

SYRPHIDAE (DIPTERA) DESCRIBED FROM UNKNOWN LOCALITIES

F. CHRISTIAN THOMPSON

Systematic Entomology Laboratory, BBIII, Agricultural Research Service, USDA,
% U.S. National Museum of Natural History,
NHB-168, Washington, D.C. 20560

Abstract.—Names of 66 flower flies described by earlier authors from unknown localities are revised. Seven unused senior synonyms are resurrected [*Spilomyia alcimus* (Walker, 1849) (= *hamifera* Loew, 1864), *Criorhina bubulcus* (Walker, 1849) (= *luna* Lovett, 1919), *Temnostoma daochus* (Walker, 1849) (= *pictulum* Williston, 1887), *Eristalinus dives* (Walker, 1849) (= *vitrescens* Hull, 1937), *Volucella linearis* Walker, 1849 (= *nitobei* Matsumura, 1916), *Copestylum longirostre* (Macquart, 1846) (= *concinna* Philippi, 1865), & *Chalcosyrphus violascens* (Megerle, 1803) (= *chalybea* Wiedemann, 1830)]; 22 other new synonyms are identified [*Eristalinus aeneus* (Scolpoli, 1763) = *aenescens* Macquart, 1842, *Prohelophilus cingulata* (Fabricius, 1775) = *agerinus* Walker, 1849, *Neocnemodon vitripennis* (Meigen, 1822) = *albohirta* Wiedemann, 1830, *Eriozona syrphoides* (Fallén, 1817) = *amplus* Walker, 1849, *Eristalinus arvorum* (Fabricius, 1787) = *anicetus* Walker, 1849, *Milesia crabroniformis* (Fabricius, 1775) = *coenina* Walker, 1849, *Xylota florum* (Linnaeus, 1758) = *corbulo* Walker, 1849, *Chalcosyrphus metallicus* (Wiedemann, 1830) = *dascon* Walker, 1849, *Merodon aureus* (Fabricius, 1805) = *flavicornis* Macquart, 1842, *Copestylum brunneum* (Thunberg, 1789) = *fusca* Macquart, 1834, *Pipizella viduata* (Linnaeus, 1758) = *fuscipennis* Walker, 1849, *Eristalis dimidiata* Wiedemann, 1830 = *haesitans* Walker, 1849, *Palpada furcata* (Wiedemann, 1830) = *involvens* Walker, 1849, *Eristalinus quinquelineatus* (Fabricius, 1781) = *jucundus* (Walker, 1849), *Brachypalpus laphriformis* (Fallén, 1816) = *laphriaeformis* Walker, 1849, *Helophilus groenlandicus* (O. Fabricius, 1780) = *oxycanus* Walker, 1852, *Meromacrus acutus* (Fabricius, 1805) = *pictus* Macquart, 1846, *Phytomia zonata* (Fabricius, 1787) = *rufitarsis* Macquart, 1842, *Eristalinus taeniops* (Wiedemann, 1830) = *secretus* Walker, 1849, *Chrysotoxum intermedium* (Meigen, 1822) = *stipatum* Walker, 1852, *Palpada mexicana* (Macquart, 1847) = *tomentosus* Macquart, 1850, & *Orthoprosopa grisea* (Walker, 1835) = *torpidus* Walker, 1857]; 3 new combinations are established [*Palpada caliginosus* (Walker, 1849), *Eupeodes corolloides* (Macquart, 1850), & *Mesembrius strenuus* (Walker, 1857)]; one old synonym is reestablished [*Quichuana angustiventris* (Macquart, 1855) = *aurata* Walker, 1857]; and 15 old synonyms confirmed. *Eumerus aquilinus* Walker is redescribed and its genitalia figured. Location of types and labels of Bigot, Macquart, Megerle, Walker and Wiedemann are described.

Flower flies are important pollinators, and the maggots of many species are predators of homopterous pests, such as aphids and scales, while a few maggots feed on economically important plants. Names are essential for communicating about complex objects such as species. Confusion, however, can arise when two different names are used for the same species, and the same name for two different species! This paper clarifies the status of 66 names used for flower flies so as to aid proper communications about these beneficial pollinators and predators.

During the early part of the last century a number of species were described from unknown localities (*patria ignota*). As most systematic work is done on a regional basis, these earlier *patria ignota* names have been neglected. Despite this neglect

these names are available and pose a serious threat to the stability of nomenclature. This paper lists all the *patria ignota* names (66) known to apply to Syrphidae and attempts to identify their provenance and possible synonymy. The names are treated in alphabetic order. For each name the following is given: The name as originally spelled (including capitalization), original citation, type-locality as originally given, type-depository, and the current status of the name and distribution of the species to which the name applies.

My use of the word "identification" here is slightly different from the conventional one. A name must have been accompanied by a diagnosis, description or indication that functions to "identify" the concept that the name denotes. Hence, I used the word "identification" for the process by which a name is tied to a concept, whereas the usual connotation of "identification" is tying a concept to a name.

TYPE DEPOSITORIES AND LABELS

I have not described the labels of most of the types individually; instead the general characteristics of these labels are described, and the locations of the types of Bigot, Macquart, Megerle, Walker and Wiedemann are noted.

Bigot types are divided between the University Museum at Oxford and the British Museum (Natural History), London. Bigot was a wealthy French amateur who amassed a fine library and a great collection of flies. He purchased Diptera from the collections of others, such as Fairmaire and Serville, and had his material studied by Macquart. Hence, many Macquart types are in Bigot's collection. His collection was sold to G. H. Verrall. Verrall, who apparently intended that this collection would one day go to the British Museum, during this lifetime turned over many exotic types from the Bigot collection to the British Museum. However, the bulk of his collection was passed on to his nephew, J. E. Collin. Collin, at the end of his life, decided that these collections would be better placed at Oxford than at the British Museum. Hence, the types of Bigot and those of Macquart in the Bigot-Serville-Fairmaire collection may be found either in Oxford or London. The types in the British Museum are usually labeled with a "Verrall donation" label (Fig. 7) and there is frequently a cross-reference label in the collection at Oxford. Usually, one of the types has the Macquart name label or a Bigot/Macquart name label folded up on the pin. Bigot frequently glued the original Macquart name label on to one of his labels (Fig. 7). The collection at Oxford was well described by Ackland and Taylor (1972) (also Maa, 1963:175). In Oxford, there are basically three components: the "Exotic" collection (4 drawers of syrphids), the Palaearctic collection (4 drawers), and the British Collection (7½ drawers), with some material in the excess collection.

Macquart types are scattered among a number of museums, with his personal collection deposited in Lille. The depository of his types is usually given in the original description. For the syrphids, the following are given with their present locations: Bigot, 56 species, q.v.; Breme, 1, see under *pictus*; Fairmaire, 12, in Bigot; Latreille, 2, see under *pictus*; Lefebvre, 2, unknown; Macquart, 50, in Lille; Museum, 109, in Paris; Payen, 4, unknown; Percheron, 2, unknown; Pilate, 1, unknown; Robyns, 4, in Brussels; Serville, 21, in Bigot; Spinola, 2, in Turin; and Webb & Berthelot, 4 Canary Island species, mostly destroyed but remains are in Paris; and not indicated, 31, in various collections. Macquart types can usually be identified by the name label in his distinctive hand (Fig. 11). In all the museums where I have seen Macquart

material this label is folded up and placed on the pin of one of the types. The respective curators have then added their own labels. The Macquart material in Paris was for many years in the general collection, but Séguy removed it and placed it in a separate collection. Hence, some of the missing Macquart types may still be in the general collection. "This is especially the case with French material, originating from Macquart's own collection and not recognized as syntypes by Séguy" (Pont, in litt.). This is unlikely for syrphids, as I and others (Vockeroth, Speight et al.) have carefully examined the general collections for types.

Megerle material should all be in the museum at Vienna. He was an early dealer in insect material and published a number of sale catalogs. Wiedemann redescribed two species first named in Megerle's sale catalogs (*Pygrotta undata* Megerle and *Hippobosca variegata* Megerle). The material used for these redescrptions is now in Vienna and may have arrived there via the Wiedemann/Winthem collections. Meigen described a number of species from material from "Hrn. Megerle von Mühlfeld" as well as from "Kais. Königl. Museum." Horn & Kahle (1936:171) stated that Megerle was the curator of the Imperial Museum in Vienna as well as the founder of an auction house for natural history specimens, especially insects, in Vienna from 1798-1806; that his first private collection went to the museum in Vienna in 1808; that his posthumous collection was also deposited in Vienna via J. A. Ferrari (after 1848?). Whether Meigen used the different form of depository citation to differentiate between what was Megerle's private material and what he may have borrowed from the Imperial Museum is not clear. These collections could both have been part of the Imperial Museum, but just kept separate as most collections were at that time. The important point here is that, if both citations do refer to material that was part of the Imperial Museum, then most of the material was destroyed in the fire of 1848. I assume that this is the case, as I have found very little Megerle material that was not part of the Wiedemann/Winthem collections (q.v.). If Meigen's citation of "Megerle von Mühlfeld" refers to the "posthumous" collection, then that material would have arrived at the museum after the fire and would today be labeled as "Alte Sammlung." Hence, any Megerle material extant today should be labeled "Alte Sammlung." A number of specimens that Wiedemann described as from unknown localities and from the "Wiener Museum" are probably Megerle material. Many of these specimens have a curious "F" label in addition to the "Alte Sammlung" label (*Baccha fusciventris*, *Baccha costalis*, *Hippobosca variegata*, etc.).

Walker types are usually found in the British Museum (Natural History) in London, although a few are at Oxford (Smith and Taylor, 1964). These types are clearly identified by a green circular "Walker" type label (Fig. 8) and usually a name label written by E. E. Austen (Fig. 8, 10) or E. A. Waterhouse. "Material that was in the Museum and was described in the 'List' [Walker, 1849] is labeled by E. A. Waterhouse as 'one of Walker's specimens so named' with the species name. Material that came from Saunders, including the Wallace material, usually has Walker's original label preserved" (Pont, in litt.). Sometimes, Austen merely wrote the name on the green Walker type label. Rarely, the original name label in Walker's hand has been folded up and saved on the pin (Fig. 14). Austen (1893) curated the Syrphidae, leaving "copious and elaborate notes" in the collection (Pont, in litt.) as well as abbreviated annotations in copies of Walker's works and a copy of Kertész's catalog. These are apparently the "copious manuscript notes on Syrphidae, which he [Austen] made

some years ago in arranging the British Museum collection, and which have proved invaluable in my [Brunetti's] revisionary work" to which Brunetti (1923:v) refers. "There are two 'groups' of Austen labels. The first group, often exceedingly lengthy, gives discursive information on generic placings. These are the labels that have been 'discarded as knowledge and curation have progressed.' The second group includes labels that may say 'apparently seen by Walker, but differs from the description by characters a, b, c' or 'this is a male but Walker described a female.' Such labels are never discarded, as they are an integral part of the process of evaluating types or potential type material" (Pont, in litt.). Unfortunately, a number of Walker types have been lost with their notes (e.g., *Paragus fuscipennis*, *Eristalis anicetus*, *E. calida*, *E. jucunda*, *E. exterus*, *E. evers*, *E. transpositus*, *Helophilus grisea*, *H. hilaris*, *Milesia lamus*, etc.). Many of these types were present as late as 1955 as Ralph Coe, the curator then, indicated their location in the collection in a card file. However, I was not able to find them in 1974, 1984 nor 1987 and neither K. G. V. Smith nor Adrian Pont has been able find them.

Recently a red holotype label has been added to most Walker types that are now uniques (Fig. 10). This curatorial practice apparently stems from Crosskey (1974). However, there is no evidence in Walker's publications nor can it be demonstrated from evidence derived from outside those publications that these types are unique; they may merely be the sole surviving syntype of a series. Vane-Wright (1975) showed the fallacies of the "assumption-of-holotype" argument and the new Code has implemented Vane-Wright's position by stating that a holotype "can only be designated in the original publication and by the original author (art. 73(a) (iii)) and by making the publication of an "assumption of a holotype" a lectotype designation (ICZN, 1985, article 74b). Even so, it is unfortunate that the Diptera Unit of the British Museum has implemented a curatorial policy contrary to the recommendations of the Code (ICZN, 1985, recommendation 73F) and that assuredly will confuse future workers. In uniformity with the Code, I have designated all these unique types as lectotypes.

Wiedemann types are scattered among several museums, although most are in Vienna. Wiedemann indicated the location of the types of his species in their original descriptions. Those in his personal collection were purchased by Winthem when Wiedemann died in 1840. Winthem was apparently combining his collection with Wiedemann's when he, in turn, died in 1848. Both collections were later transferred to the Museum at Vienna (1852?) (q.v.). Until the late 1870's these collections were kept separate, but later were amalgamated when all the collections were moved to the new Museum. At that time, each specimen was labeled to indicate its origins either in the "Winthem" or "Wiedemann" collection, but as the collections had already been somewhat mixed by Winthem, Wiedemann types may have either a "Winthem" or a "Wiedemann" collection label (figs. 13, 17) (see Osten Sacken, 1878: xv-xvi).

The Naturhistorisches Museum at Vienna is one of the important depositories of types of early dipterists. While present collections are well curated, knowledge of the history of collections (Loew, 1856; Osten Sacken, 1878; Brauer, 1880) is essential to understanding these collections. The early collections were kept in the Hofburg, part of the imperial residence in Vienna. Unfortunately, during the revolution of 1848 parts of the collections were destroyed by fire. Thus, most of the types of the species

described from material from the "Wiener Museum" (Wiedemann) or "Kais. Königl. Museum" (Meigen) and perhaps that of "Hrn. Megerle von Mühlfeld" (Meigen) were probably destroyed. However, some of this material may have been in the Wiedemann and Winthem collections as Wiedemann was the intermediary between the Imperial Court and Meigen (Pont, 1986). The Wiedemann and Winthem collections came to Vienna after the fire and were maintained separately in boxes, as this is how Loew and Osten Sacken described them (Osten Sacken, 1878). A new natural history museum was built and the collections were moved to it in 1878-1880. At this time all the collections were amalgamated into drawers. The origin of the material was indicated by a special label: that from the general collection was labeled "Alte Sammlung" (Fig. 12), from Wiedemann "Wiedemann Coll." (Fig. 13), and from Winthem "Winthem Coll." (Fig. 17). Material subsequently added to the collections does not have a special collection label.

adjuncta Walker, 1849:636 (*Volucella*). Type-locality: "----?" Syntypes male & female BMNH. *Copestylum brunneum* (Thunberg). NEOTROPICAL: Puerto Rico and Virgin Islands.

Thompson (1981:129) identified this name as a junior synonym of *brunneum* Thunberg.

aenescens Macquart, 1842:59 (119) (*Eristalis*). Type-locality: "Patrie Inconnue" Type female ??? *Eristalinus aeneus* (Scopoli). HOLARCTIC: widespread; Hawaii; Tanzania?

Macquart didn't indicate the location of his types in the original description. The type of *aenescens* Macquart was not found in Paris, London or Oxford. The description indicates that this name applies to *Eristalinus aeneus* (Scopoli) as Macquart described the species as the same as *aeneus* except for black antennae and mesonotum without white vittae. These characteristics are typical of female *aeneus*. Kertész (1910: 210) listed the name as a questionable synonym of *aeneus*.

Agerinus Walker, 1849:608 (*Helophilus*). Type-locality: "----?" Lectotype female BMNH. *Prohelophilus cingulata* (Fabricius). AUSTRALIAN: New Zealand.

A single female specimen with the appropriate Walker and Austen labels was examined and is designated lectotype. The specimen also bears a "New Zealand" locality label. This is a specimen of *Prohelophilus cingulata* (Fabricius) (new synonym), a common New Zealand species.

albohirta Wiedemann, 1830:110 (*Pipiza*). Type-locality: "Vaterland?" Lectotype male NMW. *Neocnemodon vitripennis* (Meigen). PALAEARCTIC: Europe.

A male with the appropriate Winthem label was examined (Fig. 17), is designated lectotype, and is a specimen of the common European species, *Neocnemodon vitripennis* (Meigen) (new synonym).

This name clearly illustrates the problem of *patria ignota* names. Delucchi and Pschorn-Walcher (1955) revised the European species of the genus *Neocnemodon* (as *Cnemodon*) as there was confusion as to how many species existed and what names to use for them. They indicated that the most commonly used name, *vitripennis* Meigen, had been applied to any or all of four different species. They characterized

four out of the five known European species. As they believed the holotype of *vitripennis* Meigen to be lost, they suppressed *vitripennis* Meigen as a *nomen dubium* and described *dreyfusiae*, new species, for *vitripennis* of authors. Unfortunately, they included the lectotype of *albohirta* Wiedemann in their type series because they didn't recognize the name *albohirta* as available because the name is not listed in any manual or catalog of European flower flies! They also included the probable holotype of *vitripennis* Meigen in their type-series. They incorrectly assumed that Meigen's type should be in the Meigen Collection in Paris. Meigen clearly stated that his type was in the Vienna museum, and a specimen with a Winthem label now in Vienna is, I believe, the holotype of *vitripennis* and was included as a paratype of *dreyfusiae*. Hence, the valid name for the taxon is still *vitripennis* Meigen, with *albohirta* Wiedemann and *dreyfusiae* Delucchi and Pschorn-Walcher as synonyms (also see Collin 1960).

Alcimus Walker, 1849:563 (*Milesia*). Type-locality: "----?" Lectotype female BMNH. *Spilomyia alcimus* (Walker). NEARCTIC: Eastern North America.

In the original description Walker gave the sex as male. Two females were found in the BM(NH), one of which bears Walker's name label. I accept both specimens as syntypes and designate the specimen with Walker's name label as lectotype. The types are of the common eastern North American species now called *hamifera* Loew, new junior synonym.

amplus Walker, 1849:576 (*Syrphus*). Type-locality: "----?" Lectotype female BMNH. *Eriozona (Eriozona) syrphoides* (Fallén). PALAEARCTIC: Europe.

A single female specimen with the appropriate Walker and Austen labels was examined and is designated lectotype. This is a specimen of *Eriozona syrphoides* (Fallén) (new synonym), a common Palaearctic species.

angustiventris Macquart, 1855:90 (*Merodon*). Type-locality: "Patrie inconnue." Lectotype male BMNH. *Quichuana angustiventris* (Macquart). NEOTROPICAL: Central America to Brazil.

Three male specimens with the appropriate Macquart and Verrall labels were found in the British Museum. One is designated as lectotype and has so been labeled. The types are specimens of the species previously called *Quichuana aurata* (Walker), new status. Shannon (1927:123) first identified this name as applying to a Neotropical species of the genus *Quichuana*. Hull (1943:10) examined the type and synonymized the name with *aurata* (Walker), but later he (1946:12) considered the name to represent a distinct species. Fluke (1957:123) followed Hull in listing *angustiventris* as a species distinct from *aurata*.

Anicetus Walker, 1849:624 (*Eristalis*). Type-locality: "-----?" Syntypes male & female BMNH. *Eristalinus arvorum* (Fabricius). ORIENTAL, AUSTRALASIAN & PALAEARCTIC: Hawaii to Japan, south to Australia and west to India.

The types of this name were not found in the British Museum. However, Austen left an indication in his copy of Kertész (1910) that the name was a synonym of *arvorum*. He also annotated a copy of Walker (1849) with "apparently identical with *E. antidotus* Wlk., f. China." and crossed out the "et fem." at the beginning of the

description. *Eristalis antidotus* Walker is a junior synonym of *arvorum*. As this assignment agrees with the original description, I accept the synonymy (new synonym).

Aquilius Walker, 1849:551 (*Eumerus*). Type-locality: "----?" Lectotype male BMNH. *Eumerus aquilius* Walker. AFROTROPICAL?

A single male specimen with the appropriate Walker and Austen labels was examined and is designated lectotype. As I do not recognize this species, I am re-describing it and figuring its genitalia. As a *Eumerus* species, the type must be Old World in origin. I don't believe it represents a Palaearctic species as I did run it through Stackelberg's key (1961) including all subsequent modifications (Stackelberg, 1964, 1965; Peck, 1966) without success. I suspect the type represents an Afrotropical species as it is unlike any Oriental species I know.

Head: Black; face white pilose and pollinose; cheek white pilose and pollinose; frontal triangle small, about $\frac{3}{4}$ as long as eye contiguity, white pilose and pollinose, occiput white pilose and pollinose; vertical triangle large, about $\frac{2}{3}$ as long as wide, black pilose, very sparsely gray pollinose except densely white pollinose anteriorly at eye contiguity. Eyes holoptic, white pilose, with eye contiguity long, about $\frac{1}{3}$ as long as vertical triangle (Fig. 6). Antenna (Fig. 5) black, black pilose; third segment trapezoid, about $\frac{7}{8}$ as long as wide; arista bare, black.

Thorax: Humerus white pilose and pollinose; mesonotum shiny except for broad lateral and narrow submedial gray pollinose vittae, with submedial vittae extending to scutellum, white and black pilose, with short black bristles dorsal to wing; scutellum shiny, white and black pilose, without a ventral fringe; pleurae subshiny, sparsely white pollinose, white pilose; sternopleural pile patches broadly separated. Wing: Hyaline; epaulet black, black pilose; microtrichose except for bare first costal cell, basal $\frac{1}{5}$ of first basal cell, basal $\frac{1}{4}$ of second costal cell, basal $\frac{1}{4}$ of anal cell, and basal $\frac{1}{2}$ of alula; third vein only slightly sinuate; stigma brown. Legs: Brownish black except for orange femoral-tibial joints and mid basitarsomere, extensively white pilose, black pilose only on apices of fore and mid femora, basal $\frac{1}{2}$ of hind tibia, and hind tarsus; intermixed white and black pile on trochanters and apical $\frac{1}{4}$ of hind femur; hind femur slightly swollen, with ventral spines (Fig. 4).

Abdomen: Black; first three sterna gray pollinose, white pilose; fourth sternum shiny, black pilose; dorsum with shiny metallic lustre; first tergum sparsely grayish white pollinose, white pilose; second to fourth terga shiny except for submedial white pollinose lunulae, black pilose except white pilose laterally; genitalic segments shiny, black pilose. Male genitalia as figured (Figs. 1-3).

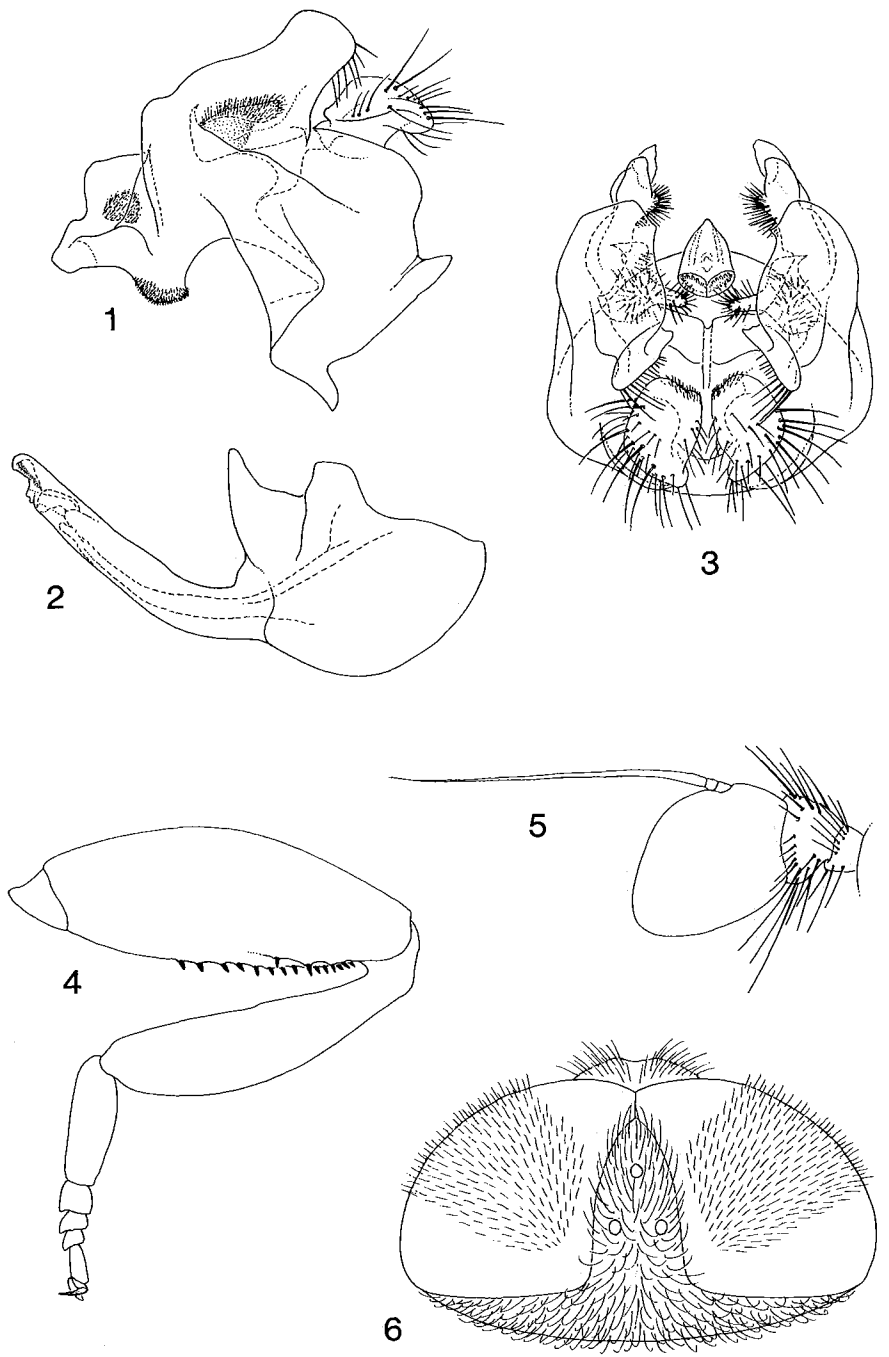
Bubulcus Walker, 1849:567 (*Milesia*). Type-locality: "----?" Lectotype male BMNH.

Criorhina bubulcus (Walker). NEARCTIC: Pacific Northwest.

A single male specimen with the appropriate Walker and Austen labels was examined and is designated lectotype. This is a specimen of the common Pacific Northwest species now called *Criorhina luna* Lovett, new synonym.

caerulifrons Bigot, 1884:542 (*Xylota*). Type-locality: "Exot. Pays?" Holotype female BMNH. *Xylota caerulifrons* Bigot. HOLARCTIC: Palaearctic?

A single female specimen with the appropriate Bigot labels (Fig. 9) was examined.



Figs. 1-6. *Eumerus aquilius* Walker. 1. 9th tergum and associated structures, lateral view. 2. 9th sternum and associated structures, lateral view. 3. 9th tergum and associated structures, dorsal view. 4. Hind femur, lateral view. 5. Antenna, lateral view. 6. Head, dorsal view.

The type is a specimen of *Xylota triangularis* group of Hippa (1968:189, 1978:65) and clearly represents a north-temperate species. Unfortunately, the taxonomy of the females of *Xylota* is poorly known. I do not believe the name applies to any Nearctic species.

calidus Walker, 1849:613 (*Eristalis*). Type-locality: "-----?" Type(s) female BMNH. ???

No type was found in my searches during 1974, 1984 nor 1987. Austen apparently studied the type as he annotated a copy of Walker (1849) by changing "fem." to "mas." There is a card indicating that the type was present in 1955.

The original description is given below. Unfortunately, it includes no clues to generic placement of the name.

"*Eristalis calidus*, n. s., fem. Niger, scutello abdomineque fulvis hujus apice vit-taque dilatata nigris, antennis piceis, pedibus flavo-fulvis, femoribus nigris, alis limpidis ad costam fulvis.

Body black; head covered with yellow down, clothed with yellow hairs; crown beset with a few black hairs; a broad brown shining stripe between the feelers and the mouth, which is pitchy; feelers pitchy; bristle tawny, downy; eyes pitchy; facets very small; chest and breast thickly covered with short tawny hairs; scutcheon tawny; abdomen nearly oval, tawny, longer and a little broader than the chest, clothed with short tawny hairs, black at the tip, and having on the back a black interrupted strip, which during its course is widened into two short bands; legs clothed with short tawny hairs; hips black; thighs black, with yellow tips; hind thighs pitchy, tawny towards the base; shanks tawny, yellow at the base; feet pitchy, tawny towards the base; claws and foot-cushions tawny; tips of claws black; wings colourless, tawny along the fore border for more than half the length, where there is a small brown spot; wing-ribs tawny; veins black, tawny towards the base; poisers yellow. Length of the body 6 lines; of the wings 12 lines."

caliginosus Walker, 1849: 621 (*Eristalis*). Type-locality: "-----?" Lectotype female BMNH. *Palpada caliginosa* (Walker). NEOTROPICAL: Bolivia?

A single headless female specimen with the appropriate Walker and Austen labels was examined and is designated lectotype. The specimen belongs to the genus *Palpada* (sensu stricto or *scutellaris* group of Thompson 1981:149) (new combination) and is similar to *aemulus* Williston. The type represents a species unknown to me, but a male from Bolivia (Buena Vista, April) from the Melander Collection (USNM) appears to belong to the same species. The following is a description of the lectotype.

Thorax: Black; black pilose except gray pollinose and yellow pilose anterior to transverse suture; scutellum black on basal $\frac{1}{3}$, yellow apically, black pilose; pleurae gray pollinose, yellow pilose except pteropleuron black pilose; metasternum yellow pilose; squama brown with white fringe. Wing: Hyaline, microtrichose apically; bare anterobasally to Rs, basal $\frac{2}{3}$ of 1st basal cell, underspurious vein in 1st basal cell, 2nd basal and anal cells, posterior to anal cell, cubital cell except medially, and alula except along basal margin. Legs: Black except orange femoral-tibial joints, black pilose except yellow pilose on coxae and dorsally and ventrally on hind femur; coxae gray pollinose.

Abdomen: Black except large orange quadrate basolateral macula on 2nd tergum, dull black pollinose except on orange maculae and for shiny mediate fasciate maculae on 3rd & 4th terga, black pilose except for yellow pile on 1st and basolaterally on all other terga.

chalybea Wiedemann, 1830:98 (*Xylota*). Type-locality: "Vaterland?" Lectotype male NMW. *Chalcosyrphus violascens* (Megerle). NEARCTIC: Eastern North America.

Two headless males were studied. One male had "Coll. Winthem" and Curran type label, and the other had an "Alte Sammlung" label. As the type was stated to be "Im Wiener Museum," I have selected the male with the "Alte Sammlung" label as lectotype. Both types are specimens of the common Eastern North American species, now called *chalybea*.

Osten Sacken (1875:60) first correctly identified this name as applying to a common Nearctic species. Curran (1926:114) reported on the status of the type specimen. See under *violascens*.

coactus Wiedemann, 1830:165 (*Eristalis*). Type-locality: "Vaterland?" Lectotype male NMW. *Mallota posticata* (Fabricius). NEARCTIC: Eastern North America.

Two males were studied. The male with Curran's determination label is designated lectotype. Both specimens are representatives of the common Eastern North American species, *posticata* Fabricius.

Osten Sacken (1878:135) first correctly identified this name as applying to a common Nearctic species. Curran (1930b: 2) reported on the status of the type specimen.

Coenina Walker, 1849:560 (*Milesia*). Type-locality: "-----?" Lectotype female BMNH. *Milesia crabroniformis* (Fabricius). PALAEARCTIC: Southern Europe, Caucasus, Madeira.

A single female with the appropriate Walker and Austen labels was examined and is designated lectotype. This specimen is also labeled with "Madeira" in a hand unknown to me.

Austen synonymized this name under *Milesia crabroniformis* (Fabricius) in his copy of Kertész, and I confirm his identification (new synonym).

coerulescens Macquart, 1834:519 (*Senogaster*). Type-locality: "Exotique" Type? male UMO *Semogaster dentipes* (Fabricius). NEOTROPICAL: Surinam to Brazil.

A male with the appropriate Macquart label was studied in Oxford and is a specimen of the species *dentipes* Fabricius. This is probably not the type, but the second specimen reported by Macquart. No other material was found in Paris or London.

Macquart (1842:72) reported a second specimen of his species from Surinam (collection of Serville). Williston (1886:321) placed the name as a questionable synonym of *dentipes* Fabricius and all subsequent authors have accepted his synonymy.

copiosus Walker, 1852:249 (*Eristalis*). Type-locality: "-----?" Lectotype male BMNH. *Eristalinus copiosus* (Walker). AUSTRALIAN: Australia.

A single female specimen with the appropriate Walker name and type and Austen labels was examined and is designated lectotype. This is a specimen of *sinuata*

Thomson. Klocker (1924:57) first identified this name with an Australian species. Later Ferguson (1926:161, 518) synonymized it with *sinuata* Thomson.

Corbulo Walker, 1849:556 (*Xylota*). Type-locality: "-----?" Lectotype female BMNH. *Xylota florum* (Linnaeus). PALAEARCTIC: Europe and Siberia.

A single female specimen with the appropriate Walker and Austen labels was examined and is designated lectotype. This is a specimen of the Palearctic species *Xylota florum* Linnaeus (new synonym).

corolloides Macquart, 1850:156 (*Syrphus*). Type-locality: "Patrie inconnue" Syn-types male & female *Eupeodes* (*Metasyrphus*) species Holarctic?

Macquart did not indicate the location of his types in the original description. The types of *corolloides* Macquart were not found in Paris, London or Oxford. The description suggests that this name applies to a species of the *latifasciatus* group of the subgenus *Metasyrphus* of *Eupeodes* (new combination).

costalis Wiedemann, 1830:97 (*Baccha*). Type-locality: "Vaterland?" Lectotype male NMW. *Ocyrtamus costatus* (Say). NEARCTIC: Eastern North America.

A male labeled "F.," "costalis, Alt. Sammlung" and with a Curran type label was examined and is designated lectotype. It is a specimen of *costatus* Say.

Curran (1926:113) identified *costalis* as the same as *tarchetius* Walker and later (Curran 1930a:6) identified both of these names as synonyms of *Baccha costata* Say.

cyaneifer Walker, 1849:621 (*Eristalis*). Type-locality: "-----?" Type(s) ? BMNH. *Palpada scutellaris* (Fabricius). NEW WORLD: United States south to Argentina.

No type specimen was found in my searches during 1974, 1984 or 1987. Also, there is no card for this name in the type specimen file. The name was identified as a synonym of *Palpada scutellaris* (Fabricius) by Kertész (1910:235). As the description of *cyaneifer* does fit *scutellaris*, I accept Kertész's synonymy.

Daochus Walker, 1849:565 (*Milesia*). Type-locality: "-----?" Lectotype female BMNH. *Temnostoma daochus* (Walker). NEARCTIC: Southeastern North America.

A female specimen with the appropriate Walker and Austen labels was studied and is designated lectotype. This specimen is of the species previously called *Temnostoma pictulum* Williston (new synonym), a common southeastern United States species.

Dascon Walker, 1849:554 (*Xylota*). Type-locality: "-----?" Lectotype male BMNH. *Chalcosyrphus metallicus* (Wiedemann). NEARCTIC: Southeastern North America.

A male with the appropriate Walker and Austen labels was examined and is designated lectotype. The type is a representative of the southeastern United States species, *Chalcosyrphus metallicus* (Wiedemann) (new synonym).

Shannon (1926:21) suggested that *dascon* was a synonym of *nemorum* Fabricius. The hind legs of the type are much darker than those of typical *metallicus* specimens.

and this may have misled Shannon. However, I dissected the male genitalia of the type and found them to be typical of *metallicus*.

Datamus Walker, 1849:628 (*Eristalis*). Type-locality: "-----?" Lectotype female BMNH. *Phytomia zonata* (Fabricius). PALAEARCTIC & ORIENTAL: Japan and Manchuria, south to India and southeast Asia.

A single female specimen from the Children's collection, with the appropriate Walker and Austen labels, was examined and is designated lectotype. This name was synonymized with *Phytomia zonata* (Fabricius) by Austen (in Brunetti 1923:204).

decora Walker, 1849:553 (*Syritta*). Type-locality: "-----?" Lectotype female, BMNH. *Syritta decora* Walker. AFROTROPICAL: Mauritius.

A single female specimen with the appropriate Walker and Austen labels was studied and is designated lectotype.

Smith and Vockeroth (1980:507) identified this name as applying to an Afrotropical species known only from Mauritius.

dibaphus Walker, 1849:560 (*Xylota*). Type-locality: "-----?" Lectotype female BMNH. *Senaspis dibapha* Walker. AFROTROPICAL: Guinea-Bissau to Kenya, south to Mozambique.

A single headless female with the appropriate Walker type labels was studied and is designated lectotype. This name was first identified by Austen (in Bezzi 1915:62).

dives Walker, 1849:617 (*Eristalis*). Type-locality: "-----?" Lectotype male BMNH. *Eristalinus dives* (Walker). AUSTRALIAN: Fiji and Samoa.

A single headless male with the appropriate Walker and Austen labels was studied and is designated lectotype.

The type is a specimen of *Eristalinus* (new combination) and agrees well with a male determined as *nitidus* Wulp from Fiji (Bezzi, 1928:79) in the BMNH collections. However, the name represents a species distinct from *nitidus* of Wulp, which was described from Java, as its abdomen lacks the characteristic sinuate black pollinose fasciae of *nitidus*. Hull (1929:198) also recorded this species from Samoa as *nitidus*, and described it from Fiji as *vitrescens* Hull (new synonym).

dubia Macquart, 1834:507 (*Eristalis*). Type-locality: [none given] Type ? Macquart Collection. ???

No specimens labeled as *dubia* Macquart were found in Oxford, London or Paris nor is any material listed as being present in the Macquart Collection in Lille. The original description is translated below. Macquart's placement in *Eristalis* and other key characters place the name in the subtribe Eristalina and among genera related to *Eristalis*. The banded thorax is suggestive of a New World *Palpada* species, but the swollen hind femur with a "tooth" is a character not known for any *Palpada* species.

Length 13.5 mm. Blackish. Face whitish; prominence tawny. Front tawny. Antennae tawny. Thoracic pile yellowish; a transverse band on anterior border; another similar one to this on posterior border yellowish; scutellum testaceous. Second seg-

ment of abdomen with a large interrupted tawny band; posterior border shiny white, as are those of following segments. Legs brown; base of tibiae yellowish; hind femur swollen and provided with a tooth. Wings brownish. This species, of my collection, is intermediate between *Eristalis* and *Helophilus*.

From Macquart's key, the following additional characters can be adduced for *dubia*: arista bare, marginal cell (R1) closed and petiolate, and eyes bare.

erraticum Walker, 1849:543 (*Chrysotoxum*). Type-locality: "----?" Lectotype female BMNH. *Callicera erraticum* (Walker). NEARCTIC: Eastern North America.

A single female with the appropriate Walker and Austen labels was studied. Verrall (1913:329) transferred this name to *Callicera* and redescribed the type. Thompson (1980:201) recognized the name as the senior synonym for the Nearctic species, *Callicera johnsoni* Metcalf, and designated the lectotype.

fascipennis Wiedemann, 1830:96 (*Baccha*). Type-locality: "Vaterland?" Lectotype female NMW. *Ocyptamus fascipennis* (Wiedemann). NEARCTIC: Eastern North America.

A female labeled "Am. Bor.," "aurinotus, = fascipennis, Alte Sammlung," "type, Baccha, fascipennis Wd., No. CNC [Red CNC type label]" was studied.

Osten Sacken (1875:50) first identified this name as applying to a Nearctic species when he listed it as a questionable synonym of *aurinotus* Walker. Later he (1878:127) removed the question mark. While he never commented on his synonymy, it was undoubtedly the result of having studied the type in Vienna. The type was then in a separate collection as noted above. The "Am. Bor." and "aurinotus = fascipennis" were added to the type after Osten Sacken studied it and probably on the basis of his identification. Curran (1926:123) reexamined the type and confirmed Osten Sacken's synonymy. The specimen is here designated as lectotype and is so labeled.

flavicornis Macquart, 1842:71 (*Merodon*). Type-locality: "Nous la croyons exotique." Holotype male MNHNP. *Merodon aureus* (Fabricius). PALAEARCTIC: Europe and North Africa.

In the Macquart collection in Paris, a headless male labeled as "No. 1184, Merodon flavicornis" was studied. This holotype is a specimen of *Merodon aureus* (Fabricius) (new synonym).

fumipennis Stephens, 1846:29 (*Eristalis*). Type-locality: "I am not aware of its locality." Holotype male BMNH (lost?). *Palpada geniculata* (Fabricius). NEOTROPICAL: Surinam to Brazil.

The original description and figure of *fumipennis* was included in Stephens' "British Insects . . .", although Stephens plainly was unaware of its locality. Walker (1851:243) merely redescribed the species in his *Insecta Britannia, Diptera*. The holotype of *fumipennis* Stephens should be in the Stephens Collection now in the British Museum. However, the type has apparently been lost since Verrall's time (Verrall, 1901:672). Haliday (in Walker, 1856:xii) suggested that the specimen belonged to the species *Palpada vinetorum* (Fabricius). Verrall (1901:672) examined the type, gave further descriptive details, and suggested that the name applied to *Palpada hortorum* (Fabricius) (Bezzi and Stein, 1907:100). However, the original description

and color figure suggest that this name applies to *Palpada geniculata* (Thompson et al., 1976:106).

fusca Macquart, 1834:495 (*Volucella*). Type-locality: "Exotique" Holotype female UMO. *Copestylum brunneum* (Thunberg). NEOTROPICAL: Puerto Rico and Virgin Islands.

This name was based on a female from the Serville Collection. There is a single headless female labeled as "V. fusca, Coll. Serville Macq." in the Bigot-Verrall-Collin Collection at Oxford. The Diptera from the Serville Collection were purchased by Bigot as Osten Sacken (1878:xvi) stated that the types from the Serville Collection are to be found in the Bigot Collection. The type is a specimen of *Copestylum brunneum* (Thunberg), a common Antillean species (new synonym).

fuscipennis Walker, 1849:545 (*Paragus*). Type-locality: "-----?" Type(s) male BMNH. *Pipizella viduata* (Linnaeus)? PALAEARCTIC: Europe.

The type was not found in 1974 nor 1984 in the BMNH, but there was a card indicating that the type was present in 1955. Austen apparently studied the type as he annotated a copy of Walker (1849) with "A dark-winged *Pipizella virens*, F." Austen's identification is reasonable at the generic level, but in his time *virens* was not recognized as the species complex it is now known to be (Collin, 1952; Goeldin, 1974; Lucas, 1976). As the species of the complex are recognized only on the basis of male genitalic characters, without examining the type of *fuscipennis* the name can not be identified with certainty and is here listed as a dubious synonym of *viduata* Linnaeus (new synonym), the oldest name in the complex.

fusciventris Wiedemann, 1830:95 (*Baccha*). Type-locality: Vaterland? Lectotype female NMW. *Pseudodoros clavata* (Fabricius). NEW WORLD: California to New Jersey, south to Argentina.

A female labeled with "F.," "fusciventris, Alte Sammlung" and with Curran type and determination labels was examined, is designated lectotype and is a specimen of *clavata* Fabricius.

Curran (1926:113) examined the type and identified it as "a rather discolored specimen of . . . *clavata* (Fabricius)."

Gerstaeckeri Becker, 1894:477 (*Chilosia*). Type-locality: "Vaterland?" Holotype; female ZMHU, Berlin. *Cheilisia gerstaeckeri* Becker. PALAEARCTIC: Sweden.

Gaunitz (1963:497) recorded this species from Sweden, Ammarnas.

haesitans Walker, 1849:615 (*Eristalis*). Type-locality: "-----?" Lectotype female BMNH. *Eristalis dimidiatus* Wiedemann. NEARCTIC: Eastern North America.

A single female specimen with the appropriate Walker and Austen labels was examined and is designated lectotype. This is a specimen of *Eristalis dimidiatus* Wiedemann (new synonym).

hilaris Walker, 1849:605 (*Helophilus*). Type-locality: "-----?" Type(s) ? BMNH. *Mesembrius hilaris* (Walker). AUSTRALIAN: New Guinea, south to Australia (Queensland, New South Wales).

In 1974 and 1984, I was unable to find the type, although there was a card indicating that it was present in 1955.

Edwards (1915:409) studied the type and identified this name with an Australian species. Ferguson (1926:165) contrasted the species with *bengalensis* Wiedemann (1819:16) and gave additional distributional records.

involvens Walker, 1860:291 (*Eristalis*). Type-locality: "-----" Lectotype female BMNH. *Palpada furcata* (Wiedemann). NEW WORLD: Texas to Argentina.

A single female with the appropriate Walker and Austen labels was studied. The specimen consists of the head of one species (a female *Eoseristalis*) glued on to the body of a *Palpada furcata* (Wiedemann) (new synonym). I designate the body as lectotype.

jucundus Walker, 1849:620 (*Eristalis*). Type-locality: "-----?" Type(s) female BMNH. *Eristalinus* (*Eristalodes*) *quinquelineatus* (Fabricius). AFROTROPICAL: Cape Verde Islands to Ethiopia, south to South Africa.

In 1974 and 1984, I was unable to find the type, although there was a card in the type file indicating that it was present in 1955. Austen left a footnote in a copy of Walker (1849) referring to "clothed with black hairs only on the hind tibiae, and at the tips of the hind femora, underneath. E. E. A."

The original description gives the eyes as with "four black stripes," which clearly restrict the name to an *Eristalinus* (*Eristalodes*) species, and other characters, such as the black facial and mesonotal vittae, place the name as a synonym of *quinquelineatus* Fabricius (new synonym).

Lamus Walker, 1849:562 (*Milesia*). Type-locality: "-----?" Syntypes females BMNH. ? ?

In 1974, 1984 and 1987, I was unable to find the types. There is no card for it in the type file nor did Austen leave any annotations about it.

The original description is given below, and is of either a *Milesia* or *Spilomyia* species or both. The description of the eyes as "varied with dark red" is characteristic of *Spilomyia*, but I know of no *Spilomyia* species with the thorax or abdomen like that described for *lamus*. Those parts of the description seem to apply to a species of *Milesia*, such as *virginensis* Drury. This may mean that the description was based on a composite, a head of a *Spilomyia* species and the body of a *Milesia* species, and, as both Walker and Macquart have been known to describe such monstrosities, such is a likely possibility in this case.

"*Milesia Lamus*, n. s., fem. Flava nigro varia, abdomine fulvo, basi fasciis vittisque nigris, antennis fulvis, pedibus fulvis, tibiis posticis ferrugineo vittatis, femoribus posticis tarsisque ferrugineis, alis cinereis ad costam fuscis.

Head yellow, with a black band across the crown, whence a black strip extends to the base of the feelers; the latter are seated on a brown space, and a tawny strip proceeds from them to the clypeus; mouth pitchy; feelers bright tawny; third joint nearly round; bristle about thrice its length, pitchy towards the tip; eyes coppery, varied with dark red; facets small; chest yellow, adorned with a square black spot on each side of the front, and with a black strip along the middle joining a black

band between the wings; another black band occupies the fore border of the scutcheon; breast black, yellow in front, and adorned with two yellow spots on each side; abdomen tawny, black at the base, adorned with two slender black bands along the fore borders of the segments; a black stripe extends from the base along half the length of the following segment, and thence passes to the sides of the abdomen by means of two slender slightly curved and retreating bands; another black stripe springs from the black suture of the following segment, but is much shorter than the first, and the bands in which it terminates are nearly straight; the third black suture does not emit a stripe, but from it proceed two black bands, which are oblique and irregular in their course to the sides of the abdomen; underside yellow, with a large black spot in the middle of each segment, and brown spot on each side of its hind border; legs tawny; feet ferruginous, pitchy towards the tips; claws and foot-cushions yellow, tips of claws black; hind legs ferruginous, their shanks tawny, with ferruginous stripes; wings gray, brown along the fore borders for about half the breadth where the two colours are intermingled; wing-ribs tawny; veins pitchy, ferruginous along the fore border, tawny in the disk; poisers yellow. Length of the body 9 lines; of the wings 16 lines.

Var. B. Scutcheon black, excepting the hind border: wings gray, tinged with brown along the fore border for one-third of the breadth."

laphriaeformis Walker, 1849:558 (*Xylota*). Type-locality: "----?" Lectotype female BMNH. *Brachypalpus laphriformis* Fallén. PALAEARCTIC: Europe.

A single female specimen with the appropriate Walker and Austen labels was studied and is designated lectotype. Coe (1941:195) examined the type and synonymized the name under *bimaculatus* Macquart. The senior name for *bimaculatus* is *laphriformis* Fallén.

latus Macquart, 1842:35 (*Eristalis*). Type-locality: "Patrie inconnue" Holotype female Macquart Collection. *Phytomia zonata* (Fabricius). PALAEARCTIC and ORIENTAL: Korea and Japan, south to India and Southeast Asia.

The type was not found in the Macquart collection in Paris nor among the Macquart material in Oxford and London.

While this species was described from an unknown locality, Macquart (1846:126) later recorded a specimen from India, and, hence, both Wulp (1896:114) and Kertész (1910:223) listed this name as a valid Oriental species. Brunetti (1923:192) gave a translation of the original description. Herve-Bazin (1923:253) listed the name as a synonym of *zonata* without explanation. Macquart's figure is atypical for *zonata* as the pale fascia on the second tergum is broadly interrupted medially and the wing is more extensively dark. However, the figure does agree with a *zonata* specimen in the USNM from Java. Hence, Herve-Bazin's synonymy is here accepted.

lepida Macquart, 1842:109 (*Baccha*). Type-locality: "Patrie inconnue" Lectotype male, MNHNP. *Ocyptamus lepidus* (Macquart). NEOTROPICAL: Mexico south to Brazil.

Thompson (1981:53, 192) discussed the identity of this name, differentiated the species from related ones and designated a lectotype. *Lepidus* of Curran (1930a:3,

1941:262) and other recent authors is *ricus* Curran, and *crocatu*s Austen is the true *lepidus* Macquart.

linearis Walker, 1852:251 (*Volucella*). Type-locality: "-----?" Lectotype female BMNH. *Volucella linearis* Walker. PALAEARCTIC: Japan.

A single female with the following labels was studied: "type" (green Walker type label), "Locality?, A. R. Wallace, ex. coll., W. A. Saunders, 68.4," "68.4," "Volucella, linearis" (in Walker's hand), "Volucella, linearis, Wlk" (Austen Label), and "head probably not belonging to body, owing to rapid narrowing of frons. Sp. trifasciata W. t. E. B." [=teste Enrico Brunetti] (in Brunetti's hand) (Figs. 10, 16). Brunetti (1923:147) listed this name as a synonym of *trifasciata* Wiedemann and stated that the type was "labeled as from India." However, I found no such label on the type. The type is a specimen of *nitobei* Matsumura (new synonym) and is designated lectotype.

longirostris Macquart, 1846:124 (*Volucella*). Type-locality "Patrie inconnue" Holotype female UMO. *Copestylum longirostre* (Macquart). NEOTROPICAL: Chile.

A single female with a bordered Bigot label ("V. longirostris o, am. mer. chili, (Coll. Fairmaire) Macq. D. ex.") was studied in the Bigot-Verrall-Collin collection at Oxford. This type is a specimen of the species previously called *concinna* Philippi (new synonym).

neglectus Wiedemann, 1830:134 (*Syrphus*). Type-locality: "Vaterland?" Syntypes males & females KIEL & NMW. ??

Type material, which minimally must have consisted of 3 males and a female, was not found in either Copenhagen or Vienna and is presumed to be lost. Rondani (1875:423; Wulp, 1896:119) identified this name with a species from Sarawak, Borneo.

Wiedemann's original description has been translated below.

Black, thoracic sides, scutellum, abdominal bands except black interruptions, antenna and legs yellow. 7.6 mm

Antenna reddish yellow; face pale yellow, with slight pearlmother shimmer; frons on the sides yellow, middle bluish. Thoracic sides metallic blackish, with pale yellow bands and spot on its end; mesonotum black. First abdominal segment on the base and sides yellow, on the tip black, so that the yellow appears twice sinuate; second segment on the base hardly very narrowly yellow, but on the middle with rather broad and complete band, and one small triangular spot on the tip; each following segment on the base with very broad, on hindmargin outwards to both sides narrowed band, which in the front encircles a black transverse line, which bends backwards next to the middle on both sides, so that a yellow stripe seems to grow out of the middle of the band. The yellow stripe is fused with a band of the tip that is much narrower and with more shortened sides. These black lines on some male examples are very faint, but still present. Wing very waterclear [=wasserklar].

oxycanus Walker, 1852:246 (*Eristalis*). Type-locality: "----?" Lectotype male BMNH. *Helophilus groenlandicus* (O. Fabricius). NEARCTIC: Alaska to Greenland, south to British Columbia, Colorado and New Hampshire.

A single male with the appropriate Walker and Austen labels was studied and is designated lectotype. This is a specimen of *Helophilus groenlandicus* (Otto Fabricius) (new synonym).

peas Walker, 1849:590 (*Syrphus*). Type-locality: "-----?" Type male BMNH. *Ocyptamus fuscipennis* (Say). NEARCTIC: Eastern North America.

Austen (1893:134) identified this name as the same as *fuscipennis* Say.

pictus Macquart, 1846:130 (*Eristalis*). Type-locality: "Patrie inconnue" Holotype female?. *Meromacrus acutus* (Fabricius). NEARCTIC: Southeastern United States.

Described from a single female labeled as "Pictus, Leach" and in the collection of Latreille which was stated as being maintained by the Marquis of Breme. The type was not found in the Macquart Collection in Paris nor among the Macquart material in Oxford and London. Horn and Kahle (1935:150) stated that Latreille's first collection went to P. F. M. A. Dejean in 1826 and that his second collection was broken up after his death and distributed among numerous people. They did not indicate where the Diptera of this second collection went. Latreille died in 1833. The first statement corresponds to what Macquart (1838:12) wrote at the beginning of his work. Later Macquart (1846:130, 132) wrote that the Latreille material was now with (*actuellement*) or maintained (*maintenat*) by "M. de Marquis de Breme." This last reference must then refer to the results of the break-up of this second collection. Unfortunately, Horn and Kahle (1935:29) gave no indication of what happened to the Diptera material of Breme as they only noted that the Coleoptera went to the Zoological Museum in Turin. Also, there is a brief announcement in the *Bulletin de la Société Entomologique de France* (1850, 2nd series, 8:xix) stating that Breme donated his collection of insects to the museum in Turin. However, I have not been able to verify that there are Macquart Diptera types in Turin.

The name clearly applies to a *Meromacrus* species, of the *pratorum* complex. In the most recent key to this complex (Thompson, 1981), the character states of orange base of the wing and black facial vitta identify the name as a synonym of *acutus* Fabricius.

purpurea Walker, 1849:560 (*Xylota*). Type-locality: "-----?" Lectotype female BMNH. *Chalcosyrphus violascens* (Megerle). NEARCTIC: Eastern North America.

A single female with the appropriate Walker and Austen labels was studied and is designated lectotype. This name was first identified as a synonym of *chalybea* by Shannon (1926:16). See *violascens*.

quadrivittatus Wiedemann, 1819:17 (*Eristalis*). Type-locality: " " Holotype male NMW. *Mesembrius quadrivittatus* (Wiedemann). ORIENTAL: India, Indonesia (to Aru Islands).

Wiedemann (1819) did not formally describe this species; he merely contrasted it with the preceding one (*Mesembrius bengalensis* [Wiedemann]), stating that he was doubtful whether the unique male was distinct. In his monograph (Wiedemann 1830:168), he merely removed his statement of doubt, calling this species similar to the preceding (again *bengalensis*), and repeating his statements of differences from the original description. As Wiedemann never made a formal description, the lack of

locality data for *quadrivittatus* was either an oversight (see under *xanthaspis*) or he meant to cover it under his expression that *quadrivittatus* was “*vorigen ausserst ähnlich . . .*” The latter possibility is confirmed by the fact there is a male from the Winthem Collection determined by Wiedemann as *quadrivittatus* and labelled as being from Bengal (the type locality of *bengalensis*). This specimen has a small pink square indicating that it is a type (see Osten Sacken 1878:xv). What is curious about this specimen, is that Curran (1930b:1) stated that it is not the holotype “as the type locality is Tranquebar, while the specimen [=the holotype] before me is from Bengal.” As I have found no basis whatsoever for Curran’s assertion, I accept the specimen as holotype, making the type locality Bengal.

rufitarsis Macquart, 1842:58 (*Eristalis*). Type-locality: “Patri inconnue.” Holotype female MNHNP. *Phytomia zonata* (Fabricius) PALAEARCTIC & ORIENTAL: Japan, Korea, south to India and Southeast Asia.

Two females are in the Macquart Collection (Box 16, #634) under this name, but only one is labeled. The female with a Macquart label is considered the holotype and is a specimen of the common widespread Far East species, *Phytomia zonata* (Fabricius) (new synonym). The other is a specimen of *Phytomia aesyminus* Walker.

secretus Walker, 1849:620 (*Eristalis*). Type-locality: “----?” Lectotype ? BMNH. *Eristalinus taeniops* (Wiedemann). PALAEOTROPICS: Southern Europe, east to India and south to South Africa.

Only a fragment of a type remains, consisting of a thorax, left mid leg, all legs on right side and abdominal terga 1–4. The fragment is also badly rubbed and discolored. It is designated lectotype. However, the fragment is clearly a part of specimen of *Eristalinus* and probably *taeniops* Wiedemann (new synonym).

solennis Walker, 1849:245 (*Eristalis*). Type-locality: “----?” Lectotype male BMNH. *Palpada solennis* (Walker). NEW WORLD: Texas south to Argentina.

A single male with the appropriate Walker and Austen labels was studied and is designated lectotype. Thompson et al. (1976:109) identified this name as the senior synonym for *mus* Curran, a Neotropical species.

stipatum Walker, 1852:219 (*Chrysotoxum*). Type-locality: “----?” Lectotype female BMNH *Chrysotoxum intermedium* (Meigen). PALAEARCTIC: Europe, North Africa.

→

Figs. 7–11. Labels. 7. *Helophilus rostratus* Macquart: a—the Macquart name label glued onto a Bigot label, b—Verrall donation label, c—type label with red circle. 8. *Eristalis oxycanus* Walker: a—Austen name label, b—Walker type with green circle, c—Walker name label. 9. *Xylota caerulifrons* Bigot: a—Verrall donation label, b—holotype label with red circle, c—Bigot name label. 10. *Volucella linearis* Walker: a—Austen name label, b—Walker type with green circle, c—Walker name label, d—locality label of unknown origin, e—BM acquisition number, f—holotype label with red circle. 11. *Merodon angustiventris* Macquart: a—Macquart name label, b—Thompson paralectotype label yellow in color, c—ex coll Bigot label, d—Austen name label?, e—cotype label with yellow circle, f—BM acquisition.

7

Melopithecus
rostratus
 n. sp.
 nov. generato. Macy, D. & Thomson

ex. coll. Bigot.
 Prs. by
 G. H. Verrall.
 B.M. 1901-14.



8

Eristalis
oxycaerus Wlk.



oxycaerus

10

9
 ex. coll. Bigot.
 Pres. by
 G. H. Verrall.
 B.M. 1894-234.

Holo-
 type

Volucella
linearis
 Walk.



Volucella
linearis



X. *Cæulifrons* G.
 we. coll. 542.
 Ex. coll. Type J. Bigot

Locality?
 A. R. Wallace
 ex. coll.
 W. H. Saunders
 68.4.

163A

11

Meredon
angustiventris
 G. Mercet

PARALECTOTYPE
angustiventris Mercet
 desgn. Thompson 1978

Co-
 type

Ex coll. Bigot.

merodon
angustiventris
 Mercet

13.7.1901-14

A single female with the appropriate Walker and Austen labels was studied and is designated lectotype. Austen identified the type as a specimen of *italicum* Rondani, a name that is now considered synonymous with *intermedium* (Meigen). I accept this synonymy (new synonym).

strenuus Walker, 1857:152 (*Helophilus*). Type-locality: [none given] Lectotype male BMNH. *Mesembrius strenuus* (Walker). PALAEOTROPICS.

A male with the appropriate Walker and Austen labels was examined and is designated lectotype. The type is a specimen of *Mesembrius* unknown to me (new combination).

tcnebricus Walker, 1849:601 (*Merodon*). Type-locality: "----?" Lectotype female BMNH. *Palpada furcata* (Wiedemann). NEW WORLD: Texas to Argentina.

A single female with the appropriate Walker and Austen labels was studied and is designated lectotype. Shannon and Aubertin (1933:161) first identified this name as the same as *furcata* Wiedemann.

tomentosus Macquart, 1850:140 (*Eristalis*; preocc. Macquart, 1847). Type-locality: "Patrie inconnue." Lectotype female NMNHP. *Palpada mexicana* (Macquart). NEW WORLD: California to Texas, south to Venezuela and Peru.

In Box 16, #641 of the Macquart Collection in Paris, there are two specimens associated with this name. The female with a Macquart label "Eristalis, tomentosus, Macq. n. sp." is designated lectotype and has been so labeled. Both specimens are of *Palpada mexicana* (Macquart) (new synonym).

torpidus Walker, 1857:153 (*Merodon*). Type-locality: [none given]. Lectotype male BMNH. *Orthoprosopa grisea* (Walker). AUSTRALIAN: Australia.

A male with the appropriate Walker and Austen labels was examined and is designated lectotype. The type is a specimen of *Orthoprosopa grisea* (Walker) (new synonym).

torridus Walker, 1849:612 (*Eristalis*). Type-locality: "----?" Lectotype female BMNH. *Eristalinus taeniops* (Wiedemann). PALAEOTROPICS: Southern Europe, east to India and south to South Africa.

A single headless female with the appropriate Walker and Austen labels was studied and is designated lectotype. Yerbury (in Verrall 1898:415) identified this name as a synonym of *taeniops* Wiedemann.

varia Walker, 1849:548 (*Baccha*). Type-locality: "----?" Syntypes male(s) and female(s) BMNH. *Pseudodoros clavatus* (Fabricius). NEW WORLD: California to New Jersey, south to Argentina.

Austen (1898:159) identified this name as a synonym of *clavatus* Fabricius.

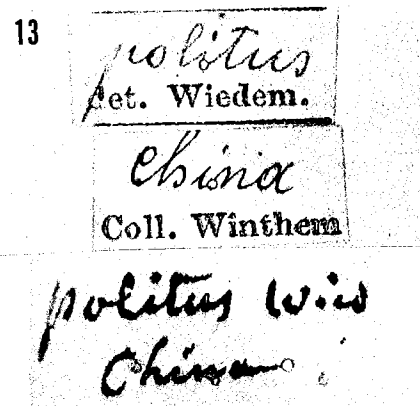
violascens Megerle, 1803:[36] (*Syrphus*). Type-locality: "Exotica" Lectotype female NMW. *Chalcosyrphus violascens* (Megerle). NEARCTIC: Eastern North America.

The description of this species appeared in a sales catalog prompting the question of whether the name is available. Two other Diptera names also appeared in the same catalog, and one of these, *Hippobosca variegata*, is currently accepted as avail-

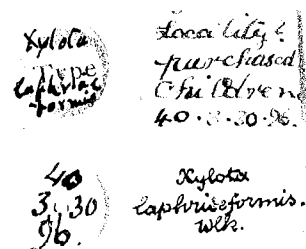
12



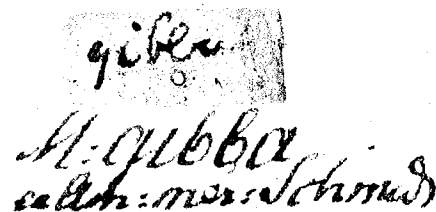
13



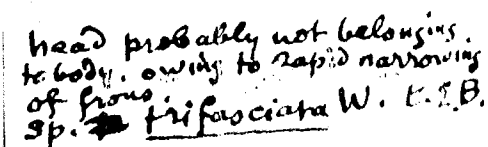
14



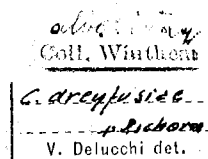
15



16



17



Figs. 12-17. Labels. 12. *Volucella maximiliani* Jaenicke: a—locality label, b—Alte Sammlung label, c—Jaenicke label?. 13. *Paragus politus* Wiedemann: a—NMW old determination label, b—Winthem Collection label, c—Wiedemann name label. 14. *Xylota laphriaeformis* Walker: a—Walker type label with species name in Austen's hand, b—BM acquisition label, c—locality label of unknown origin, d—Austen name label. 15. *Musca gibba* Fabricius: a—Fabricius name label, b—Sehested & Tonder Lund label. 16. *Volucella linearis* Walker: a—Brunetti comment label. 17. *Pipiza albohirta* Wiedemann: a—Winthem Collection label, b—Delucchi determination label.

able (Maa, 1963:131, 1969:286; Crosskey, 1980:1077) from that catalog. Wiedemann (1830:581 & 603) had recognized both of them (*Pygrotta undulata* and *Hippobosca variegata*) as available from Megerle. Hence, I also accept *violascens* as an available name. The description clearly identifies this name as applying to the species presently known as *Chalcosyrphus chalybeus* (Wiedemann)(new synonym). Wiedemann based his name on an unlabeled specimen in the Vienna Museum. I suspect that the type of *chalybeus* Wiedemann is in fact the type of *violascens* Megerle and so designate it as lectotype. Wiedemann clearly had access to Megerle's material as he redescribed two other Megerle species.

vittatum Wiedemann, 1830:87 (*Chrysotoxum*). Type-locality: "Vaterland?" Lectotype female NMW. *Sphecomyia vittata* (Wiedemann). NEARCTIC: Eastern North America.

Two females labeled "Georg." and "vittata, Alte Sammlung" were studied. One had a red Curran type label and is designated lectotype. The "Georg." locality label was probably added subsequently based on Macquart (1842:18).

Macquart (1842:18) identified this name as synonymous with *Psarus ornatus* Wiedemann and used *vittata* as the valid name. Previously Latreille (1825:495) described a new genus for an unnamed species from "Carolina," collected by Bosc and in the Paris museum. Macquart correctly associated all these descriptions. Despite the numerous citations to the contrary (i.e., Wirth et al., 1965:612), Macquart's designation of *vittata* is the first valid one for *Sphecomyia* (by subsequent monotypy and designation).

xanthaspis Wiedemann, 1830:191 (*Eristalis*). Type-locality: [none given]. Holotype female NMW. *Palpada distinguendus* (Wiedemann). NEOTROPICAL: Paraguay to Argentina.

Curran (1930:8) identified this name as synonymous with *Palpada distinguendus* (Wiedemann) based on examination of the types of both names. The female Curran studied was labeled as from "Buenos Aires" which lead Curran to suspect that it was not a type. From Wiedemann's description it is obvious that the lack of a locality for *xanthaspis* was merely an oversight or that he meant to cover it in his expression that *xanthaspis* was "*in jedem Betracht der vorigen . . . ähnlich*" (in every respect similar to the preceding (= *distinguendus*)). He did not formally describe *xanthaspis* as he indicated that it perhaps was the female of the preceding species (= *distinguendus*). Thus the description of *xanthaspis* does not include a Latin or German diagnosis nor length and locality statement. I studied the same specimen as Curran and have no doubt that it is the type of *xanthaspis* and the female of *distinguendus*.

ACKNOWLEDGMENTS

I thank K. G. V. Smith and Adrian Pont, British Museum (Natural History), London (BMNH); Loïc Matile, Museum National d'Histoire Naturelle, Paris (MNHN); H. Schumann, Zoologisches Museum, Museum für Naturkunde, Humbolt-Universität, Berlin (ZMHU); Ruth Contreras-Lichtenberg, Naturhistorisches Museum Wien, Vienna (NMW); and Martin C. Birch, Hope Department of Entomology, Oxford University, Oxford (UMO), for permission to study material in their care. I also thank Adrian Pont (vide supra); Werner Barke-meyer of Universität Oldenburg; Suzanne W. T. Batra, Douglass R. Miller and Robert V. Peterson of the Systematic

Entomology Laboratory, USDA, Washington, D.C.; and Wayne N. Mathis of the Smithsonian Institution (USNM), Washington, D.C., for their critical review of the manuscript. Special thanks is due to Dr. J. R. Vockeroth, who originally challenged me to identify all the "patria ignota" syrphid names, and, who has generously shared with me his type notes and knowledge of syrphids. The initial support for this study, which covered travel expenses to European museums, was provided by a grant from the Penrose Fund of the American Philosophical Society.

LITERATURE CITED

- Ackland, D. M. and E. Taylor. 1972. Notes on the Verrall-Collin Collection of Diptera in the Hope Department of Entomology, University Museum. Oxford. Entomol. Mon. Mag. 108:12-15.
- Austen, E. E. 1893. Descriptions of new species of dipterous insects of the family Syrphidae in the collection of the British Museum, with notes on species described by the late Francis Walker. Part I. Bacchini and Brachyopini. Proc. Zool. Soc. London 1893:132-164, pl. 4-5.
- Becker, T. 1894. Revision der Gattung *Chilosia* Meigen. Nova Acta Acad. Caes. Leop.-Carol. 62:194-524, pls. 11-23.
- Bezzi, M. 1915. The Syrphidae of the Ethiopian Region Based on Material in the Collection of the British Museum (Natural History), with Descriptions of New Genera and Species. Brit. Mus. (Nat. Hist.), London, iv + 146 pp.
- Bezzi, M. 1928. Diptera Brachycera and Athericera of the Fiji Islands Based on Material in the British Museum (Natural History). Brit. Mus. (Nat. Hist.), London, viii + 220 pp.
- Bezzi, M. and P. Stein. 1907. Cyclorhapha Aschiza. Pages 1-189 in: T. Becker, M. Bezzi, K. Kertész and P. Stein (eds.), Katalog der paläarktischen Dipteren, Vol. 3. Budapest, 828 pp.
- Bigot, J. M. F. 1884. Diptères nouveaux ou peu connus; 23e partie, XXXII. Syrphidi (2e partie), Espèces nouvelle, No. 2e. Ann. Soc. Entomol. France (6)3:535-560.
- Brauer, F. 1880. Die Kaiserliche Winthem'sche, Wiedemann'sche und Egger'sche Sammlung. Pages 105-107 in: Die Zweiflügler des Kaiserlichen Museums zu Wien. I. Denkschr. Kais. Akad. Wiss. Wien (math.-naturwiss. Cl.) 42:105-216, pl. I-VI.
- Brunetti, E. 1923. Pipunculidae, Syrphidae, Conopidae, Oestridae. Diptera. Vol. III. xii + 424 pp., 7 pls. In: A. E. Shipley (ed.), Fauna of British India. London.
- Coe, R. L. 1941. *Brachypalpus eunotus* Loew (Dipt. Syrphidae) new to Britain; its distinctions from *B. bimaculatus* Macquart; and notes on synonymy in the genus. Entomol. Mon. Mag. 77:193-197.
- Collin, J. E. 1952. On the subdivisions of the genus *Pipizella* Rnd., and an additional British species (Diptera, Syrphidae). J. Soc. Brit. Entomol. 4:85-88.
- Collin, J. E. 1960. A fourth species of *Cnemodon* (Diptera, Syrphidae) in Britain. Entomologist 93:144-145.
- Crosskey, R. W. 1974. The British Tachinidae of Walker and Stephens (Diptera). Bull. Brit. Mus. (Nat. Hist.) Entomol. 30:267-308.
- Crosskey, R. W. 1980. Catalogue of the Diptera of the Afrotropical Region. Brit. Mus. (Nat. Hist.), London, 1,437 pp.
- Curran, C. H. 1926. Notes on Wiedemann's types of Syrphidae. Can. Ent. 58:111-114.
- Curran, C. H. 1930a. New species of Diptera belonging to the genus *Baccha* Fabricius (Syrphidae). Amer. Mus. Novitates 403, 16 pp.
- Curran, C. H. 1930b. New species of Eristalinae with notes (Syrphidae, Diptera). Amer. Mus. Novitates 411, 27 pp.
- Curran, C. H. 1941. New American Syrphidae. Bull. Amer. Mus. Nat. Hist. 78:243-304.
- Delucchi, V. and H. Pschorn-Walcher. 1955. Les espèces du genre *Cnemodon* Egger (Diptera,

- Syrphidae) predatrices de *Dreyfusia (Adelges) piceae* Ratzeburg (Hemiptera, Adelgidae). Zeitschr. Angewandte Entomol. 37:492-506.
- Edwards, F. W. 1915. Report on the Diptera collected by the British Ornithologists' Union Expedition and the Wollaston Expedition in Dutch New Guinea. Trans. Zool. Soc. London 20:391-422, pl. 38.
- Ferguson, E. W. 1926. Revision of Australian Syrphidae (Diptera). Part I; Part II, with a supplement to part I. Proc. Linn. Soc. N. S. Wales 51:137-183, 517-544.
- Fluke, C. L. 1956-1957. Catalogue of the family Syrphidae in the Neotropical Region (Diptera). Revta Bras. Entomol. 6:193-268 (1956), 7:1-181 (1957).
- Gaunitz, S. 1963. *Cheilosia*-Funde aus Schweden (Ins. Diptera). Senck. Biol. 44:497.
- Goeldlin de Tiefenau, P. 1974. Contribution à l'étude systématique et écologique des Syrphidae (Dipt.) de la Suisse occidentale. Mitt. Schweiz. Entomol. Ges. 47:151-252.
- Haliday, A. H. 1856. Addenda and corrigenda. Pages xi-xxiv in: F. Walker, H. T. Stainton and S. J. Wilkinson (eds.), *Insecta Britannica. Diptera*, vol. 3 [by Walker], London, xxiv + 352 pp., pls. 21-20.
- Herve-Bazin, M. J. 1923. Première note sur les Syrphides (Diptera) de la collection du Muséum National de Paris. Bull. Mus. Hist. Nat. 29:252-259.
- Hippa, H. 1968. Classification of the Palaearctic species of the genera *Xylota* Meigen and *Xylotomima* Shannon (Dipt., Syrphidae). Ann. Entomol. Fenn. 34:179-197.
- Hippa, H. 1978. Classification of Xylotini (Diptera, Syrphidae). Acta Zool. Fenn. 156, 153 pp.
- Horn, W. and Kahle, I. 1935-1937. Über entomologische Sammlungen, Entomologen & Entomo-Museologie (Ein Beitrag zur Geschichte der Entomologie). Entomol. Beih. Berlin.-Dahlem 2:1-160, pls. 1-16 (1935); 3:161-296, pls. 17-26 (1936); 4:297-536, pls. 27-38, i-vi (1937).
- Hull, F. M. 1929. Syrphidae. Insects of Samoa and other Samoan terrestrial Arthropoda 7(4): 191-198.
- Hull, F. M. 1943. Some notes upon the types of North and South American syrphid flies in the British Museum of Natural History, Proc. Entomol. Soc. Washington 45:9-10.
- Hull, F. M. 1946. The genus *Quichuana* Knab. Amer. Mus. Novitates 1317, 17 pp.
- International Code of Zoological Nomenclature. 1985. Third Edition. London, xx + 388 pp.
- Kertész, K. 1910. Catalogus Dipteriorum Hucusque Descriptorum. Vol. 7. Lipsiae, Budapestini [=Leipzig, Budapest], 470 pp.
- Klocker, A. 1924. On a collection of syrphids from Queensland with descriptions of a new genus and of eight new species. Mem. Queensland Mus. 8:53-60, pl. x.
- Latreille, P. A. 1825. Familles Naturelles du Règne Animal, Exposées Succinctement et dans un Ordre Analytique, avec l'Indication de Leurs Genres. Paris, 570 pp.
- Loew, H. 1856. Die Wiener dipterologischen Sammlungen. Pages 1-11 in: Neue Beiträge zur Kenntniss der Dipteren. Berlin, 57 pp.
- Lucas, J. A. W. 1976. New species of the genus *Pipizella* Rondani, 1856 (Diptera, Syrphidae). Publ. Natuurhist. Genootschap Limburg 26:5-13.
- Maa, T. 1963. Genera and species of Hippoboscidae (Diptera): Types, synonymy, habitats and natural groups. Pacific Insects Monogr. 6, 186 pp.
- Maa, T. 1969. A revised checklist and concise host index of Hippoboscidae (Diptera). Pages 261-299 in: Studies in Hippoboscidae (Diptera). Part 2. Pacific Insects Monogr. 20, 312 pp.
- Macquart, J. 1834. Histoire naturelle des Insectes. — Diptères, Tome premier. 578 pp., 12 pls. In: N. E. Roret (ed.), Collection des suites à Buffon. Paris.
- Macquart, J. 1838. Diptères exotiques nouveaux ou peu connus. Mém. Soc. R. Sci. Agric. Arts, Lille 1838 (2):9-225, 25 pls. Also published separately as his "Diptères exotiques nouveaux ou peu connus," Vol. 1, Pt. 1, Paris 1838, pp. 5-221, 25 pls.
- Macquart, J. 1842. Diptères exotiques nouveaux ou peu connus. Mém. Soc. R. Sci. Agric.

- Arts, Lille 1841:65-200, 22 pls. Also published separately as his "Diptères exotiques nouveaux ou peu connus," Vol. 2. Pt. 2, Paris 1842, pp. 5-140, 22 pls.
- Macquart, J. 1846. Diptères exotiques nouveaux ou peu connus. [I^e] Supplément. Mém. Soc. R. Sci. Agric. Arts, Lille (1845) 1844:133-364, 20 pls. Also published separately as his "Diptères exotiques nouveaux ou peu connus. Supplément" [I], Paris, 1846, pp. 5-238, 20 pls.
- Macquart, J. 1850. Diptères exotiques nouveaux ou peu connus. 4^e supplément [part]. Mém. Soc. R. Sci. Agric. Arts, Lille 1849:309-479, pls. 1-14. Also published separately as his "Diptères exotiques nouveaux ou peu connus. Supplément IV," Paris, 1850-51, pp. 5-336, pls. 1-28.
- Macquart, J. 1855. Diptères exotiques nouveaux ou peu connus. 5^e supplément. Mém. Soc. imp. Sci. Agric. Arts, Lille 1854:25-156, 7 pls. Also published separately as his "Diptères exotiques nouveaux ou peu connus. Supplément V," pp. 5-136, 7 pls. Paris, 1855.
- Megerle von Mühlfeld, J. C. 1803. Catalogus insectorum, quae Viennae Austriae die 28. Novembris 1803. Auctionis lgece distrahuntur. Wien [=Vienna], 36 pp. [unnumbered].
- Osten Sacken, C. R. von. 1875. A list of the North American Syrphidae. Bull. Buffalo Soc. Nat. Sci. 3:38-71.
- Osten Sacken, C. R. von. 1878. Catalogue of the described Diptera of North America. [Ed. 2] Smithsonian Misc. Coll. 16(2), 276 pp.
- Peck, L. V. 1966. [New and little known hover-flies (Diptera, Syrphidae) from Kirghizia.] Ent. Obozr. 45:188-196. [In Russian]
- Pont, A. C. 1986. A revision of the Fanniidae and Muscidae described by J. W. Meigen (Insecta: Diptera). Ann. Naturhist. Mus. Wien 87(B):197-253.
- Rondani, C. 1875. Muscaria exotica Musei Civici Januensis observata et distincta. Fragmentum III. Species in Insula Bonae fortunae (Bornco), Provincia Sarawak, annis 1865-68, lectae a March. J. Doria et Doct. O. Beccari. Ann. Mus. Civ. Stor. Nat. Genova 7:421-464.
- Shannon, R. C. 1926. Review of the American xylotine syrphid-flies. Proc. U.S. Natl. Mus. 69(9), 52 pp.
- Shannon, R. C. 1927. A review of the South American two-winged flies of the family Syrphidae. Proc. U.S. Natl. Mus. 70(9), 34 pp.
- Shannon, R. C. and D. Aubertin. 1933. Syrphidae. Diptera of Patagonia and South Chile. Brit. Mus. (Nat. Hist.) 6(3):120-170.
- Smith, K. G. V. and E. Taylor. 1964. On the location and recognition of some Walker types of Diptera from the W. W. Saundcr's Collection. Entomol. Mon. Mag. 100:21-33.
- Smith, K. G. V. and J. R. Vockeroth. 1980. 38. Family Syrphidae. Pages 488-510 in: R. W. Crosskey (q.v.).
- Stackelberg, A. A. 1961. [Palaeartic species of the genus *Eumerus* Mg. (Diptera, Syrphidae).] Trud. Vses. Ent. Obsch. 48:181-229. [In Russian]
- Stackelberg, A. A. 1964. [Notes on Palaeartic Syrphidae (Diptera).] Zool. Zh. 43:467-473. [In Russian]
- Stackelberg, A. A. 1965. [New data on the taxonomy of palaeartic hover-flies (Diptera, Syrphidae).] Entomol. Obozr. 44:907-926. [In Russian]
- Stephens, J. F. 1846. Illustrations of British Entomology; or, a Synopsis of indigenous insects: containing their generic and specific distinctions; with an account of their metamorphoses, times of appearance, localities, food, and economy, as far as practicable. Supplement. London, vi + 32 pp.
- Thompson, F. C. 1980. The North American species of *Callicera* Panzer (Diptera: Syrphidae). Proc. Entomol. Soc. Washington 82:195-211.
- Thompson, F. C. 1981. The flower flies of the West Indies (Diptera: Syrphidae). Mem. Entomol. Soc. Washington 9, 200 pp.

- Thompson, F. C., J. R. Vockeroth and Y. S. Sedman. 1976. Family Syrphidae. Catalog. Dipt. Amer. S. United States 46, 195 pp.
- Vane-Wright, R. I. 1975. The butterflies named by J. F. Gmelin (Lepidoptera: Rhopalocera). Bull. Brit. Mus. (Nat. Hist.) Entomol. 32:17-64, 6 pls.
- Verrall, G. H. 1898. Notes on some Syrphidae collected near Aden by Colonel J. W. Yerbury in February and March, 1895. Trans. Entomol. Soc. London 1898:413-422.
- Verrall, G. H. 1901. Platypezidae, Pipunculidae, and Syrphidae of Great Britain, Vol. 8. 691 pp. *In*: G. H. Verrall (ed.), British Flies, London.
- Verrall, G. H. 1913. Descriptions of new species of the syrphid genus *Callicera* (Diptera). Trans. Entomol. Soc. London 1913:323-333.
- Walker, F. 1849. List of the specimens of dipterous insects in the collection of the British Museum. Vol. 3. London, pp. 485-687.
- Walker, F. 1851. Diptera. Vol. 1. 314 pp., pls. 1-19. *In*: F. H. Walker, T. Stainton and S. J. Wilkinson, Insecta Britannica. London.
- Walker, F. 1852. Diptera, Vol. 1. Pages 157-252, pls. 5-6, *in*: W. W. Saunders (ed.), Insecta Saundersiana, London "1856."
- Walker, F. 1857. Characters of undescribed Diptera in the Collection of W. W. Saunders, Esq., F. R. S., &c. Trans. Entomol. Soc. London (n.s.) [=2nd] 4:119-158.
- Walker, F. 1860. Characters of undescribed Diptera in the collection of W. W. Saunders, Esq., F. R. S., &c [part]. Trans. Entomol. Soc. London (n.s.) [=2nd series] 5:268-296.
- Wiedemann, C. R. W. 1819. Beschreibung neuer Zweiflügler aus Ostindien und Africa. Zool. Mag. (Wiedemann's) 1(3):1-39.
- Wiedemann, C. R. W. 1830. Aussereuropäische zweiflügelige Insekten. Vol. 2. Hamm, xxi + 684 pp.
- Williston, S. W. 1886. Catalogue of the described species of South American Syrphidae. Trans. Amer. Entomol. Soc. 14:308-324.
- Williston, S. W. 1887. Synopsis of the North American Syrphidae. Bull. U.S. Natl. Mus. 31, "1886," 335 pp.
- Wirth, W. W., Y. S. Sedman and H. V. Weems, Jr. 1965. Family Syrphidae. Pages 557-625 *in*: A. Stone, C. Sabrosky, W. W. Wirth, R. H. Foote and J. Coulson (eds.), A Catalog of the Diptera of America North of Mexico. U.S. Dept. Agric. Handb. 276, 1,696 pp.
- Wulp, F. M. van der 1896. Catalogue of the Described Diptera from South Asia. The Hague, [viii] + 219 + [1] pp.

Received June 26, 1987; accepted March 20, 1987.