

New Genera and New Species of the Family Dictyopharidae (Homoptera), with Notes on the Systematics of the Subfamily Dictyopharinae

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Abstract—14 new genera and 17 new species of the subfamily Dictyopharinae are described from the tropical and southern subtropical regions, partly based on the previously described species lacking recent attribution. In addition, new species of the genera *Macronaso* Synave (2) and *Arjuna* Muir (1) are described. The rank, limits, and systematic position of the tribe Aluntiini (formerly a subfamily of the Fulgoridae) are revised, the tribes Taosini and Lappidini are downgraded to subtribes of the Nersiini. Redescription of the genus *Putala* Mel. is given based on the lectotype (designated in this paper) of the type species, the genus is treated as monotypical. *Dictyophara timorina* Lallemand is transferred to *Anasta* gen. n., thus a new combination is formed: *A. timorina* (Lall.), ridge. n.

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The taxonomy of the family Dictyopharidae of the tropical and southern subtropical areas of the World has been insufficiently studied. For particular, its generic classification has not been entirely developed. A significant number of species described in the 19th, and the first half of the 20th century still remain in the artificial genus *Dictyophara*, some species are also formally described in other unclearly understood genera. The current concept of the volume of the genus in Dictyopharidae was substantiated in the middle of the 20th century by R.G. Fennah, who reconsidered the generic composition of the faunas of the New World and Africa. The fauna of the Oriental Region is least known. After half a century, Fennah's concept requires specification and addition.

The present study is mainly based on examination of the large exotic collections of the Museum National d'Histoire Naturelle, Paris, France (MNHN); Natural History Museum, London, UK (BMNH); Australian National Insect Collection, Canberra, Australia (ANIC); Australian Museum, Sydney, Australia (AMSA); National Insect Collection, Pretoria, Republic of South Africa (NICP); Natal Museum, Pietermaritzburg, Republic of South Africa (NMSA); Institut Royal des Sciences Naturelle de Belgique, Bruxelles (ISNB); Hungarian Natural History Museum, Budapest, Hungary (HNHM); National Museum of Wales, Cardiff, UK (NMWC); and Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia (ZIN).

The genera described here are only part of a great number of the new genera, which must be described for ordering the classification of the family and, primarily, the subfamily Dictyopharinae.

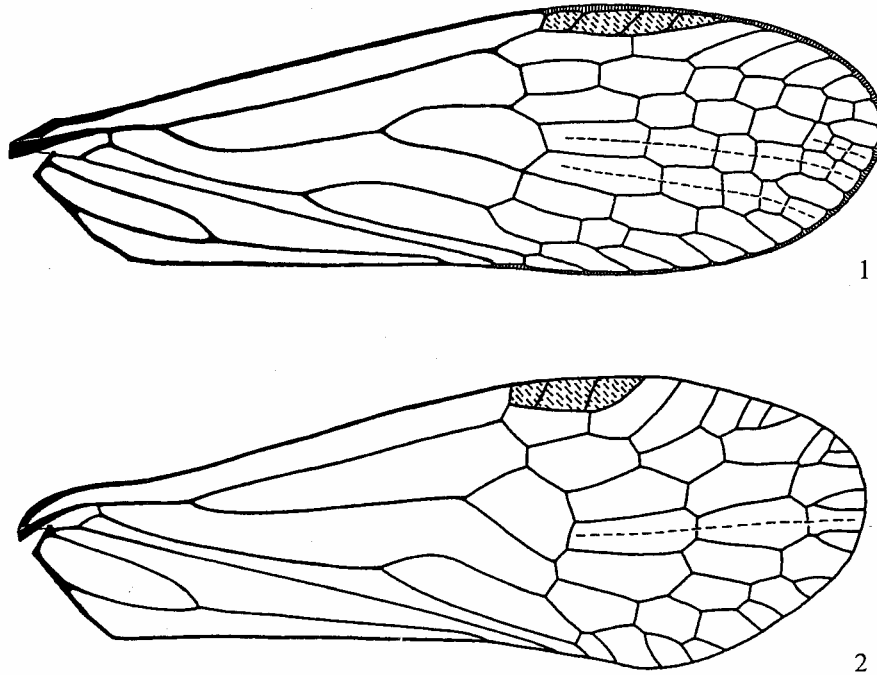
The depositories of the types of the species described here are indicated in the list of the material.

Tribe **NERSIINI** Emeljanov, 1983

Taosina Emeljanov, 1983, stat. n. (Taosini).

Lappidina Emeljanov, 1983, stat. n. (Lappidini).

The division of the subfamily Dictyopharinae into tribes, proposed by me earlier, is imperfect and requires further development with new characters taken into consideration and with the generic composition covered to a greater extent. At the same time, considerable part of the genera are known only from single type specimens and are not presented in the collections by both sexes. Now I think that the rank of the tribes Taosini and Lappidini is overestimated, relative to the tribe Nersiini. All the three taxa are characterized by a great length of the common stem of *ScRM* (Figs. 1, 2, 10, 14) and by the presence of more than one longitudinal fold on the membrane (Figs. 1, 14); the second character can be secondarily lost with the thickening and shortening of the wings. In the South American fauna, the genus *Dorimargus* Mel. and apparently also *Eudictya* Mel. belong to the tribe Hastini known ear-



Figs. 1, 2. Fore wing: (1) *Hyalodictyon* cf. *nodivenum* Walk., (2) *Crocodictya norma* gen. et sp. n.

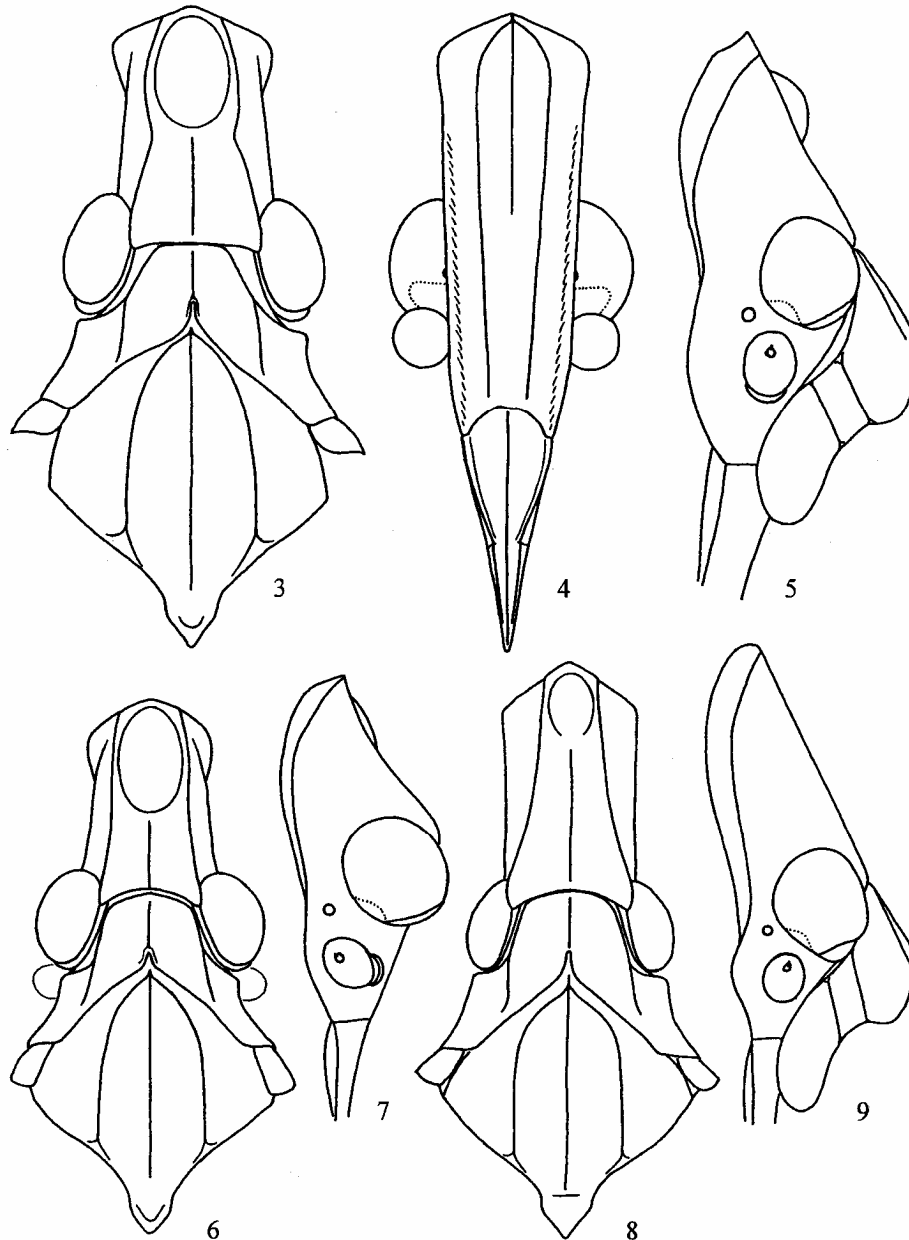
lier only from the Australian Region. *Dorimargus* is characterized by the filmy edging of the outer lobes of the third valvulae of the ovipositor (gonoplacs) and the high digitate socles of ventral setae on the female anal tube.

Genus **CROCODICTYA** Emeljanov, gen. n.

Type species *Crocodictya norma* sp. n.

Description. Head approximately prismatic, transversely truncate at apex similarly to that in the genus *Hyalodictyon* Fenn., but basal part of metope running nearly in parallel to coryphe, and metope convexly curved near apex of head; sides of metope visible in dorsal view as those in *Hyalodictyon*, parallel as far as truncate apex. Coryphe with short convex lateral margins between eyes, slightly narrowed in front of eyes to half length of cephalic process, then parallel-sided, 0.66 times as wide in anterior part as at base. Apical margin of coryphe roundly obtuse-angled, weakly projecting. Posterior emargination of coryphe deep, extending forward beyond middle of eyes. Median carina of coryphe developed only in posterior half, distinct; its anterior half gently longitudinally ovaly raised in form of cupola; borders of swelling distinctly outlined. Apical callus in form of carina, length of carina comparable with width of areas of metope. Metope parallel-sided or slightly widened toward

apex. Intermediate carinae of metope subparallel, lancet-like converging at apex; lateral and middle areas of subequal width; median carina poorly developed; subantennal lobes of metope deflected forward; in front view, metope not widened opposite antennae. Clypeus arcuately running in metope. Anteclypeus acute-angularly truncate at apex in lateral view. Antennae usual, 2nd segment globose. Smooth arcuate callus developed behind eyes. Penultimate segment of rostrum distinctly longer than ultimate one, reaching apices of hind coxae; ultimate segment reaching approximately middle of abdomen. Pronotum with wide disc and rather strongly inclined lateral lobes, 2/3 of length of disc projecting forward beyond anterior margins of lateral lobes. Posterior margin of pronotum with deep, slightly obtuse-angled emargination deeply running apically into disc in form of incision. Lateral carinae of disc sharp nearly as far as posterior margin, but not reaching it, curved so that convexities pointing sideward; median carina of disc sharp; anterior margin of disc about half as wide as posterior one. Lateral and collateral carinae sharp, with anterior ends projecting in form of obtuse tubercles; lateral carinae (sides of pronotum) weakly diverging backward. Mesoscutum nearly square, but anterior margin curved at obtuse (close to right) angle, and apex of posterior margin slightly attenuate and rounded. Carinae of mesonotal disc sharp. Lateral carinae lancet-like converging ante-



Figs. 3–9. *Crocodictya* gen. n., anterior part of body: (3–5) *C. dira* sp. n. [(3) anterior part of body, dorsal view; (4) face; (5) head and pronotum, lateral view]; (6, 7) *C. norma* sp. n. [(6) anterior part of body, dorsal view; (7) head, lateral view]; (8, 9) *C. acerba* sp. n. [(8) anterior part of body, dorsal view; (9) head and pronotum, lateral view].

riorly, parallel posteriorly. Tegulae without carina, but roundly curved dorsally, similarly to those in *Hyalodictyon*. Fore wing oblong, distinctly widened toward nodal line; costal margin gently concave, except for short convex basal area. *R* and *M* forming common stem longer than basal cell. *ScR* branching for the first time at nodal level, *M*, nearly before nodal line, its branches widely diverging and forming characteristic short wide oblique discal cell separated distally by nodal cross-veins and bends of *MA* and *MP*. Mem-

brane with 3 rows of cross-veins, including nodal row. *CuA* branching basal to *M*, but prenodal cell *CuA* also rather short. Claval veins joined in basal third of clavus. Nearly all longitudinal veins furcating before margin of wing near last cross-veins. Longitudinal fold present between branches of *M*.

Legs rather fine, moderately slender; hind tibia with 4 lateral teeth, including knee-tooth. 1st and 2nd segments of hind tarsus weakly widened toward apices,

with small teeth bearing platellae; marginal teeth large, without platellae; on 2nd segment, teeth bearing platellae nearly lost, but platellae remaining long; structure of tarsus as though being transitional to type of so-called higher Fulgoroidea.

The genus is similar to the genera *Hyalodictyon* Fenn. and *Paralappida* Mel., but differs from them in the body proportions: large wide head, rather narrow pronotum, slightly reduced fore wings folded more sharper roof-shaped. In habitus, *Crocodyctya* is similar to the genus *Pelitropis* V. D. of the family Tropiduchidae. *Crocodyctya* differs from the genus *Hyalodictyon*, and also from all the other genera, in the coryphe forming a distinct cupola-shaped swelling in the anterior part (*Lappida ferocula* Distant has similar formations, but they are situated at the apex of the long cephalic process) and also in the metope strongly convex apically and parallel to the coryphe in middle part (in *Hyalodictyon*, the metope is entirely flat and cuneiformly converging to the coryphe in lateral view). On the fore wing of *Crocodyctya*, the first branching of *ScR* is situated closely to the pterostigma, the cell in the fork of *M* (discal) is wide and short, and the membrane has only two rows of cross-veins, except for the nodal one. In *Hyalodictyon* (Fig. 1), the branching of *ScR* is distant from the pterostigma, the cell in the fork of *M* is elongate, and rows of cross-veins are absent; only one entire longitudinal fold (between branches of *MP*) is developed, and the veins in the adjoining areas are situated alternately, similarly to architectural rustics. The new genus has only one fold on the fore wing, between the branches of *M* (basal), whereas *Hyalodictyon* has two or three folds on the fore wing. The new genus is similar to *Paralappida* in the structure of the pronotum with a deep posteromedial incision and in the general shape of the fore wing, but differs mostly in the characters listed above for differentiation from *Hyalodictyon*.

Crocodyctya acerba Emeljanov, sp. n. (Figs. 8, 9)

Description. Head more elongate, coryphe narrower in anterior part. Swelling in apical part of coryphe weak, longitudinally elongate, without distinct border posteriorly. Anterior margin of head obtuse-angled but projecting more sharply than that in two the other species of the genus.

Coloration mainly brownish gray. Ridges of carinae of coryphe slightly paler than rest of surface; middle part of surface of coryphe also vaguely paler. Preocular areas indistinctly paler in middle part (far from

carinae). Metope, including carinae, mainly dark brown; lateral areas paler at apex, with 2 rows of pale spots on rest of surface at place of larval sensory pits. Inner lobes with pale band near middle and with pale stripes along outer margins, joined at apex behind band and bordering brown elongate longitudinal spot. Clypeus brown to pale brown, to dark brown in places. Rostrum pale, with darkened apex. Genae dark brown; antennae brown, with darker sensilla. Pronotum brown, with paler carinae; lateral parts with speckled pattern formed by vague pale spots in places. Mesonotum brown, with indistinct pattern formed by longitudinal stripes on disc and by vague spots at sides, apex and posterior ends of lateral carinae also paler. Tegulae pale, with darkened free margins. Fore wing hyaline, only slightly infuscate; veins of corium and clavus reddish brown; veins of membrane dark brown; pterostigma entirely darkened, but with pale "window" (spot) in basal part. Ventral side of body brown, with paler carinae and vague spots; antecoxale of metathorax dark brown. Legs pale brown. Fore femur with several dark spots sharper in middle part; fore tibia darkened at apex, also bearing narrow subbasal band and 2 other bands dividing tibia into 3 subequal parts; fore tarsus pale, apical half of 3rd segment dark brown. Middle leg colored similarly to fore one, but dark spots on femur larger and forming vague bands: two in middle part and two at ends. Hind femur also with few dark spots mainly in middle part and at apex; tibia pale, with dark dorsal spot in middle part; tarsus pale, except for teeth and apical half of 3rd segment.

Female unknown.

Length of body: ♂ 11.4 mm.

Material. Holotype: ♂, Brasil. BA. Travessas, 14°08'13" S, 39°16'39" W. 28.IV.1997. Prato Amarilo, secondary forest, Rec. JR. Santos: HJ Santos [?tes carmo]. Museum Paris [MNHN].

Crocodyctya norma Emeljanov, sp. n. (Figs 2, 6, 7)

Description. Apical part of coryphe forming oval swelling wider than that of *C. acerba* sp. n., about as wide as that of *C. dira* sp. n., but lateral margins of coryphe smoothly bent without break at border of two parts. Oval swelling distinctly, in contrast to that in *C. acerba* sp. n., bounded at all sides.

Coloration mainly brownish gray. Carinae of coryphe pale, probably slightly greenish in living individuals, including middle margin and edging of posterior margin. Preocular area dark brown at sides, pale

brown in middle part immediately from eyes. Metope dark brown, with pale spots at place of larval sensory pits; apex of inner lobes pale, in form of indistinct spot. Pronotum brown, with pale carinae; humeral area frequently entirely pale. Mesonotum brown, with pale carinae; apex of scutellum paler, posterior ends of lateral carinae in form of indistinct pale spots, sides of scutellum with rather smooth irregular pale spot slightly behind tegulae. Tegulae pale in middle part and with darkened free margins. Fore wing hyaline, with brown veins on corium and clavus and dark brown veins on membrane; pterostigma entirely darkened or with "windows" in middle part of some cells. Ventral side of thorax irregularly brown to dark brown, carinae mostly pale. Abdomen dark brown with pale spots ventrally, dorsal pattern probably similar. Fore femur pale, without pattern; fore tibia with 4 bands: 1 subbasal, 1 apical, and 2 medial situated at subequal distance. Middle femur with 2 bands in apical half, bands in basal half similar to those on fore leg. Hind femur almost entirely brown; hind tibia brown in basal third, with vague subapical band and darkened apical teeth; tarsus dark entirely or only at apices of segments.

Length of body: ♂ 11.2 mm, ♀ 11.5–13.6 mm.

Material. Holotype: ♂, Muséum Paris, Colombie 27.XI.1996, G. Lecourt (MNHN). Paratypes: ♀, Curbet-Alice Oyapock, Guyane 8-nov, 1969. Piège lumineux Guyane, Mission Balachowsky-Gruner, Oct-nov., 1969 (MNHN); ♀, Pied Saut Farare, VIII.1979 Museum Paris, Guyane, M. Descamps res. (MNHN).

Crocodyctya dira Emeljanov, sp. n. (Fig. 3–5)

Description. Cupola-shaped swelling of coryphe slightly longer than wide, occupying slightly less than apical half of coryphe; median carina present behind swelling. Lateral carinae behind swelling obtuse-angularly depressed towards each other; coryphe distinctly narrowed there, then slightly widened as far as posterior margin.

Prevailing tone of coloration brownish red, with paler, to yellowish-whitish, spots in places; head and pronotum also with bluish green pattern. Cupola reddish brown; lateral carinae outward from cupola and narrow stripe of coryphe between cupola and anterior carina bluish green; in posterior half, only ridges of lateral carinae greenish; green stripe widened backward running along median carina; basal part of surface of coryphe brownish red at sides of median carina, merging anteriorly with darker coloration of cu-

pola. Preocular and supraocular areas bordered by wide stripe dorsally, anteriorly and ventrally; stripe brownish red dorsally and anteriorly and dark brown ventrally at border with metope; rest of surface, beginning from eyes, green; genae mainly dark brown, greenish along metopal margin opposite and behind antennae. Metope mainly dark brown, including carinae; lateral areas with greenish indistinct spots at place of larval sensory pits; apical part of metope about as long as wide, paler, with transverse brown spot crossing apical carina and with 1 pair of brown spots adjoining intermediate ones slightly posteriorly. Postclypeus and adjoining part of anteclypeus, with pronounced lateral carinae, dark brown; other part yellowish-greenish; rostrum also yellowish-greenish, except for blackened apex. Pronotal disc brownish red, with bluish green carinae. Sides of dorsum also brownish red, except for lateral margins and margins adjoining tegulae, this area with whitish-yellowish spot occupying humeral area. Mesoscutum grayish brown, including carinae, except for narrowly pale anterior part of median carina, small marginal areas behind tegulae, and bluish green apex. Fore wing with hyaline cells and reddish brown veins and cells of pterostigma. Pleurosternal parts of thorax dark brown, with brownish tint. Fore coxa brown to dark brown; femur pale, yellowish-greenish; tibia pale brown, with 4 narrow dark brown bands: 1 at base, 1 at apex, and 2 intermediate dividing tibia into 3 subequal areas; tarsus dark brown. Middle coxa dark in basal half and pale in distal half; femur yellowish-greenish in basal third and at apex, other part with 2 vague dark brown bands separated by paler greenish area; tibia and tarsus similar to those of fore leg. Hind coxa and trochanter brownish; femur irregularly brown to dark brown, with pale brown base; tibia darkened in basal third, bearing vague dark apical band at end of apical quarter; tarsus darkened. Ventral side of abdomen brownish, with pale spots; dorsal side mainly pale brown, greenish in places.

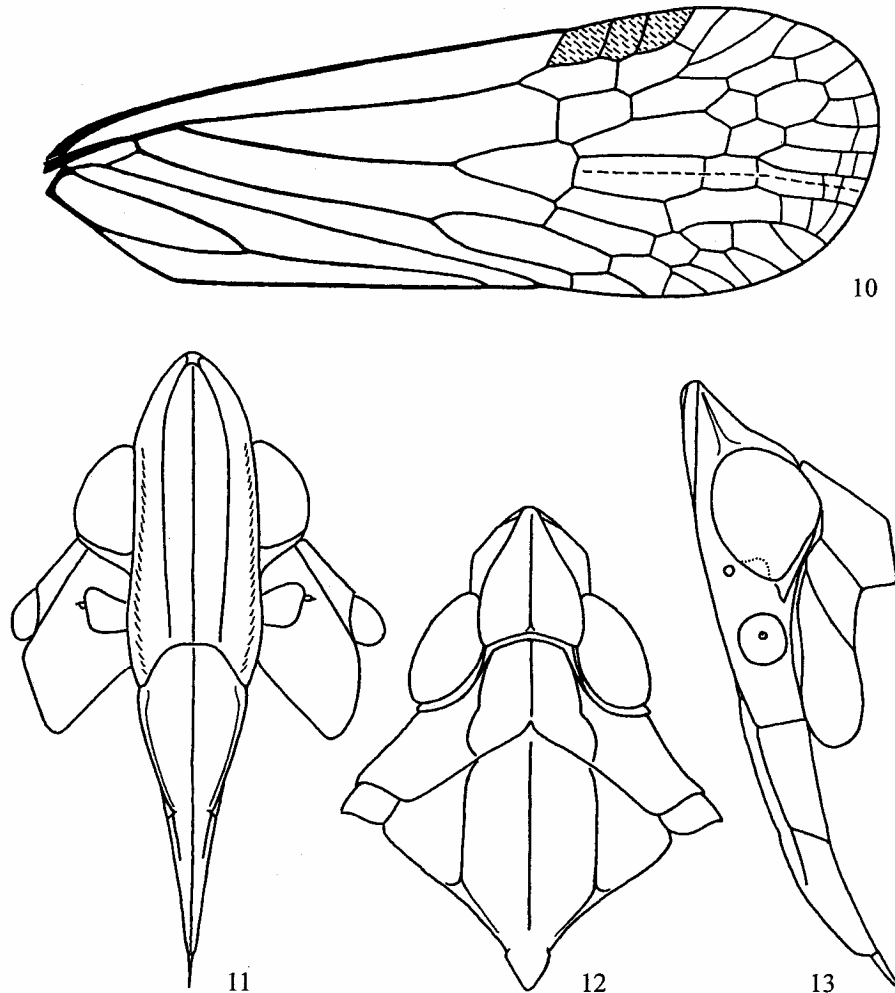
Male unknown.

Length of body: ♀ 13.2 mm.

Material. Holotype: ♀, Guyane Française, Nouveau Chantier, Collection Le Mout. Muséum Paris, Collection Lucien Chopard, 1914 (MNHN).

Genus ***NERSIELLA*** Emeljanov, gen. n.

Type species *Dictyophara haywardi* Lallemand (Figs. 10–13).



Figs. 10–13. *Nersiella haywardi* Lall.: (10) fore wing; (11) head and pronotum, anteroventral view; (12) anterior part of body, dorsal view; (13) head and pronotum, lateral view.

The genus is similar to *Nersia* Stål. in habitus and in most of the external characters.

Description. Slightly more than half of head projecting beyond eyes. Coryphe lancet-shaped, turning into roundly pentagonal; apex narrowly rounded; middle and longitudinal carinae sharp, median carina slightly thickened backward, with 1 pair of weak longitudinal prominences at sides in posterior part. Posterior margin gently concave. Metope about 2.5 times as wide as long, lancet-shaped dorsally, parallel-sided opposite eyes, slightly widened below opposite antennae, gently convex at sides. Clypeal margin gently concave. Intermediate carinae straight about as far as level of upper margins of eyes, slightly diverging upwards, then lancet-like converging toward apex of head; ventrally, lateral areas slightly wider than middle ones; dorsally, lateral carinae nearly half as wide as middle

ones. Apical callus small, subsquare. Weak additional carina extending from eye to apex of head along border of pre- and supraocular areas, this carina well-visible owing to contrasting pale coloration. Coryphe weakly gently concave in lateral view, metope straight. Antennae small, with globose 2nd segment. Postclypeus convex, with sharp carinae. Anteclypeus slightly concave medially in lateral view, its lateral carinae developed only in proximal half. Rostrum long, apex of its penultimate segment reaching apices of hind coxae, ultimate and penultimate segments subequal in length. About half of pronotal disc projecting forward beyond emarginations of anterior margin; disc rounded anteriorly, with sharp lateral and median carinae; lateral carinae reaching obtuse-angularly concave posterior margin. Lateral and collateral carinae sharp, pectoral carinae absent. Mesoscutum with 3 sharp carinae; lateral carinae subparallel, weakly curved so

that convexities pointing outwards. Tegulae with carina. Fore wing of normal consistence, oblong, slightly widened toward apex, regularly rounded apically. *ScR* and *M* forming common stem slightly shorter than arculus. Pterostigma narrow, with 3 or 4 cells; *ScR* branching before stigma. *M* and *CuA* branching on oblique line directed to posterior quarter of clavus, i.e., rather lately. Claval veins joined in anterior third of clavus. Media branching to form characteristic wide cell closed by cross-vein immediately behind bifurcation of its anterior and posterior arms. In distal part of membrane, cross-veins slightly thickened, arranged more closely to one another. Longitudinal line-fold not sharply pronounced, lying behind closing cross-vein of proximal cell of *M* (mentioned above). Legs slender, of medium proportions. Hind tibia with 4 lateral and 8 apical teeth; 1st segment of hind tarsus with 13 teeth, including marginal ones without platellae, 2nd segment with 15 teeth.

Nersiella most clearly differs from the genus *Nersia* in the larger pronotal disc with sharp lateral carinae running as far as the posterior margin, in the more late first branching of the basal veins (*M* and *CuA*), and in the parallel (not converging anteriorly) carinae of the mesoscutum. The general similarity is apparently convergent-parallel.

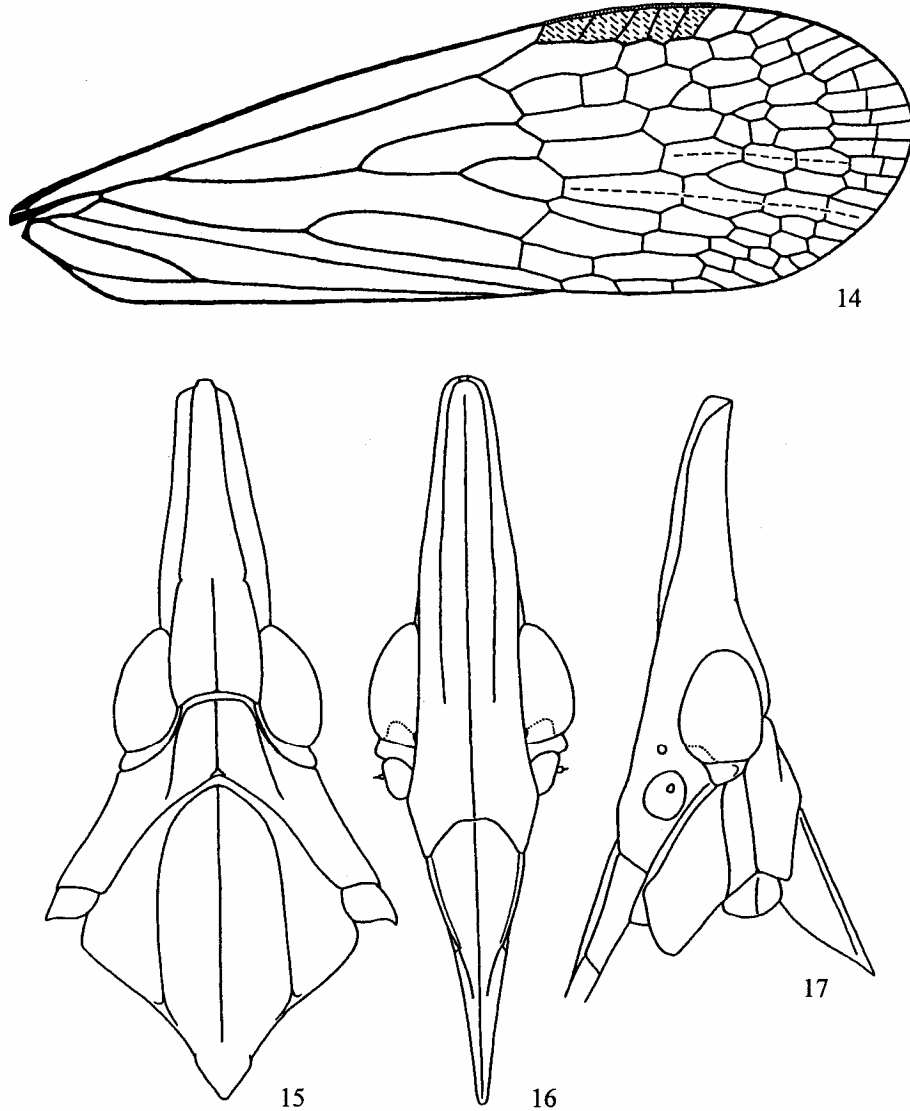
The above description was made from two females of the type species from Brussels. The specimens had no geographical label but Synave's determination "*Dictyophara haywardi* Lallemand" (R. I. Sc. N. B/I. G. 23.285) (ISBN). *D. haywardi* was described from Argentina (Formosa) on the Paraguayan River.

Genus *MALOGAVA* Emeljanov, gen. n.

Type species *Malogava rostrata* sp. n. (Figs. 14–17).

Description. Habitus similar to that of *Rhynchomitra* Fenn. Cephalic process elongately conical, slightly deflected upwards. Coryphe projecting forward by about 3 longitudinal diameters of eye. Lateral margins of coryphe nearly straight, with characteristic angular depression (break) in front of eyes at distance subequal to 2/3 of longitudinal eye diameter; before depression, carinae slightly concave and converging at first slightly more sharply. Apex of coryphe narrow, nearly 0.25 times as wide as base, straightly truncate. Median carina clearly pronounced before break, then only outlined. Metope straight in lateral view; apex of head narrow in lateral view, transversely truncate, this

margin formed by apical callus. In front of eyes, lateral carinae of metope inclined slightly toward coryphe to open intermediate carinae, but running nearly in parallel, smoothly bent only at apex to join margins of coryphe at apical callus. Metope with obtuse-angularly rounded lobes opposite antennae; above, margins of metope running in parallel as far as level slightly above eyes and then cuneiformly converging to narrowly rounded apex. In lower part of metope, intermediate and median carinae developed almost equally; in upper part, intermediate carinae becoming sharper, and middle one weakened. Intermediate carinae rather strongly approximate to median carina at clypeus, then smoothly and weakly diverging, and again converging above eyes. Clypeus with well-developed median carina, anteclypeus with lateral carinae cuneiformly joined near its middle. Antennae small, 2nd segment projecting upward more strongly. Postocular swelling in form of obtuse cone. Rostrum long, penultimate segment nearly reaching apices of hind coxae, length of ultimate segment about 2/3 of that of penultimate segment. Pronotal disc projecting forward beyond postocular depressions by about half of its length; lateral carinae of disc arcuate, distinctly diverging anteriorly, subparallel posteriorly, slightly not reaching posterior margin. Median carina sharp; puncture-shaped depressions at sides of carina not sharp, shifted to posterior margin. Lateral and collateral carinae of pronotum sharp, pectoral carina absent, posterior margin of pronotum with deep obtuse-angled lancet-shaped emargination. Mesoscutum diamond-shaped, nearly square, with 3 sharp carinae; lateral carinae parallel in middle and posterior parts, lancet-like converging in anterior part. Tegulae with clearly pronounced carina. Fore wing slender, widened to membrane; membrane elongate, with asymmetrically rounded margin, apex shifted forward, and posterior part rounded less sharply. *ScR* and *M* originating from basal cell as common stem slightly longer than half length of basal cell. Stigma narrow, consisting of approximately 7 cells, slightly thickened, except for 2 distal cells. Basal longitudinal fold running between branches *MA* and *MP*. Claval veins joined in basal third of clavus. Legs rather slender, fore tibia about 2/5 longer than fore femur. Hind tibia with 4 lateral and 8 apical teeth, apical teeth slightly spread apart. Apex of 1st segment of tarsus with 1 row of 13–15 teeth, apex of 2nd segment with 1 row of 13 teeth; in addition, 1st segment bearing 3 teeth in middle and basally of main row: 2 teeth shifted into 2nd row and 1 tooth, in 3rd row.



Figs. 14–17. *Malogava rostrata* gen. et sp. n.: (14) fore wing; (15) anterior part of body, dorsal view; (16) face; (17) anterior part of body, lateral view.

Ovipositor typical of Dictyopharinae, with wide rounded outer lobes of gonoplasts.

The new genus is closely related to genera (of the tribe Nersiini) with carinate tegulae (*Nersia* Stål, *Trimedia* Fenn., *Retiala* Fenn.), but differs from them in the much longer cuneiform head with the flatly conical postocular swellings and also in the more slender fore leg with the tibia much longer than the femur. This character is shared by the new genus with the unrelated genera *Hydriena* Mel., *Toropa* Mel., *Lappida* A. S., and *Igava* Mel. characterized by the tegulae without carina. In the type of branching of the forewing media (Fig. 14), the new genus is similar to species of the genus *Trimedia*, but differs in the following

features: system of cross-veins on membrane denser (4–5 veins in each area), only one entire fold present (between branches of *MP*), and posterolateral carinae of pronotum clearly pronounced and only slightly not reaching its posterior margin.

***Malogava rostrata* Emeljanov, sp. n. (Figs. 14–17)**

Description. Coloration mainly pale ochre. Median carina of coryphe bluish green. Upper half of preocular area, adjoining coryphe, greenish. Ridges of carinae of metope ochre in posterior half, filiform blackened in apical half; intermediate carinae in front of eyes also filiformly blackened along ridges. Lateral areas of metope greenish-whitish, median areas ochre,

median carina greenish along entire length. Lateral carinae of postclypeus also greenish-whitish, but less bright. Genae whitish-greenish, antennae ochre. Postocular tubercle greenish dorsally, this spot serving as origin of lateral greenish stripe running through lateral carina of pronotum, carina of tegulae, and anterior carina of costal vein. Lateral carinae of pronotum paler, middle and collateral carinae of pronotum very slightly paler. On scutellum, median carina also slightly paler in posterior 2/3. Cells of fore wing hyaline, veins ochre, costal vein narrowly blackened dorsally and ventrally of anterior carina; pterostigma reddish-brownish, not hyaline. Fore tibia with darkened apex and filiformly darkened lower carina, all tarsi slightly darkened. Abdomen ochre dorsally, greenish white ventrally (sternites and genitalia).

Body length: ♂ 13.8–14.2 mm, ♀ 9–17 mm.

Material. Holotype: ♀, “Museum Paris, Minas Geraes, env. de Passa Quatro, bordz,” “du Rio Las Pedras (1000 m d’alt.) E.R. Wagner., 1903” (MNHN). Paratypes: 2 ♂, “Museum Paris, Bresil, Bahia (ex coll. A. David) R. Oberthür., 1903” (MNHN).

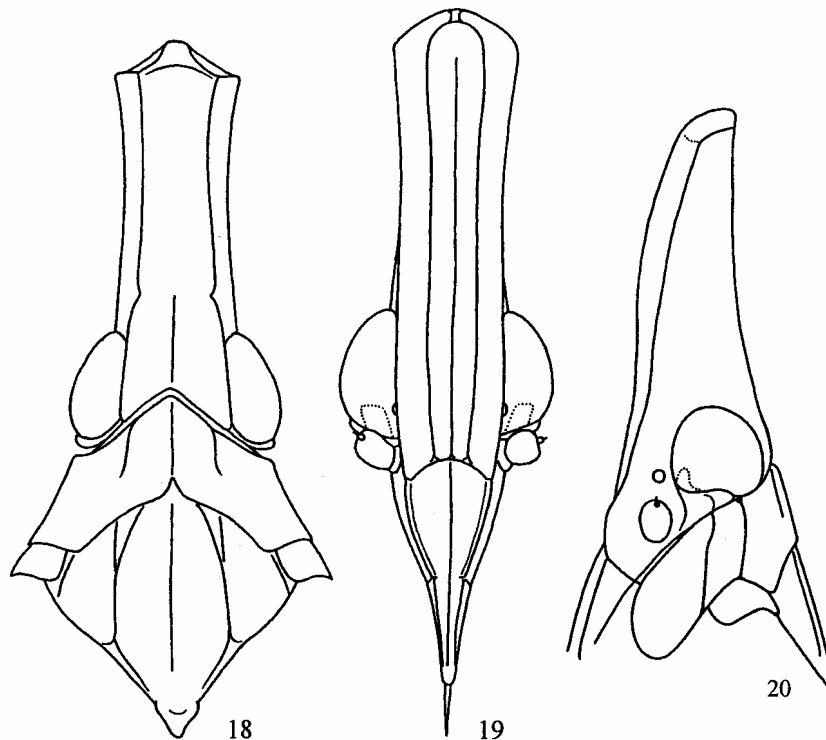
Tribe **HASTINI** Emeljanov

Genus **ARTICRIUS** Emeljanov, gen. n.

Type species *Thanatodictya handschini* Lallemand (Figs. 18–20).

Description. Habitus similar to that of *Chanithus* Kol.. Cephalic process rather thick, relatively short, prismatic, truncate at apex. Coryphe more than 4 times as long as wide, with sharper lateral carinae and sharp median carina between and in front of eyes along half length of process, slightly narrowed forward in this part. Lateral carinae forming characteristic break-bend and becoming less sharp, median carina becoming weak and narrow in this area before obtuse-angled, almost transversely truncate apex. Lateral surfaces of cephalic process at sides of coryphe in form of rather wide stripes (as those in *Hyalodictyon*). Surface of coryphe slightly concave in front of eyes, process slightly ascending. Metope parallel-sided, semicircularly rounded at apex; clypeal margin gently concave; all carinae developed entirely. Intermediate carinae near clypeus situated at equal distance from each other and from sides of metope, weakly diverging about as far as level of upper margins of eyes, and then running in parallel to join in form of semicircle at apex; on process in front of eyes, lateral and middle areas equal

in width, lateral areas slightly deflected at margins. Apical sagittal carina long and sharp, lateral areas of metope widened before it; middle areas of metope curved upward apically and occupying lower part of apex. Metope in lateral view concave opposite anterior margins of eyes and convexly rounded at apex, cephalic process slightly narrowed toward apex (in lateral view). Postclypeus weakly concave, with sharp carinae. Anteclypeus in lateral view slightly concave in middle part, lateral carinae vanishing near its middle in area of concavity. Narrow obtuse-angularly rounded lobes visible opposite antennae (not visible in front view). Antennae small, 2nd segment approximately globose. Postocular prominences slightly swollen dorsally, with darkened depression ventrally. Posterior margin of vertex obtuse-angularly concave. Rostrum rather short, about half of ultimate segment projecting beyond hind coxae; penultimate segment about 1.5 times as long as ultimate one. Pronotum obtuse-angularly roundly projecting forward, sharp depressions behind eyes absent. Median carina of disc sharp and high, lateral carinae of disc in anterior part (anterolaterodiscal carinae) sharply pronounced, arcuately deflected inwards along margin of disc anteriorly, sharply terminating posteriorly, thus, half of length of disc without carinae but with oblique weak keel-shaped elevations, which are not continuations of anterior carinae. Lateral carinae of pronotum present only anteriorly, then vanishing; collateral carinae sharp along entire length. Pectoral carinae absent. Scutellum with 3 longitudinal carinae; lateral carinae bifurcating anteriorly; outer branch weakened at base, running straightly as continuation; inner branch deflected medially, but pronounced more sharply and running continuously. Tegulae without carinae. Fore wing oblong, slightly widened distally, semi-elliptically rounded at apex. Veins *ScR* and *M* forming stem slightly shorter than arculus. First branchings of *M* and *CuA* situated at about one level (on one wing of the paratype, *M* branching earlier than *CuA*; on other wing, otherwise). Stigma widened, with posterior margin angularly receding backward; stigma crossed by several not parallel veins suggesting reticulate venation. Claval veins joined in basal third of clavus, fold present between branching of *MA* and *MP*. In distal part of membrane, cross-veins numerous but regular. Legs moderately short. Hind tibia with 4 lateral teeth, 8 teeth at apex; 1st and 2nd segments with numerous teeth: 17 on 1st segment, 21 on 2nd. Ovipositor with large, elongately trapeziform postvaginal plate nar-



Figs. 18–20. *Articrius handschini* Lall.: (18) anterior part of body, dorsal view; (19) face; (20) anterior part of body, lateral view.

rowed backward. Outer lobes of gonoplacs apparently without appendages, with capitate prominence at base on outer wall; straight elongate elevation running from this prominence basally; other elongate elevation running more dorsally, strongly curved upward and backward, bordering pit above capitulum; elongate elevations gradually weakened and vanishing. Anal tube rather wide, without setae with papillary bases.

The description was made from the paratype: ♀ with label “Burnside [Australia] N. April, 1931./Handschin” (ISNB).

Articrius differs from the genus *Thanatodictya* Kirk. in the following characters: cephalic process wide, truncate apically; intermediate and median metopal carinae entirely developed; lateral carinae of scutellum distinctly bifurcating anteriorly; and apical part of lateral areas of metope not separated from its basal part by distinct additional carina.

Genus *ANASTA* Emeljanov, gen. n.

Type species *Dictyophara prognatha* Distant (Figs. 21, 22, 25, 27).

Description. Body slender; head elongate, pointed, with apex slightly deflected upward. Coryphe oblong-

triangular, projecting forward beyond eyes at distance equal to their half length; lateral carinae with bend-depression (constriction), thicker before constriction, median carina very fine after constriction. Lateral sides of process visible in dorsal view at sides of coryphe. Coryphe concavely arcuate in lateral view, curved slightly more strongly in posterior part. Metope in lateral view straight in basal half, gently convex in apical half; bend becoming stronger toward apex of head. Metope parallel-sided from clypeus to upper margins of eyes and slightly above, then cuneiformly narrowed toward apex, without prominences opposite bases of antennae. Intermediate carinae near clypeus equally distant from each other and from sides of metope, sharp along entire length, with weaker median carina running along bottom of groove between them. Lateral carinae slightly diverging, then also smoothly converging; lateral areas in front of eyes bent laterad. In lateral view, lateral carinae diverging from intermediate carinae in basal third of metope, then running in parallel. Apical callus small, vertical; lateral carinae of metope approaching to coryphe at distance equal to length of apical callus. Clypeal border of metope gently concave. Antennae small, 2nd segment globose. Postocular swellings small, distinct, continuing toward antenna as short vanishing carina. Rostrum short, only

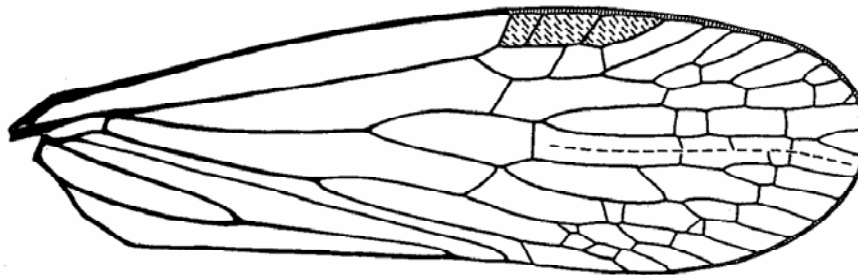


Fig. 21. *Anasta prognatha* Dist., fore wing.

reaching apices of hind coxae. Ultimate segment 1.5 times shorter than penultimate one. Posterior margin of coryphe in form of not sharp keel. Pronotum rather long; disc rather weakly projecting forward, anterior margin arcuate, median carina well-developed, lateral carinae sharp but weakened in posterior part, terminating at distance from posterior margin equal to 1/3 of their length. Lateral carinae of pronotum entirely developed, collateral carina stronger, pectoral carina absent. Posterior margin of pronotum gently obtuse-angularly concave. Mesoscutum with 3 distinct carinae; lateral carinae parallel in posterior part, slightly curved medially at anterior margin. Tegulae without carina. Fore wings elongate, corium widened distally, membrane semi-elliptically rounded. Stem of *ScRM* about half as long as basal cell. Stigma narrow, with 1 or 2 cross-veins. Vein *ScR* branching before stigma, claval veins joined in basal 2/5 of clavus. Fold of fore wing crossing first intermedial cross-vein. Hind tibia with 4 lateral and 7 apical teeth, 1st and 2nd segments of hind tarsus with more than 20 teeth (20–22). Female genitalia typical of representatives of the tribe Hastini.

The new genus is similar to the genus *Hasta* Kirk. in many characters, but sharply differs in the more or less beak-like curved cephalic process pointed apically and also in the lateral carinae of the pronotal disc, which distinctly do not reach the posterior margin. In *Hasta*, these carinae, though curving laterad in the posterior part, but are not separated from the posterior margin by a space.

Dictyophara timorina Lallemand (Figs. 23, 24, 26) also belongs to the genus *Anasta* gen. n. The author has examined a female with the label: "Koe-pang./Timor/Dez., 1931/Handschin," paratype (ISNB).

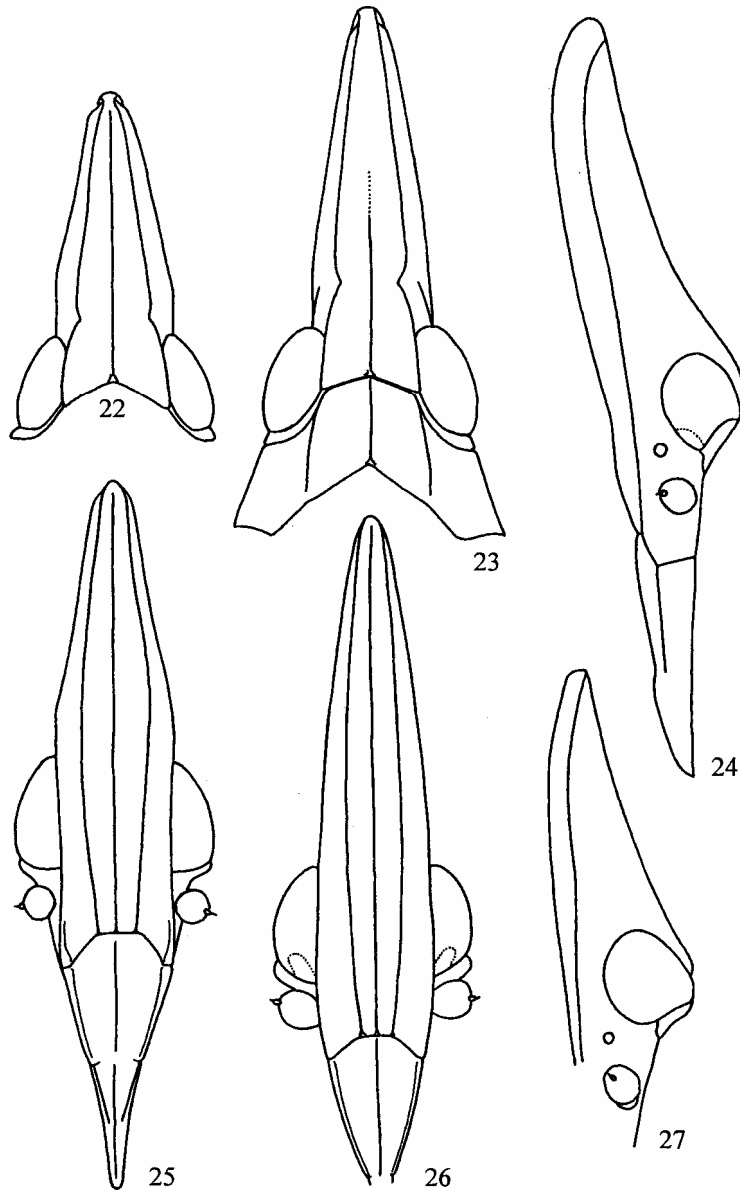
Tribe **ALUNTIINI** Emeljanov, 1979, stat. n.

Aluntinae Emeljanov, 1979, family Fulgoridae.

Examination of representatives of the genera *Dictyomorpha* Melichar and *Arjuna* Muir, and also of the

genus *Pippax* gen. n. described here, has shown their similarity to *Aluntia* Stål, this primarily concerns to *Dictyomorpha*. The latter genus is similar to *Aluntia*, but lacks the system of additional veins, characteristic of *Aluntia* (Figs. 28, 29). Of prime importance is the absence of any cross-veins on the clavus of *Dictyomorpha*, which is typical of Dictyopharidae; *Aluntia* also possesses no claval cross-veins comparable with usual cross-veins on the membrane, but only has particular dendroid nodose secondary veins. Dendroid veins are also absent in *Arjuna* and *Pippax* gen. n. At present, I think that among the six characters supporting the ascription of Aluntiinae to Fulgoridae, only two ones remain valid. The following characters listed by me earlier (Emeljanov, 1979) are reconsidered or rejected (with indication of their numbers in my paper): 1. Not counting dendroid secondary veins, the clavus has no cross-veins, and *Dictyomorpha*, *Arjuna*, and *Pippax* also lack them. 2. The open clavus is characteristic only of the genera *Aluntia* and *Dictyomorpha* in the tribe, being therefore a synapomorphy of these genera; similarity with Fulgoridae is convergent (homoplasia). In the genera *Arjuna* and *Pippax*, the clavus is close. 14. The membranous posterior margin of lower lobes of the ovipositor gonopods, bearing no sensory appendage (absence of a sensory appendage), may be a character convergent with Fulgoridae, but the filmy margin is also characteristic of the tribe Hastini; this may be a synapomorphy of the tribes Aluntiini and Hastini. Character no. 9, the presence of two teeth in the median group at apex of the hind tibia, is erroneous, as three teeth are present there.

Representatives of the tribe Aluntiini (in the new volume) are characterized by the slender elongate body, very long and slender legs, oblong or very long cephalic process, and entirely or almost entirely developed wings slightly projecting beyond the abdominal apex. Particular characters of the tribe are the eyes shifted from the pronotum (from neck), absence of postocular swellings, and presence of additional cari-



Figs. 22–27. *Anasta* gen. n.: (22, 25, 27) *A. prognatha* Dist., (23, 24, 26) *A. timorina* Lall. [(22) head, dorsal view; (23) head and pronotum, dorsal view; (24, 27) head, lateral view; (25, 26) face].

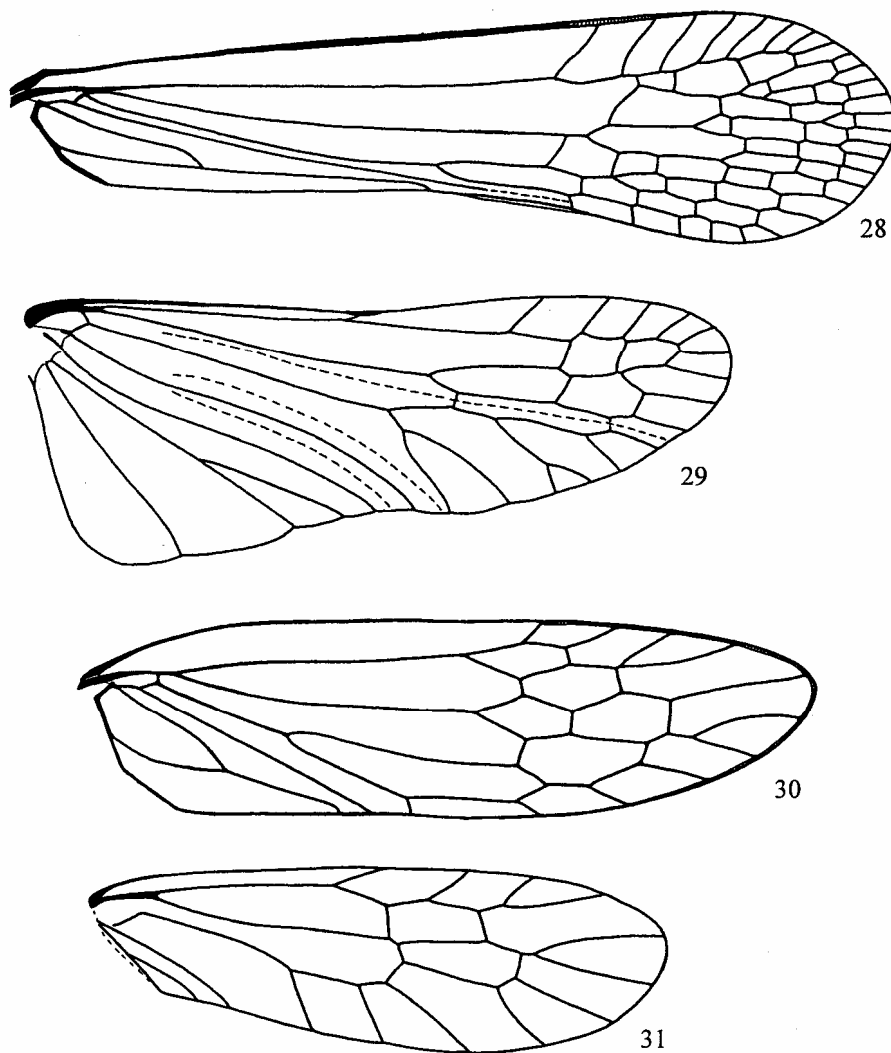
nae before the apex of head, which separate small apical areas of the outer lobes from their basal parts.

Genus *PIPPAX* Emeljanov, gen. n.

Type species *Pippax opilionoides* sp. n. (Figs. 30, 31, 33–35).

Description. Body slender, submacropterous, with long slender legs. Cephalic process of moderate length, moderately thick, slightly widened and roundly truncate at apex. In lateral view, facial margin of head approximately straight, coryphal margin obtuse-

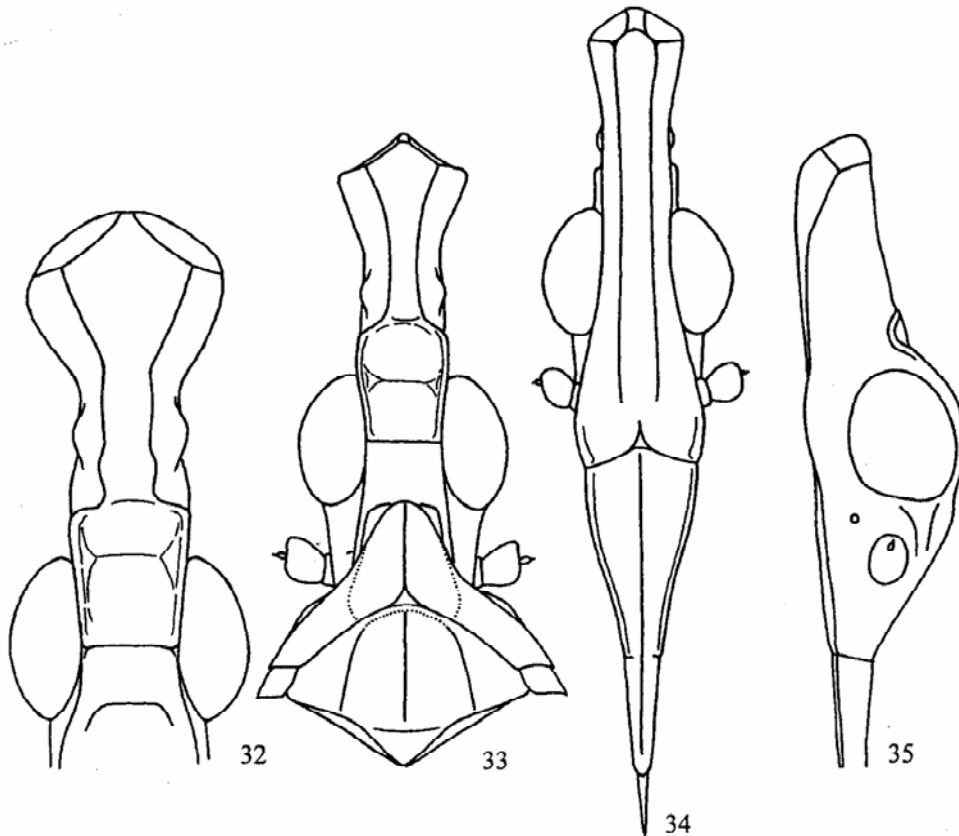
angularly curved in front of eyes and running obliquely upward in parallel to facial margin. Coryphe widened forward between and slightly in front of eyes, then becoming half as wide because of margins steeply curving inwards and forming there constriction; coryphe slightly widened before this constriction and then gently narrowed, but widened again before apex; apical margin obtuse-angularly truncate. Basal part of coryphe slightly shorter than apical part. Surface of basal part of coryphe gently convex, bordered by grooves along lateral carinae; apical part concave, except for widened apical area cupola-like raised and



Figs. 28–31. Wings: (28, 29) *Dictyomorpha elongata* Mel., (30, 31) *Pippax opilionoides* gen. et sp. n.; [(28, 30) fore wing, (29, 31) hind wing].

separated from margins by depression parallel to carinae. Lateral surfaces of head depressed at half of height along constriction of coryphe, indistinctly outlined rounded swelling (tumour) lying forward from depression. Metope smoothly widened below eyes, subparallel-sided between eyes and above; clypeal border weakly concave. Median carina poorly marked below level of antennae; above level, no median carina but not sharp, straight intermediate carinae running almost in parallel and equally distant from each and from margins. Metope slightly narrowed in front of eyes, slightly widened at apex. Apical area of metope (occupying apex of process) separated from rest of metope by transverse carinae running through lateral areas, bearing rather thick convex apical callus separating lateral depressions. Ocelli absent. Postocular

swellings not developed. Antennae small, rather far distant from eyes. Postclypeus flat, narrowed to anteclypeus. Anteclypeus elongate, with lateral carinae forming characteristic bracket-shaped bend in apical third and then vanishing. Rostrum long and fine, reaching apex of abdomen in female and projecting beyond it in male, ultimate and penultimate about equal in length. Pronotum small, rather narrow; disc approximately 1.5 times as long as wide, parabolically projecting forward, with lateral carinae weakened and vanishing before posterior margin; both lateral carinae of dorsal side present but not reaching anterior margin of pronotum; pectoral carina absent; lower margin of paranota slightly thickened and deflected outwards. Posterior margin of pronotum obtuse-angularly concave in middle part. Mesoscutum transverse, approxi-



Figs. 32–35. *Pippax* gen. n., anterior part of body: (32) *P. bulbinaso* sp. n., head, dorsal view; (33–35) *P. opilionoides* sp. n. [(33) anterior part of body, dorsal view; (34) face; (35) head, lateral view].

mately rhomboid; lateral carinae less sharp than median carina, converging forward. Tegulae simple, without carinae. Elytra oblong, longitudinally oval when combined, convex similarly to those of coleopterans, more steeply convex transversely and less steeply, longitudinally; apices separately pointed-rounded; membranes distinctly longer than clavus; veins keel-like prominent. Claval veins joined before middle, common vein running into commissural margin of clavus near its apex, *R* and *M* branching slightly behind level of apex of clavus, branching of *R* more distal than that of *M*, *CuA* bifurcating clearly distally to claval fork, slightly behind apex of clavus. Fore and middle femora slightly thickened at apices. Hind tibia with 4 lateral teeth, apex with 7 teeth; basal segment of hind tarsus longer than two apical segments combined. 1st segment of hind tarsus with 8, 2nd with 6 teeth.

Pippax is similar to the genus *Arjuna* Muir In habitus (Figs. 36, 38), but differs in the usual arrangement of carinae on the cephalic process—characteristic of most of Dictyopharidae and other families. The apex

of the cephalic process is narrow and deflected in *Arjuna*, and is straight and widened in the new genus. Another essential distinction is carinae of the metope: in *Arjuna*, the median carina is developed and the intermediate carinae are reduced, whereas in *Pippax* gen. n., the median carina is absent but the intermediate ones are well-developed.

***Pippax opilionoides* Emeljanov, sp. n.**
(Figs. 30, 31, 33–35)

Description. Body brownish greenish. Apex of cephalic process blackened, sides of clypeus and metope bluish green, middle part reddish brown. Pronotum mainly pale brown dorsally, lateral carinae and anterior part of disc greenish, paranota reddish brown below collateral carina in upper half and greenish brown in lower part. Mesoscutum pale brown, including carinae. Elytra pale brown, semi-transparent, with green veins. Ventral side of body yellowish-brownish or pale brown; epicostal carina of mesepimeron green. Legs brown or reddish brown. Abdomen brownish or greenish-brownish.

Body length: ♂ 6.2–6.3 mm, ♀ 7.3–7.7 mm.

Material. Holotype: ♂, Papua New Guinea, Morobe Pr.: Bulolo Manki Ridge, 18-V-1988 (St. 037), leg. J. Van Stalle, I. G. n., 27363. Coll. R. I; Sc. N. Belg. (ISNB). Paratypes: 1 ♂, 2 ♀, Papua New Guinea, Madang Pr.: Bundi (1300 m), 9-V-1988 (St. 022), leg. J. Van Stalle, I. G. n., 27363; Coll. R. I. Sc. Belg. (ISNB).

Pippax vanstallei Emeljanov, sp. n.

Description. Habitus similar to that of *P. opilionoides* sp. n. and *P. alboruber* sp. n. Fore wing about as that of *P. alboruber* sp. n., extending beyond apex of abdomen. Anterior part of body bluish green with red stripes. Basal part of coryphe vaguely darkened along lateral carinae and on anterior margin, other part of coryphe bluish green, carinae also bluish green along entire length, including in darkened basal part of apical half. Preocular areas of cephalic process blackened at coryphe, becoming irregularly paler (up to reddish-brownish) more closely to metope. Widened apex of head blackened entirely, including metope. Lateral parts of metope and postclypeus, including lateral carina, bearing bluish green stripe; middle parts of metope and postclypeus, and also anteclypeus and rostrum entirely red; darkening between intermediate carinae gradually becoming weaker in direction from apical blackening of head, nearly reaching level of eyes. Preocular area basal to cephalic process, gena, and postocular area bluish green. Pronotum bluish green, disc slightly brownish between carinae, paradiscal areas posteriorly with 1 pair of transverse reddish ochre spots along margin. Paranotal lobes with wide brownish red stripe and with upper half of humeral area and lower margin of paranota remaining green. Tegulae reddish-brownish. Antennae reddish. Fore wing nearly hyaline, slightly brownish; basal part of costal vein reddish. Ventral side of thorax, including coxae, and abdomen bluish green. Fore and middle femora red with black carinae, tibiae and tarsi nearly black with reddish tint; ventral side of middle leg dark red. Hind femur red in apical third, bluish green on rest of surface; tibia dark, brownish red; tarsus dark brown.

Female unknown.

Body length: ♂ 8.2–8.8 mm.

Material. Holotype: ♂, "Coll. R. I. Sc. N. B., Papua New Guinea Morobe pr.; Lae, 24-V-1988 (St. 057), leg. J. Van Stalle, IG n°: 27363" (ISNB). Paratypes:

1 ♂, Awala Estate, Popondetta subdist. Papua, 26 Oct. 1963, D.K. McAlpine (AMSA); 1 ♂, Mt. Lamington Dist., Northern Division, Papua, Jan.–Feb. '24, C.T. McNamara (AMSA).

Pippax alboruber Emeljanov, sp. n.

Description. Habitus similar to that of *P. opilionoides* sp. n., but fore wing more oblong and less convex, posterior third of membrane extending beyond apex of abdomen.

Red and reddish brown tones prevailing in body coloration, white stripes running along many carinae. Apex of cephalic process dark brown, nearly black. Coryphe red, carinae white in wide basal part, less strongly and more narrowly lightening in apical part. Lateral carinae of clypeus and metope with white stripe, red in middle parts; intermediate carinae slightly paler. Preocular areas brownish red, whitish on cephalic process in front of eyes; genae whitish. Postocular area red, sides of clypeus pale ochre. Rostrum reddish. Carinae of pronotal disc in anterior part and lateral carinae white, forming almost continuous, curved, white line. Disc and paradiscal areas red, median carina of disc slightly paler. Paranotal lobes red below lateral carinae, ventral surface of lobes with white uneven spot along margin. Tegulae reddish. Mesoscutum pale ochre with white apex. Fore wing nearly hyaline, pale ochre. Costal vein and area reddish-brownish darkened, darkening gradually weakening toward area of pterostigma. Ventral side of thorax and abdomen pale ochre, epicostal carina of mesothorax white. Fore and middle femora red, tibiae and tarsi reddish brown. Hind femur with large longitudinal red stripes against ochre background, tibia and tarsus reddish brown.

Female unknown.

Body length: ♂ 7.9 mm.

Material. Holotype: ♂, "Papua: Mafulu, 4,000 ft., I.1934 L.E. Cheesman. B.M., 1934–321" (BMNH).

Pippax bulbinaso Emeljanov, sp. n. (Fig. 32)

The species is similar to *P. opilionoides* sp. n. and, especially, to *P. vanstallei* sp. n. in coloration, but clearly differs in the thicker cephalic process with the swollen apex.

Description. In lateral view, cephalic process widened toward apex, also widened laterally at apex and, thus, apical swelling only slightly narrower than head including eyes; sides of coryphe moderately widened

toward apex, coryphe as wide there as between eyes. Fore wing as that in *P. alboruber* sp. n., extending beyond apex of abdomen by length nearly equal to length of membrane. Anterior part of body with alternating red (tint of beet) and bluish green stripes and spots. Swollen apex of cephalic process black. Coryphe pale brown, greenish posteriorly. Preocular areas reddish brown, lateral carinae of metope bluish green, basal part of metope reddish brown (swollen apex black). Postclypeus reddish brown, with bluish green lateral carinae; anteclypeus and lorum reddish brown. Genae near margin of metope yellowish-brownish below antennae and reddish-brownish above them. Antennae red. Pronotum reddish brown with the following areas bluish green: median carina of disc, lateral carinae of disc anteriorly, lateral carinae of pronotum, and lower margin of paranotal lobes. Sides of scutellum and lateral carinae of its disc reddish brown, disc bluish green. Fore wing semi-transparent, brownish yellowish, with red veins; rostrum and legs red. Sides of mesonotum red, with bluish green epicostal carina; rest of ventral side of body pale, greenish and brownish. Lower lobes (visible) of gonopods of ovipositor darkened to black.

Body length: ♀ 9.9–10.5 mm.

Male unknown.

Material. Holotype: ♀, Papua New Guinea, Matkomrae village, approx. 50 km N of Kiunga, 60 m, 5:49S 141:09E, 3 Oct., 1993, M. S. Moulds & S. Cowan (AMSA). Paratype: ♀, as holotype (AMSA).

A Key to Species of the Genus Pippax gen. n.

- 1 (6). Cephalic process not, or only slightly widened at apex.
- 2 (5). Epicostal carina of mesothorax paler than surrounding parts.
- 3 (4). Antennae reddish, epicostal carina of mesothorax white *P. alboruber* sp. n.
- 4 (3). Antennae green, epicostal carina of mesothorax green *P. opilionoides* sp. n.
- 5 (2). Epicostal carina of mesothorax green as surrounding parts, only slightly paler.—Antennae reddish *P. vanstallei* sp. n.
- 6 (1). Cephalic process strongly widened at apex, nearly as wide there as head across eyes
..... *P. bulbinaso* sp. n.

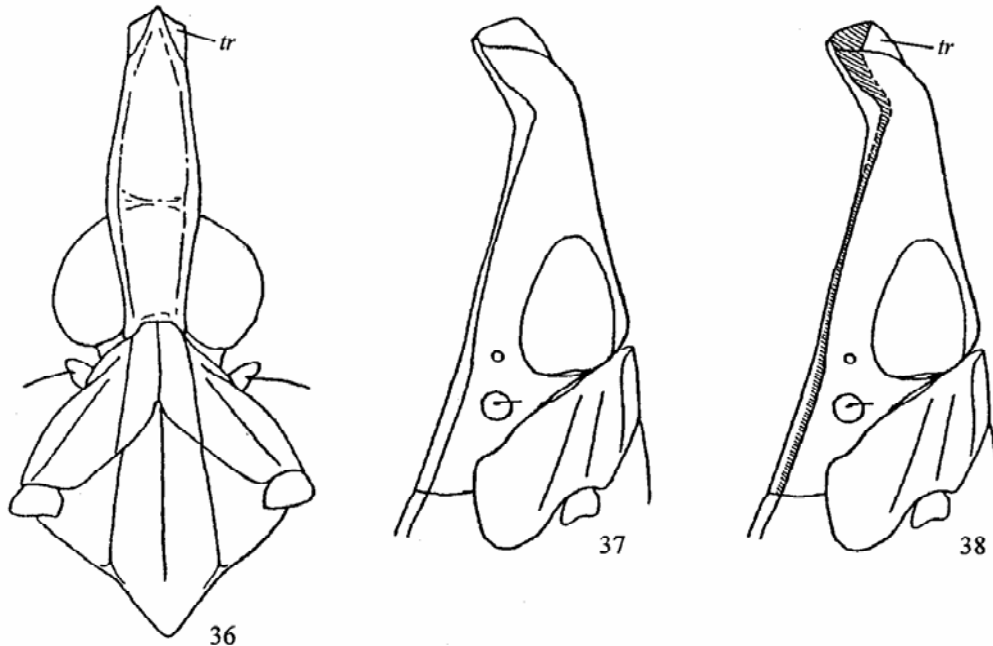
Genus *ARJUNA* Muir, 1934.

In the genus *Arjuna*, the carinae at the apex of the cephalic process underwent a significant transformation (Figs. 36–38). In the original description, Muir (1934) erroneously depicted the margin of the metope in a figure and, contradicting his text, showed the intermediate carina of the metope at the apex of the process as a part of the lateral carina, i.e., as one carina, though the lateral is not developed carina at the apex of the process and does not join the intermediate carina. In the area of a bend of the cephalic process, the intermediate and lateral carinae are equally developed and run in parallel; the intermediate carinae appear before the bend and extend as far as the apex of the cephalic process, and the lateral ones, originate from the clypeus and disappear after the bend of the process (Fig. 38). This fact does not allow any confusion between them. In *Arjuna dohertyi* Muir, a weak yellow stripe shows the position of the disappeared part of the lateral carina—the border between the metope and preocular area. Also, Muir did not show a weak carina crossing the peculiar lanceolate cells (areolae) lying at sides of the apical carina, these weak carinae are the true border between the coryphe and the preocular area. Thus, the triangular upper half of the mentioned lanceolate cell is bounded by the apical sections of the lateral carinae of the coryphe and metope and is separated from the preocular area by an additional carina, i.e., it corresponds to the trigon in the general scheme of the structure of the head of Fulgoroidea. The tribe Aluntiini is characterized by the presence of a carina (not always sharp) separating the apical parts of the lateral areas of the metope from the basal part, such carinae are clearly pronounced in *Pippax* gen. n. (Fig. 35), a genus very closely related to *Arjuna*. Most likely, this is a homolog of the intermetopal carina (anterior carina of the macrocoryphe) in Delphacidae and Cixiidae.

Arjuna scriba Emeljanov, sp. (Fig. 36–38)

The species is closely related and similar to *A. dohertyi* Muir, but differs in the slightly more sharply curved cephalic process with the blackened apex. Probably, many pale details of the pattern were bluish green in living individuals, but lost their color in the collection.

Description. Coryphe pale ochre with greenish lateral carinae or almost entirely greenish; apex of head, beginning from base of secondary carinae of coryphe



Figs. 36–38. *Arjuna dohertyi* Muir., anterior part of body, arrangement of carinae on head: (36) dorsal view; (37, 38) lateral view; [(36, 37) after Muir (erroneous), (38) corrected]. Lateral areas of metope are shaded; *tr*, trigon.

and from additional apical carina of lateral lobes of metope, blackened; blackening occupying narrow part of preocular area adjoining carina and areas of metope. Apical callus in form of contrasting pale puncture. Basal parts of preocular area, genae, and lora pale orange; lateral carinae of postclypeus and metope bluish green; rest of clypeus and metope orange-red, becoming paler toward apex; passing onto deflected apical part, lateral carinae of metope entirely smoothed and merging in color with pale ochre background of metope and preocular area. Dorsal side of pronotum ochre, carinae vaguely paler in anterior part of disc; lateral carinae and adjoining parts of paradiscal areas whitish-greenish; pale area in form of stripe widened backward; border with ochre area pronounced more sharply and straightly than that in *A. dohertyi* Muir; basal part of humeral area, including collateral carina and paranotal lobe, except for lower margin, orange-red, margin bluish-greenish. Scutellum and tegulae regularly pale ochre. Fore wing hyaline, veins ochre or greenish. Ventral side of body ochre; mesopleura brighter reddish, with greenish epicostal carina. Legs pale brown, with vague greenish tint; fore and middle femora with dark stripes on ventral and anterior surfaces; anterodorsal carina bright greenish white. Tibiae and tarsi dark brown. Hind tibia and femur pale brown; tibia and tarsus slightly darker than femur; femur with 2 black lateral spots at apex. Abdomen pale, greenish-brownish ventrally, slightly ochre dorsally.

Body length: ♂ 7.8–8.2, ♀ 10 mm.

Material. Holotype: ♂, New Guinea: Torecella Mts. between Afua & Chinapelli Akimbo R., Sea Falla, 1700'. G.P. Moore B. M., 1939–479 (BMNH). Paratypes: 4 ♀ (1 ♀ not entirely mature), as holotype (BMNH); 1 ♂, New Guinea: Torecella Mts., Afua Village, 16.III–3.IV.1939. G.P. Moore, B. M., 1939–479 (BMNH); 1 ♂, New Guinea: Torecella Mts., 1700', 6–8.II.1939. G.P. Moore, B. M., 1939–479 (BMNH); 1 ♂, W. New Guinea: Mt. Nomo. S of Mt. Bougainville. 700 ft. II.1936. L.E. Cheesman. B. M., 1936–271 (BMNH); 1 ♀, Dutch New Guinea: Humboldt Bay. Hollandia, IV.1936. L.E. Cheesman. B. M., 1936–271 (BMNH); 1 ♀, Amele PLTN, Madang distr. N. Guinea, 29–6–1959. Coll. J.J.H. Szent-Ivany, resting on cacao. Ex Coll. Dept. Agr. Pt. Moresby, No. 9394. C.I.E. Coll. A 1315 (BMNH); 2 ♂, Coll. R. I. Sc. N. B., New Guinea: Irian, Topo 970032 and 920032, 24-IV-1997, P. Grottaert (ISNB); 1 ♂, Bainyik, TPNG, 12 Dec., 1963, D.K. McAlpine (AMSA).

Tribe **ORTHOPAGINI** Emeljanov

Genus **MACRONASO** Synave

Macronaso expressus Emeljanov, sp. n.

Description. Coryphe black, with yellowish white carinae. Metope with intermediate carinae only above middle of eyes and with only middle and lateral cari-

nae below. Apices of cephalic process, all carinae, and apical callus blackened; pale edging also interrupted from side of coryphe; blackening of intermediate carinae beginning above eyes, blackening of median carina, from level of middle of eyes; lateral carinae yellow, filiformly darkened along ridges on process; median carina bluish green below level of middle of eyes. United areas of metope ochre-orange; ochre-orange area above eyes narrowing gradually, continuing only over inner areas. High lateral carinae of upper half of postclypeus yellow, low; those of lower half of postclypeus black; median carina pale, yellowish or greenish in upper half and vaguely blackened in lower half; surface between carinae ochre-yellow. Lateral surfaces of head with cuneiform black spot extending from eye toward apex of cephalic process and separated from metope by yellowish stripe wider than that separating spot from coryphe. Preocular area, genae, and upper part of lora yellowish; lower part of lora black; transverse pale spot lying on oblique suture between lora and anteclypeus; sides of anteclypeus black, except for apex; apex and entire rostrum pale ochre-yellow. Antennae and space of gena between eye and antenna pale ochre, slightly darkened near postocular swelling; swelling pale. Pronotal disc black, with 1 pair of reddish spots. Lateral carinae of disc accompanied by rather wide yellowish white stripe. Paradiscal areas dark brown to black; postocular areas black; postocular carina, its continuation—lateral carina, and also collateral carina pale; humeral area darkened continuing postocular darkening in anterior part and pale brownish orange in posterior part. Basal part of paranota ochre-orange; margin between antenna and postocular swelling greenish white, yellowish ochre band running through lower part of paranota; margin of paranota blackened below band. Mesoscutum with anterior half occupied by orange-red band and with posterior half black, except for orange-yellow apex of scutellum. Carinae of scutellum on orange-red stripe yellow; narrow lanceolate transverse spot lying at anterior margin of scutellum behind pronotal disc; sides of scutellum also with narrow linear darkening extending from under margin of pronotum. Tegulae in form of narrow crescents protruding from under sides of pronotum; ventrally, considerably not reaching costal margin of elytra. Fore wing with dense reticulation of additional veins, veins pale, cells dark brown; in area of membrane, vein and cell more strongly darkened, but posteroapical area of each wing with not sharply bounded pale spot, veins and cells on this spot pale. Thorax, including fore and middle coxae, dark

brown, slightly paler in places; fore and middle femora pale brown, tibiae similar, but fore tibia darkened on posterior side. Hind femur vaguely darkened (blackened) on dorsal and anterior sides subapically: nearly from base to apex, on ventral side and nearly from base nearly to apex, on anterior side; tibia pale, with dark base and apices of teeth and with black line running over anterior side from base to about middle. Abdomen dark brown, margins of sclerites pale in places and lateral parts of sternites with pale spots in places, tergal parts visible from under elytra with larger pale spots.

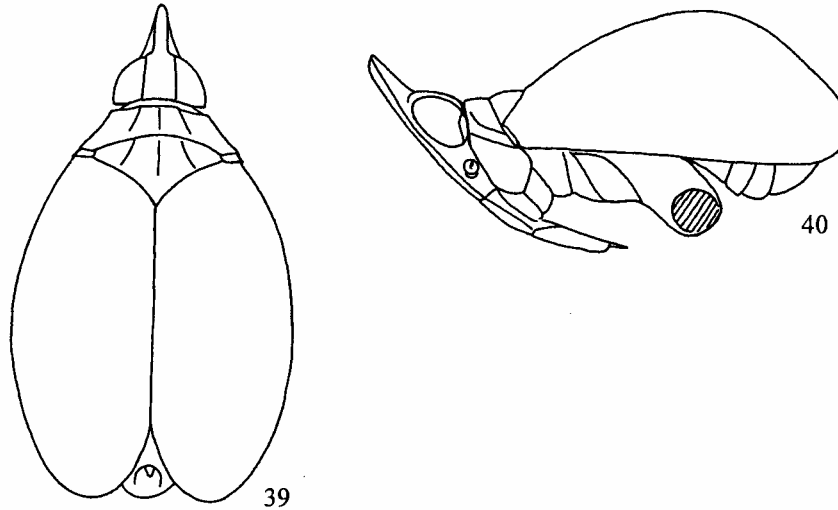
Male unknown.

Body length: ♀ 7.6 mm.

Material. Holotype: ♀, Malawi: "Nyasaland. Mlanje. 5.IX.13, 2000 ft. S.A. Neave., 1914–75" (BMNH).

Macronaso iris Emeljanov, sp. n. (Figs. 39, 40)

Description. Anterior part of body mainly orange and bluish green. Coryphe pale, ochre-orange; lateral carinae greenish, blackened on process; 1 pair of orange spots present at base of coryphe. Metope with green carinae (lateral and median) and ochre-orange intervals. Median carina of postclypeus and lateral carinae green in upper half, being high there; lower part of postclypeus slightly darkened; adjoining part of lora blackened. Lateral parts of head with brown stripe extending from eye to apex of process. Genae, slightly away from green lateral carina of metope, ochre-orange; antennae ochre-orange; postocular swellings greenish. Pronotum with green carinae and ochre-orange intervals in discal and paradiscal areas, space between lateral and collateral carinae without orange tone. Paranota with ochre-orange median spot and with green prominence wedging in this spot anteriorly above antenna; posteroventral margin of spot bounded by green stripe insensibly passing into wide, pale green stripe nearly reaching margin of paranotum ventrally; narrow dark stripe running along margin. Scutellum ochre-orange, with green carinae and 1 pair of spots in lateral corners, apex of scutellum greenish yellow. Elytra mainly brown, with pale brown venation and dark brown cells in distal part of wing, each cell bearing pale puncture in middle. Fore coxa black, ventral and lateral sides of thorax brown. Legs pale brown, hind femur and tibia near knee joint slightly darkened, posterior and lower surfaces of femora darkened almost entirely. Abdomen pale brown.



Figs. 39, 40. *Macronaso iris* sp. n., habitus: (39) dorsal view; (40) lateral view (legs not shown).

Male unknown.

Body length: ♀ 6.2–6.9 mm.

Material. Holotype: ♀, Malawi, “Nyasaland. Karonga. 7–11 July, 1910. S.A. Neave.” Paratypes: 1 ♀, as holotype; Malawi, 1 ♀, “N/E/Rhodesia. July 13, 1910. S.A. Neave” (BMNH).

A Key to Species of the Genus Macronaso

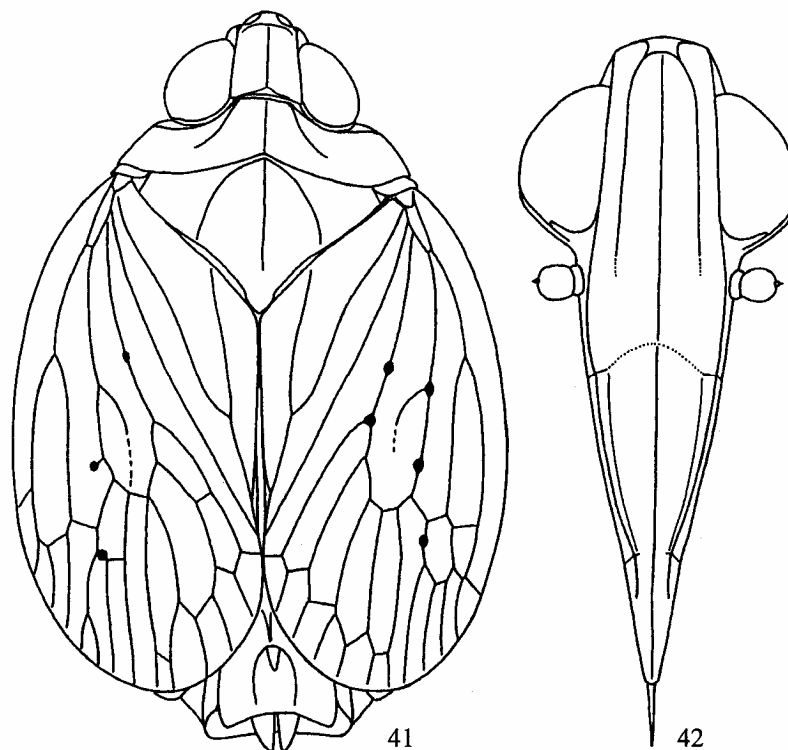
- 1 (4). Coryphe black.
 2 (3). Paranotal lobes of pronotum black, with pale band near black lower margin *M. ulugurensis* Syn.
 3 (2). Paranotal lobes of pronotum orange above pale band, band yellow, lower margin of lobe black *M. expressus* sp. n.
 4 (1). Coryphe pale orange *M. iris* sp. n.

Genus **ELLIPOMA** Emeljanov, gen. n.

Type species *Ellipoma nodulosa* sp. n.

Description. Body strong, compact, moderately brachypterous; elytra not concealing only very apex of abdomen, folded rather flatly. Head short, coryphe about as long as wide, all its margins keel-shaped, anterior margin slightly convex, posterior one slightly concave, lateral margins converging anteriorly, surface of coryphe slightly concave but with 2 gently sloping longitudinal prominences in anterior half, median carina developed only behind these prominences. Metope about 3 times as long as wide at clypeus; its

lateral margins sharp, straight, slightly converging toward apex of head; intermediate carinae sharp, absent below antennae; median carina sharp along entire length. Apical callus small, slightly longitudinal; intermediate carinae running more closely to lateral carinae than to median one, lancet-like converging to apical callus. Border of metope with clypeus rather strongly concave, indistinct. Postclypeus about half as long as metope, with sharp carinae; lateral carinae convex, approximate toward anteclypeus. Anteclypeus slightly gibbous in lateral view, without ledge at apex, with sharp median carina; lateral carinae sharp, present only in basal half, sharply terminating before median carina. Rostrum protruding slightly beyond hind coxae, its ultimate segment nearly 0.67 times as long as penultimate one, lateral ocelli well developed. Antennae small, 2nd segment rounded. Pronotum wide, much wider than head. Lateral carinae of disc diverging backward and vanishing when curved outwards. Posterior margin gently obtuse-angularly concave, except for weakly convex lateral parts. Lateral and collateral carinae well-defined, pectoral carina absent. Scutellum wide, transverse, posterior margin protruding at sharper obtuse angle, apex of scutellum slightly attenuate. Lateral carinae of disc arcuately passing in each other anteriorly; all 3 carinae, including median one, sharp. Fore wing thickened but with distinct system of keel-shaped veins, rather wide and flat, widely rounded posteriorly. Tegulae developed. Basal part of elytra (opposite mesonotum) with smooth precostal area. Vein *ScR* making first branching slightly behind basal third of remigium, ptero-



Figs. 41, 42. *Ellipoma nodulosa* gen. et sp. n.: (41) body, dorsal view; (42) face.

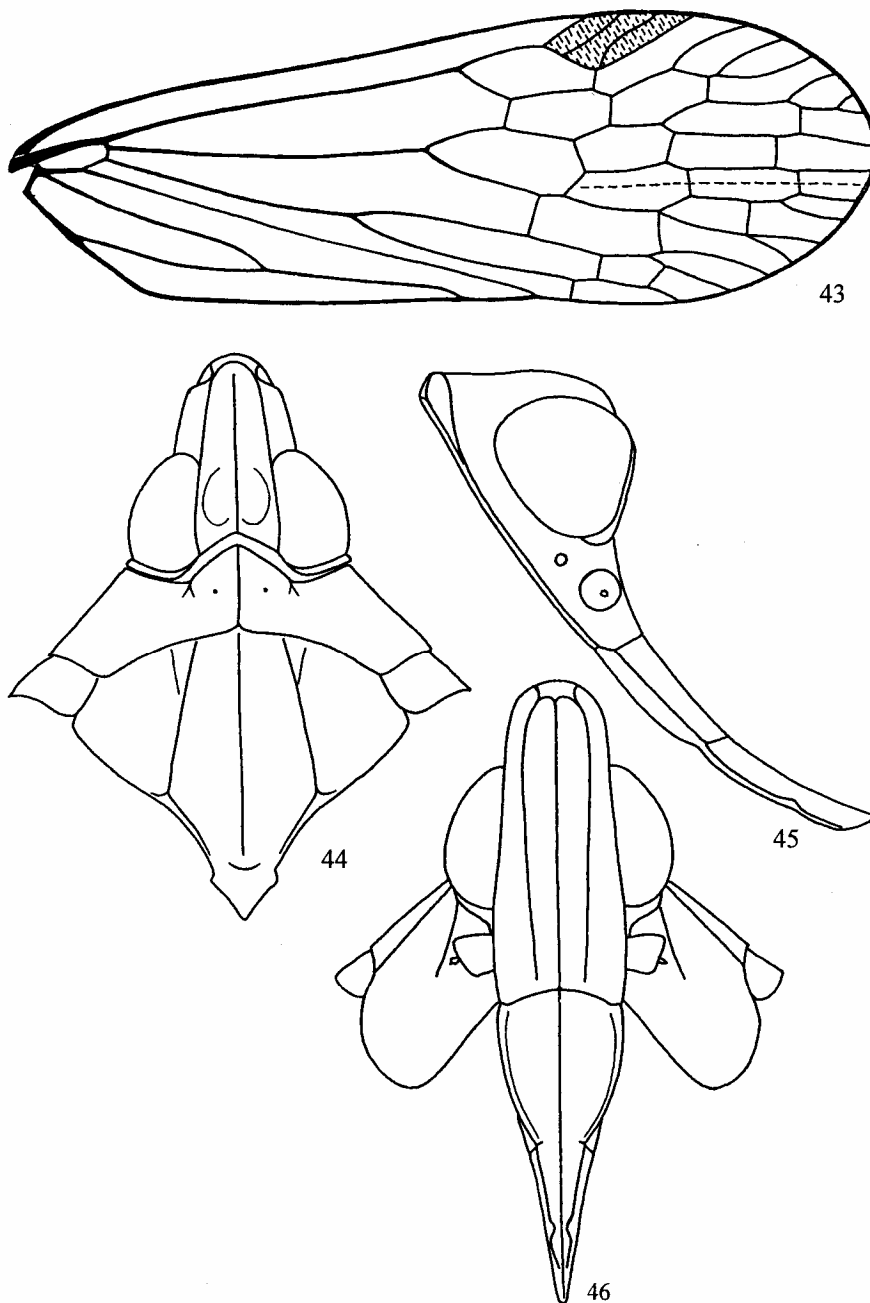
stigma absent, only anterior branch of *ScR* bifurcating before margin of wing. *RP* bimodal; media with 2 anterior and 3 posterior branches; base of posterior branch shifted far backward in such way that cross-vein *mcua* taking longitudinal position and looking like anterior branch of *CuA*. *CuA*, as usually, bimodal, but both branches at first curved obliquely backward at base and only then taking longitudinal direction. Nodal cross-vein *rm* present. Claval veins joined in basal third of clavus, united vein running into posterior margin of clavus near its apex. Stem of *M* with 2 nodule-shaped thickenings: one in middle part and other before first branching; less sharp nodule visible near base of *MA*; anterior cubitus with similar nodule in middle part of stem slightly more basally of nodule on media. Apex of abdomen in only available specimen (♂) deflected upward and squeezed between diverging margins of elytra. Legs strong, with widened fore and middle femora and tibiae; fore coxa simple, without angular prominence. Ventral (posterior) widening of fore and middle femora terminated as sharp ledge apically. Hind tibia with 5 lateral teeth (including knee tooth). Apex of tibia with 7 teeth: 5 + 2. 1st and 2nd segments of hind tarsus with 12 and 14 teeth, respectively, among these, 1st and 2nd teeth outer and last

tooth inner free of platellae. 2nd segment deeply emarginate at apex.

Apparently, the new genus is closely related to the genera *Orthopagus* Uhler and *Saigona* Mats., but clearly differs from them in the short wings and strongly widened fore and middle legs.

Ellipoma nodulosa Emeljanov, sp. n. (Figs. 41, 42)

Description. Body brown, with clay-like tint. Metope with brown darkening with vague pale spots, postclypeus slightly paler than metope. Genae darkened around antennae; lorum darkened, except for basal third; anteclypeus darkened, except for carinae and apex. Pronotum and scutellum also with small pale spots. Antennae darkened. Distal half of penultimate segment of rostrum, its base, and entire ultimate segment darkened. All coxae and metathorax irregularly darkened up to yellowish brown, posteroventral margin of mesepipleura also darkened. Abdomen not very intensely dark brown ventrally, with fine, not sharp, pale spots; pale larger spots at bases of sensory hairs (anemaesthetes) distinguished against background of fine spots; posterior margins of sternites entirely paler. Fore and middle femora irregularly



Figs. 43–46. *Indagnia fuminervis* Leth.: (43) fore wing, (44) anterior part of body, dorsal view; (45) head, lateral view; (46) head and pronotum, anteroventral view.

brownish, darker than dorsal side of body; tibiae dark brown, with pale, off-white middle third. Tarsi dark. Hind femur with not sharp, dark longitudinal stripes; tibia with oblique dark brown bands originating from each lateral tooth; teeth and carinae darkened. Anal tube with large lateral lobes concealing upper part of styli.

Body length: ♂ 6.1 mm.

Female unknown.

Material. Holotype: ♂, Australia, “Colo Vale, N. S. W., 6.III.1957, A.L. Duce” (ANIC).

Tribe **DICTYOPHARINI**

Genus **INDAGNIA** Emeljanov, gen. n.

Type species *Dictyophara fuminervis* Leth. (“Inde Mahe”) (Figs. 43–46).

One species of the genus *Paranagnia* Mel., similar to *P. afra* Stål, was long determined as *P. fuminervis* Leth. Actually, the true *D. fuminervis* Leth. does not belong to the genus *Paranagnia* and is unknown from Africa.

Description. The new genus is similar to *Paranagnia* in many characters. Coryphe narrow, oblong, narrower than transverse diameter of eye, nearly half of its length protruding forward from eyes; lateral margins nearly straight, slightly converging toward apex, and with faint resemblance to zigzag ledge in middle part at anterior margin of eyes. Posterior margin obtuse-angularly concave; coryphe gutter-like; lateral carinae high, but strong rather thick median carina running posteriorly as far as half length of eyes (in *Paranagnia*, coryphe wider and flatter, and carina through). Anterior margin of coryphe about 0.67 times as wide as posterior margin, gently obtuse-angularly projecting, entirely bounded by large apical callus. In lateral view, coryphe slightly convex above eyes, straight anteriorly, slightly inclined forward; apical callus steeply falling downward to metope, looking in dorsal view as transverse formation; metope straight in lateral view. Apical callus rectangular to first approximation, nearly square, slightly higher than wide, convex, with fine sagittal groove; lower angles attenuate and, narrowing, passing into normal intermediate carinae. Metope about 2.5 times longer than wide, becoming 1.5–2.0 times narrower in upper part (upper margin rounded, therefore ratio is difficult to determine); margin weakly convex below eyes, inconspicuously concave between eyes, weakly convex above. Intermediate carinae of metope originating near clypeus, straight and slightly diverging about to level of middle of eyes, then slightly converging, approaching thick apical callus. Lateral lobes nearly twice as wide as middle lobes near clypeus and equal in width to them near middle of eyes; above, they narrower than middle lobes and turning away on lateral sides in such way that appearing even narrower. Clypeal margin of metope very gently concave. In the new genus, margins of metope and coryphe joined with apical callus in one point, whereas in *Paranagnia* (*P. afra*, etc.), carinae of metope approaching coryphe at sides of callus, distance between carinae and callus equal to width of callus (apical callus of *Paranagnia afra*, etc. longitudinally elongate, significantly longer than wide). Postclypeus with 3 carinae (all specimens of the series are pasted on cardboard, and the ventral side of the body is not seen). Antennae small, 2nd segment

compressed along longitudinal axis and protruding upward relative to basal segment. Discal margin of pronotum projecting anteriorly as third of circle, postocular margins concave, outer angles shifted forward. Lateral carinae of disc not developed; median carina distinct, with 1 pair of puncture-shaped depressions at sides. Lateral carinae of pronotum (lateral and collateral) sharp, pectoral carina distinct. Posterior margin of pronotum very gently, obtuse-angularly or arcuately concave. Scutellum with 3 distinct carinae, median carina distinctly not reaching apex of scutellum. Lateral carinae straight, diverging backward; anteriorly, from outside, less sharp parallel carinae lying, as though being outer branch of main carina [in *Paranagnia*, lateral carinae arcuate, moderately converging toward anterior margin (*P. afra*, etc.) or vanishing (*P. aethiopica*)]. Fore wing oblong, moderately widened to semi-elliptically rounded membrane; costal margin slightly concave. *ScR* and *M* originating from one point of basal cell. Stigma wide, obtuse-angularly projecting backward, with several oblique veins, thickened, dark brown. *RP* originating from common stem before 2/3 of length of stigma. Longitudinal fold on membrane running through first posteromedial area. *MP* branching before *MA*, as that in Cixiidae. Claval veins joined about middle of clavus. Legs of medium proportions. Fore femur not widened, with several small teeth instead of preapical ledge, as in *Dictyophara* Germ. Hind tibia with 5 lateral and 7 apical teeth, 1st segment of tarsus with 15, and 2nd with 13 teeth.

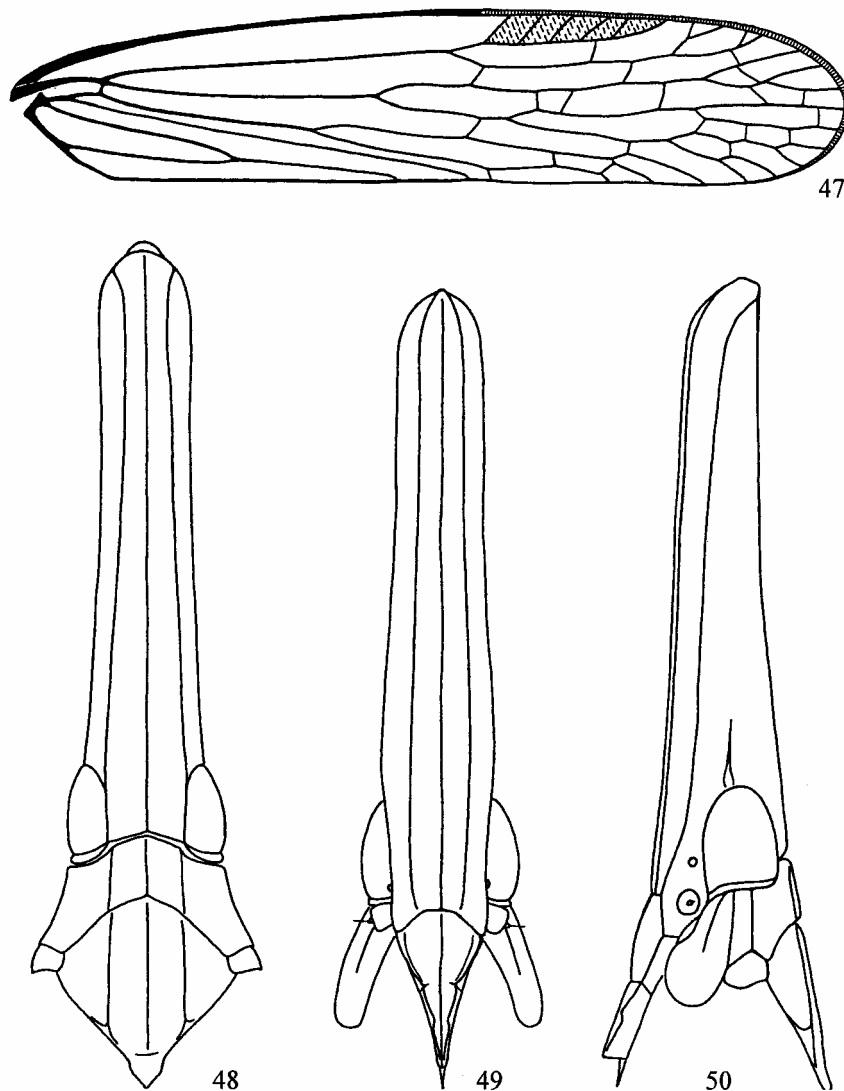
The genus was described from syntypes of the type species (MNHN). *Putala brachycephala* Distant (*Indagnia brachycephala* Distant, ridge. n.) also belongs to this genus.

The genus differs from *Paranagnia* Mel. in the narrower, longitudinally gutter-like coryphe with the median carina not developed in the anterior half, the wider subsquare apical callus, and the fore femur without a ledge at the apex.

Genus *CARPHOTOMA* Emeljanov, gen. n.

Type species *Hasta ogadensis* Melichar (Figs. 47–50).

Description. Body slender, elongate. Cephalic process long, weakly narrowed toward truncate apex. Median carina of coryphe weakening and vanishing in front of eyes. Coryphe rather narrow, preocular edges of cephalic process appearing in dorsal view as wide



Figs. 47–50. *Carphotoma ogadensis* Mel.: (47) fore wing, (48–50) anterior part of body [(48) dorsal view; (49) ventral view, (50) lateral view].

stripes at sides from coryphe. Metope weakly narrowed toward apex. Intermediate carinae sharp along entire length, median carina as sharp as intermediate carinae in posterior half, becoming finely filiform in apical half, but remaining distinct up to apex or vanishing. Apical carina narrow, rather short; therefore, middle lobes of metope distinctly deflected upward at apex. Preocular area with longitudinal carina extending from eye to angle between coryphe and metope. Clypeal margin of metope shallowly arcuately concave; postclypeus narrower than metope, short, narrowed to anteclypeus, its lateral margins convex nearly up to border with anteclypeus; median carina distinct. Anteclypeus with straight lateral carinae reaching its truncate apex. Rostrum rather short, hardly reaching anterior (anteromedial) margins of hind coxae; ulti-

mate segment slightly shorter than penultimate one. Postocular swelling small. Pronotum rather narrow; lateral carinae of disc sharp, parallel, reaching posterior margin of pronotum; median carina sharp; lateral, collateral, and pectoral carinae also sharp; latter running almost in parallel to collateral and lateral carinae. Mesoscutum with 3 distinct parallel carinae. Tegulae without carina. Fore wing oblong, with oblong, parabolically rounded membrane. Stigma not pronounced as something separated from rest, subcostoradial stem running in parallel to straight costal margin, stigmal area crossed by 4 or 5 oblique cross-veins. First branching of stem of *ScR* lying at level of apex of clavus. Forks of *ScR*, *M*, and *CuA* and claval fork lying approximately on one line, claval (recurrent) fork lying slightly basal of middle of clavus; nodal veins *rm* and

mcua clearly shifted distally from first branchings of corresponding stems. Distal part of membrane with additional cross-veins, fold between M_2 and M_3 ill-defined or absent. Legs slender, fore femur without teeth on anteroventral carina at apex. Hind tibia with 4 lateral teeth, 1st and 2nd segments of hind tarsus strongly widened apically, each bearing approximately 20 small teeth with long subapical platellae. External structure of ovipositor similar to that in the genus *Philotheria* s. 1.

Species of the new genus were erroneously described in the genus *Hasta* Kirkaldy distributed only in Australia and belonging to tribe Hastini. However, the new genus belongs to tribe Dictyopharini: the lower lobes of the gonoplares of the ovipositor bear a digitate sensory appendage, which is absent in Hastini, and have no specialized setae with a high socle on the ventral side of the anal tube (a character of Hastini). In *Hasta*, the paranotal lobes of the pronotum bear no pectoral carina and the rostrum reaches the middle parts of the hind coxae. In the coloration and habitus, the new genus is more similar to *Raivuna* Fenn., but clearly differs in the presence of lateral carinae of the pronotal disc and in the complete development of the intermediate carinae of the metope.

The genus *Carphotoma* gen. n. comprises the species *C. ogadensis* Melichar, ridge. n. (*Hasta ogadensis* Melichar), *C. pallidior* Fennah, ridge. n. (*Hasta pallidior* Fennah) and, probably, also *Dictyophara ufidensis* Mel. and *D. atbarae* Dist.

Genus **AETHIOCERA** Emeljanov, gen. n.

Type species *Aethiocera adusta* sp. n.

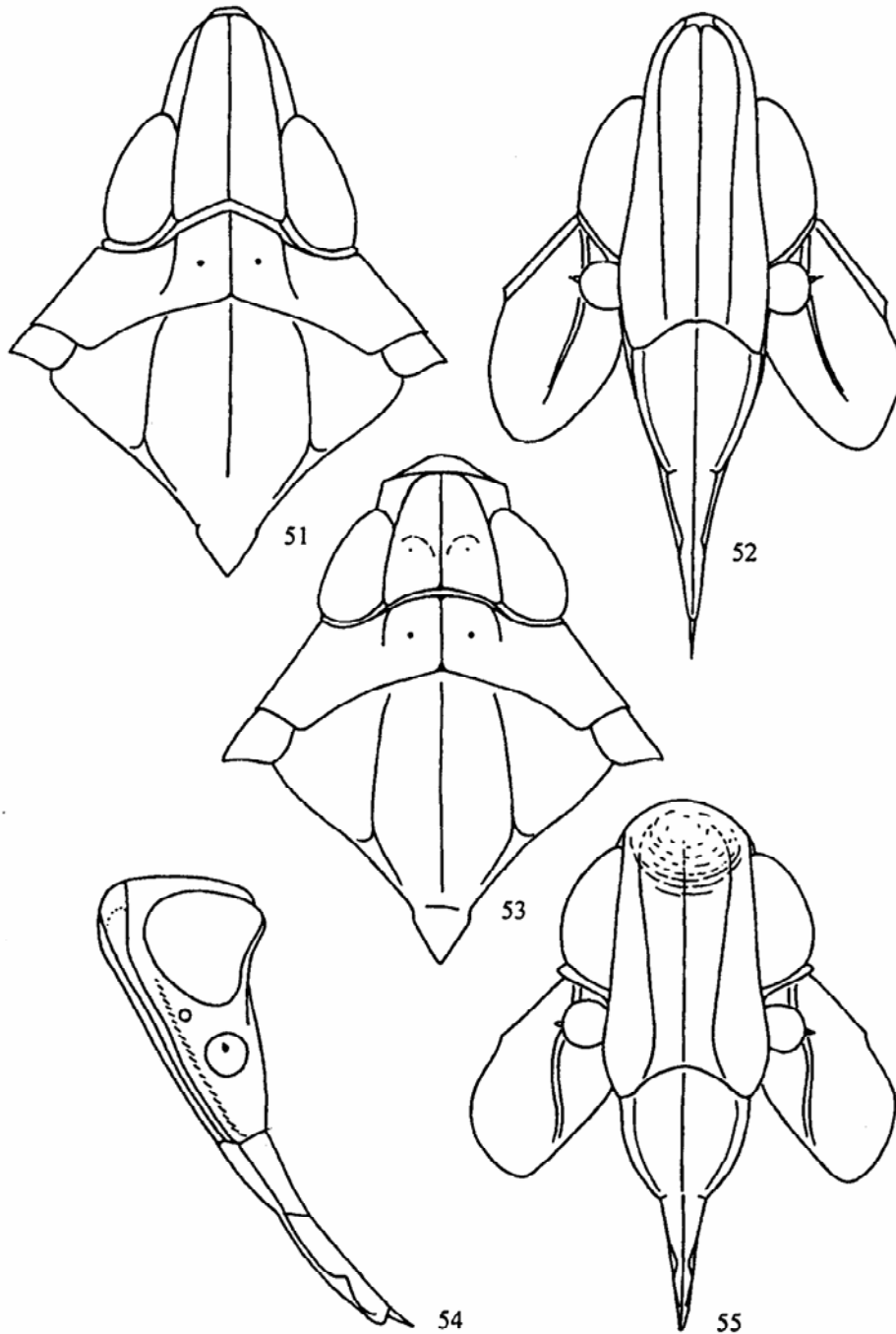
Description. Coryphe parabolic, with rather widely rounded apex, projecting forward from eyes by about half of length; all carinae distinct. Apical callus medium-sized. Metope flat; lateral areas deflected laterally only at apex; intermediate carinae running in parallel up to level of anterior margin of eyes, then parabolically joined with callus; lateral carinae arcuately projecting sideways below level of eyes opposite antennae, lateral areas as wide there as median areas. All carinae of metope sharp. Border with clypeus gently concave. Postclypeus short, convex; its convex lateral margins converging toward narrow anteclypeus. Lateral carinae of anteclypeus reaching its apex, with small undulate flexure in apical third. Antennae small, 2nd segment globose. Third of ultimate segment of rostrum projecting beyond hind coxae, ultimate segment slightly shorter than penultimate one. Postocular

swellings narrow, keel-shaped. Pronotum with sharp carinae, disc with 1 pair of puncture-shaped depressions, lateral carinae of disc not reaching posterior margin by third of their length, pectoral carinae thick and distinct. Posterior margin of pronotum gently arcuately concave. Scutellum with 3 sharp carinae; lateral carinae moderately diverging backward, anteriorly distance between them equal to width of pronotal disc. Tegulae without carinae. Fore wing slightly shortened and thickened, parallel-sided in middle part; membrane widely rounded, about as long as wide; pterostigma small, almost not projecting backward from line of stem of *ScRA*. Membrane with 3–4 cross-veins in each entire area, only half of membrane projecting beyond apex of abdomen (♀). *ScR* and *M* originating from one point of basal cell. Legs of medium proportions, fore and middle femora without ledges or teeth at posterior margins. Hind tibia with 5 lateral and 7 apical teeth. 1st segment of hind tarsus with about 16, and 2nd segment with about 12 teeth.

Apparently, the genus is closely related to *Philotheria* Mel., most similar to representatives of the *Ph. natalensis* Stål group, but differs in the wider coryphe with the continuously convex lateral margins and in the slightly shortened and compact fore wing.

Aethiocera adusta Emeljanov, sp. n. (Figs. 51, 52)

Description. Head rather long, coryphe projecting forward from eyes by about half of length. Basic tone of coloration brown to dark brown. Coryphe slightly darker than background, face slightly paler. Carinae of coryphe slightly paler than background, metope bearing alternating black and whitish spots on narrow lateral areas above level of middle of eyes. Postclypeus with dark oblique stripes merging near anteclypeus, carinae of anteclypeus pale, intervals strongly darkened. On pronotum and scutellum, carinae distinctly paler than background. Fore wing hyaline, with brown veins slightly paler. Areas between radial and median stems on membrane dark brown, forming vague longitudinal stripe. Hind wing vaguely darkened along margin in postnodal area, this darkening appearing through fore wing. Legs with pale carinae and dark intervals between them, fore and middle tibiae with black spots in places, apices of fore and middle tibiae entirely darkened, all tarsi dark. Sides of hind tibia regularly darkened, ventral side regularly blackened. Abdomen dark brown to black, ventrally with white spots at places of sensitive hairs, subgenital sternite of female with 1 pair of pale brown spots at sides.



Figs. 51–55. *Aethiocera adusta* gen. et sp. n. (51, 52) and *Tylacra nigrinaso* gen. sp. n. (53–55), anterior part of body: (51, 53) anterior part of body, dorsal view; (52, 55) head and pronotum, anteroventral view; (54) head, lateral view.

Male unknown.

Body length: 8.9 mm.

Material. Holotype: ♀, Republic of South Africa, Orange Free State, Wolwecop, 26.II.1994 (B. Belozero) (ZIN).

Genus *TYLACRA* Emeljanov, gen. n.

Type species *Tylacra nigrinaso* sp. n.

Description. In appearance, the genus resembling representatives of the *P. afra* group of the genus *Paranagnia* Mel. Head short. Coryphe projecting forward from eyes by about third of its length; swollen part of metope, including apical callus situated (visible in dorsal view) in front of coryphe. Lateral margins of coryphe keel-shaped, slightly curved with prominence directed outwards, distinctly converging toward anterior margin; anterior margin obtuse-angled, less than

half as wide as posterior margin; median carina sharp, slightly not reaching margin of coryphe anteriorly; posterior margin of coryphe slightly elevated. Wide areas of lateral surfaces of head visible in front of eyes at sides of coryphe. Metope more than twice as long as wide, nearly flat in basal part, only slightly convex transversely, rather strongly convexly swollen at apex, widest slightly below level of antennae (its margins convex there), approximately parallel-sided between eyes, parabolically rounded from upper third of eyes. Intermediate and median carinae of metope smoothed, but not lost. Intermediate carinae parallel in lower part, then slightly diverging, and vaguely semi-circularly joined at apex of head on swelling; borders of apical callus not distinguishable reliably because of swelling. Lateral lobes of metope widest at lower margin of antennae, about 1.5 times as wide there as middle lobes; between eyes, middle lobes slightly wider than lateral ones. Clypeal border gently concave. Postclypeus gently concave, with sharp carinae, narrowed to anteclypeus in lower half, with sides slightly concave before anteclypeus. Anteclypeus with entire lateral carinae forming characteristic bracket-shaped bend in middle part and joined at apex of anteclypeus. Area of lateral surface of head between eye and angular junction of margins of coryphe and metope shallowly depressed and separated from eye by indistinct carina, i.e., indistinctly separated trigon present. Antennae small; 2nd segment oval, beveled upward. Rostrum reaching apices of hind coxae, ultimate segment nearly 0.67 times as long as penultimate one. Postocular swellings narrow, keel-shaped. Pronotum obtuse-angularly projecting in area of disc and concave at sides behind eyes. Disc with entirely developed median carina; lateral carinae outlined in form of tubercles anteriorly, then not developed, but bend of surface showing their parallel arrangement; 1 pair of depressed punctures lying at sides of median carina. Lateral and collateral carinae of pronotum well developed, pectoral carina sharpest and thickest. Posterior margin of pronotum gently arcuately concave. Scutellum with 3 carinae, lateral carinae parallel or slightly diverging backward. Tegulae without carinae. Fore wing oblong, slightly widened to membrane, almost symmetrically rounded in distal half of membrane, more steeply rounded in posterior half. Pterostigma narrow, with 3 or 4 cells. *ScR* and *M* extending from one point of basal cell. *ScR* forking near pterostigma, and *RP* immediately anastomosing with *M* in area about as wide as crossed area. Longitudinal fold occupying first area of system of *MP*. Claval veins joined

near its middle. Legs slender, of medium length. Fore femur without teeth and prominences at apex ventrally. Hind tibia with 5 lateral and 7 apical teeth, 1st and 2nd segments of hind tarsus with about 21 and 19 teeth (including marginal teeth without setae), respectively.

The new genus is similar to species of the *P. africana* Syn. group of the genus *Philotheria* Mel., but differs from them in the following characters: coryphe rather wide, wider than transverse diameter of eye; lateral and anterior margins forming smooth parabolic arc; apical part of coryphe distinctly convex, as though being swollen; carinae of metope well developed, but smoothed (in *Philotheria*, carinae narrow and sharp; coryphe narrower than eye, neither smoothed nor swollen); lateral carinae of pronotal disc distinct only in anterior third, absent in posterior half (in *Philotheria africana* group, lateral carinae straight, slightly converging, frequently with weak ledge in front of eyes, rounded only anteriorly); *ScR* branching distinctly earlier than that in *Philotheria africana* group (in this group, *ScR* branching immediately in front of pterostigma); pterostigma not shifted backward on line of stem of *ScR*.

Tylacra nigrinaso Emeljanov, sp. n. (Figs. 53–55)

Description. Body whitish brown, with restrictedly developed, not large, dark brown to black pattern. About 1/4 of coryphe projecting forward from eyes. Coryphe with nearly black stripe with vague margins extending from apical callus along median carina, this stripe mostly limited by anterior half of coryphe, but occasionally weakly continuing along pronotum, scutellum, and sutural margin of clavus (when wing in repose, this is one line). Ridge of median carina of pronotum and mesonotum remaining pale. Metope with, oval, nearly black, longitudinal spot with vague margins, this spot continuing stripe on coryphe; granules at place of sensory pits, situated in area of spot, remaining pale. Postclypeus brown, with pale oblique stripes. Genae and antennae brown. Carinae on sides of pronotum slightly paler than background. Fore wings, in addition to sutural darkening, with 2 large dark brown spots on membrane (spots with vague margins, indistinctly separated on posteromedial area along fold characteristic of most Dictyopharinae); at anterior margin of wing, stigma and anterior half of radial area behind basal half of stigma remaining pale. Anterior spot, narrowing, cuneiformly extending toward base of wing through posterior radial area as far

as fork of *M*. Apical part of hind wing darkened similarly to that of fore wing. All femora with pale carinae and dark intervals; carinae on tibiae also pale; on fore and middle tibiae, intervals irregularly darkened, with darker spots in places, apices darkened more intensely; hind tibia and tarsus almost not darkened. Abdomen ventrally dark brown, with pale spots laterally at base of hair-like setae.

Body length: ♂ 8.1–8.9 mm, ♀ 9.2–9.8 mm.

Material. Holotype: ♂, Senegal. Tabi près Bignona, 12–13 et 23–24.XI.1961, lumière, Mission IFAN en Basse-Casamance, Coll. R. I. Sc. N. B. (ISNB). Paratypes: 6 ♂, 12 ♀ + 2 specimens without abdomen, same locality (ISNB).

Genus *LITOCRAS* Emeljanov, gen. n.

Type species *Litocras athletes* sp. n.

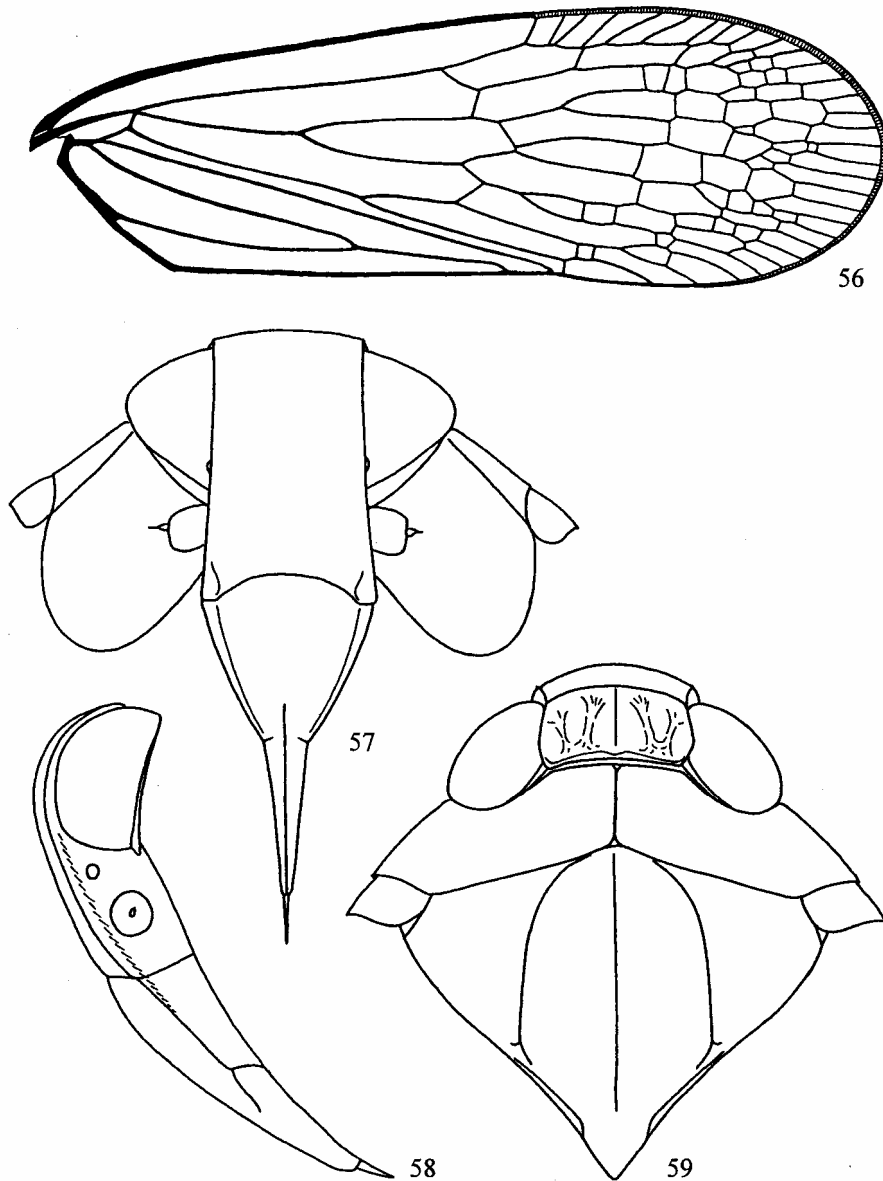
Description. Body large, with short head and wide pronotum. All carinae on coryphe and metope, except for lateral ones, smoothed, hardly visible; anterior border of coryphe slightly more clearly pronounced. Head transverse; coryphe slightly concave; its anterior and posterior margins gently arcuate; width of anterior margin about twice median length of coryphe; lateral margins of coryphe distinctly diverging backward; median carina weakly outlined. Upper part of metope (from half of height of eye) smoothly deflected backward to coryphe, passing into coryphe without break; length of visible (in dorsal view) part of metope comparable with length of coryphe. Metope about twice as long as wide, weakly convex transversely, moderately widened to clypeus, border with clypeus gently concave, carinae of metope hardly visible, surface slightly shagreened. Postclypeus narrowed toward apex; lateral carinae of postclypeus extending on anteclypeus, converging near middle of length of anteclypeus; postclypeus transversely convex, its median carina poorly developed but becoming stronger toward anteclypeus; median carina of anteclypeus distinct. Supra- and preocular areas rather narrow, lateral ocelli large, antennae small, 2nd segment approximately globose. Rostrum projecting slightly beyond apices of hind coxae, its ultimate segment about half as long as penultimate one. Pronotum transverse, much wider than head; its lateral margins situated at right angle relative to each other; length of pronotum along midline about twice that of coryphe. Median carina of disc and lateral and collateral carinae present, collateral carinae smoothed, disc without lateral carinae, pectoral carina ab-

sent. Posterior margin of pronotum gently concave in middle part. Mesoscutum nearly triangular because of its anterior margin weakly projecting forward, bearing 3 distinct carinae; lateral carinae slightly diverging backward. Tegulae without carinae. Fore wing of medium proportions, weakly widened as far as nodal level; membrane semi-elliptical. Costal margin straight nearly from base. *ScR* and *M* originating from one point of basal cell or forming very short common stem. First branching of *ScR* near stigma; stigma not wider than costal area, with 6–8 oblique cross-veins. Media branching very early: at middle of corium basal to level of merging of claval veins and much more proximal than first branching of *CuA* laying slightly distal to claval fork situated in apical 2/5 of clavus. Veins *rm* and *mcu* lying near nodal line. Membrane with about 4 rows of indistinct cross-veins. Only one longitudinal fold between anterior and posterior branching of *MP* clearly pronounced. Veins on membrane branching several times, over 20 marginal veins present. Fore and middle legs rather long, but tibiae no more than by 1/5 longer than femora. Fore femur slightly widened owing to high posteroventral carina, carina dentiformly terminating before apex of femur. Hind tibia with 5–6 lateral and 8 apical teeth. 1st and 2nd segments of hind tarsus each with 11–13 teeth; all teeth, except for marginal ones, with subapical setae.

Female genitalia. Subgenital sternite rather short, with anterior margin arcuately projecting forward, longer medially and shorter laterally than preceding sternites. First valvifers with oblique median margins converging backward and with obtusely dentiformly attenuate posteromedial angles. Postvaginal plate with undulate posterior margin. Lower lobes of 2nd valvulae of ovipositor wide, with well-defined appendage.

Male genitalia. Anal tube rather narrow, parallel-sided, with shallowly emarginate or truncate apex. Stylus with apical part higher than basal one. Lateral hook situated almost immediately below upper hook shifted apically in comparison with its usual position. Lateral walls of pygophore nearly straight, with weakly sclerotized tongue-shaped processes in upper third.

The new genus sharply differs from the others in the almost entire absence (disappearance) of carinae on the head and in the early branching of the medial vein on the fore wing, similar to that of Fulgoridae. The genus may be distantly related to *Paranagnia* Mel., as both have a similar structure of the fore femur.



Figs. 56–59. *Litocras athletes* gen. et sp. n.: (56) fore wing; (57) head and pronotum, anteroventral view; (58) head, lateral view; (59) anterior part of body, dorsal view.

Litocras athletes Emeljanov, sp. n. (Figs. 56–59)

Description. Main color of body green, being lost with time of deposition, specimens collected long time ago brownish orange. Eyes reddish. Pronotum with yellowish white stripe running along smoothed lateral carina, intercarinal space and collateral carina (also not sharp) dark brown; anterior part of humeral area with black rounded callus-shaped prominence in form of very large ocellus. Dark humeral stripe continuing on lower margin of tegula and below blackened costal carina. Anterior margin of paranotum bearing below eye dark stroke interrupted before lower

end. Fore femur ventrally with row of dark brown spots closer to anterior margin, middle femur also with traces of similar spots, dorsal surface of fore femur with 3 rows of similar spots, posterior row pronounced only in basal half of femur and consisting of larger transverse spots. Posteroventral carina of femur blackened along ridge and bearing black spot on subapical prominence. Fore tibia with blackened edges of carinae, middle tibia with slightly darkened carinae, fore and middle tarsi brown to dark brown. Base and apex of fore tibia darkened, those of middle tibia more sharply darkened. Hind femur with weakly blackened

posterior carina, blackening strengthened and widened before apex; anterior surface of femur with row of brown spots in apical part. Apical margin of femur and base of tibia blackened, tibia blackened as far as knee tooth, carinae of tibia slightly darkened, tibial spines and tibia at base of tarsus darkened. Abdominal tergites brownish darkened dorsally, except for posterior and lateral margins.

Body length: ♂ 14.4–15.3, ♀ 16–17.8 mm.

Material. Holotype: ♂, S. Africa, Nelspruit, 25°28'S, 30°59'E, 25–26.II.1991 (M. Stiller) (NICP). Paratypes: S. Africa. Natal: 1 ♀, Mkuze Reserve, light, 32°15'E, 27°40'S, 120 m, IV.21 (P.E. Reavell) (NMSA); Mpumalanga: 1 ♂, # 90, Nelspruit Botanical Gardens, 25°27'S, 30°58'E, 450 m, 10.XII.1997 (J.G.H. & A. Londt) (NMSA.) Transvaal: 2 ♀, Farm-Weltevreden, 25°34'S, 31°10'E, 2–3.II.1989 (R. Oberprieler) (NICP); Kwazulu-Natal: 1 ♂, Tembe Elephant Park, Sihangwane Area, 27°02'S, 32°25'E, 100 m, 1–4.I.1996 (E. Grobbelaar) (NICP.) North Cape: 1 ♀, North Cape, E. Tvl., S. Afr., 17.I.[19]72 (A.L. Capener) (NICP).

Genus *DAPLOCE* Emeljanov, gen. n.

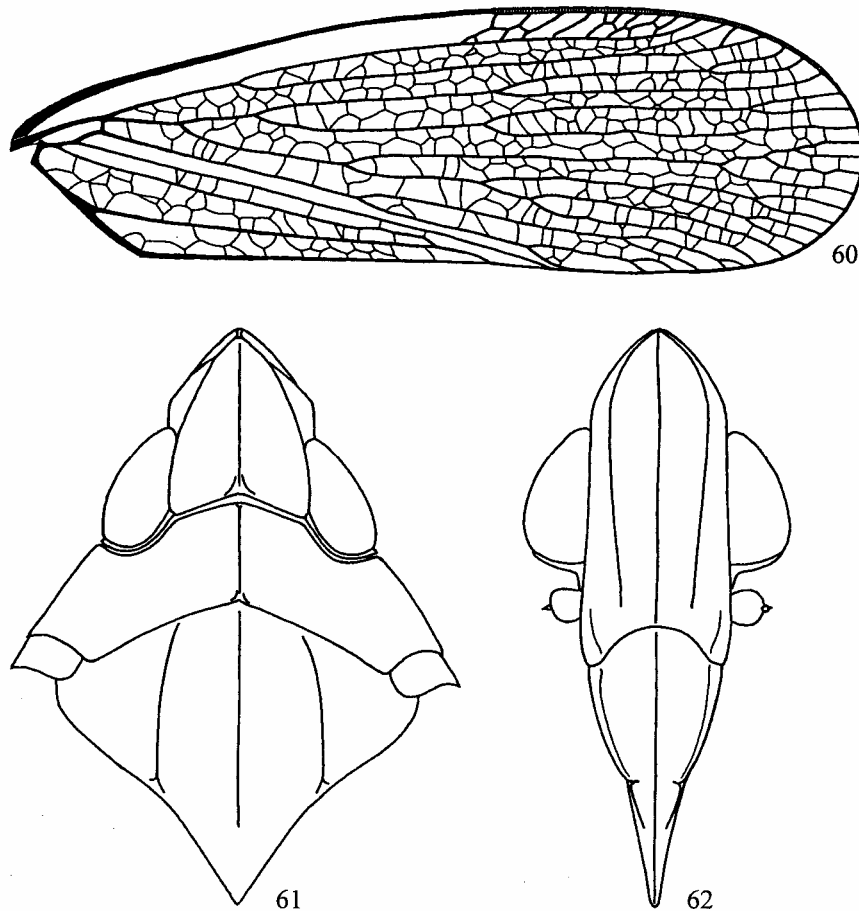
Type species *Daploce exquisita* sp. n.

Daploce is similar to the genera *Dictyophara* Germ., *Pseudophanella* Fenn., and *Afronersia* Fenn. in habitus, but sharply differs in the venation of the fore wings bearing a reticulation of additional veins, which is similar to that in *Aselgeia* Walker.

Description. Coryphe transitive from pentagonal to triangular, bend of lateral margins in front of eyes poorly developed, surface slightly concave, median carina sharp, preocular part of coryphe slightly longer than interocular part. Metope parallel-sided from clypeus to nearly to level of anterodorsal margin of eyes, then cuneiformly narrowed toward apex of head; lateral margins of metope visible in dorsal view in front of eyes at sides of coryphe, similarly to those in representatives of the genus *Afronersia*. Intermediate carinae of metope approximate to lateral carinae in preapical part and equally distant from margins of metope and from its median carina in preclypeal part. Clypeal margin of metope arcuately concave, clypeus introduced up to level of lower margins of antennae, lateral margins of metope subparallel or slightly diverging to clypeus. Clypeus with gently convex lateral margins and sharp median carina. Lateral carinae of

postclypeus passing on anteclypeus, converging to median carina, and then becoming indistinct and running in parallel to latter. Lateral ocelli large. Antennae small, 2nd segment approximately globose. Rostrum with more than half length of ultimate segment projecting beyond hind coxae, ultimate segment about half as long as penultimate one. Pronotum with lateral margins converging forward at sharp angle (60°), posterior margin of pronotum rather deeply emarginate in middle part. Median carina of disc and lateral and collateral carinae developed, lateral carinae of disc and pectoral carinae absent. Mesoscutum with 3 sharp parallel carinae. Tegulae without carinae. Fore wing moderately oblong, costal margin parallel to sutural in posterior 2/3. Margin of wing in area of membrane oval, anterior half curved less steeply than posterior half. All areas of wing, except for costal and preclaval ones, covered with reticulation of cross-veins; basal stems and branches vaguely distinguished in reticulation more apically. Interlacing of secondary veins forming in places similarity to false longitudinal veins. Sharper subcostoradial vein distinct from base to nearly apex of pterostigma. Pterostigma not wider than costal area and crossed by oblique cross-veins. Vein *RP* weak, originating from *ScRA* in middle part of corium more closely to arculus than to pterostigma. Area of *rm* with 2 rows of secondary cells, rows separated by irregular angular false longitudinal vein. *M* and *ScR* originating from one point of basal cell. *M* early branching and soon, earlier than *MP*, also forking; its anterior branch (first fork of *MP*) lying more distally than fork of *MA*, but basal to fork of *CuA* lying opposite posterior third of clavus. On clavus, recurrent fork (*Pcu* + *A*₁) strongly shifted to its apex, lying from at distance not exceeding 1/5 of total length of clavus. Legs of medium proportions; fore tibia 1/3 longer than femur; femur simple, slender, without high carinae and teeth. Hind tibia with 4–6 lateral teeth, distance between knee tooth and succeeding tooth greater than that between other teeth (as though 1 tooth missed). Apex of hind tibia with 8 teeth, two basal segments of hind tarsus with 14–20 teeth; all teeth, except for marginal ones, with subapical setae.

Female genitalia. Subgenital sternite large, long, with anterior margin angularly projecting forward. First valvifers with lobiformly attenuate posteromedial angles. Postvaginal plate weakly sclerotized, with straight anterior margin, i.e., not projecting in form of lobe. Lower lobes of gonoplares of ovipositor wide, with small appendage.



Figs. 60–62. *Daploce exquisita* gen. et sp. n.: (60) fore wing; (61) anterior part of body, dorsal view; (62) face.

Male genitalia. Styli rather short, with arcuately convex lower margin and with rather short, cuneiformly rounded apical part. Anal tube with long lobes ventrally at apex, lobes narrowed toward rounded apices and directed anteroventrally. Lateral walls of styli with arcuate carina in basal half, carina extending nearly from upper margin downward and backward. Anal tube arcuately bend with prominence directed upward. Posterior margin of pygophore with dentiform process at sides, process separated dorsally by transverse fold-incision.

The genus differs from all the genera of Dictyopharidae, except for *Aluntia* Stål and *Aselgeia* Walker, in the fine secondary reticulation on the fore wing, and from the latter genus, also in the absence of crossveins in the costal area and in the early branching of the median stem. In addition, the secondary veins of *Daploce* gen. n. form no blind branching, in contrast to those of *Aselgeia*. The new genus also differs from all the genera of Dictyopharidae in the early branchings of the radius (*ScR*) and *M* (*MA* branches earlier than

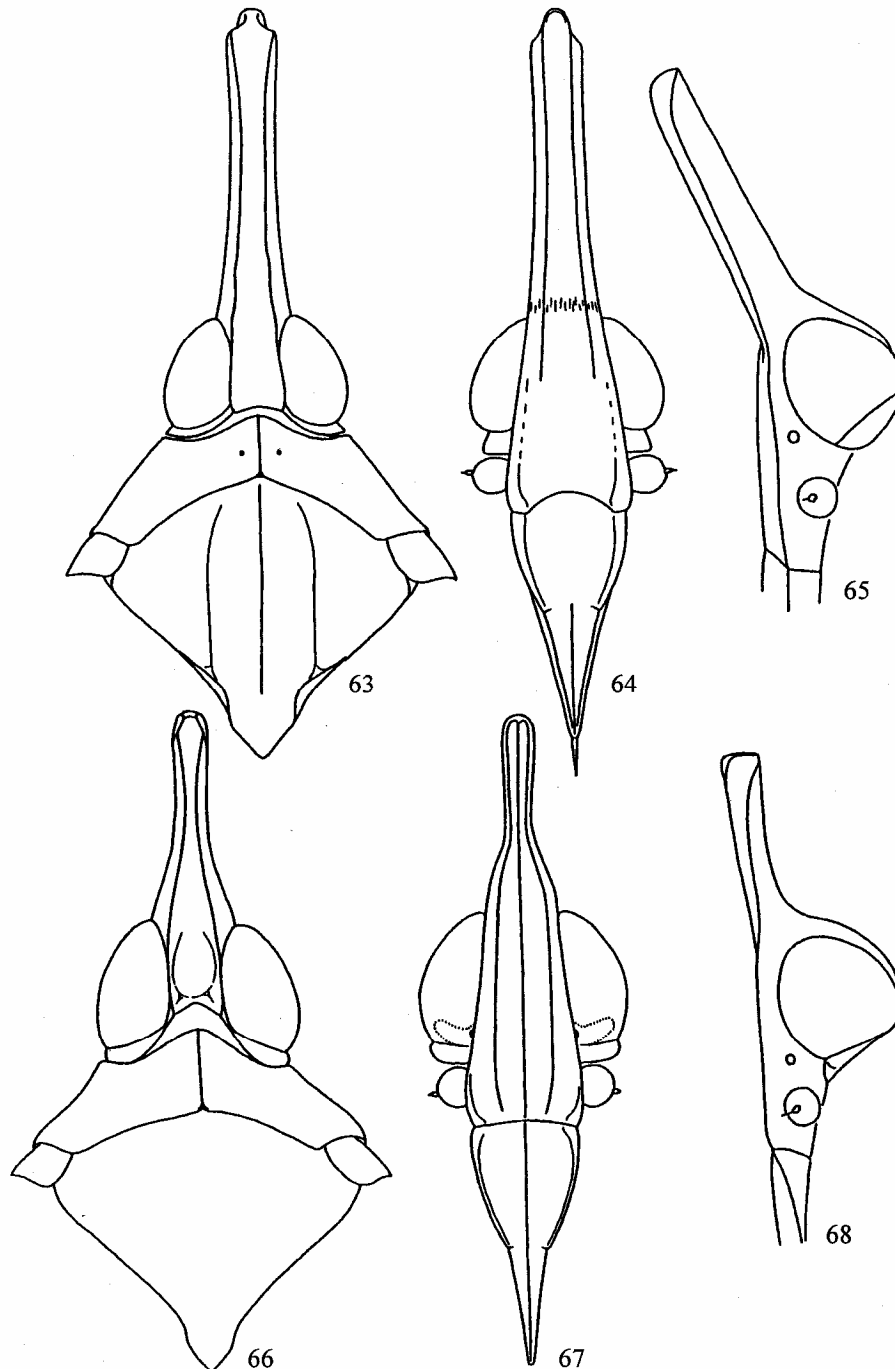
MP and both branches bifurcate very early, considerably distal to the merging of *PCu* and *A*₁) and in the rich branching of the system of *M*.

Daploce exquisita Emeljanov, sp. n. (Figs. 60–62)

Description. Body grassy-green (lost coloration in collections), almost regularly colored. Fore wing matte, slightly paler than anterior part of body, semi-transparent; costal area slightly whitish, opaque. Apices of fore tibiae slightly darkened.

Body length: ♂ 11.5–12.8, ♀ 14.9 mm.

Material. Holotype: ♂, S. Africa, W Cape, Gamkas Kloof Nature Reserve. Die Hel. 33.21 S, 21.37 E, 450 m, 12.XII.1995 (M. de Jager) (NICP). Paratypes. S. Africa. 1 ♂, Cape [#15] 12 km N of De Rust, 33°25'S, 22°34'E, 900 m, 23.IX.1990 (Whittington and Zondt), Meirings poort area (NMSA); 1 ♀, W Cape, Gamkas Kloof Nature Reserve. Die Hel. 33.21 S, 21.37 E, 450 m, 12.XII.1995 (M. de Jager) (NICP), 3 ♂ 1n: Western Cape Area, Wiedow Farm foot Gif-



Figs. 63–68. *Zaputala* gen. n. and *Putala* Mel. (63–65) *Z. bourgoini* gen. et sp. n.: (63) anterior part of body, dorsal view; (64, 65) head [(64) anteroventral view, (65) lateral view]; (66–68) *P. rostrata* Mel.: (66) anterior part of body, dorsal view; (67, 68) head [(67) anteroventral view, (68) lateral view].

berg Pass SE Vanrhynsdorp, 31°44' S, 18°46'E, 3–10.X.2002, 120 m // SWEEP/beat trees/shrubs at night (M. Stiller) (NICP).

Genus **ZAPUTALA** Emeljanov, gen. n.

Type species *Z. bourgoini* sp. n.

Description. Appearance similar to that of the type species of the genus *Putala* Mel. (Figs. 66–68), but differing in smoothed metope without intermediate and median carinae and in smoothed sides of pronotum without lateral and collateral carinae. Head with narrow, rather long process; coryphe narrow between

eyes, about as wide as process; eyes large in comparison with coryphe, their diameter about twice width of coryphe. Lateral carinae of coryphe sharp, slightly undulate immediately in front of eyes, curved; median carina absent; coryphe slightly narrowed in middle part of process, with lateral carinae gently arcuate there. On whole, cephalic process narrow, prismatic; plane of metope obtuse-angularly concavely refracted immediately in front of eyes; intermediate carinae of metope developed only on process. Basal part of metope (without process) smooth, without carinae, weakly gently convex transversely; metope widest below antennae, roundly narrowed to clypeus, with straight margins converging upward-forward in basal part, about half as wide dorsally as ventrally; border with clypeus gently concave. Postclypeus also without median carina and lateral grooves. Lateral carinae of anteclypeus running as far as its apex, weakly bent in middle part. Lateral ocelli normally developed. Postocular swellings falcate, with sharp posterior margin. Rostrum projecting slightly beyond hind coxae, its ultimate segment shorter than penultimate one. Pronotum only with sharp and high median carina; punctate depressions extending at sides of carina and crossed by smooth oblique elongate depressions directed approximately from posterior end of median carina sideways, toward outer margins of eyes. Lateral and collateral carinae hardly visible in posterior part. Basal part of posterior margin of pronotum gently arcuately concave, with small incision at end of median carina. Mesoscutum large, with 3 not sharp carinae; lateral carinae lancet-like converging anteriorly, parallel in posterior 2/3. Tegulae without carinae. Fore wing slender; claval part slightly widened toward longitudinally elliptic membrane; *ScR* and *M* originating from one point of basal cell; order of branchings of *ScR*, *M*, and *CuA* standard. Pterostigma narrow, with 3 cross-veins. Each area of membrane with no more than 3 (usually 2) cross-veins: nodal and subapical rows. United claval vein significantly longer than fork. Legs slender, narrow, slightly longer than usual ones; fore tibia about 1/3 longer than femur. Hind tibia with 5 or 6 lateral teeth, apex with 7 teeth. Hind tarsus with long basal segment occupying ventrally 2/3 of total length of tarsus. 1st and 2nd segments each 11 teeth, among them, 9 teeth with platellae, marginal teeth without platellae. Posteromedian angles of basal plates of first sheaths of ovipositor attenuate to form small rounded lobes, lateral lobes of gonoplaes with appendage.

The new genus is closely related to the genus *Putala* Mel. (Figs. 66–68), to its type species (the genus has been described as a monotypical one, and the other species described in it apparently do not belong to it), in many characters and in appearance, but clearly differs in the absence of any carinae (except for the lateral ones) on the metope and of the median carina on the postclypeus, in the pronotum without lateral and collateral carinae, and in the similar width of the coryphe between the eyes and on the process.

Zaputala bourgoini Emeljanov, sp. n. (Figs. 63–65)

Description. Body mainly reddish-brownish, apparently more or less green in living individuals. Pattern developed very restrictedly. Cephalic process with preocular areas brown but bearing pale stripe along carina of coryphe, outer areas of metope also darkened but with pale spots at place of larval sensory pits. Femora with dark spots in preapical parts, fore tibia with narrow dark subbasal band and darkening near apex, middle tibia only with subbasal band, hind tibia and tarsus only with apices of teeth darkened. Fore wing nearly hyaline, with greenish veins. Middle part of posterior margin of anal tube (♀) with dark brown to black sharp spot.

Male unknown.

Body length: ♀ 12.6 mm.

Material. Holotype: ♀, “Madagascar, Lambromacandro, Tulear. Museum Paris, 1935, Cataia” (MNHN).

According to Melichar (1903, 1912), the intermediate carinae of the metope in *Putala* fuse with the median carina, when pass on the cephalic process, the same is shown in the original figure. Examination of the syntype deposited in the Hungarian Natural History Museum has shown that this statement is erroneous (Figs. 66–68). The middle and intermediate carinae of the metope are closely approximate but run separately as far as the apex of the cephalic process. Since Melichar did not distinguish the holotype in the original description, I designate as lectotype the specimen (syntype) from the Hungarian Natural History Museum. The specimen was provided with the following labels: “Puttalam/CeylonHorn,” “*rostrata*/det. Melichar,” “*Putala*,” and “Hung. Nat. Hist. Mus./Budapest/coll. Rhynchota.” I have added the red label “Lectotypus *Putala rostrata* Melichar Emeljanov design.” (HNHM).

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