

## New and little-known Cachoplistinae and Phaloriinae (Orthoptera: Gryllidae)

A.V. Gorochov

Gorochov, A.V. 2003. New and little-known Cachoplistinae and Phaloriinae (Orthoptera: Gryllidae). *Zoosystematica Rossica*, **12**(1): 79-92.

A total of 13 Indo-Malayan and Afrotropical species belonging to six genera from four tribes of the subfamilies Cachoplistinae and Phaloriinae are considered. A new tribe, two new genera, two new subgenera, eight new species, and a new subspecies are described. Some other taxa are characterized (including revisions of type material, information about systematic position, and new data on distribution). Two names are restored: *Cacoplistes indicus* (Chop.), sp. dist. and *Meloidomorpha albicornis* (Walk.), sp. dist. Two names are lowered in rank: *M. japonica yunnanensis* (Yin), **stat. n.** and *Vescelia pieli ryukyuensis* (Oshiro), **stat. n. et comb. n.**

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

This paper is based on materials deposited at the following institutions: Zoological Institute, Russian Academy of Sciences, St.Petersburg (ZIAS); Natural History Museum, London (BMNH); Naturhistorisches Museum, Wien (NHMW); Zoological Survey of India, Calcutta (ZSIC).

Subfamily **CACHOPLISTINAE** Saussure, 1877

*Notes.* The subfamily Cachoplistinae includes crickets with the long legs, bad ability to jump (or without this ability), the narrow 2nd tarsal segments, and the ovipositor usually adapted to oviposition into soil or mouldering wood (the mode of life of these crickets is insufficiently studied).

This subfamily was originally described as the legion Cachoplistites of the tribe Myrmecophiliiens (Saussure, 1877) for a single genus *Cacoplistes* Br.-W. (= *Cachoplistus* Sauss.). Now, this taxon is usually considered a subfamily of the family Gryllidae. Gorochov (1986) included in Cachoplistinae two other genera and divided this subfamily into two tribes, Cachoplistini with the genus *Cacoplistes* and Homoeogryllini with the genera *Homoeogryllus* Guér.-Mén. and *Meloidomorpha* Walk. Later, Otte (1994) erroneously placed the genera *Kempiola* Uv. and *Parendacustes* Chop. (both the genera are true Phalangopsinae) in Cachoplistinae not indicating their tribal position, and Gorochov (1995) added to this subfamily a problematical tribe Paragryllini, which was formed as a result of synonymy of Paragryllidae, Rumeinae, and Benoistellini (sen-

su Desutter). At present, the tribe Paragryllini seems to be more closely related to Phalangopsinae than to Cachoplistinae, and the latter subfamily is considered to be more closely related to Phalangopsinae, Phaloriinae, and Pteroplistinae than to other subfamilies of Gryllidae (Gorochov, 2001).

Tribe **CACHOPLISTINI** Saussure, 1877

*Notes.* This tribe differs from Homoeogryllini in the presence of large longitudinal lateral keels on the pronotum (Figs I: 1-3, 6-8), the absence of any ability to jump (Figs I: 10, 12, 14), the quadriangular transverse section of all tibiae (Figs I: 13, 15), and the absence of articulated spines (other than apical spurs) on hind tibiae (Figs I: 8, 10). Cachoplistini contain a single genus.

Genus **Cacoplistes** Brunner von Wattenwyl, 1873

= *Cachoplistus* Saussure, 1877.

Type species: *Cachoplistus brunnerianus* Saussure, 1877 (by subsequent designation).

*Notes.* This genus was described by Brunner von Wattenwyl (1873) without included species. Saussure (1877) redescribed this genus as "*Cachoplistus* Brunn." (unjustified emendation) and described three new species of this genus (two from "Australia" and one from India). Kirby (1906) designated one of these "Australian" species as the type species. Chopard (1935) described the fourth species (also from India), but later, he synonymized it with the Saussure's Indian spe-

cies (Chopard, 1968). Otte & Alexander (1983) decided that both the “Australian” species (the type species and *C. westwoodianus*) were possibly collected outside of Australia. I think that the latter opinion is probably correct, but the synonymy of the two Indian species is erroneous as they are strongly distinguished from each other and must be included in different subgenera.

#### Subgenus **Cacoplistes** s. str.

*Included species.* The nominotypical subgenus possibly includes 3 species: type species, *Cachoplistus indicus* Chopard, 1935, and *Cacoplistes proximus* sp. n.

*Notes.* The type species (*C. brunnerianus*), described from a single female, is probably related to two other species of this subgenus as their pronota are very similar: hind part of the pronotal disc is provided with a pair of large convexities partly visible above longitudinal lateral keels of the pronotum when observed from side (Fig. I: 1; Saussure, 1877: Fig. XXXII, 1a). Alexander (in Otte & Alexander, 1983) has suggested that *C. brunnerianus* is possibly a synonym of *C. indicus*. This hypothesis needs checking using more detailed information.

**Cacoplistes (Cacoplistes) indicus** (Chopard, 1935), sp. dist.  
(Figs I: 1-5; II: 9, 10)

*Holotype.* ♂, **India, Assam**, “Gauhati, Nov. 1919, Fletcher coll.”, “Holotype”, “*Cachoplistus indicus* Chop. L. Chopard, det. type” (BMNH).

*Description. Male* (holotype). Coloration almost uniformly dark brown, but with reddish brown labrum, mandibles, spots on maxillae, large spot on each lateral lobe of pronotum, a pair of smaller spots on middle part of pronotal disc, brown dorsal part of upper tegmen (excepting darker apical area) and lower parts of thorax and abdomen. Head, pronotum and legs partly covered with very small denticles. Shape of head and pronotum as in Figs I: 1-3; rostrum between antennal cavities slightly narrower than scape; ocelli absent; longitudinal keels between disc and lateral lobes of pronotum well developed, but almost not lamellar. Tegmina with comparatively narrow stridulatory areas, long apical area, and narrow distal half of costal area; their venation as in Figs I: 4, 5; hind wings distinctly shorter than tegmina. Fore tibiae with inner tympanum only; this tympanum open, oval, medium-sized; hind tibiae with two rows of numerous denticles on upper side and two rows of very numerous and short setae; 1st segment of hind tarsi with denticles and setae as on hind tibiae. Apical part of abdomen missing; genitalia damaged (Figs II:

9, 10), but similar to those of *C. proximus* sp. n. (for comparison of genitalia, see description of the latter species).

Female unknown.

Length (mm). Body with wings 32; pronotum 6.8; tegmina 24; hind femora 16.5; hind tibiae 17.5.

**Cacoplistes (Cacoplistes) proximus** sp. n.  
(Figs II: 1-8)

*Holotype.* ♂, **India**, “Nupbo 119 [illegible], W.W. Webb” (BMNH) [identified by Townsend as *C. rogenhoferi*].

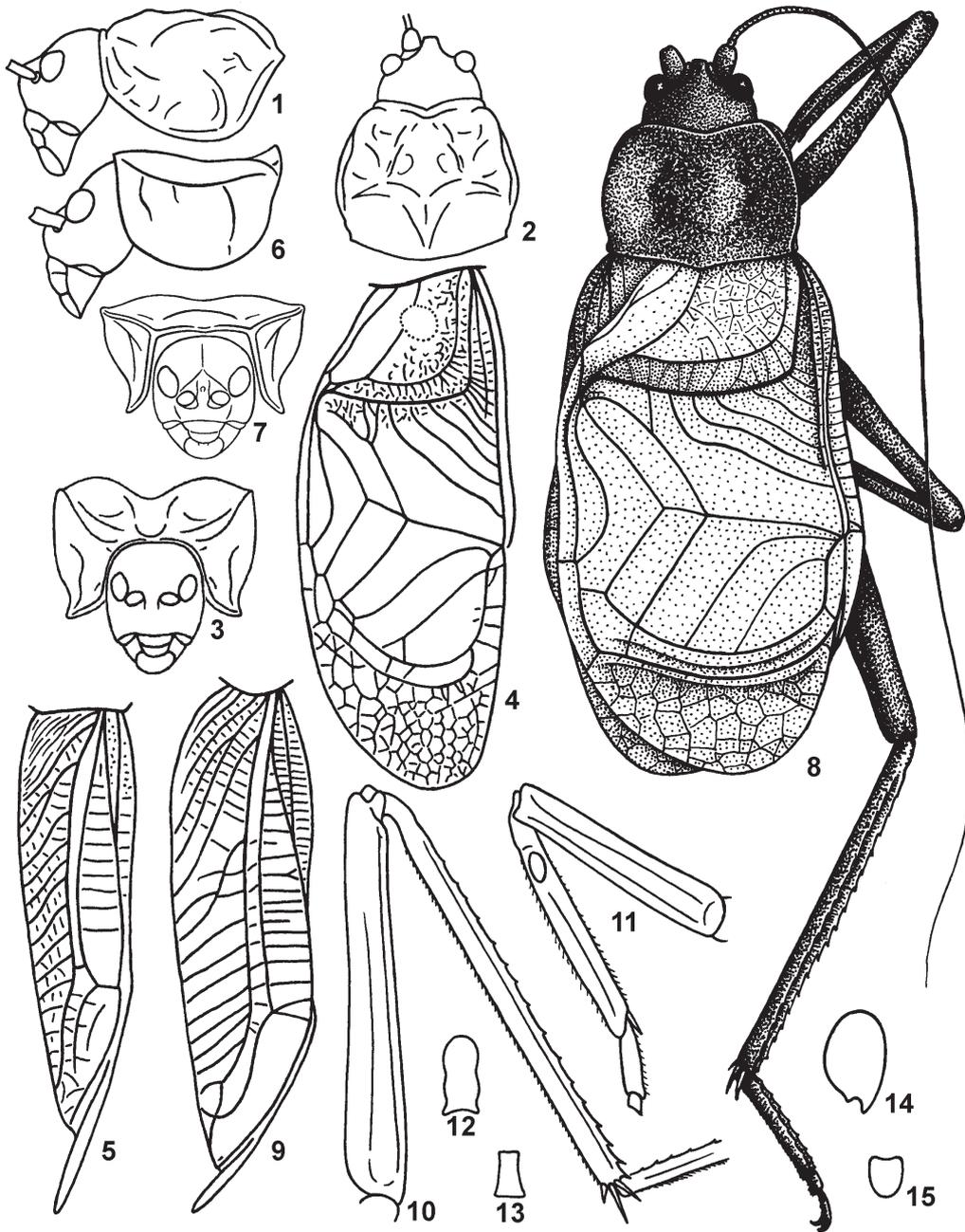
*Paratype.* ♀, with same data as in holotype (BMNH).

*Description. Male* (holotype). Very similar to *C. indicus* in general appearance, but differs in following details: size somewhat smaller, head and pronotum almost without reddish brown spots, antennal flagellum lighter (small proximal part dark; part between it and 22th segment light brown; more distal part yellowish, almost whitish), maxillary palpi with light stripe on apical segment, and abdomen darker. Shape of anal and genital plates as in Figs II: 5-7. Genitalia (Figs II: 1-4) distinguished from those of *C. indicus* by following characters: membranous window of epiphallus somewhat narrower, distance between epiphallic apex and posterior edge of this window distinctly smaller (Figs II: 1, 9), posterior edge of upper epiphallic projection near posterior edge of this window almost vertical (in *C. indicus*, oblique and sloping) (Figs II: 3, 10), ectoparameres slightly curved (in *C. indicus*, straight) (Figs II: 3, 10), endoparameral apodemes and hind arms of mold of spermatophore attachment plate distinctly longer (Figs II: 1, 2, 9).

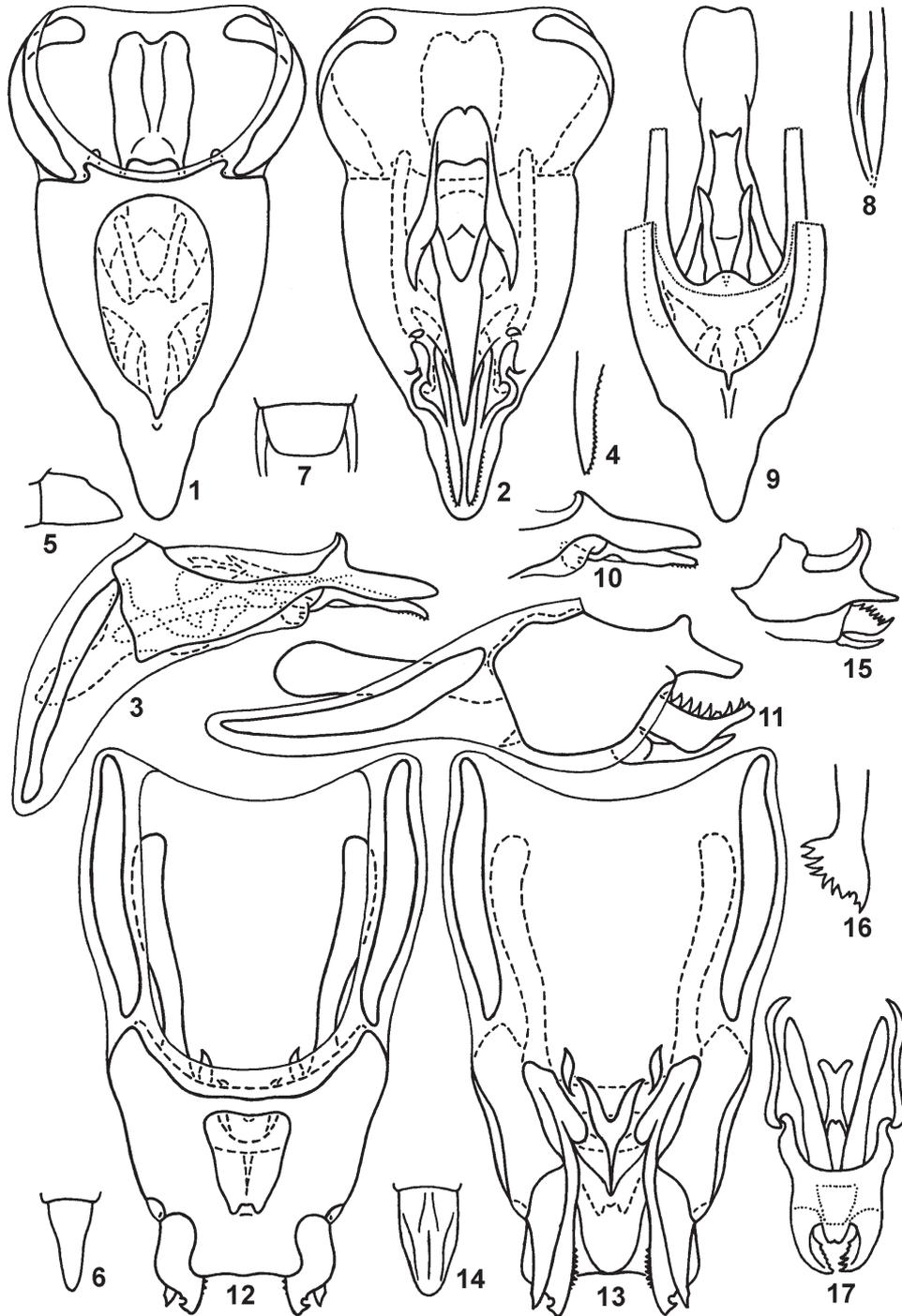
*Female.* Size slightly larger than in male, but slightly smaller than in holotype of *C. indicus*. Coloration almost entirely dark brown. Structure of head, pronotum and legs as in male. Tegmina semisclerotized, extending hardly behind abdominal apex, longer than hind wings; their venation characteristic: longitudinal veins parallel and strongly convex (almost keel-like) excepting apical and narrow costal areas; crossveins between these veins numerous and irregular. Genital plate with almost round hind edge; ovipositor long, with simple apical part (apex of this part missing) probably adapted to oviposition into soil (Fig. II: 8).

Length (mm). Body: ♂ 27, ♀ 26; body with wings: ♂ 28, ♀ 27; pronotum: ♂ 6, ♀ 6.3; tegmina: ♂ 20, ♀ 19; hind femora: ♂ 14.5, ♀ 15.5; hind tibiae: ♂ 15, ♀ 16.5.

*Comparison.* The differences from *C. indicus* are listed above. From *C. brunnerianus*, the new species differs in the less spotted coloration of the antennae and in the pronotum distinctly narrowing towards the head (in *C. brunnerianus*, its lateral sides are almost parallel).



**Figs I (1-15).** *Cacoplistes* Br.-W. and *Meloimorpha* Walk., male. **1-5**, *C. indicus* (Chop.) (holotype); **6-13**, *C. rogenhoferi* (Sauss.) (holotype); **14, 15**, *M. albicornis* (Walk.). Head with pronotum from side (1, 6), from above (2), and in frontal view (3, 7); dorsal (4) and lateral (5, 9) parts of tegmen; general view (without left antennal flagellum and legs) from side (8); inner side of hind (10) and fore (11) legs (without most of basal and distal parts); transverse section of middle part of hind femur (12, 14) and hind tibia (13, 15), schematically.



**Figs II (1-14).** *Cacoplistes* Br.-W. **1-8.** *C. proximus* sp. n.; **9, 10.** *C. indicus* (Chop.) (holotype); **11-14.** *C. rogenhoferi* (Sauss.) (holotype); **15-17.** *C. derelictus* sp. n. (from Bhowmik, 1977: Figs 2, A-C). Male genitalia from above (1, 9, 12, 17), from below (2, 13), and from side (3, 11); distal half of left (4) and right upper (16) ectoparameres from below; male genital (5, 6, 14) and anal (7) plates from side (5), from below (6, 14), and from above (7); apical part of ovipositor from side (8); distal part of male genitalia from side (10, 15).

Subgenus **Laminogryllus** subgen. n.

Type species: *Cachoplistus rogenhoferi* Saussure, 1877.

**Diagnosis.** This subgenus distinguished from nominotypical one by following characters: hind part of pronotal disc with slight convexities not visible from side (Fig. I: 6), longitudinal keels between disc and lateral lobes of pronotum distinctly lamellar (hardly lamellar in *Cacoplistes* s. str.) (Figs I: 3, 7), male tegmina and their stridulatory areas distinctly wider (Figs I: 4, 8), distal half of costal area of these tegmina distinctly wider (Figs I: 5, 9), male genitalia with shorter epiphallus, its window smaller, two pairs of ectoparameres (one pair in *Cacoplistes* s. str.), guiding rod and mold of spermatophore attachment plate distinctly smaller (Figs II: 1-3, 9, 10, 11-13).

**Included species.** Type species, *C. derelictus* sp. n., and, possibly, *Cachoplistus westwoodianus* Saussure, 1877.

**Cacoplistes (Laminogryllus) rogenhoferi**

(Saussure, 1877)

(Figs I: 6-13; II: 11-14)

**Holotype.** ♂, **India**, "Kaschmir", "Hugel 37 Type", "Rogenhoferi Sauss. Kaschmir? ♂ Type!", "*Cachoplistus rogenhoferi* Sauss." (NHMW).

**Description.** **Male** (holotype). Coloration almost uniformly dark brown, but with mandibles partly yellowish brown and dorsal part of upper tegmen brown with feebly marked greyish spots. Head and pronotum covered with numerous distinct small tubercles. Shape of head and pronotum as in Figs I: 6-8; rostrum between antennal cavities slightly narrower than scape; lateral ocelli absent; median ocellus distinctly reduced; longitudinal keels between disc and lateral lobes of pronotum rounded from above, but pronotum narrowing towards head less distinctly than in *C. indicus* and *C. proximus*. Tegmina as in Figs I: 8, 9; hind wings much shorter than tegmina. Legs (Figs I: 10, 11) similar to those of *C. indicus* and *C. proximus*. Anal plate missing; genital plate almost as in *C. proximus* (Fig. II: 14); genitalia as in Figs II: 11-13.

Female unknown.

Length (mm). Body 24.3; body with wings 32; pronotum 5.5; tegmina 23; hind femora 13.8; hind tibiae 14.8.

**Comparison.** *C. rogenhoferi* is clearly distinguished from *C. westwoodianus* by the short hind wings (hind wings of the latter species are longer than tegmina).

**Cacoplistes (Laminogryllus) derelictus** sp. n.

(Figs II: 15-17)

= *Cachoplistus rogenhoferi* sensu Bhowmik, 1977.

**Holotype.** ♂, **India**, Assam, "Kaziranga Game Sanctuary", 7.X.1961, R. Katiyar (ZSIC) [identified by Bhowmik as *C. rogenhoferi*].

**Description** [based on data by Bhowmik (1977)]. **Male** (holotype). Similar to *C. rogenhoferi*, but distinguished by structure of genitalia: epiphallus distinctly narrower in profile, with much longer and almost vertical projection near distal edge of epiphallic membranous window (Fig. II: 15), distinctly longer proximal lateral arms, and distinctly narrower hind median lobe (Figs II: 17); upper ectoparameres different in shape and with much larger teeth (Figs II: 15-17); rami with hooked distal part; mold of spermatophore attachment plate well developed, rather long, but distinctly shorter than endoparameral apodemes (Fig. II: 17).

Female unknown.

**Comparison.** The differences from *C. rogenhoferi* are listed above. Apparently, the new species differs from *C. westwoodianus* in the same character as *C. rogenhoferi*.

Tribe **HOMEOGRYLLINI** Gorochov, 1988

**Notes.** The differences between the Homoeogryllini and the Cachoplistini are given above (see notes to Cachoplistini). The tribe Homoeogryllini includes two genera (the African genus *Homoeogryllus* and the Asian genus *Meloimorpha*), which were usually considered to be synonyms (Chopard, 1968), until Gorochov (1986) has shown that they are different genera readily distinguished from each other by the structure of the male genitalia. Later, Otte (1994) mistakenly included the majority of *Meloimorpha* species in *Homoeogryllus* without any explanation.

Genus **Meloimorpha** Walker, 1870

Type species: *Meloimorpha cincticornis* Walker, 1870.

**Included species.** Four species from South-East and East Asia: type species, *Gryllus japonicus* Haan, 1842 (with two subspecies), *Phalangopsis longicornis* Walker, 1869, *Ph. albicornis* Walker, 1869, and *Homoeogryllus indicus* Agarwal & Sinha, 1988.

**Meloimorpha albicornis** (Walker, 1869), sp. dist. (Figs III: 1-7)

**Holotype.** ♂, **India** (north?), "N Ind 55 76", "*Phalangopsis albicornis*", "One of Walker's series so named - Type", "Holotype", "*Phalangopsis albicornis* Walker det. B.C. Townsend, 1975" (BMNH).

**Other material examined.** **India:** 1 ♂, Delhi, at light, 10-20.IX.1958, N. Alexandrov (ZIAS).

**Description.** **Male** (holotype). Head light brown with dark brown genae, subgenae, palpi, and a

pair of large spots behind eyes, brown two proximal antennal segments (remainder of antennae missing) and longitudinal stripes on upper part of head; pronotum dark brown with light brown fore and middle parts of disc; tegmina light brown with greyish tinge (stridulatory areas almost transparent); legs light brown with brown middle part of femora, short basal and somewhat longer distal parts of tibiae, and dark brown distal part of femora; other parts of thorax and abdomen brown. Venation of tegmina as in Fig. III: 1. Fore legs with inner and outer tympana open, oval, medium-sized; hind legs missing. Proximal part of abdomen missing; anal and genital plates as in Figs III: 2-4; genitalia similar to those of *M. japonica*, but distal part of hind lateral lobes of epiphallus semimembranous (membranous in *M. japonica*) and indistinctly separated from their proximal part; other genital structures as in Figs III: 5-7.

Variation. Specimen from Delhi with light brown subgenae, indistinct stripes on upper part of head, well-developed small lightish spots on hind part of pronotal disc, brown 1st-2nd antennal segments and proximal half of 3rd antennal segment, yellowish (whitish) remainder of antennae, with hind wings almost transparent and much longer than tegmina, coloration of hind legs as in fore and middle ones, and brown proximal part of abdomen.

Female unknown.

Length (mm). Body 13.5; body with tegmina 19-20; body with hind wings 23; pronotum 2-2.2; tegmina 16-17; hind femora 11; hind tibiae 12.

Notes. Chopard (1968) synonymized this species with *M. japonica*. Later, the name *albicornis* was used for the Indo-Malayan subspecies of *M. japonica* (Gorochov, 1996). The examination of the mentioned holotype shows that *M. albicornis* is a distinct species.

**Meloidomorpha japonica yunnanensis**  
(Yin, 1998), comb. n. et stat. n.

= *Homoeogrillus yunnanensis* Yin, 1998.

Material examined. **Vietnam**: 2 ♂, 1 ♀, 50 km NW of Hanoi, Ba Vi Mt., 19.VIII.1993, A. Baranov (ZIAS).

Notes. These specimens were described in detail as *M. japonica albicornis* (Gorochov, 1996: Figs 165-169), but they are clearly distinguished from *M. albicornis* by the distinctly darker coloration, much narrower male tegmina (with less curved oblique veins), and some of genital characters listed above (in the redescription of *M. albicornis*). These specimens probably belong to a species described recently from South China (Yin, 1998). Therefore, it is considered here as the Indo-Malayan subspecies of *M. japonica*.

Subfamily **PHALORIINAE** Gorochov, 1985

Notes. This subfamily is similar to Cachoplistinae, but differs in the ability of its representatives to powerful jumps (plesiomorphy) and the presence of more or less widened lobes on 2nd tarsal segments (autapomorphy of Phaloriinae associated with obligatory or almost obligatory phytophilous mode of life). The subfamily Phaloriinae was originally described as a tribe of Podoscirtinae (Gorochov, 1985). Later, this taxon was considered as a subfamily related to Cachoplistinae, but without division into tribes (Gorochov, 1986, 1995, 1996, 1999, 2001). At present, this subfamily should be divided into two tribes.

Tribe **SUBTILORIINI** trib. n.

Diagnosis. The Subtiloriini distinguished from the Phaloriini by ovipositor more or less similar to that of Cachoplistini: apical part of ovipositor narrow above, with acute apex and without drilling denticles (Figs III: 8, 9) or with very small ones (this structure of ovipositor possibly adapted to oviposition into soil, mouldering wood, or bark fissures).

Included genera. Four genera known only from Africa: *Heterotrypus* Saussure, 1878, *Schizotrypus* Chopard, 1954, *Subtiloria* Gorochov, 1999, and *Kameruloria* gen. n.

Genus **Kameruloria** gen. n.

Type species: *Kameruloria primitiva* sp. n.

Diagnosis. Fore tibia with inner tympanum open, oval, medium-sized; outer tympanum strongly reduced, as a small longitudinal concavity only (in all other Subtiloriini, both tympana well developed and outer tympanum slightly or strongly immersed, sometimes almost slit-like). All tarsi with 2nd segments very weakly widened. Male tegmina with normal stridulatory apparatus (Fig. III: 10); female tegmina developed. Male anal plate simple (Fig. III: 11) (without hook-like spines characteristic of *Subtiloria* and some *Schizotrypus*); male genital plate with comparatively narrow and slightly notched apex (Fig. III: 13) being narrower than in *Subtiloria* and less notched than in *Schizotrypus* (in *Heterotrypus*, apex of genital plate rounded). Male genitalia similar to those in all genera of Subtiloriini in fusion of guiding rod with mold of spermatophore attachment plate (Figs III: 14-16), but new genus strongly distinguished from *Heterotrypus* by much shorter hind epiphallic processes and ectoparameres, from *Schizotrypus* and *Subtiloria* by presence of distinct hind epiphallic processes, and from all other genera of Subtiloriini by simple and widely-rounded apical part of guiding rod

as well as wide ribbon between left and right endoparameres. Ovipositor well developed, with apex acute, smooth, and narrow from below (Figs III: 8, 9).

*Included species.* Type species only.

**Kameruloria primitiva** sp. n.  
(Figs III: 8-16)

*Holotype.* ♂, **Cameroon**, "Southern Cameroons, Brit. trust. terr., mt. Cameroon, post & telegraph road, 4500 ft., 2.I.1961" (BMNH) [identified by Tinning as *Heterotrypus* sp.].

*Paratypes.* 2 ♂, 5 ♀, with same data as in holotype (BMNH, ZIAS).

*Description. Male* (holotype). Head with rostrum (between antennal cavities) hardly narrower than scape; coloration of head spotted (with rather numerous light and dark brown spots and stripes); palpi and antennae light brown. Pronotum distinctly narrowing towards head, dark brown with light brown stripes along lower edges of lateral lobes (these edges dark) and several spots on disc. Legs spotted; hind tibiae with rather short articulated spines and a single small denticle between these spines and tibial base; longest tibial spur much longer than these spines and extending to apex of 1st segment of tarsi; this segment with single lateral row of 4-5 denticles and a pair of spurs (inner spur much longer than outer one). Tegmina slightly protruding behind abdominal apex; dorsal part of tegmina with mirror divided by two crossveins, with very short apical area (Fig. III: 10); lateral part of tegmina with narrow *R-M* area and 16-17 oblique branches of *Sc*; hind wings much shorter than tegmina. Abdomen brown; anal and genital plates as in Figs III: 11-13; genitalia (Figs III: 14-16) with asymmetrical structure consisting of fused guiding rod and mold of spermatophore attachment plate (Fig. III: 15).

*Variation.* Sometimes, mirror of tegmina with 3 crossveins.

*Female.* Similar to male in general appearance, but with following distinctive features: coloration of head and pronotum slightly lighter and less spotted; tegmina extending to base of 7th abdominal tergite; tegminal apical part widely rounded; tegminal dorsal part with 4 longitudinal veins, 3-4 branches of outer lateral of these veins, and sparse and slightly irregular crossveins; tegminal lateral part with 5-6 longitudinal veins almost parallel to *R*. Genital plate narrowing towards round apex, with a small apical notch; ovipositor slightly curved upwards, with apex as in Figs III: 8, 9.

Length (mm). Body: ♂ 11-11.5, ♀ 10-12; body with wings, ♂ 12-13; pronotum: ♂ 1.8-2, ♀ 2-2.4; tegmina: ♂ 8.5-9, ♀ 5.4-5.8; hind femora: ♂ 8.8-9.2, ♀ 9-9.5; ovipositor 6.2-6.5.

Tribe **PHALORIINI** Gorochov, 1985

*Notes.* This tribe differs from the Subtiloriini in the widened apical part of the ovipositor provided with drilling (large or medium-sized) denticles for oviposition into plant tissue (Figs VI: 9, 10). The Phaloriini includes eight genera distributed from the Seychelles to Oceania, with most of taxa occurring in the Indo-Malayan and Australo-Papuan regions (*Phaloria* Stål, 1877; *Vescelia* Stål, 1877; *Tremellia* Stål, 1877; *Pseudotrigonidium* Chopard, 1915; *Strophiola* Uvarov, 1940; *Trellius* Gorochov, 1988; *Ceyloria* Gorochov, 1996; *Sumatoria* gen. n.).

Genus **Trellius** Gorochov, 1988

*Type species:* *Heterotrypus vitalisi* Chopard, 1925.

*Composition.* This genus includes six subgenera: *Trellius* s. str., *Neotrellius* Gorochov, 1992, *Protrellius* Gorochov, 1996, *Zatrellius* Gorochov, 1999, *Vescelotrellius* Gorochov, 1999; *Diatrellius* subgen. n.

Subgenus **Protrellius** Gorochov, 1996

*Type species:* *Trellius siveci* Gorochov, 1996.

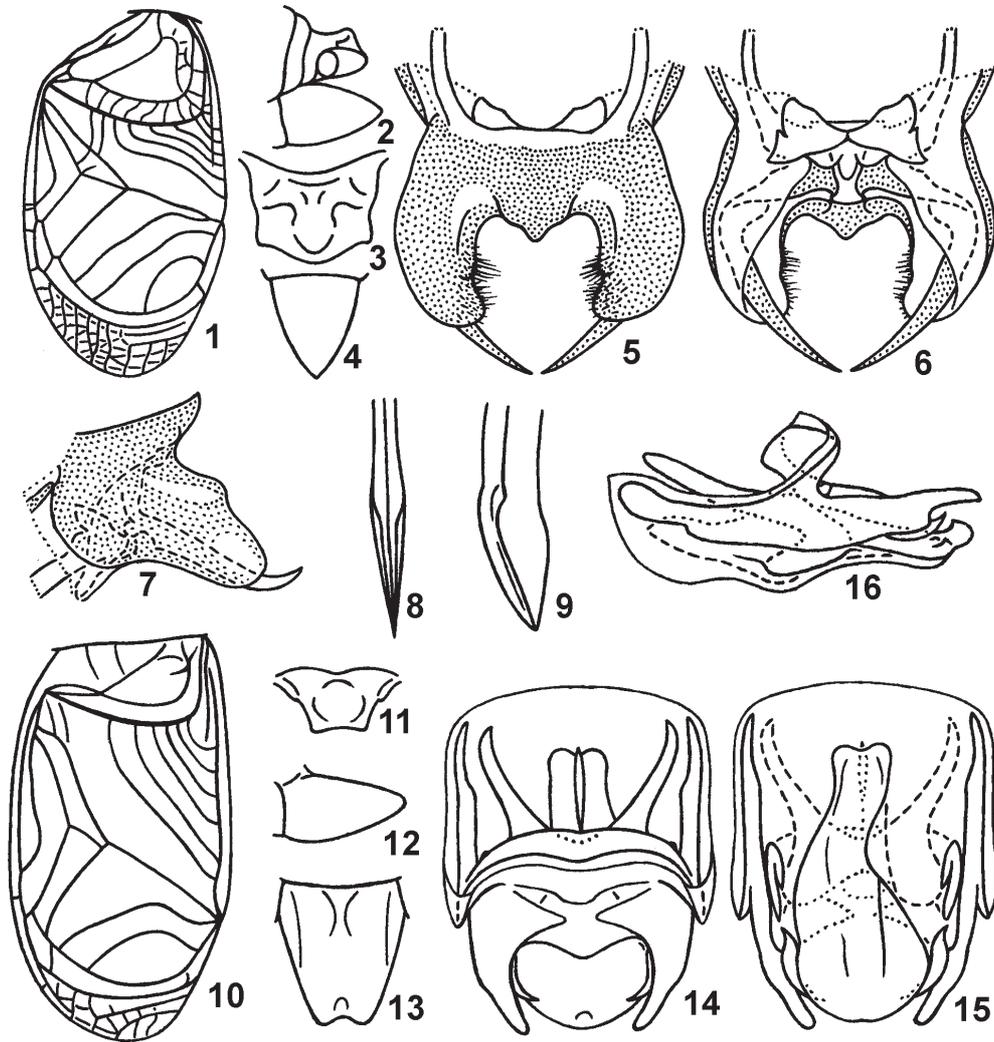
*Included species.* Ten species from Malacca (type species; *Phaloria helverseni* Heller, 1985; *T. suspectus* Gorochov, 1999; *T. electus* Gorochov, 1999), Java (*Platydictylus buqueti* Audinet-Serville, 1839; *Trellius perbonus* Gorochov, 1999; *T. duplicatus* Gorochov, 1999), Philippines (*T. dulcis* Gorochov, 1996), and Sumatra (*T. aequatorialis* sp. n.; *T. kerinci* sp. n.).

**Trellius (Protrellius) aequatorialis** sp. n.  
(Figs IV: 1-3)

*Holotype.* ♂, **Indonesia**, prov. West Sumatra, 20 km E of Sasak, env. of National Park Harau Valley, equator, 600 m, primary forest, on leaves of tree near brook, at night, 24-26.XI.1999, A. Gorochov (ZIAS).

*Paratypes.* 2 ♂, with same data as in holotype (ZIAS).

*Description. Male* (holotype). Coloration light brown with darkish striped pattern on head, slight darkenings on pronotum, spotted legs, almost transparent tegminal lateral parts and dorsal part of lower tegmen, greyish distal part of hind wings, and darkened anal plate. Venation of upper tegmen almost identical to that of *T. buqueti* and *T. duplicatus* (Gorochov, 1996: Fig. 435); hind wings much longer than tegmina. Spines and inner spurs of hind tibiae very long, pubescent; longest spur of these tibiae distinctly longer than 1st segment of hind tarsi. Anal and genital plates typical of this genus; genitalia with hind epiphallic processes strongly widened in middle part (Figs IV: 1, 2) and provided with strong, almost vertical apical hook (Fig. IV: 3).



**Figs III (1-16).** *Meloimorpha* Walk. and *Kameruloria* gen. n. **1-7**, *M. albicornis* (Walk.) (holotype); **8-16**, *K. primitiva* sp. n. (10-16, holotype). Dorsal part of male tegmen (1, 10); male abdominal apex (without cerci) from side (2); male anal (3, 11) and genital (4, 12, 13) plates from above (3, 11), from below (4, 13), and from side (12); male genitalia from above (5, 14), from below (6, 15), and from side (7, 16); apex of ovipositor from below (8) and from side (9).

**Variation.** In one paratype, coloration slightly darker, greyish brown with almost dark brown stripes and spots.

Female unknown.

**Length (mm).** Body 15-18; body with wings 28-31; pronotum 3-3.2; tegmina 21-23; hind femora 13-14.

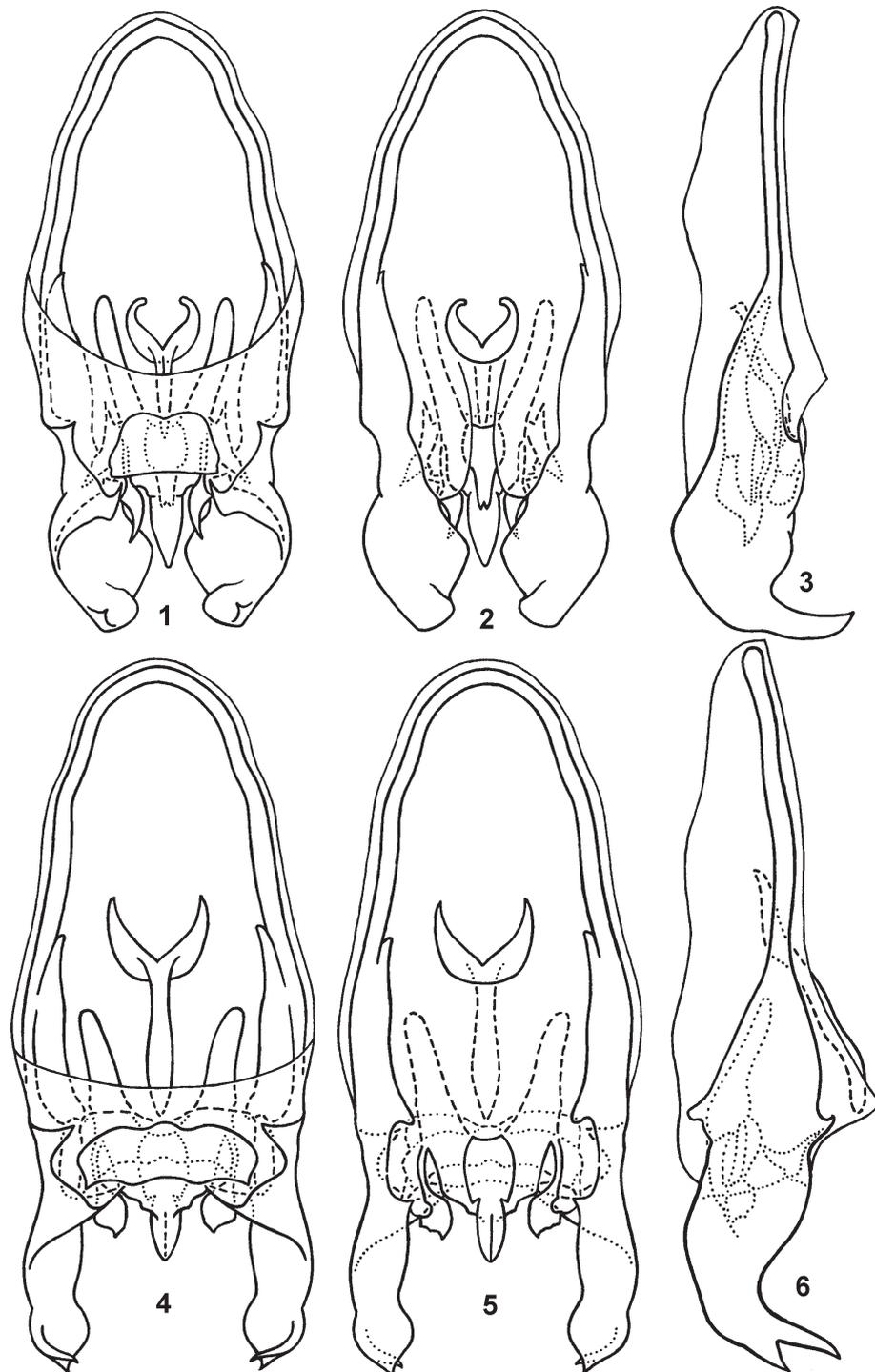
**Comparison.** The new species is clearly distinguished from all known species of this subgenus by the characteristic shape of hind epiphallic processes.

***Trellius (Protrellius) kerinci* sp. n.**  
(Figs IV: 4-6)

**Holotype.** ♂, **Indonesia, Sumatra, prov. Jambi**, 35 km N of Sungaipenuh, National Park Kerinci-Seblat, Kerinci Mt., 1500-2000 m, primary forest, on leaves of tree near brook, at night, 18-22.XI.1999, A. Gorochov (ZIAS).

**Paratype.** 1 ♂, with same data as in holotype (ZIAS).

**Description. Male (holotype).** Very similar to *T. aequatorialis*, but differs in following characters: coloration somewhat darker (upper part of head and pronotum almost entirely dark brown;



**Figs IV (1-6).** *Trellius* Gor., male. **1-3.** *T. aequatorialis* sp. n. (holotype); **4-6.** *T. kerinci* sp. n. (holotype). Genitalia from above (1, 4), from below (2, 5), and from side (3, 6).

other parts of body as in darker specimen of this species, but with yellowish stripe on *R-M* area of tegmina; tegmina with slightly shorter apical area [more or less as in *T. perbonus* (see Gorochov, 1999: Fig. 133)]; hind wings shorter (slightly longer than tegmina); genitalia with hind epiphallallic processes distinctly narrower and clearly bifurcated at apex, median epiphallallic sclerite distinctly wider, ectoparameres wider and less hooked, endoparameral apodemes shorter, and apodeme of mold of spermatophore attachment plate longer (Figs IV: 4-6).

Variation. Paratype without any yellowish stripe on tegmina.

Female unknown.

Length (mm). Body 14-17; body with wings 26-27; pronotum 3.1-3.2; tegmina 20-21; hind femora 13.5-14.

*Comparison.* The differences between *T. kerinci* and *T. aequatorialis* are listed above. From all other species of this subgenus, *T. kerinci* differs in the hind epiphallallic processes clearly bifurcated at the apex.

#### Subgenus **Diatrellius** subgen. n.

*Type species:* *Trellius abbreviatus* sp. n.

*Diagnosis.* This subgenus distinguished from all other subgenera of *Trellius* by very short hind epiphallallic processes covered with numerous small denticles near apex (Figs V: 1, 3). Additionally, it differs from *Trellius* s. str. and *Neotrellius* in the rather large guiding rod, from *Protrellius*, *Zatrellius* and *Vescelotrellius* in the strongly reduced (possibly, absent) ectoparameres, and from two latter subgenera in the much shorter guiding rod (Figs V: 1-3).

*Included species.* Type species only.

#### **Trellius (Diatrellius) abbreviatus** sp. n. (Figs V: 1-3; VI: 1-4)

*Holotype.* ♂, **Thailand**, prov. *Nakhon Ratchasima*, env. of National Park Khao Yai, 500-1000 m, primary forest, on leaf of bush, at night, 26.X-4.XI.2000 (collected as nymph, imago reared I.2001), A. Gorochov & L. Anisyutkin (ZIAS).

*Paratypes.* 7 ♂, 4 ♀, with same data as in holotype (all collected as nymphs, imagines reared I-III.2001) (ZIAS).

*Description.* *Male* (holotype). Size somewhat smaller than in all other congeners. Head brown with dark brown eyes and dorsal part of rostrum, light brown (almost yellowish) ocelli, mouthparts, palpi, antennae, antennal cavities, rings around them, narrow median stripe from rostral apex to clypeus, large spots under and behind eyes; pronotum almost uniformly dark brown; tegmina with rather light, greyish brown lateral parts and dorsal part of upper tegmen; distal parts of hind wings darkened, brownish grey; legs dis-

tinctly spotted; remainder of thorax and abdomen light brown with darkish anal plate. Rostrum between antennal cavities hardly wider than scape; ocelli small and round. Tegmina distinctly smaller than in all other congeners, with comparatively short apical area and venation as in Fig. VI: 1; hind wings hardly protruding behind tegmina. Inner and outer tympana of fore legs oval, medium-sized (almost equal); hind tibiae with rather short articulated spines (longest of them much shorter than longest of hind tibial spurs). Anal and genital plates similar to those of *Protrellius* (Figs VI: 2-4); genitalia as in Figs V: 1-3.

Variation. Sometimes coloration slightly lighter with almost indistinct light brown spots on pronotal disc and with light anal plate.

*Female.* Similar to male in general appearance, but tegmina distinctly shorter, extending slightly behind abdominal apex and with rather regular venation of dorsal part (9-10 more or less oblique, almost parallel longitudinal veins and rather sparse crossveins); hind wing distinctly protruding behind tegmina. Ovipositor comparatively short, much shorter than hind femora, with drilling apex typical of this genus.

Length (mm). Body: ♂ 15-17, ♀ 14-15.5; body with wings: ♂ 18-21, ♀ 18.5-20; pronotum: ♂ 2.9-3.2, ♀ 3-3.2; tegmina: ♂ 14-15, ♀ 12.5-13.5; hind femora: ♂ 11.5-13, ♀ 11.5-12.5; ovipositor 6-6.5.

#### Subgenus **Zatrellius** Gorochov, 1992

*Type species:* *Trellius communis* Gorochov, 1992.

*Included species.* Type species (Indochina: from Central Malacca to Western Cambodia) and *T. andamanensis* sp. n.

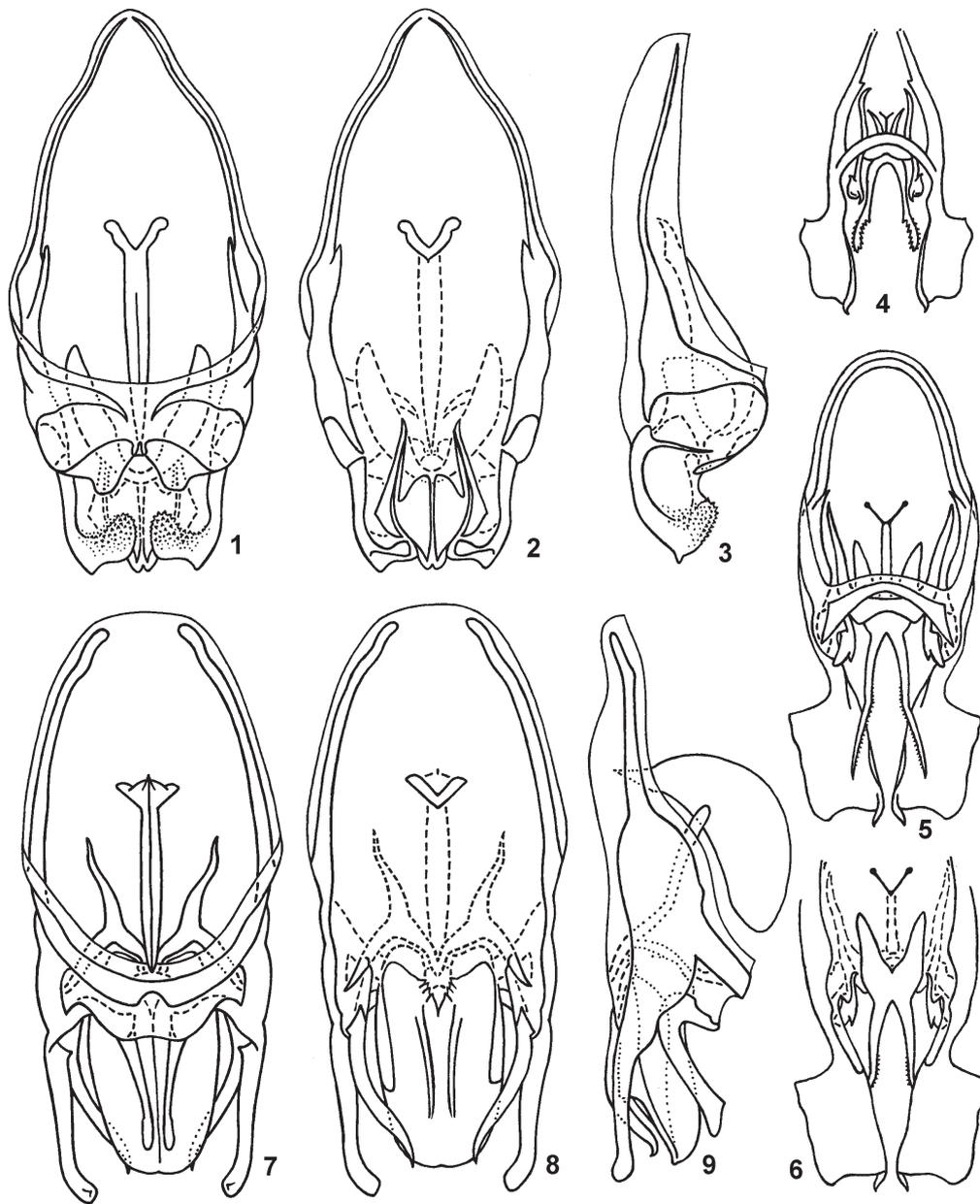
#### **Trellius (Zatrellius) andamanensis** sp. n. (Fig. V: 4)

= *Heterotrypus pictus* sensu Bhowmik, 1969.

*Holotype.* ♂, **India**, *Andaman Is.*, "South Andaman, Mt. Harrier Range, Mannarghat (Alt. 80 ft., Lat. 11.44, Long. 92.44)", 26.III.1964, B. Lamba (ZSIC) [identified by Bhowmik as *H. pictus* Chop. known only from Borneo and belonging to the genus *Vescelia*].

*Paratype.* 1 ♂, with same data as in holotype (ZSIC).

*Description* [based on data by Bhowmik (1969)]. *Male* (holotype). Similar to *T. communis* (see description in Gorochov, 1999), but clearly distinguished from this species by shape of genital plate and structure of genitalia: genital plate with almost angular apex (in *T. communis*, apex of this plate clearly rounded); guiding rod with paired distal processes distinctly shorter, extending to middle part of widened distal lateral lobes of epiphallus (in *T. communis*, these processes



**Figs V (1-9).** *Trellius* Gor. and *Sumatloria* gen. n., male. 1-3, *T. abbreviatus* sp. n. (holotype); 4, *T. andamanensis* sp. n. (Bhowmik, 1969: Fig. 17); 5, 6, *T. communis* Gor. (holotype); 7-9, *S. minima* sp. n. Genitalia from above (1, 4, 5, 7), from below (2, 8), and from side (3, 9); genitalia without proximal part, from below (6).

extending to distal part of mentioned lobes of epiphallus); distal parts of above-mentioned processes of guiding rod slightly widened and supplied with rather strong denticles (in *T. communis*, these parts very narrow and with smaller

denticles); mold of spermatophore attachment plate distinctly shorter, and shape of ectoparameres somewhat different from that of *T. communis* (Figs V: 4-6).

Female unknown.

*Comparison.* The differences between *T. andamanensis* and *T. communis* are given above.

#### Genus **Sumatloria** gen. n.

*Type species:* *Sumatloria minima* sp. n.

*Diagnosis.* Tympanal organ with outer and inner tympana open, oval, not large. Male genitalia distinguished from those in other genera of Phaloriini by following characters: from *Phaloria* and *Strophiola*, by ectoparameres fused with each other; from *Vescelia* and *Pseudotrignidium*, by presence of two pairs of long hind processes of epiphallus; from *Trellius* and *Ceyloria*, by epiphallus not divided into two or larger number of isolated sclerites; from *Phaloria* and *Ceyloria*, by ectoparameres long, narrow and articulated; from *Vescelia* and *Strophiola*, by epiphallus partly membranous and large apodeme of mold of spermatophore attachment plate; from *Pseudotrignidium*, by wide guiding rod; from *Trellius*, by medial hind processes of epiphallus distinctly longer (Figs V: 7-9). From *Tremellia*, new genus differs in apical part of ovipositor more widened and supplied with not numerous, large teeth (Fig. VI: 9, 10).

*Included species.* Type species and, possibly, *Heterotrypus testaceus* Chopard, 1925 (from an island near northern Sumatra).

#### **Sumatloria minima** sp. n. (Figs V: 7-9; VI: 5-10)

*Holotype.* ♂, **Indonesia**, *Sumatra, prov. Jambi*, 35 km N of Sungaipenuh, env. of National Park Kerinci-Seblat, Kerinci Mt., 1500-2000 m, primary forest, on large leaf near brook, at night, 18-22.XI.1999, A. Gorochov (ZIAS).

*Paratype.* ♀, with same data as in holotype (ZIAS) [damaged during ecdysis to imago].

*Description. Male* (holotype). Size small. Head with narrow rostrum (scape 1.5 times as wide as rostrum between antennal cavities); its coloration yellowish with dark brown pattern: four longitudinal stripes on vertex (fused with each other near antennal cavities and rostral apex, embracing brownish ocelli; each of medial stripes including a small yellowish spot), a pair of vertical lines from rostral apex to clypeus, a pair of narrow and almost vertical stripes under medial edges of eyes, a large spot behind eyes and small spots on genae. Pronotum slightly narrowing towards head, dark brown with yellowish spots on disc and longitudinal stripe near the middle of lateral lobes. Tegmina rather small, extending slightly posterior to abdominal apex, with short apical area and single crossvein in mirror (Fig. VI: 5); coloration of tegmina yellowish, with not numerous slight brownish spots and several dark brown veins near anal edge of tegmina; hind wings shorter than tegmina. Legs spotted; outer

tympana somewhat smaller than inner one; spines of hind tibiae comparatively short, much shorter than longest of hind tibial spurs. Ventral part of thorax brown; remainder of thorax yellowish. Abdomen yellowish with feebly marked darkenings; anal plate simple (Fig. VI: 6); genital plate elongate, with distal median concavity on ventral surface and with apical part narrowly rounded and curved upwards (Figs VI: 7, 8); genitalia (Figs V: 7-9) rather similar to those of *S.?* *testacea*, but hind medial processes of epiphallus straight and longer, guiding rod distinctly wider, and apical part of ectoparameres somewhat narrower.

*Female.* Similar to male in general appearance, but dark areas of body slightly larger and wings noticeably shorter. Tegmina with three longitudinal veins in dorsal part (lateral vein with 2-3 rather short branches in apical area) and sparse irregular crossveins. Proximal part of abdomen missing; genital plate narrowing towards apex, with a small apical notch; ovipositor rather long, with apical part as in Figs VI: 9, 10.

Length (mm). Body: ♂ 9.3; body with wings: ♂ 9.5, ♀ 8; pronotum: ♂ 1.7, ♀ 1.8; tegmina: ♂ 6.4, ♀ 5.4; hind femora: ♂ 9.2, ♀ 9.5; ovipositor 5.

*Comparison.* The new species is rather similar to *S.?* *testacea* in the structure of the male genitalia (the differences between their male genitalia are listed above), but *S. minima* is readily distinguished by the more spotted coloration and much smaller wings (with strongly reduced apical area of the male tegmina and a single crossvein in their mirror).

#### Genus **Vescelia** Stål, 1877

*Type species:* *Vescelia infumata* Stål, 1877.

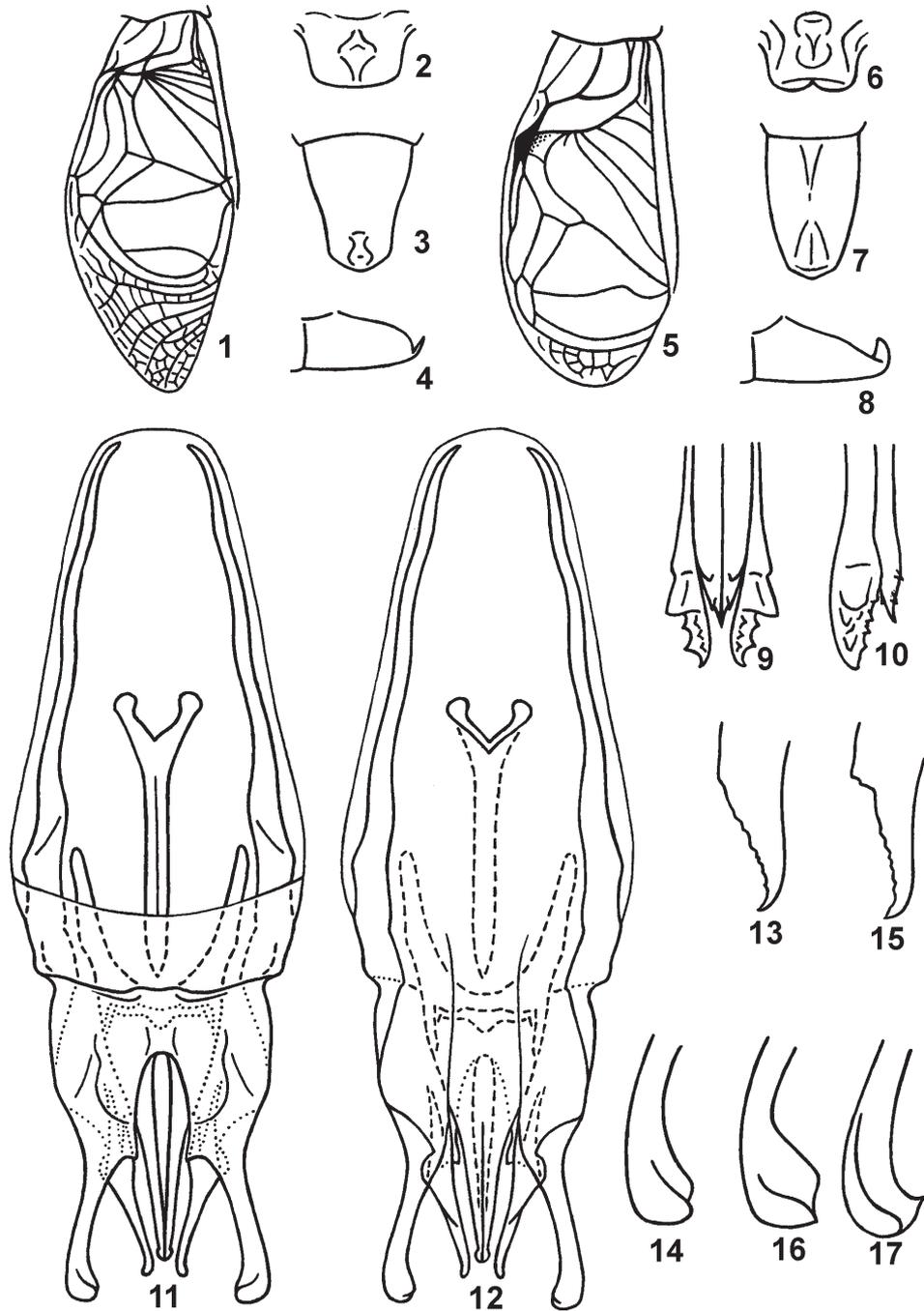
*Composition.* This genus includes three species groups distinguished from each other by the details of the male genitalia: (1) *Heterotrypus pictus* Chopard, 1931 (Borneo), *H. variegatus* Chopard, 1937 (Philippines), *H. pieli* Chopard, 1939 (with 3 subspecies considered below), (2) *H. fraterculus* Chopard, 1937 (Philippines), (3) *H. moorei* Chopard, 1940 (Borneo). The position of the type species is unclear as it is known from a single female from Philippines.

#### **Vescelia pieli vietii** subsp. n. (Figs VI: 11-14)

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

*Paratypes. Vietnam:* 1 ♂, 1 ♀, with same data as in holotype (ZIAS); 3 ♂, 3 ♀, *prov. Quang Binh*, Nature Reserve Phong Nha, 300 m, primary forest, 3-19.VII.2003, N. Orlov (ZIAS).

*Description. Male* (holotype). Head light brown with numerous dark brown stripes and spots;



**Figs VI (1-17).** *Trellius* Gor., *Sumatoria* gen. n., and *Vescelia* Stål. **1-4,** *T. abbreviatus* sp. n. (holotype); **5-10,** *S. minima* sp. n.; **11-14,** *V. pieli vietii* subsp. n. (holotype); **15, 16,** *V. pieli ryukyuensis* (Oshiro); **17,** *V. pieli pieli* (Chop.) (from Chopard, 1939: Fig. 1). Dorsal part of male tegmen (1, 5); male anal (2, 6) and genital (3, 4, 7, 8) plates from above (2, 6), from below (3, 7), and from side (4, 8); apex of ovipositor from below (9) and from side (10); male genitalia from above (11) and from below (12); ectoparamere without basal part, from side (13, 15); apex of left hind epiphallallic process from above (14, 16, 17).

antennae and palpi light brown, but 2nd antennal segment brown and medial part of scape with feebly marked darkish spots. Pronotum dark brown with light brown longitudinal spot on middle part of lateral lobes (in their anterior two-thirds) and few small, scarcely distinct spots on posterior half of disc. Tegmina light brown with venation somewhat darker; tegminal dorsal part similar to that pictured by Oshiro (1985: Figs 1, 2), but with less curved medial part of proximal crossvein in mirror; hind wings somewhat shorter than tegmina. Legs spotted; spines of hind tibiae not very long, much shorter than longest hind tibial spur. Anal plate with widely rounded apex and longitudinal concavity on dorsal surface; genital plate similar to that in Figs VI: 3, 4, but without small distinct concavity near apex; genitalia as in Figs VI: 11-14.

Variation. Anterior half of pronotal disc sometimes with a pair of small lightish spots.

*Female*. Similar to male in general appearance, but most part of pronotal disc light brown, dorsal part of tegmina with five longitudinal veins (four medial ones slightly curved; lateral one with 5-6 oblique branches) and dense (rather regular) transverse venation, and hind wings slightly protruding behind tegmina. Genital plate comparatively short, narrowing towards apex, with rather wide and round apical notch; ovipositor typical of this genus.

Length (mm). Body: ♂ 13.5-14, ♀ 13; body with wings: ♂ 19.5-20.5, ♀ 20; pronotum: ♂ 2.9-3, ♀ 3.3; tegmina: ♂ 15-16, ♀ 14.5; hind femora: ♂ 13-13.5, ♀ 14.5; ovipositor 7.

*Comparison*. This subspecies differs from the Chinese subspecies *V. pieli pieli* in the male tegmina distinctly shorter and the apex of hind epiphallallic processes more or less rounded (Fig. VI: 14) (in the nominotypical subspecies, this apex has an acute medial projection, see Fig. VI: 17). The differences from the third subspecies of this species are listed below.

***Vescelia pieli ryukyuensis*** (Oshiro, 1985), stat. n. (Figs VI: 15, 16)

= *Phaloria ryukyuensis* Oshiro, 1985.

*Material examined*. **Japan**: 3 ♂, *Ryukyu Is.*, Iriomote I., forest, at night, VII.2001, N. Orlov (ZIAS).

*Note*. *V. ryukyuensis* is very close to *V. pieli pieli* and *V. pieli vietii*; I consider the distinctive features are of subspecific level only, therefore the rank of *V. ryukyuensis* is lowered to subspecies. *V. pieli ryukyuensis* is distinguished from *V. pieli vietii* by the strongly curved medial part of proximal crossvein in the male tegminal mirror, the narrower middle part of the ectoparameres

(as a result of presence of a sloping notch at their lower edge) (Figs VI: 13, 15), and the larger apical widening of hind epiphallallic processes (Figs VI: 14, 16). From *V. pieli pieli*, this subspecies differs in the shape of the above-mentioned apical widening (Figs VI: 16, 17).

#### Acknowledgements

For the loan of the material for this study, I am grateful to Dr. A. Kaltenbach (NHMW), Mrs. J. Marshall and the late Dr. G.B. Popov (BMNH).

#### References

- Bhowmik, H.K.** 1969. Studies on Indian crickets (Orthoptera: Insecta), part 1. *Zool. Anz.*, **182**(1/2): 143-152.
- Bhowmik, H.K.** 1977. Studies on Indian crickets (Orthoptera: Insecta) with descriptions of two new species. *Rec. zool. Surv. India*, **73**: 23-39.
- Brunner von Wattenwyl, C.** 1873. Dispositio generum Gryllodeorum secundum. *Mitt. Schweiz. entomol. Ges.*, **4**(4): 164-170.
- Chopard, L.** 1935. On a collection of Gryllidae from India made by Mr. B.M. Fletcher. *Ann. Mag. natur. Hist. (Ser. 10)*, **16**: 284-296.
- Chopard, L.** 1939. Note sur quelques Gryllides de la région orientale. *Notes entomol. Chinoise*, **6**(3): 77-80.
- Chopard, L.** 1968. Gryllides. *Orthopterorum Catalogus*, **12**: 213-500. s'Gravenhage.
- Gorochov, A.V.** 1985. On the fauna of crickets of the subfamilies Itarinae, Podoscirtinae and Nemobiinae (Orthoptera, Gryllidae) from Eastern Indochina. In: *Nasekomye Vietnam* [Insects of Vietnam]: 17-25. Moscow. (In Russian).
- Gorochov, A.V.** 1986. System and morphological evolution of crickets from the family Gryllidae (Orthoptera) with description of new taxa. *Communication 2. Zool. Zh.*, **65**(6): 851-858. (In Russian).
- Gorochov, A.V.** 1995. System and evolution of the suborder Ensifera (Orthoptera). Part 2. *Trudy Zool. Inst. Ross. Akad. Nauk*, **260**: 1-214. (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 2. *Zoosyst. Ross.*, **5**(1): 29-90.
- Gorochov, A.V.** 1999. New and little-known Phalorinae (Orthoptera: Gryllidae). *Zoosyst. Ross.*, **8**(1): 27-60.
- Gorochov, A.V.** 2001. Preliminary notes on the history of South American Ensifera (Orthoptera). *Acta geol. Leopoldensia*, **24**(52/53): 81-86.
- Kirby, W.F.** 1906. Orthoptera Saltatoria. Part 1. *A synonymic catalogue of the Orthoptera*, **2**. London. 562 p.
- Otte, D. & Alexander, R.D.** 1983. *The Australian crickets (Orthoptera: Gryllidae)*. Philadelphia. 477 p.
- Otte, D.** 1994. *Orthoptera species file 1. Crickets (Grylloidea). A systematic catalog*. Philadelphia. 120 p.
- Oshiro, Y.** 1985. A new species of *Phaloria* (Orthoptera, Gryllidae) from the Ryukyu Islands. *Kontyû*, **53**(1): 138-142.
- Saussure, H.** 1877. Gryllides. *Mém. Soc. Phys. Hist. natur. Genève*, **25**(1): 1-352.
- Yin, H.S.** 1998. Description of a new species of *Homoeogryllus* (Orthoptera: Grylloidea: Phalangopsidae). *Entomotaxonomia*, **20**(2): 111-114. (In Chinese).

Received 2 August 2003