividus (Sjöstedt, 1900), comb. n. from Cameroon and L. obtusus Saussure, 1899 from Madagascar [the types of L. obtusus (σ)] and L. lativertex Saussure, 1899 (9) deposited in FNSF were examined by me; they are possibly conspecific] are rather similar in the general appearance (for comparison see Figs 147-150, 155-157) and have the male genitalia typical of all congeners (Figs 145, 146), but some previous authors mistakenly included them in the "different" former genera Comidogryllus and Pezoloxoblemmus (Otte, 1994).

Loxoblemmus globiceps sp. n.

(Figs 135a-e)

Holotype. o, Vietnam, prov. Ha Tinh, vill. Huong Son near Rao An river, 18°21'N, 105°13'E, primary forest, IV.2000, N. Orlov (ZIAS).

Description. Male (holotype). Size rather large for this genus. Head globular, with convex (not obliquely applanate) face (Fig. 135a); rostrum between antennal cavities 1.6 times as wide as scape; coloration of head almost uniformly dark brown: with 3 small yellowish spots on frons (around light ocelli) and light brown areas on postclypeus and labrum; antennae brown, rather dark; palpi yellowish brown. Pronotum with almost square disc and rather high lateral lobes, uniformly dark brown. Tegmina shortened, extending to base of 6th abdominal tergite (f. brachyptera), with 5 oblique veins, arched diagonal vein, rather small mirror, and strongly reduced apical area (Fig. 135b); dorsal part of tegmina light brownish (almost transparent) with darkish brown basal area and apical part (including mirror); lateral area with 8-9 partly parallel longitudinal veins, dark brown with very narrow light stripe along lower edge. Legs rather long, more or less uniformly brown (almost light brown); fore tibiae with elongate outer tympana only. Abdomen and cerci almost dark brown, unmodified; genitalia as in Figs 135c-e.

Female unknown.

Length (mm). Body 18; pronotum 3.7; tegmina 8.5; hind femora 13.5.

Comparison. This new species is well distinguished from all other congeners by the large size, globular head of male, numerous oblique veins of the male tegmina, and some other

characteristics of the coloration, venation, and shape of the genital sclerites in male.

Loxoblemmus peraki sp. n.

(Figs 151-154)

Holotype. o', **Malaysia**, "Hulu, Perak, Belum Expedition, B. Camp, 5°30'07"N, 101°26'21"E", 250 m, 24-28.III.1994, I. Sivec (ZIAS).

Description. Male (holotype). Size small for this genus. Head globular, with rather large eyes; rostrum between antennal cavities slightly wider than scape; upper half of head uniformly dark brown; lower half of head (under median ocellus, antennal cavities, and eyes) reddish brown, rather light; antennae light brown with yellowish scape; palpi almost yellowish white. Pronotum hardly narrowing in front, shining, uniformly dark brown, but with narrow lightish line along fore and hind edges. Tegmina extending to 9th abdominal tergite (f. brachyptera), rather wide; their dorsal part with 5 oblique veins, narrow S-shaped mirror, subparallel chords and diagonal vein, and strongly reduced apical area (Fig. 154); their lateral part with 3-4 parallel longitudinal veins; coloration of tegmina: areas between chords, between chords and diagonal vein, near all these veins, spot on basal area (but not near plectrum), upper 2/3 of lateral part, and mirror dark brown, other parts almost transparent. Legs rather light, uniformly reddish brown, but with darkish oblique lines on outer surface of hind femora, slightly darkened their apical part and hind tibiae; outer tympanum medium-sized, rather long; inner tympanum absent. Abdomen brown, rather dark; cerci brownish grey; genitalia as in Figs 151-153.

Female unknown.

Length (mm). Body 9; pronotum 2.1; tegmina 4.5; hind femora 6.3.

Comparison. The new species is similar to the representatives of Nemobiodes Chop. and Crynculus Gor., but it is unrelated to them as the male genitalia of Crynculus and African species of *Nemobiodes* (including type species) are very distinct from those of Loxoblemmus. N. laeviceps Chop. (Sri Lanka) is characterized by the convoluted spermatophore sac of the male genitalia, and this species is evidently a representative of some other genus (not *Loxoblemmus*). All other Indo-Malayan species of Nemobiodes (some of which are possibly representatives of Loxoblemmus) differ from Loxoblemmus peraki in the coloration, venation of the male tegmina, and structure of the male genitalia.



Figs 158-175. 158-165, Conoblemmus psammophilus sp. n., σ' ; 166, Macrobaenetes valgum (Stroh.), φ ; 167, Oryctopus prodigiosus Bol., φ ; 168, Schizodactylus hesperus B.-Bien., σ' ; 169, Xya variegata Latr., σ' ; 170-175, Abmisha? coiblemmoides sp. n., σ' . Fore half of body from above (158); head in front (159, 171) and from side (160, 172); genitalia from side (161, 173), from above (162, 174), and from below (163); hind (164, 166, 167) and middle (165, 168, 169) tibiae from side; dorsal part of tegmen (170); distal half of genitalia from below (175).

Genus Conoblemmus Adelung, 1910

This genus is very similar to *Loxoblemmus* in the structure of the male genitalia, but *Conoblemmus* is distinguished by the absence of active stridulatory apparatus and tympanal organs, the characteristic digging mode of life and small distinctions in the shape of the head, which is usually more or less similar to that of *Pseudocoiblemmus* and *Coiblemmus* (convergence) (Figs 2, 6, 11, 17), but sometimes almost rounded (Figs 158-160) or with special projections in male.

Conoblemmus psammophilus sp. n. (Figs 158-165)

Holotype. of, Turkmenistan, env. of Repetek, 19-21.IX.1965 (ZIAS).

Description. Male (holotype). Very small for this genus. Coloration uniformly light yellowish. Head wide, almost rounded in profile

(Figs 158-160); rostrum between antennal cavities almost 1.5 times as wide as scape; palpi rather large: length of apical segment of maxillary palpi slightly greater than height of eyes. Pronotum distinctly widening in front; tegmina small, extending to hind part of 1st abdominal tergite, contacting with each other, with only 2 distinct veins in dorsal part (plectrum and stridulatory vein) and 3 longitudinal veins in lateral part (Fig. 158). Legs rather long and strong; fore and middle tibiae slightly inflated (spindle-like) (Fig. 165), but hind tibiae distinctly inflated and hardly arched (Fig. 164); fore tibiae with 3 rather large lower apical spurs, very long pubescence, and without any tympanal organs; middle tibiae with 4 smaller apical spurs and short pubescence; hind tibiae with 3 pairs of rather long spines at distal part of tibiae and 6 apical spurs (4 very long and 2 lower distinctly shorter) (Fig. 164); fore and middle tarsi rather short; hind tarsi distinctly longer, with few spinules; claws long, thin, slightly curved, and distinctly pubescent. Abdomen unmodified, typical of this genus; genitalia as in Figs 161-163.

Female unknown.

Length (mm). Body 8; pronotum 1.7; tegmina 1.4; fore femora 2.6; hind femora 5.7.

Comparison. The new species clearly differs from all other congeners in the much smaller size, uniform light coloration, almost unmodified male head, presence of only few veins in the male tegmina, shape of legs (rather large, with inflated tibiae), distal position of hind tibial spines, and characteristic structure of claws (Figs 164, 165).

Note. Interestingly, the more or less similar shape of legs is present in some digging Stenopelmatoidea (and even Tridactyloidea), which use all (or almost all) legs for "swimming" in the loose soil (Figs 166-169). C. *psammophilus* is found in the central part of Kara-Kum sandy desert, where the natural constant reservoirs of moisture are absent, except for the deep layers of sandy soil. Small insects can penetrate to these layers only by using burrows of larger animals. For example, the other species of Grylloidea from the natural landscapes of this desert is Bothriophylax vlasovi (Mir.), which usually lives at the ceiling of rodent burrows. The new species maybe lives in similar burrows also, but it possibly "swims" in the floor sand.

Genus Abmisha Otte, 1987

The placement of the species described below in this genus is problematic, as this genus is rather poorly defined. Otte (1987) wrote that it is "similar in overall appearance to both *Velarifictorus* and *Gymnogryllus*", but these genera are very dissimilar and unrelated. The male tegmina and genitalia of *Abmisha* are similar to those of my specimen, but the genitalia of the latter are also very similar to those of *Phonarellus* Gor. and *Sciobia* Burm. (Figs 173-175). Moreover, the head of my male specimen is somewhat modified (similar to that of *Coiblemmus*, some *Pseudocoiblemmus*, and most *Conoblemmus*) (Fig. 172), but the shape of the male head of true *Abmisha* is not described (maybe normally rounded?).

Abmisha? coiblemmoides sp. n.

(Figs 170-175)

Holotype. of, Kenya (without additional data) (ZIAS).

Description. Male (holotype). Mediumsized. Head rather large, with rounded rostral projection and sloping concavity under it (Figs 171-172); rostrum between antennal cavities almost twice as wide as scape; coloration of head uniformly reddish brown with slightly lighter mouthparts and scarcely darker 4 longitudinal lines on hind part of vertex. Pronotum hardly widening in front, dark brown (almost black), with a few scarcely distinct, small, lighter spots on hind part of disc and lower part of lateral lobes. Tegmina shortened (f. brachyptera), extending to hind part of 5th abdominal tergite; venation of their dorsal part as in Fig. 170; their lateral part with 5-6 subparallel longitudinal veins and without transverse veinlets; tegminal dorsal part yellowish (transparent) with dark brown distal part including mirror and areas near it; tegminal lateral part dark brown with narrow lightish stripe along lower edge. Lower part of thorax brown. Fore tibiae with well developed, elongate outer tympanum only; legs brown with darker apical part of hind femora, numerous oblique stripes on their outer surface, and hind tibiae. Abdomen unmodified, dark brown, with scarcely lighter cerci; genitalia as in Figs 173-175.

Female unknown.

Length (mm). Body 20.5; pronotum 3.6; tegmina 8; hind femora 12.

Comparison. The new species is distinguished from the congeners by the characteristic shape and uniform reddish brown coloration of the male head, darker legs and abdomen, and narrower apical median notch of epiphallus and distal part of ectoparameres.

Genus Trullus Gorochov, 2000

This genus was recently described for 1 male from Thailand (Gorochov, 2000). Placement of the following species with unknown male in this genus is problematic.



Figs 176-200. 176, Trullus? egregius sp. n.; 177-180, Tympanogryllus tympanopterus sp. n. (holotype); 181-184, T. cyclopterus sp. n. (holotype); 185-187, Tarbinskiellus? neotropicus sp. n.; 188, 189, T. portentosus (Licht.); 190-194, Macrogryllus ephippium vespertinus subsp. n.; 195, Gymnogryllus novaeguineae Chop.; 196, G. pravdini fidus subsp. n.; 197, G. vietnamensis Gor.; 198, G. equinus sp. n.; 199, Phonarellus minor (Chop.); 200, T. portentosus. Ovipositor from side (176); male genitalia from above (177) and from side (179, 183); distal half of male genitalia from above (181) and from below (178, 182); dorsal part of male tegmen (180, 184, 187, 192); pronotum from above (185, 190) and from side (186, 191); scheme of burrow for call: sagittal section (188, 193) and view from above (189, 194); apical part of left lower valva of ovipositor from below (195-200).

Trullus? egregius sp. n.

(Fig. 176)

Holotype. 9, Thailand, prov. Phetchaburi (northern Malacca), 50 km SW of Phetchaburi, env. of Nat. park Kaeng Krachan, 400 m, secondary forest, 30.VII-1.VIII.1996, A. Gorochov (ZIAS).

Description. Female (holotype). Distinctly smaller than T. inopinatus Gor. Head large, globular, dark brown (almost black) with greyish tinge and slightly lighter postclypeus, subgenae, labrum, maxillae, labium, and medial part of mandibles; eyes not large; head slightly higher than its width; rostrum between antennal cavities approximately 2.3 times as wide as scape; antennae brownish grey, darkish, but with lightish base of flagellum and lateral half of scape; maxillary palpi brownish grey; labial palpi somewhat lighter. Pronotum scarcely pubescent, distinctly widening in front, rather long, with slightly concave fore edge of disc, dark grey (almost black) with brownish tinge and small lightish spots in hind upper and fore lower corners of lateral lobes. Tegmina strongly reduced, lateral, rounded, scale-like, light brownish, with 3-4 almost indistinct longitudinal veins. Hind wings absent. Legs rather robust, not long, pubescent, with rather large, oval outer tympanum only; fore and middle femora yellowish with greyish brown distal 2/3 and not large proximal spot; hind femora yellowish with darkened apical part and numerous oblique stripes and dots on outer and upper surfaces; tibiae and tarsi brownish, more or less darkish, but with hardly lighter base; hind metatarsi rather high, with almost arched upper edge (in profile). Tergites of pterothorax and abdomen from dark grey to dark brown with small lightish spots on lateral parts of metanotum; pleurites and sternites of thorax and abdomen yellowish with darkish spots on hind upper part of pleurites; cerci not long, brownish with yellowish base; genital plate and very short ovipositor light brown; apex of ovipositor as in Fig. 176.

Male unknown.

Length (mm). Body 14.3; pronotum 2.8; tegmina 0.8; hind femora 9.7; ovipositor 1.9.

Comparison. The body shape of *T. egregius* is similar to that of numerous other apterous or almost apterous representatives of Gryllinae with a digging mode of life. This species differs from them in the shape of pronotum, structure of tegmina and tympana, coloration, and characteristic ovipositor. From *T. inopinatus*, it is distinguished by the smaller size, larger head and outer tympana, shorter legs, and more contrasting coloration of legs and cerci.

Genus Tympanogryllus gen. n.

Type species Tympanogryllus tympanopterus sp. n.

Diagnosis. Similar to Phonarellus Gor., but with strongly widened male tegmina and with very characteristic venation of sridulatory apparatus. Head not large, almost globular, rather high, with comparatively small eyes; rostrum between antennal cavities almost 1.8 times as wide as scape. Male pronotum strongly narrowing in front. Male tegmina very wide, oval. with long, arched stridulatory vein, numerous S-shaped oblique veins, almost straight and parallel chords and diagonal vein, rather small triangular mirror, and short apical area (Figs 180, 184); their lateral area with sparse, parallel longitudinal veins. Fore legs with outer, oval, medium-sized tympanum only. Apical part of male abdomen normal; male genitalia as in Phonarellus, but proximal lateral parts of epiphallus normal (without any bend), proximal part of endoparameres narrow (without large apodeme), and mesal lobe of ectoparameres very long (Figs 177-179, 181-183).

Included species. Type species and T. cyclopterus sp. n.

Comparison. This genus is most related to Phonarellus (maybe only its specialized subgenus). The distinctions between these taxa are named above. Other related genera (Gym-Sauss., **Tarbinskiellus** nogryllus Gor., Brachytrupes A.-Serv.) differ from Tympanogryllus in the same characters as from Phonarellus (almost straight or slightly Sshaped oblique veins and rather dissimilar genitalia in male). Interestingly, the structure of the male tegmina of this new genus is more or less similar to that of Endacusta pilipennis Chop. (Phalangopsinae) and slightly to that of / L. peraki (Fig. 154) as their strong stridulatory apparatus consists mainly of a large area with numerous oblique veins and their mirror is partly reduced.

Tympanogryllus tympanopterus sp. n. (Figs 177-180)

Holotype. o', Papua-New Guinea, "D. N. Guinea, 25, Lordberg, 1000 m, 29-30.XI.12, Kais. Augustal Exp., Bürgers S.G." (MNHU).

Paratype. o', Papua-New Guinea, "D. N. Guinea 209, Etappenbg, 16-18.XI.12, Kais. Augustafl. Exp. Bürgers S.G." (ZIAS).

Description. Male (holotype). Larger than second species of this genus. Uniformly brown (upper part of body hardly darker than lower one). Tegmina extending to abdominal apex with long stridulatory vein; areas between

345

oblique veins and mirror rather narrow; mirror strongly transverse; apical area with rather numerous cells; lateral area with 5-6 longitudinal veins. Hind wings absent. Fore metatarsi slightly shortened; hind tibiae with 6 inner and 5-6 outer rather short spines (excepting spurs); hind metatarsi rather long (almost as half of hind tibiae) and laterally compressed. Genitalia with comparatively long epiphallus characterized by rather wide apical notch and short proximal apodemes, with narrow proximal part of ectoparameres and small spermatophore sac.

Variations. Head and pronotum of paratype almost dark brown.

Female unknown.

Length (mm). Body 12-13; pronotum 2.5-2.7; tegmina 10-10.5; hind femora 10-10.5.

Tympanogryllus cyclopterus sp. n.

(Figs 181-184)

Holotype. of, New Guinea (Indonesian part), "Dutch New Guinea: Cyclops Mts., Mt. Lina, 3500-4500 ft, III.1936, L.E. Cheesman. B.M. 1936-271" (BMNH).

Paratypes. 3 σ , same data as holotype (BMNH and ZIAS).

Description. Male (holotype). Very similar to *T. tympanopterus*, but smaller; tegmina with shorter stridulatory veins, wider area between oblique veins and mirror, almost not transverse mirror, indistinct cells of apical area, and 4-5 longitudinal veins in lateral area; genitalia with shorter epiphallus characterized by narrower apical notch and longer proximal apodemes, with wider proximal part of ectoparameres and distinctly larger spermatophore sac.

Variations. Sometimes coloration almost lightish brown, but with brown head and pronotum.

Female unknown.

Length (mm). Body 10-12; pronotum 2.1-2.4; tegmina 7.5-8.5; hind femora 8-9.

Genus Gymnogryllus Saussure, 1877

This genus comprises only several rather large species distributed from India to Australia (true representatives of *Gymnogryllus* are unknown from Africa): *Gryllus leucostictus* Burmeister, 1838 (= *G. elegans* Guérin, 1834, homonym, type species; see Gorochov, 1998), *Brachytrypus angustus* Saussure, 1877, *B. pulvillatus* Saussure, 1877, *B. birmanus* Chopard, 1928, *Gymnogryllus brachyxiphus* Chopard, 1931, *G. novaeguineae* Chopard, 1937, *G. brevicauda* Chopard, 1937, *G. corroboree* Otte & Alexander, 1983, *G. pravdinii* Gorochov, 1990, *G. vietnamensis* Gorochov, 1991, G. kuznetzovi Gorochov, 1991, G. contractus Liu et al., 1995, G. machairodus Gorochov, 1996, G. smilodon Gorochov, 1996, G. malayanus Desutter-Grandcolas, 1996, and 1 new species. The rest of species mistakenly included in this genus by Otte (1994) belongs to the genus Phonarellus, which is distributed from Africa (subgenus Semaphorellus) to southern Asia (nominotypical subgenus). The male tegmina of *Gymnogryllus* have almost straight or slightly S-shaped oblique veins (a possible synapomorphy with Brachytrupes, Tarbinskiellus, and Macrogryllus, see Figs 187, 192; in Phonarellus and Tympanogryllus, these veins are distinctly S-shaped as in most Gryllini, a possible plesiomorphy, see Figs 180, 184). The main autapomorphies of Gymnogryl*lus* are in the structure of the male genitalia [long ectoparameres with widened distal part of large upper medial process (usually moved distally) " and very large proximal endoparameral apodeme, see Figs 201, 203, 204, 206, 207] and ovipositor (with the characteristic small hook before apical part of lower valvae, for comparison see Figs 195-200).

Gymnogryllus pravdini fidus subsp. n.

(Figs 196, 204-206)

Holotype. o', Papua-New Guinea, Morobe, bay Langemak, mouth of river Bubui, 21.V.1971, M. Heptner (ZIAS).

Paratypes. **Papua-New Guinea**: 7 9, same data as holotype (ZIAS); 1 9, "Madang Dist., Finisterre Mts., Budemu, c. 4000 ft. 15-24.X.1964", M.E. Bacchus (BMNH).

Description. Male (holotype). Practically identical to nominotypical subspecies in size, coloration, shape of body and venation (see Gorochov, 1990), but genitalia slightly different: epiphallus with longer distal part, narrower median apical notch, and distinctly smaller paired lower apical teeth, ectoparameres slightly longer, almost straight (but with hooked apical part), with smaller proximal part and distinctly shorter mesal lobe (for comparison see Figs 201-206).

Female. Similar to male in general appearance (general coloration of head and pronotum varying from reddish brown to almost dark brown). Tegmina with 15-17 longitudinal veins in dorsal part, more or less uniformly brownish. Ovipositor rather long; apex of its lower valvae as in Fig. 196.

Length (mm). Body: $\sigma' 32$, $\varphi 28-33$; body with wings: $\sigma' 38.5$, $\varphi 41-46$; pronotum: $\sigma' 5.7$, φ 5.9-6.7; tegmina: $\sigma' 20.5$, $\varphi 22-24.5$; hind femora: $\sigma' 18.8$, $\varphi 19-21$; ovipositor 13.5-15.5.



Figs 201-217. Gymnogryllus, Macrogryllus, and Tarbinskiellus. 201-203, G. pravdini pravdini Got.; 204-206, G. pravdini fidus subsp. n.; 207, G. corroboree Otte & Alex.; 208, G. kuznetzovi Got.; 209, G. vietnamensis Got.; 210, G. equinus sp. n.; 211-213, M. ephippium vespertinus subsp. n.; 214-216, T.? neotropicus sp. n.; 217, T. terrificus (Walk.) (lectotype). Male genitalia from below (201), from above (212, 215), and from side (203, 206, 213, 216); epiphallus from behind (202, 205, 208, 209, 210); distal half of male genitalia from below (204, 207, 211, 214); ovipositor from side (217).

Comparison. The distinctions between males of G. pravdini pravdini and G. pravdini fidus are named above, those between females of these subspecies are unknown (female of nominotypical subspecies is unknown), and those between females of the new subspecies and G. novaeguineae (congener from New Guinea) are as follows: the pronotum in G. novaeguineae with light lower half of lateral lobes and in G. pravdini with only narrow light stripe along lower edge of these lobes; male genitalia sharply different (for drawing of the male genitalia of G. novaeguineae see Gorochov, 1983b: Figs 14, 43-45; the holotype of this species in MNHN was examined by me); ovipositor with larger hook before apical part of lower valvae (Figs 195, 196).

Gymnogryllus equinus sp. n.

[/](Figs 198, 210)

Holotype. o', Malaysia (southern Malacca), "Hulu, Perak; Belum Expedition, B. Camp; 5°30'07"N, 101°26'21"E; 250 m. VIII-XII.1993, leg. Rothamsted light trap" (ZIAS).

Paratypes. 2 9, same data as holotype (ZIAS).

Description. Male (holotype). Very similar to G. vietnamensis (see Gorochov, 1991), but light stripe along lower edge of pronotal lateral lobe slightly narrower (this stripe in G. vietnamensis as wide as half of these lobes), hind tarsi, hind tibiae, and distal half of hind femora darker (almost dark brown), and genitalia with somewhat narrower epiphallus and distinctly greater distance between its paired lower apical teeth (Figs 209, 210).

Female. Similar to male in general appearance; almost indistinguishable from female of *G. vietnamensis* (the width of light stripes of pronotum hardly varying in females of both species), but ovipositor with distinctly larger hook before apical part of lower valvae (Figs 197, 198).

Length (mm). Body: σ 31.5, φ 27-28.5; body with wings: σ 41, φ 40-42; pronotum: σ 6, φ 5.7-5.8; tegmina: σ 23.5, φ 22-23; hind femora: σ 19.5, φ 18.5-19.5; ovipositor5-5.5.

Comparison. G. equinus is similar to G. vietnamensis, G. brachyxiphus, and G. kuznetzovi. The distinctions from the first are named above, the second differs in the shape of the apical part of epiphallus (in G. brachyxiphus, it is very similar to that of G. vietnamensis; the ovipositor of these both species is similar also, unlike to that depicted by Chopard (1969: Fig. 18); the syntypes of G. brachyxiphus in BMNH are examined), and the third differs in the somewhat darker coloration and small details in the structure of epiphallus (Figs 208, 210).

Gymnogryllus kuznetzovi Gorochov, 1991 (Fig. 208)

Material. 2 o', Vietnam, prov. Gia Lai, 20 km N of Kannack, Buon Luoi, road in primary forest, 3-11.XI.1993, A. Gorochov (ZIAS).

Description. Male (nov.). Similar to G. vietnamensis and G. equinus in general appearance, but hind wings shortened (f. brachyptera) and coloration blackish with lightish small spots on frons near middle part of clypeal suture and behind eyes, light brown mouthparts (excepting dark brown anteclypeus and base of mandibles), rather narrow stripe along lower edge of pronotal lateral lobes, lower part of body, and some parts of legs (all tibiae, apical parts of fore and middle femora, and distal halves of hind femora dark brown or almost blackish), more transparent lateral and stridulatory areas of tegmina. Genitalia also similar to both above-mentioned species, but with characteristic apical part of epiphallus (Fig. 208).

Length (mm). Body, of 32-35; pronotum, of 5.8-5.9; tegmina, of 21-22; hind femora, of 19-19.5.

Genus Tarbinskiellus Gorochov, 1983

The possible American representative of *Tarbinskiellus* described below shows somewhat intermediate characters of male genitalia between those of this genus and *Gymnogryllus*. It may testify about the more close relation of these genera to each other than to *Brachytrupes*.

Tarbinskiellus? neotropicus sp. n.

(Figs 185-187, 214-216)

Holotype. of, Brazil, "Para-Minas" (ZIAS).

Description. Male (holotype). Not large for this genus. Head rounded, but with slightly convex rostrum, which is slightly more than twice as wide as scape; eyes and mouthparts rather small; coloration of head (including antennae and palpi) yellowish with rather small dark brown spot between lateral ocelli. Pronotum large, hardly wider than head, subparallelsided, with high lateral lobes, yellowish with brown fore edge connected with large brown triangle on hind part of disc (Figs 185, 186). Dorsal part of tegmina as in Fig. 187; their lateral part with 11-12 branches of Sc; tegmina vellowish with slightly darkened (brownish) apical area and small spot in basal area, with almost transparent stridulatory and lateral areas. Hind wings much longer than tegmina, light. Legs as in T. portentosus (Licht.), but

•



Figs 218-227. Mimicogryllus, Squamigryllus gen. n., and Acanthoplistus. 218-220, M. hymenopteroides Gor.; 221-224, S. squamipterus (Ingr.) (holotype) (Fig. 224 after Ingrish, 1987); 225-227, A. africanus Gor. Male genitalia from above (218, 221, 225), from below (219), and from side (220, 223, 227); pronotum with tegmen from side and slightly above (224); hind (distal) half of male genitalia with (222) and without (226) endoparameres and rami from below.

hind femora almost 4.2 times as long as wide, hind tibia and metatarsus (including its spurs) combined subequal in length to hind femur; coloration of legs almost uniformly yellowish, but with slightly darkened longitudinal stripe on upper-inner side of hind femora (before apical part). Abdomen and lower part of thorax uniformly yellowish; genital plate with rounded apex; genitalia as in Figs 214-216.

Female unknown.

Length (mm). Body 33; body with wings 45.5; pronotum 6.2; tegmina 26; hind femora 20; hind tibiae 13.5; hind metatarsi 5.

Comparison. The new specis clearly differs from all congeners in the large mirror, slightly arched chords (in the male tegmina), smaller median proximal notch of epiphallus, and spine-like apex of upper medial process of ectoparameres.

Note. The generic position of this species is not fully clear. If it belongs to Tarbinskiellus, its male genitalia acquired convergent similarity to those of *Gymnogryllus*: the upper medial process of ectoparameres is large and bearing at the apex a spine-like projection directed distally, as in some representatives of Gymnogryllus (Figs 201, 204, 207). But it is also not improbable that this new species is more related to Gymnogrylus than to Tarbinskiellus; in that case, the male genitalia of T.? neotropicus acquired convergent similarity to those of Tarbinskiellus: the short ectoparameres, shorter and narrower virga, rather small proximal endoparameral apodemes, and characteristic shape of the proximal edge of epiphallus (Figs 214-216).

Tarbinskiellus portentosus (Lichtenstein, 1796)

Neotype (here designated). or, India, Assam, Gaukhati, at light, 25.V.1957, E. Shver (ZIAS).

This species described from India is difficult for distinguishing from 3 other (not American) species of this genus. Additional examination of the lectotype of T. orientalis (Burm.) shows that its male genitalia are more similar to those of T. portentosus than it is indicated in my paper (Gorochov, 1996: Figs 49, 53) as the mesal lobe of ectoparameres is separated from the upper medial process of ectoparameres by a small membranous area in both species. The distinctions between them are mainly in the size, but intermediate specimens are known. T. portentosus is similar also to T. terrificus (Walk.), but the latter species differs from it almost only in the strongly reduced ovipositor (Fig. 217) (a female of the type series of T. terrificus from

BMNH is designated here as lectotype to fix the application of the name; it is examined by me; its labels are "Type", "68-45 Madras", "Brach. terrificus. One of Walker's series so named", "Brachytrupes terrificus Walker, Syntype, det. B.C. Townsend, 1979"). The type (or type series) of T. portentosus is lost (Otte, 1994). The original description of this species (Lichtenstein, 1796: Acheta portentosa) does not contain characters sufficient for distinguishing T. portentosus from T. terrificus and maybe from large specimens of T. orientalis. All these species are widely distributed in India and it is necessary for reliable distinguishing of them to designate a neotype of T. portentosus. A good description of this species was published by Chopard (1969) and the drawings by Gorochov (1983b: Figs 2, 27, 28, 30, 37-39).

Genus Macrogryllus Saussure, 1877

This genus is most related to *Tarbinskiellus* as their male genitalia are rather similar (Figs 211-216). It is not improbable that they are only two subgenera of the same genus, but they have remarkable distinctions in the shape of pronotum (Figs 185-191) and stridulatory vein (Figs 187, 192) as well as in the structure of burrow for the call (Figs 188, 189, 193, 194).

Macrogryllus ephippium vespertinus subsp. n. (Figs 190-194, 211-213)

Holotype. of, Sumatra, prov. West Sumatra, 20 km E of Sasak, env. of Nat. park Harau Valley, equator, 600 m, primary forest, 24-26.XI.1999, A. Gorochov (ZIAS).

Paratype. 1 of, same data as holotype (ZIAS).

Description. Male (holotype). Distinguished from *M. ephippium ephippium* (Sauss.) by the somewhat longer pronotum, distinctly narrower areas between chords of tegmina, and 4-5 (not 3) pairs of spines on hind tibiae (in addition to 6 apical spurs). Genitalia as in Figs 211-213.

Variation. Paratype with 3 outer and 4 inner spines on one of hind tibiae.

Female unknown.

Length (mm). Body 42-44; pronotum 8.4-9.7; tegmina 28-29; hind femora 24-25; hind tibiae 14-14.5; hind metatarsi 6.4-6.7.

Note. These males were collected during their call. This call is very loud and similar to that of *Tarbinskiellus* or *Gryllotalpa*. The crickets sing during short time after the coming of darkness. They dig the special (elliptic from above) hollow near the entrance of burrow for the call (Figs 193, 194).

Genus Conogryllus gen. n.

Type species Grylloderes testaceus Chopard, 1934 (Zaire).

Diagnosis. Small crickets with normal, rounded head and short mouthparts. Pronotum with a pair of small notches at fore edge of disc and distinct median projection between them. Male tegmina shortened, with partly reduced venation (but with more or less distinct stridulatory vein). Legs with only outer tympanum. Male genitalia with rather deep hind median notch of epiphallus and 3 pairs of long distal sclerites (including ectoparameres).

Included species. Only type specis.

Comparison. This new African genus differs from all other Gryllini in the characteristic pronotal projection, partly reduced venation of male tegmina, and above-mentioned characters of the male genitalia.

Note. The type species was originally put in the genus *Grylloderes* Bol., which contains numerous species with normal pronotum and clearly dissimilar male genitalia; these numerous species were included by some previous authors in the former genus *Platygryllus* Chop. (junior synonym of *Grylloderes*).

Genus Squamigryllus gen. n.

Type species *Acanthoplistus squamipterus* Ingrish, 1987 (Thailand).

Diagnosis. This genus belongs to the group of related genera united by characteristic black (or brown), shining, and punctate head and pronotum (Acanthoplistus Sauss., Mimicogryllus Gor., Agryllus Gor., and maybe Rhabdotogryllus Chop.); this group connects other Gryllini with Sclerogryllini. In general outline, this genus is similar to Acanthoplistus, but clearly distinguished from it (as well as from Agryllus) by other type of the male genitalia (Figs 221-223, 225-227). From all other genera of this group and also from Acanthoplistus it differs in the strongly shortened, lateral, scalelike male tegmina without stridulatory apparatus (Fig. 224), absence of hind wings and tympanal organs. Squamigryllus is most similar to Mimicogryllus in the male genitalia (Figs 218-223), but differs in the rostrum between antennal cavities 3 times as wide as scape, pronotum wide and short, with distinct carina between disc and lateral lobe (Fig. 224), legs rather short and robust, male genitalia with very large ectoparameres, almost normal mesal lobes, strongly widened base of virga, and rather large spermatophore sac.

Included species. Only type species (its holotype, from FNSF, was examined by me).

Acknowledgements

I thank late Dr. G.B. Popov, J. Marshall (BMNH), Dr. K.K. Günther, I. Dorandt (MNHU), Dr. V. Llorente, I. Izquierdo (MNCN), Dr. W.A. Nässig (FNSF), and Dr. M. Donskoff (MNHN) for the loan of some specimens for this study. This work was supported by grant No. 00-04-48833 of the Russian Foundation for Basic Research.

References

Chopard, L. 1969. Grylloidea. Fauna of India and adjacent countries. Orthoptera, 2: 1-421. Calcutta.

- Gorochov, A.V. 1983a. Life-forms of Grylloidea (Orthoptera) of the USSR Far East. *Biol. Nauki*, 1983(1): 49-56. (In Russian).
- Gorochov, A.V. 1983b. To the knowledge of the cricket tribe Gryllini (Orthoptera, Gryllidae). *Entomol. Obozr.*, 62(2): 314-330. (In Russian).
- Gorochov, A.V. 1990. New and little known taxa of orthopterans of the suborder Ensifera (Orthoptera) from tropics and subtropics. *Entomol. Obozr.*, 69(4): 820-834. (In Russian).
- Gorochov, A.V. 1991. Material on the fauna of Gryllinae (Orthoptera, Gryllidae) of Vietnam. Part 1. *Trudy zool. Inst. Akad. Nauk SSSR*, 240: 3-19. (In Russian).
- Gorochov, A.V. 1994. Material on the fauna of Gryllinae (Orthoptera, Gryllidae) of Vietnam. Part 2. *Trudy zool. Inst. Ross. Akad. Nauk*, 257: 3-15. (In Russian).
- Gorochov, A.V. 1996. New and little known crickets from the collection of the Humboldt University and some other collections (Orthoptera: Grylloidea). Part I. Zoosyst. ross., 4(1), 1995: 81-114.
- Gorochov, A.V. 1998. On homonymy of *Gymnogryllus* elegans (Guér.) (Orthoptera: Gryllidae). Zoosyst. ross., 7(2): 228.
- Gorochov, A.V. 2000. A new genus of the tribe Gryllini from Thailand (Orthoptera: Gryllidae). Zoosyst. ross., 8(2), 1999: 210.
- Gorochov, A.V. & Kostia, D. 1999. A new genus and two new species of Gryllidae (Orthoptera) from Tanzania. Acta zool. cracow, 42(2): 275-278.
- Ingrisch, S. 1987. Neue Grillen von Borneo und aus Thailand (Insecta: Saltatoria: Grylloidea). Senckenbergiana biol., 68(1/3): 163-185.
- Lichtenstein, A.A.H. 1796. Catalogus Musei Zoologici ditissimi Hamburgi, 3. Insecten. 224 p. Hamburg.
- Otte, D. & Alexander, R.D. 1983. The Australian crickets (Orthoptera: Gryllidae). Acad. nat. Sci. Philadelphia Monogr., 22. 475 p.
- Otte, D. & Cade, W. 1984. African crickets (Gryllidae). 6. Genus Gryllus and some related genera (Gryllinae, Gryllini). Proc. Acad. nat. Sci. Philadelphia, 136: 98-122.
- Otte, D. 1987. African crickets (Gryllidae). 9. New genera and species of Brachytrupinae and Gryllinae. *Proc. Acad. nat. Sci. Philadelphia*, **139**: 315-374.
- Otte, D. 1994. Orthoptera species file, 1. Crickets (Grylloidea). 120 p. Philadelphia.

Received I November 1999