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STUDIES IN PACIFIC BOMBYLIIDAE (DIPTERA)

IX. Systematic remarks on Australian Bombyliinae, with descriptions of new genera

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Abstract. The following new genera of Australian Bombyliinae are described and illustrated: *Syrphoides,* n. gen.; *Mandella,* n. gen.; and *Meomyia,* n. gen. In addition, neotypes are proposed for the species *Choristus bifrons* and *Staurostichus chiastoneura.* Included species for each of these 5 genera are also given.

It became evident during preparation of a preliminary catalog of Australian Bombyliidae that many of the species previously listed under the genera *Bombylius* Linnaeus, *Systoechus* Loew, and *Anastoechus* Osten Sacken were incorrectly placed. According to Bowden (pers. commun.), there are no "true *Bombylius*" in Australia. My studies appear to bear this out, as well as the fact that there are also no true *Systoechus* or *Anastoechus* in Australia. In fact, the species previously placed in these 3 genera are actually representatives of the tribe Dischistini Hull ("*Dischistus* series" as interpreted by Bowden 1973) by virtue of the absence of any metapleural vestiture, and not the tribe Bombyliini to which the genera *Bombylius, Systoechus* and *Anastoechus* belong.

The following new genera are described to enable their inclusion, together with their respective species, in an upcoming catalog of the Diptera of Australasia and Oceania.

Neotypes are proposed for the species *Choristus bifrons* Walker and *Staurostichus chiastoneura* Hull, each the type-species of its respective genus.

Species listed under each genus that are prefaced with an asterisk (*) have been seen by me. Other species listed are included under each genus based on comparison with original and subsequent published descriptions or notes on types made by the late Dr S.J. Paramonov, kindly provided by Miss Zenta Liepa, CSIRO, Canberra, ACT, Australia.

Syrphoides Evenhuis, **new genus**

Type-species: Bombylius byrrhus Bowden, here designated.

Length: 6.5–13.0 mm. *Head:* occiput flat; eyes in ♂ touching just anterior to ocellar tubercle; frontal triangle small; face in profile not well pronounced, almost vertical; oral margin broadest at mentum; 3rd antennal segment linear, almost 2× length of segments I and II combined, style apical (Fig. 1); palpus broad apically, lanceolate, 1-segmented; proboscis subequal in length

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to thorax or a bit longer, labellae large, bifurcation at ⅝ distance from base of proboscis. *Thorax:* hypo- and metapleura without pile; scutellum reddish or black. *Legs:* hind and sometimes mid femora with stout, ventroapical spines, otherwise legs as in *Bombylius. Wing* (Fig. 5): infuscated basoanteriorly or wing entirely hyaline; if infuscated, ♀ less so than ♂; 2 submarginal cells; r-m crossvein beyond middle of discal cell, placed at an oblique angle to vein M_1; alula large; squama large with long fringe of pile. *Abdomen:* ground color yellowish to reddish with black pattern on middorsum and posterior portions of tergites resembling pattern found in species of the syrphid genus *Eristalis* Latreille; hind margins of apical tergites with long hairs or bristles. ♂ *genitalia* (Fig. 7): in lateral view with basistylus linear ovate, clawed basally; dististylus ovate with recurved clawlike apex; epiphallus broad basally with long thin aedeagal tip; basal apodeme large rounded; epandrium subquadrate, with rounded anterior and posterior processes; cerci large, exerted. ♀ *genitalia* (Fig. 12): spermathecal reservoir spatulate-ovate, with papillate apex, inflated basally, sclerotized on apical ¼ except papillate apex; apical spermathecal duct long, thin, membranous; ejaculatory apparatus subequal in length to apical duct, with many canaliculi; apical and basal valves vestigial; basal duct long, broad, membranous.

This genus is most similar in general appearance to *Bombylius* Macquart. It may be separated from *Bombylius* by the bare metapleura, eristaline-like pattern of the abdominal tergites, indentation on the posterior margin of the eye, and oblique placement of the r-m crossvein in the wing.

Included species. **byrrhus* Bowden [*Bombylius*], **new combination**; **robertsi* Paramonov [*Bombylius*], **new combination**; **rubriventris* Bigot [*Bombylius*], **new combination**; and the unnamed allied forms of *rubriventris* described by Roberts (1928).

Mandella Evenhuis, **new genus**

Type-species: Systoechus albohirtus Roberts, here designated.

Length: 6.0–7.0 mm. *Head:* occiput slightly inflated; frontal triangle extremely small, face, in profile, slightly pronounced; eyes holoptic in ♂, dichoptic in ♀, no indentation on posterior margin; oral margin nearly vertical; palpus short, recessed within oral genal cup, 1-segmented; proboscis extending beyond oral margin, length 1.5× antennal length or (more commonly) less; labellae large, fleshy, bifurcation ⅔ distance from base of proboscis; 3rd antennal segment spindle-shaped, style originating from truncate apex (Fig. 2). *Thorax:* hypo- and metapleurae bare; post alar calli and scutellum without bristles. *Legs:* as in *Systoechus. Wing:* hyaline or infuscated at most basoanteriorly; 2 submarginal cells; 1st and 2nd basal cells subequal in length; squama large with fringe of long dense pile. *Abdomen:* conical, not wider than thorax; densely covered with long pile. ♂ *genitalia* (Fig. 9): in lateral view with basistylus linear-ovate, pointed apically, with fingerlike process basally, similar to that in *Pantarbes* Osten Sacken; dististylus originating subapically from basistylus, tapering to hooked apex, length approximately 2× greatest width; epiphallus broad basally, tapering sharply to short aedeagal neck; tip of aedeagus deeply truncate; basal apodeme reduced, subrectangular; epandrium subquadrate, anterior process small, fingerlike, posterior process squared; cerci recessed, small.

This genus is superficially similar in appearance to *Systoechus,* from which it may be separated by the eyes of the male touching at the vertex, proboscis projecting only slightly beyond the antennae, at most 1.5× length of antennae, large labellae, antennal style originating from a truncate apex of the 3rd antennal segment, and shape of the male genitalia.

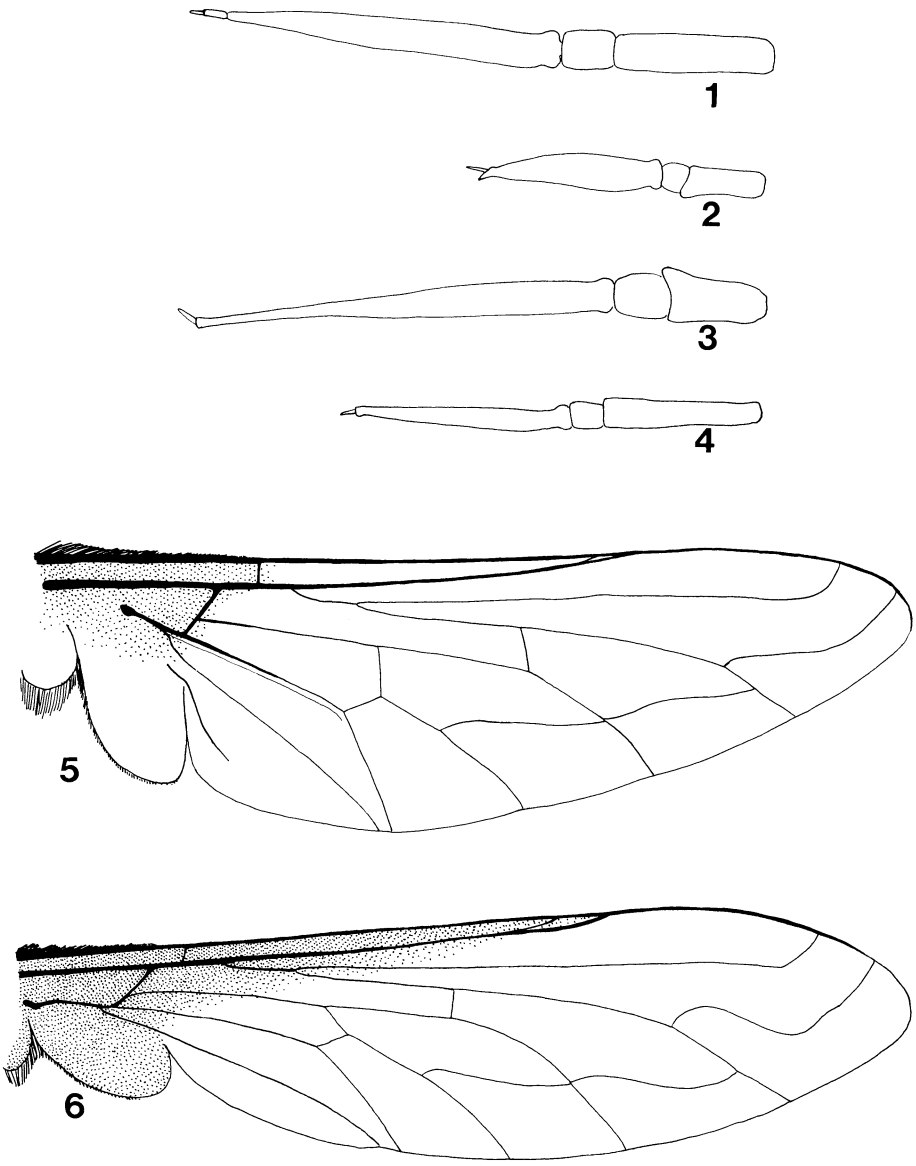

FIG. 1–6. **1–4,** antennae: **1,** *Syrphoides byrrhus*; **2,** *Mandella albohirtus*; **3,** *Meomyia platyurus*; **4,** *Choristus bifrons*. **5–6,** wings: **5,** *Syrphoides byrrhus*; **6,** *Staurostichus chiastoneura*.

Included species. **albohirta* Roberts [*Systoechus*], **new combination**; **cinctiventris* Roberts [*Systoechus*], **new combination**; **flavovillosa* Roberts [*Systoechus*], **new combination**; **pallida* Roberts [*Systoechus*], **new combination**; **rubida* Roberts [*Systoechus*], **new combination.**

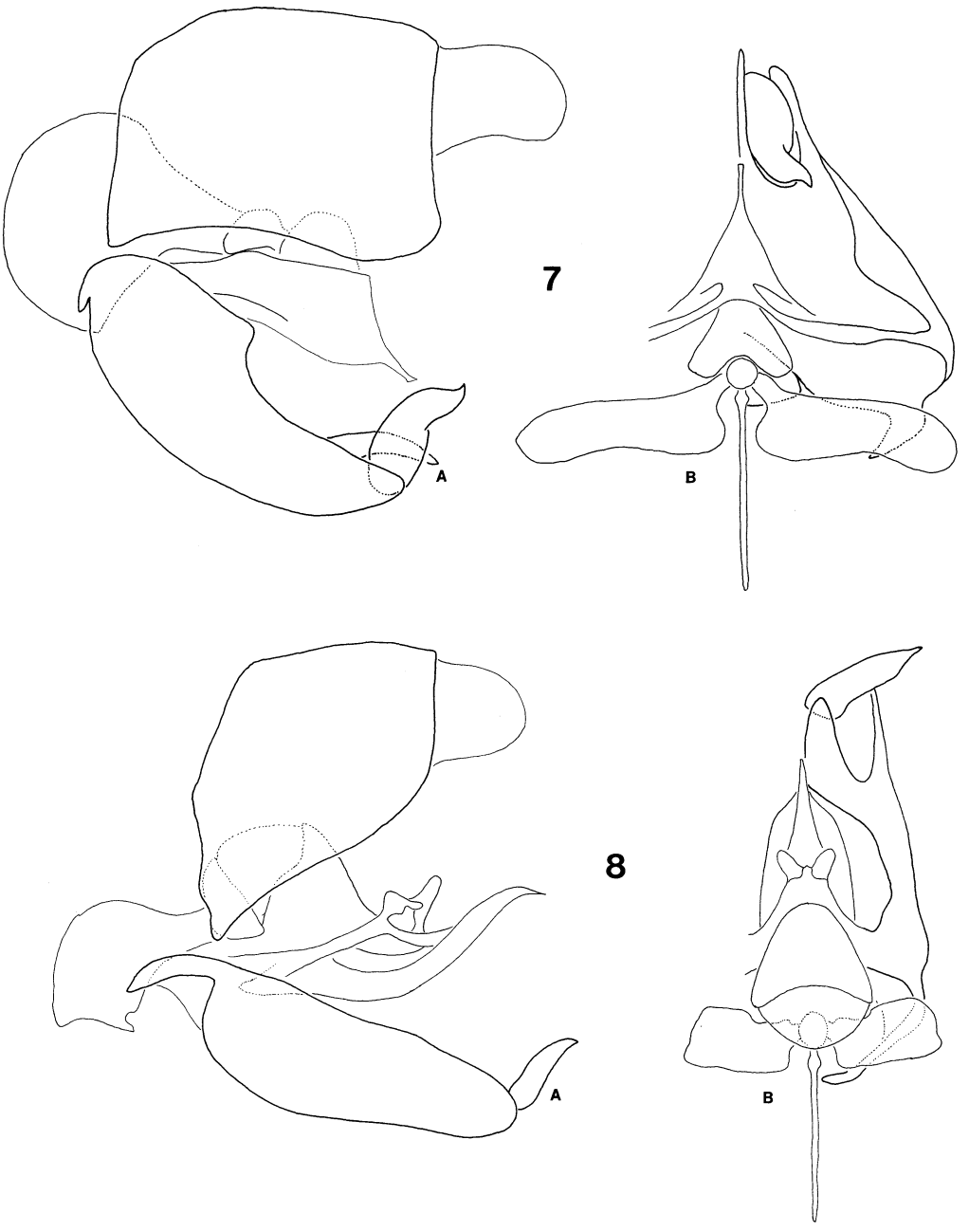

FIG. 7–8. Male genitalia. **7,** *Syrphoides byrrhus:* a) lateral view; b) dorsal view. **8,** *Meomyia platyurus:* a) lateral view; b) dorsal view.

Meomyia Evenhuis, **new genus**

Type-species: Bombylius platyurus Walker, here designated.

This genus contains those species from Australia previously placed in *Systoechus* that have a bifid upper oral margin, fleshy labellae, dark abdominal crossbands and, usually, spots in the wings.

Length: 6.5–16.0 mm. *Head:* occiput only slightly inflated; frontal triangle small; face, in profile, slightly produced; tip of oral margin bifid (some specimens not as pronounced as in others); 3rd antennal segment extremely long, thin, pointed apically (Fig. 3), style apical; proboscis with large, broad labellae, bifurcation ⅔ distance from base of proboscis; palpus small, recessed within oral genal cup, 1-segmented. *Thorax:* metapleuron and lower hypopleuron without pile; post alar callus and scutellum with bristles. *Legs:* mid and hind femora with spines; tarsi broad; pulvilli large; in some specimens (i.e., *albiceps* Macquart) fore tibiae with well-developed comb of spines apically. *Wing:* infuscated basoanteriorly or hyaline, with or without spots on crossveins and at bases of posterior cells; 2 submarginal cells; 1 posterior cell closed before wing margin; 1st and 2nd basal cells subequal in length. *Abdomen:* ovate, wider than thorax at tergite II; densely clothed with short pile; apical tergites commonly with large tufts of black pile similar to some species of *Euprepina* Hull. ♂ *genitalia* (Fig. 8): in lateral view with basistylus linear-ovate, with basal fingerlike process as in *Mandella*; dististylus length 3× greatest width, with pointed apex recurved posteriorly; epiphallus complex, consisting of lateral rami fused dorsally to form a pair of leaflike structures, aedeagus enclosed in a long, thin sinuous sheath posteriorly; tip of aedeagus sharply pointed; basal apodeme as in illustration; epandrium subquadrate without posterior process, anterior process pointed; cerci exerted. ♀ *genitalia* (Fig. 11): spermathecal reservoir ovate-conical, sclerotized apically; apical spermathecal duct recessed into base of spermathecal reservoir, inflated basally, subequal in length to ejaculatory apparatus; ejaculatory apparatus short, without canaliculi; apical and basal valves vestigial; basal duct long, broader than apical duct.

Meomyia is most similar in appearance to *Systoechus* from which it may be separated by the bifid upper oral margin, 3rd antennal segment extremely long and thin, labellae large, broad, the eyes in males touching above, the wing often with spots, and the metapleuron without pile.

Included species. **albiceps* Macquart [*Bombylius*], **new combination**; *callynthrophora* Schiner [*Systoechus*], **new combination**; **crassa* Walker [*Bombylius*], **new combination**; *notatipennis* Macquart [*Bombylius*], **new combination**; *pausaria* Jaennicke [*Systoechus*], **new combination**; *penicillata* Macquart [*Bombylius*], **new combination**; **platyura* Walker [*Bombylius*], **new combination**; **punctipennis* Thomson [*Bombylius*], **new combination**; **sericans* Macquart [*Bombylius*], **new combination**; **spinipes* Thomson [*Bombylius*], **new combination**; **vetusta* Walker [*Bombylius*], **new combination**.

Genus **Choristus** Walker

Bowden (1971) resurrected the genus *Choristus* Walker from synonymy with *Bombylius* and gave a redescription of the genus, noting that the type-species, *bifrons* Walker, was presumed lost. A label by E.E. Austen in the Walker Collection at the British Museum (Natural History) dated 1930 (given in full below) states that the

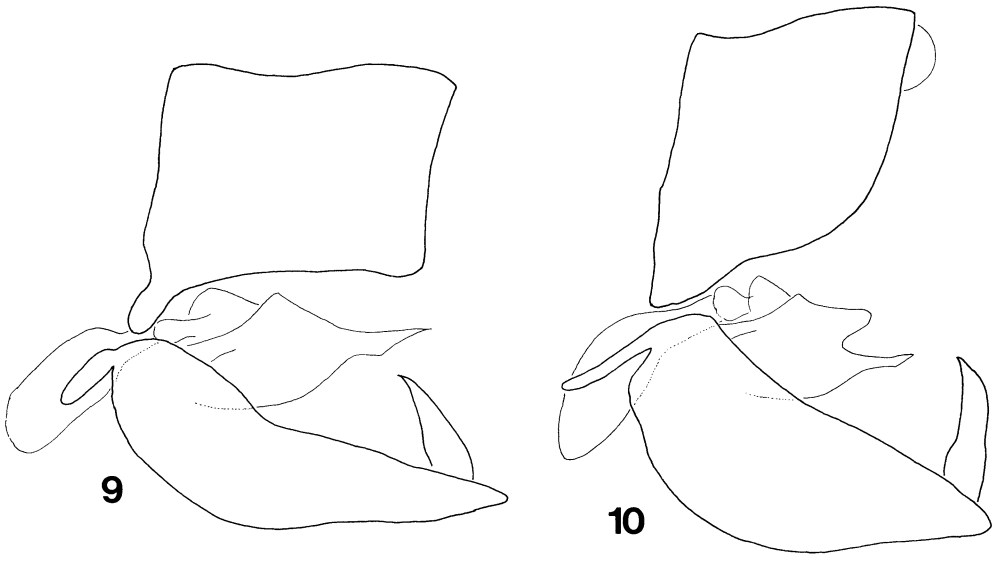

FIG. 9–10. Male genitalia, lateral view: **9,** *Mandella albohirtus*; **10,** *Choristus bifrons.*

type of *C. bifrons* could not be found at that time. A recent search for the type by Mr Kenneth G.V. Smith again failed to turn up the type, but a male specimen standing by the name *Choristus bifrons* in the British Museum (Natural History) was found. It is the same specimen mentioned by Bowden (1971) when he redescribed *Choristus* and is here proposed as the neotype of *C. bifrons* Walker. Designation of this neotype stabilizes the taxonomy of this genus by giving it an existing type-species.

Choristus bifrons Walker

Choristus bifrons Walker, 1852: 198.
Anastoechus perspicuus Roberts, 1928: 434. **New synonymy.**

The holotype of *Anastoechus perspicuus* Roberts in the South Australian Museum was examined in this study and proved to be conspecific with *C. bifrons.* It is here treated as a junior synonym of *C. bifrons.*

The neotype of *Choristus bifrons* is described as follows.

♂. *Length:* 7.5 mm. *Head:* gray; front dark brown pilose lateral to antenna; face and gena long dark brown pilose surrounding dense white pile of oral margin; ocellar tubercle black, long dark brown pilose; occiput dense long white pilose above and below, white tomentose laterally; eyes touching above; antenna black, segment I with long dark brown hair, segments II and III bare, style small, apical (Fig. 4); antennal ratio: 4:1:5; palpus small, extending only slightly beyond oral margin, light brown; proboscis short, at most, length ca. 2× head; labellae large, broad, bifurcation ¾ from base of proboscis. *Thorax:* mesonotum and scutellum dull black, dense pale yellow pilose; pleura gray, white pilose; metapleuron bare; halter yellowish

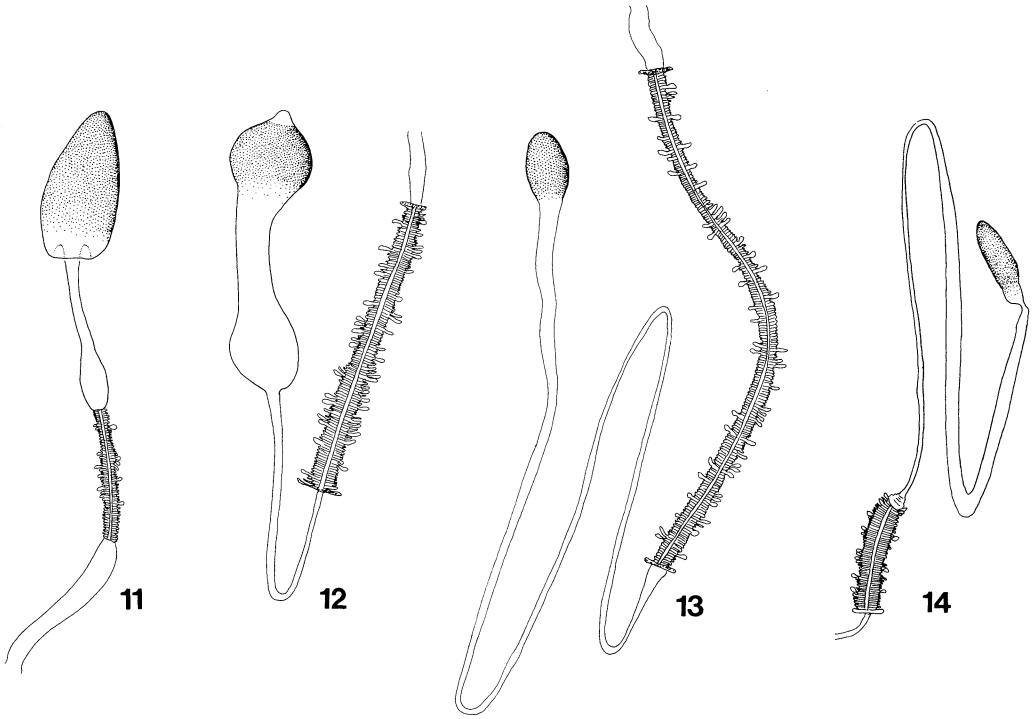

FIG. 11–14. Female spermathecae: **11,** *Meomyia platyurus*; **12,** *Syrphoides* sp.; **13,** *Staurostichus chiastoneura*; **14,** *Choristus bifrons.*

white. *Legs:* coxae, femora, apices of tibiae, all of tarsi, black; tibiae and claws orangish brown; pulvilli as long as claws; spines orange on tibiae. *Wing:* tinted brown basoanteriorly, extending to middle of marginal, submarginal, 1st posterior discal and alular cells, and just beyond posterior crossvein, rest of wing smoky hyaline; 1st and 2nd basal cells subequal in length; 1st posterior cell closed in wing margin with a stalk; squama tan with fringe of white pile. *Abdomen:* dull black, dense white pilose and tomentose. *Genitalia:* not dissected.

Label data. "Morven Q'ld/ Sept. 1927/A.P. Dodd//Queensland:/ Morven./ ix.1927/ A.P. Dodd/ Pres. by/ F.H.S. Roberts./ 1930.296//Choristus is a/ valid genus./ J.B. 1970." There is, in addition, an accompanying label on a separate pin that reads, "N.B.-*Apud* F.H.S. Roberts, *in litt.*, 31.i.1930, the name *Choristus*, Walk. (1852), must replace *Anastoechus*, O. Sack. (1877). The type of *Ch. bifrons*, Walk., is not now to be found in the B.M. (N.H.). E.E. Austen, 14.vii.1930."

Remarks. Though the label above states that *Choristus* must replace *Anastoechus*, *Choristus* and *Anastoechus* are, in fact, 2 distinctly separate genera. *Choristus* is easily separated from *Anastoechus* by the bare metapleuron, shape of the 3rd antennal segment, and male genitalia (described below).

The neotype is damaged, with rubbing of the thoracic and abdominal pile. Legs are missing as follows: both hind legs beyond coxae, left midleg beyond femur, right foreleg beyond tibia. The abdomen is broken at segment III, but still attached.

Included species. **annexus* Roberts [*Anastoechus*], **new combination**; **bifrons* Walker; **perspicuus* Roberts [*Anastoechus*], **new combination**.

Bowden (1971) did not describe the male genitalia of *C. bifrons.* Based on specimens in the Bishop Museum, the male and female genitalia of *C. bifrons* are described and illustrated here.

♂ *genitalia* (Fig. 10): in lateral view with basistylus ovate, with fingerlike process basally as in *Mandella* and *Meomyia*; dististylus straight to hooked apex, length ca. 3× width; epiphallus with dorsal projection as in *Parabombylius* Williston; tip of aedeagus truncate; basal apodeme reduced, spatulate; epandrium subquadrate, without posterior process, anterior process squared; cerci small, exerted.

♀ *genitalia* (Fig. 14): spermathecal reservoir linear-ovate, sclerotized on apical ⅞; apical spermathecal duct extremely long, membranous, constricted at base of reservoir, inflated on distal ½, tapering toward apical valve; ejaculatory apparatus ⅙ length of apical duct, with many canaliculi; apical and basal valves flat, disc-shaped; basal duct thin, membranous, subequal in width to apical duct.

Genus **Staurostichus** Hull

Staurostichus was described by Hull (1973) based on 1 male and 1 female syntype of the type-species of the genus, *S. chiastoneura* Hull, collected by him at Acacia Ridge, Queensland, September–October 1953. The genus is characterized by the punctiform apex of the discal cell, the slender 3rd antennal segment, and the large, fleshy labellae.

The F.M. Hull Collection was sold to the Canadian National Collection (CNC) where, in 1975, a search for the types of *S. chiastoneura* failed to uncover them. A recent second search, by Dr H.J. Teskey at CNC, again produced no results. F.M. Hull's son, C.S. Hull, who handled the transfer of the Hull Collection to CNC, revealed (pers. commun.) that there were "some boxes of specimens that that (sic) been destroyed by dermestids perhaps a couple thousand specimens." These were discarded prior to the sale of the collection to CNC. It is most probable that the type-specimens of *Staurostichus chiastoneura,* as well as other unaccounted for type-specimens of Hull, were among those destroyed.

A female specimen in the Bishop Museum that fits the description of *S. chiastoneura* is designated here as neotype, thereby stabilizing the taxonomy of this otherwise unknown genus. It is described as follows:

♀. *Length:* 6.5 mm. *Head:* gray, front brown; ocellar tubercle dark brown with long black hair; eyes separated above by 2× width of ocellar tubercle; front and face sparse long black pilose, golden tomentose; occiput flattened, yellow pilose above, white pilose laterally and below and on mentum, a few brown hairs dorsally on each side of ocellar tubercle; antennal segments I and II gray-brown, dark brown pilose; segment III missing; antennal ratio: 4:1:–; palpus 1-segmented with long apical bristle and long lateral hairs; proboscis 3× length of head; labellae large, broad, bifurcation ¾ beyond base of proboscis. *Thorax:* mesonotum and dorsum of scutellum dark brown, posterior margin of scutellum reddish, pale yellow pilose, sparse golden tomentose; post alar calli and posterior margin of scutellum with black bristles; pleura gray, white pilose; meta- and hypopleura bare; halter orangish. *Legs:* orange-yellow, mid femur

with 2–3 orange spines on anterior surface; hind femur with 7–8 orange spines ventrally; tibiae and tarsi with orange spines; claws black; pulvilli large. *Wing* (Fig. 6): tinted basoanteriorly with brown, extending to end of vein R_1, anterior and posterior crossveins, and all of alula, smoky hyaline beyond; 2 submarginal cells; 1st posterior cell closed with a long stalk; anterior crossvein at middle of discal cell; axillary cell reduced, narrow, hyaline; squama yellowish with fringe of white pile. *Abdomen:* black, yellowish pilose and tomentose; black hairs on posterior margins of tergites II–VII. *Genitalia* (Fig. 13): acanthophorites with 6–7 pairs of spines hooked apically; vaginal apodeme with lateral sclerites L-shaped curving toward membranous medial sclerite; spermathecal reservoir ellipsoidal, sclerotized brown; apical spermathecal duct extremely long, thin, membranous, length ca. 40× spermathecal reservoir, slightly broadened apically; ejaculatory apparatus long, ca. ⅓ length of apical duct, with numerous canaliculi; apical and basal ducts flat, disc-shaped; basal duct short, broad, membranous.

Label data. "Mt. Victoria/ N. S. Wales//Coll. F. Muir/ I-1920."

The neotype specimen is abraded, with the 3rd antennal segments missing and slight rubbing of pile on both the thorax and abdomen. Female genitalia are on a slide mount. *Neotype* (BPBM 12,933) deposited in Bishop Museum, Honolulu.

Included species. *australianus* Bigot [*Bombylius*], **new combination**; **chiastoneura* Hull; **chrysendetus* White [*Bombylius*], **new combination**; **dulcis* Roberts [*Bombylius*], **new combination**; **palliolatus* White [*Bombylius*], **new combination**; **proprius* Roberts [*Bombylius*], **new combination**; *viduus* Walker [*Bombylius*], **new combination**.

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