PROC. ENTOMOL. SOC. WASH.
101(2), 1999, pp. 263–269

A TURN OF THE CENTURY CONUNDRUM—REEXAMINATION OF *AEOLOTHYNNUS* ASHMEAD (HYMENOPTERA: TIPHIIDAE: THYNNINAE)

LYNN S. KIMSEY

Bohart Museum of Entomology, Department of Entomology, University of California, Davis, CA 95616, U.S.A. (e-mail: lskimsey@ucdavis.edu)

Abstract.—The identity of the Australian thynnine genus *Aeolothynnus* Ashmead has been the source of nomenclatural confusion since the early 1900's. Its identity is reevaluated relative to other related genera, species placements are reconsidered, and one new species, ***Aeolothynnus caliventer,*** from South Australia, is described. *Asthenothynnus* is discovered to be a **new junior synonym** of *Aeolothynnus,* and Turner's concept of *Aeolothynnus* is in reality synonymous with *Thynnoturneria* Rohwer. **New combinations** of species in *Aeolothynnus* include: *Thynnus beatrix* Turner, *Asthenothynnus deductor* Turner, *Thynnus generosus* Turner, *Asthenothynnus kurandensis* Turner, *Thynnus lactarius* Turner, *Asthenothynnus lilliputianus* Turner, *Asthenothynnus maritimus* Turner, *Asthenothynnus minutissimus* Turner, *Asthenothynnus perkinsi* Turner, *Asthenothynnus pleuralis* Turner, *Thynnus pulcherrimus* Turner, and *Asthenothynnus vicarius* Turner.

Key Words: Tiphiidae, Hymenoptera, Thynninae, *Aeolothynnus, Asthenothynnus,* Australia

Many genera of Thynninae were originally based on one or a small number of species, and the original characterizations were obscure at best. One of the finest examples of the confusion resulting from these inadequate descriptions can be seen in the taxonomic literature near the turn of the century, published by taxonomists at the British Museum and at the U.S. National Museum. This confusion was largely the result of miscommunications, misinterpretations and a bit of transatlantic competition. Two generic names, *Aeolothynnus* Ashmead and *Asthenothynnus* Turner, were proposed for the same group of species. The valid generic name for these species is *Aeolothynnus* and Turner's mistaken concept of the genus *Aeolothynnus* is a very different entity later renamed *Thynnoturneria* Rohwer, which in turn has been confused with *Iswaroides* Ashmead.

Ashmead originally based *Aeolothynnus* on the new species *multiguttatus.* He described the species and genus simultaneously in one of his notorious keys (1903). As a result of his habit of describing new genera and species in very brief keys, most subsequent authors confused the identity of *Aeolothynnus.* Although Ashmead did not clearly indicate the species as new, the genus was monotypic, therefore as stated in the International Zoological Code (1985), Article 12, the generic description also applied to the species. As a result, Turner's 1908 statement that "*Ashmead gives Aeolothynnus multiguttatus Ashm., as the type of his genus but, as he has not given any description of that species, his name cannot stand.*" is incorrect. To further confuse the situation, Rohwer (1910a) subsequently recognized Ashmead's designation of *multiguttatus* and gave a new name to Turner's

concept of *Aeolothynnus* as *Turnerella*, stating that:

> *"The characters given by Ashmead in his table of the genera of Thynnidae, are sufficient to satisfy the technical requirements so this species [Aeolothynnus multiguttatus Ashmead (nec Turner)] should date from that time and be accredited to Ashmead."*
> *"Turner considering that Aelothynnus (sic!) multiguttatus Ashm, was undescribed named Thynnus cerceroides Sm. as the type of Aelothynnus. Aelothynnus multiguttatus Sm. and Thynnus cerceroides are not congeneric, which leaves Aelothynnus Turn, without a name. For this genus the name Turnerella may be used."*

Unfortunately the name *Turnerella* ran into problems of homonymy, and according to Turner (1911):

> *"My identification of Ashmead's genus, of which the type was undescribed, was incorrect, as has been pointed out by Mr. Rohwer, who renamed the genus Turnerella. That name, however, was used by Professor Cockerell for a genus of bees; his paper was published in London on the same day as Mr. Rohwer's paper was published in America, and I believe the name should be retained for the bee. I therefore have to propose a new name for the genus."*

Turner never made a new generic description for his concept of *Aeolothynnus*. The uncertainty of the situation caused Given (1959) to lament:

> *"The genus Aeolothynnus was erected by Ashmead in 1903 with the genotype A. multiguttatus. The genus was then very poorly defined and has been frequently misinterpreted by subsequent workers."*
> *"Rohwer (1910a) published the first description of the genotype, Ashmead (1903) having given mere key distinctions. Rohwer (1910a) stated that T. cerceroides and A. multiguttatus were not congeneric and therefore the genus Aeolothynnus Turner was left without a name as that name was valid for the genotype multiguttatus of Ashmead. Rohwer (1910a) proposed the name Turnerella for Turner's genus. However, this generic title was preoccupied, and both Turner (1911) and Rohwer (1910b) appreciated this at about the same time. Turner (1911) then proposed the name Eurohweria for his genus, but he was forestalled by Rohwer (1910b) who proposed the name Thynnoturneria."*

When Rohwer (1910b) renamed *Aeolothynnus*, as treated by Turner, he established Turner's concept of the group as a valid genus, particularly since none of the species placed by Turner (1910a) in *Aeolothynnus* under *cerceroides* were congeneric with *multiguttatus*. Thus the name *Thynnoturneria* Rohwer applied to the *cerceroides* group of species. Turner (1912) was not entirely pleased by this situation:

> *"I am by no means sure that the name Aeolothynnus should not be used for this genus. Ashmead in describing the genus Aeolothynnus took an undescribed species for the type. In my work on the Thynnidae I accepted Ashmead's genus, but treated the species as a nomen nudum. Mr. Rohwer, on the other hand, holds that the description of the genus covers the species also; but I cannot agree with this opinion, as Ashmead evidently did not intend the description for a specific one, and a description to be recognized should be at least intended by the author for a description of a species."*
> *"Unfortunately, A. cerceroides, Sm., selected by me as the type of the genus, does not appear to belong to the same genus as Ashmead's type. Yet if Ashmead's specific name is treated as a*

nomen nudum, A. cerceroides must be treated as the type of the genus. It is bad enough to have to recognized the very insufficient descriptions of some authors as valid, but if we are also to accept what were never intended for descriptions things would be still worse. For the present, pending some decision on the subject, I am using Rohwer's name, but do not consider that it can stand. The whole confusion is due to a want of editing in Ashmead's paper, as no editor should publish a description of a genus with an undescribed species taken for the type."

Turner's argument that Ashmead did not intend to describe *multiguttatus* as new at the same time as he described the genus was not accepted by other systematists.

Simultaneously, Turner (1910a) also named a new genus *Asthenothynnus,* based on *Thynnus pulchellus* Klug. Upon examination, *Thynnus pulchellus* turns out to be congeneric with *multiguttatus.* Therefore *Asthenothynnus* also becomes synonymous with *Aeolothynnus.* In light of this generic confusion all of the species placed variously in *Aeolothynnus, Thynnoturneria* and *Asthenothynnus* need to be reevaluated for their correct placement. Some of this replacement of species has been done below, showing new combinations as indicated. Types that have been seen and the generic placement confirmed are indicated by an asterisk (*). However, those without either indication are placed in the appropriate genus based on whether Turner himself placed them in his concept of *Aeolothynnus* or one of the subsequent generic names for that entity, or placed them in *Asthenothynnus,* which is the equivalent of Ashmead's *Aeolothynnus.*

To further clarify *Aeolothynnus* Ashmead the genus is rediagnosed and discussed below, species placements are reassigned, and a new species, *caliventer,* is described, which exhibits some very unusual thoracic modifications in the male.

Materials and Methods

Specimens were studied *in situ* or were borrowed from the following institutions: the Natural History Museum, London, S. Lewis; Hope Museum, Oxford University, C. O'Toole; and the Australian National Insect Collection, CSIRO, Canberra, ACT, I. Naumann and J. Cardale.

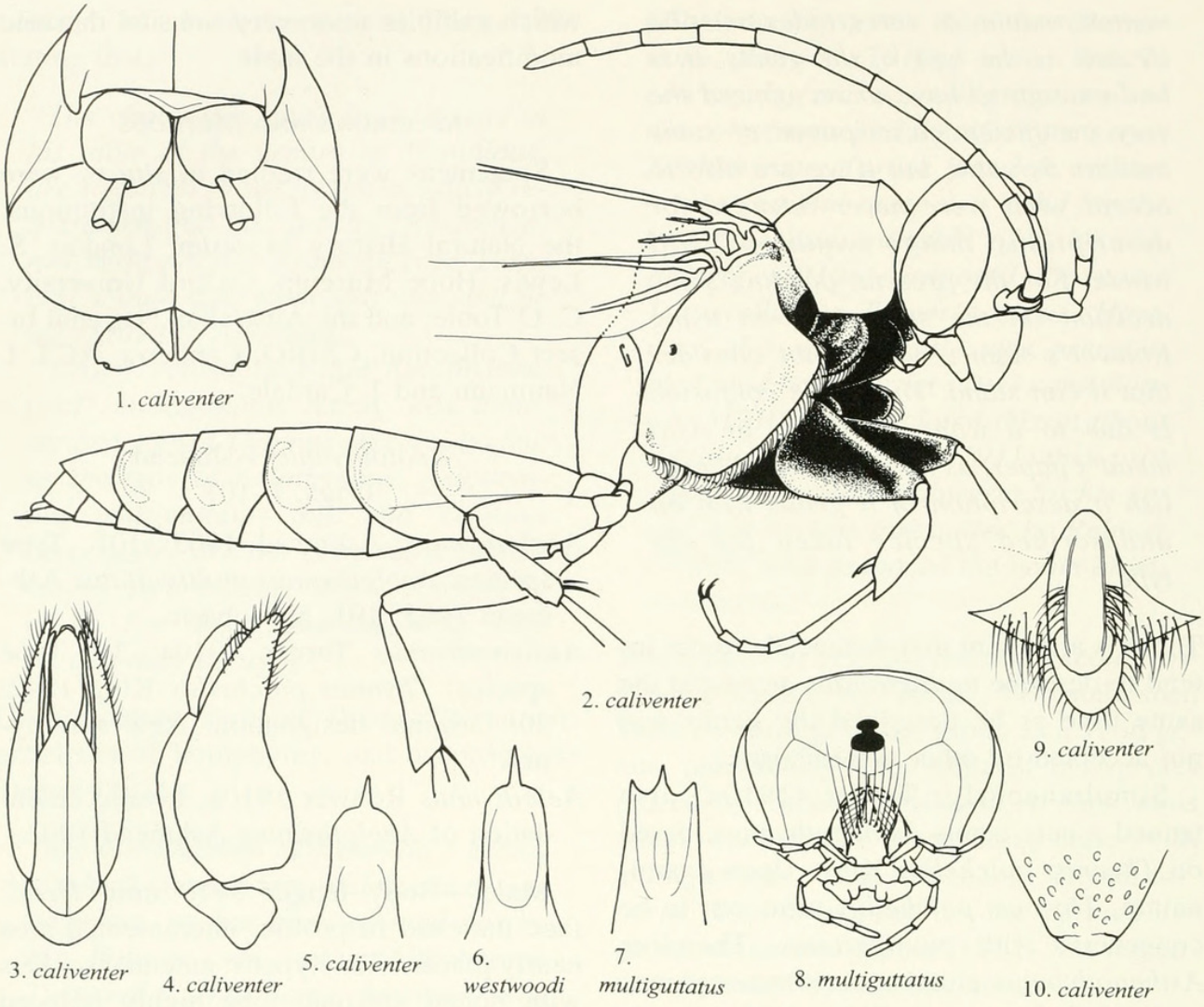
Aeolothynnus Ashmead
(Figs. 1–10)

Aeolothynnus Ashmead 1903: 101. Type species: *Aeolothynnus multiguttatus* Ashmead 1903: 101. Monobasic.

Asthenothynnus Turner 1910a: 34. Type species: *Thynnus pulchellus* Klug 1842: 20. Original designation. **New synonymy.**

Aelothynnus Rohwer 1910a. Invalid emendation of *Aeolothynnus* Ashmead 1903.

Male.—Body length 3–10 mm. *Head:* face flattened in profile, interantennal area nearly planar with clypeus; antennal sockets with dorsal antennal lobe highly reduced without carinae or transverse welt; subantennal area highly polished and impunctate; apical 7 to 9 flagellomeres somewhat arcuate or bulging along inner margin, with two small linear tyloids; clypeus nearly flat or slightly convex in profile, apical margin narrowly truncate; labrum small, medially emarginate with narrow neck-like base; tongue short unmodified, prementum with apical brush of long setae reaching back to occipital foramen; maxillary stipes with short stipal fringe originating on inner margin and extending transversely across stipes to outer margin; mandibles slender with small subapical tooth on inner margin; oral fossa extending to inner margin (Fig. 8) of mandible, widely separated from occipital carina; venter of head with large flattened and polished area, margined by carinâe and surrounding the oral fossa. *Thorax:* pronotum with transverse anterior carina well-de-



Figs. 1–10. 1–5, 9–10, *Aeolothynnus caliventer*. 6, *A. westwoodi*. 7–8, *A. multiguttatus*. 1, Ventral view of male thorax. 2, Lateral view of body. 3, Ventral view of genital capsule. 4, Lateral view of genital capsule. 5–7, Apex of hypopygium. 8, Ventral view of male head. 9, Posterior view of apex of female abdomen. 10, Male apical gastral tergum.

veloped; mesepisternum and mesopleuron separated by shallow scrobal groove; propodeum without discrete dorsal surface, gently sloping posteriorly; forefemur often indented basoventrally; forecoxae globular in most species; hindcoxa with short dorsal carina. *Abdomen:* basal segment slightly convex ventrally, foreshortened, dorsally without discrete dorsal surface; apical tergum hood-like, with narrow apical lip (Fig. 10); hypopygium ventrally longitudinally grooved or trough-like, apically variable, tridentate, ligulate or unidentate (Figs. 5–7); abdominal segments smoothly tapering one to the next (Fig. 2); terga II–IV with fine sublateral transverse sulcus; spiracles not apparent; terga with W-shaped transverse sulcus or line, marked by a row of setae near posterior margin. *Genital capsule* (Figs. 3, 4): penis valves large, dilated apically and often curved; volsella large flattened and tapering apically, forming floor of capsule; digitus not apparent; parameres slender and subtriangular; gonocoxa produced into elongate, often apically notched dorsal lobe (Fig. 3); aedeagus short, originating on this lobe (Fig. 3), with short apical loop. *Color:* body black with yellow, white and red markings; vertex with oblong reddish brown spot extending diagonally from dorsal eye margin to behind hindocelli; abdomen in most species with odd

comma-shaped pale markings on most segments.

Female.—Body length 2–5 mm; *Head:* broader than long or elongate and usually appearing pinched across at eyes; clypeus narrow and linear, shorter than interantennal distance; maxillary palpus with two articles, labial palpus with three; mandible edentate and sickle-shaped. *Thorax:* pronotum subquadrate; forecoxa unmodified or narrowed and separated by deep rectangular slot (*multiguttatus*); scutum and metanotum broadly visible dorsally. *Abdomen:* tergum I and III–V with broadly W-shaped transverse sulcus; tergum II with three transverse carinae or ridges; tergum V with thin shagreened or roughened laterotergite marked by an arcuate bulge and sulcus; tergum VI with broadly or narrowly ovoid plate delimited at least laterally by carina, subtended by long tuft of setae (Fig. 9); sternum VI narrowly U-shaped. *Color:* pale brown.

Distribution.—This genus occurs throughout southern Australia in New South Wales, South Australia, Western Australia, Tasmania, Victoria, and apparently the Northern Territory, although this record needs to be confirmed.

Included species.—Thirty species are placed in *Aeolothynnus* including: *beatrix* (Turner) 1908* (*Thynnus*), **new combination**; *caliventer* Kimsey, new species; *decoratus* (Smith) 1879 (*Thynnus*); *deductor* (Turner) 1910b (*Asthenothynnus*), **new combination**; *exiguus* (Turner) 1910c (*Thynnus*); *generosus* (Turner) 1908* (*Thynnus*), **new combination**; *incensus* (Smith) 1868 (*Thynnus*); *innocuus* (Turner) 1908 (*Thynnus*); *kurandensis* (Turner) 1910d* (*Asthenothynnus*), **new combination**; *lactarius* (Turner) 1910d* (*Thynnus*), **new combination**; *leucostictus* (Turner) 1908 (*Thynnus*); *lilliputianus* (Turner) 1915a* (*Asthenothynnus*), **new combination**; *maritimus* (Turner) 1915b* (*Asthenothynnus*), **new combination**; *minutissimus* (Turner) 1910c (*Asthenothynnus*), **new combination**; *minutus* (Smith) 1859 (*Thynnus*); *multiguttatus* Ashmead 1903*; *penetratus* (Smith) 1879 (*Thynnus*); *perkinsi* (Turner) 1910d* (*Asthenothynnus*), **new combination**; *planiventris* (Turner) 1908 (*Thynnus*); *pleuralis* (Turner) 1915a (*Asthenothynnus*), **new combination**; *pulchellus* (Klug) 1842 (*Thynnus*) (=*Thynnus multipictus* Smith 1879); *pulcherrimus* (Turner) 1908* (*Thynnus*), **new combination**; *pygmaeus* (Turner) 1908 (*Thynnus*); *quadricarinatus* (de Saussure) 1867 (*Thynnus*); *rubromaculatus* (Turner) 1908 (*Thynnus*); *tenuis* (Turner) 1908 (*Thynnus*); *vicarius* (Turner) 1915a (*Asthenothynnus*), **New combination**; *westwoodi* (Guérin de Meneville) 1842 (*Agriomyia*) (=*Thynnus intricatus* Smith* 1859); *longiceps* (Smith) 1859 (*Thynnus*); *nanus* (Smith) 1879 (*Thynnus*).

Discussion.—Members of the genus *Aeolothynnus* are small-bodied and locally abundant Australian wasps. The vast majority of species average 1 cm in length or less. Thousands of individuals, both males and females, may be found on a single flowering Eucalyptus tree. Members of the genus occur in most habitats throughout at least the southern part of Australia. They are for the most part unremarkably modified. However, a new species, collected in South Australia has a bizarrely modified male. The male modifications in this species are unusual for the entire subfamily, so it is described as new below. Hosts are apparently unknown for *Aeolothynnus*. However, given the parasitic habits of the rest of the subfamily, the hosts are undoubtedly small, locally abundant, species of larval Scarabaeidae.

A number of traits are diagnostic for members of this genus. The most distinctive feature of the males is the longitudinally grooved or impressed apical abdominal sternum (hypopygium). This characteristic coupled with their smoothly tapering abdomen, and flattened face will distinguish *Aeolothynnus* males from closely related genera. *Aeolothynnus* belongs to a group of genera characterized by the presence of a transverse carina, ridge or welt, across the

apical edge of the apical abdominal tergum (epipygium), the female apical abdominal tergum is smoothly convex, narrowed, with an oval medial plate margined laterally by a carina, which is in turn subtended laterally by a long brush of setae. This group consists of *Epactiothynnus* Turner, *Tmesothynnus* Turner, *Thynnoturneria* Rohwer, *Iswaroides* Ashmead, *Gymnothynnus* Turner, *Acanthothynnus* Turner, *Doratithynnus* Turner and *Aspidothynnus* Turner. Females are problematic in this group of genera and too few are associated with males to distinguish between species level and generic characteristics.

Aeolothynnus caliventer Kimsey, new species

(Figs. 1–5, 9, 10)

Male.—Body length 8–9 mm; *Head:* face nearly flat from frons to upper clypeus; frons and vertex densely punctate, punctures small and contiguous; prementum strongly convex medially, with long medial fringe of setae; flagellum I 1.5× as long as broad; flagellum II 2.5× as long as broad; flagellum III three times as long as broad. *Thorax* (Figs. 1, 2): Pronotum extended ventrally; propleura convex; forecoxa ventrally flat and expanded sharp-edged laterally; forefemur flat, broadly expanded and rounded ventrally; mesepisternum strongly produced and flange-like, giving the thoracic venter a strongly cuplike appearance. *Abdomen:* epipygium (Fig. 10); hypopygial apex subtruncate with rounded lateral corners and short acute medial spine, ventral groove teardrop-shaped (Fig. 5). *Genital capsule* (Figs. 3, 4). *Color:* body black with pale whitish markings on apical margin of clypeus, a small spot on each antennal lobe, pronotum with small spot adjacent to tegula and on either end of transverse anterior carina; small spot at posterior angle of mesopleuron above midcoxa outlining mesopleural lamellae, and small comma-shaped lateral spot on gastral terga I–VI; vertex with small oval red spot between hindocelli and nearest eye margin; fore- and midlegs with femoral apex and tibia entirely or partly red; hindfemur medially red; hindtibia somewhat reddish medially; wing membrane untinted, veins dark brown. *Pubescence:* long erect and silvery, except dense and golden along mesepisternal edge.

Female.—Body length 5.5 mm; *Head:* head broader than long; mandible sickle-shaped and edentate. *Thorax:* pronotal disk with anterolateral corners acute, posterior margin with two submedial warts; propleura strongly convex ventrally; scutum broadly visible; scutellum flattened, length subequal to breadth; propodeum strongly convex and rounded laterally and posteriorly. *Abdomen:* tergum I with W-shaped sulcus; II with three transverse ridges; III–IV with large submedial U-shaped sulcus; pygidium narrowly longitudinally ovoid with lateral carina, with row of setae laterad of carina (Fig. 9); sternum VI apex narrowly U-shaped. *Color:* yellowish brown.

Material examined.—Holotype ♂: Australia: SA, 79 km nnw Renmark, 33°31′S 140°24′E, 9 Aug.–7 Sept. 1995, K. R. Pullen, Casuarina woodland, malaise trap. Holotype deposited in the Australian National Insect Collection (ANIC), Canberra, ACT. Paratypes: two ♂, one ♀, same data as holotype except also collected in flight intercept trap (deposited in ANIC and Bohart Museum of Entomology, University of California, Davis). These specimens derived from the Calperum Station/Bookmark Biosphere Reserve Invertebrate Survey.

Etymology.—The name refers to the peculiar modifications of the male thorax; *calix* = cup, *venter* = belly, Latin, noun.

Discussion.—The unusually modified male thorax and forefemur will serve to distinguish this species from other *Aeolothynnus* or related genera. The female is less remarkable but can be distinguished by shape of the pronotum with a small acute tooth on the anterolateral corner and posterior submedial swellings. In addition, the scutellum is relatively flat and the propleura are strongly bulging ventrally.

Acknowledgments

Many thanks to Richard M. Bohart for reviewing the manuscript, and to the various collections and curators who made the study possible.

Literature Cited

Ashmead, W. H. 1903. Classification of the fossorial, predaceous and parasitic wasps, of the superfamily Vespoidea. Canadian Entomologist 35: 95–107.

Given, B. B. 1959. Notes on Australian Thynninae. V. *Aeolothynnus multiguttatus* Ashmead and *Iswaroides koebelei* Ashmead. Proceedings of the Linnaean Society of New South Wales 83: 400–402.

Guérin de Meneville, F. E. 1842. Matériaux sur les Thynnides. Magasin de Zoologie 4: 1–15.

International Code of Zoological Nomenclature. 1985. Third edition. University of California Press, Berkeley, xx + 338 pp.

Klug, J. C. F. 1842. Ueber die Insectenfamilie Heterogyna Latr. und die Gattung *Thynnus* F. insbesondere. Physikalische und Mathematische Abhandlungen der Königlichen Akademie der Wissenschaften zu Berlin, pp. 1–44.

Rohwer, S. A. 1910a. Turner's genera of Thynnidae with notes on Ashmeadian genera. Entomological News 21: 345–351.

———. 1910b. A preoccupied generic name (*Thynnoturneria* n. n.). Entomological News 21: 474.

de Saussure, L. F. 1867. Hymenoptera. *In* Reise der Osterreichischen Fregatte Novara um die Erde in den Jahren, etc. Zoologischer Theil, Zweiter Band: Hymenoptera. Vol. 2, 156 pp.

Smith, F. 1859. Catalogue of the Hymenopterous insects in the collection of the British Museum 7: 10–69.

———. 1868 (May). Descriptions of aculeate Hymenoptera from Australia. Transactions of the Entomological Society of London 1868: 231–237.

———. 1879. Descriptions of new species of Hymenoptera in the British Museum, London. 240 pp.

Turner, R. E. 1908. A revision of the Thynnidae of Australia. Pt. II. Proceedings of the Linnaean Society of New South Wales, Sydney 33: 70–208 (June), 209–256 (August).

———. 1910a. Hymenoptera, Family Thynnidae. *In* Wytsman, P. ed., Genera Insectorum, 105. Bruxelles, 62 pp.

———. 1910b. Additions to our knowledge of the fossorial wasps of Australia. Proceedings of the Zoological Society of London 1910: 259–306.

———. 1910c. New species of Thynnidae from the Australian and Austro-Malayan Regions. Annales Historico-Naturales Musei Nationalis Hungarici 8: 107–124.

———. 1910d. New fossorial Hymenoptera from Australia. Transactions of the Entomological Society of London 1910: 407–429.

———. 1911. Notes on fossorial Hymenoptera. V. Further notes on the Thynnidae and Scoliidae. Annals and Magazine of Natural History, London (8)8: 602–624.

———. 1912. Notes on fossorial Hymenoptera, IX. On some new species from the Australian and AustroMalayan Regions. Annals and Magazine of Natural History, London (8)10: 48–63.

———. 1915a. Descriptions of new fossorial wasps from Australia. Proceedings of the Zoological Society of London 1915: 41–69.

———. 1915b. Notes on fossorial Hymenoptera. XVI. On the Thynnidae, Scoliidae and Crabronidae of Tasmania. Annals and Magazine of Natural History (8)15: 537–559.