

REICHENBACHIA

Staatliches Museum für Tierkunde Dresden

Band 33

Ausgegeben: 22. März 1999

Nr. 6

New species of *Toropa* and *Igava* and a new genus, *Trigava* gen. n. (Hemiptera: Auchenorrhyncha: Fulgoromorpha: Dictyopharidae)

With 15 Figures

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Abstract. Two new species, *Toropa remanei* sp. n. and *Igava hartae* sp. n., are described. *T. melanogona* (WALKER) is resurrected. The species described by MELICHAR as *T. ferrifera* WALKER and named as the type species was misidentified; the Rules of Zoological Nomenclature say a misidentified type species must be submitted to the Commission for designation. A new genus, *Trigava* gen. n., is erected for the species *I. brachycephala* MELICHAR (type species) and *I. recurva* MELICHAR as described by MELICHAR (1912).

Introduction

FENNAH placed four genera, *Igava* MELICHAR, *Toropa* MELICHAR, *Hydriena* MELICHAR, and *Lappida* AMYOT & SERVILLE, together in his key to the Dictyopharini of the New World (1944), separated from the others by protibiae very long in relation to femora. Two of them, *Toropa* and *Igava*, are studied here.

Toropa was described by MELICHAR (1912) to include the species *Dictyophara ferrifera* WALKER. DISTANT (1906) synonymized *D. melanogona* WALKER with this species, which MELICHAR (1912) followed, adding *D. telifera* WALKER as another synonym. FENNAH (1944) published a new key to the New World genera; in 1945 he redescribed *ferrifera* and illustrated the genitalia after sending specimens to W.E. CHINA at the British Museum for comparison with the type. In 1947 he published an addition to the key which separated *Dictyopharoides* into three genera and removed *telifera* from *Toropa*, placing it in his new genus *Neomiasa*.

Igava was described by MELICHAR (1912) with the type species *Dictyophara callipepla* GERSTAECKER, in which he repeated GERSTAECKER's description except for references to a species from Java. MELICHAR also placed two new species in this genus, which I believe belong elsewhere.

In this paper I am resurrecting *T. melanogona* from synonymy, describing a new species of *Toropa*, a new species of *Igava*, and placing *I. brachyceps* MELICHAR and *I. recurva* MELICHAR in a new genus.

Toropa MELICHAR, 1912: 80

This genus may be identified by the anterior tibiae longer than femora; head projecting forward and upward; wings long, exceeding body by width of wing, 3–7 stigmal cells; 5 spines on the hind tibiae; and tenth segment long, triangular.

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Unfortunately probably MELICHAR was unable to borrow specimens from the British Museum because of a strong law as he described in his Acanaloniinae and Flatinae paper (1902), as that museum is not listed as a repository of specimens examined. Thus he misidentified specimens he held (with a dark stripe on the side of the head from the eye to the ventral margin of the head projection) as *D. ferrifera* WALKER, which lacks that vitta (see MELICHAR 1912, plate III, Figs. 6–8). According to the International Code, “if, however, a type species is considered to have been misidentified, the case is to be referred to the Commission to designate as the type species whichever nominal species will in its judgement best serve stability and universality of nomenclature”. I prefer not to rename this species of MELICHAR without seeing his specimens, so that I do not add another error. I do have specimens that I would provisionally identify as *D. ferrifera* sensu MELICHAR, nec WALKER, and they do have a different genitalia.

Stages of the inflation of the aedeagus of *T. ferrifera* are shown (Fig. 11, a–c). Because of the difficulty of reproducing the same state of inflation in the same or different specimens of the same or different species, I prefer to use the pygofer and claspers for characters to separate the species.

***Toropa ferrifera* (WALKER) (Figs. 1, 4, 11)**

Dictyophara ferrifera WALKER, 1851: 313

Toropa ferrifera (WALKER), MELICHAR 1912: 80

Salient features: Disk of vertex (without projection) $\frac{3}{4}$ as broad as long; head projection $1\frac{3}{4}$ as long as disk of vertex; in lateral view projection $\frac{1}{7}$ longer than line from projection to base of head behind eye. Stigma with 3–5 cells. Length: 17–19 mm. Green, yellow, reddish yellow, or brown; lateral carinae of frons red; marginal carinae of frons and vertex black (sometimes red), broader on projection; margins of pronotum and tegulae, and lateral marginal carinae of pronotum and underside of costa black. In lateral view of projection, no dark vitta running from front of eye to lower margin of projection.

Male genitalia: [Since the genitalia of specimens I had identified as *ferrifera* differed from those illustrated by FENNAH (1945, Fig. 250), I borrowed the specimens he sent to the National Museum of Natural History, Washington, and illustrated one of them. I cannot explain his Figure.] Pygofer pentagonal, dorsal surface angulate; dorsal half slightly wider than ventral half; anterior and posterior margins subparallel. Paramere triangular, dorsal spine at apical third; lateral basal spine comparatively short and broad. Aedeagus with apical pair of spines reflexed along dorsum, reaching pygofer, with two pairs of ventral expandable processes, one pair of which may expand to a semicircular reflexed projection.

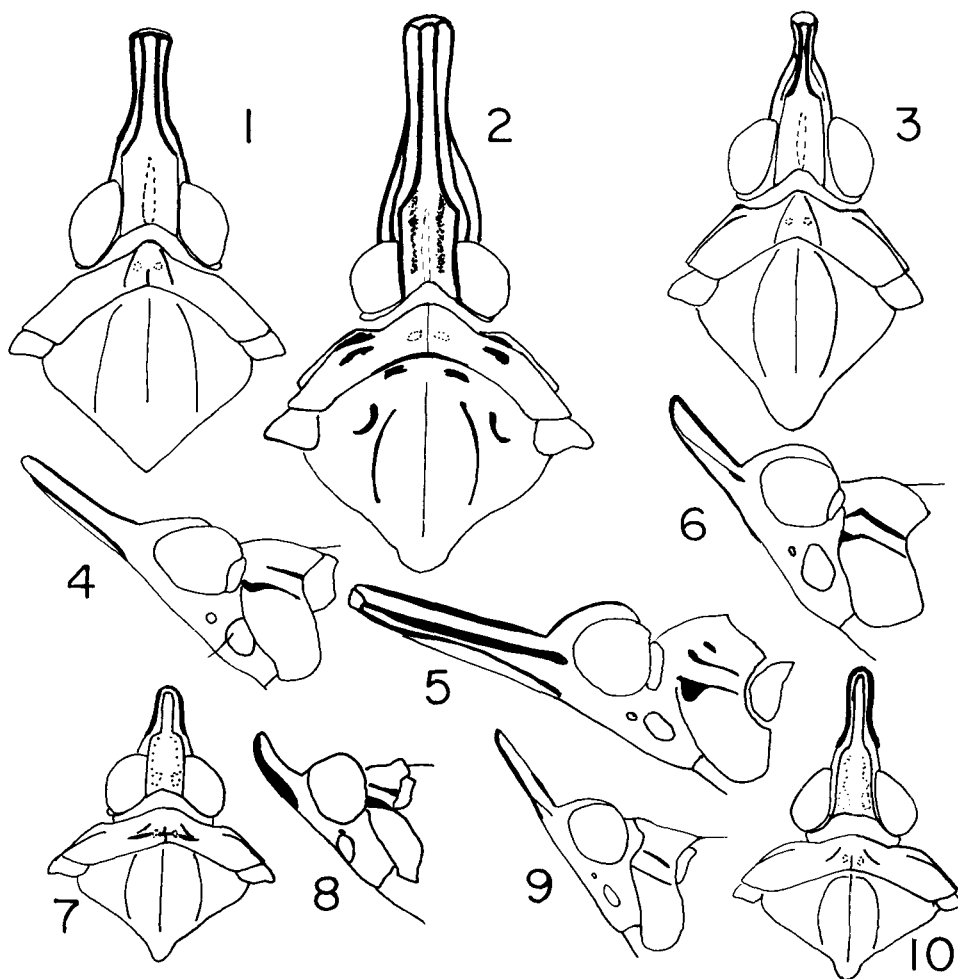
Specimens studied: 13. – TRINIDAD: Arima Valley, Curepe, Montserrat, Santa Margarita. Collection dates: Feb. 3 and June 8 to August 19, 7 specimens [USNM, LOB]. GUYANA, Mabura Hill, 1♂, on *Catostemma fragrans* Benth., 14-X-1997; 1♂ on *Chlorocardium rodiei* (Scomb.) tree, 24-X-1997; 1♀ on *Pentaclethra macroloba* (Willd.) Kuntze, 30-V-1996; 1♀ on *Eperua rubigenosa* Miq., 29-I-1997 [Tropenbos, LOB]. VENEZUELA: Bolivar, Guri; Ta'chira, Rio Frio, 30 km S. Cristobal, Collection dates: July 9 & 13 [LOB].

Notes: The lack of a brown vitta on the head in front of the eyes separates *ferrifera* from the other species known. In *ferrifera*, the dorsal spine is at about the posterior third of the clasper; in the other three species it is near the middle. In *ferrifera*, the pygofer is subrectangular, but slightly widened dorsally. In *remanei* the projection is more pronounced and lower; in *melanogona* it is absent.

***Toropa melanogona* (WALKER), stat. n. (Figs. 2, 5, 12)**

Dictyophara melanogona WALKER, 1858: 63

Dictyophara ferrifera WALKER = *D. melanogona* WALKER, DISTANT 1906; MELICHAR 1912



Figs. 1-10: Dorsal and lateral views of head and thorax of: 1, 4: *Toropa ferrifera* (WALKER); 2, 5: *T. melanogona* (WALKER); 3, 6: *T. remanei* sp. n.; 7, 8: *I. callipepla* (GERSTAECKER); 9, 10: *I. hartae* sp. n.

Salient features: Disk of vertex (without projection) 0.65 as broad as long; head projection 2.4 as long as disk of vertex; in lateral view projection 1.7 longer than line from projection to base of head behind eye. Stigma with 4-7 cells. Length: 20 mm. Green, yellow, reddish yellow, or brown, lateral carinae of frons red; marginal carinae of frons and vertex black (sometimes red), broader on projection. Margins of pronotum, tegulae, and lateral marginal carinae of pronotum and underside of costa black. In lateral view of projection, dark vitta running from front of eye to lower margin of projection.

Male genitalia: Pygofer pentagonal, dorsal surface angulate; anterior and posterior margins subparallel. Paramere triangular; dorsal spine at middle, surface before it strongly concave; lateral basal spine about 2× as long as broad. Aedeagus with apical pair of spines reflexed along dorsum, reaching pygofer, pair of ventral expandable process curved to symmetrical point.

Specimens studied: 3. - BRAZIL: Amazonas: Tonantins [NHRS], Rio Aufax [LOB]. PERU: Iquitos [SMFD].

Notes: This species may be distinguished by its long head projection and the dorsal surface of the paramere being strongly concave before the dorsal spine.

Toropa remanei sp. n. (Figs. 3, 6, 13)

Salient features: Disk of vertex (without projection) 0.6 as broad as long; head projection equal to length of disk of vertex; in lateral view projection 0.9 as long as line from projection to base of head behind eye. Stigma with 4–5 cells. Length: 16 mm. Yellowish brown, lateral carinae of frons red; marginal carinae of frons and vertex black, broader on projection. Posterior margins of pronotum, tegulae, and underside of costa narrowly black; lateral marginal carinae of pronotum both broadly black. In lateral view of projection, incomplete dark vitta running from front of eye to lower margin of projection.

Male genitalia: Pygofer with posterior margin in lateral view broadly expanded in submedial lobe. Paramere subtriangular, spines narrow. Aedeagus with apical spines reflexed along dorsum, long, reaching to base of 10th segment; with pair of dorsal inflatable processes which expand laterally; ventral inflatable processes parallel to aedeagus, dorsal apical angle rounded.

Etymology: It gives me great pleasure to name this species in honor of REINHARD REMANE.

Specimens studied: Holotype: ♂, VENEZUELA: Tachira, La Morita, 300 m, 8–14-IV-1972. A. D'Ascoli, A. Montagne, J. Salcedo. [MIZA]. Paratype ♂, same data [LOB].

Notes: This species may be separated from the other three by its short head projection and from *ferrifera* and *melanogona* by the curved posterior margin of the pygofer.

Igava MELICHAR, 1912: 47

This genus may be identified by the anterior tibiae longer than femora; head projecting forward and upward; wings short, exceeding body by less than width of wing, 1 (sometimes 2) stigmal cells; by 4 spines on the hind tibiae; by the long subrectangular 10th segment, the last two being apomorphies which confirm the monophyly of this genus. Both described species have a median red area between green lateral carinae on frons.

Igava callipepla (GERSTAECKER) (Figs. 7, 8, 14)

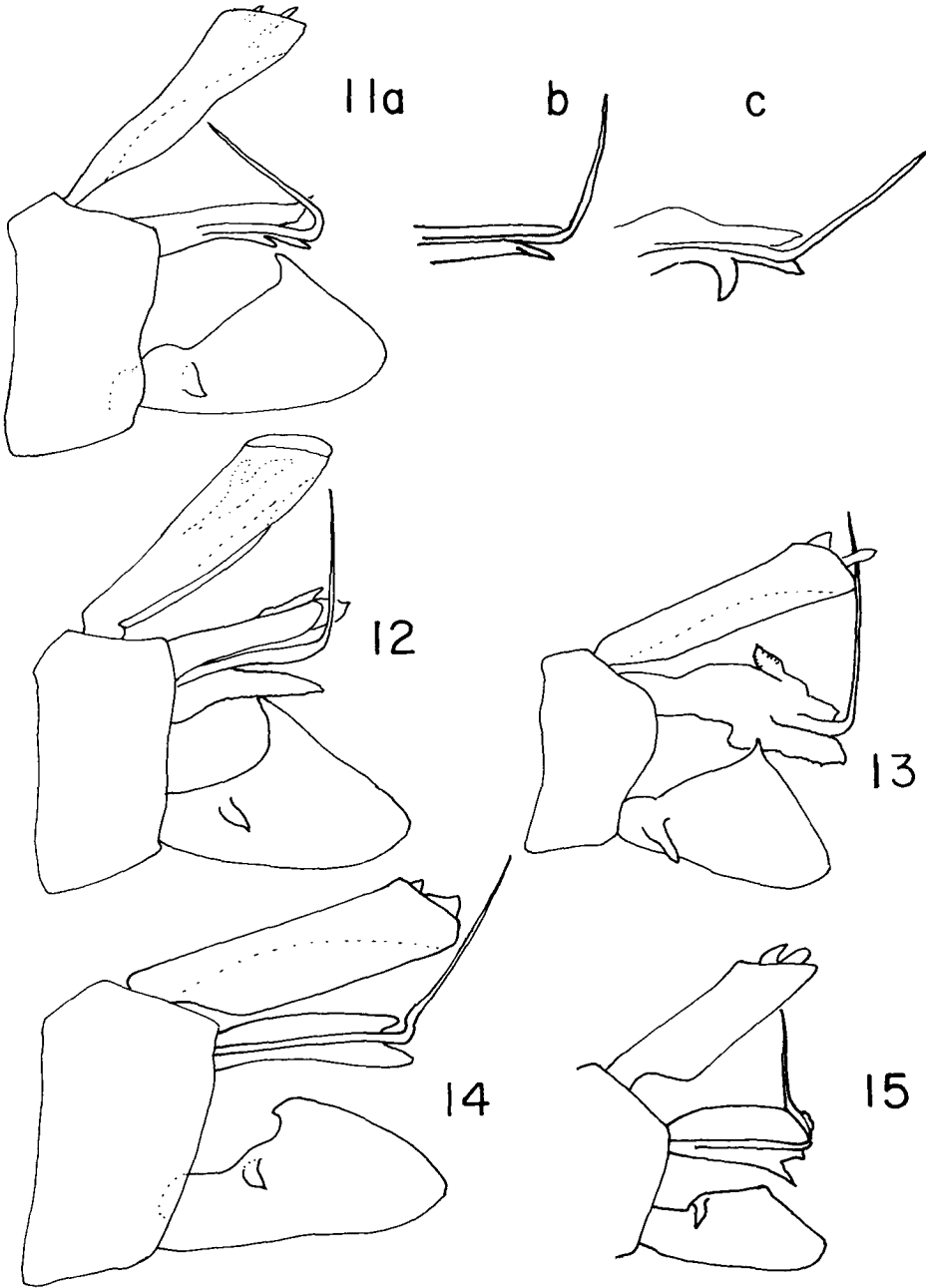
Dictyophara callipepla GERSTAECKER, 1895: 44
Igava callipepla (GERSTAECKER), MELICHAR 1912: 48

Salient features: Disk of vertex (without projection) 1.5 as long as broad; head projection as long as disk of vertex; in lateral view projection as long as the line from projection to base of head behind eye. Length: 11–12 mm. Yellowish brown, marked with red between lateral carinae of frons, a spot on lateral base of head projection, and behind brown transverse band on pronotum; lateral carinae of frons, anterior raised area on pronotum, and carinae of mesonotum green; marginal carinae of frons and vertex black, marking broader on projection. Margins of pronotum, tegulae, and lateral marginal carinae of pronotum and underside of costa black.

Male genitalia: Pygofer pentagonal, dorsal surface angulate. Paramere longer than broad, dorsal spine projecting anterad. 10th segment with projection at base so that dorsal and ventral margins are parallel. Aedeagus with apical pair of spines reflexed along dorsum, reaching pygofer, lobes not expanded in specimen examined.

Specimens studied: 17. – PERU: 1, Yurac, 67 mi. E. Tingo Maria [CAS]. BRAZIL: 16, Rondonia, 62 km SW. Ariquemes, Fzda. Rancho Grande, between X-13 and XII-15 [LOB].

Notes: This species may be distinguished by its head projection shorter than *hartae*, a brown transverse bar on pronotum which *hartae* lacks; the dorsal spine on the paramere is pointed anterad; the posterior margin of the pygofer is about 2× the length of the dorsal margin declined to it.



Figs. 11–15: Lateral view of ♂ genitalia of: 11: *Toropa ferrifera* (WALKER); 12: *T. melanogona* (WALKER); 13: *T. remanei* sp. n.; 14: *I. callipepla* (GERSTAECKER); 15: *I. hartae* sp. n. Fig. 11a shows a partially expanded aedeagus; 11b a non-expanded specimen; and 11c a fully expanded specimen.

Igava hartae sp. n. (Figs. 9, 10, 15)

Salient features: Disk of vertex (without projection) twice as long as broad; head projection as long as disk of vertex; in lateral view projection as long as the line from projection to base of head behind eye. Length: 10.2–11 mm. Green to pale reddish brown, marked with red and black colors on head as described for *callipepla*, pronotum with green transverse band and brown apical and brown lateral area between marginal carinae.

Male genitalia: Pygofer pentagonal, dorsal surface angulate, posterior inclined dorsal margin subequal in length to posterior margin. Paramere longer than broad, dorsal spine reduced. 10th segment with projection at base so that dorsal and ventral margins are parallel. Aedeagus with apical pair of spines reflexed along dorsum, reaching pygofer, dorsal lobe wider than ventral, ventral pair of lobes with angular lobe projecting down and posteriorly.

Specimens studied: 5. – Holotype ♂, BOLIVIA: Santa Cruz, 9-V-1964. [CAS]. 4 Paratypes: BOLIVIA, Santa Cruz: 1♂, Saavedra Research Station, March 22, 1978; 1♀, 9 mi. N. Santa Cruz, March 28, at night; 1♀, 3 mi. N. Buena Vista, March 26, 1978; 1♀, 4 mi. E. Portachuelo, March 24, 1978, at night [all LOB].

Etymology: I am happy to name this species after my friend SHERRY HART.

Notes: See *I. callipepla*.

Trigava gen. n.

This genus is based on the description of MELICHAR of *Igava brachycephala* MELICHAR (1912), the type species. It also contains *I. recurva* MELICHAR (1912), also from Peru. The characters that distinguish it from *Igava* are the green dorsal marginal carina of the pronotum (not continued on the tegula) and the frons of equal width above and below, and the shape of the head in MELICHAR's illustration (1912, Tafel II). This species name is an arbitrary combination of letters, "Tri" signifying the triangular shape of the head in dorsal view, and "gava", the genus in which it was originally described.

Acknowledgements

I wish to thank STUART McKAMEY for a loan of specimens from the National Museum of Natural History, Washington, and M. WEBB, The Natural History Museum, London, for checking the head of the specimens of *Toropa ferrifera* against the illustrations of MELICHAR. I am also grateful for receiving specimens from YVES BASSET from Tropenbos and from M. GAIANI, Instituto do Zoologia Agrícola, Universidad Central de Venezuela, Maracay. The specimens collected by Tropenbos will be deposited in the National Insect collection at NARI (Nacional Agriculture Research Institute), Georgetown, and University of Guyana, Georgetown.

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