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Review of the Species of *Achias* (Diptera : Platystomatidae)

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Abstract

The genus *Achias* Fabricius occurs in New Guinea, northern Australia, and some islands adjacent to these areas. Evidence is presented as to the disputed publication dates for Hendel's two significant reviews of the Platystomatidae as these affect nomenclature. Available information on *Achias* biology is summarised, but includes no larval records. A method of estimating the approximate number of undiscovered species is presented, and indicates that the register of *Achias* species is very incomplete. A description of the genus *Achias* is given. Generic synonyms and means of generic determination are discussed. Certain taxonomic characters are discussed and these are related to taxonomic placement of the genus, informal infrageneric groupings of species, and species delimitation. A key to all recognised species is given. In total, 67 species (listed in index) are described as new. No synonyms among nominal species of *Achias* are recognised. Four apparent species represented by inadequate available material are assigned provisional numbers. An etymology of *Achias* nomenclature is appended.

Introduction

The genus *Achias* is of interest as exemplifying the rich diversity of platystomatid species in New Guinea forests, and also for the grotesque modifications of the head in males of many species, often including stalked eyes (McAlpine 1979, 1982). On the present species count, it is the largest platystomatid genus in the New Guinea area, and one of the largest in the world, though undoubtedly exceeded in number of world species by *Rivellia* Robineau-Desvoidy and *Euprosopia* Macquart. *Achias* is geographically much more restricted than these genera, very few species being found outside New Guinea and the most closely adjacent islands. The limits of distribution in the west are Waigeu, Aru, and Melville Island, in the east New Britain and the Louisiade Archipelago, and in the south the Townsville district of Queensland (see Fig. 1).

Methods

The morphological terms used here are those previously employed by me for platystomatids (McAlpine 1973). In addition, the cell-4 index is defined as the ratio of the length of the antepenultimate section of vein 4 to the full length of the discal cell along vein 4.

In listing material, the following collectors' names are abbreviated to the initials: J. H. Ardley, L. Biró, W. W. Brandt, L. E. Cheesman, I. F. Common, R. W. Crosskey, F. P. Dodd, J. L. Gressitt, G. A. Holloway, J. W. Ismay, N. L. Krauss, R. B. Lachlan, H. A. Lorentz, D. K. McAlpine, A. S. Meek, B. J. Moulds, M. S. Moulds, H. Roberts, J. Sedlaček, M. Sedlaček, S. Shinonaga, R. Straatman, M. S. Upton, A. R. Wallace.

The following abbreviations refer to collections housing specimens.

AM	Australian Museum, Sydney
AMNH	American Museum of Natural History, New York City
AMST	Zoological Museum, Amsterdam
ANIC	Division of Entomology, CSIRO, Canberra

0818-0164/94/010117$50.00

BM British Museum (Natural History) (The Natural History Museum), London
BPB Bernice P. Bishop Museum, Honolulu
CNC Canadian National Collection, Agriculture Canada, Ottawa
DEI Institut für Pflanzenschutzforschung der Akademie der Landwirtschaftswissenschaften, Eberswalde
FRIL Forest Research Institute, Lae (formerly at Bulolo)
HELS Zoological Museum, Helsinki
KONE Department of Agriculture and Livestock, Konedobu, Port Moresby
MCG Museo Civico, Genoa
MNB Museum of Natural Science at Humboldt University, Berlin
MNM Hungarian Natural History Museum, Budapest
NAT Natal Museum, Pietermaritzburg
NSMT National Science Museum, Tokyo
OX University Museum, Oxford
PM National Museum of Natural History, Paris
SAM South Australian Museum, Adelaide
SPB Zoological Institute, Academy of Sciences, Saint Petersburg
UQ University of Queensland Insect Collection, Brisbane
USNM National Museum of Natural History, Washington
WM Natural History Museum, Vienna

Publication Dates of Hendel's (1914) Works

Different views have been expressed on priority of publication between Hendel's two major works on Platystomatidae, that in *Genera Insectorum* here referred to as Hendel (1914*a*), and that in *Abhandlungen der K.K. Zool.-Botan. Gesellschaft in Wien* here referred to as Hendel (1914*b*) (see Neave 1940: 72, under *Rhytidortalis*, and

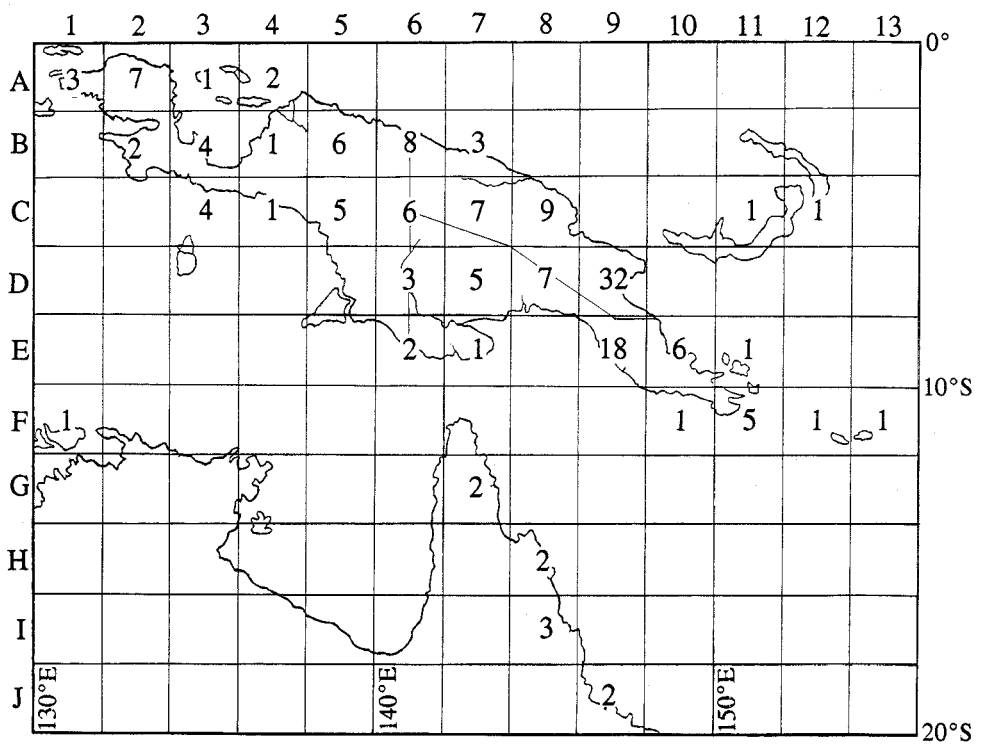


Fig. 1. Map of New Guinea and northern Australia showing numbers of *Achias* species recorded for each grid square (2° long. × 2° lat.), reference notation used in *Distribution* under each species description.

other places in that work; McAlpine 1973; Steyskal 1977; Evenhuis 1989). It is important to establish which of these works was published first because of the large number of new taxa established therein and the numerous consequent decisions to be made affecting nomenclature and interpretation of type material. Some of the problems have been discussed by McAlpine (1973: 49, 70, 141, 183), and a further relevant problem concerns the type material of *Achias furcatus* Hendel.

Hendel (1914*a*): Diptera Fam. Muscaridae Platystominae. At the end of the text (p. 179) there appear the words 'Wien 15 April 1914'. This has sometimes been interpreted as a publication date, sometimes as a date of receipt of manuscript because Wien is the address of the author, not of the publisher/printer (Steyskal 1977). These city and date combinations appear on the last page of text of all fascicles of Genera Insectorum issued about this time. They do not indicate date of receipt of manuscript, as they are often too close to actual date of receipt of the finished work by libraries for complex works that must have often taken many months at the printers. On the other hand they cannot be taken as reliable dates of issue (i.e. publication). In the case of the relevant Fascicle 157, there is an author's proof copy in the Diptera library at the Natural History Museum, Vienna, with the date 15 April 1914 in the handwriting of F. Hendel (R. Contreras-Lichtenberg, in litt.). Thus, this date can be taken as that of return of the proof from Vienna, and the association of this date with 'Wien' as printed on the last page becomes meaningful. Dates of accession of this part in certain European libraries are given in Table 1.

Hendel (1914*b*): Die Arten der Platystominen. It is stated on the title page that the work was submitted for publication on 1 July 1912 and issued on 15 June 1914. Available dates of accession in European libraries are given in Table 1.

Table 1. Subscribers' accession dates for Hendel 1914 publications

Subscriber	Date for 1914*a*	Date for 1914*b*
National Museum of Natural History, Paris	10 June	—
British Museum (Natural History)	20 June	21 July
Zoological Museum, Berlin	23 June	9 July
Zoological Society of London	24 June	30 June
Linnean Society of London	—	30 June
Royal Institute of Natural Sciences, Brussels	6 July	—

I regard the work on platystomatid genera (Hendel 1914*a*) as having been published before that on platystomatid species (Hendel 1914*b*) because: (1) the earliest recorded librarian's accession date for Hendel (1914*a*) (10 June 1914) is earlier than both the printer's claimed date of issue (15 June 1914) and the first available library accession date (30 June 1914) for Hendel (1914*b*); (2) four libraries had accessioned their copies of Hendel (1914*a*) before any are known to have accessioned copies of Hendel (1914*b*); (3) each of the three recorded subscribers to both works accessioned Hendel (1914*a*) six or more days earlier than Hendel (1914*b*).

Habits and Biology

Flies of the genus *Achias* live almost entirely in primary forests though they sometimes survive in small strips of forest. They have been found from near sea level to at least 3000 m, and some species occur through a wide range of altitude. At least 40% of the species are known only from the mid mountain to high mountain zones. In the author's experience, *Achias* have been found on trunks and foliage of rainforest trees, in the latter case generally on the lower surface of leaves. They have been observed to avoid direct sunlight. *Achias kurandanus* are sometimes gregarious on trunks of *Ficus* sp.

Adults of some species have been observed to feed at or to be attracted to mammalian faeces (Osten Sacken 1881; McAlpine 1979). Traps baited with human faeces have yielded numerous *Achias* species in some areas. Parsons (1984) records *Achias* spp. feeding on sap at tree trunk wounds (including *Trema orientalis*, family Ulmaceae) and at cut banana plants. Some information on agonistic and other behaviour was given by McAlpine (1979), and a function for the eye-stalks was suggested.

Larvae of *Achias*, like those of many other platystomatids, are unknown. Possibly, like those of some other platystomatids, they are associated with tree roots.

Estimation of Number of Species

Recent discussion of the numbers of the earth's species, particularly of invertebrates, has centred on the inhabitants of the tropical forests, a category that probably includes all *Achias* species. It is possible that estimates involving extrapolation from counts of samples of 'morphospecies' determined by non specialists have little reality (Monteith 1990). On the other hand, specialists may have made guesses as to numbers of yet unrecorded species on the basis of little more than a vague impression. The little information on platystomatid species in tropical forest canopies (Steyskal 1966) suggests that further collecting in this habitat will not greatly increase species counts obtained by other methods (e.g. baited traps near ground level), even though Malaysia, the area investigated, is not such a significant centre of platystomatid diversity as New Guinea or eastern Australia.

The method of Steyskal (1965), who used trend curves to ascertain whether large numbers of undiscovered species still exist in certain animal groups, can only be used if there is some continuity in collecting and taxonomic activity with respect to time. *Achias* taxonomy has been marked by bursts of activity in species description which have occurred at irregular but significant intervals (1859–60, 9 spp.; 1913–15, 10 spp.; 1939–40, 6 spp.; present work, 67 spp.). Only four species (*A. oculatus* Fabricius, 1805, *A. robustus* (Bigot, 1880), *A. albertisi* Osten Sacken, 1881, and *A. rothschildi* Austen, 1910) have been described outside these bursts.

Two factors that strike the author as significant in estimating numbers of undiscovered *Achias* species are: (1) the continuing phenomenon of the discovery of one or more additional species each time a good platystomatid collection is made in a new vicinity of mainland Papua New Guinea; and (2) the fact that, in this moderately known area, a little less than half the known species have been collected on only one occasion or by one excursion (while a significant number of others have been collected on very few occasions), seems to indicate that a more or less similar number of existing species are not represented at all in the available collections. In the best known part, the Morobe Province south of the Markham River, 27 species are recorded, while there are no records for some vast areas.

The endemic Australian species of *Achias* are a relatively well known cluster of limited distribution, mainly in the limited tropical rain forests of Queensland. I estimate that the total number of species (a) is possibly the same as that of already recorded species ($a \simeq 3$).

The number of known widely distributed species in New Guinea is 16. These have all been found in at least two non-adjoining provinces of Papua New Guinea, or localities of comparable remoteness in West New Guinea, or in both Papua New Guinea and either Australia or a distant part of West New Guinea. Because of the significant scatter of collecting localities over New Guinea, the widely distributed species of New Guinea are probably well known compared with those of restricted distribution. I suggest that perhaps 90% of such species are already known and that the total in this category (b) may thus be about 18 species ($b \simeq 18$).

The number of species in Papua New Guinea, which have been collected only once, or on one limited excursion (c) is 35 ($c = 35$).

The number of species in Papua New Guinea, which have been collected more than once, but have apparently restricted distributions compared with those in category b (d), is 26 ($d = 26$).

If the number of undiscovered species in Papua New Guinea (e) is somewhat similar to the number of species as yet found only once, then the total number of species of restricted distribution in Papua New Guinea ($x = c+d+e$) may approximate to $2c+d$ ($x \simeq 2c+d = 96$).

The *Achias* species of West New Guinea are much less known than those of Papua New Guinea, though evidently quite numerous. It seems reasonable to estimate the number of western species by extrapolating from the number estimated for Papua New Guinea. There is a possibility, but no firm evidence, that the biota of West New Guinea may be slightly more species-diverse than that of Papua New Guinea (Flannery 1992), though there is no special reason for applying this generalisation to *Achias*. Thus, the number of species of restricted distribution in West New Guinea (y) may be about equal to that of Papua New Guinea ($y \simeq x \simeq 96$).

The total number of existing species of *Achias* (n) is the sum of all the above categories of species, on the assumption that there are virtually no species in other geographic areas (Java, Fabricius 1805, being discounted) ($n = a+b+x+y \simeq 213$ species). The 100 species now known could represent about 47% of the existing number (n), and the number of existing undiscovered species (u) could be about 113.

The appropriate figures given above (particularly values of x, y, n and u), like other such estimates, are remarkable for their large margin of error, but because the figures involve a subjective extrapolation from actual numbers, there is no standard means of determining the error. Because the discovery of new Papua New Guinean species continues undiminished with continuing, though irregular and far from geographically complete collecting effort, the value of e, perhaps the softest component of the whole calculation, is probably not very greatly overestimated; I suspect that it is very unlikely to fall short of the estimate by more than 25% (i.e. about eight species). Other soft components have been estimated at about the lowest reasonable figures. On the other hand, the estimates for such figures as e and y could be much below the actual figures if there are large, unrecorded pockets of species diversity. In view of the large margin of error some values (such as u) could have been rounded off. However, because some of these need to be summed or represent a sum of smaller components, it seems better to leave them in their initial form to make this relationship apparent.

The element not considered in the above discussion is the number of recently extinct species. These could be of two categories: (1) species that have become extinct after collection and placement in a study collection, and that are subject to taxonomic description; (2) species that have become extinct without preservation in a permanent study collection.

The species of *Achias* are principally inhabitants of primary forests or perhaps, particularly in the case of lowland species, inhabitants of forests approaching a secondary climax. I infer this from my own experience in collecting *Achias* in Queensland and attempting to find them in Papua New Guinea, from comments by H. Roberts and others (in litt.), and from Parsons (1984). According to Johns (1982), most of the lowland forests of New Guinea have suffered some form of destruction during the last 200–300 years. This could have resulted in extinctions of *Achias* species, particularly those restricted to islands. The high rate of commercial destruction of forests now proceeding in New Guinea and nearby islands seems likely to cause extinctions of *Achias* sooner or later, but it is doubtful that this process could have brought about extinctions on the mainland yet. Perhaps *A. oculatus*, apparently not collected since before 1805, is an extinct island species, but this suspicion cannot be checked as the type locality is unknown (see discussion under that species).

While collection of further large numbers of *Achias* species may prove difficult in the near future, the probability of man-induced extinctions seems likely to proceed soon to the level where the rate of extinction exceeds the rate of new species description in both West New Guinea and Papua New Guinea. The network of forest reserves, including national parks, in Queensland is likely to ensure the survival of the five Australian *Achias* species into the foreseeable future.

Genus *Achias* Fabricius

Achias Fabricius, 1805: 247. [Type species (monotypy): *A. oculatus* Fabricius.].– Osten Sacken, 1881: 473–8 (key to and discussion of species, generic delimitation, relationships); Hendel, 1914*a*: 101–3 (characterisation); Hendel, 1914*b*: 201–3 (key to species); Malloch, 1939: 132–4 (key to species).

Mystia Walker, 1861: 249–50. [Type species (monotypy): *M. attrahens* Walker.] (Synonymised McAlpine, 1973.)

Achiosoma Hendel, 1914*a*: 100–01. [Type species (original designation): *Achias dacoides* Walker.] (Synonymised McAlpine, 1982.)

Description

Head wider than high, with eyes generally prominently bulging from the general outline of head or situated on stalks of variable length; cheek deeper than vertical diameter of eye; antennal grooves deep and well defined, separated by a broad, sharply defined carina; inner and outer vertical bristles present; postvertical, ocellar, and fronto-orbital bristles absent or poorly differentiated; posterior cheek bristle present. Prelabrum moderately developed, retractile.

Thorax. Mesoscutum as long as or slightly longer than wide, with the following bristles: 1 humeral, 1 + 1 notopleurals, anterior supra-alar, postalar, posterior intra-alar, 1 posterior dorsocentral, prescutellar acrostichal; scutellum bare or haired, with variable number of marginal bristles; subscutellum much reduced; pleura without strong bristles; supra-squamal ridge with some rather long hairs in addition to dense pile on posterior part, anterior section often setulose; edge of mesoscutum below postalar ridge with a single row of setulae; prosternum short-haired, with distinct precoxal bridges.

Legs moderately stout; femora frequently with series of spinescent ventral bristles.

Wing of normal proportions or somewhat elongate; radial vein setulose only beyond humeral crossvein; subcosta gradually approaching costa; vein 4 strongly arched in distal section; second basal cell not enlarged; posterior crossvein bowed outwards; anal cell with posterior distal angle of about 90° or slightly more. Squama developed as a lobe of variable size (Figs 126–130).

Abdomen broadly ovoid, similar to that of stouter *Lamprogaster* spp., or sometimes narrowly ovoid, or with segment 1 narrowed to a petiole. Aedeagus of relatively simple form for subfamily; preglans often distinct, without process; bulb little developed, without caeca; terminal filaments 2, subequal in length.

Coloration variable; mesoscutum often with 4 brown or black longitudinal stripes; wing with markings confined to costal region or with dark marks also on crossveins.

Status of Mystia *and* Achiosoma

Achias attrahens (Walker), the type species of *Mystia*, is closely related to *A. delectans* (Walker), *A. microcephalus* Hendel, and *A. kurandanus* Hennig, all species placed well within the limits of *Achias* as defined by workers of this century.

The status of the group of species separated by Hendel and by Malloch (1939) under the genus *Achiosoma* has been more difficult to decide. I attempted to separate *Achiosoma* from *Achias* in a key to genera (McAlpine 1973) using some additional morphological characters but even these have proved inadequate to sort the species into two well defined groups. *A. venustulus* and several closely related species have the chaetotaxy I have given for *Achiosoma*, but the shape of the squama is relatively broad and the abdomen is broad at the base as in typical *Achias*. This group of species may have a genuine phylogenetic relationship to the *Achiosoma* group of species, but phenetically it is not far removed from typical *Achias*. *Achias rothschildi* Austen is frequently without the humeral bristle but is otherwise a quite typical *Achias* species. *Achias apictipennis* Hennig (1940) is closely related

to species of the *Achiosoma* group, particularly *A. costalis* and related species, though the abdomen is much less narrowed basally and the squama larger. The most typical species of the *Achiosoma* group exhibit mimicry of Hymenoptera (probably mainly of Vespidae) but this does not apply to the *A. venustulus* group, and in *A. apictipennis* and the *mitis* group evidence of mimicry is less obvious. As in numerous other Hymenoptera-mimics among the Schizophora, a metathoracic postcoxal bridge is present in the most typical species of *Achiosoma*. *A. apictipennis* and the *A. venustulus* group are without the bridge, though the former has the deepened postcoxal area of the *Achiosoma* group.

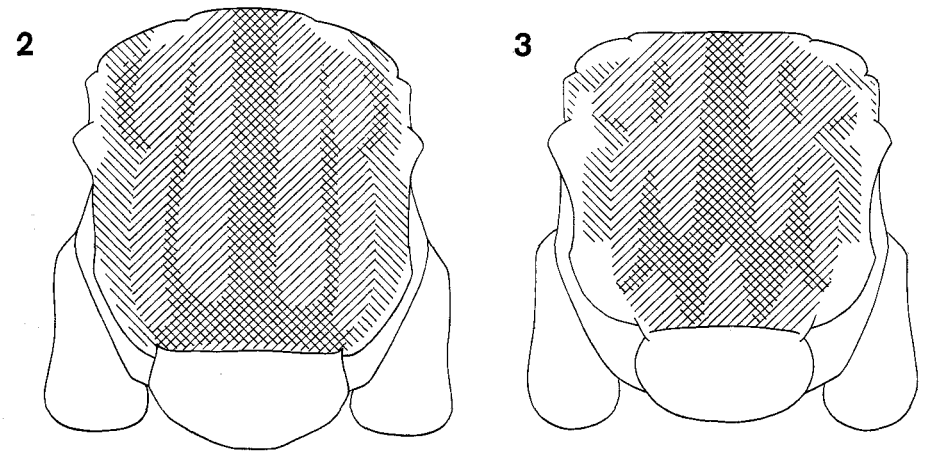
For these reasons, I consider that *Achiosoma* cannot be maintained as a separate genus, though it probably forms a monophyletic group within *Achias* s.l.

Generic Identification

Australian specimens of *Achias* can be distinguished by means of my key to Australian genera of Platystomatidae (McAlpine 1973: 31–3), where they should run either to *Achias* or to *Achiosoma*, which is now considered a synonym of *Achias*. For identification of material from New Guinea and nearby islands the key to platystomatid genera by Malloch (1939: 98–101) can be used only with considerable caution. Many species of *Achias* will be misdirected to couplet 3a, because all femora have 'short, stout ventral spines'. The following six key characters can be used to segregate *Achias* specimens from other Australasian platystomatids.

1. Mesopleural bristle absent.
2. Face with well developed rather flat-topped carina separating antennae, which drops away abruptly at sides.
3. Squama forming a definite lobe (Figs 126–130).
4. Setulae on dorsal surface of vein 1 restricted to region beyond humeral crossvein.
5. Arista with numerous long hairs for greater part of its length.
6. Eye usually either stalked or prominently bulging laterally, never much deeper than cheek.

Reasonably quick checking of the generic identification can be achieved for suspected *Achias* material by comparison of head shape and wing features (including colour pattern) with illustrations in this paper. Examples of less characteristic head shape for the genus are shown in Figs 16, 44, and 125.



Figs 2, 3. Thoraces (dorsal view, macrotrichia omitted) of *2*, *Achias attrahens*, *3*, *Lamprogaster hilaris* (Walker); to show nature of colour pattern on mesoscutum. Acute (/) parallel hatching indicates distribution of black cuticular pigment; grave (\) parallel hatching indicates distribution of pale pruinescence.

Laglaizia Bigot is the only other Australasian platystomatid genus with stalked eyes (in males only), and is distinguished from *Achias* by having a large fronto-orbital and mesopleural bristle, the anal crossvein (free transverse section of vein CuA or CuA_2) strongly angularly bent near the middle of its length, and the anterior and discal crossveins closely approximated (cell-4 index >8·5).

Taxonomic Characters and their Significance

My comparative studies of *Achias* suggest that the following character states belong to the ground plan of the genus, though not sufficiently consistent at generic level to be diagnostic.

1. Eye of male more or less pedunculate. Eye-stalks occur very widely among the various alliances of *Achias* species, though many clusters of apparently related species are inconsistent in this character. Some species also show individual variability as to the presence of eye-stalks in males, and in probably all species with eye-stalks there is great variation in eye-stalk length (McAlpine 1979). Even in many *Achias* species which lack eye-stalks, e.g. *A. microcephalus* and *A. minax*, the eyes of larger males are slightly but significantly more widely separated and more prominent than those of females. At group level, eye-stalks may be consistently absent only in the highly derived *minax* and *mitis* groups, and though some such sexual dimorphism exists in the former group, too little material of the *mitis* group is available to ascertain if there is dimorphism for any included species.

An alternative condition to pedunculate eyes is the broadening of the head across both the eyes and cheeks of males, as seen in *A. wallacei* and to a lesser extent in *A. sursividens* and *A. cauda*. This also results in a wide separation of the eyes, and the condition could be functionally similar to that of stalked eyes (McAlpine 1979). I have considered whether these three species represent a more plesiomorphic stage in the evolution of stalked eyes. This seems improbable because *A. sursividens* and *A. cauda* are closely related to species with eye-stalks, particularly *A. stigon*, and, although *A. wallacei* does not have such an obviously close relationship with any other known species, there is no other reason for considering that it diverged very early from other *Achias* lineages. Hence, the *wallacei-sursividens* condition is deemed to be derived more than once from either a stalk-eyed condition or a secondarily simplified condition as exemplified by *A. microcephalus*.

2. Face with dark brown markings probably taking the form of a ventrolateral blotch below the antennal groove on each side. The face and cheeks of *Achias* species are commonly translucent fulvous with dark brown markings in a pattern which tends to be characteristic for each species, though sometimes showing sexual dimorphism. The dark areas, unlike those of the mesoscutum and femora, are produced by pigmented subcuticular tissue. The most widespread type of facial pattern includes a pair of lateroventral blotches, and this pattern is found in all four sections of the genus. Other patterns seem explicable as derivatives of this one. In females there is commonly also a stripe on the cheek which runs downwards from the lowest part of the eye margin, but in most cases this is absent in males.

3. Mesoscutum with four (two pairs) longitudinal non-pruinescent stripes, separated by paler, heavily pruinescent stripes. This is the predominant pattern in sections 1 and 2, but has become modified to a varying extent in sections 3 and 4. In those *Lamprogaster* species with pruinescent mesoscutum there is a distinct tendency towards manifestation of the common *Achias* pattern [e.g. *Lamprogaster flavipennis* Macquart, *L. pumicata* Wulp, *L. hilaris* (Walker)]. Compare Figs 2 and 3.

4. Posterior part of mesoscutum with a zone of thick pubescence near each dorsocentral bristle (consisting of longer microtrichia than those near the centre of mesoscutum). This pubescence is distinguishable in many species of sections 1 and 2, but is generally little developed in the more derived sections 3 and 4.

5. Fore femur with several distal posteroventral bristles thickened, spinescent. This condition is widely distributed among species of all sections and predominates among the less derived groups of species. Species lacking these thickened bristles (e.g. *A. nigricoxa*, *A. mitis*) are usually closely related to the various species possessing them, and their absence appears to be an apomorphic condition within the genus. In some species, similar but usually smaller anteroventral spinescent bristles are present on the fore femur and both anteroventral and posteroventral bristles may be present on the other femora. Possibly this whole pattern of femoral armature is in the generic groundplan.

The spinose fore femora are used in agonistic behaviour in *Achias australis* (McAlpine 1979). The damaged condition of these spinescent bristles in flies of several *Achias* species, apparently not due to handling, may be the result of similar behaviour.

6. Wing membrane with ridge-like, obliquely longitudinal crease in third posterior cell near vein 5, which is furnished on at least part of the surface with denser microtrichia than on the adjacent part of membrane. Though widely present in species of sections 1 and 2, the ridge-like crease is generally vestigial in section 3 and indistinguishable in section 4 of *Achias*. It is well developed in a few species of *Lamprograster*, e.g. *L. pumicata* Wulp, *L. hilaris* (Walker) and some allied species.

Among the flies of the family Platystomatidae, *Achias* is clearly a member of the subfamily Platystomatinae, having the aedeagal structure and other features of that group (McAlpine 1973). Within this subfamily, *Achias* seems most closely related to the genus *Lamprogaster* Macquart. In what appear to be the less apomorphic species of *Lamprogaster* (e.g. *L. indistincta* Malloch) we find a general morphology exceedingly like certain forms of *Achias* (e.g. *A. kurandanus*), but without the more distinctive groundplan characters of *Achias* (character states 1, 2, 4, 5 given above, plus strongly irregularly plumose arista, and absence of mesopleural bristle). There is a general resemblance between the two groups in facial structure, wing venation, and the short broad abdomen often with metallic coloration. There are often similarities in wing pattern between species of *Achias* and *Lamprogaster*, as seen, for example, between *A. kurandanus* and *L. hilaris*. A further interesting character found in some members of each genus is a peculiar kind of subcuticular colour pattern on various parts of the head and thorax, consisting of small dark brown spots, sometimes fusing to form an irregular reticulum.

I feel that the available evidence strongly supports a monophyletic origin for the genus *Achias*. Character states 1, 2, 4 and 5 are not found in *Lamprogaster* nor in any closely related platystomatine group; they appear to be groundplan apomorphies for *Achias*, which have been secondarily lost in various more derived *Achias* species or groups of species. However, the morphology of *Lamprogaster* or of any component of that genus does not seem derivable from the *Achias* groundplan. *Lamprogaster* cannot be demonstrated to be the sister-group of *Achias* because *Lamprogaster* has not been shown to be monophyletic. Possibly some subdivision of the present genus *Lamprogaster* is the sister group of *Achias*, in which case *Lamprogaster* would be paraphyletic with respect to *Achias*. Probably *Achias* and *Lamprogaster* together incorporate most elements of a monophyletic taxon, though without further study of *Lamprogaster* and related groups, e.g. the genus *Montrouziera* Bigot, the limits of this taxon are uncertain.

Infrageneric Classification

My consideration of comparative morphology in *Achias* has not led to a clear understanding of monophyletic groupings. Many of the characters I have used with some confidence in identifying species are too unstable at a higher level, and evolutionary reversals have probably been frequent. There are many species, about two-thirds of the total, which possess a preponderance of plesiomorphic character states combined with very diverse combinations of derived and unevaluated states. I do not believe there is a ready method of determining phylogenetic relationships through much of this large cluster of species, and I therefore divide these species into two sections, rather arbitrarily distinguished by presence (Section 1) or absence (Section 2) of hairs (finer, irregularly placed socket-based macrotrichia,

as distinct from pubescence) on the scutellum. There are probably several across-group relationships between species grouped thus arbitrarily. I have made a compromise by placing *A. longitarsis* next to the probably related *A. schneiderae* in the group with bare scutellum, although *A. longitarsis* has a haired scutellum.

The species that approximate to the characters of the genus *Achiosoma*, as used by Hendel and Malloch, probably form a monophyletic group (*A. apictipennis* to *A. fritillus* in my sequence below). I regard these as a main section (Section 4) within *Achias*, distinguished by their slender form, reduced chaetotaxy and squama, and modified distribution of pruinescence on the mesoscutum. All these species run directly to couplet 82 from the first couplet in my key to species. The species of Section 4 are divisible into five well-defined groups, but it is uncertain if these groups are all monophyletic.

The nine species from *A. sphyrna* to *A. venustulus* in my sequence appear to be somewhat related to those in Section 4, of which they may be the sister group, though in the less modified body form and large squama they are more plesiomorphic. These are designated as Section 3. They perhaps form a monophyletic group, though *A. sphyrna* is more plesiomorphic than the other species.

I characterise the informal groupings in *Achias* as follows:

Section 1. Habitus more or less stout; abdomen broad basally; humeral and prescutellar acrostichal bristles usually present; fore tarsus shorter than tibia; squama large, broadened posteriorly; first costal cell microtrichose at least in part; alula usually extensively microtrichose; mesoscutum usually with extensive pale pruinescence, and most commonly with four longitudinal non-pruinescent stripes; scutellum haired, the hairs sometimes restricted to a zone in front of the foremost marginal bristle. Included species: *A. albertisi* to *A. wallacei* in my text sequence given below.

Section 2. Resembling group 1, but scutellum not haired (restricted lateral hairing present in *A. longitarsis* and some specimens of *A. testaceus*); fore tarsus as long as or longer than tibia in few species. Included species: *A. thoracalis* to *A. gjellerupi* in the sequence below.

Section 3. Habitus medium to rather stout; abdomen broad basally; humeral and prescutellar acrostichal bristles absent; fore tarsus longer than tibia (except in *A. sphyrna*); squama large, broad and rounded posteriorly; first costal cell bare; alula extensively microtrichose (except in *A. calcar*): mesoscutum without extensive pale pruinescence (median pruinescent stripe present only in *A. sphyrna*); scutellum bare or with restricted lateral hairing. Included species: *A. sphyrna* to *A. venustulus* in the sequence below.

Section 4. Habitus slender; abdomen narrowed basally (least so in *A. apictipennis* and the *mitis* group); humeral and prescutellar acrostichal bristles absent; squama usually much narrowed (least so in *A. apictipennis*); first costal cell entirely microtrichose; alula bare, except for marginal fringe; mesoscutum with variably distributed pruinescence, but never with four longitudinal non-pruinescent stripes; scutellum hairless or with few lateral hairs. Included species: *A. apictipennis* to *A. fritillus* in the sequence below. The species of this section are divided into the following five groups.

4.1. The *apictipennis* group. Eye pedunculate in both sexes; anterior notopleural bristle unreduced; wing with costal band narrow and in part ill defined, without broad brownish apical zone enclosing discal crossvein; squama less reduced than in other groups of Section 4; abdomen somewhat narrowed basally, but not petiolate. Included species: *A. apictipennis* only. This group is somewhat atypical for the section, but the only species otherwise shows such close congruence with species of the *costalis* group that close relationship is not in doubt.

4.2. The *costalis* group. Similar to *apictipennis* group, except as follows: anterior notopleural bristle reduced; costal band sometimes more distinct (though narrow); squama very narrow; abdomen petiolate. Included species: *A. costalis*, *A. polyonychus*, *A. xyrion*.

4.3. The *dacoides* group. Eye pedunculate in both sexes (except in *A. dacoides*, of which only female is known); anterior notopleural and supra-alar bristles unreduced; wing with costal band generally broad and complete, not expanded distally into broad apical zone, but sometimes (*A. aspiciens*) discal crossvein with separate brown mark; squama

narrow; abdomen petiolate or narrowly clavate. Included species: *A. aspiciens* to *A.* sp. 4 in the sequence below.

4.4. The *nigrifacies* group. Eye not pedunculate; antennal segment 2 conical, but not markedly attenuated basally; anterior notopleural bristle present, sometimes small; supra-alar bristle absent; wing with broad brownish apical zone enclosing discal crossvein and confluent with costal band; second costal cell entirely microtrichose; squama narrow; abdomen petiolate; tergite 4 with pair of large pale pruinescent zones. Included species: *A. nigrifacies* to *A. fuligo* in the sequence below.

4.5. The *mitis* group. Similar to *nigrifacies* group except as follows: antennal segment 2 elongate, attenuated basally (except in *A. lachlani*); costal band less developed, sometimes interrupted; second costal cell largely bare; abdomen not at all petiolate; tergite 4 with pale pruinescence restricted to narrow lateral marginal zone or absent. Included species: *A. mitis, A. lachlani, A. trivittatus, A. fritillus.*

Species Delimitation

Platystomatid flies, particularly representatives of the genus *Achias*, are insects of complex structure and coloration, offering numerous features that can be used for species discrimination, as will be apparent from a glance at my key to species. A minority of the species are available in fairly long series or as examples from a range of localities and these bear out the value of the kinds of characters here used for species discrimination. Many apparent species are known from very few or single specimens, and it has been necessary to extrapolate from what is known about character values for better known species. I feel that in most cases, the concepts I have formally named are likely to be true biological species, though there are several possible reasons for error in these conclusions.

The geographic coverage of samples is often poor, so that it is conceivable that some of my nominal species are geographic variants of others. Examples of species I accept as showing geographic variation are *A. crosskeyi* and *A. lativídens*. On the other hand I accept *A. lativídens* and *A. australis* as very similar but sharply differentiated species that are totally allopatric.

The methods of comparative morphology cannot always uncover sibling species, and there is the possibility of some being overlooked in the present work. Comparative study of the copulatory organs of males is helpful in discriminating very closely related species in many dipterous families, but in the Platystomatinae it is often less useful taxonomically. The proportions of the different parts of the aedeagus and the absolute length of the glans (which usually varies little within a species despite individual overall size variation) have proved helpful in sorting *Achias*, as in some other platystomatines (McAlpine 1973).

I have examined primary type material of all nominal species of *Achias*, and at present allow valid species status for all of these. There is particular doubt regarding the validity of *A. delectans* (Walker), *A. gjellerupi* de Meijere, and *A. punctulatus* de Meijere, as discussed under these species, but these have been placed in the key to species on the basis of examination of their holotypes.

Key to Species of *Achias*

1. Squama dilated and broadly rounded posteriorly (Figs 126–127), its outer margin thus not usually forming a continuous curve; form not wasp-like, the abdomen rapidly expanding from junction with thorax; supra-alar and prescutellar acrostichal bristles not simultaneously absent; surface of alula usually microtrichose 2

   Squama rather narrow, not dilated posteriorly, its outer margin describing a continuous curve (Figs 128–130); form somewhat wasp-like, with abdomen much narrowed or petiolate anteriorly, or, if not so, humeral, supra-alar, and prescutellar acrostichal bristles all absent; alula with only marginal series of microtrichia 82

2. Scutellum with hairs (socket-based macrotrichia as distinct from pubescence) on dorsal or dorso-lateral surface or restricted to zone in front of foremost marginal bristle, in addition to major bristles 3

Scutellum not haired, or rarely with 1 or 2 hairs on each side aligned with marginal bristles 43

3. Second costal cell bare or only microtrichose on relatively small basal zone and sometimes to very limited extent elsewhere 4

Second costal cell microtrichose on almost its entire length 19

4. Mesoscutum without noticeable pruinescence and thus without differentiated non-pruinescent stripes, its length distinctly greater than width across sockets of postalar bristles; humeral and prescutellar acrostichal bristles absent; fore tarsus longer than tibia ..... *A. ios*

Mesoscutum with at least a median pale pruinescent stripe, usually also additional pruinescent zones alternating with 4 longitudinal non-pruinescent stripes; other characters not entirely as above 5

5. Mesoscutum with pale pruinescence almost restricted to median stripe (some pale pubescence along transverse and scutellar sutures); first and second costal cells predominantly bare, with bare area reaching humeral crossvein in both cells; humeral and prescutellar acrostichal bristles absent ..... *A. sphyrna* (part)

Mesoscutum with extensive pruinescent zones alternating with 4 non-pruinescent stripes; other characters not entirely as above 6

6. Scutellum densely pubescent from scutellar suture to centre of dorsal surface; discal cell largely bare, microtrichose on no more than distal sixth and linear zone along basal crossvein; humeral and prescutellar acrostichal bristles absent; fore tarsus distinctly longer than tibia ..... *A. longitarsis*

Scutellum at most narrowly pubescent along scutellar suture; other characters usually not as above 7

7. Second costal cell without distinct basal microtrichose zone, bare area thus meeting humeral crossvein 8

Second costal cell with basal microtrichose zone for whole width 9

8. Face with brown zone covering whole width of epistomal margin; tarsi entirely black; mesoscutum with paramedian pair of non-pruinescent stripes black anteriorly, reddish brown elsewhere; alula bare on most of anterior half ..... *A. rufus*

Face with pair of well-separated brown marks below; at least mid and hind tarsi variegated with yellowish; mesoscutum with non-pruinescent stripes entirely reddish brown; alula almost entirely microtrichose ..... *A. crosskeyi*

9. Face without dark markings, with only a light reddish brown suffusion on lower part; scutellum without pubescence ..... *A. fulviceps*

Face with at least pair of brown marks or with brown zone below; scutellum pubescent near scutellar suture 10

10. Face pale medially, with pair of more or less separate brown lateral marks, at most connected by trace of brown on epistomal margin 11

Face broadly brown across entire epistomal region, or with large central mark 12

11. Median pruinescent stripe of mesoscutum tapering to become linear on posterior half; hind femur with long yellow ventral hairs on basal half; hind tibia only slightly convex on posterior surface near apex, strongly curved in ♂ ..... *A. reses*

Median pruinescent stripe parallel-sided; hind femur with only quite short ventral hairs on basal half; hind tibia strongly gibbous posteriorly near apex in ♀, more so in ♂, only slightly curved ..... *A. tawii*

12. Scutellum with numerous yellow hairs on almost entire dorsal surface ..... *A. strigatus*

Scutellum with fine inconspicuous hairs, absent or nearly so on central part 13

13. Wing with heavy blackish spot on anterior crossvein, not extended across submarginal and marginal cells ..... *A. molysma*

Wing without such spot on anterior crossvein 14

14. Face almost entirely brown, with pair of fulvous spots just above middle and a yellowish spot between antennal bases ..... *A. celaenops*

Face with more extensive yellowish areas 15

15. Face brown on approximately lower half, the brown colour extending broadly on to lower part of cheek; dark cheek stripe present only in ♀ 16

Face with brown zone otherwise, scarcely extending on to cheek; cheek stripe of ♂ present or absent 17

16. Wing with brown microtrichose stigmatal band from costa to vein 4; hind femur with ventral hairs shorter than half diameter of femur ..... *A. cogani*

Stigmatal band vestigial, in marginal and submarginal cells represented by neither pigment nor microtrichia; hind femur ventrally with numerous long hairs from near base to beyond middle, many of them about as long as diameter of femur ..... *A. subnudus*

17. Brown zone on lower part of face formed by fusion of 3 brown patches; eye of ♂ rounded and remarkably little prominent for genus; stigmatal band represented in neither marginal nor submarginal cells ..... *A. sedlacekae*

Brown zone on lower part of face not tripartite; eye of ♂ prominently projecting from outline of head on lower part, though not stalked; stigmatal band variable 18

18. Brown facial zone reaching to centre of face; scutellum with short posterior marginal hairs extending between apical bristles; stigmated band absent, except as a trace surrounding anterior crossvein; ♂ abdominal sternites 3 and 4 not reduced, the latter not longer than wide ..... *A. parilis*

Brown facial zone not reaching centre of face; scutellum not haired on posterior part; stigmatal band represented by a densely microtrichose spot in marginal cell; ♂ abdominal sternites 3 and 4 reduced, the latter longer than wide ..... *A. kentae*

19. Wing with brown discal band completely crossing wing (Figs 7, 13, 15); stigmatal band broad and distinctly entering discal cell 20

Discal band absent or reduced to a mark on discal crossvein which does not cross first posterior cell; stigmatal band generally less developed 23

20. Brown costal band little developed except from discal band to apex, the costal zones between stigmatal and discal bands and in second costal cell yellowish ..... *A. additus*

Costal band dark brown and continuous from base to apex of wing 21

21. Prescutellar acrostichal bristle well developed; base of submarginal cell brown, entirely microtrichose ..... *A. furcatus*

Prescutellar acrostichal bristle absent; base of submarginal cell clear, bare 22

22. Face predominantly blackish, with few fulvous markings; wing with discal band very broad and fused with stigmatal band in discal cell; humeral callus thickly grey pruinescent; fore femur without posteroventral spines; scutellum haired across whole width ..... *A. nigricoxa*

Face fulvous with a blackish mark between each antennal groove and epistomal margin only; discal band narrower, well separated from stigmatal band; humeral callus without noticeable pruinescence; fore femur with numerous short, thick posteroventral spines; scutellum without hairs on a broad median zone ..... *A. sackeni*

23. Face entirely fulvous, without dark markings; fore tarsus longer than fore tibia; humeral and prescutellar acrostichal bristle vestigial; mesoscutum tawny, unstriped ..... *A. opipes* (part)

Face with brown markings or suffusion; other characters not entirely as above 24

24. Face with median blackish mark on upper part, in addition to pair of brown epistomal marks; wing with complete brownish costal band; eyes of ♂ usually on long stalks ... *A. albertisi*

Face without separate median mark on upper part; other characters variable 25

25. Brown colouring of face not restricted to lower half but consisting of a general suffusion, the face with yellow lateral margins to carina, often with 2 or more yellowish vertical streaks and some yellowish mottling; hairs on 4 non-pruinescent mesoscutal stripes yellowish, rather coarse and conspicuous; head of ♂ variably broadened but without eye-stalks (Fig. 44) ..... *A. wallacei*

Brown colouring of face restricted or almost restricted to well defined area or areas on lower half; hairs on mesoscutal stripes usually largely blackish; head of ♂, when strongly broadened, with eyes more or less stalked 26

26. Brown zone on lower part of face undivided 27

Face with pair of lateral brown marks on lower part, the median part not infuscated .. 29

27. Wing with large apical dark mark quite separate from stigmatal band; discal crossvein with brown mark; prescutellar acrostichal bristle present; lower half of face entirely infuscated ..... *A. khooi*

Wing without such distinct marks at apex and on discal crossvein; prescutellar acrostichal bristle absent; lower part of face with variable infuscation 28

28. Brown zone on face broad, extending laterally to antennal grooves; hind tibia (at least in ♂) with narrowly rounded, posterodorsally produced lobe on posterior terminal margin ..... *A. pumex*

Brown facial zone subtriangular, nowhere extending to lateral margins of face; hind tibia without definite lobe on the convexly curved posterior margin ..... *A. meijerei*

29. Wing with stigmatal brown band more or less indistinct, not crossing submarginal cell; scutellum with hairs restricted to area in front of foremost lateral bristle or almost so 30
Wing with distinct brown stigmatal band enclosing anterior crossvein and completely crossing submarginal cell; scutellum more extensively haired 33
30. Marginal cell bare for most of middle third of length; ♂ hind trochanter without trace of process ..... *A. steyskali*
Marginal cell microtrichose for its entire length; ♂ hind trochanter with prominent haired process 31
31. Fore and mid femora broadly browned distally; both sexes with solid blackish cheek stripe ..... *A. penicillus*
Femora with at most minute brown zone distally; both sexes with cheek stripe forming a mottled band 32
32. Wing with yellow-brown costal band becoming dark brown distally and in stigmatal region; tibiae almost entirely blackish; ♂: process of hind trochanter with yellowish and black hairs; concavity at distal side of base of process with pubescent zone ..... *A. clastus*
Wing without distinct costal band; tibiae fulvous with brown markings; ♂: process of hind trochanter with hairs entirely yellowish; concavity at distal side of base of process without pubescence ..... *A. janus*
33. Brown apical costal mark entering only apical part of marginal cell, where it is discontinued and well separated from stigmatal band by a hyaline zone 34
Brown or yellow-brown apical costal mark continued through marginal cell to stigmatal band 36
34. Wing membrane immediately beyond stigmatal band with distinct bare area in marginal cell and large bare area in submarginal cell; first basal cell bare in distal half, except for microtrichia on stigmatal band and those close to veins 3 and 4; anterior margin of scutellum bare in centre ..... *A. fabricii*
Wing membrane beyond stigmatal band almost entirely microtrichose in marginal cell, with at most very small bare area in submarginal cell; distal part of first basal cell with numerous microtrichia or at least a small isolated group clear of veins and stigmatal band (rarely absent); anterior margin of scutellum usually pubescent on entire width 35
35. Longitudinal stripes of mesoscutum reddish brown; fore femur fulvous with blackish apex; apical wing mark not reaching basad to level of discal crossvein, broadly entering first posterior cell for much of its length ..... *A. kurandanus*
Longitudinal stripes of mesoscutum black; fore femur dark brown; apical mark extending basad slightly beyond discal crossvein, narrowly entering first posterior cell only near costa ..... *A. cheesmanae*
36. Scutellum haired only in front of foremost lateral bristle; lateral margins of mesoscutum tawny with dark brown dots ..... *A. testaceus* (part)
Scutellum extensively haired at sides; lateral margins of mesoscutum generally not distinctly dotted 37
37. Postfrons largely blackish, with some yellowish spots; second costal cell dark brown; basal halves of at least mid and hind femora yellowish 38
Postfrons at least broadly yellowish across middle; second costal cell honey-yellow; femora variably coloured 39
38. Fore tarsus broader, in ♂ segment 1 about 3 × as long as wide; sublateral pair of mesoscutal stripes tawny behind suture ..... *A. meeki*
Fore tarsus narrower, in ♂ segment 1 about 4 × as long as wide; mesoscutal stripes black ..... *A. diversifrons*
39. Fore femur with long strong posteroventral spines; all thoracic hairs pale; prescutellar acrostichal bristle absent; femora almost entirely yellowish ..... *A. brachyophthalmus*
Fore femur with rather short spinescent posteroventral bristles (longer in *A. straatmani*); hairs on dark stripes of mesoscutum predominantly black; prescutellar acrostichal bristle present; femora variably coloured 40
40. Mesoscutum with 4 reddish brown stripes ..... *A. delectans*
Mesoscutum with 4 black stripes 41
41. Scutellum with hairs on most of dorsal surface, giving way to pubescence towards anterior margin; eye of ♂ subacute in anterior aspect; discal crossvein enclosed in distinct brown stripe; stigmatal band broad, distinctly entering discal cell ..... *A. straatmani*

Scutellum with hairs restricted to marginal area, its central part bare; eye of ♂ rounded; wing markings not entirely as above 42

42. Mesoscutum with submedian and sublateral black stripes fused for most of length; a brownish suffusion covering full length of discal crossvein ..... *A. microcephalus*

Mesoscutum with submedian and sublateral stripes separated by a greyish pruinescent stripe except near anterior extremity; discal crossvein with slight brownish suffusion most distinct near posterior end ..... *A. attrahens*

43. Longitudinal stripes of mesoscutum absent, or almost completely obscured by dense pruinescence, except sometimes near anterior extremity, or thorax with median black stripe only 44

Mesoscutum with 4 dark or tawny more or less non-pruinescent longitudinal stripes alternating with pruinescent zones, or if stripes not all well defined, then at least a median pruinescent stripe distinct from paramedian non-pruinescent areas (striping sometimes hard to see in greasy specimens) 54

44. Humeral and prescutellar acrostichal bristles absent; mesoscutum minutely roughened but without conspicuous pruinescence or pubescence; fore tarsus longer than fore tibia; habitus relatively slender, the mesoscutum usually longer than wide 45

Humeral and prescutellar acrostichal bristles present; mesoscutum pruinescent or pubescent at least near scutellar suture; fore tarsus not longer than fore tibia; habitus robust, the mesoscutum not longer than wide 51

45. Face with pair of large dark brown spots on lower part 46

Face without such spots 47

46. Abdomen blackish with fulvous median zone; marginal cell with numerous microtrichia in basal part; humeral callus glossy on most of surface, with all hairs short; ♂: hind femur not clavate; eye very rounded in outline ..... *A. ismayi*

Abdomen without paler median zone; marginal cell with very few or no microtrichia in basal part; humeral callus only shining on about lower half, with rather long hairs anteriorly; ♂: hind femur slightly clavate; eye subangular at lateral extremity ..... *A. hollowayi*

47. Surface of alula bare, only a marginal series of microtrichia present; postfrons largely infuscated, the dark colour extending to eyes; ♂: hind trochanter with prominent posteroventral process ..... *A. calcar*

Surface of alula microtrichose in part; postfrons tawny, often with brown median patch in front of ocelli and mainly separate brown spots; ♂: hind trochanter simple (except in *A. opipes*) 48

48. Inner vertical bristle much reduced; hairs on humeral callus short, less than 0·2 of length of anterior notopleural bristle; abdominal tergites 3 to 5 blackish with tawny median zone; scutellum tawny with black spots ..... *A. hyweli*

Inner vertical bristle strong, about as long as outer vertical; longer hairs on humeral callus more than 0·2 of length of anterior notopleural bristle; other characters not entirely as above 49

49. Tergites 3 to 5 black with median tawny zone; ♂: hind trochanter with prominent posteroventral tooth ..... *A. opipes* (part)

Tergites 3 to 5 entirely blackish; ♂: hind trochanter simple 50

50. Fore tibia largely pale yellowish, brown at base; ♂: hind femur almost straight, only slightly tapered at each end ..... *A. venustulus*

Fore tibia dark brown; ♂: hind femur rather slender and curved basally, slightly clavate distally ..... *A. tudes*

51. Wing with complete obliquely transverse dark brown band enclosing both anterior and discal crossveins; mesoscutum black with areas of pruinescence and pubescence largely restricted to vicinity of transverse and scutellar sutures ..... *A. obliquus*

Discal crossvein not enclosed in a brown band; mesoscutum with dense ochraceous pruinescence or pubescence on almost entire surface 52

52. Wing with dark brown costal band for almost entire length, paler at most on a short section beyond stigmatal band ..... *A. hennigi*

Wing with costal band yellowish brown and, at least in part, poorly defined 53

53. Costal band brown with yellow tinge, indistinct only in second costal cell; first posterior cell without bare spot; hind femur slightly curved downwards towards base, leaving ventrally a sub-basal excavation and a basal convex area bearing distinctly lengthened hairs, without ventral tuft near base ..... *A. thoracalis*

Costal band pale brownish yellow and diffuse throughout; a small spot devoid of microtrichia situated towards base of first posterior cell; hind femur very slightly curved upwards from a little beyond base through much of its length, its ventral outline almost straight basally (i.e. beyond narrowing for insertion into trochanter), without much lengthening of hairs, but with small ventral hair tuft basad of general hairing ..... *A. kimi*

54. Wing without distinct longitudinal brown costal band (distal third of wing sometimes suffused brownish with slight intensification near costa) 55
Wing with more or less distinct (but sometimes interrupted) costal band which is deep brown at least in part, or at least area in front of vein 3 darker than most of area behind it 70

55. Mesoscutum with greyish pruinescence restricted to median stripe; first and second costal cells predominantly bare, with bare zone reaching to humeral crossvein in both cells; humeral and prescutellar acrostichal bristles absent ..... *A. sphyrna* (part)
Mesoscutum with more extensive pruinescent zones, more or less dividing non-pruinescent area into 4 stripes; other characters not entirely as above 56

56. Face without heavy brown markings; second costal cell bare, except near base; scutellum reddish brown to tawny 57
Face with pair of large brown spots on epistomal margin, or more extensively infuscated; or second costal cell entirely microtrichose; scutellum black or dark brown 58

57. Alula almost entirely densely microtrichose; wing with irregular brown stigmatal stripe from anterior crossvein to costa; fore tarsus (♀) rather broad, with segment 1 less than 4 × as long as wide ..... *A. melinus*
Alula bare, except at margin; stigmatal stripe absent; fore tarsus slender, with segment 1 more than 4 × as long as wide ..... *A. sciotus* (part)

58. Supra-alar and humeral bristles absent; femora fulvous, only faintly browned distally; second costal cell entirely microtrichose ..... *A. planiceps*
Supra-alar and usually humeral bristles present; other characters not entirely as above 59

59. Wing with conspicuous brown spots as follows: 1 stigmatal spot from vein 4 to vein 1, 1 discal to subapical spot extending both sides of vein 2, a small spot on fork of veins 2 and 3; fore tarsus slender, not depressed ..... *A. schneiderae*
Wing less extensively spotted or unspotted; fore tarsus depressed 60

60. Fore femur brown to black; other femora yellowish, broadly blackish distally; fore tarsus much broadened and depressed, especially in ♂, with segment 1 much depressed, less than 4 × as long as wide, and segment 2 wider than long even in ♀ 61
Femora yellowish, often more or less darkened distally; fore tarsus less broad, with segments 1 and 2 dorsally somewhat convex 63

61. Face almost entirely infuscated, with only a pair of small pale marks near middle and small pale area between antennal sockets ..... *A. platychirus*
Face infuscated only on about lower half, upper half pale fulvous 62

62. Wing with broad light brown densely microtrichose stigmatal band from vein 1 to vein 4; marginal cell with bare zone just beyond stigmatal band; alula microtrichose on posterior half only ..... *A. pygmosus*
Wing without trace of stigmatal band except for microtrichia surrounding anterior crossvein; marginal cell almost uniformly microtrichose; alula microtrichose except on small anterodistal area ..... *A. alutarius*

63. Tibiae dark brown to black; second costal, marginal, and first basal cells almost entirely microtrichose; stigmatal band represented in submarginal cell by a broad microtrichose yellowish patch ..... *A. oculatus*
At least mid and hind tibiae with yellowish areas; second costal, marginal, and first basal cells largely bare or with bare zones; stigmatal band not indicated in submarginal cell (except in *A. sursividens*) 64

64. Alula bare except on a narrow zone along free margin 65
Alula microtrichose on most of surface 66

65. Median pruinescent stripe of mesoscutum anteriorly narrower than paramedian non-pruinescent stripe; mid and hind femora at most indistinctly browned distally; bare zone in second costal cell extending basally to humeral crossvein ..... *A. carolinae*
Median pruinescent stripe of mesoscutum much broader than paramedian non-pruinescent stripe; mid and hind femora strongly browned distally; a microtrichose zone filling base of second costal cell ..... *A. sciotus* (part)

66. Face with broad, continuous brown zone below, elsewhere mainly pale; second costal cell with only trace of microtrichia at base; ♂: fore tarsus with segments 3–5 greatly widened; hind trochanter unarmed ..... *A. comptus*
Face otherwise marked; second costal cell densely microtrichose on about basal sixth; ♂: fore tarsus not greatly expanded distally; hind trochanter with strong, setulose ventral tubercle 67

67. Face with pair of small brown marks on epistomal margin, with broad brown zone on upper third (except between antennal sockets); upper part of parafacial broadly brown; fore coxa dark brown ..... *A. sursividens*
Face with pair of large, well separated brown marks between antennal grooves and epistomal margin, and sometimes narrow median stripe, otherwise pale; parafacial pale fulvous (facial ridge brown); fore coxa largely pale fulvous 68

68. Face with median brown stripe (only females of doubtful affinity known) ..... see under *A. stigon*
Face without median brown stripe (only males known) 69

69. Femora with heavy dark brown markings distally; segment 2 of fore tarsus about as long as wide (without basal attenuation), almost parallel-sided; in larger ♂, eye on basally thickened stalk; each terminal filament of aedeagus less than 3 × as long as glans, slightly swollen preapically, tapered apically ..... *A. stigon*
Femora only slightly browned distally; segment 2 of fore tarsus longer than wide, subtrapezoid; head of ♂ broadened but without eye-stalk (? consistently); each terminal filament more than 4 × as long as glans, slightly flared apically, not swollen preapically ..... *A. cauda*

70. Fore tarsus slender, with segment 1 at least 6 × as long as wide; humeral bristle absent 71
Fore tarsus rather broad, with segment 1 at most 5 × as long as wide; humeral bristle generally present 73

71. Alula microtrichose on posterior half or less; postfrons with 2 broad brown transverse bands and a yellowish area between them; fore femur with all ventral bristles weak and hair-like ..... *A. divisus*
Alula microtrichose on most of surface; postfrons with brown markings mostly broken into spots; fore femur with several posteroventral bristles forming strong spines 72

72. Wing with well defined light brown distal zone, not much intensified around discal crossvein; dark brown apical mark differentiated from costal band from just before end of vein 3 to vein 4; posteroventral angle of discal cell almost completely rounded off; all femora with large, solid distoventral dark brown mark; ♂: eye-stalk with yellow mark near eye ..... *A. gjellerupi*
Wing with brownish cloud around discal crossvein, but distal brownish zone otherwise absent or poorly defined; if well defined apical mark present, then more extensive than indicated above; posterodistal angle of discal cell usually almost a right angle, which is somewhat muted by curvature of veins; femora with only indistinct tawny brown marks distally; eye stalk without yellow distal mark ..... *A. rothschildi*

73. Face pale medially (except sometimes for scattered dark spots), without median stripe; eye variable, but generally sessile in ♀ 74
Face with median blackish stripe, or (in exceptional examples) blackish over entire width; eye generally stalked and rounded in both sexes (Figs 81, 82) 80

74. Scutellum tawny with extensive darker spotting 75
Scutellum dark brown or black, unspotted or spotted only on anterior marginal strip .. 77

75. Face with pair of large blackish marks below antennal grooves, otherwise unspotted or almost so; eye of ♂, when stalked, rounded oval, relatively small on slender stalk ..... *A. hendeli*
Face without paired lateral marks but with numerous small separate blackish spots; eye of ♂, when stalked, large, very obliquely oval, subacute, on stout stalk 76

76. Fore coxa almost entirely yellowish; femora yellowish, very narrowly browned apically; tergite 5 of ♂ longer than tergites 3 and 4 together ..... *A. amplividens*
Fore coxa largely dark brown; femora dark brown, at least on a broad distal zone; tergite 5 of ♂ shorter than tergites 3 and 4 together ..... *A. punctulatus*

77. Costal band dark brown on whole length of wing; mesoscutum with sublateral and submedian stripes not separated by a pruinescent stripe, thus with only 2 non-pruinescent zones which are broadly fused posteriorly ..... *A. szentivanyi*

Costal band yellowish brown, at least in parts of submarginal and second costal cells; mesoscutum with sublateral and submedian stripes separated by a pruinescent stripe for all or most of their length 78

78. Femora broadly blackish to dark brown distally; thoracic pleura unspotted; paramedian stripes of mesoscutum wider than median pruinescent stripe and with rough rugose-punctate sculpture between hairs ..... *A. gressitti*

Femora yellowish, at most very narrowly darkened apically; pleura (at least pleurotergite and part of sternopleuron) with numerous small blackish spots; paramedian stripes of mesoscutum narrower than median stripe, almost smooth between hairs 79

79. Scutellum with large anterior area of pubescence extending to centre; cheek region with numerous small separate dark spots, but no stripe; ♂: fore-tarsal segments 2 to 4 with enlarged, compressed, scimitar-shaped bristles ..... *A. mallochi*

Scutellum with yellowish pubescence (as distinct from pruinescence) restricted to narrow anterior marginal area: cheek with short blackish stripe below eye in ♀ (absent in ♂), but without scattered spots; ♂: fore tarsus without scimitar-shaped bristles .... *A. testaceus* (part)

80. Discal crossvein with large dark brown blotch separate from costal band; dark cheek stripe extending obliquely forwards from below eye, fusing with lateral facial mark .... *A. longividens*

Discal crossvein with indistinct pale greyish cloud which often fills whole distal third of wing behind costal band; dark cheek stripe not approaching lateral corner of face 81

81. Fore femur with some long, strongly spinescent posteroventral bristles; hind trochanter with hairs less than half as long as minimum diameter of trochanter; median facial stripe joined to the broadened lateral facial stripes on epistomal margin ..... *A. australis*

Posteroventral bristles of fore femur rather short and often not very strongly spinescent; hind trochanter with longer hairs as long as its minimum diameter; median facial stripe narrower and usually not joined to lateral facial stripes ..... *A. lativides*

82. A broad brown area covering much of distal section of wing including discal crossvein (Figs 110, 121); eyes often prominent but not on lateral extensions of head 83

No apical brown area enclosing discal crossvein but often brownish costal band extending to vein 4 and sometimes a restricted brown mark on discal crossvein; eye usually on distinct extension of head capsule, which, at least in ♀, is short and broad 91

83. Second costal cell largely hyaline and devoid of microtrichia; abdomen not distinctly petiolate; metathoracic postcoxal area entirely membranous 84

Costal cells brown, uniformly microtrichose; segment 1 of abdomen forming petiole; metathorax with sclerotised, medially narrowed postcoxal bridge 87

84. Length of antenna *c.* half that of face along median line; antennal segment 2 stout; width of postfrons near vertex not over $\frac{1}{3}$ width of head; submarginal cell with large bare zone just beyond anterior crossvein ..... *A. lachlani*

Antenna much more than half as long as face; segment 2 attenuated basally; minimum width of postfrons greater than $\frac{1}{3}$ width of head; submarginal cell variable 85

85. Apical dark area of wing separated from costal band by hyaline area reaching costa in front of discal crossvein; submarginal cell with bare zone; anterior notopleural bristle absent ..... *A. mitis*

Apical dark area broadly continuous with costal band; submarginal cell entirely microtrichose; anterior notopleural bristle well developed 86

86. Fore femur with some strongly spinescent posteroventral bristles; face with large dark brown patch between each antennal groove and epistomal margin, in addition to numerous separate brown spots ..... *A. trivittatus*

Fore femur with fine, hair-like posteroventral bristles only; face with numerous large mostly separate brown spots, but no larger brown areas on epistomal margin ..... *A. fritillus*

87. First posterior cell with narrow transverse hyaline bar, no wider than dark stigmatal band; mesoscutum in front of scutellar suture with inconspicuous greyish pruinescence not forming a defined zone; face yellowish with brown spots and streaks forming an irregular reticulum 88

First posterior cell with broad hyaline zone near base; mesoscutum with well-defined zone of dense yellowish or greyish pruinescence in front of scutellar suture; face with almost solid infuscation on lower part or with reduced markings 90

88. Yellow pruinescent zone on each side of tergite 4 approaching posterior margin of tergite only towards lateral extremity; ♂ fore tarsus: segments 2–4 wider than long, each with major posterior bristle long, strongly falcate, contrasting with the broadly compressed, little-curved major anterior bristle; segment 5 with tubercle on each side (Fig. 117) ... . *A. hapsis*

Yellow pruinescent zone on each side of tergite 4 broadly reaching posterior margin of tergite; ♂ fore tarsus: segments 2–4 variable in shape, with major bristle of each side rather similar, slightly curved and compressed; segment 5 without tubercle on each side 89

89. Tergite 5 entirely brown-black in ground-colour; ♂ fore tarsus: segment 3 wider than long; segment 5 with long, broadly spatulate dorsal subapical bristle (Fig. 119) ... *A. strictus*

Tergite 5 with large yellowish median zone; ♂ fore tarsus: segment 3 not wider than long; segment 5 with dorsal subapical bristle short and simple (Fig. 118) ..... *A. fuligo*

90. Mesoscutum with prescutellar pale pruinescent zone continued forwards as a conspicuous densely pruinescent median stripe to level of humeral calli; clear zones in first posterior cell and distal half of first basal cell broadly extending to vein 3 ..... *A. nigrifacies*

Mesoscutum with median pruinescent stripe very indistinct, not appearing as a continuation of prescutellar zone; clear zones in first posterior cell and distal half of first basal cell separated from vein 3 by a narrow brownish microtrichose strip ..... *A. minax*

91. Squama rather broad (Fig. 128) produced posteriorly as a rounded lobe well behind line of attachment to thorax; abdominal tergite 1 expanding from junction with thorax, scarcely forming a petiole; submarginal cell with extensive bare zone in proximal half .... *A. apictipennis*

Squama narrower, not produced posteriorly (Figs 129, 130); tergite 1 usually forming an almost parallel-sided petiole, almost as long as wide or longer; submarginal cell entirely microtrichose or, seldom, with very narrow bare zone 92

92. Supra-alar bristle absent; scutellum yellowish with dark spots restricted to vicinity of scutellar suture; anterior notopleural bristle pale and much reduced or absent; ♂ fore tarsus: segments 2–4 dilated and depressed, each with an enlarged compressed bristle on each side, segment 5 with enlarged subterminal or dorsal, usually spatulate bristle 93

Supra-alar bristle well developed; scutellum brown, or pale with dark spots over entire dorsal surface; anterior notopleural bristle nearly as long as posterior one, black; ♂ fore tarsus (where known) slender, without enlarged compressed bristles, with segment 2 subcylindrical, without subterminal spatulate bristle on segment 5 95

93. Costal band dark brown, bounded posteriorly by vein 3 for much of its length; fore basitarsus dark brown ..... *A. costalis*

Costal band pale yellowish, not sharply bounded by vein 3; fore basitarsus largely fulvous 94

94. First basal cell with large area of microtrichia in distal part; ♂ fore tarsus: distal segments variegated yellow and brown, segments 2 to 4 each with enlarged posterior bristle narrowly falcate, claw-like ..... *A. polyonychus*

First basal cell bare, except for few microtrichia close to veins; ♂ fore tarsus: 3 distal segments almost entirely black, segments 2 to 4 each with a broadly cuneate lamelliform posterior bristle ..... *A. xyrion*

95. Anterior parts of mesopleuron and of sternopleuron devoid of pubescence-pruinescence; abdominal tergites 2, 3 and 4 with grey pruinescent anterior margins; eye of ♀ not on extension of head capsule ..... sp. 4

Mesopleuron and sternopleuron entirely pubescent-pruinescent; tergites 2–4 without pruinescent anterior margins; eye of ♀ on short extension of head capsule 96

96. A clearly limited brown cloud enclosing discal crossvein and extending slightly basad of it ..... *A. aspiciens*

No such brown cloud present 97

97. Costal band entirely pale yellow-brown; ♂ hind basitarsus depressed, broadened basally, tapering distally; ♂ hind tibia with strong apical dorsal gibbosity ..... *A. robustus*

Costal band dark brown, at least in distal part; ♂ (where known) with hind basitarsus not or only slightly broadened basally; ♂ hind tibia without or with less developed gibbosity 98

98. Costal band scarcely extending into first posterior cell except beyond level of discal crossvein 99

Costal band distinctly entering first posterior cell for entire length of cell 100

99. Anterior crossvein enclosed for its whole length in a brownish microtrichose stripe; ♂ hind tibia without dorsal apical gibbosity ..... *A. flyensis*
Anterior crossvein without such stripe, the membrane browned only near its anterior extremity; ♂ hind tibia with dorsal apical gibbosity ..... *A. gracilis*

100. First posterior cell entirely microtrichose; first basal cell entirely or preponderantly microtrichose 101
First posterior cell with bare area near base; first basal cell almost bare except at base and along anterior margin 102

101. Second basal cell with bare zone near middle; basal section of vein 3 distinctly curved ..... *A. pexatus*
Second basal cell entirely microtrichose; basal section of vein 3 almost straight ..... sp. 2

102. ♂ eye-stalk stout, not longer than broad; ♀ with incipient eye-stalk only; face yellowish and unspotted on upper half and median part of lower half; ♂ with broad cheek stripe ..... *A. dacoides*
Eye-stalk much longer than above in each sex; other characters (at least in ♂) not entirely as above 103

103. Abdomen with conspicuous yellow markings, including a transverse pruinescent stripe on tergite 3; discal cell in vicinity of anterior crossvein entirely microtrichose; ♂ with black cheek stripe ..... sp. 3
Abdomen without transverse yellow stripe on tergite 3, with other pale markings almost restricted to lateral margins of tergites; other characters not entirely as above 104

104. Face with pair of well defined, well separated brown marks below, otherwise unmarked; mid femur fulvous, becoming brownish on about distal third or less ..... *A. stiva*
Face with pair of brown marks narrowly separated medially, breaking into spots near their margins, the irregular spots extending on to upper half of face; mid femur tawny brown, sometimes with small paler area near base ..... sp. 1

Achias albertisi Osten Sacken

Achias albertisi Osten Sacken, 1881: 85–7.–Hendel 1914*a*: 103, pl. 10, figs 175–176 (based on syntype); Hendel, 1914*b*: 210–12 (detailed description).

Material Examined

Lectotype (here designated). ♂, West New Guinea: Hatam [Arfak Mtns, Vogelkop Pen.], Sept. 1872, L. M. D'Albertis (MCG). Of the three type specimens remaining in MCG, this is the one of intermediate head width and with the surstyli visible. Another specimen carries a determination label of 'O.Sack', but no indication of type status.

Paralectotypes. 2♂, same data (MCG). The remaining two specimens of the type series, one of which Hendel may have used for his redescription, cannot now be found.

Description (male)

Hendel's redescription includes most of the distinctive specific characters. I add the following from observations of the type series. Female still unknown.

Head. Eyes rounded-oval (intermediate in shape between the subangular, oval eye of *A. kimi* and the rounded eye of *A. australis*; eye-stalks rather slender, flattened.

Thorax with the following bristles: humeral, 2 notopleurals, supra-alar, postalar, intra-alar, rather short dorsocentral, prescutellar acrostichal, 3 pairs of scutellars; scutellum subshining on apical margin only, minutely sculptured on entire dorsal surface, with rather numerous lateral hairs and some posterior marginal hairs, with pubescence near scutellar suture very sparse and inconspicuous. Hind trochanter unarmed; fore femur with fairly numerous, rather weak anteroventral and posteroventral spines on distal half, the area between these series bare, but spines giving way basally to a ventral field of numerous non-seriate strong setulae almost as long as seriate spines, with dorsal bristles undeveloped; hind tibia strongly curved, with apical posterior swelling little developed.

Abdomen. Surstylus much broadened from a little beyond base, with slender distal part curved posteriorly and slightly deflexed at apex.

Distribution

West New Guinea, Vogelkop Peninsula. Map reference 2*A* (Fig. 1).

Notes

A. albertisi resembles *A. diversifrons* and *A. meeki*, but is distinguished by the median blotch on the upper part of the facial carina and the broad dark brown stripe crossing the upper part of the parafacial which encloses a fulvous area at the summit of the parafacial.

Achias meeki, sp. nov.
(Figs 4–5*a*)

Achias diversifrons de Meijere.—Malloch, 1939: 136. Misidentification.

Material Examined

Holotype. ♂ (unique), Papua: Aroa R. [Central Province], no date, A.S.M. (BM). Meek probably obtained his specimen during his expedition to the head of the Aroa R. in 1903 (Meek 1913: 123). It bears an inscription by E.E. Austen dated 30.vi.1911, indicating it to be probably a new species of *Achias*, and a determination label as *A. diversifrons* by Malloch dated 1938.

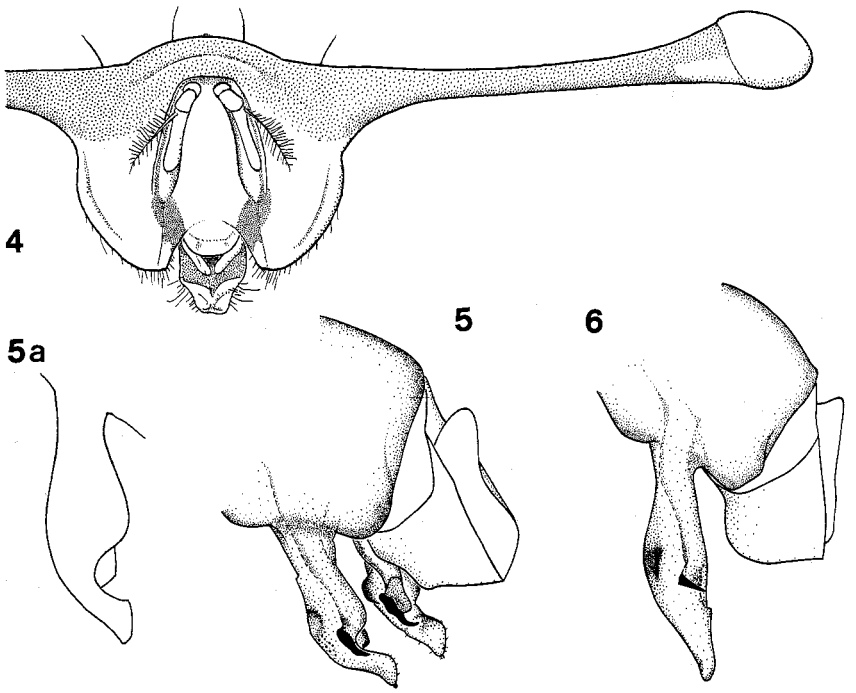
Description (male)

Coloration. Head fulvous; postfrons mottled with brown, densely so in parts, especially near anterior and posterior margins; eye-stalk dark brown with fulvous to tawny zone on distal extremity of anterior margin, becoming fulvous also where it adjoins cheek; antennal groove pale tawny, narrowly margined with brown on outer side; face with pair of widely spaced dark brown marks between antennal grooves and epistomal margin, otherwise unmarked; cheek and parafacial without dark markings. Antenna tawny tinged with brown. Prelabrum fulvous with few brown spots; palpus fulvous with broad, irregular brown mark along centre of inner surface. Ground colour of mesoscutum dark brown, darker on a broad median zone which includes paramedian non-pruinescent stripe, castaneous on sublateral non-pruinescent stripe, on a small longitudinally divided zone behind middle on median stripe, and on postalar callus; surface covered with greyish white pruinescence except on the 2 pairs of longitudinal stripes, which are minutely roughened, and on a narrow postsutural zone which includes supra-alar and postalar bristles; hairs on much of mesoscutum black, those towards lateral, anterior, and posterior margins whitish; scutellum brown-black, with tawny brown dots at bases of most marginal hairs; pleura mid-brown with some lighter brown to tawny variegation and lower part of sternopleuron tawny, the whole with covering of translucent whitish pubescence-pruinescence. Fore coxa dark brown with tawny mark near base anteriorly; other coxae tawny with brown markings; fore femur tawny, more brownish on dorsal surface, with large distoventral dark brown zone; other femora fulvous with distoventral brown zone; tibiae brown, mid and hind ones more tawny brown on central part (perhaps faded); tarsi dark brown. Wing hyaline with continuous brown costal band filling area anterior to vein 2 and its basal connections, filling distal third of submarginal cell, spilling over into first posterior cell beyond level of discal crossvein and reaching vein 4 at wing apex; stigmatal stripe well developed to and discontinued at vein 4, very broad in submarginal cell; squama buff-white. Haltere buff with brown capitellum. Abdomen dark brown with blue-green to purple reflections; tergite 1 and part of tergite 2 tawny.

Head with eye-stalks long, moderately slender, depressed, lying in the one transverse straight line; eye, in anterior aspect, somewhat depressed, oval, rounded at outer extremity; inner and outer vertical bristles well developed. Palpus rather narrow.

Thorax rather stout; mesoscutum almost as long as wide; scutellum somewhat convex, a little longer than a semicircle, with numerous hairs on lateral margins and with rather

dense pubescence on anterior margin except on median line, its entire dorsal surface minutely roughened; the following thoracic bristles all strongly developed: humeral, 1 + 1 notopleurals, supra-alar, postalar, intra-alar, dorsocentral, prescutellar acrostichal, 3 pairs of scutellars. Hind trochanter unmodified, with rather dense short hairs; fore femur with very short, scarcely spinescent anteroventral and posteroventral bristles on distal part; ventral bristles on other femora little developed except for some distinct slightly spinescent anteroventral bristles near apex of hind femur; fore tarsus with all segments strongly depressed; length/breadth for segment 1 = 3·0, for segment 2 = 1·2, for segment 3 = 0·8, for segment 4 = 0·7, for segment 5 = 1·0; other tarsi rather broad but somewhat less depressed. Wing quite narrowly rounded at apex; distal section of vein 4 arched, with very slight forward curvature at apex; cell-4 index = 0·61; entire brown costal band microtrichose; submarginal cell bare on most of area basad of stigmatal band, beyond stigmatal band microtrichose except on small area next to that band; first basal cell almost bare except at basal extremity, along vein 3 and its stem on basal half of cell, and on stigmatal band; basal half of discal cell bare, except towards middle; third posterior cell bare at base and along part of vein 6, with rather densely microtrichose ridge near vein 6; alula almost entirely microtrichose; squama large.



Figs 4–6. *Achias meeki*: *4*, head (♂); *5*, epandrium, oblique lateral view; *5a*, surstylus, lateral view. *Achias diversifrons*: *6*, epandrium, lateral view.

Abdomen rather broad from near base; tergite 2 with bare zone on each side at posterior margin; tergite 3 with corresponding bare zone on each side at anterior margin; tergite 5 about 2·8 × as long as tergite 4. Male postabdomen: outer surstylus with basal section expanding gradually from just beyond origin and becoming broad before contracting rapidly into the relatively slender posteriorly curved distal section, which has a deep bight in posterior side before the almost longitudinally truncate apex; a rounded boss present on inner surface of outer surstylus just before origin of distal section; aedeagus with preglans short and obliquely divided off from stipe; glans rather elongate, curved, abruptly narrowed at base; each filament with a high sclerotised lamallate ridge at base, with membranous margin beyond this and slight expansion at apex, about twice as long as glans.

Dimensions. Total length 9·0 mm; width of head 14·7 mm; length of thorax 4·6 mm; length of wing 10·2 mm; length of glans of aedeagus 1·3 mm.

Distribution

Papua, Central Province. Map reference *9E* (Fig. 1).

Notes

A. meeki is very similar in most characters to *A. diversifrons*, but the genitalic characters leave no doubt of its distinctness. See under that species for detailed comparison.

Achias diversifrons de Meijere
(Fig. 6)

Achias diversifrons de Meijere, 1913: 371–2.—Hendel, 1914*b*: 214.
Not *Achias diversifrons*.—Malloch, 1939: 136 (misidentification, see under *A. meeki*).

Material Examined

Lectotype (here designated). ♂, West New Guinea: Heuvelbivak [Lorentz or Noord R.], 1.xi.1909, H.A.L. (AMST). This is the specimen previously labelled 'Type'.

Paralectotypes. 4♂, 3♀, same data (AMST, AM).

Other material. 1♂, 1♀, 'Holl. Nieuw Guinea, Lorentz' (AMST). Perhaps not types but probably more or less topotypical.

Description

Very similar to *A. meeki* in most characters, so that only points of difference are noted below.

Coloration. Black cheek stripe present only in female. Palpus tawny. Mesoscutum with ground colour of broad central zone, including paramedian and all but posterior extremity of sublateral non-pruinescent stripes, black; scutellum with paler dots barely discernible. Fore femur deep reddish brown to dark brown, broadly blackish distally; other femora approximately as in *A. meeki*. Wing markings approximately as in *A. meeki* but approximately distal half of submarginal cell brown.

Head of variable shape in male; eye-stalk in male quite long and slender, or almost absent as in female; eye, in stalk-eyed male, more compact and rounded, and less depressed than in *A. meeki*.

Thorax. Scutellum very convex and rounded in outline; dorsocentral bristle sometimes weaker than in *A. meeki*. Fore tarsus narrower and less depressed than in *A. meeki*; length/breadth for segment 1 = 4·2, for segment 2 = 1·7, for segment 3 = 1·0, for segment 4 = 0·8. Wing a little less narrowed at apex than in *A. meeki*; cell-4 index = 0·61; first basal cell with patch of rather numerous microtrichia in distal part before stigmatal band; discal cell with more restricted bare basal zone than in *A. meeki*.

Abdomen. Tergite 5 about 2·6 × as long as tergite 4. Male postabdomen: distal section of outer surstylus not much contracted from near origin, subtriangular, almost straight, with no visible bight on posterior side in lateral aspect; preglans longer than in *A. meeki*; glans straight, not noticeably narrowed at basal end; each filament without basal ridge, slender apically, more than twice as long as glans.

Dimensions (male paralectotype in AM). Total length 9·3 mm; width of head 10·9 mm; length of thorax 4·4 mm; length of wing 9·7 mm; length of glans of aedeagus 0·78 mm. For the males of the type series, de Meijere gives the range for distance between apices of eye-stalks (i.e. width of head without eyes) as 4–14 mm. I did not check these measurements when examining the type series.

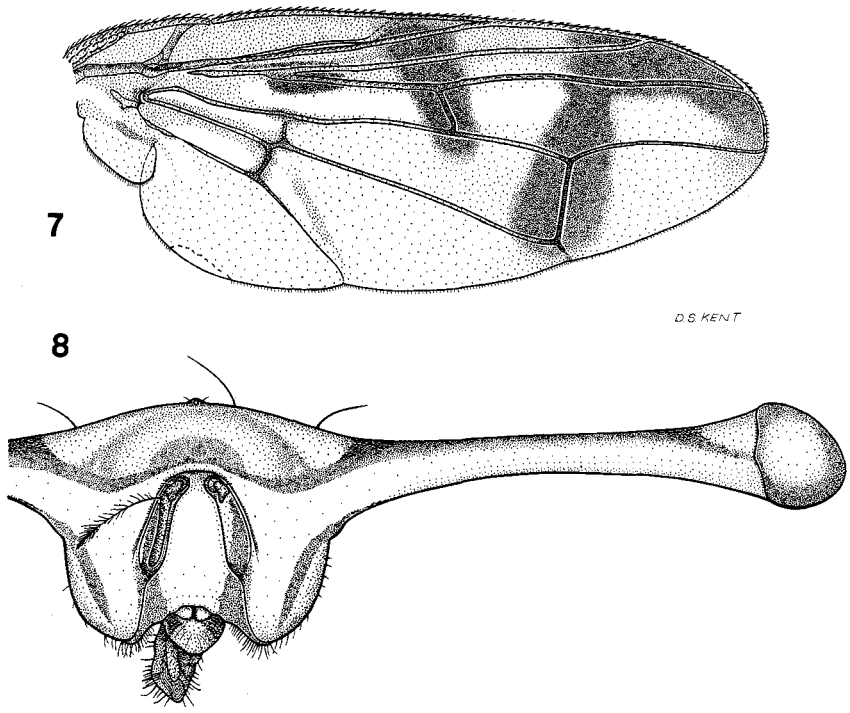
Distribution

Southern West New Guinea, Lorentz River. Map reference 5*C* (Fig. 1).

Notes

Apart from the male genitalia, the differences from *A. meeki* are small. *A. diversifrons* is distinguished by having black instead of red brown longitudinal stripes on the mesoscutum, the fore tarsus narrower, the distal section of the outer surstylus quite differently shaped (cf. Figs 5, 6), the glans significantly shorter, and the terminal filaments quite lacking the basal lamellate ridges seen in *A. meeki*. No doubt Malloch would not have confused the two species if he had had the opportunity to compare the genitalia.

Hendel believed the female specimens of de Meijere (which he did not examine) to belong to a different species from the males on account of the presence of the cheek stripe in the former. However, this form of sexual dimorphism is quite common in the genus, and there is no reasonable doubt that the type series is homogeneous.



Figs 7, 8. *Achias additus*: *7*, wing (♀); *8*, head (♂).

Achias additus sp. nov.
(Figs 7, 8)

Material Examined

Holotype. ♀, Louisiade Group: Mt Riu, Tagula I., 7.iii.1979, W.C. and B.H. Gagne (AM). Right wing on slide.

Paratypes. 1♂, 1♀, same data (AM, FRIL). Further material with similar data reported to be in FRIL.

Description

Coloration. Head orange-fulvous; postfrons with transverse anterior and posterior brown stripe, the anterior one sometimes interrupted medially but extending to eye margin in both sexes; face with pair of well-separated dark brown marks connecting each antennal groove to epistomal margin; blackish cheek stripe present in both sexes, in male extending a short distance on to ventral surface of eye-stalk. Antenna tawny. Prelabrum pale fulvous, brownish at sides; palpus orange-fulvous. Ground colour of thorax dark brown to black; mesoscutum with general covering of ochraceous pubescence-pruinescence and 4 non-pruinescent but minutely roughened black stripes which do not reach scutellar suture, those of each side separated by a slightly narrower pruinescent stripe, but fused anteriorly; paramedian stripes separated by a much broader median pruinescent stripe; hairs on mesoscutum black on much of surface, pale yellowish laterally, towards anterior and posterior margins, and on part of median stripe; scutellum black or dark brown, not much shining dorsally, glossy ventrally, with dense yellowish pubescence next to scutellar suture and thinner pubescence extending to centre of dorsal surface; pleura with general covering of pale yellowish to greyish pubescence-pruinescence. Coxae brown; femora orange fulvous, fore femur slightly browned apically; fore tibia blackish brown; other tibiae reddish brown with darker markings; fore tarsus black; other tarsi reddish brown to black. Wing membrane with yellow tinge least noticeable in a preapical part of first posterior cell, in second posterior cell and along posterior margin, quite intensely yellow in front of vein 3 and its basal stems and in parts of first basal cell in male, with yellow pigment less developed in female; vicinity of humeral crossvein and of fork of veins 2 and 3 with variable brownish cloud; brown stigmatal band rather broad, extending from costa to behind vein 4, darkest and most sharply defined near anterior crossvein; a broad, complete brown discal band present; a broad costal band extending only from discal band to apex, filling only a small apical part of marginal cell but extending behind vein 3 throughout and slightly behind vein 4 at apex; squama orange-fulvous in male, pale buff in female. Haltere fulvous, with dark brown capitellum. Abdomen brown-black with dull greenish or bluish reflections; hairs mostly black except for the longer yellowish ones on tergites 1 and 2.

Head broad in both sexes, in male with long, rather slender, depressed eye-stalks; eye of male rounded-oval, somewhat depressed; eyes of female rounded, very prominent (more so than in male of *A. sackeni*), but not stalked; inner and outer vertical bristles long and strong. Arista relatively sparsely haired to middle, more densely haired on apical third to form a loose brush.

Thorax moderately stout; mesoscutum almost as long as wide; scutellum short and broadly rounded, strongly convex, with moderate number of hairs restricted to lateral surfaces, the following thoracic bristles present; strong humeral, 1 + 1 notopleurals, supra-alar, postalar, strong intra-alar, weak to vestigial dorsocentral, strong prescutellar acrostichal, 3 pairs of scutellars. Hind trochanter with hairs not particularly dense, all much shorter than diameter of trochanter; femora all with rather strong posteroventral and anteroventral spines, the posteroventral ones of fore femur strongest; fore tarsus broad and depressed, especially so in male in which sex length/breadth for segment 1 = 3·4, for segment 2 = 1·0, for segment 3 = 0·7, for segment 4 = 0·5, for segment 5 = 0·7; other tarsi also somewhat broad and depressed except for segment 1 of mid tarsus. Wing with distal section of vein 4 rather strongly arched, then slightly curved forwards towards apex; cell-4 index = 0·63; membrane microtrichose except as follows: marginal cell bare on at most very small linear areas near base; submarginal cell in figured female (holotype) with bare zone between the narrowly microtrichose base and stigmatal band, this zone reduced or absent in other specimens; first basal cell with variable bare zone near middle; first posterior cell without bare zone; second basal cell variably microtrichose at distal extremity; discal cell without bare areas or almost so; third posterior cell with small variable basal bare area near vein 6; fourth posterior cell with small bare zone divided in 2; anal cell bare except along anterior and distal margins; alula without bare zone.

Abdomen rather broad; tergite 2 with bare or sparsely haired zone on posterior margin on each side of the densely haired median part; other tergites without bare zones but tergite

3 more sparsely haired laterally than on median part; tergite 5 of male about 1·2 × as long as tergite 4; sternite 5 very deeply divided longitudinally. Male postabdomen: surstyli not visible; stipe of aedeagus very broadly compressed, with median longitudinal groove containing setulae on a small part of its length; preglans broad, separated from stipe by an obvious constriction; glans stout, subcylindrical; terminal filament rather stout, slightly thickened apically, *c.* 1·5 × as long as glans.

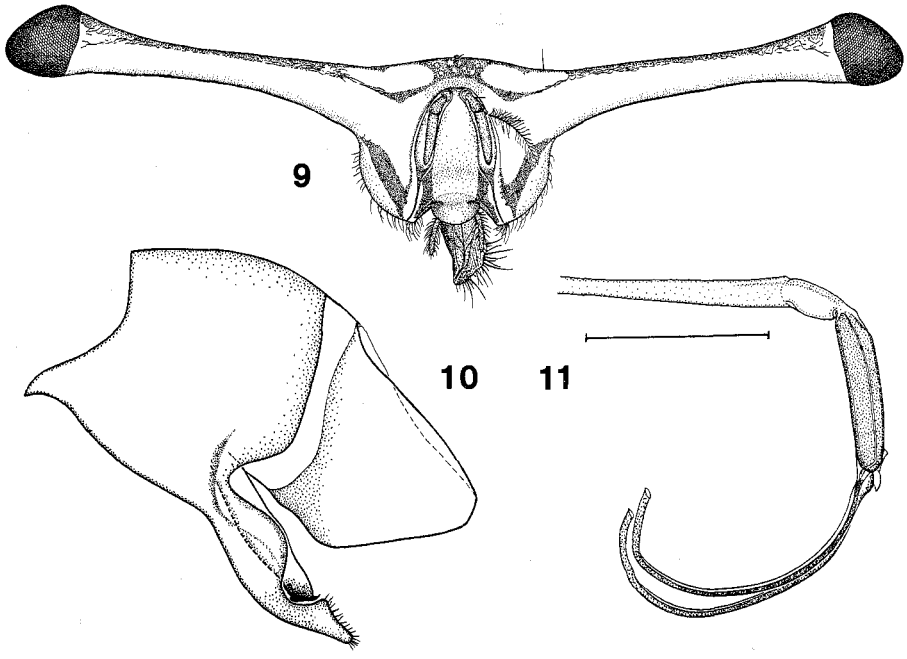
Dimensions. Total length: male, 10·0 mm; female, 6·6–7·4 mm. Width of head: male, 13·7 mm; female, 3·9–4·0 mm. Length of thorax: male, 4·5 mm; female, 3·1–3·7 mm. Length of wing: male, 9·9 mm; female, 6·5–7·7 mm. Length of glans of aedeagus: 0·65 mm.

Distribution

Louisiade Group, Tagula Island. Map reference 12*F* (Fig. 1).

Habitat

Lowland rainforest, all specimens taken at mercury vapour light.



Figs 9–11. *Achias furcatus* (♂, Numfoor): *9*, head; *10*, epandrium; *11*, distal part of aedeagus. Scale = 1 mm.

Notes

A. additus most resembles the geographically remote *A. furcatus*, but does not appear near that species in the key because the brown costal band is discontinued between the stigmatal and discal cross-bands. It also differs from *A. furcatus* in having the paramedian

black stripe of the mesoscutum separated from the sublateral one by a pruinescent stripe, in the broader fore tarsus, and in the shorter tergite 5 of the male. There is also some resemblance to *A. khooi*, but *A. additus* differs in having two separate dark marks on the face, the second costal cell entirely microtrichose, the discal wing band continuous with the apical costal mark, the fore femur with strong posteroventral spines, and the fore tarsus broader and darker.

Achias furcatus Hendel
(Figs 9–11)

Achias furcatus Hendel, 1914*a*: 103 (no description), pl. 10, fig. 177 (wing).—Hendel, 1914*b*: 216–18 (description).

Material Examined

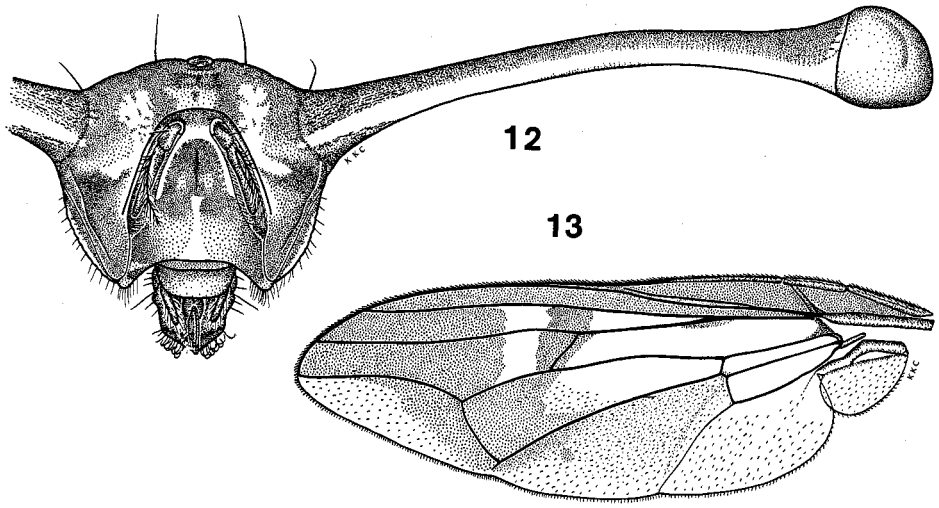
Holotype. ♀, West New Guinea: Roon [Run I., Geelvink Bay], no date, H. Fruhstorfer (MNM). This specimen, the fore legs of which are missing beyond the trochanters, is the basis of Hendel's figure upon which the original availability of the name depends. It is thus the only type specimen.

Other material. 1♂, Mafor [i.e. Numfoor or Noemfoör I., Geelvink Bay], no date, H. Fruhstorfer (MNM). This specimen bears incorrectly a 'Typus' label.

Description

A description of both sexes has been given by Hendel and no further material is available. The species agrees with the description here given for *A. sackeni*, the most closely related species, in most characters, a comparison being given under that species. To Hendel's description I add the following.

Mesoscutum with ground colour, including entire sublateral stripe, black; sublateral stripe not distinctly separated from paramedian stripe, the intervening grey pruinescent stripe obsolete; greyish pruinescent postsutural area outside sublateral stripe not divided by a non-pruinescent stripe.



Figs 12, 13. *Achias nigricoxa* (♂): *12*, head; *13*, wing.

In male, hairs on hind trochanter all short, less than half as long as diameter of trochanter; fore tarsus with length/breadth for segment 1 = 5·3, for segment 2 = 1·8. Aedeagus with slender stipe and glans; each terminal filament more than twice as long as glans.

Dimensions. Total length: male, 10·4 mm; female, 10·3 mm. Width of head: male, 13·2 mm; female, 5·4 mm. Length of thorax: male, 4·4 mm; female, 4·7 mm. Length of wing: male, 9·9 mm: female, 10·1 mm. Length of glans of aedeagus: 0·88 mm.

Distribution

West New Guinea, islands of Geelvink Bay. Map reference 3*A*, 3*B* (Fig. 1).

Notes

For comparative data see under *A. nigricoxa.*

Achias nigricoxa sp. nov.
(Figs 12, 13)

Material Examined

Holotype (unique). ♂, NE. New Guinea: Hotmin, nr May (Mai) R., July 1981, J. E. van S. Greve (AM).

Description (male)

Resembling *A. furcatus* and *A. sackeni*; agreeing with description given for the latter, except as indicated below. Female unknown.

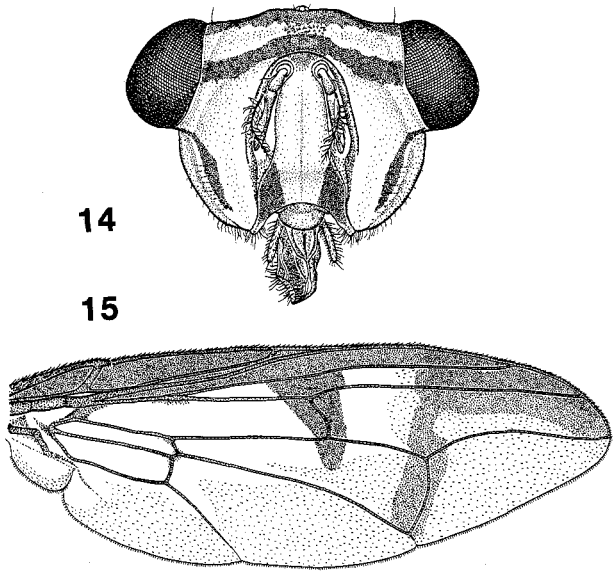
Coloration. Postfrons without distinct transverse brown bands, heavily suffused and blotched with dark brown particularly towards vertex; face dark brown, with fulvous zone between antennal bases extending narrowly along margins of carina, and fulvous median stripe on lower half, also with few small tawny marks; antennal groove pale grey pruinescent on dark brown cuticle; parafacial with large irregular brown zone in front of base of eye-stalk; cheek region dark brown, ochraceous posteriorly. Antenna with segment 1 tawny, segments 2 and 3 reddish brown. Prelabrum suffused with brown laterally; palpus brown. Ground colour of thorax mainly blackish brown, becoming black dorsally; submedian black stripes of mesoscutum distinct from median dark grey pruinescent stripe, but not very distinct from sublateral black stripe; both these stripes extending rather close to scutellar suture; lateral part of mesocutum with only 1 indistinct thinly pruinescent stripe between supra-alar and postalar bristles; humeral callus thickly grey-pruinescent. Fore coxa brown-black; other coxae reddish brown with darker markings; femora tawny with incompletely infuscated dark distoventral zones; tibiae brown, the fore and mid ones with tawny markings. Wing with first posterior cell beyond discal crossvein entirely brown, with remaining hyaline zones in this and submarginal cells smaller than in *A. sackeni*; discal band merged into a large apical brown field which does not cover marginal part of second posterior cell, but fills about distal third of discal cell, thus uniting stigmatal and discal bands within the latter cell; third posterior cell lightly shaded with brown except near margin. Abdomen dark brown with lilac-and green-tinted reflections.

Head. Eye on long stalk, subangular lateroventrally.

Thorax. Mesoscutum as wide as long; scutellum haired on entire dorsal surface; humeral bristle absent; dorsocentral bristle very weak. Hind trochanter with hairs shorter than in *A. sackeni*; femora without ventral spines, the anteroventral ones of hind femur replaced by short bristles, the other ventral spines represented at most by weak hairs; fore tarsus with length/breadth for segment 1 = 4·7, for segment 2 = 1·4, for segment 3 = 1·0, for segment 4 = 0·71, for segment 5 = 1·1. Wing: cell-4 index = 0·64; discal cell more extensively microtrichose than in *A. sackeni*; alula entirely microtrichose.

Abdomen. Tergite 5 about 1·7 × as long as tergite 4; sternite 5 apparently divided in 2 by very deep median incision. Male postabdomen: surstyli not examined; stipe of aedeagus slender, somewhat thickened distally; preglans hardly differentiated from stipe; glans (damaged) subcylindrical-fusiform, rather slender; filament slender, slightly expanded apically, *c.* 7 × as long as glans.

Dimensions. Total length 10·4 mm; width of head 20·2 mm; length of thorax 5·5 mm; length of wing 11·0 mm; length of glans of aedeagus *c.* 0·61 mm.



Figs 14, 15. *Achias sackeni* (♂): *14*, head; *15*, wing.

Distribution

North-east New Guinea, West Sepik Province. Map reference 6C (Fig. 1).

Notes

A. nigricoxa forms with *A. furcatus* and *A. sackeni* a series of species in Section 1 having a complete brown costal band and a brown zone or band completely crossing the wing at the level of the discal cell. *A. nigricoxa* differs from the other two species in the densely grey-pruinescent humeral callus, absence of ventral spines on the femora, and complete fusion of the discal and stigmatal bands in the discal cell, in addition to the characters given in the key. The aedeagus is exceedingly different in proportions and size of glans from that of *A. sackeni*, and sternite 5 is also quite different.

Achias sackeni, sp. nov.
(Figs 14, 15)

Material Examined

Holotype (unique). ♂, West New Guinea: Bokondini, 40 km N. of Baliem Valley, 1300 m, 16–23 Nov. 1961, L. W. Quate (BPB).

Description (male)

Coloration. Head fulvous; postfrons with rather broad, complete upper transverse dark brown band covering ocelli, and a narrower anterior band which becomes paler and more irregular on median section, a few irregular brown flecks present medially between the 2 bands; face with pair of widely separated well-defined dark brown marks; antennal groove suffused with light brown on lower part; facial ridge brownish for most of its length; parafacial unmarked; dark brown cheek stripe narrow but distinct. Antenna tawny; segment 3, beyond base, brownish. Prelabrum fulvous; palpus tawny. Ground colour of thorax deep reddish brown, becoming black on intradorsocentral area of mesoscutum except posteriorly; mesoscutum with paramedian stripes broad, black, minutely roughened, not nearly reaching scutellar suture, separated by a broad median greyish pruinescent stripe, and separated from sublateral stripes by a narrow pruinescent stripe except towards anterior extremities; sublateral stripe black before suture, reddish brown behind; 2 short separate additional non-pruinescent stripes present behind suture on each side, the outermost containing supra-alar bristle; humeral callus somewhat shining, reddish brown, without obvious pruinescence; hairs of mesoscutum almost all yellowish; pleura with whitish pruinescence, pubescence, and hairing. Coxae reddish brown; fore coxa with extensive blackish markings; fore femur reddish brown, blackish distoventrally; mid and hind tibiae fulvous, becoming brown on about distal $\frac{2}{5}$; tibiae reddish brown with black markings; tarsi almost entirely black. Wing clear with heavy complete brown costal band limited posteriorly by vein 2, except beyond discal band where it extends broadly into first posterior cell and to vein 4 near apex; stigmatal band well developed, terminating near middle of discal cell; discal band well developed covering discal crossvein, and rather narrowly connected to costal band in first posterior cell; squama pale buff. Haltere tawny with brownish capitellum. Abdomen reddish brown, with faintly green-tinted reflections.

Head. Eyes prominent, not at all stalked, rather rounded; outer vertical bristle short but rather strong; inner vertical probably similar but broken.

Thorax rather robust; mesoscutum about as broad as long, with numerous hairs on most of surface; scutellum broadly rounded, convex but with slight dorsal flattening, minutely roughened dorsally, without pubescence, with 3 pairs of bristles on very prominent sockets, the anterior pair much the shortest; scutellar hairs moderately fine, whitish, restricted to lateral parts; thorax also with the following bristles: a weak, pale humeral, 1 + 1 notopleurals, supra-alar, postalar, intra-alar, a rather short dorsocentral, no prescutellar acrostichal. Hind trochanter with hairs moderately long, shorter than diameter of trochanter, but some fully half that length; all femora with numerous unusually short, but strong ventral spines, about 14 anteroventral and 18 posteroventral on fore femur; hind femur almost straight basally, slightly curving upwards from near middle, without basal ventral hair tuft, with moderately long pale and black dorsal hairs on distal half; hind tibia curved; fore tarsus rather stout (only segments 1 and 2 remaining), with segment 1 about 4·0 × as long as wide, segment 2 1·3 × as long as wide; hind basitarsus slightly shorter but of similar proportions. Wing: cell-4 index = 0·61; membrane microtrichose with following areas bare: clear area in base of submarginal cell, clear window beyond stigmatal band in submarginal cell, most of first basal cell except at base, on stigmatal band, and very narrowly on parts of its anterior margin, in discal cell much of basal half, an extension into discal part posteriorly and an isolated patch anteriorly; also second basal and anal cells and areas in posterior cells (other than first) bare as usual; alula microtrichose only on a broad marginal zone, i.e. no more than half its area.

Abdomen rather broad, with general hairing on tergites, but broad paramedian areas on tergite 3 and adjacent margin of tergite 2 sparsely haired; tergite 5 about 2·0 × as long as tergite 4; sternite 5 broad with relatively shallow median incision posteriorly. Male postabdomen: stipe of aedeagus very broad; glans stout, slightly curved; terminal filaments about 0·8 × as long as glans.

Dimensions. Total length 10·9 mm; width of head 4·7 mm; length of thorax 4·7 mm; length of wing 10·5 mm; length of glans of aedeagus 1·6 mm.

Distribution

West New Guinea, central highlands. Map reference 5*B* (Fig. 1).

Notes

The most closely related species are *A. furcatus* and *A. nigricoxa*. *A. sackeni* differs from *A. nigrocoxa* in the characters given in the key and also from the only known male of *A. furcatus* (not topotypical) in the much thicker fore tarsus, longer hairs on the hind trochanter, very different proportions of the parts of the aedeagus, and lack of eye-stalks. Though development of eye-stalks is often variable within a species, the male specimen of *A. sackeni* is slightly larger in body size than that of *A. furcatus* and is quite without eye-stalks, while the latter has very long slender eye-stalks (cf. Figs 9 and 14). Even the female of *A. furcatus* has the eyes more distinctly stalked than the male of *A. sackeni*. In view of the general allometric trend in eye-stalk development, it is improbable that the populations from which the two male examples were drawn are similar in respect to length of eye-stalk. *A. sackeni* differs from *A. nigricoxa* as indicated under that species.

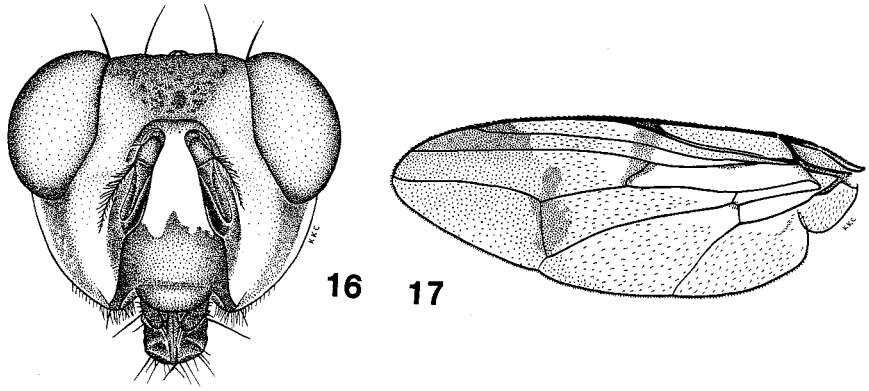
Achias khooi sp. nov.
(Figs 16, 17)

Material Examined

Holotype (unique). ♀, NE. New Guinea, Baiyer R., 1200 m, 4–8.viii.1982, S.S. (BPB).

Description (female)

Agreeing with description here given for *A. kurandanus*, except as indicated below. Male unknown.



Figs 16, 17. *Achias khooi* (♀): *16*, head; *17*, wing.

Coloration. Postfrons with fine brown mottling on posterior part, with tawny suffusion and brown blotching on broad anterior median zone; face brown on about lower half, the upper limit of the brown zone very irregular; facial ridges tawny; antennal grooves reddish brown; cheek stripe long and broad, light brown. Prelabrum tawny brown; palpus reddish brown, darker distally. Mesoscutum reddish brown, unspotted, with pruinescence and striping approximately as in *A. kurandanus*; scutellum reddish brown, darker dorsally; pleura tawny, without spotting. Fore femur tawny, tinged with brown distoventrally; other

femora entirely fulvous; tibiae tawny brown; tarsi reddish brown, fore tarsus darker than others. Much of wing membrane faintly yellowish, tinged with brown apically from about level of discal crossvein; costal cells more strongly yellowish, darkest near humeral crossvein; base of marginal cell similarly yellowish; brown stigamtal band paler than in *A. kurandanus*, more nebulous and incised; discal band consisting of a brown zone surrounding discal crossvein, extending narrowly to near middle of first posterior cell; apical brown mark slightly larger than in *A. kurandanus*; squama yellowish.

Head. Eye slightly larger and less prominent than in *A. kurandanus.*

Thorax. Scutellum with short hairs on much of surface, becoming shorter and sparser medially. Hind trochanter with hairs longer than in female of *A. kurandanus*, mostly pale; femora without ventral spines, but only weak posteroventral bristles and shorter anteroventral bristles on fore femur, and weak anteroventral bristles on hind femur; fore tarsus much more slender than in female of *A. kurandanus*, more as in *A. australis*; other tarsi also slender. Wing: cell-4 index = 0·57; first costal cell entirely microtrichose; second costal cell microtrichose on almost entire length but with narrow, basally expanded bare zone along vein 1; marginal cell with substantial bare zone before stigmatal band and smaller bare to sparsely microtrichose zone just beyond it; submarginal cell with somewhat larger bare zones than in *A. kurandanus*; first basal cell without distal microtrichose spot and otherwise with microtrichose zones more restricted than in *A. kurandanus*; first posterior cell with rather large sub-basal bare zone; discal and third posterior cells with relatively large basal bare zones; squama rather narrowly rounded posteriorly.

Dimensions: Total length 8·1 mm; width of head 3·2 mm; length of thorax 3·5 mm; length of wing 9·6 mm.

Distribution

North-east New Guinea, Western Highlands. Map reference 8*C* (Fig. 1).

Notes

A. khooi is the only species in Section 1 with the following combination of characters: second costal cell microtrichose over most of its length but enclosing a bare zone; an isolated dark mark surrounding discal crossvein, costal margin without a continuous dark band. Other distinctive characters include the infuscated lower half of the face, the slender tarsi (perhaps broader in the male), and the absence of thickened ventral spines on the femora.

Achias brachyophthalmus Walker

Achias brachyophthalma Walker, 1865*a*: 119.

Achias brachyophthalmus.– Hendel, 1914*b*: 218. Not *Achias brachyophthalmus* Malloch, 1939: 135–6 (see under *A. kurandanus*).

Material Examined

Holotype (unique). ♀ 'N.' = New Guinea: probably nr Dorey (Manokwari), Mar.–July 1858, A.R.W. (BM, 68.4).

Description (male)

The following description is an adaptation of my notes on the holotype.

Coloration. Head fulvous; postfrons with blackish spotting well developed on upper section towards vertex but none elsewhere; face creamy with dark brown mark between each antennal groove and epistomal margin; antennal groove tawny; cheek stripe extending from eye to middle of cheek area. Prelabrum pale yellowish; palp fulvous. Mesoscutum not

shining, largely thickly pubescent-pruinescent, pale fawn; non-pruinescent stripes reddish tawny, rather narrow and well separated except that paramedian and sublateral ones of each side fuse at anterior extremities, the paramedian ones separated from each other by nearly twice width of each, discontinued at slightly less than half distance between transverse and scutellar sutures; scutellum black, finely densely pitted and almost non-shining; pleura entirely pale yellowish; all thoracic hairs pale. Femora yellowish, only very slightly browned at apex dorsally; mid tibia entirely brown; other tibiae tawny with brown markings; tarsi black to brown-black. Wing with both costal cells brownish yellow; base of first basal cell brownish; a brown costal band from stigmatal section of subcostal cell to wing apex, terminating at vein 4, also extending to base of marginal cell, but more or less interrupted for a short distance immediately beyond subcostal cell by a yellowish area; anterior crossvein outlined with brown mainly towards anterior end; discal crossvein unmarked. Abdomen dull fulvous, distal margins of tergites 2–4 dark brown, that of tergite 5 less distinctly browned.

Head. Eye not very prominent. Palp narrow.

Thorax with the following bristles: humeral, 1 + 1 notopleurals, supra-alar, postalar, intra-alar, dorsocentral, 4 pairs of scutellars; prescutellar acrostichal absent; scutellum haired on margins, especially laterally, without trace of pubescence dorsally towards scutellar suture. Fore femur with 5 or 6 very strong posteroventral spines on distal half and a few much weaker ones, with series of much smaller anteroventral spines; mid femur on distal half with series of small, thick anteroventral spines and larger, thicker posteroventral spines; hind femur with weaker spines ventrally, only a few posteroventral and anteroventral ones better developed. Wing with distal section of vein 4 distinctly but not strongly arcuate, becoming almost straight on apical half; discal crossvein transverse, slightly convexly curved.

Abdomen with tergite 5 very slightly longer than tergite 4.

Distribution

West New Guinea, Vogelkop District. Map reference 2*A* (Fig. 1).

Notes

A. brachyophthalmus is related to *A. attrahens* from which it differs in having the non-pruinescent stripes of the mesoscutum reddish tawny and quite narrow, in the long, strong posteroventral spines of the fore femur, and in the absence of the prescutellar acrostichal bristles. In combination these characters will also serve to separate it from other related species such as *A. straatmani*, *A. delectans* and *A. microcephalus*. Malloch confused the species with *A. kurandanus*, which is restricted to Queensland and has the dark costal band extensively interrupted beyond the stigmatal band, the mesoscutum less thickly pruinescent, and the prescutellar acrostichal bristle present.

Achias delectans (Walker)

Lamprogaster delectans Walker, 1859: 111–12.—Hendel, 1914*a*: 108.
Achias delectans.—Evenhuis, 1989: 485.

Material Examined

Holotype (unique). ♀, Aru, Jan.–June 1857, A.R.W. (BM, 68/4). This also bears a later label: 'Achias (Lamprogaster) delectans Walk. E.E.A(usten)', the parentheses evidently indicating the former generic combination.

Descriptive Note

I have made detailed observations and notes on the holotype. The only character I have found that distinguishes it from all available specimens of *A. attrahens* is the castaneous or red-brown colour of the non-pruinescent stripes of the mesoscutum, which are predominantly black in *A. attrahens*. It remains to be seen if this is constant in the Aru population. I allow the species to stand provisionally.

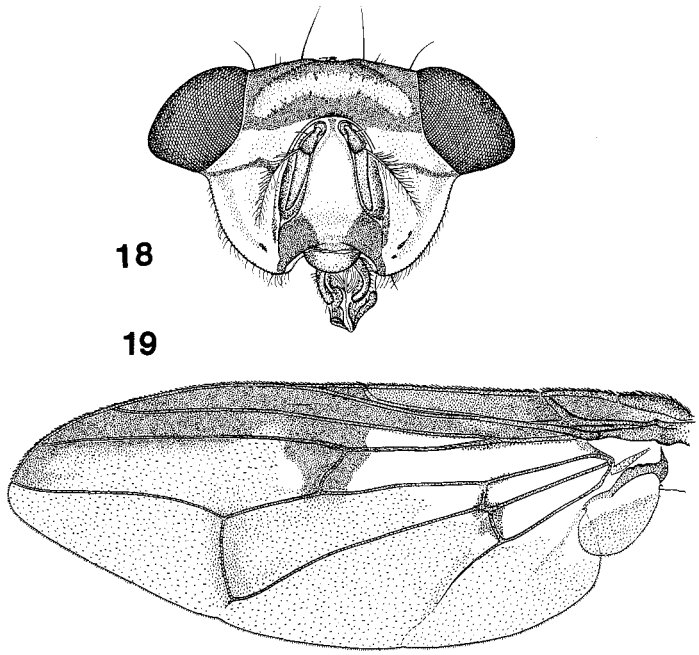
Distribution

Aru Islands. Map reference 3*C* (Fig. 1).

Achias straatmani, sp. nov.
(Figs 18, 19)

Material Examined

Holotype (unique). ♂, NE. New Guinea: Ambunti, Sepik R., 150 m, 7.v.1963, R.S. (BPB). As the left wing was crumpled, it has been mounted on a slide. The thorax and abdomen are slightly damaged.



Figs 18, 19. *Achias straatmani* (♂): *18*, head, *19*, wing.

Description (male)

Resembling *A. attrahens* and agreeing with description given for that species except as indicated below. Female unknown.

Coloration. Postfrons with largely separate, slightly dissected anterior and posterior dark brown transverse bands; paired dark brown facial spots large but well separated; a narrow horizontal stripe extending from near lowest point of eye margin forward on to

parafacial but not reaching ptilinal suture; cheek stripe absent, but 1 or 2 brown dots present on lower anterior part of cheek. Ground colour of mesoscutum black, becoming brown-black on lateral margins; pruinescent markings of mesoscutum as in *A. attrahens* but stripe separating paramedian and sublateral black stripes narrower, though quite distinct; scutellum brown-black; pleura dark reddish brown with whitish pubescence-pruinescence. Fore coxa dark brown; fore femur tawny, brown on ventral surface; other femora fulvous with brown distoventral zone not quite reaching to apex; tibiae deep reddish brown with darker brown markings. Wing with first costal cell and base of second costal cell dark brown; greater part of second costal cell yellowish brown; brown costal band broad beyond stigmatal band where it nearly fills submarginal cell; stigmatal band extending a short distance into discal cell; a brown cloud surrounding discal crossvein and extending into first posterior cell; brown spot on anal crossvein much more developed than in allied species. Abdomen dark brown with reflections not distinctly coloured.

Head rather broad; eye not stalked, but much more prominent and subangular than in *A. attrahens*.

Thorax. Scutellum haired on entire dorsal surface except near scutellar suture where it is pubescent. Fore femur with several posteroventral spines quite long; hind femur with both anteroventral and posteroventral spines well developed; fore tibia somewhat depressed, but with segment 1 only slightly so, length/breadth for segment 1 = 4·2, for segment 2 = 1·6, for segment 3 = 1·0, for segment 4 = 0·7, for segment 5 = 1·2. Wing: cell-4 index = 0·62; anterior crossvein less oblique than in *A. attrahens*; submarginal cell entirely microtrichose beyond stigmatal band.

Abdomen. Tergite 5 about 3·5 × as long as tergite 4. Male postabdomen: epandrium and surstyli not extracted; aedeagus with stipe slender, weakly pigmented and sclerotised; preglans slender but apparently little differentiated from stipe; glans rather short, subcylindrical, with pair of large, unequal membranous wing-like lobes at distal end, each with a sclerotised strut; terminal filament rather slender, tapering finely at distal end, with broad membranous margin except towards each extremity.

Dimensions. Total length 7·7 mm; width of head 4·0 mm; length of thorax 4·0 mm; length of wing 7·8 mm; length of glans of aedeagus 0·66 mm.

Distribution

North-east New Guinea, lowlands of East Sepik Province. Map reference 7*C* (Fig. 1).

Notes

A. straatmani resembles *A. attrahens* but differs in the more extensive brown markings on the wing, the more extensively haired scutellum, and very different structure of the aedeagus as detailed above. There is also evidence of relationship to *A. meijerei*, but *A. straatmani* has quite different cephalic markings and the wing markings, particularly the costal band, developed to a greater degree.

Achias microcephalus Hendel

Achias microcephalus Hendel, 1914*a*: 104, *nom. nud.*—Hendel, 1914*b*: 215–16, description of mixed series.

Material Examined

Lectotype (here designated). ♂, New Britain: Kinigunang, Neu Pommern [Kinegunan, nr Kokopo, Gazelle Pen.], no date, C. Ribbe (MNM). The paralectotype ♀ (Simbang, Huon Gulf, L.B., MNM) is referable to *A. attrahens*.

Other material. **East New Britain:** 1♀, Mt Sinewit, Gazelle Pen., 900 m, Nov. 1962, R.S. (BPB). **West New Britain:** 20♂, 33♀, Tamari Ck, between Talasea and Kimbe (forest), 6.vii.1986, J.W.I. (AM, BM, BPB, FRIL, KONE, USNM).

Description

Agreeing largely with description given for *A. attrahens*; differing mainly as indicated below.

Coloration. Postfrons with 2 transverse blackish bands complete; paired blackish brown facial marks large but widely separated; blackish cheek stripe well developed in both sexes, removed from eye in male, touching eye in female. Palpus brown. Thorax with ground colour almost completely black, including that of lateral margins of mesoscutum; mesoscutum with paramedian black stripe fused with sublateral black stripe, i.e. the narrow pruinescent stripe, which separates them in *A. attrahens*, absent. Fore coxa brown-black; fore femur fulvous, broadly brownish distoventrally; mid and hind femora deep fulvous, narrowly browned at extreme apices only; tibiae dark brown with tawny markings. Wing marked as in *A. attrahens*, but brown cloud on discal crossvein extending for full length of crossvein; squama fulvous. Abdomen dark brown with coppery purple reflections.

Head structurally as described for *A. attrahens*.

Thorax. Fore tarsus depressed, slightly shorter than tibia; in male length/breadth for segment 1 = 3·3, for segment 2 = 1·2, for segment 3 = 0·88, for segment 4 = 0·70, for segment 5 = 1·1. Wing: cell-4 index = 0·62.

Abdomen. Tergite 5 of male at least as long as combined lengths of tergites 3 and 4. Male postabdomen as described for *A. attrahens*; filament *c.* 5 × as long as glans.

Dimensions. Total length: male, 9·2 mm; female, 9·8 mm. Width of head: male, 4·4 mm; female, 3·9 mm. Length of thorax: male, 4·3 mm; female, 4·6 mm. Length of wing: male, 7·1 mm; female, 9·2 mm. Length of glans of aedeagus: 0·78–0·90 mm.

Distribution

New Britain, where it is the only known representative of the genus. Map reference 11*C*, 12*C* (Fig. 1).

Notes

A. microcephalus is so similar to *A. attrahens* that Hendel failed to distinguish the two species. *A. microcephalus* apparently differs consistently in its darker thorax, complete fusion of the paramedian and sublateral black stripes on each side of the mesoscutum, the brown cloud covering the full length of the discal crossvein, the absence of brown zones on the mid and hind femora, and the presence of a dark cheek stripe in the male.

Achias attrahens (Walker)
(Fig. 2)

Mystia attrahens Walker, 1861: 250.
Achias attrahens.—McAlpine, 1973: 31, 188.

Material Examined

Holotype. ♀, West New Guinea: Dor = Dorey (Manokwari), Mar.–July 1858, A.R.W. (BM).

Other material. **North-east New Guinea:** 1♀, Maprik, Oct. 1957, J.L.G. (BPB); 1♀, Kurum, Karkar I., N.L.K., Aug. 1968 (BPB); 1♀ (paralectotype of *A. microcephalus* Hendel), Simbang, Huon Gulf, 1898, L.B. (WM); 1♀, Lae, Nov. 1961, J.S. (BPB); 1♂, 1♀, Stony Logging Area nr Bulolo, Feb. 1979, H.R. (FRIL); 3♂, 4♀, Garaina, southern Morobe Province, Jan. 1968, J.S. and M.S. **Papua:** 1♀, Popondetta, July. 1968, P. Coleman (BPB); 1♂, Embala R. to Ajeka, nr Kumusi R., Nov. 1963, D.K.M. (AM); 1♀, Aroana Estate, Aroa R., Nov. 1963, D.K.M. (AM); 1♀, Doa Estate, Aroa R. Dec. 1963, D.K.M. (AM); 1♂, 4♀, Brown R., nr Port Moresby, Oct. 1960–1963, D.K.M., J.L.G. (AM, BPB); 3♂, 2♀, 5 km NW. of Brown R. bridge, 29.xii.1985, J.W.I. (AM, KONE); 1♀, Wakaiuna, Sewa Bay, Normanby I., Nov. 1956, W.W.B. (BPB).

Description

Coloration. Head fulvous; postfrons typically with 2 transverse blackish bands which may show a tendency to beak into spots, sometimes postfrons with dark mottling and suffusion only; antennal groove brown with grey pruinescence; face with pair of usually widely separated dark brown marks connecting each antennal groove to epistomal margin, sometimes these brown marks larger and narrowly joined on centre of epistomal margin; parafacial unmarked; blackish cheek stripe well developed in female, absent in male. Antenna tawny; segment 3 usually more brownish. Prelabrum fulvous, often becoming tawny laterally; palpus tawny, sometimes partly suffused with brown. Mesoscutum densely yellow-grey pruinescent with 4 rather broad coarsely granular black longitudinal stripes, each paramedian black stripe narrower than median pruinescent stripe, at least anteriorly, but more than twice as broad as the narrow pruinescent stripe which separates it from sublateral black stripe; lateral margins of mesoscutum tawny brown to dark brown with inconspicuous yellowish pubescence; scutellum dark brown to black; pleura reddish brown to dark brown, sometimes fulvous on upper part of mesopleuron and pteropleuron, with uneven covering of whitish pubescence-pruinescence. Fore coxa dark brown to blackish with some tawny marks; other coxae brown with tawny markings; fore femur reddish brown to fulvous, with variable darker areas; other femora fulvous, usually with brown distal or distoventral area; tibiae dark brown to blackish, usually with reddish brown to tawny markings; tarsi black. Wing with first costal cell pale brownish yellow, usually becoming darker at base; brown costal band extending from stigmatal section of subcostal cell to apex of vein 4, where it fades somewhat, and entirely filling marginal cell; brown stigmatal band well developed, terminating on vein 4; submarginal cell hyaline proximad of stigmatal band, with small brown mark at extreme base; brown cloud on discal crossvein not very distinct and covering only posterior part of that crossvein, sometimes absent; first basal cell narrowly yellowish brown at base and along stem of veins 2 and 3 and basal extremity of vein 3; a small brownish spot on vein 5 where it joins basal and anal crossveins; squama buff. Haltere fulvous, with brownish capitellum. Abdomen reddish brown, becoming darker posteriorly, slightly shining with reflections faintly green-tinted.

Head rather narrow for the genus though generally a little wider in male than in female; eye not stalked, convexly prominent in female, usually more gibbous or even subangularly prominent on lower part in male; inner and outer vertical bristles well developed. Palpus rather narrow.

Thorax rather stout; mesoscutum as wide as long or almost so; scutellum about twice as wide as long or slightly less wide, convex dorsally, straight or concave in outline between apical bristles, with numerous pale hairs on lateral parts and variable number on apical margin, but with most of dorsal surface bare; pubescence behind scutellar suture rather sparse or absent; the following thoracic bristles present and usually well developed: humeral, 1+1 notopleurals, supra-alar, postalar, intra-alar, dorsocentral, prescutellar acrostichal, 3 pairs of scutellars. Hind trochanter simple, with hairs of moderate length, not dense; fore femur with moderately developed posteroventral spines on about distal half and shorter anteroventral ones; mid femur with moderately short anteroventral and posteroventral spines; hind femur with moderate anteroventral spines and much smaller posteroventral spines; fore tarsus somewhat broadened in male, a little more slender in female, in male length/breadth for segment 1 = 3·6, for segment 2 = 1·2, for segment 3 = 0·8, for segment 4 = 0·7, for segment 5 = 1·1–1·2, without apparent geographic variation, some ratios for a female (Garaina) for the 5 segments 3·8, 1·6, 0·9, 0·7, 1·2; other tarsi moderately stout. Wing rather broad, narrowing to the rounded apex; distal section of vein 4 arched on much of its extent, curving forwards at apex; anterior crossvein oblique, curved at posterior end; cell-4 index = 0·61–0·62; costal cells and marginal cell entirely microtrichose; submarginal cell bare on much of area before stigmatal band and on a small area, not extending across width of cell, just beyond that band; first basal cell almost bare except for zones of microtrichia at extreme base, narrowly along anterior margin from base to beyond origin of vein 3, and on stigmatal band; first posterior cell with rather small bare zone just beyond stigmatal band, not reaching to vein 4; discal and third posterior cells each with variable,

often small basal bare zone; alula broadly rounded, entirely microtrichose; squama large, posteriorly broadly rounded or sometimes subangular at junction of lateral and posterior margins.

Abdomen broad; tergite 2 with bare zone on each side at posterior margin; corresponding bare zone on anterior margin of tergite 3 quite narrow, often concealed; tergite 5 of male usually about 2·5–3·0 × as long as tergite 4. Male postabdomen: outer surstylus basally narrowed, distal section at first a little curved with shallow bight on posterior margin beyond which it is subtriangular, broadly so in posterior aspect, narrowly so in lateral aspect, obtuse at apex; aedeagus with preglans rather short; glans subcylindrical, slightly curved, without supernumerary lobes; terminal filament very stout throughout and strongly thickened at extreme apex, over 4 × as long as glans, without membranous margin.

Dimensions. Total length: male, 7·5–8·7 mm; female, 8·0–9·6 mm. Width of head: male, 3·5–4·3 mm; female, 3·4–4·6 mm. Length of thorax, male, 3·8–4·3 mm; female, 3·6–5·6 mm. Length of wing: male, 7·7–8·2 mm; female, 7·6–10·2 mm. Length of glans of aedeagus: 0·84 (Garaina)–0·86 mm (Brown River).

Distribution

Mainland New Guinea, widely distributed below 1000 m; Karkar Island; Normanby Island. Map reference 2*A*, 7*B*, 8*C*, 9*D*, 9*E*, 10*E*, 11*F* (Fig. 1).

Notes

A. attrahens is rather similar to *A. delectans*, *A. microcephalus*, *A. straatmani* and *A. brachyophthalmus*. See under these species for comparison with *A. attrahens*.

Achias meijerei, sp. nov.
(Figs 20, 21)

Material Examined

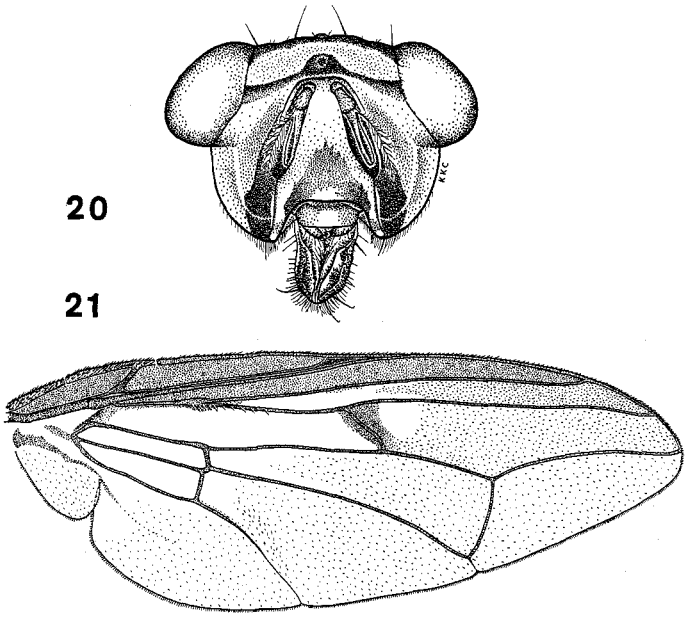
Holotype. ♂, NE. New Guinea: Baiyer R. Sanctuary, Western Highlands, 1200 m, 6.viii.1982, S.S. (BPB).

Paratypes. 5♂, 1♀, Baiyer R. Sanctuary, 4–8.viii.1982, S.S. (AM, NSMT); 1♂, Wanuma, Adelbert Range, Madang Province, 600–720 m, Aug. 1968, N.L.K. (BPB).

Description

Resembling *A. attrahens* and agreeing with description given for that species, except as given below.

Coloration. Genoparafacial region with broad brown stripe extending obliquely from outer side of antennal groove approximately to postgenal bristle near lowest point of head capsule; the usual vertical cheek stripe absent; face with somewhat variable large triangular brown mark, broad but not reaching lateral margins of face, its upper angle reaching slightly above centre of face. Mesoscutum with pruinescent zone yellowish grey to ochraceous; pleura without fulvous zones. Femora fulvous with brown distal zone divided dorsally by extension of fulvous coloration almost to apex; tibiae fulvous with dark brown markings, darker in female; tarsi dark brown basally or almost entirely black, sometimes paler at joints. Wing with costal band entirely yellowish, paler and more diffuse than in *A. attrahens*; stigmatal band absent in submarginal cell represented by a brownish yellow mark around anterior crossvein; submarginal cell slightly to distinctly yellowish throughout, without distinct brown basal mark; brown cloud on discal crossvein barely discernible. Abdominal tergites dark brown with slight greenish to purplish reflections; tergites 3 and 4 with short dark hairs except on median and narrow lateral marginal zones where hairs are longer and pale yellowish.



Figs 20, 21. *Achias meijerei*: *20*, head (♂, Baiyer River); *21*, wing (♂, Wanuma).

Head of male variable in shape at most with very short eye-stalks and eyes oblique and subangular, in smallest male eye not stalked, prominent, very rounded; head of female similar to that of smallest male in shape.

Thorax. Scutellum haired on entire dorsal and lateral surfaces except near scutellar suture; prescutellar acrostichal bristle absent. Mid and hind femur with spines less developed than in *A. attrahens*; in male fore tarsus length/breadth of segment 1 = 3·4–3·8, for segment 2 = 1·1–1·2, for segment 3–0·7, for segment 4 = 0·5–0·6, for segment 5 = 1·0–1·1. Cell-4 index = 0·60–0·61; squama broadly rounded posteriorly.

Abdomen. Tergites 3 and 4 with median zone of somewhat longer yellowish hairs. Male postabdomen: distal section of outer surstylus more elongate than in *A. attrahens*; glans straight, with complex subterminal lobe; terminal filament more than twice as long as glans, tapering to a fine apex, with broad membranous margin.

Dimensions. Total length: male, 7·0–9·7 mm; female, 6·8 mm. Width of head: male, 3·5–5·9 mm; female, 3·7 mm. Length of thorax: male, 3·8–5·1 mm; female, 4·1 mm. Length of wing: male, 8·6–10·2 mm; female, 9·2 mm. Length of glans of aedeagus: 0·75–0·76 mm.

Distribution

North-east New Guinea, Western Highlands and Madang Province (Adelbert Range). Map reference 7*C*, 8*C* (Fig. 1).

Habitat

The holotype and some paratypes are labelled 'horse dung in forest'.

Notes

A. meijerei closely resembles *A. attrahens* and related species, but the facial markings are quite distinctive (Fig. 20). The slender apices of the aedeagal filaments are very different from those of *A. attrahens*. *A. meijerei* is also closely related to *A. pumex*.

Achias pumex, sp. nov.

Material Examined

Holotype (unique). ♂: NE. New Guinea: Oenake Mts, nr Vanimo, West Sepik Province, 29.viii.1983, H.R. (AM).

Description (male)

Resembling *A. meijerei* and *A. attrahens*, agreeing with description of the latter, except as given below.

Coloration. Postfrons largely covered by a blackish brown zone with some fulvous mottling, giving way to dark mottling on a fulvous background towards vertex, with pair of large oval lateral fulvous zones centred a little in front of middle; face pale fulvous above, except for very slight brown mottling, with dark brown zone on lower half which extends to antennal groove and laterally almost to parafacial suture; parafacial fulvous, becoming creamy near eye margin, with large dark brown zone adjacent to facial ridge and broadening below towards lower extremity of cheek; cheek stripe absent. Antenna brown; segment 1 tawny. Prelabrum brown becoming tawny medially; palpus tawny brown. Scutellum dorsally without yellowish pubescence, glabrous along scutellar suture. Fore coxa entirely dark brown; fore femur fulvous, with dark brown anterior blotch near base, with large distoventral brownish to tawny zone. Wing with costal cells almost uniformly yellowish brown; costal band yellowish brown, paler distally, of similar extent to that of *A. attrahens*; yellowish brown stigmatal band not crossing and barely extending submarginal cell, not entering discal cell; basal half of submarginal cell hyaline except for yellow tinge along parts of vein 2; discal crossvein without distinct brown cloud; squama creamy white. Abdomen dark brown, subshining, with slight rainbow-tinted reflections.

Head structurally as described for *A. attrahens*.

Thorax stout; mesoscutum slightly wider than long; scutellum slightly more than twice as wide as long, with very numerous rather short hairs on entire dorsal surface except near scutellar suture; prescutellar acrostichal bristle absent. Hind tibia with the usual posterior terminal comb mounted on a narrowly rounded, posterodorsally projecting lobe; tarsi apparently similar to those of *A. attrahens* and *A. meijerei*; proportions of fore tarsus not easily measurable in type. Wing: cell-4 index = 0·61; microtrichiation as given for *A. attrahens* except for lack of microtrichia corresponding to part of stigmatal band in submarginal cell.

Abdomen. Tergite 4 without median zone of longer pale hairs; tergite 5 nearly twice as long as tergite 4. Male postabdomen: distal section of outer surstylus short triangular, its basal angle not particularly prominent; aedeagus resembling that of *A. meijerei*; terminal filament at least 3 × as long as glans, with fine apex.

Dimensions. Total length 8·8 mm; width of head 4·6 mm; length of thorax 4·9 mm; length of wing 9·2 mm; length of glans of aedeagus 0·57 mm.

Distribution

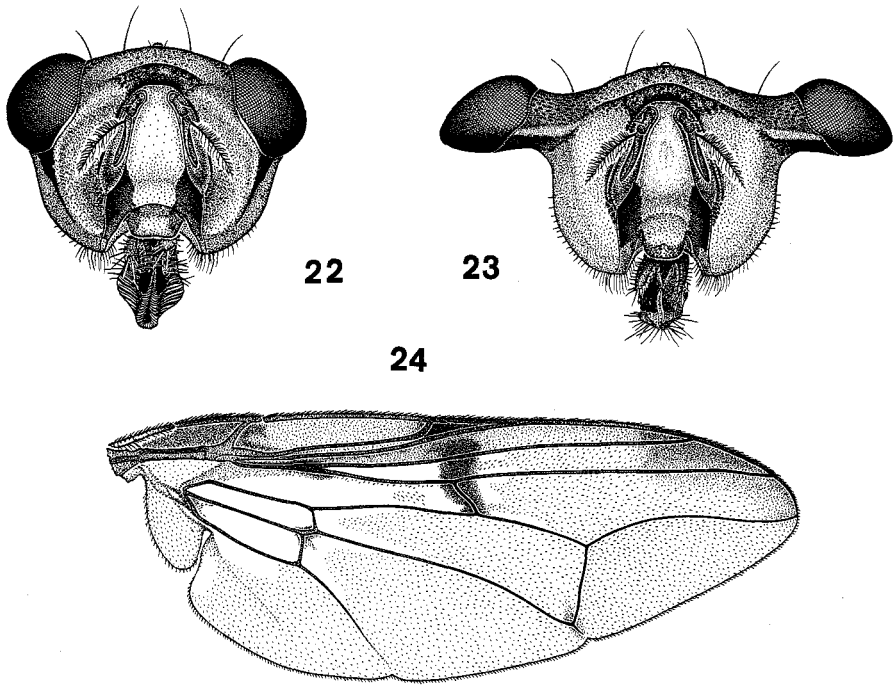
North-east New Guinea, far north-east of West Sepik Province. Map reference 6*B* (Fig. 1).

Notes

In addition to the characters given in the key, *A. pumex* differs from the closely related *A. meijerei* in the absence of somewhat longer pale hairs forming a median zone on tergite 4. Also the terminal lobe on the hind tibia (perhaps male-restricted) and the shorter glans provide evidence of distinction from *A. meijerei*.

Achias kurandanus Hennig
(Figs 22–27)

Achias kurandana Hennig, 1940: 315–16, pl. 24, fig. 8.—Morge, 1975: 349–54, figs 4–6.
Achias kurandanus.—McAlpine, 1973: 29, 31; McAlpine, 1979: 221–3 (habits).
Achias brachyophthalmus.—Malloch, 1939: 135–6, pl. v, fig. 27. Misidentification.



Figs 22-24. *Achias kurandanus*: *22*, head (♀); *23*, head (moderately large ♂); *24*, wing (♀).

Material Examined

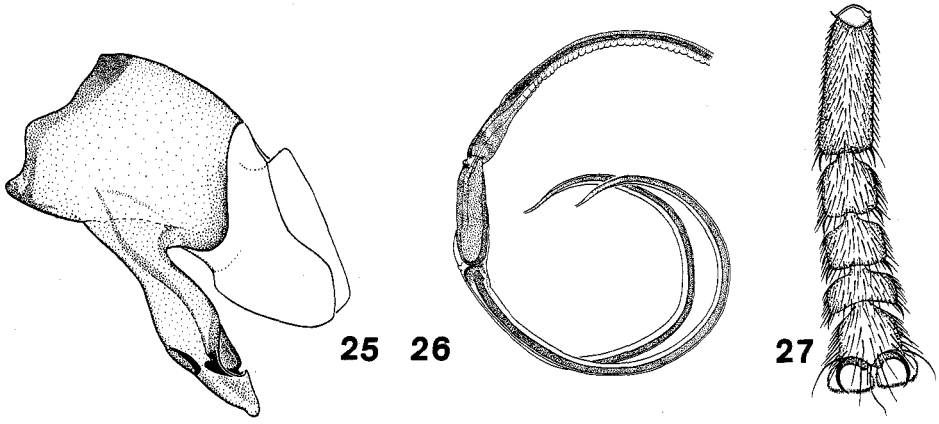
Holotype. ♂, Queensland: Kuranda, nr Cairns, no date, probably F.P.D. (DEI). There is also paratype material, not seen by author, in DEI.

Other material. **Queensland:** Cooktown (ANIC); Mt Hartley, nr Roseville, Cooktown district (AM); Gap Ck, Mt Finlayson Range, nr Bloomfield (AM); Windsor Tableland, NW. of Mossman (AM); Daintree R., 10 km W. of Daintree (AM); Mt Spurgeon, NW. of Mossman (AM); 14 km N. of Kuranda (ANIC); Kuranda (AM, BM); Davies Ck, nr Mareeba (AM, AMNH); Mulgrave R., 6 km W. of Gordonvale (AM); Herberton district (BM); 18 km S. of Ravenshoe, *c.* 800 m (ANIC); El Arish (AM); 3 km N. of Tully R. bridge, nr Cardstone (AM); 3 km E. of Cardstone (AM); 40 km W. of Tully (ANIC); 32 km W. of Tully (ANIC); Townsville (district) (BM).

Description

Coloration. Head fulvous; postfrons with small, mostly separate, often numerous dark brown spots, in female generally restricted to posterior part and a central zone, in male generally extending to anterior margin at least at sides; anterior margin of postfrons often suffused with brown medially; face with pair of widely separated brown marks between antennal grooves and epistomal margin; facial ridge largely dark brown; antennal groove tawny with whitish pruinescence; cheek stripe absent in male, present in female but often partly broken into spots; eye-stalk of male, when present, with dark brown area on anterior part of ventral surface and with creamy anterior mark immediately above this next to eye margin; when exceptionally well developed, eye-stalk also with brown suffusion on dorsal

surface. Antenna tawny, with segment 3, beyond base, more brownish. Prelabrum pale fulvous with little brown mottling; palpus tawny with brown tinge. Mesoscutum with tawny to castaneous ground colour, paler at lateral margins where it is spotted with brown, with covering of ochraceous pruinescence except on 4 rather broad, well separated longitudinal stripes; median pruinescen stripe slightly broader than each paramedian non-pruinescent stripe but narrowed at its posterior end; hairs of mesoscutum mostly black, except towards posterior and lateral margins; scutellum dark brown, scarcely shining dorsally, narrowly tawny with darker spotting along scutellar suture, sometimes with small tawny spots on free margins, some of which spots surround hair-sockets; pleura ochraceous to tawny with extensive brown mottling, absent from lower part of sternopleuron, and covering of whitish to pale ochraceous pubescence-pruinescence. Fore coxa dark brown with tawny longitudinal stripe on outer margin; other coxae brownish tawny; fore femur tawny to fulvous with large dark brown distoventral zone and brown anterior spot near base; other femora fulvous, rather narrowly but distinctly browned at apices; tibiae dark brown with ill defined reddish brown zones; tarsi black. Wing with first costal cell and base of second costal cell yellowish brown; remainder of second costal cell pale yellowish; brown stigmatal band well developed from costa to vein 4 but scarcely extending into discal cell; discal band absent; apical brown mark extending from apical extremity of marginal cell to vein 4, separated from stigmatal band by about its own length or somewhat more; marginal cell before stigmatal band yellowish, browner at basal extremity, between stigmatal band and apical mark pale yellowish, almost hyaline along vein 2; submarginal cell, except as indicated above, largely hyaline, as is most of more posterior area of wing membrane; first basal cell narrowly yellowish brown at base and along anterior margin to about middle of its length; a diffuse brownish spot at junction of discal crossvein and vein 5; a smaller brown spot at junction of anal crossvein and vein 5; squama buff. Haltere fulvous with capitellum partly brown. Abdomen tawny brown, somewhat shining, with reflections usually green-tinted.



Figs 25–27. *Achias kurandanus*: *25*, epandrium; *26*, aedeagus; 27, left fore tarsus (♂).

Head in female not very broad, with eye very rounded and only moderately prominent; in male head resembling that of female only in smallest examples, usually broader with eye prominently gibbous to subangular on lower part, sometimes very shortly stalked (Fig. 23), occasionally with longer eye-stalk, approximately as shown for *A. hennigi* (Fig. 57); inner and outer vertical bristles well developed. Palpus rather narrow.

Thorax robust; mesoscutum about as wide as long or almost so; scutellum more or less rounded in outline, dorsally convex, with moderately numerous rather short hairs on free margins and a variable quantity of pale pubescence along scutellar suture; the following thoracic bristles present: humeral, 1 + 1 notopleurals, supra-alar, postalar, intra-alar, dorsocentral, prescutellar acrostichal, 3 pairs of marginal scutellars. Hind trochanter with numerous black to yellowish hairs ventrally which are longer and denser in male but

not situated on a prominence; femora with anteroventral and posteroventral series of spines, anteroventral ones on fore and mid femora least developed, posteroventral ones on fore femur rather long; fore tarsus depressed and broadened, particularly in male; in moderate-sized male length/width for segment 1 = 3·1, for segment 2 = 1·3, for segment 3 = 0·9, for segment 4 = 0·7, for segment 5 = 1·0, these segments, particularly segment 1, a little broader in largest examples; hind tarsus thickened and somewhat depressed. Wing with distal section of vein 4 arched through much of its length, curved forwards at apex; cell-4 index = 0·58–0·61; costal and marginal cells entirely microtrichose; submarginal cell bare on much of area before stigmatal band and on 1 or 2 quite small areas beyond that band; first basal cell largely bare, microtrichose at base and along anterior margin to about middle of its length, on stigmatal band, and on a spot of variable size in distal part of cell before stigmatal band; first posterior cell microtrichose except on a variable bare patch immediately beyond stigmatal band which is sometimes divided and rarely reaches across full width of cell; discal and third posterior cells each with rather small bare zone at base; alula entirely microtrichose; squama large, broad posteriorly, but somewhat rounded.

Abdomen broad; tergite 2 with variable bare or sparsely haired zone on each side at posterior margin; tergite 3 usually with pair of such zones at anterior margin; in male tergite 5 1·6–2·8 × as long as tergite 4 (the higher figures for smaller specimens). Male postabdomen: outer surstylus broadened beyond base, with discal section contracted and curved, apically very obliquely, almost longitudinally truncate, with narrowly obtuse distally directed anterior angle and acute basally directed posterior angle; aedeagus with preglans slightly expanding distally, almost smooth; glans rather short, straight, subcylindrical, simple; terminal filament with narrow membranous margin, finely tapering apically, about 6·5 × as long as glans.

Dimensions. Total length: male, 5·5–10·8 mm; female, 5·7–8·6 mm. Width of head: male, 2·7–10·5 mm; female, 2·7–4·7 mm. Length of thorax: male, 3·0–5·1 mm; female, 3·2–5·3 mm. Length of wing: male, 6·6–10·8 mm; female, 6·8–10·5 mm. Length of glans of aedeagus: 0·54–0·69 mm.

Distribution

Queensland, probably from Townsville district to Cooktown district, but confirmation of occurrence south of Tully River desirable. Map reference 8*H*, 8*I*, 9*J* (Fig. 1).

Habitat

Rainforest and gallery forest from near sea level to at least 800 m. The specimen from Mt Spurgeon is labelled 'nr summit in eucalypt-she oak'.

Notes

A. kurandanus is distinguished from most species of the genus by the combination of haired scutellum, paired facial marks, entirely microtrichose costal and marginal cells,

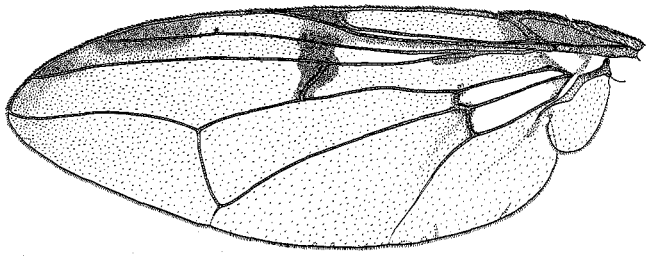


Fig. 28. *Achias cheesmanae*, wing (♂).

distinct stigmatal and apical wing marks, and absence of the discal band and of a complete costal band. Only *A. cheesmanae*, which is widely separated geographically, agrees in these characters but differs in the more extensively microtrichose wing membrane and differently shaped surstylus, in addition to the characters given in the key.

Morge's (1975) illustrations of type material are neither competent nor useful.

Achias cheesmanae, sp. nov.
(Fig. 28)

Material Examined

Holotype. ♂, West New Guinea: Cyclops Mts, *c.* 1070 m, Mar. 1936, L.E.C. (BM, 1936–271).

Paratype. 1♂ without head, same data (BM, 1936–271).

Description (male)

Resembling *A. kurandanus* and agreeing with description of that species except as indicated below. Female unknown.

Coloration. Head orange fulvous; postfrons with fine dense dark brown mottling on about posterior third, elsewhere spots tending to merge in an irregular brownish suffusion; facial ridge less strongly browned than in *A. kurandanus*. Ground colour of mesoscutum reddish brown without darker spots, with broad black central area extending to outer limit of sublateral non-pruinescent stripes and, in holotype but not in paratype, to scutellar suture; pruinescence of mesoscutum greyish, distributed much as in *A. kurandanus*; all hairs of mesoscutum black except near lateral margins in front of transverse suture; scutellum entirely black (holotype) or dark brown becoming reddish brown towards scutellar suture; pleura reddish brown to tawny, without distinct spots, with greyish white pubescence-pruinescence. Fore coxa dark brown becoming reddish brown near base; fore femur reddish brown to dark brown; other femora reddish brown, somewhat darker distoventrally; tibiae dark brown with reddish brown markings. Wing with apical costal mark longer than in *A. kurandanus*, extending a little basad of level of discal crossvein; sub-basal brown mark on vein 5 small but more extended along basal and anal crossveins than in *A. kurandanus*, entering first basal cell as a brown dot; brownish spot at junction of discal crossvein and vein 5 small and indistinct. Abdomen blackish, with distal part of tergite 5 reddish brown, with reflections varying in tint from bluish green to coppery.

Head only a little wider than thorax, narrower than in similarly sized specimens of *A. kurandanus*; eye relatively little prominent for this section of genus, slightly gibbous below.

Thorax. Scutellum shorter and less convex than in *A. kurandanus*, with hairs almost absent from apical part. Hind trochanter with hairs not as dense as in *A. kurandanus*, nearly all pale; femora with ventral spinescent bristles rather small, except for moderately developed posteroventral ones on fore femur and anteroventral ones on hind femur; hind tibia strongly curved; tarsi more slender than in *A. kurandanus*; fore tarsus less depressed than in *A. kurandanus*; length/breadth for segment 1 = 4·1, for segment 2 = 1·4, for segment 3 = 0·9, for segment 4 = 0·6, for segment 5 = 1·2. Wing: cell-4 index = 0·56; submarginal cell beyond stigmatal band with even smaller bare area than in *A. kurandanus*; first basal cell microtrichose for whole length, with rather narrow bare areas along veins 3 and 4 only; first posterior cell with bare area near base almost obsolete; discal cell microtrichose to base, with only small bare area at junction of vein 5 and basal crossvein; third posterior cell with bare area reduced to small spot near junction of vein 5 and anal crossveins.

Abdomen. Bare zones on tergites 2 and 3 narrow, almost obsolete on the former; tergite 5 2·2 to 2·4 × as long as tergite 4. Male postabdomen: distal section of outer surstylus straight and slender, compressed in a transverse plane; glans rather elongate; terminal filament with broad membranous margin, its length not measured.

Dimensions. Total length 9·5 mm; width of head 3·9 mm; length of thorax 4·2–4·3 mm; length of wing 8·7–9·5 mm; length of glans of aedeagus 0·84 mm.

Distribution

West New Guinea, far north-east. Map reference 6*B* (Fig. 1).

Notes

A. cheesmanae most resembles *A. kurandanus*, q.v. for comparison.

Achias fabricii, sp. nov.

Material Examined

Holotype (unique). ♀, Papua: Tororo, Goilala subdistrict, 1560 m, 15.ii.1958, W.W.B. (BPB).

Description (female)

Agreeing with description of *A. kurandanus* except as indicated below. Male unknown.

Coloration. Postfrons largely suffused with brown except anterolaterally, not spotted or mottled; face marked as in *A. kurandanus*; cheek stripe large, unbroken. Mesoscutum tawny brown in ground colour, without spotting, with large black median zone including paramedian stripes but discontinued at posterior quarter of mesoscutum; median pruinescent stripe slightly narrower than paramedian black stripes except at anterior extremity; scutellum dark brown; pleura tawny brown, without mottling. Fore coxa tawny, suffused with brown distally; femora fulvous, with brown apical suffusion. Wing with markings largely undeveloped because of immaturity, but with indications of most brown markings present in *A. kurandanus*; stigmatal band narrower than in *A. kurandanus*; apical mark on costa probably very narrow or indistinct; mark at junction of discal crossvein and vein 5 not indicated. Abdominal tergites with purplish reflections.

Head shaped approximately as in female of *A. kurandanus*; eye slightly less prominent above and slightly more prominent below than in that species.

Thorax. Scutellum slightly excavated between apical bristles, with 2 separate pubescent zones at scutellar suture; humeral bristle thinner and paler than in *A. kurandanus*. Fore femur distally with few small dorsal bristles and thicker, but not spinescent, posteroventral bristles; mid femur with small anteroventral bristles only; hind femur with long hair-like, non-seriate dorsal bristles and a series of shorter, stouter anteroventral bristles distally; fore tarsus depressed, somewhat similar to that of female of *A. kurandanus*; hind tarsus depressed but not thickened. Wing: cell-4 index = 0·62; microtrichiation as in *A. kurandanus* except as follows: second costal cell beyond base with microtrichiation sparser and less uniform; marginal cell just before stigmatal band sparsely, unevenly microtrichose, beyond band with short bare zone; submarginal cell with larger bare zone beyond stigmatal band; first basal cell microtrichose only at extreme base, narrowly at fork of veins 2 and 3, and on stigmatal band; first posterior cell with larger bare zone basally; discal and third posterior cells with much larger basal bare zones, particularly in former where it extends along veins 4 and 5 to beyond middle of length of cell.

Abdomen. Tergite 5 with much smaller, finer posterior marginal bristles than in female of *A. kurandanus*.

Dimensions. Total length 10·0 mm; width of head *c.* 4·2 mm; length of thorax 4·8 mm; length of wing 10·3 mm.

Distribution

Papua, Owen Stanley Range, Goilala subdistrict, Central Province. Map reference 9*E* (Fig. 1).

Notes

A. fabricii is close to *A. kurandanus* and *A. cheesmanae* in the combination of complete thoracic chaetotaxy, haired scutellum, extensively microtrichose second costal cell, and well developed stigmatal band separate from any distal costal band. It differs from both in the more extensive bare zones of the wing membrane, from *A. kurandanus* in the black paramedian mesoscutal stripes and other characters indicated above, and from *A. cheesmanae* in the less extensively and more weakly bristled femora.

Achias penicillus, sp. nov.

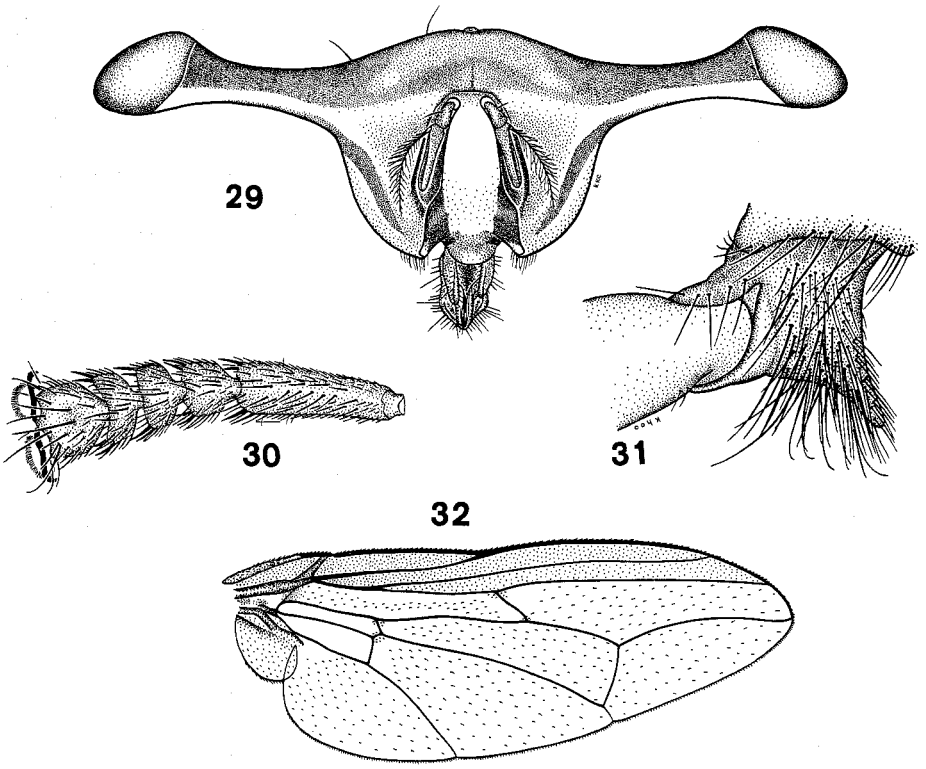
Material Examined

Holotype. ♂: NE. New Guinea: Gumi, Bulolo, 2010 m, 7.ix.1979, H.R. (AM).

Paratypes. 1♂, 1♀, same data as holotype (AM); 1♀, Nawata Banda Logging Area, Bulolo, 17.iv.1980, H.R. (FRIL).

Description

Agreeing with description given for *A. kurandanus* except as indicated below.



Figs 29–32. *Achias janus* (♂): *29*, head; *30*, left fore tarsus; *31*, right hind trochanter; *32*, wing.

Coloration. Postfrons almost entirely browned except near vertical bristles, brown pigment forming very dense mottling or almost continuous laterally, mottling more open centrally; facial markings as in *A. kurandanus*; antennal groove brown to tawny, with grey pruinescence; dark brown cheek stripe well developed in both sexes, breaking into spots

at lower extremity, in male running on to ventral surface of eye-stalk; eye-stalk, when well developed, predominantly brown, with tawny anterior mark at eye margin. Prelabrum fulvous anteriorly, variably browned at sides; palpus dark brown, tawny towards base. Mesoscutum with predominantly dark brown ground colour, sometimes paler laterally with some darker spotting, with grey pruinescence and 4 non-pruinescent stripes; paramedian stripe shortened posteriorly; sublateral stripe often reddish brown; median pruinescent stripe often on reddish brown or tawny ground colour; pleura coloured as in *A. kurandanus* but brown areas darker, clouded rather than mottled. Mid and hind coxae largely fulvous; fore femur coloured as in *A. kurandanus* or more extensively browned; other femora broadly browned distally. Wing: stigmatal band obsolete except for dark brown zone in end of subcostal cell, slightly darker pigment behind this in marginal cell and very narrow brown mark on each side of anterior crossvein; brownish zone on apical part of costal margin very diffuse; no spot present at junction of discal crossvein and vein 5; squama fulvous.

Head in female slightly broader than in *A. kurandanus*, in male eye-stalk present, short (holotype) to quite long and slender, dorsoventrally compressed; eye of female very rounded, that of male obliquely oval less angular at outer extremity than in *A. kurandanus*.

Thorax. Scutellum with hairs restricted to each lateral extremity in front of foremost marginal bristle, with dense pubescence near scutellar suture. Hind trochanter of male with large ventral tubercle surmounted by brush of dense, rather short hairs, pale hairs on outside of brush, black ones in centre; anteroventral and posteroventral spines on femora short but rather numerous; fore tarsus of male, length/breadth for segment 1 = 3·3, for segment 2 = 1·0, for segment 3 = 0·7, for segment 4 = 0·7, for segment 5 = 1·0; fore tarsus of female distinctly more slender; hind tarsus slightly more slender than in *A. kurandanus*. Wing: cell-4 index = 0·61–0·63; second costal cell microtrichose on entire length but not uniformly so, with narrow longitudinal bare to sparsely microtrichose zones; marginal cell also with narrow bare zones near middle and near base; submarginal cell bare or almost so on slightly more than basal half.

Abdomen. In male tergite 5 3·4–3·8 × as long as tergite 4. Male postabdomen: distal section of outer surstylus broad at base, without bight or constriction, rather uniformly tapering to transverse, obtuse apex; aedeagus with preglans not distally expanded; glans almost banana-shaped, without terminal lobes; terminal filaments moderately slender, with well developed membranous margins, particularly broad a little beyond base, each more than 4 × as long as glans.

Dimensions. Total length: male, 8·0–9·0 mm; female, 8·0–8·4 mm. Width of head: male, 5·0–13·7 mm, female, 3·8–4·3 mm. Length of thorax: male, 4·3–5·4 mm; female, 4·3–4·9 mm. Length of wing: male, 10·4–11·7 mm; female, 9·7–10·7 mm. Length of glans of aedeagus: 0·94–1·00 mm.

Distribution

North-east New Guinea, Morobe Province. Map reference 9*D* (Fig. 1).

Notes

A. penicillus is intermediate between my arbitrarily defined sections 1 and 2, as the scutellum is haired but only on the area in front of the foremost marginal bristle. This agrees with some specimens of *A. testaceus* (Section 2) from which *A. penicillus* is distinguished by the absence of a dark costal band and vestigial stigmatal band, the dark distal markings on the femora, the generally darker thorax and much more prominent tubercle on the hind trochanter of the male. From the other species of Section 1 with a male trochanteral tubercle, *viz. A. clastus* and *A. janus*, *A. penicillus* is distinguished by the reduced hairing of the scutellum. For comparison with *A. steyskali*, which has similar scutellar hairing, see under that species.

Achias janus, sp. nov.
(Figs 29–32)

Material Examined

Holotype. ♂, Papua: Tapini (Primary School), 1800 m, tent trap, 25–19.i.(year not given), R.S. (AM).

Paratype. 1♀, Papua: Loloipa, Owen Stanley Range, 16–30.i.1958, W.W.B. (BPB).

Description

Agreeing with description given for *A. kurandanus* except as indicated below.

Coloration. Postfrons and, in male, upper surface of eye-stalk with fine rather dense brown mottling, discontinued towards ptilinal suture; face marked as in *A. kurandanus*; cheek stripe in both sexes consisting of band of fairly dense brown mottling, which continues on to basal half of ventral surface of eye-stalk in male; eye-stalk without additional markings. Thorax a little darker than in *A. kurandanus*; paramedian reddish brown stripes of mesoscutum discontinued at about posterior third of length of mesoscutum; median pruinescent ochraceous stripe divided towards its posterior end by a narrow blackish stripe. Fore coxa tawny with slight brown mottling; femora fulvous, without distinct dark markings; tibiae fulvous, with reddish brown to tawny markings. Approximately distal third of wing with faint brown suffusion; stigmatal band rather indistinct, represented by a faint spot in marginal cell, a fainter one on anterior side of submarginal cell, and a narrow brownish mark on anterior crossvein; apical brown mark absent; marginal and submarginal cells pale yellow.

Head in female shaped like that of male *A. kurandanus*, that of only available male somewhat similar to that of extreme broad-headed male *A. kurandanus* or normal male of *A. mallochi*, with eye-stalks elongate, strongly dorsoventrally compressed.

Thorax. Hairs of scutellum restricted to small lateral zone in front of foremost marginal bristle; pubescence on dorsal surface of scutellum restricted to 2 zones at scutellar suture. Hind trochanter with entirely yellow hairs, that of male with haired process more prominent and elongate than in *A. clastus*, with no pubescent zone at distal side of its base; fore tibia with spinescent posteroventral bristles smaller than in *A. kurandanus*; fore tarsus of male slightly more dilated distally than in *A. kurandanus*, length/breadth for segment 1 = 3·1, for segment 2 = 0·9, for segment 3 = 0·6, for segment 4 = 0·6, for segment 5 = 1·1. Wing: cell-4 index = 0·59–0·60; second costal cell mostly microtrichose, with linear bare zone along distal part of subcosta.

Abdomen. In male tergite 5 *c.* 3·8 × as long as tergite 4. Male postabdomen: outer surstylus without preapical constriction, its blade-like apical part transversely placed, obtuse, pubescent on posterior surface; preglans separated from stipe by a constriction; glans slightly curved, simple; terminal filament *c.* 4·5 × as long as glans, with broad membranous margin on basal part, narrower towards apex, which is truncate, not tapered.

Dimensions. Total length: male, 9·9 mm; female, 9·4 mm. Width of head: male, 9·9 mm; female, 4·4 mm. Length of thorax: male, 4·7 mm; female, 5·0 mm. Length of wing: male, 10·9 mm; female, 11·9 mm. Length of glans of aedeagus: 1·1 mm.

Distribution

Papua, Highlands of Central Province (Goilala subdistrict). Map reference 9*E* (Fig. 1).

Notes

A. janus is intermediate between sections 1 and 2 of the genus, as the scutellum is haired only on the extreme anterolateral surface. It thus particularly resembles *A. clastus*, *A.*

penicillus, and *A. steyskali*, but is distinguished as indicated in the key. Among the species of Section 2 it would tend to run to *A. stigon*, but differs in the slender, dorsoventrally compressed male eye-stalk, extensively microtrichose marginal cell, speckled cheek-stripe in both sexes, and other details. *A. janus* also resembles and may be quite closely related to *A. mallochi* of Section 2, but has no brown costal band, broader non-pruinescent stripes on the mesoscutum, and a median blackish mark on the posterior part of the mesoscutum.

Achias clastus sp. nov.

Material Examined

Holotype. ♂, NE. New Guinea: Nawata Banda Logging Area, Bulolo, 30.iii.1980, H.R. (AM).

Paratype. 1♀, same data (FRIL).

Description

Agreeing with description given for *A. kurandanus* except as indicated below.

Coloration. Head with markings as given for *A. janus*, but, in male, brown mottling on ventral surface of eye-stalk more extensive; facial ridge fulvous with brown mottling. Thorax with 4 non-pruinescent brown stripes markedly narrower than in *A. kurandanus* and *A. janus*, more as in *A. mallochi*, the paramedian brown stripes discontinued at about posterior third of length of mesoscutum. Fore coxa fulvous, with brown mark on outer margin; other coxae predominantly fulvous; fore femur fulvous with elongate anterodorsal and short posterior apical brown marks and small anterior basal brown spot; other femora fulvous, only indistinctly browned at apices; tibiae dark brown to black. Wing with continuous brown to yellowish brown costal band filling area in front of vein 1 basally and vein 2 from its origin, filling distal parts of marginal and first posterior cells, more diffuse in latter; stigmatal band little developed, represented by intensification of costal band in marginal cell, sometimes a brown spot in anterior side of submarginal cell (male only), and a light brown mark on anterior part of anterior crossvein; no mark present on discal crossvein; squama orange-fulvous.

Head in female much as in *A. kurandanus* but eye a little more prominent; in male shaped more as in *A. janus* and *A. mallochi*, with long, compressed eye-stalk and eye obliquely oval in anterior aspect.

Thorax very robust; mesoscutum slightly wider than long in both sexes; scutellum with hairs restricted to lateral zone in front of foremost marginal bristle, with pubescence at scutellar suture extending across median line; hind trochanter of male with stout ventral tubercle bearing yellow and black hairs, with small zone of short pubescence on ventral surface just beyond tubercle; femora with anteroventral and posteroventral spinescent bristles small, posteroventral series on hind femur absent; fore tarsus of male, length/width of segment 1 = 3·3, for segment 2 = 1·2, for segment 3 = 0·8, for segment 4 = 0·6, for segment 5 = 1·1. Wing: cell-4 index = 0·60–0·62; first basal cell microtrichose on most of basal half, on a broad tract in centre of distal half, and narrowly along anterior crossvein.

Abdomen. Tergites 2 and 3 with sparsely haired zones narrow and poorly defined; in male tergite 5 *c.* 3·0 × as long as tergite 4. Male postabdomen: distal section of outer surstylus small, no constriction separating distal section from basal section; glans rather elongate, curved; terminal filament at least 4·2 × as long as glans, thickened at base but not noticeably tapered on distal part, with membranous margin broad basally, narrow distally.

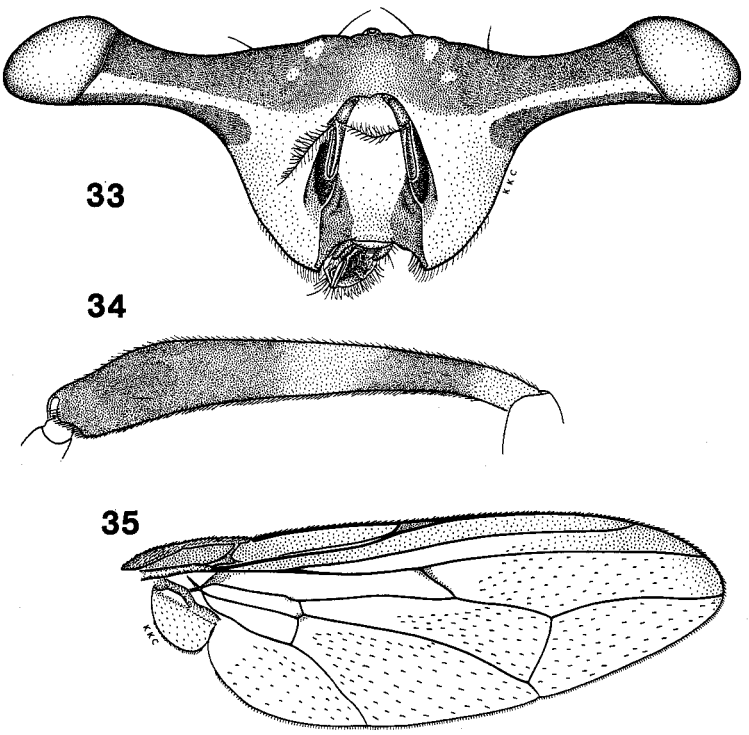
Dimensions. Total length: male, 9·2 mm; female, 9·0 mm. Width of head: male, 13·4 mm; female, 5·5 mm. Length of thorax: male, 5·8 mm; female 5·7 mm. Length of wing: male, 12·6 mm; female, 13·1 mm. Length of glans of aedeagus: 1·2 mm.

Distribution

North-east New Guinea, highlands of Morobe Province. Map reference 9*D* (Fig. 1).

Notes

Among the other species of Section 1, *A. clastus* most resembles *A. janus*, *A. penicillus*, and *A. steyskali*, but differs from all these in having a dark costal band. It also strongly resembles *A. mallochi* of Section 2, but differs in having lateral hairing but much more restricted dorsal pubescence on the scutellum, and, in the male, a stout ventral tubercle on the hind trochanter.



Figs 33–35. *Achias steyskali* (♂): *33*, head; *34*, right hind tibia; *35*, wing.

Achias steyskali, sp. nov.
(Figs 33–35)

Material Examined

Holotype. ♂, NE. New Guinea: Funyende, Finisterre Range, (nr) Saidor, 1200 m, 24–30.ix.1958, W.W.B. (BPB).

Paratypes. 2♂, main Finisterre Range, nr Freyberg Pass, 2550 m, 1–21.x.1958, W.W.B. (AM, BPB).

Description (female)

Agreeing with description given for *A. kurandanus* except as indicated below. Female unknown.

Coloration. Postfrons with general very dense brown mottling to almost even brown coloration covering dorsal surface of eye-stalk; posterior zone enclosing inner vertical bristles, pair of large paramedian spots, and pair of small anteroventeral spots fulvous; eye-stalk ventrally with small mottled spot only (smallest male) to uniformly brown ventrally and posteriorly, with anterior longitudinal fulvous stripe (largest male); face marked as in *A. kurandanus*. Prelabrum fulvous, without mottling. Mesoscutum with ground colour largely or entirely dark brown, with pale grey pruinescence and dark non-pruinescent stripes approximately as in *A. kurandanus*, but also with median non-pruinescent spot just in front of prescutellar acrostichal bristles which is extended forward as a very narrow median dark brown stripe; scutellum entirely brown-black; pleura with brownish ground colour, apparently unspotted, densely covered with pale grey pubescence-pruinescence. Fore coxa brownish tawny without distinct markings; femora tawny to fulvous basally, brown distally; tibiae dark brown to reddish brown, with tawny markings. Wing without stigmatal band, but anterior crossvein narrowly browned; apical brown mark diffuse and indistinct; marginal cell yellowish, slightly browned apically; remainder of wing membrane with faint yellow-brown tinge; small brown spot present at junction of anal crossvein and vein 5, none on discal crossvein. Abdomen tawny brown, with green-tinted reflections; tergite 2 with median greyish white pruinescent zone.

Head and eye shaped somewhat as in *A. kurandanus*, but males with well developed eye-stalks possibly more frequent than in that species (one in sample of three for *A. steyskali*, the other two being possibly more or less diminutive).

Thorax. Scutellum with hairs rather long and fine, restricted to small area above and in front of foremost marginal bristle, with pubescence near scutellar suture as in *A. kurandanus*. Hind trochanter with short, fine, pale hairs only; fore femur with 2 to 5 long, spinescent posteroventral bristles; femora otherwise with anteroventral and posteroventral bristles weakly developed and not spinescent; hind femur near and before middle with numerous long yellow hairs; hind tibia slightly swollen preapically, particularly on dorsal surface; fore tarsus much more elongate and less depressed than in *A. kurandanus*, *A. janus*, and *A. clastus*; in largest male length/width for segment 1 = 3·9, for segment 2 = 1·4, for segment 3 = 1·1, for segment 4 = 0·8, for segment 5 = 1·5; each segment of fore tarsus with a long curved, slightly compressed posterodistal bristle, which is shortest on segment 4, longest on segment 5, the corresponding anterodistal bristles much less developed on segments 1 and 2, but present on distal segments; segment 5 also with 3 long, deflexed, compressed apical bristles and 2 slightly smaller preapical dorsal bristles (all these large, compressed bristles presumably less developed in female); hind tarsus less broad than in *A. kurandanus*. Wing: cell-4 index = 0·60–0·62; second costal cell densely microtrichose on basal sixth, more sparsely and not uniformly microtrichose for rest of length; marginal cell partly bare, but with microtrichia mainly on distal and basal quarters; submarginal cell microtrichose on about distal third, almost bare elsewhere; first basal cell almost bare; first posterior cell with large basal bare zone; discal cell microtrichose only on narrow central area and on full width distally; third posterior cell more extensively bare basally than in *A. kurandanus*; alula as in *A. kurandanus*; squama more evenly rounded posteriorly than in *A. kurandanus*.

Abdomen. Sublateral bare zone more distinct on tergite 3 than on tergite 2; tergites 2 and 3 each with rather long whitish hairs on median zone; tergite 5 of male 2·4–2·8 × as long as tergite 4. Male postabdomen not studied in detail; surstyli somewhat similar to those of *A. kurandanus*, glans elongate, subcylindrical; terminal filament less finely tapered than in *A. kurandanus*, less than 3 × as long as glans.

Dimensions. Total length 8·2–9·2 mm; width of head 4·1–9·4 mm; length of thorax 3·9–5·0 mm; length of wing 10·1–11·8 mm; length of glans of aedeagus 0·76 mm (smallest specimen).

Distribution

North-east New Guinea, Finisterre Range, Madang Province. Map reference 9*D* (Fig. 1).

Notes

A. steyskali is one of the few species with the scutellar hairing present but confined to the area in front of and above the foremost marginal bristle. In this and other features it strongly resembles *A. penicillus*, but differs in the large bare zone in the marginal cell, the paler palpus, and, in the male, the absence of a cheek stripe and hind trochanteral process, different bristling of the fore tarsus, more slender glans, and less elongate terminal filament of the aedeagus.

Achias tawii, sp. nov.

Material Examined

Holotype. ♂, Papua: Kagaba, 40 km N. of Mendi, 2800 m, 13–18.xii.1967, Tawi (BPB).

Paratypes. 1♂, 1♀, same data (AM, BPB).

Description

Agreeing with description given for *A. kurandanus* except as indicated below.

Coloration. Postfrons with irregular mid-brown suffusion on most of surface, anteriorly fulvous except for brown suffusion medially; face marked as in *A. kurandanus*; brown cheek stripe broad and unbroken in both sexes; parafacial uniformly fulvous. Prelabrum tawny brown. Mesoscutum with ground colour brown-black anteriorly and centrally to outer edge of sublateral non-pruinescent stripe, reddish brown laterally and posteriorly; median pruinescent pale grey stripe complete, narrower than paramedian dark stripe; scutellum reddish brown to dark brown, not paler or spotted near scutellar suture; sternopleuron with predominantly brown ground colour, not paler below except quite narrowly along median ventral line, variably tawny towards upper margin; remainder of pleural ground colour brown to reddish brown, without spotting, below a general covering of grey to yellowish pruinescence-pubescence. Coxae tawny, partly suffused with brown; fore femur brown with much of basal half or more fulvous, with brown anterior spot near base usually visible; distal infuscation on other femora variable, sometimes almost absent; tibiae brown with tawny markings. Wing membrane with general faint yellowish brown tinge; first costal cell and *c.* basal seventh of second yellowish brown, the remainder of latter almost clear; stigmatal band virtually absent; apical brown mark very narrow and faint; base of marginal cell yellowish brown; extreme base of first basal cell and narrow mark in that cell at origin of vein 3 yellowish brown; other wing markings represented only by narrow inconspicuous brownish marks on anterior, basal, and anal crossveins; squama deep yellow.

Head not sexually dimorphic, shaped somewhat as in *A. khooi* (Fig. 16), with eye less prominent than in female of *A. kurandanus* and slightly smaller than in *A. khooi.*

Thorax. Scutellum haired as in *A. kurandanus*, but with very little pubescence near scutellar suture. Hind trochanter with pale hairs and no ventral prominence or tubercle; fore femur with several short, rather thin dorsal and posteroventral bristles; hind femur with dorsal bristles distally, with ventral yellow hairs short, inconspicuous, particularly on basal half; femora otherwise without distinct bristles or spines; hind tibia of male only slightly curved, with apical posterior gibbosity; fore tarsus broader in male than in female, less broad than in *A. kurandanus*; in larger male length/width for segment 1 = 4·1, for segment 2 = 1·2, for segment 3 = 0·81, for segment 4 = 0·73, for segment 5 = 1·2; hind tarsus depressed, not notably thickened. Wing: cell-4 index = 0·59–0·60; entire first costal cell and *c.* basal seventh of second densely microtrichose, the latter bare or almost so beyond, sometimes with small zone of microtrichia at apical extremity; marginal cell microtrichose on *c.* basal quarter and distal third; submarginal cell microtrichose on slightly more than distal third only; first basal cell less extensively microtrichose than in *A. kurandanus*; first posterior cell with microtrichia distributed approximately as in *A. kurandanus*; bases of discal and third posterior cells with bare zones larger in *A. kurandanus.*

Abdomen. Tergite 5 of male 2·4–3·3 × as long as tergite 4. Male postabdomen: outer surstylus with distal section little curved, much more elongate than in *A. kurandanus*, with small terminal tuft of pubescence; glans slightly curved; terminal filament with broad membranous margin, only slightly tapered distally, about twice as long as glans.

Dimensions. Total length: male, 6·9–9·4 mm; female, 7·2 mm. Width of head: male, 2·8–4·0 mm; female, 3·8 mm. Length of thorax: male, 3·4–4·7 mm; female, 4·6 mm. Length of wing: male, 8·5–10·8 mm; female, 11·0 mm. Length of glans of aedeagus 0·09 mm (holotype, larger male).

Distribution

Papua, Southern Highlands Province. Map reference 7*D* (Fig. 1).

Notes

Among the species of Section 1, *A. tawii* most resembles *A. reses* in having the second costal cell largely bare but densely microtrichose at base, the mesoscutum with 4 non-pruinescent stripes, and the face with a pair of separate brown spots below. It differs from *A. reses* in having the paired facial spots smaller and more widely separated, in the presence of a cheek stripe in the male, the more slender fore tarsus, the shorter glans, and longer, more slender terminal filaments. Further characters are given in the key.

Achias reses, sp. nov.

Material Examined

Holotype. ♂, Papua: Mt Giluwe, Southern Highlands Province, 2500 m, 9.xii.1979, H.R. (AM).

Paratype. 1♀, NE. New Guinea: Mt Kaindi, nr Wau, 2350 m, 3.ix.1966, G.A. Samuelson (BPB).

Description

Agreeing with description given for *A. kurandanus* except as indicated below.

Coloration. Postfrons almost uniformly mid-brown, with pair of paler spots just in front of centre, with only slight indications of mottling; face with pair of large, irregular brown spots narrowly separated medially; facial ridge not distinctly browned; cheek stripe present only in female, broad, unbroken; parafacial entirely pale fulvous. Prelabrum tawny; palpus tawny basally, partly brown distally. Mesoscutum largely blackish brown in ground colour, becoming more reddish brown laterally and, in female, on posterior section of sublateral pruinescent stripe, without darker spotting; median yellowish grey pruinescent stripe slightly narrower than each paramedian stripe anteriorly, becoming linear posteriorly; scutellum dark reddish brown, without spotting; pleura tawny to reddish brown, without spotting. Coxae tawny with brown markings; fore femur as in *A. kurandanus* but with additional dark brown dorsal suffusion on whole length; other femora tawny, with large distal brown zone in male, but not distinctly browned distally in female; tibiae brown, with tawny zones; tarsi blackish brown or black. Wing coloration as in *A. tawii*, but narrow brown mark on anterior crossvein better developed. Abdominal tergites in male dark brown with greenish reflections, in female tawny brown with reflections not green-tinted.

Head in female very similarly shaped to that of *A. kurandanus* (see Fig. 22); in (small) male eye more gibbous below than in female of present species or larger male of *A. tawii* (therefore probably strongly gibbous in yet unknown larger males).

Thorax. Scutellum somewhat rounded, but prominent at base of each bristle, dorsally near scutellar suture with little pubescence (female) or none (male), with hairing on sides short, moderately extensive. Hind trochanter with yellow hairs, some of ventral ones rather

long, without ventral prominence; femora without spines, armed much as in *A. tawii*; fore femur with dorsal bristles almost obsolete; hind femur with long yellow ventral hairs, particularly on basal half; hind tibia strongly curved in male, slightly curved in female, without strong gibbosity on apical part of posterior surface; fore tarsus in both sexes rather slender, a little broadened distally, in male length/width for segment 1 = 4·9 (other segments not measured); hind tarsus depressed, moderately slender. Wing: cell-4 index = 0·59; microtrichiation of wing membrane approximately as in *A. tawii*, but microtrichose zones in marginal and submarginal cells smaller.

Abdomen. Tergites 5 of male *c.* 2·3 × as long as tergite 4. Male postabdomen: outer surstylus somewhat similar to that of *A. tawii*, but with distal section smaller; terminal filament about 3 × as long as glans, moderately tapered distally, with very narrow membranous margins.

Dimensions. Total length: male, 6·9 mm; female, 7·4 mm. Width of head: male, 3·5 mm; female, 3·9 mm. Length of thorax: male, 3·8 mm; female, 4·3 mm. Length of wing: male, 9·3 mm; female, *c.* 10·4 mm. Length of glans of aedeagus: 0·66 mm.

Distribution

Papua, Southern Highlands Province and highlands of Morobe province. Map reference 7*D*, 9*D* (Fig. 1).

Notes

A. reses most closely resembles *A. tawii*. See under that species for comparative data.

Achias strigatus de Meijere

Achias strigatus de Meijere, 1913: 372–3.—Hendel, 1914*b*: 205.

Material Examined

Holotype (unique). ♂, West New Guinea: Alkmaar, upper Lorentz R., 2.ii.1910, H.A.L. (AMST).

Description (male)

The following descriptive notes made from the slightly immature holotype, supplement the descriptions by de Meijere and Hendel.

Coloration. Postfrons black, with pair of pale blotches; summit of parafacial with pale horizontal line next to eye; face with pair of large black spots below (and extending into) antennal grooves, and broadly fused on centre of epistomal margin; central and upper part of face pale yellowish. Palp yellowish brown. Mesoscutum yellowish grey pruinescent with 4 broad dull black separate stripes; scutellum dull dark brown. Femora yellowish with large distoventral blackish mark. Wing nearly clear, brownish in first and base of second costal cell, with pale brown mark on anterior crossvein, with no trace of apical mark. Abdomen with tergite 1 yellowish, other preabdominal tergites dark brown with purple reflections.

Head. Eye scarcely stalked but very prominent and subacutely gibbous.

Thorax. Major bristles as in *A. kurandanus*; hairs on humeral callus, mesopleuron, and between postalar and intra-alar bristles unusually long; scutellum with rather dense yellow hairs on entire dorsal surface. Tarsi and hind trochanter without special modification.

Abdomen. Male postabdomen not observed.

Distribution

South-central West New Guinea, Lorentz (Noord) River district. Map reference 5C (Fig. 1).

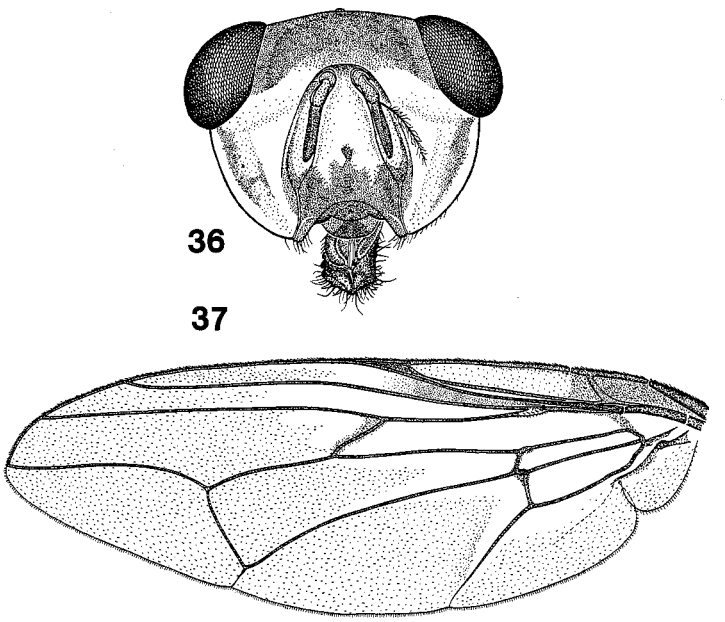
Notes

A. strigatus differs from other species with minimal wing markings and the face browned on lower part, in the conspicuous yellow hairing of the scutellum which covers the entire dorsal surface.

Achias sedlacekae, sp. nov.
(Figs 36, 37)

Material Examined

Holotype (unique). ♂, Papua: Mt Giluwe, 2550 m, 27.v.1963, 'J. Sedlacek' (actually M. Sedlacek–J. Sedlacek personal communication) (BPB).



Figs 36–37. *Achias sedlacekae* (♂): *36*, head; *37*, wing.

Description (male)

Agreeing with description given for *A. kurandanus* except as indicated below. Female unknown.

Coloration. Postfrons mid-brown, almost uniformly coloured in part, partly mottled; face brown on about lower third, with brown zone apparently consisting of 3 irregular, partly fused blotches; brown-mottled cheek stripe present, dissected below; parafacial with pale yellow mark at its summit next to eye, subtended by an indistinct tawny mark. Prelabrum partly brown. Mesoscutum with ground colour tawny brown at sides and on posterior section of sublateral stripe, elsewhere dull black; median grey pruinescent stripe slightly

narrower than paramedian black stripes, except at anterior end; scutellum brown-black, without spotting; pleura tawny brown, with only very indistinct mottling. Coxae tawny, with darker suffusions; fore femur broadly diffusely browned distally, with brownish dorsal suffusion on rest of length, and brown basal anterior zone; other femora diffusely brownish distally, hind one more strongly so; tibiae dark brown with tawny zones. Wing coloration similar to that of *A. tawii*; stigmatal band and apical mark absent; marks on crossveins less distinct than in *A. tawii*; squama pale buff. Abdomen dark brown, with faintly greenish reflections.

Head. Eye not stalked, rounded, only slightly prominent below. Palpus slightly broadened beyond middle.

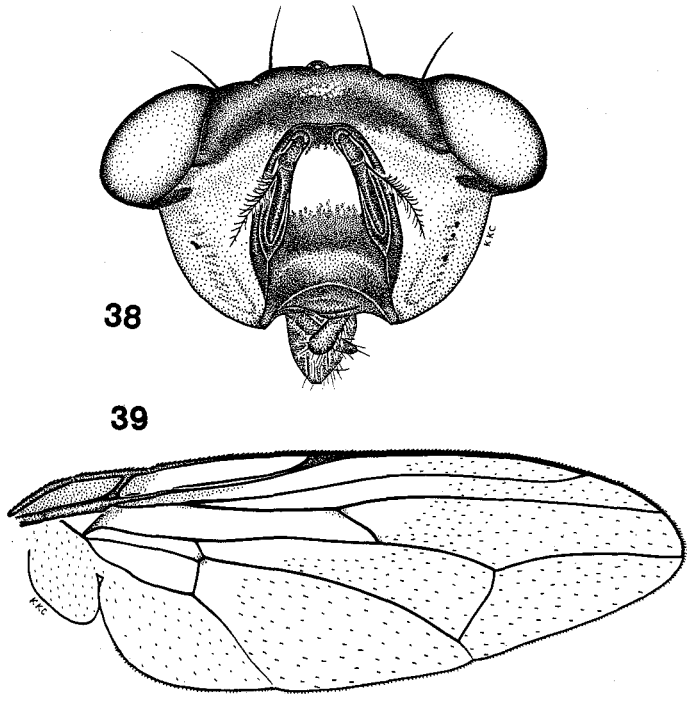
Thorax. Scutellum with short, inconspicuous hairs on lateral and posterior margins and a small zone of dense pubescence on each side near scutellar suture; bristling probably as in *A. kurandanus*, but prescutellar acrostichals obliterated by pin. Hind trochanter with moderately developed pale ventral hairs, without prominence; femora as described for *A. tawii*; hind tibia moderately curved, with moderate gibbosity on apical part of posterior surface; fore tarsus rather slender, depressed, almost as long as tibia; length/width for segment 1 = 4·4, for segment 2 = 1·2, for segment 3 = 1·0, for segment 4 = 0·66, for segment 5 = 1·2. Wing: cell-4 index = 0·59; wing microtrichiation as in *A. tawii*; second costal cell bare beyond basal sixth.

Abdomen. Tergite 5 *c.* 2·0 × as long as tergite 4. Male postabdomen: outer surstylus with broadly triangular, externally convex distal section and several apical spinules; aedeagus with slender subcylindrical glans; terminal filament slightly more than twice as long as glans, gradually tapered to slender apex, with moderately developed membranous margin.

Dimensions. Total length 8·2 mm; width of head 3·6 mm; length of thorax 5·1 mm; length of wing 11·9 mm; length of glans of aedeagus 0·99 mm.

Distribution

Papua, Southern Highlands Province. Map reference 7*D* (Fig. 1).



Figs 38, 39. *Achias parilis* (♂): *38*, head; *39*, wing.

Notes

A. sedlacekae is distinguished from other species with haired scutellum and only basal part of second costal cell microtrichose by the tripartite brown zone on the face and longer fore tarsus. The inconspicuous hairing of the scutellum suggests comparison with species in Section 2; *A. sedlacekae* resembles *A. comptus* of that group but has a well-developed microtrichose zone at base of second costal cell and the fore tarsus of male not expanded distally.

Achias parilis, sp. nov.
(Figs 38, 39)

Material Examined

Holotype. ♂, NE. New Guinea: Mt Gahavisuka, Eastern Highlands Province, 13.viii.1983, H.R. (AM).

Paratype. 1♀ (immature), same data as holotype except 11.viii.1983 (FRIL).

Description

Agreeing with description of *A. kurandanus* except as indicated below.

Coloration. Postfrons of male largely dark brown with fulvous blotch near centre, in immature female generally much paler; face brown on lower half (male) or slightly less (female), upper margin of brown zone irregularly mottled; cheek stripe represented by few small dots in male, well developed in female; in male incipient eye-stalk with brown anteroventral mark and adjacent anterior creamy mark as in *A. kurandanus*. Prelabrum brownish; palpus largely brownish. Mesoscutum with black ground colour, becoming castaneous towards lateral and posterior margins, without spotting; pruinescent areas grey; median pruinescent stripe anteriorly almost as broad as each paramedian stripe, but narrower posteriorly; pleura brown to tawny, without distinct mottling, with greyish to yellowish pubescence and hairs. Fore coxa yellowish brown; all femora fulvous with large distoventral brown zone, fore femur with large anterior brown spot at base; tibiae fulvous with brown markings. Wing with first costal cell and basal seventh of second yellowish brown; remainder of second costal cell indistinctly yellowish; marginal cell strongly tinged with yellow in basal half, brownish at extreme base, distal side of anterior crossvein with narrow yellowish brown mark, but stigmatal band otherwise absent; apical mark absent, but almost distal half of wing with slight brown tinge; other crossveins without brown marks; squama pale yellow to buff.

Head somewhat as in *A. kurandanus*; in female eye larger and probably less prominent than in that species (somewhat collapsed); head of male broad across cheeks, with eye very prominent below, not stalked, but orbital margin of cheek slightly horizontally produced below eye. Palpus broader than in *A. kurandanus*.

Thorax. Scutellum short-haired on lateral and posterior margins, with well developed pubescence near scutellar suture. Hind trochanter without prominence, with yellow hairs, none particularly long; fore femur with a few moderately stout posteroventral bristles distally; other femora without strong ventral bristles or spines; hind femur with longitudinal anterodorsal band of coarse black hairs from near base to beyond middle, ventrally with only quite short yellowish hairs, distally with vestigial black anteroventral setulae; fore tarsus moderately depressed, in male broadened distally, length/width for segment 1 = 3·4, for segment 2 = 1·1, for segment 3 = 0·77, for segment 4 = 0·62, for segment 5 = 0·95; segments a little more slender in female. Wing: cell-4 index = 0·60; anal crossvein straight; first costal and basal seventh of second costal cell densely microtrichose, rest of second costal cell largely but not entirely bare; marginal cell microtrichose only on slightly less than distal half and at extreme base; submarginal cell quite bare on basal $\frac{3}{5}$; first basal cell with microtrichose areas very reduced; first posterior cell with large anterobasal bare zone and narrow bare zone along penultimate section of vein 4; discal cell with almost basal half bare; alula entirely microtrichose.

Abdomen. In male tergite 5 *c.* 2·4 × as long as tergite 4. Male postabdomen: distal section of outer surstylus short, apically very obtuse, with short hairs not forming an apical

tuft; aedeagus with preglans narrower than stipe, not expanded distally; glans rather short, ovoid-cylindrical; terminal filament not much tapered distally, with membranous margin for much of length, 3 × as long as glans.

Dimensions. Total length: male, 12·2 mm; female, *c.* 9·6 mm. Width of head: male, 5·6 mm; female, -. Length of thorax: male, 5·2 mm; female, *c.* 4·8 mm. Length of wing: male, 12·5 mm; female, *c.* 10·8 mm. Length of glans of aedeagus: 0·70 mm.

Distribution

North-east New Guinea, Eastern Highlands province. Map reference 8*D* (Fig. 1).

Habitat

Male in fly trap (dung); female on ground vegetation.

Notes

A. parilis most closely resembles *A. kentae.* In addition to the characters given in the key, *A. parilis* differs in having a longitudinal anterior band of coarse black hairs on the hind femur and no median black line dividing the posterior part of the median pruinescent stripe of the mesoscutum.

The only female is immature and the head has collapsed.

Achias kentae, sp. nov.

Material Examined

Holotype. ♂, NE. New Guinea: Gumi, nr Bulolo, Morobe Province, 2010 m, 14.ix.1979, H.R. (AM).

Paratype. 1♀, same data exept 6.iii.1980 (FRIL).

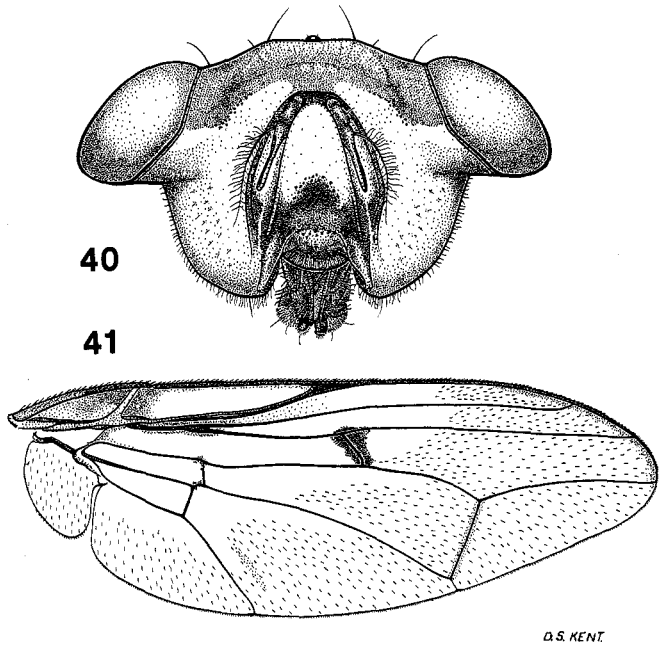
Description

Agreeing with description of *A. kurandanus* except as indicated below.

Coloration. Postfrons dark brown, with fine, irregular fulvous mottling, with anterolateral fulvous spot on each side, closer to eye-margin in female than in male; face with dark brown zone on about lower third, but occupying much less than $\frac{1}{3}$ of height of face on median line and thus less extensive than in *A. parilis*; cheek stripe, in female only, long consisting of brown mottling; incipient eye-stalk of male without dark mark, with creamy spot anteriorly. Prelabrum variably suffused with brown; palpus largely brown, tawny towards base. Mesoscutum with ground colour dark brown to black, in male more castaneous anteriorly and centrally and on 4 non-pruinescent stripes, in female more uniformly dark; median pruinescent stripe divided centrally and posteriorly by a dark line (defined by cuticular pigment and absence of pale pruinescence) which expands behind limits of paramedian non-pruinescent stripes; scutellum black; ground colour of pleura brown, tawny on lower part of scutellum and of hypopleuron, the whole with pale greyish pubescence-pruinescence. Fore coxa dark brown, with little fulvous to tawny coloration at base; all femora fulvous with brown distal or distoventral zone; tibiae dark brown, with fulvous markings which are mostly obscure in female. Wing coloration as given for *A. parilis*, but trace of stigmatal band present in marginal cell.

Head somewhat as in *A. kurandanus*, in female eye slightly smaller and less convex, in male head and eye shaped much as in *A. parilis*, only slightly narrower across cheeks, though specimen much smaller.

Thorax. Scutellum with hairs restricted to sides, most of them in front of foremost lateral bristle, longer in male than in female, with well developed pubescence near scutellar suture. Hind trochanter with mostly pale hairs, without ventral prominence; fore femur with a few posteroventral spinescent bristles distally; femora otherwise without ventral spines or stout bristles; fore tarsus moderately depressed, not much broadened, length/width for segment 1 = 4·0, for segment 2 = 1·4, for segment 3 = 0·77, for segment 4 = 0·63, for segment 5 = 1·2, segments more slender in female; hind basitarsus slightly less elongate than fore one. Wing: cell-4 index = 0·65; microtrichiation resembling that of *A. parilis*; marginal cell also microtrichose on stigmatal band.



Figs 40, 41. *Achias molysma* (♂): *40*, head; *41*, wing.

Abdomen. In male tergite 5 *c.* 2·7 × as long as tergite 4. Male postabdomen: outer surstylus with rather broad, subtriangular distal expansion, its apex subacute with compact fascicle of appressed setulae; aedeagus with preglans short, as wide as stipe; glans subcylindrical; terminal filament moderately tapered apically, nearly 4 × as long as glans.

Dimensions. Total length: male, 9·3 mm; female, 6·6 mm. Width of head: male, 4·3 mm; female, 3·6 mm. Length of thorax: male, 4·4 mm; female, 3·9 mm. Length of wing: male, 10·4 mm; female, 9·7 mm. Length of glans of aedeagus: 0·69 mm.

Distribution

North-east New Guinea, Morobe Province. Map reference 9*D* (Fig. 1).

Notes

A. kentae is most similar to *A. parilis* (see account of this species for comparison). Because of reduced hairing of the scutellum it resembles certain species of Section 2, particularly *A. comptus*, but the male fore tarsus is very different and the microtrichiation in the second costal cell is less reduced; *A. stigon* and *A. sursividens* of Group 2 are also similar, but have different facial markings and the male hind trochanter with a ventral tubercle.

Achias molysma, sp. nov.
(Figs 40, 41)

Material Examined

Holotype. ♂, NE. New Guinea: Gumi, nr Bulolo, Morobe Province, 2010 m, 26.ix.1979, H.R. (AM).

Paratype. 1♀, same data as holotype (FRIL).

Description

Agreeing with description given for *A. kurandanus* except as indicated below.

Coloration. Postfrons largely covered with dense dark brown mottling, appearing almost uniformly brown in male, with less dense and dark mottling in female, with irregular fulvous spot in front of centre, but no lateral pale spot; face brown below on full width, brown zone extending upwards medially as a somewhat mottled lobe, not quite reaching centre of face, not extending on to cheek; eye-stalk of male with creamy anterior mark, without brown anteroventral mark. Antennal segment 3 tawny. Mesoscutum coloured approximately as in *A. sedlacekae*; median pruinescent stripe anteriorly as wide as paramedian black stripe; scutellum dark reddish brown (male) to brown-black (female); pleura tawny brown, without mottling; lower part of sternopleuron paler. Coxae reddish brown to dark brown, darker in female; femora fulvous with apical brown zone; tibiae fulvous to tawny with dark brown markings. Wing coloration generally as given for *A. parilis*, but most pigmented areas paler; anterior crossvein with dark brown blotch which barely extends into submarginal cell; posterior crossvein with narrow pale brown stripe for whole length; narrow, inconspicuous brown stripe on costa from distal part of marginal cell to end of vein 4.

Head and eye shaped somewhat as in *A. kurandanus*; eye of female slightly larger and slightly more prominent below; in male eye-stalk as in medium-sized male of *A. kurandanus*, eye slightly more depressed. Palpus slightly broader than in *A. kurandanus*.

Thorax. Scutellum with hairing well developed laterally, reduced apically, with distinct pubescence near scutellar suture. Hind trochanter without prominence, with rather long coarse, yellow hairs; fore femur with few small dorsal and posteroventral bristles distally; hind femur with long dorsal and small anteroventral bristles distally; femora otherwise without distinct bristles; fore tarsus moderately depressed, slightly broadened distally; in male length/width for segment 1 = 3·7, for segment 2 = 1·3, for segment 3 = 0·81, for segment 4 = 0·62, for segment 5 = 1·0; hind tarsus more slender than fore tarsus. Wing: cell-4 index = 0·59–0·60; microtrichiation resembling that of *A. parilis* except for additional microtrichose zone coinciding with brown blotch on anterior crossvein.

Abdomen. In male tergite 5 *c.* 2·6 × as long as tergite 4. Male postabdomen: outer surstylus with unusally small distal section, with angular anterior prominence and compact fascicle of short setulae at the obtuse apex; preglans longer than wide; glans elongate subcylindrical; terminal filament with very narrow membranous margin, not much tapered distally, with slight cylindrical thickening at apex, *c.* 5·5 × as long as glans.

Dimensions. Total length: male, 10·3 mm; female, 7·7 mm. Width of head: male, 6·0 mm; female, 4·5 mm. Length of thorax: male, 5·1 mm; female, 4·9 mm. Length of wing: male, 11·8 mm; female, 10·9 mm. Length of glans of aedeagus: 0·82 mm.

Distribution

North-east New Guinea, Morobe Province. Map reference 9*D* (Fig. 1).

Notes

A. molysma resembles the group of species about *A. sedlacekae* and *A. parilis*, but differs from all these in having a dark brown blotch on the anterior crossvein. The facial

markings most resemble those of *A. sedlacekae*, but *A. molysma* differs from that species in the shorter, straighter, less oblique anterior crossvein, and, in males of similar size, greater development of the eye-stalk and shorter glans.

Achias subnudus Malloch

Achias subnudus Malloch, 1939: 134–5.

Material Examined

Holotype. ♂, Papua: Mt Tafa, Wharton Range, 8500 ft (*c.* 2600 m), Mar. 1934, L.E.C. (BM, 1934–321).

Paratypes. 4♂, 6♀, same data as holotype (BM, AM). One of the females should be an allotype, but none is labelled as such.

Description

The following short description supplements that of Malloch.

Coloration. Facial markings very similar to those of *A. cogani*. Wing coloured much as in *A. parilis*; first costal cell and *c.* basal sixth of second tawny brown, remainder of second costal cell clear; brown mark on anterior crossvein narrow but distinct.

Head and eye similarly shaped to those of *A. kurandanus*, but eye-stalk of male much thicker; eye of female less evenly rounded, more gibbous below.

Thorax. Scutellum with small zone of pubescence on each side of median line at scutellar suture. Hind trochanter of male with rather long yellow hairs, without prominence; femora without strong ventral bristles; mid femur with rather long yellow ventral hairs; hind femur with long, rather fine dorsal bristles distally, with long yellow ventral hairs, some longer than greatest diameter of femur in male; tarsi of both sexes much more slender than in *A. kurandanus*, *A. parilis* etc.; fore tarsus cylindrical, with only distal segments depressed; in moderate sized male length/width for segment 1 = 6·7, for segment 2 = 2·1, for segment 3 = 0·98, for segment 4 = 0·63, for segment 5 = 1·0, the last with acute distolateral angles. Wing: cell-4 index = 0·58–0·62; microtrichiation as in *A. parilis*, but microtrichose zones in first and third posterior cells and especially in distal part of marginal and submarginal cells smaller.

Abdomen. In male tergite 5 *c.* 2·9 × as long as tergite 4. Male postabdomen: distal section of outer surstylus with subtriangular apical expansion, acute posterior angle, obtuse apex, and few apical setulae; aedeagus not examined.

Dimensions. Total length: male, 8·6 mm; female, 7·7 mm. Width of head: male, 4·6 mm; female, 4·2 mm. Length of thorax: male, 4·0 mm; female, 4·4 mm. Length of wing: male, 9·9 mm; female, 10·8 mm. Measurements made from one paratype of each sex; larger, broader-headed males are present in type series.

Distribution

Papua, highlands of Central Province. Map reference 9*E* (Fig. 1).

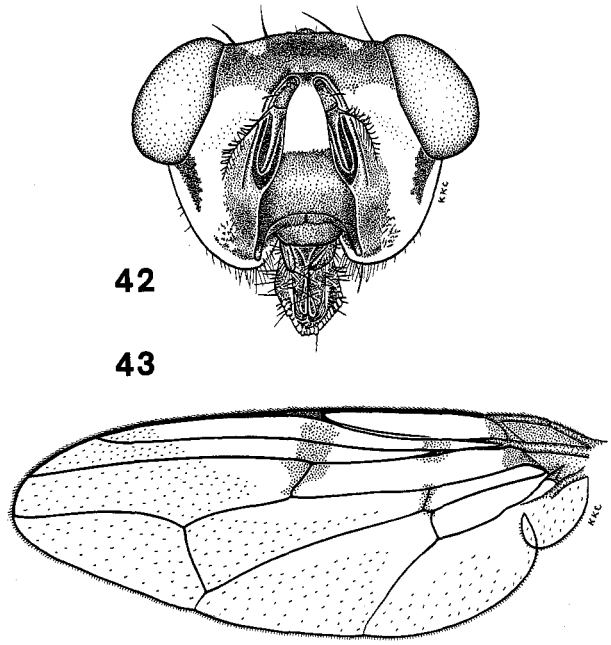
Notes

A. subnudus is readily distinguished from other species of Section 1, except *A. cogani*, by the slender fore tarsus in combination with the distinctive facial-parafacial markings. From *A. cogani* it differs in the more attenuated fore basitarsus and absence of the stigmatal band in the marginal and submarginal cells.

Achias cogani, sp. nov.
(Figs 42, 43)

Material Examined

Holotype (unique). ♀, NE. New Guinea: Mt Kaindi, nr Wau, 2350 m, Malaise trap, 30.iv.1966, J.L.G. (BPB).



Figs 42, 43. *Achias cogani* (♀): *42*, head; *43* wing.

Description (female)

Coloration. Head fulvous; postfrons largely covered by a brown patch which extends from eye to eye and from ptilinal suture to posterior ocelli but is somewhat incised posteriorly in front of inner vertical bristles; face brown on lower half, the brown colour extending as suffusion and mottling on to lower part of parafacial and cheek; cheek stripe present as a large separate blotch below eye; upper occiput with some irregular brown markings. Antenna brownish tawny. Prelabrum and palpus tawny brown. Ground colour of thorax predominantly reddish brown; mesoscutum with ochraceous pubescence-pruinescence and 4 broad longitudinal non-pruinescent stripes, the submedian pair not reaching to scutellum, their surface minutely roughened; submedian stripe blackish anteriorly; a reddish brown lightly pubescent lateral mark present between supra-alar and postalar bristles; scutellum dark brown, shining only at margin, with narrow zone of white pubescence on each side near scutellar suture; pleura covered with pale grey pubescence-pruinescence of varying density. Coxae tawny with some brown markings; fore femur tawny with large distoventral brown patch; other femora fulvous, distally becoming tawny on dorsal surface, brown on ventral surface; tibiae fulvous with tawny markings; tarsi reddish brown to dark brown. Wing membrane faintly tinged with brown on distal third; first costal cell, basal extremity of second costal cell to about level of costal break, and stigmatal section of subcostal cell yellowish brown; small yellowish brown marks in base of first basal cell and both anterior and posterior to fork of veins 2 and 3; a narrow brownish mark covering basal and anal crossveins; a rather narrow irregular yellowish brown stigmatal band extending almost from

vein 1 to vein 4; a slight intensification of brown tinge along costa in first posterior cell; discal crossvein unmarked; squama buff. Haltere buff to fulvous with capitellum partly brown. Abdomen brown to tawny, with reflections slightly tinged green.

Head rather broad; face somewhat convex above, with transverse depression near level of lower end of antennal groove; eye prominent but not stalked, somewhat rounded; inner and outer vertical bristles well developed. Palpus moderately narrow.

Thorax stout; scutellum rounded in outline and slightly convex dorsally, with rather numerous short, fine hairs laterally, and a few very short ones on apical part, none on dorsal surface; the following thoracic bristles well developed: humeral, 1 + 1 notopleurals, supra-alar, postalar, posterior intra-alar, dorsocentral, prescutellar acrostichal, 3 pairs of marginal scutellars. Fore femur with rather weak anteroventral bristles and fewer similar posteroventral ones, with dorsal bristles short; mid femur without distinct bristles; hind femur with strong dorsal bristles, shorter but moderately strong anteroventral bristles and weak posteroventral bristles, with ventral hairs mostly quite short; hind tibia simple, slightly curved; fore tarsus with segments 1 and 2 moderately slender and slightly depressed, segment 1 about 4·9 × as long as maximum diameter, segment 4 very short and crescentric, segment 5 broad and flat; hind tarsus not very stout. Wing venation very similar to that of *A. kurandanus*; cell-4 index = 0·55; first costal cell and brown basal part of second costal cell microtrichose, remainder of second costal cell bare; marginal cell largely bare except on a small brown sub-basal patch, on stigmatal band, and on distal extremity; submarginal cell microtrichose on a minute basal area, on stigmatal band, and on distal third; first basal cell with 4 patches of microtrichia only, corresponding to the brown markings; first posterior cell with large sub-basal bare area not reaching to anterior crossvein; discal cell bare on about basal half, and further distally along veins 4 and 5; third posterior cell bare basally and to beyond middle along veins 5 and 6, with slightly pigmented more densely microtrichose ridge in front of vein 6; alula entirely microtrichose; squama large, posteriorly widened and rounded.

Abdomen broadly oval; tergite 1 short and rapidly expanding from attachment to thorax; tergite 3 with pair of bare sublateral anterior patches.

Dimensions. Total length 7·7 mm; width of head 4·3 mm; length of thorax 4·7 mm; length of wing 11·1 mm.

Distribution

North-east New Guinea, highlands of southern Morobe Province. Map reference 9*D* (Fig. 1).

Notes

A much damaged topotypical specimen in BPB, apparently a male, is almost certainly this species. It has incipient eye-stalks and lacks the cheek stripe; width of head = 5·0 mm, length of wing = 10·7 mm.

A. cogani is extremely similar to *A. subnudus* in most characters, but is distinguished by the presence of a brown stigmatal band and the much shorter hairing of the hind femur. Although their type localities are separated by only *c.* 140 km, I believe these character states probably represent differences between populations.

Achias celaenops, sp. nov.

Material Examined

Holotype. ♀, Papua: nr Myola, Central Province, 1900–2100 m, 24.vii.1986, J.W.I. (AM).

Paratype. 1♀, same data as holotype (AM).

Description (female)

Agreeing with description of *A. kurandanus* except as indicated below. Male unknown.

Coloration. Postfrons largely brown, not mottled, with irregular fulvous patches anteriorly; face brown, with fulvous blotch between and just below antennal sockets, a pair of small fulvous spots just above centre, and few, variable irregular fulvous streaks below centre; parafacial broadly brownish below on part nearest face (much as in *A. cogani*, but brownish zone broader); cheek stripe well developed, fusing below with parafacial brown zone. Antennal segment 1 pale fulvous. Prelabrum brown; palpus greyish brown, paler basally. Ground colour of mesoscutum black centrally, dark reddish brown to castaneous laterally, unspotted; paramedian, non-pruinescent black stripes well separated anteriorly, broadening and more or less fusing posteriorly; scutellum entirely brown-black, subshining, without spotting; pleura unspotted, with lower part of sternopleuron and hypopleuron paler tawny. Fore coxae tawny brown; fore femur blackish brown, becoming dark reddish brown basally; other femora fulvous, dark brown on apical third; tibiae dark brown, mid and hind ones with tawny suffusion near middle. Wing coloration as in *A. parilis*, but general yellowish to brown tinge of membrane less noticeable; squama pale buff. Abdomen predominantly dark reddish brown, with green reflections.

Head. Eye larger and more gibbous below than in *A. kurandanus*; face strongly convex above, with epistomal margin particularly prominent; cheek subcarinate and with parallel groove at posterolateral margin of lateral surface.

Thorax. Scutellum with outline concave between bristles of apical pair, with hairs short on sides, very sparse posteriorly, with small pubescent zone on each side of median line at scutellar suture. Hind trochanter with rather long whitish hairs; femora without spines or distinct ventral bristles; fore femur without dorsal bristles; hind femur with few fine dorsal bristles distally, with numerous yellowish ventral and posteroventral bristles, some as long as diameter of femur; fore tarsus slender, depressed distally but not much broadened; length/width for segment 1 = 4·3; segment 5, as compared with that of *A. subnudus* and *A. cogani* more nearly parallel-sided in part, with distolateral angles less acute; other tarsi moderately slender. Wing: cell-4 index = 0·58–0·61; microtrichiation as in *A. parilis*, but microtrichose areas in submarginal and, especially, in marginal cells smaller.

Abdomen much as in *A. kurandanus*, *A. subnudus* etc.

Dimensions. Total length 7·5–7·8 mm; width of head 3·9–4·0 mm; length of thorax 4·3–4·6 mm; length of wing 9·9 mm.

Distribution

Papua, highlands of Central Province. Some maps show the locality Myola as located over the border in the Oro (Northern) Province, on the Kokoda Trail. Map reference 9*E* (Fig. 1).

Notes

A. celaenops most resembles *A. subnudus* and *A. cogani* in the distribution of microtrichia in the second costal cell, haired scutellum, and extension of the facial brown zone on to the parafacial. It differs from these in the more extensive brown zone on the face (covering much of the upper part), and the distinctive marginal carina and submarginal groove on the posteroventral edge of the lateral surface of the cheek. The fore basitarsus is less attenuated than in *A. subnudus*.

Achias fulviceps de Meijere

Achias fulviceps de Meijere, 1913: 373.–Hendel, 1914*b*: 205–6.

Material Examined

Holotype (unique). ♀, S. West New Guinea: Heuvelbivak, Lorentz R., 800 m, 7–15.xi.1909, H.A.L. (AMST).

Description (female)

The following descriptive notes, based on the holotype, supplement in part the descriptions of de Meijere and Hendel.

Coloration. Head tawny with slight suffusion of reddish brown on centre of postfrons anteriorly and on lower part of face, but without darker markings or spots. Palpus apparently reddish brown (surface obscured by dirt). Thorax apparently dark-coloured (greasy); 4 non-pruinescent stripes of mesoscutum black, with slight blue sheen posteriorly; scutellum blackish with broken blue sheen. Fore femur brownish tawny; other femora fulvous tawny; all femora with blackish distoventral area; tibiae dark brown; tarsi black. Wing with yellowish brown areas as follows: in first and base of second subcostal cells, distal end of subcostal cell, base of marginal cell, along costa from beyond end of subcostal cell to apex, and narrow zone on anterior crossvein. Abdominal tergite 1 yellow-brown; other tergites black with blue reflections.

Thorax. Chaetotaxy as in *A. kurandanus*; scutellar bristles arising from tubercles; scutellum with numerous fine, inconspicuous hairs, absent from central part, without anterior pubescence. Second costal cell microtrichose only at base.

Distribution

South-central West New Guinea, Lorentz (Noord) River district. Map reference 5*C* (Fig. 1).

Notes

Correct placement of this species in the key is difficult. My notes on the holotype were made long ago before the key was drawn up in its present form. It should be distinguished from other species of Section 1 with complete chaetotaxy, second costal cell microtrichose only at base, and 4 non-pruinescent mesoscutal stripes by the absence of any well defined markings on the face.

Achias rufus, sp. nov.

Material Examined

Holotype. ♂, NE. New Guinea: Gumi nr Bulolo, Morobe Province, 2010 m, 6.iii.1980, H.R. (AM).

Paratype. 1♀, same data as holotype (AM). Further material (not seem by author) should be in FRIL.

Description

Agreeing with description of *A. kurandanus* except as indicated below.

Coloration. Postfrons with extensive brown mottling, except anterolaterally; anterior margin not noticeably browned; face with brown zone, slightly finely dissected medially, on

about lower third; cheek stripe well developed in both sexes. Antenna tawny. Prelabrum fulvous to brownish. Mesoscutum with reddish tawny ground colour, unspotted laterally, with intradorsocentral black zone on anterior half, thus with anterior part of paramedian non-pruinescent stripe black; scutellum tawny to reddish brown, with indistinct paler spots in part; pleura tawny to reddish brown, unspotted. Fore coxa tawny, becoming brown distally; other coxae tawny to brownish; femora almost entirely fulvous; tibiae tawny brown with darker zones in male, darker in female; tarsi dark brown to black. Wing coloured as in *A. crosskeyi*. Abdomen brown, with greenish reflections in female, not in male; tergite 5 of male orange-fulvous on slightly less than posterior half.

Head not showing sexual dimorphism in available sample, shaped much as in female of *A. kurandanus*, but with eyes larger and less protruding.

Thorax. Scutellum with fine yellow hairs on most of dorsal and lateral surfaces. Hind trochanter with moderately developed yellow hairs; fore and mid femora without distinct ventral bristles, former with few small dorsal bristles; hind femur with few small anteroventral bristles and long, hair-like dorsal bristles distally; fore tarsus strongly depressed, somewhat broadened, not much expanded distally, slightly broader in male than in female; in male length/width for segment 1 = 3·2, for segment 2 = 0·97, for segment 3 = 0·67, for segment 4 = 0·47, for segment 5 = 0·91; hind tarsus not notably thickened. Wing: cell-4 index = 0·62–0·64; first costal cell microtrichose, very sparsely so in part; second costal cell bare, except for few microtrichia along costa; wing microtrichia otherwise as in *A. parilis*.

Abdomen. In male tergite 5 *c.* 2·0 × as long as tergite 4. Male postabdomen: distal section of outer surstylus short, broadly rounded apically, with finely acute posterior angle, thus somewhat hook-shaped; preglans rather short; glans ovoid-cylindrical; terminal filament slender, widened and obliquely truncate at apex, about 6 × as long as glans.

Dimensions. Total length: male, 7·4 mm; female, 6·7 mm. Width of head: male, 3·2 mm; female, 3·4 mm. Length of thorax: male, 3·9 mm; female, 4·3 mm. Length of wing: male, 9·2 mm: female, 9·8 mm. Length of glans of aedeagus: 0·56 mm.

Distribution

North-east New Guinea, highlands of Morobe Province. Map reference 9*D* (Fig. 1).

Notes

A. rufus is very similar to *A. crosskeyi* (q.v.) in most characters.

Achias crosskeyi, sp. nov.

Material Examined

Holotype. ♂, NE. New Guinea: Gumi, nr Bulolo, 2010 m, 19.ii.1979, H.R. (AM).

Paratypes. Morobe Province: 1♀, Gumi, 19.viii.1979, H.R. (AM); 1♂, Upper Stony Logging Area, nr Bulolo, 18.viii.1979, H.R. (FRIL); 1♂, Mt Missim, nr Wau, 21.xi.1978, T. Pratt (AM).

Other material. 1♂, Upper Chimbu Valley, Chimbu (Simbu) Province, 2200 m, 5.vii.1955, J.L.G. (BPB); 1♂, Mt Hagen, Western Highlands Province, 4–7.vi.1965, R.W. Crosskey (BM).

Description

Agreeing with description of *A. kurandanus* except as indicated below.

Coloration. Head orange-fulvous; postfrons with variable, sometimes sparse brown mottling; facial ridge not much darkened; cheek stripe short and broken in female, absent or represented by a little mottling in male. Antenna reddish tawny; segment 3 sometimes tinged with brown. Prelabrum fulvous with few brown spots, or largely tawny brown;

palpus tawny or tawny brown, with greyish pruinescence. Mesoscutum with castaneous, unspotted ground colour and ochraceous pruinescence; paramedian non-pruinescent stripe much narrower than median pruinescent stripe, not or slightly wider than pruinescent stripe separating if from sublateral stripe; hairs of mesoscutum yellow; scutellum tawny brown, with a paler tawny spot surrounding socket of each hair, these spots varying much in distinctness; pleura without brown mottling. Coxae tawny; femora fulvous, without dark zones; tibiae fulvous, with or without reddish brown markings; fore tarsus brown or tawny brown, becoming blackish distally, with variable amount of fulvous-yellow on segments 1 and 2; mid and hind tarsi usually paler, in male often with segments 1 and 2 largely yellow. Wing with first costal cell, base of second costal cell and of marginal cell yellow, adjacent parts with faint yellow tinge; about distal third of wing with faint brown tinge; anterior crossvein and junction of anal crossvein with vein 4 very narrowly clouded wtih brown; wing otherwise without trace of transverse bands and apical costal mark; squama fulvous. Abdominal tergites tawny, with green reflections, apparently darker in female.

Head in female with eyes larger, less widely separated, and less protruding than in *A. kurandanus*; in male eye-stalk absent, but in largest male eye gibbous below and cheek slightly horizontally produced below eye.

Thorax. Scutellum with short hairs on most of dorsal and lateral surfaces. Hind trochanter with fine yellow hairs, longer in male; fore femur with at most very slight development of dorsal and posteroventral bristles distally; mid femur without distinct bristles; hind femur with variable dorsal and anteroventral bristles distally, the former usually long but hair-like, the latter fine to somewhat spinescent; fore tarsus depressed from distal part of segment 1, not much broadened, or expanded apically; in male length/width for segment 1 = 4·0, for segment 2 = 1·3, for segment 4 = 0·52, for segment 5 = 0·97; hind tarsus not notably thickened. Wing: cell-4 index = 0·62–0·65; first costal cell microtrichose distally, elsewhere thinly microtrichose or partly bare; second costal cell bare, except for few microtrichia close to costa; wing microtrichia otherwise distributed approximately as in *A. parilis*; squama a little more narrowly rounded posteriorly than in *A. kurandanus*.

Abdomen. In male tergite 5 2·0–2·2 × as long as tergite 4. Male postabdomen: surstyli rather similar to those of *A. kurandanus*; aedeagus with slender preglans; glans elongate, subcylindrical; terminal filament not much tapered, *c.* 1·2–1·3 × as long as glans, with very narrow membranous margin.

Dimensions. Total length: male, 6·8–8·6 mm; female, 5·5 mm. Width of head: male, 3·5–4·4 mm; female, 2·9 mm. Length of thorax: male, 4·1–4·5 mm; female, 3·6 mm. Length of wing: male, 9·3–10·1 mm; female, 9·0 mm. Length of glans of aedeagus: 0·87–0·94 mm.

Distribution

North-east New Guinea, Western Highlands, Chimbu, and Morobe Provinces. Map reference 8*C*, 9*D* (Fig. 1).

Notes

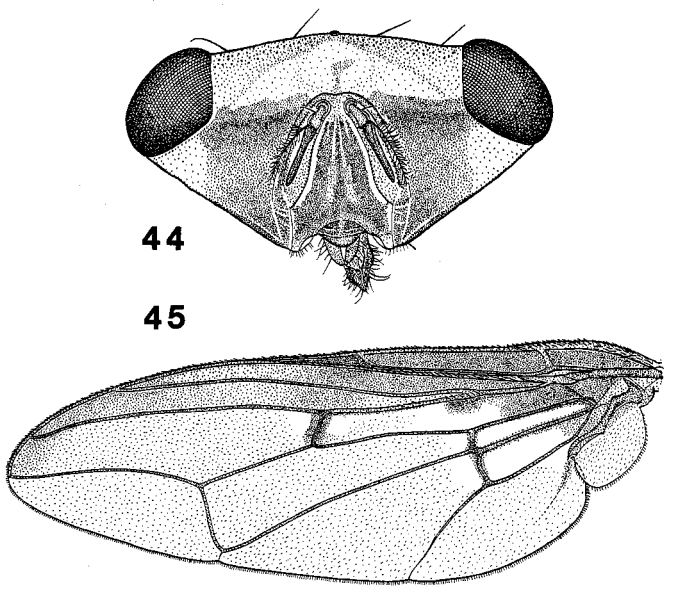
A. crosskeyi, together with the closely related *A. rufus*, differs from other species of Section 1 in the combination of complete thoracic chaetotaxy, reduced wing markings, and bare second costal cell. The femora and scutellum are also paler than in most other species of this section. *A. melinus* of Section 2 shares some of these attributes, but lacks distinct brown facial markings and scutellar hairs, and has a moderately developed stigmatal band and long, spinescent posteroventral bristles on the fore femur. *A. crosskeyi* is most readily separated from *A. rufus* by the characters given in the key, also in the male by the unicolorous tergite 5, subacute outer surstylus, and short terminal filament of the aedeagus. The known distribution is wider than in most closely related species, but it is sympatric with both *A. rufus* and *A. melinus* at Gumi.

Achias wallacei, sp. nov.
(Figs 44, 45)

Material Examined

Holotype. ♂, Papua: Kiunga, Fly R., 9–14.x.1957, W.W.B. (BPB).

Paratypes. 2♂, 2♀, Kiunga, Aug.–Oct. 1957, W.W.B. (BPB, AM).



Figs 44, 45. *Achias wallacei*: *44*, head (♂); *45*, wing (♀).

Description

Coloration. Head orange-tawny; postfrons with small black spots scattered across full width at vertex; face dull brown with variable pale central patch, with lateral margins of carina and 2 or more vertical streaks on upper part pale yellowish; antennal grooves tawny with dense whitish pruinescence; in male parafacial and most of cheek (except postgena and outermost part below lower margin of eye) brownish, this brownish coloration paler and less extensive in male with narrowest head; in female parafacial and cheek orange-tawny except for an indistinct brown mark on parafacial between antennal base and eye. Antenna tawny with segment 3 browish. Prelabrum tawny; palpus reddish tawny with grey pruinescence. Thorax with reddish brown ground colour, with subcuticular mottling very indistinct or absent; mesoscutum with colouring and markings almost exactly as described for *A. mallochi*, but ground colour entirely, including lateral parts, deep reddish brown, unspotted, and hairing entirely golden-yellow; scutellum black or brown-black with slight metallic reflections; pleura covered with greyish pubescence-pruinescence of varying density. Fore coxa tawny with heavy but somewhat variable dark brown suffusion in male, with little or no brown suffusion in female; other coxae tawny tinged with brown; femora of male dark brown with a little paler coloration at each end, palest and most extensive on hind femur; femora of female fulvous to tawny; tibiae generally tawny with reddish brown markings, but fore tibia of male wholly deep reddish brown; tarsi reddish brown, darker brown apically; hind tarsus usually paler basally. Wing with yellowish suffusion covering area in front of vein 3 and stem of R; area behind this predominantly faintly smoky brown; first costal

cell, stigmatal section of subcostal cell, base of first basal cell, a spot in first basal cell next to fork of veins 2 and 3, and a rather narrow mark surrounding anterior crossvein yellowish brown; haltere pale yellowish with tawny margins. Haltere fulvous to tawny with brown mark on capitellum. Abdomen reddish brown, sometimes tawny on tergites 1 and 2.

Head in female a little broader, in male much broader than thorax but without even incipient eye-stalks, with eye, in anterior aspect, not bulging beyond outline of cheek in male, only slightly so in female; genoparafacial region of male very broad, not at all impressed below eye, with a straight, angular carina running from ventrolateral extremity of face almost to eye margin; in female this region less broad with carina variably developed. Palpus of moderate width.

Thorax very robust; mesoscutum with some rather long hairs between postalar and dorsocentral bristles but no long hairs immediately in front of scutellar suture; scutellum short, rounded, convex, almost twice as broad as long, with a little pubescence near scutellar suture on each side of median line and a number of yellowish hairs limited to lateral surface; the following thoracic bristles well developed: humeral, 1 + 1 notopleurals, supar-alar, postalar, posterior intra-alar, dorscentral, prescutellar acrostichal, 3 or 4 pairs of marginal scutellars. Hind trochanter simple, with quite short hairs only; fore and mid femora with strongly developed posteroventral spines and less developed anteroventral ones; hind femur almost straight, with few short anteroventral spines and weaker posteroventral ones, with rather long fine dorsal bristles intergrading with hairs; hind tibia of male a little more swollen apically on posterior surface than that of female, somewhat excavated preapically; tarsi somewhat depressed, with fore tarsus and segment 1 of hind tarsus broader in male than in female. Wing venation as in Fig. 45; cell-4 index = 0·53–0·55; wing membrane microtrichose except for small bare area near base of first posterior cell, areas in central and distal parts of first basal cell, most of second basal and anal cells, and basal extremities of discal, third posterior and fourth posterior cells; squama large, shorter and broader than in most species (e.g. *A. australis*, *A. lativídens* and *A. kimi*), with outer margin straight in part but nowhere concave.

Abdomen broad; tergite 5 about 3·2 to 3·3 × as long as tergite 4 in male. Male postabdomen: outer surstylus rather long, its distal section not very long but much exceeding apex of inner surstylus, rather narrowly obtuse and pubescent at apex, with a short, angular, inwardly directed preapical lobe; aedeagus with slender stipe; preglans swollen but not sharply defined; glans short, almost ovoid; terminal filaments very long, becoming very fine apically, at least 14 × as long as glans but exact measurement not possible.

Dimensions. Total length: male, 10·6–11·1 mm; female, 11·0–11·4 mm. Width of head: male, 6·1–7·4 mm; female, 5·6–5·8 mm. Length of thorax: male, 4·8–5·5 mm; female, 5·5–5·8 mm. Length of wing: male, 9·2–11·0 mm; female, 10·9–11·1 mm. Length of glans of aedeagus: 0·40–0·43 mm.

Distribution

Papua, northern lowlands of Western Province. Map reference 6*D* (Fig. 1).

Notes

A. wallacei differs from all other species of Section 1 in the shape of the male head, which, though remarkably broadened, shows no tendency towards development of eye-stalks. This condition is reminiscent of that of males of representatives of some other platystomatid genera, such as *Mesoctenia coalescens* (Hendel), *Zygaenula paradoxa* Doleschall, and *Cleitamia astrolabei* (Boisduval). Within *Achias*, there is an approach to this condition in the little known species *A. sursividens* and *A. cauda*, species belonging to Section 2 and having quite different facial coloration, male hind trochanteral armature, and other features separating them from *A. wallacei*. The sexual dimorphism in the claws has not been noted in other *Achias* species.

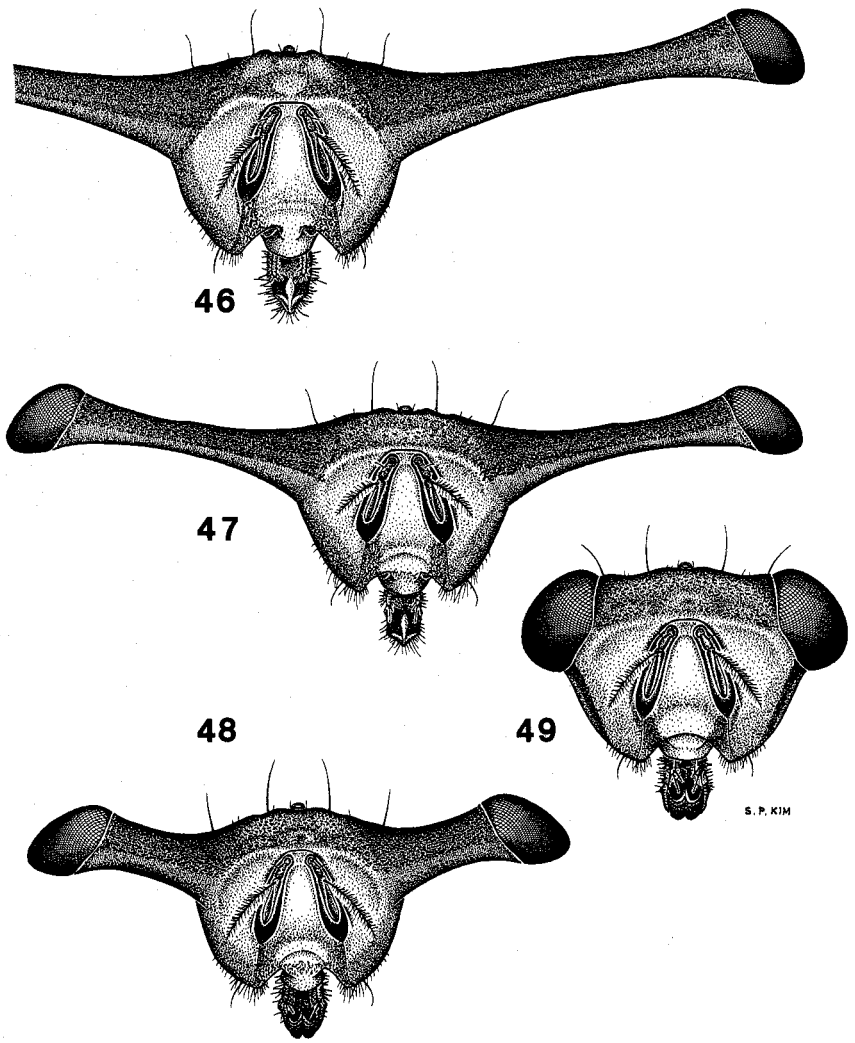
Achias thoracalis Hendel
(Fig. 56)

Achias thoracalis Hendel, 1914*a*: 104 (nom. nud.).–Hendel, 1914*b*: 213–14 (described).

Material Examined

Lectotype (here designated). ♀, NE. New Guinea: 'Deutsch N. Guinea', no other data (MNM).

Paralectotype. 1♀, same data (MNM).



Figs 46–49. *Achias kimi*: *46*, head (largest ♂); *47*, head (holotype ♂); *48*, head (small ♂); *49*, head (♀).

Description (female)

Closely related to *A. kimi* and differing principally in characters given below.

Coloration. Head very similar to that of *A. kimi* in markings; lateral facial marks somewhat darker and more distinct; cheek stripe less developed, the spots composing

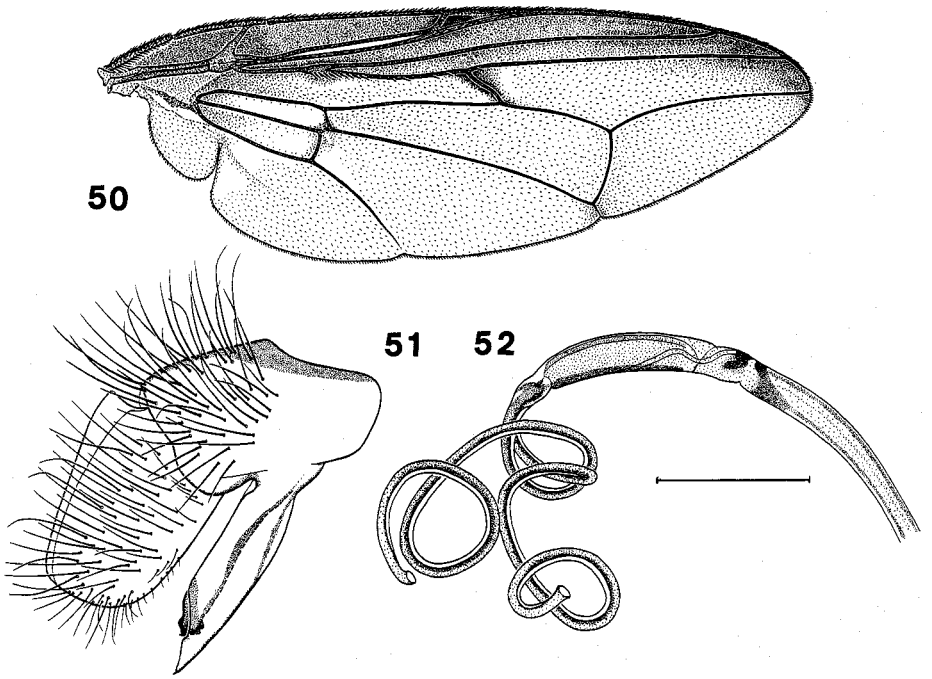
it sparser, thus cheek stripe less intense than lateral facial mark. Wing with costal band distinctly brown, except in most of second costal cell, but with a strong golden tint; yellowish brown stigmatal band broadly crossing submarginal cell and less strongly surrounding anterior crossvein, though the membrane around latter definitely pigmented.

Head similar in shape to that of *A. kimi*.

Hind leg. Trochanter with yellow hairs only and no spines, a small slightly raised gibbosity on posterior surface; femur of distinctly different contour from that of *A. kimi*, not curved upwards near middle, but slightly curved downwards near basal end, leaving ventrally a sub-basal excavation and a basal convex area, the hairs on latter distinctly lengthened, extreme base without small ventral tuft; tibia with apical posterior gibbosity much more prominent than in *A. kimi*.

Wing first posterior cell without bare patch near base, merely a very small area where microtrichia are less dense.

Dimensions (lectotype). Total length 9·4 mm; width of head 4·7 mm; length of thorax 4·6 mm; length of wing 9·6 mm.



Figs 50–52. *Achias kimi*: *50*, wing; *51*, epandrium; *52*, distal part of aedeagus. Scale = 1 mm.

Distribution

North-east New Guinea; further localisation not given.

Notes

A. thoracalis is very similar to *A. kimi*, but both available specimens agree in wing colour and structure of hind leg, being thus sharply differentiated from specimens of *A. kimi* from both Queensland and Papua New Guinea. From *A. hennigi* it differs in the paler costal band and in the same characters of the hind leg which separate it from *A. kimi*.

Achias kimi, sp. nov.
(Figs 50–55)

Material Examined

Holotype. ♂, Queensland: Gordon's Ck, 1 km NE. of Mt Lamond, Iron Range, 22.i.1972, G.A.H. and D.K.M. (AM).

Paratypes. Queensland, Iron Range district: 4♂, 1♀, Gordon's Ck, Jan. 1972 (AM, ANIC); 4♂, 5♀, West Claudie R., 8 km W. of Mt Lamond, Dec. 1971, Jan. 1972 (AM, BM, MNM), all coll. G.A.H. and D.K.M.

Other material (all from Papua New Guinea). **Owen Stanley Range (Papua):** 1♂, 1♀, Tapini, 975 m, Nov. 1957, W.W.B. (BPB); 6♂, 4♀, Loloipa, Jan., Feb., Nov., Dec. 1957–1958, W.W.B. (AM, BPB). **North-east New Guinea:** 1♀, Baiyer R. Sanctuary, Western Highlands, 1200 m, Aug. 1982, S.S. (NSMT).

Description

Coloration. Head fulvous; postfrons, including (in male) entire dorsal surface of eye-stalk to eye margin, rather densely mottled with dark brown subcuticular pigment; face with an irregular light brown blotch (sometimes a little indistinct) below each antennal groove, but without dark pigment in groove; lateral cheek stripe consisting of brown mottling present below eye in female only. Antenna tawny with segment 1 paler. Palpus and proboscis tawny; membranous area between epistomal margin and prelabrum with brown mottling. Ground colour of thoracic cuticle largely fulvous with covering of ochraceous pruinescence or, in parts, pubescence, except on scutellum; mesoscutum largely with rather dark brown ground colour and 4 reddish brown often poorly differentiated longitudinal stripes, of which the submedian pair are very broad and only narrowly separated; these stripes very largely obscured by the almost uniform covering of pruinescence, except towards anterior extremity; humeral callus, notopleural area, and postalar callus fulvous, the first 2 with brown mottling; scutellum dark brown, shining towards margins (the reflections usually faintly bluish) but minutely roughened on much of dorsal surface, with a transverse basal band of ochraceous pubescence; much of pleura with slightly variable brown mottling; postnotum fulvous, unspotted, with ochraceous pubescence above and on sides, the glabrous central area extending close to postscutellum on median line. Legs with coxae and femora fulvous, the latter very slightly browned apically; fore and mid tibiae blackish brown, often with variable anterior and posterior yellowish brown longitudinal stripes; hind tibia similar, but with more extensive variable fulvous to yellowish brown markings in middle section; tarsi black. Wing membrane generally faintly brownish, with more distinctly pigmented fulvous areas forming an ill defined but continuous costal band; costal cells and marginal cell entirely fulvous; subcostal cell deeper yellowish brown in distal section, almost unpigmented basad of distal bend of subcosta; submarginal cell pale fulvous, becoming darker towards the pale brown wing apex; a brownish yellow mark, narrowed and fading posteriorly, around anterior crossvein not extending into submarginal cell as a stigmatal band; first basal cell fulvous on approximately the basal third. Squama fulvous. Haltere fulvous, becoming brownish apically. Abdominal tergites reddish brown, largely shining, the reflections tinged with purple and, less noticeably, with green.

Head. Face with carina less convex in *A. australis*, often with shallow median and sublateral grooves; in male eye-stalk broadly dorsoventrally compressed and, when best developed, with slight forward curvature; eye obliquely and subacutely ovoid; in female eye quite sessile, much more rounded than in male. Palpus moderately broad.

Thorax very robust; scutellum slightly convex, almost semicircular in outline with slight excavation between apical bristles without hairs; the following thoracic bristles all well developed: humeral, 1 + 1 notopleurals, supra-alar, postalar, posterior intra-alar, dorsocentral, prescutellar acrostichal, usually 4 pairs of marginal scutellars. Hind trochanter without distinct gibbosity on posterior surface, in male with dense ventral brush of yellowish hairs including shorter blackish hairs near centre, in female brush much less developed with

no dark hairs; all femora with double ventral series of rather short spinescent bristles; fore femur with dorsal bristles present distally but very short; hind femur almost straight near base, thence slightly curved upwards and near apical extremity very slightly decurved, with some moderately developed dorsal bristles distally, ventrally near base with rather numerous yellowish hairs, which are not much longer than those on other parts of femur, and a small ventral tuft of hairs basad of general area of hairing; hind tibia with only very slight gibbosity on posterior surface near apex; tarsi somewhat depressed; fore tarsus broader than others, especially in male; length/breadth for segment 1 = 3·1, for segment 2 = 1·1, for segment 3 = 0·7, for segment 4 = 0·6, for segment 5 = 1·2. Wing venation as in Fig. 50; cell-4 index = 0·61–0·63; vein 3 usually with few setulae ventrally on basal section in addition to the normal dorsal setulae; squama large and posteriorly dilated, with outer margin slightly concave in part.

Abdomen broad; tergite 4 generally with well developed posterior marginal bristles in both sexes, these bristles less developed in smallest males; tergite 5 of male about as long as tergites 3 and 4 together; sternite 5 of male very deeply and broadly cleft medially. Male postabdomen: outer surstylus almost parallel-sided on much of basal section; distal section subtriangular, demarcated by a sinuate incision, with 2 minute spinules at the acute apex; aedeagus with glabrous stipe; terminal filaments not strongly tapered apically, truncate, each about five × as long as glans.

Dimensions. Total length: male, 10·7–13·0 mm; female, 7·0–10·9 mm. Width of head: male, 9·7–19·2 mm; female, 5·6–6·0 mm. Length of thorax: male, 5·3–5·9 mm; female, 5·0–5·6 mm. Length of wing: male, 11·3–12·6 mm; female, 11·4–12·0 mm. Length of glans of aedeagus: 0·93–1·00 mm.

Distribution

Queensland, Iron Range district, Cape York Peninsula; Papua, highlands of Central Province; north-east New Guinea, Western Highlands Province. Map reference *7C*, *7G*, *9E* (Fig. 1).

Notes

Among the species of Section 2, *A. kimi* agrees only with *A. thoracalis* and *A. hennigi* in the almost uniformly ochraceous-pruinescent mesoscutum without darker, non-pruinescent bands. It is distinguished from *A. thoracalis* as given under that species, and from *A. hennigi* by the absence of a complete, dark brown costal band, more extensive microtrichiation in the basal parts of the submarginal and first basal cells, and the larger size.

Achias hennigi, sp. nov.
(Fig. 57)

Achias thoracalis Hendel.–Hennig, 1940: 315, pl. 24, Fig. 7 (wing). Misidentification.

Material Examined

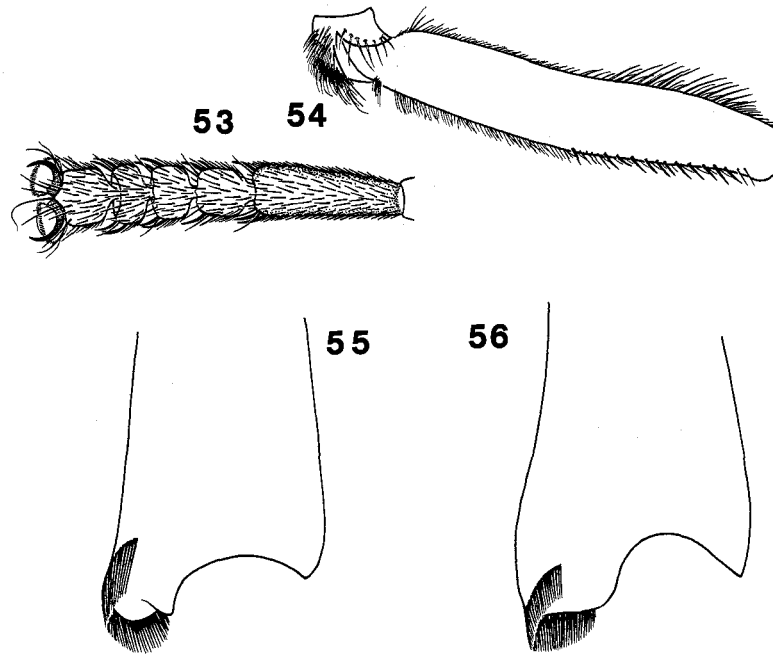
Holotype. ♂, NE. New Guinea: Upper Stony Logging Area, nr Bulolo, Dec. 1979, H.R. (AM).

Paratypes (all from NE. New Guinea). **Morobe Province:** 1♂, Finschhafen district, no date or collector (SAM); 1♂, Vatut (Watut) nr Bulolo, 700–800 m, May 1969, J.S. (BPB); 1♂, 'Compt. 5 Taun. L.A.' Bulolo, Apr. 1972, B. Gray (FRIL); 260♂, 242♀, Upper Stony Logging Area, June 1978, Dec. 1979, H.R. (AM, ANIC, UQ, FRIL, KONE, BM, MNM, PM, SPB, HELS, MNB, NAT, CNC, BPB, USNM); 2♂, 1♀, Mt Sus, nr Bulolo, 920 m, Feb. 1979, H.R. (AM, FRIL). **Madang Province:** 1♂, 'Mindjemfluss' (Mindjim R.), no date, R. Schlechter (det. Hennig as *A. thoracalis*, DEI).

Description (male)

Very similar to *A. kimi* in most characters, but smaller, agreeing with description of that species except as indicated below.

Coloration. Postfrons darker and more densely mottled with brown than in *A. kimi*; eye-stalks mostly brown on dorsal surface; paired facial marks much darker and more distinct than in *A. kimi*. Thorax even more densely ochraceous pruinescent than in *A. kimi*; scutellum largely blackish. Wing with continuous dark brown costal band filling area in front of vein 2 except, in some specimens, for a yellow-brown patch just beyond end of vein 1, extending a little behind vein 3 near origin of latter, extending as a wedge-shaped stigmatal band very broadly over submarginal cell and narrowly to vein 4, filling submarginal cell on distal third of wing, extending as a somewhat lighter brown area behind vein 3 over a more restricted distal zone and extending to vein 4 at apex.



Figs 53–56. *Achias kimi*: *53*, left fore tarsus (♂); *54*, left hind trochanter and femur (♂); *55*, apex of right hind tibia, dorsal view (♀). *Achias thoracalis*: *56*, apex of right hind tibia, dorsal view (♀).

Head. Eyes slightly more elongate and depressed than in *A. kimi*. Palpus rather narrow.

Thorax with 3–5 pairs of scutellar bristles. Legs agreeing in detail with description of *A. kimi* (and similarly contrasting with those of *A. thoracalis*) except that hairing on basal half of ventral surface of hind femur is shorter and includes some blackish hairs.

Abdomen. Outer surstylus similar in shape to that of *A. kimi* but subtriangular distal section somewhat shorter and more noticeably setulose on outer surface.

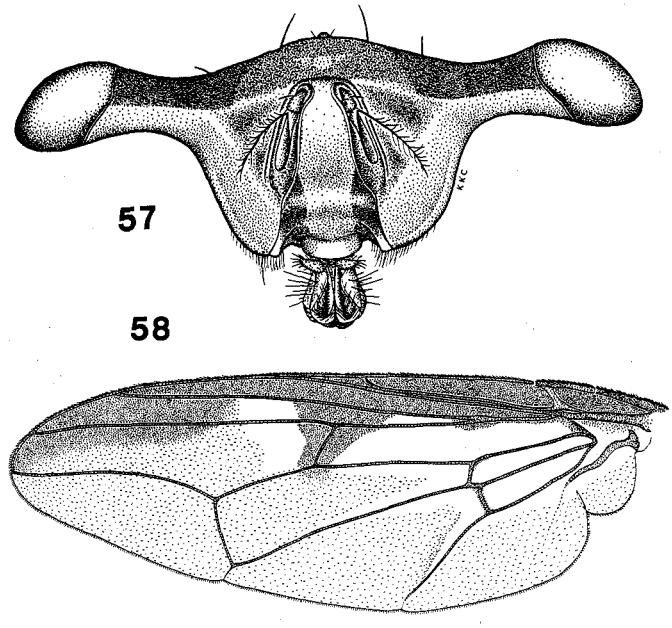
Dimensions. Total length: male, 7·1–9·7 mm; female, 7·7–9·4 mm. Width of head: male, 5·5–11·4 mm; female, 4·4–5·0 mm. Length of thorax: male, 4·2–5·4 mm; female, 4·6–4·9 mm. Length of wing: male, 9·4–11·0 mm; female, 9·9–10·9 mm. Length of glans of aedeagus: 0·9 mm.

Distribution

North-east New Guinea, Morobe and Madang Provinces. Map reference 8*C*, 9*D* (Fig. 1).

Notes

For comparison with *A. thoracalis* and *A. kimi* see under those species and the key to species. Hennig mistook his specimen for *A. thoracalis* in the absence of comparative material.



Figs 57–58. *57, Achias hennigi,* head (moderately large ♂). *58, Achias szentivanyi,* wing (♀).

Achias szentivanyi, sp. nov.
(Fig. 58)

Material Examined

Holotype. ♂, NE. New Guinea: Upper Stony Logging Area, nr Bulolo, 3.i.1980, H.R. (AM).

Paratypes. NE. New Guinea: 1♀, same data as holotype (AM); 1♂, 1♀, Wau, 1000 m and 1250 m, Jan., Mar. 1963, J. S., H. W. Clissold (BPB). Other material from Upper Stony Logging Area reported by H.R. (FRIL).

Description

Coloration. Head pale yellowish; postfrons dark brown with variable amount of yellow mottling; in male dorsal surface of eye-stalk entirely brown, ventral surface yellowish; face with pair of widely separated dark brown marks below antennal grooves; long dark brown cheek stripe present below eye in female only. Antenna tawny, with segment 3 browner. Prelabrum yellowish medially, variably browned laterally; palpus brown, with paler pruinescence and tawny base. Ground colour of thorax largely varying shades of reddish brown, black with blue to metallic gold reflections on a broad median section of mesoscutum, sometimes not reaching to scutellum; mesoscutum with median grey pruinescent band on anterior half only, imperfectly divided longitudinally, also broadly pruinescent laterally and posteriorly but without the longitudinal pruinescent stripe which

separates the submedian and sublateral stripes in many species, the latter pairs of stripes thus not defined; scutellum dark brown, with broken colourless reflections dorsally, with narrow stripe of grey pubescence along anterior margin; pleura with thick light grey pubescence, reduced in parts to thin pruinescence, particularly on much of pteropleuron. Legs coloured much as in *A. obliquus*, but fore femur sometimes tawny brown basally; mid and hind femora blackish on at least apical quarter. Wing marked much as in *A. obliquus* but stigmatal band narrowed posteriorly, discontinued a short distance behind vein 4, and not continued distally along vein 4 much beyond anterior crossvein, there being no dark pigment in vicinity of discal crossvein; costal band a little narrower distally, and hyaline area near base of submarginal cell larger and more distinct; squama buff. Haltere pale tawny with brownish area on capitellum. Abdomen shining reddish brown to blackish brown with green reflections.

Head. Eye of male smaller and more rounded than in specimens of *A. hennigi* of similar head width, somewhat oblique and depressed, on very short stalks; eye of female somewhat similar in shape and relation to head capsule to that of *A. hennigi* and *A. obliquus*. Palpus narrow.

Thorax similar structurally to that of *A. obliquus* with chaetotaxy as described for *A. kimi*; scutellum not as broad as in *A. obliquus* and more distinctly excavated between apical bristles, thus shaped more as in *A. hennigi*, with 3 pairs of marginal bristles. Hind trochanter without ventral brush, group of spines, or gibbosity; all femora with ventral spines rather short and weak; hind femur slightly curved upwards distally, with long black dorsal bristles distally, and basal ventral tuft minute or indistinct; fore tarsus depressed but not much broadened, in male length/breadth for segment 1 = 4·4, for segment 2 = 1·2, for segment 3 = 0·9, for segment 4 = 0·7, for segment 5 = 1·1. Wing resembling that of *A. obliquus* but hyaline part of submarginal cell beyond stigmatal band largely or entirely bare, and first basal cell without microtrichia in distal part before stigmatal band; alula microtrichose on about posterior half or much more than half.

Abdomen. Tergite 3 with median zone of rather long, mostly yellowish hairs, laterally with numerous yellowish hairs, the intermediate zones almost bare; tergite 4 without distinct bristles, with almost uniform dark hairing; tergite 5 about twice as long as tergite 4 in male, only slightly longer in female. Male postabdomen: distal section of outer surstylus rather long, subtriangular, acute; aedeagus resembling that of *A. obliquus*; preglans 0·27 of length of glans; glans more slender than in *A. obliquus*; terminal filaments slightly expanded apically, very slightly longer than glans.

Dimensions. Total length: male, 7·8–8·1 mm; female, 7·1–8·7 mm. Width of head: male, 4·4–5·5 mm; female, 3·7–4·0 mm. Length of thorax: male, 3·5–3·8 mm; female, 3·7–4·0 mm. Length of wing: male, 8·4–9·2 mm; female, 8·8–9·2 mm. Length of glans of aedeagus: 0·87 mm.

Distribution

North-east New Guinea, Morobe Province. Map reference 9*D* (Fig. 1).

Notes

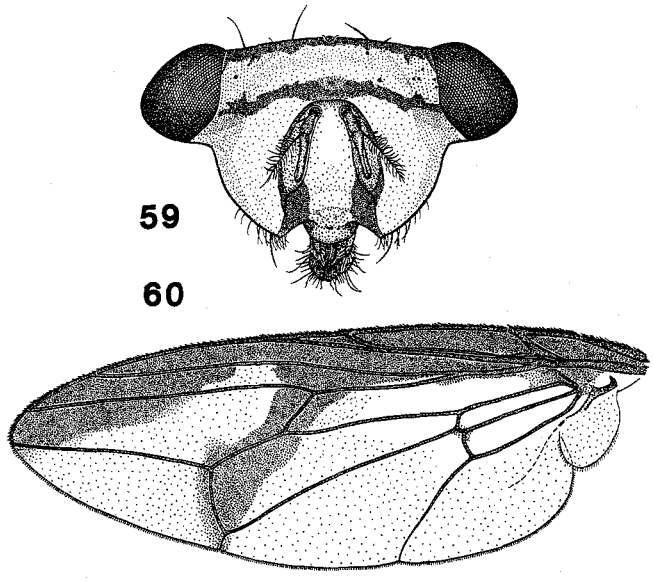
A. szentivanyi appears to be related both to *A. hennigi* and *A. obliquus*, being sympatric with the former but apparently rather widely geographically isolated from the latter. From *A. hennigi* it may be distinguished by means of the extensive non-pruinescent blackish areas of the mesoscutum, more extensively darkened femora, and absence of a brush on hind trochanter of male. From *A. obliquus* it is distinguished by the stigmatal band not being extended obliquely across the wing to include the discal crossvein, by the less reduced pruinescence of the mesoscutum, and other details.

Achias obliquus, sp. nov.
(Figs 59, 60)

Material Examined

Holotype. ♀, Papua (Milne Bay Province): Wakaiuna, Sewa Bay, Normanby I., 11–20.xii.1956, W.W.B. (BPB).

Paratypes. 1♂, 3♀, same locality as holotype, Nov., Dec. 1956, W.W.B. (AM, BPB). Further material (det. H.R.) in FRIL.



Figs 59, 60. *Achias obliquus*: *59*, head (♂); *60*, wing (♀).

Description

Coloration. Head yellow; postfrons with upper transverse blackish band covering ocelli and a more irregular anterior transverse band; face with pair of large well defined, well separated lateral marks; antennal grooves brown; cheek stripe below eye absent in male, blackish, sharply defined, rather short in female; occiput unmarked. Antenna tawny brown with segment 1 paler. Prelabrum yellow, brownish laterally; palpus brown. Thorax black; mesoscutum and dorsal surface of scutellum minutely roughened, with broken greenish reflections; mesoscutum with greyish pruinescence-pubescence restricted to notopleuron and vicinity of transverse suture and of scutellar sutures, with no trace of median pruinescent stripe, the submedian and sublateral non-pruinescent stripes thus not differentiated except for a slight coppery tinge on former; pleura covered with dark grey pruinescence and pubescence. Legs, including coxae and trochanters rather dark brown to black; mid and hind femora yellow, narrowly blackish at apices. Wing clear, with rather dark yellowish brown costal band filling area in front of vein 3 except for a clear patch in submarginal cell beyond anterior crossvein; a broad brown oblique and somewhat angular band passing from stigmatal region to apex of vein 5 and enclosing both anterior and discal crossveins; squama pale buff. Haltere tawny with dark brown capitellum. Abdomen shining black with bluish green reflections.

Head in male with eyes oblique, subangular at lateroventral extremities, on incipient stalks only, in female with eyes relatively larger and more rounded than in female of

A. kimi, more prominent than in female of *A. kurandanus*; both pairs of vertical bristles well developed. Palpus rather narrow.

Thorax robust, with mesoscutum slightly broader than long, with numerous hairs on most of surface; scutellum broadly rounded, moderately convex, with usually 3 pairs of bristles; chaetotaxy otherwise as in *A. kimi*. Hind trochanter with only trace of ventral gibbosity, without distinct brush or ventral spines; fore femur with well defined pruinescent area on posterior surface distally (at most poorly defined in allied species) and long strong posteroventral spines on distal half of fore femur; armature of femora otherwise similar to that of *A. kimi*; hind femur nearly straight; tarsi stout; fore tarsus of male somewhat broadened, as in *A. kimi* but with lateral spines less strong. Wing (Fig. 60) rather similar structurally to that of *A. kimi*; greater part of first basal cell bare, but a group of microtrichia present in distal part before stigmatal band; hyaline part of submarginal cell beyond stigmatal band almost entirely microtrichose.

Abdomen broad; tergite 3 with rather short black hairs except for some longer, denser yellow hairs near lateral margins only, sublateral areas with sparse, minute hairs; tergite 4 without distinct bristles; tergite 5 about 1·3 × as long as tergite 4 in both sexes. Male postabdomen: preglans marked off from stipe by a constriction, with light sclerotisation on anterior surface, membranous on posterior surface, about 0·4 as long as glans; terminal filaments rather short, slightly thickened near apices, each about 0·9 as long as glans.

Dimensions: Total length: male, 7·6 mm; female, 7·1–8·2 mm. Width of head: male, 5·1 mm; female, 3·9–4·4 mm. Length of thorax: male, 3·9 mm; female, 4·0–4·4 mm. Length of wing: male, 9·1 mm; female, 7·8–9·7 mm. Length of glans of aedeagus: 1·17 mm.

Distribution

D'Entrecasteaux Group, Normanby Island. Map reference 11*F* (Fig. 1).

Notes

A. obliquus differs from all other known *Achias* species in having both anterior and discal crossveins enclosed in the one oblique dark stripe, and from other related species with broad thorax and humeral bristle in having the central part of the mesoscutum devoid of pruinescence. It may be related to *A. szentivanyi* and *A. hennigi*.

Achias oculatus Fabricius

Achias oculatus Fabricius, 1805: 247.—Robineau-Desvoidy, 1830: 433; Wiedemann, 1830: 14, pl. 1, figs 1–5; Guérin-Méneville, 1835: pl. 102, fig. 7; Macquart, 1843: 158, pl. 21, figs 10, 10*a*; Hendel, 1914*b*: 203–4.

Material Examined

Holotype. ♂ (unique), no locality on label but Fabricius gives 'Java', ex coll. L. A. Bosc (PM).

Description

The following descriptive notes are based on my examination of the now very defective holotype and on the descriptions of it by the authors listed above. The head, abdomen and hind legs with adjoining part of thorax are now all missing, and, in addition, many parts of the insect have a coating of mould and dirt. Nevertheless, a careful examination of this specimen supplemented from the meagre information published by early authors up to the time of Macquart, when it was still almost complete, enables characterisation of the species.

Coloration. 'Face' (perhaps meaning a large part of head capsule) of a delicate blue with yellowish (Robineau-Desvoidy; perhaps indicating head to be largely fulvous with blue-tinted reflections which are likely to be restricted to dorsal surface); postfrons bluish brown; eye-stalks with slight bluish reflections; antennal groove yellowish fawn; face (probably) without very conspicuous dark markings (? as in *A. kimi*); palpus and proboscis pale yellowish. Mesoscutum with outer pair of non-pruinescent stripes tawny, submedian pair darker (? blackish), both pairs probably with blue-tinged reflections in fresh material (Robineau-Desvoidy); remainder of mesoscutum possibly dark brown with greyish pruinescence; scutellum black or blackish; postnotum yellow, with fairly dense white pubescence on upper part reaching to subscutellum but pubescent area deeply sinuate below medially. Wing apparently coloured somewhat similarly to that of *A. kimi*, without dark costal band, but with yellowish suffusion along costa probably somewhat less distinct than in *A. kimi*; stigmatal band not only discernible around anterior crossvein, but very broadly crossing submarginal cell, here defined by more distinct yellowing of membrane and denser dark microtrichia; squama whitish. Mid femur yellowish with only a little brown at extreme apex; mid tibia very dark brown or black; other femora and tibiae probably similarly coloured; tarsi largely or entirely black. Abdomen shining coppery, with blue or violet reflections (pale according to Robineau-Desvoidy), with tergites 1, 2, and part of 3 paler, yellowish.

Head probably resembling that of *A. kimi* in form (the figure of Guérin being probably the most accurate, that of Macquart quite unreliable), with moderately long eye-stalks; eyes probably obliquely oval in anterior aspect, somewhat as in *A. kimi* or *A. hennigi.*

Thorax robust; scutellum apparently without hairs and with extensive pubescence anteriorly; with total of 7 marginal bristles; also the following thoracic bristles present: strong humeral, 1 + 1 notopleurals, supra-alar, postalar, intra-alar, dorsocentral, strong prescutellar acrostichal. Legs probably rather similar to those of *A. kimi* but details of hind legs and fore tarsus unknown; according to Wiedemann, fore legs larger ('plus grandes') than other legs, perhaps in reference to the broader tarsi. Wing venation very similar to that of *A. kimi*; discal cell beyond basal end a little narrower than in that species; vein 4 a little more dipped into discal cell before anterior crossvein; anal crossvein just slightly curved; wing membrane with general covering of microtrichia with the apparent exception of the following: a sparsely microtrichose patch in submarginal cell between base and stigmatal band, a narrow bare stripe near centre of first basal cell, a small bare patch at base of third posterior cell and probably another at base of fourth posterior cell, almost entirely bare second basal and anal cells.

Abdomen broad.

Dimensions. Total length '6 lignes', i.e. about 13 mm (Robineau-Desvoidy); width of head about 11–12 mm (my estimate); length of thorax 5·0 mm; length of wing 10·7 mm.

Notes

A. oculatus, the type species of the genus, was described from a single specimen in the collection of L. A. Bosc of Paris, supposed to have come from Java. The specimen was examined by several dipterists early in the nineteenth century, but their published descriptions and figures have proved inadequate for later workers to identify the species. No author appears to have examined the specimen after Macquart (1843), who said that it had become the property of the (Paris) Museum. The specimen was later reported to be lost (Zimsen 1964). Hendel (1914*b*) suggested the possibility of *A. oculatus* being synonymous with *A. platychirus* Hendel. Malloch (1939) left the identity of *A. oculatus* in doubt, simply recording Hendel's suggestion.

In May 1973, I found and re-examined the type specimen of *A. oculatus* in PM. The authenticity of the specimen seems beyond reasonable doubt, as it bears an ancient label, which, though difficult to decipher, includes the words 'g. Achias...Coll...Bosc'. Though partly eaten by dermestids, it otherwise agrees with what was published about Bosc's specimen.

It is apparent that *A. oculatus* is distinct from any species of *Achias* described subsequently. It differs from *A. platychirus* in the absence of the very distinctive head markings of the latter, in the smaller amount of brown on the femora, in the distribution of microtrichia on the wing membrane, and in the distribution of pubescence on the postnotum. The width of the fore tarsus is almost certainly much less than in the male of *A. platychirus*. *A. oculatus* appears to be related to *A. thoracalis* and *A. kimi*, but differs in the presence of non-pruinescent stripes on the mesoscutum, in minor details of wing venation and coloration, and in the bluish reflections of much of the body surface. As noted by Osten Sacken (1881) *A. oculatus* also resembles *A. amplividens*, but the wing markings are much reduced and the scutellum is uniformly dark. The less developed wing markings and probably the absence of well-defined facial markings distinguish it from *A. mallochi*.

Java seems an unlikely type locality for *A. oculatus* (as already noted by Osten Sacken 1881), in view of the known distribution of the genus, which does not even include the main western Molluccan islands. On the other hand, almost no insect material was known from mainland New Guinea up to the year 1805, though this is the habitat of the great majority of *Achias* species. It is probable that the association of Bosc's specimen with Java merely indicated that it passed through Java as an item of trade, having been collected elsewhere. Several of the islands near West New Guinea (particularly Ambon or Amboina), were the source of many natural history objects at or before Bosc's time, and it may be that *A. oculatus* originated from one of these. The fact that neither *A. oculatus* nor any other species of *Achias* has since become known from these islands (other than Aru, Waigeu, Salawati, and islands of Geelvink Bay), is probably due to the inadequacy of entomological collecting in the region. The possiblity of a small island population being wiped out by habitat destruction in modern times is also not to be overlooked.

Achias alutarius, sp. nov.

Material Examined

Holotype. ♀, NE. New Guinea: Lae, 23.xii.1956, A.H. (AM).

Paratype. NE. New Guinea: 1♀, Mirilunga, Melambi R., nr Lae, 1400 m, Dec. 1956, J.H.A. (AM).

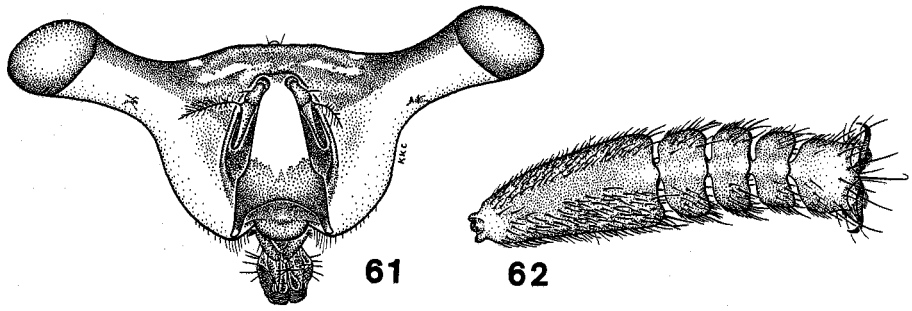
Description (female)

Coloration. Head yellow; postfrons largely dark brown, becoming yellowish along ptilinal suture and with large yellow patch on each side; face pale yellowish on somewhat more than upper half, dark brown below, with median extension of yellowish zone forming a shallow incision in brown zone; antennal groove brownish with grey pruinescence; brown cheek stripe well developed, becoming somewhat broken at lower end (probably absent in male). Antenna reddish brown, paler basally. Palpus dark brown with brown or grey pruinescence. Ground colour of mesoscutum castaneous, with broad median zone, to outer limit of paramedian stripes, black, fading to brown posteriorly; median grey pruinescent stripe almost as wide as paramedian black stripes, the latter stripes separated from sublateral castaneous stripes by a narrow grey-pruinescent stripe post-suturally, but not thus separated pre-suturally; more lateral parts of mesoscutum largely grey-pruinescent; scutellum dark brown to deep reddish brown with pale grey pubescence covering almost anterior third of dorsal surface; pleura reddish brown covered with light grey pubescence and pruinescence. Fore coxa largely blackish, tawny on part of outer and posterior surfaces; other coxae tawny; fore femur reddish brown, extensively blackish distoventrally; other femora fulvous, becoming blackish distoventrally and narrowly reddish brown apically on dorsal surface; fore tibia reddish brown, black distally and basiventrally and with black dorsal longitudinal line; other tibiae similar but with reddish brown colour replaced by paler tawny brown; tarsi black. Wing membrane largely transparent, with very little pigment; stigmatal section

of subcostal cell yellowish brown; first costal cell, basal and anterior parts of second costal cell, entire marginal cell, and extreme base and costal margin of submarginal cell tinged with yellow; a light brownish spot from dense microtrichiation and some membrane pigment on fork of veins 2 and 3, on anterior crossvein and on short section of vein 5 connecting discal and anal cells; squama pale buff. Haltere fulvous with capitellum partly brownish. Abdomen light reddish brown.

Head. Eyes not stalked, rounded and only slightly prominent. Palpus moderately narrow.

Thorax similar structurally to that of *A. kimi*, but scutellum with 3 pairs of marginal bristles. Hind trochanter with rather short hairs not forming a brush. Fore femur with moderately long spinescent posteroventral bristles on distal half, and very short inconspicuous anteroventral ones; mid and hind femora with short anteroventral and posteroventral spinescent bristles; fore tarsus broad and depressed; segment 1 slightly longer than 4 succeeding segments combined, slightly concave or channelled dorsally, length/breadth for segment 1 = 3·4, for segment 2 = 1·3, for segment 3 = 0·5, for segment 4 = 0·6, for segment 5 = 1·1; other tarsi stout but less dilated than fore tarsus, with segment 1 not markedly depressed. Wing venation resembling that of *A. kimi*; cell-4 index = 0·59; costal cells microtrichose except for a narrow bare strip along subcosta in second costal cell; marginal cell microtrichose except for small bare zone beyond base; submarginal cell bare in most of basal half, with variable amount of microtrichia near anterior crossvein; first basal cell bare except for small areas of microtrichia at base, near origin of vein 3, and along anterior crossvein; first posterior cell with bare area near base sometimes divided in two; discal and third posterior cells bare basally, the latter with more densely microtrichose ridge near vein 6; alula uniformly microtrichose except on small anterobasal bare zone; squama large, with slightly sinuate outer margin.



Figs 61, 62. *Achias pygmosus* (♂): *61*, head; *62*, right fore tarsus.

Abdomen. Tergite 3 with large bare area on each side; tergites 3 and 4 subequal in length.

Dimensions. Total length 7·8 mm; width of head 4·2–4·4 mm; length of thorax 4·6–4·7 mm; length of wing 10·0–10·2 mm.

Distribution

North-east New Guinea, Morobe Province. Map reference 9*D* (Fig. 1).

Notes

A. alutarius is closely related to *A. platychirus* and *A. pygmosus*. Among other common characters, these species share the very broad, depressed fore tarsus, a character which

shows some sexual dimorphism, but even the females (unknown in *A. pygmosus*) have broader fore tarsi than in either sex of other species of *Achias*. Probably the unknown male of *A. alutarius* will be found to have the fore tarsus as broad as in males of *A. platychirus* and *A. pygmosus*.

A. alutarius, together with *A. pygmosus*, is distinguished from *A. platychirus* in having only the lower half of the face darkly pigmented. It is distinguished from *A. pygmosus* by the virtual absence of the stigmatal band and the extensive microtrichiation of the alula.

Achias pygmosus, sp. nov.
(Figs 61, 62)

Material Examined

Holotype. ♂ (unique), NE. New Guinea: Ulap, 800–1100 m, Sept. 1968, N.L.K. (BPB).

Description (male)

Similar to *A. alutarius* in most characters and agreeing with description given for that species except as indicated below. Female unknown.

Coloration. Cheek stripe absent (probably present in female). Scutellum dark brown, with pale grey pubescence covering almost anterior quarter of dorsal surface. Fore tibia more extensively blackened than in *A. alutarius*; other tibiae as in that species. Wing with distinct broad light brown stigmatal band, narrowed posteriorly and contrasting with yellow colour of marginal cell. Abdomen reddish brown with green-tinted reflections.

Head. Eyes on moderately developed upwardly sloped stalks.

Thorax. Hind trochanter with moderately long hairs, not forming a brush; fore tarsus very broad, approximately as in male of *A. platychirus*; segment 1 2·1 × as long as broad, slightly shorter than 4 succeeding segments together; segment 2 slightly less than, segments 3 and 4 slightly more than twice as long as wide; segment 5 slightly narrower than preceding segments. Wing: cell-4 index = 0·58; second costal cell with large almost bare zone extending for most of cell near middle; marginal cell microtrichose except on broad zone immediately beyond stigmatal band and on narrower zone along vein 2 before band; submarginal cell microtrichose on slightly more than distal third and on stigmatal band only; alula microtrichose on approximately posterior half of surface only.

Abdomen. Tergite 5 about 1·2 × as long as tergite 4. Outer surstylus with rather short, broadly triangular distal part; aedeagus with preglans poorly differentiated from stipe; glans elongate-cylindrical, almost straight, without lobe; terminal filament 0·70 of length of glans.

Dimensions. Total length 8·1 mm; width of head 7·0 mm; length of thorax 3·9 mm; length of wing 8·7 mm; length of glans of aedeagus 0·96 mm.

Distribution

North-east New Guinea, northern Morobe Province. Map reference 9*D* (Fig. 1.)

Notes

See under *A. alutarius* for comparative information.

Achias platychirus Hendel

Achias platychirus Hendel, 1914*a*: 104, pl. 10, figs 178, 179.– Hendel, 1914*b*: 204–5 (description).

Material Examined

Holotype. ♂, NE. New Guinea: Sattelberg, nr Finschhafen, 1898, L.B. (MNM).

Other material. **NE. New Guinea:** 2♀, Gumi, nr Bulolo, 2010 m, Oct. 1979, H.R. (AM). Further material from Bulolo district reported by H.R. (FRIL).

Description

A reasonably detailed description has been given by Hendel, but a few additional specimens are now available. The following notes are supplementary to Hendel's description.

Coloration. Face almost entirely dark brown with only small yellowish patch between antennal sockets and a pair of irregular vertically elongate yellowish spots near middle; brown cheek stripe absent in male, well developed and unbroken in female. Mesoscutum mid to rather dark reddish brown in ground colour, with central zone on approximately anterior $\frac{2}{3}$ black (entirely reddish brown in one female), thus the sublateral pair of non-pruinescent stripes reddish brown, the submedian ones largely black, both pairs of stripes with minute granular sculpture, the former divided from one another by a median grey-pruinescent stripe on about anterior half, but separated from sublateral stripes by a shining, almost smooth stripe and posteriorly by a short pruinescent stripe also. Wing almost unmarked except for an inconspicuous greyish mark around anterior crossvein and a yellowish tinge in front of vein 2. Abdomen reddish brown with blue-green tinted reflections.

Head. Eyes of male on very short stalks (Hendel's fig. 178); eyes of female not stalked, rounded, larger and more prominent than in *A. alutarius*; inner and outer vertical bristles well developed.

Thorax broad; scutellum convex, not haired but densely pubescent near scutellar suture, with sockets of apical pair of bristles sometimes very prominent; the following thoracic bristles present: humeral, 1+1 notopleurals, supra-alar, postalar, intra-alar, dorsocentral, prescutellar acrostichal, 3 pairs of scutellars. Hind trochanter simple, with numerous ventral hairs not forming a brush; fore femur distally with several rather long strong posteroventral spines; fore tibia slightly thickened and dorsally convex just before apex; hind tibia with slight preapical impression on both anterior and posterior sides in male, these impressions less marked in female; fore tarsus in male very broad and depressed (Hendel's fig. 179), in female less broad, but still with segment 2 a little broader than long. Wing structurally as described for *A. alutarius* except as follows: second costal cell with broader bare zone extending over half the width of cell; marginal cell almost bare on each side of microtrichose zone which coincides with stigmatal band; submarginal cell with diffuse patch of microtrichia on the ill defined stigmatal band.

Abdomen broad. Tergite 3 with whitish hairs concentrated in median and lateral marginal zones, the intervening area bare except for a few very short hairs posteriorly.

Dimensions. Total length: male, 7·1 mm; female, 7·3–7·4 mm. Width of head: male, 5·3 mm; female, 3·8–4·0 mm. Length of thorax: male, 3·7 mm; female, 4·2–4·3 mm. Length of wing: male, 9·0 mm; female, 9·0–9·3 mm.

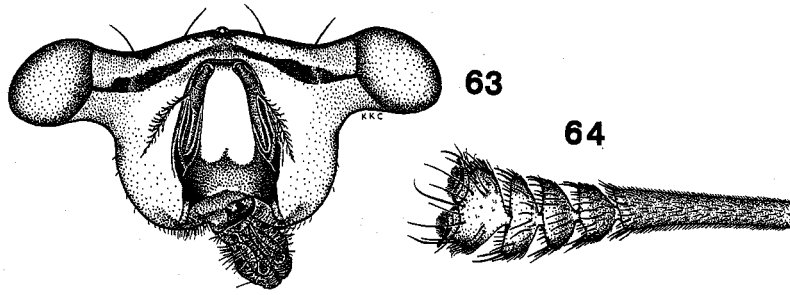
Distribution

North-east New Guinea, Morobe Province. Map reference 9*D* (Fig. 1).

Notes

An outstanding character is the extensive infuscation of the face. This condition is approached in *A. nigrifacies* and allied species, which are distinguished by possession of

dark costal band and petiolate abdomen, and in some specimens of *A. longividens*, which in addition to having a dark costal band, have a relatively slender, little depressed fore tarsus. *A. platychirus* is most closely related to *A. pygmosus* and *A. alutarius*. See under the latter for comparison.



Figs 63, 64. *Achias comptus* (♂): *63*, head; *64*, left fore tarsus.

Achias comptus, sp. nov.
(Figs 63, 64)

Material Examined

Holotype. ♀, NE. New Guinea: Gumi, nr Bulolo, 2010 m, 24.viii.1979, H.R. (AM).

Paratypes. NE. New Guinea: 1♂, ♀, Manki, nr Bulolo, 7.i.1980, H.R. (AM).

Description

Related to *A. carolinae* and agreeing with the description given for that species except as indicated below.

Coloration. Postfrons fulvous with transverse brownish stripe across ocelli, widening towards each side, an anterior narrower and sometimes less distinct transverse brownish stripe, and a little brown mottling in middle; face with brown zone usually extended medially so that zone has the appearance of 3 fused blotches; blackish cheek stripe well developed and unbroken in female, absent in male; occiput fulvous except on brown median patch above neck. Antenna tawny on segment 1 and part of segment 2, brown in distal part of segment 2 and on segment 3. Prelabrum tawny with brown markings; palpus brown, sometimes narrowly tawny apically and on margins. Thorax with ground colour slightly darker than in *A. carolinae*; pruinescence on mesoscutum more yellowish than in that species; median pruinescent stripe broader than paramedian non-pruinescent stripe; scutellum dark brown to black with dense yellowish pubescence along scutellar suture. Fore coxa dark brown with little tawny colouring at base; other coxae tawny with slight brown suffusion; fore femur fulvous on somewhat more than basal half, black distoventrally to about middle of ventral surface, brownish dorsally on slightly less than distal half; mid and hind tarsi fulvous, with blackish distal zone, that on the latter almost divided dorsally; fore tibia black with fulvous markings (male) or dark brown markings (female); mid and hind tibiae fulvous to tawny with blackish markings; tarsi black, very narrowly tawny at joints. Wing with brown markings much less distinct than *A. carolinae*. Abdomen with green-tinted reflections.

Head. Eye of male rounded oval on short but distinct stalk, that of female very prominent but with only slight indication of stalk below. Palpus very narrow throughout.

Thorax. Mesoscutum almost as long as broad; humeral bristle absent; dorsocentral quite small and pale; prescutellar acrostichal well developed. Fore femur with several

very short but slightly spinescent anteroventral and posteroventral bristles, without long ventral hairs on basal half; hind femur with black dorsal hairs on distal part; fore tarsus of male with segment 1 rather slender and subcylindrical basally, a little dilated apically, with distal segments greatly widened, segments 2–4 weakly sclerotised dorsally on distal margins, length/breadth for segment 1 = 4·5, for segment 2 = 0·81, for segment 3 = 0·67, for segment 4 = 0·54, for segment 5 = 0·60; other tarsi of male and all tarsi of female not notably widened. Wing with anterior crossvein rather short; cell-4 index = 0·64; first costal cell microtrichose anteriorly and posteriorly, with almost bare longitudinal central strip; alula microtrichose except on a bare anterodistal zone; wing microtrichiation otherwise much as described for *A. carolinae*.

Abdomen. Tergite 5 of male about 1·5 × as long as tergite 4. Aedeagus with well-defined, basally articulated preglans; glans elongate, nearly straight, with very small apical projection; terminal filament somewhat tapering, without membranous margin, its length 0·9 of that of glans.

Dimensions. Total length: male, 9·3 mm; female, 7·0–7·6 mm. Width of head: male, 5·5 mm; female, 3·8–4·1 mm. Length of thorax: male, 4·2 mm; female, 3·8–3·9 mm. Length of wing: male, 10·2 mm; female, 9·5–9·8 mm. Length of glans of aedeagus: 0·88 mm.

Distribution

North-east New Guinea, highlands of Morobe Province. Map reference 9*D* (Fig. 1).

Notes

A. comptus is most closely related to *A. carolinae* which it resembles in general markings and microtrichiation of the wing. It differs in markings of the head and femora, microtrichiation of the alula, shape of the palpus, and shape of the head in both sexes. There is also a resemblance to *A. sciotus* (q.v.). The form of the male fore tarsus, with the basal segment relatively slender and the distal segments greatly expanded, is unlike any other species, though somewhat approached in certain species of Section 4.

Achias carolinae, sp. nov.
(Fig. 65)

Material Examined

Holotype. ♂, NE. New Guinea: Mt Kaindi, nr Wau, 2350 m, 19.viii.1969, Y. Hirashima (BPB).

Paratypes. NE. New Guinea: 2♀, Mt Kaindi, April 1978, July. 1982, J. T. Medler, S.S. (AM, NSMT); 1♀, damaged, Wau, 1700 m, Jan. 1969, J.S. (BPB).

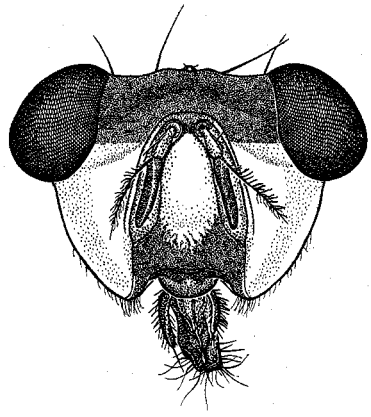


Fig. 65. *Achias carolinae*, head (♂).

Description

Coloration. Head pale fulvous; postfrons mid-brown to yellowish brown palest on anterior median part, the brown coloration abruptly giving way to fulvous on parafacial; face with paired brown patches on lower part broadly fused medially to make most of lower third of face brown, a few fine brown marks invading central part of face; cheek stripe absent; upper occiput tawny brown with transverse fulvous patch behind inner vertical bristles. Antenna reddish brown, becoming greyish brown on segment 3 beyond base. Prelabrum tawny brown; palpus tawny brown with some darker brown markings. Thorax with predominantly reddish brown ground colour; mesoscutum with 4 non-pruinescent, matt stripes fairly well defined, but remainder of surface not uniformly pruinescent; sublateral stripe paler than paramedian one; median grey pruinescent stripe narrower than paramedian non-pruinescent stripe, fading posteriorly and not reaching prescutellar patch of pruinescence; scutellum deep reddish brown, only slightly shining, with narrow zone of whitish pubescence, which becomes sparse medially, along scutellar suture; pleura with general covering of dense pale yellowish pubescence-pruinescence, with ground colour of lower part of sternopleuron and parts of mesopleuron pale tawny. Coxae tawny; femora bright fulvous; fore femur narrowly brown at apex; tibiae fulvous with brown markings most extensive on fore tibia; tarsi blackish. Wing without dark costal band; membrane tinged with yellowish brown, a little more brownish on slightly less than distal half, more yellowish in marginal and first costal cells; stigmatal section of subcostal cell brown, a narrow brown mark present on anterior crossvein and a small mark on vein 5 between basal and anal crossveins, but markings otherwise absent; squama pale buff. Haltere fulvous with brown capitellum. Abdomen tawny brown with mainly yellowish hairs.

Head rather small for the genus, almost without sexual dimorphism (judging from the available sample); eye rather prominent but eye-stalk absent; inner and outer vertical bristles well developed. Palpus somewhat spatulate.

Thorax of moderate build; mesoscutum with width 0·96 of length; scutellum rounded and somewhat convex, without hairs; the following thoracic bristles present: humeral (sometimes weak and pale), 1 + 1 notopleurals, supra-alar, postalar, intra-alar, dorsocentral (weak and often pale), prescutellar acrostichal (sometimes weak and pale); 3 pairs of scutellars. Hind trochanter simple, ventrally with numerous hairs not forming a brush; fore femur with 3 or 4 moderate to weak posteroventral spinescent bristles and some much shorter anteroventral bristles on distal part, on basal half with up to about 5 rather long fine yellowish posteroventral hairs; other femora with ventral bristles reduced to weak hairs; hind femur with rather long yellowish dorsal to anterodorsal hairs for most of length; tibiae rather slender; hind tibia without modification at distal end; male fore tarsus rather slender but with all segments depressed, about as long as tibia, length/breadth for segment 1 = 3·5, for segment 2 = 1·0, for segment 3 = 0·8, for segment 4 = 0·7, for segment 5 = 1·2; fore tarsus of female more slender, 1·1 × as long as tibia; mid tarsus slender; hind tarsus slightly less so. Wing with vein 4 slightly arched beyond discal crossvein, slightly curved forward towards apex; anterior crossvein curved at posterior end only; cell-4 index = 0·58; anal crossvein slightly curved, making a right angle or slightly obtuse angle with vein 6 on proximal side; first costal cell microtrichose mainly on anterior half; second costal cell bare except for minute area at junction of costa and humeral crossvein; marginal cell microtrichose on about distal third and on a small basal area; submarginal cell microtrichose on about distal half, almost bare basally; first basal cell bare except at extreme base and narrowly along anterior crossvein; first posterior cell extensively bare at base except along anterior crossvein; discal cell bare on more than basal half, but microtrichose zone extending further basad in middle of cell; third posterior cell extensively bare basally and for some distance along vein 5, without differentiated microtrichose ridge; alula microtrichose only near posterior margin; squama broad and rounded posteriorly, with outer margin somewhat sinuate.

Abdomen moderately broad; tergites 3 and 4 relatively sparsely haired between median and lateral parts; male: tergite 5 1·6 × as long as tergite 4; sternite 5 deeply divided medially, slightly prominent at sinus.

Dimensions. Total length: male, 9·6 mm; female, 7·7–7·9 mm. Width of head: male, 4·0 mm; female, 3·7–4·0 mm. Length of thorax: male, 4·0 mm, female, 3·8–4·1 mm. Length of wing: male, 10·8 mm; female, 9·5–10·8 mm.

Distribution

North-east New Guinea, highlands of Morobe Province. Map reference 9*D* (Fig. 1).

Notes

A. carolinae is apparently most closely related to *A. sciotus* and *A. comptus*, of this section, and *A. subnudus*, *A. steyskali*, and *A. gibbosus* of Section 1. All of these except *A. comptus* have the costal cells more extensively microtrichose than in *A. carolinae*. *A. sciotus* also differs in the much narrower non-pruinescent stripes on the mesoscutum, brown markings on the mid and hind femora, and more widely separated eyes. The species of Section 1 (unlike *A. carolinae* and *A. sciotus*) all have some hairing on the scutellum and the alula heavily microtrichose. See also under *A. comptus*.

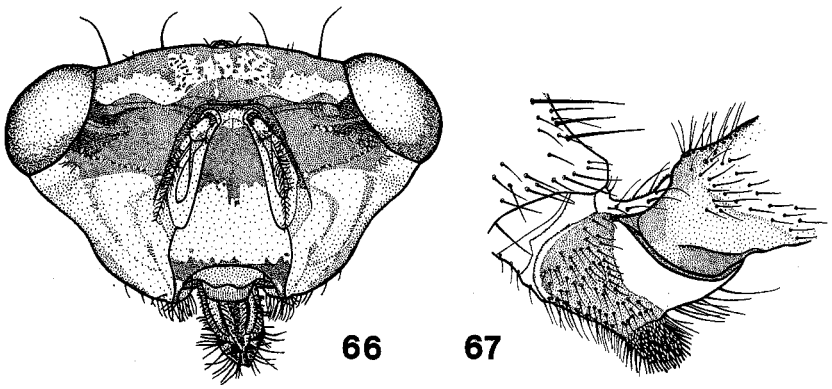
Achias sursividens, sp. nov.
(Figs 66, 67)

Material Examined

Holotype. ♂ (unique), Papua: nr Myola, S of Kokoda, 1900–2100 m, 24.vii.1986, J.W.I. (AM).

Description (male)

Resembling *A. carolinae* and *A. comptus*; agreeing with description of the former except as indicated below. Female unknown.



Figs 66, 67. *Achias sursividens* (♂): *66*, head; *67*, left hind trochanter.

Coloration. Postfrons with extensive brown zone across full width posteriorly, with brown mottling centrally, and brown where it borders on the broad brown zone covering upper part of parafacial; face with rather small brown zone on each lower lateral angle and a few brown dots on central part of lower margin; extensive brown zone covering upper half of face, except for small zone between antennal sockets; upper occiput tawny fulvous, laterally behind each eye glabrous and shining. Antenna with segment 1 fulvous, segments 2 and 3 brown. Mesoscutum with 4 well-separated dark brown non-pruinescent stripes;

median pruinescent zone wider than each paramedian stripe, partly divided by a narrow median blackish brown stripe which is expanded posteriorly and discontinued in front of suture; scutellum with pair of extensive zones of yellowish pubescence anterodorsally; pleura paler and more nearly uniform in ground colour than in *A. carolinae*. Coxae predominantly dark brown; fore femur dark brown on about distal half; other femora with less extensive dark brown distal zones; tibiae brown-black with fulvous markings, fulvous areas predominating on hind tibia. Wing with first costal cell and basal sixth of second costal cell yellowish brown; stigmatal band represented by a brown mark in marginal and submarginal cells and a heavier brown mark on anterior crossvein than in *A. carolinae*; squama fulvous.

Head anteroposteriorly compressed; with no indication of eye-stalks and cheek region not impressed below eyes; eye thus much less prominent than in most species of genus, its surface largely inclined upwards. Palpus not spatulate.

Thorax stout; mesoscutum with width 1·06 of length; humeral, dorsocentral, and prescutellar acrostichal bristles well developed. Hind trochanter with strong ventral tubercle bearing brush of short black setulae; fore femur with numerous short posteroventral bristles on distal half, with anteroventral bristles apparently little-developed and no particularly long ventral hairs on basal half; hind femur slightly clavate, slightly curved on basal half; hind tibia strongly curved, gradually thickened distally, with distal posterior gibbosity which is produced a little beyond apex of tibia; fore tarsus less depressed than in male of *A. carolinae*, slightly shorter than tibia; segment 1 4·6 × as long as wide; segment 2 1·7 × as long as wide; segment 3 almost wide as long; segment 5 1·1 × as long as wide; mid and hind tarsi less slender than in *A. carolinae*. Wing: vein 4 strongly arched beyond discal crossvein, slightly curved forward near apex; cell-4 index = 0·58; first costal cell entirely densely microtrichose; second costal cell densely microtrichose on about basal sixth, elsewhere partly bare but with sparse, irregularly grouped microtrichia; marginal cell as in *A. carolinae* but with microtrichia on stigmatal spot in addition; submarginal cell microtrichose on somewhat less then distal half and on stigmatal mark; first basal cell with additional microtrichose spot at fork of veins 2 and 3; first posterior cell with microtrichose longitudinal streak traversing basal bare zone a little in front of vein 4; discal cell a little more extensively setulose than in *A. carolinae*; third posterior cell with more densely microtrichose ridge in front of vein 5; alula rather densely microtrichose except narrowly on anterior margin.

Abdomen. Sternite 5 strongly ventrally produced at sinus of 2 lobes, resembling a split cone with double apex; outer surstylus somewhat as in *A. kimi*, but with subtriangular distal section more obtuse and defined by a deeper sinus.

Dimensions. Total length 10·3 mm; width of head 5·4 mm; length of thorax 4·7 mm; length of wing 11·8 mm; length of glans of aedeagus 0·53 mm.

Distribution

Papua, Owen Stanley Range near border between Central and Oro (Northern) Provinces. Map reference 9*E* (Fig. 1).

Notes

A. sursividens approaches *A. wallacei* more than any other species in shape of the male head, having the head much broadened and no tendency for the eyes to become stalked, but it lacks the angular carina on the genoparafacial region. Otherwise, there appear to be no special points of resemblance, and it differs widely from *A. wallacei* in facial pattern, absence of scutellar hairs, wing microtrichiation, reduced femoral spination, differentiation of heavily haired and subglabrous zones on abdominal tergite 3, and presence of several sexually dimorphic modifications of the hind leg.

On the basis of the sequence of diagnostic characters used in my key, *A. sursividens* comes close to *A. carolinae*, *A. comptus*, and particularly *A. stigon*, and its relationships

may lie with these and some similar species. It appears that *A. sursividens* is not closely related to *A. wallacei* and that the resemblance in shape of the head is probably convergent.

Achias cauda, sp. nov.

Material Examined

Holotype. ♂, Papua: Mt Dayman, Maneao (not 'Maneau') Range, western Milne Bay Province, 2230 m, 26.vi.1953, G.M. Tate (AMNH).

Description (male)

Agreeing with description given for *A. carolinae* except as indicated below.

Coloration. Postfrons largely suffused and mottled with dark brown, with paired fulvous patches posterolaterally and anterolaterally; face with paired, irregular brown patches on lower part widely separated, without other brown markings; cheek stripe present, much dissected above, well removed from eye. Prelabrum and palpus fulvous. Mesoscutum with median grey pruinescent stripe not narrower than paramedian non-pruinescent stripe, divided by a median non-pruinescent stripe except towards anterior end, its components posteriorly diverging and fusing with dorsocentral pruinescent stripe on each side; scutellum dark-brown with patch of yellowish pubescence at scutellar suture on each side, its dorsal surface largely pruinescent, its free margin shining; lower part of sternopleuron not paler than remainder. Femora only slightly browned apically. Wing pigmentation imperfectly developed in type, but probably similar to that of *A. stigon*.

Head shaped approximately as in *A. stigon* (see Fig. 68) but less broadened, probably because of smaller size of individual.

Thorax (somewhat distorted) apparently broader than in *A. carolinae*; humeral and prescutellar acrostichal bristles well developed. Hind trochanter similar to that of *A. stigon*; fore femur with a series of rather small fine posteroventral bristles distally and less distinct anteroventral bristles, with hairing approximately as in *A. stigon*; hind femur less strongly clavate and less excavated on basal half of ventral surface than in *A. stigon*, but similarly haired; fore tarsus depressed, slightly shorter than tibia, length/breadth for segment 1 = 3·8, for segment 2 = 1·3, for segment 3 = 0·9, for segment 4 = 0·7, for segment 5 = 1·2. Wing: cell-4 index = 0·61; microtrichiation as in *A. stigon* except that microtrichia in second costal cell are restricted to basal eighth and a minute apical zone; anal crossvein straight.

Abdomen. Tergite 5 *c.* 2·7 × as long as tergite 4; outer surstylus with distal section resembling that of *A. stigon* but more tapered towards apex; aedeagus with glans slender, curved, fusiform; terminal filament very elongate, *c.* 4·3 × as long as glans, not tapered over distal $\frac{3}{4}$ of length, slightly flared at apex, with broad membranous margin on slightly more than basal half of length.

Dimensions. Total length 9·5 mm; width of head 4·6 mm; length of thorax 4·2 mm; length of wing 10·6 mm; length of glans of aedeagus 0·95 mm.

Distribution

Papua New Guinea, highlands of Milne Bay Province. Map reference 10*E* (Fig. 1).

Notes

A. cauda belongs in the same small group of species in Section 2 as *A. stigon* and *A. sursividens*, distinguished by the combination of facial and thoracic markings, distribution of wing microtrichia, and armature of the male hind trochanter, as given in the key. The male head appears to be shaped more as in *A. sursividens*, but the head markings,

pigmentation of the fore coxa, and size of the glans are quite different. It further differs from *A. stigon* in the characters given in the key. In view of lack of knowledge of the female of this species, it is conceivable that some female specimens listed under *A. stigon* belong here.

Achias stigon, sp. nov.
(Figs 68, 69)

Material Examined

Holotype. ♂, NE. New Guinea: Mt Missim (Mission), nr Wau, 5000 ft (*c.* 1500 m), 2.viii.1983, H.R. (AM).

Other material (doubtfully referable here). **NE. New Guinea:** 1♀, same data as holotype (FRIL); 1♀, Gumi, nr Bulolo, 2010 m, 31.i.1980, H.R. (AM). Papua: 2♀, Myola, S. of Kokoda, 2100 mm, 15.ix.1985, J.W.I. (AM).

Description (male)

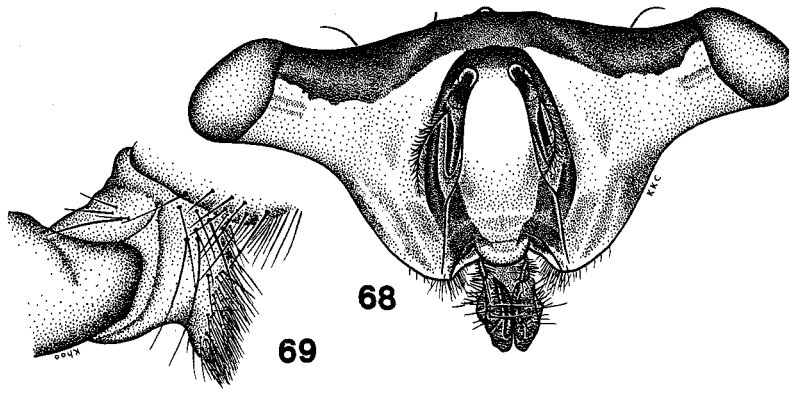
Somewhat resembling *A. carolinae*, agreeing with description given for that species except as indicated below.

Coloration. Postfrons heavily mottled with dark brown on most of surface, more intensely so near vertex where mottling abruptly gives way to fulvous colouring of occiput; eye-stalk dark brown above, fulvous below; cheek stripe absent; face with large brown mark on each side from lower end of antennal groove to epistomal margin, without median stripe. Antenna with segment 1 brownish tawny; segment 2 dark brown becoming reddish brown distally; segment 3 greyish brown, becoming reddish brown basally. Prelabrum pale fulvous, tawny at sides. Mesoscutum with rather broad median greyish pruinescent stripe on a largely reddish brown ground colour, posteriorly divided by dark brown non-pruinescent medial line which broadens just in front of acrostichal bristles; paramedian non-pruinescent stripes rather dark brown, discontinued posteriorly at about posterior third of length of mesoscutum; scutellum dark brown, with well developed patch of golden pubescence on each side at scutellar suture; pleura with predominantly brown ground colour; lower part of sternopleuron tawny. Fore coxa pale fulvous, browned posterodistally; all femora fulvous with large distoventral dark brown zone, and distodorsal tawny brown wedge; tibiae tawny with brown markings. Wing, squama and haltere coloured as in *A. carolinae*. Abdominal tergites brown to tawny, with greenish reflections; hairs on tergites 4 and 5 mostly blackish, except for longer lateral ones.

Head. Eye-stalk rather well developed, not dorsoventrally compressed, very thick basally, with small longitudinal groove anteriorly near eye margin. Palpus rather narrow, not spatulate.

Thorax rather stout; mesoscutum as wide as long or slightly wider than long; dorsocentral bristle well developed; humeral bristle well developed. Hind trochanter of male with ventral setulose tubercle very like that of *A. sursividens*; femora without strong anteroventral or posteroventral bristles or spines; fore femur with fine soft yellowish hairs on somewhat more than basal half of posteroventral surface; hind femur slightly clavate and curved, excavated on basal part of ventral surface, with numerous rather long yellowish hairs on somewhat more than basal half of anterodorsal surface; fore tarsus moderately depressed, in male length/breadth for segment 1 = 3·8 (not noticeably narrowed basally), for segment 2 = 1·0, for segment 3 = 0·8, for segment 4 = 0·6, for segment 5 = 1·0. Wing: cell-4 index = 0·61; first costal cell almost entirely microtrichose; second costal cell densely microtrichose on *c.* basal eighth, with less dense band of microtrichia along centre for most of length; marginal cell with microtrichose stigmatal spot; submarginal cell microtrichose on *c.* distal third; third posterior cell with slightly differentiated microtrichose ridge; alula almost entirely microtrichose.

Abdomen. Tergite 5 *c.* 2·3 × as long as tergite 4; distal section of outer surstylus elongate, almost parallel-sided with apparently acute apex consisting of small tapered fascicle of setulae; aedeagus with preglans apparently 2-segmented; glans nearly straight, slightly tapered distally; terminal filament little more than twice as long as glans, with membranous margin for much of length, with preapical gibbosity, tapering beyond.



Figs 68, 69. *Achias stigon* (♂): *68*, head; *69*, right hind trochanter.

Dimensions. Total length 9·2 mm; width of head 7·8 mm; length of thorax 5·5 mm; length of wing 11·7 mm.

Distribution

Papua New Guinea, highlands of Morobe Province. Map reference *9D*, *9E* (Fig. 1).

Habitat

The material from Mount Missim and Gumi was taken in dung trap. That from Myola is labelled 'dung, forest'.

Notes

On the basis of the male holotype, *A. stigon* is a distinctive species of that part of Section 2 having no dark costal band and extensive bare zones in the second costal, marginal, and submarginal cells. The facial markings are distinctive: a pair of large, well separated brown marks below and, in the doubtfully associated females, a narrow median stripe. The presence of a cheek stripe in these females probably constitutes sexual dimorphism. This male differs from that of closely related species in having basally thickened eye-stalks and from species other than *A. sursividens* and *A. cauda* in the armature of the hind trochanter. It also differs from the females listed above and from the holotype of *A. cauda* in the presence of a broad longitudinal microtrichose band for much of the length of the second costal cell. For further comparison with *A. cauda* see under that species.

Achias sciotus, sp. nov.

Material Examined

Holotype. ♀ (unique), NE. New Guinea: Mt Missim (Mission), nr Bulolo, 2100 m, 21.xii.1968, J.S. (BPB).

Description (female)

Somewhat resembling *A. carolinae* and agreeing with description given for that species except as indicated below.

Coloration. Pigmentation of head unknown (subcuticular pigment-bearing tissue of type destroyed by mites). Ground colour of mesoscutum reddish brown, becoming tawny towards lateral margins and scutellar suture and on humeral calli; 4 distinct reddish brown non-pruinescent stripes relatively narrow, those of submedian pair separated by more than width of each, joined posteriorly without reaching scutellar suture; remainder of mesoscutum with pale yellowish pubescence-pruinescence; scutellum tawny brown with slight darker mottling (perhaps due to state of preservation), distinctly shining only on free margins, with dense white pubescence along scutellar suture; pleura tawny with rather dense pale yellowish pubescence. Fore coxa suffused with brown, darkest along outer margin; fore femur blackish brown distoventrally, the infuscation extending to middle on ventral surface; mid and hind femur less extensively browned distally. Wing with first costal cell, base of second costal cell, and stigmatal section of subcostal cell amber-yellow; yellow tinge also somewhat intensified towards base of marginal cell; brown marks absent on anterior crossvein and vein 5.

Head rather broad, with eye very prominent, rounded, not stalked; inner and outer vertical bristles distinct, but shorter and weaker than in *A. carolinae.*

Thorax. Mesoscutum as wide as long; humeral bristle absent; dorsocentral bristle rather weak, black; fore femur with 5 or 6 moderately strong spinescent posteroventral bristles along distal half, without long ventral hairs on basal half; mid femur with small spinescent anteroventral and posteroventral bristles distally; fore tarsus slightly stouter than in female of *A. carolinae.* Wing: cell-4 index = 0·58; first costal cell entirely microtrichose; second costal cell microtrichose over full width at base, bare beyond; marginal cell microtrichose on about distal quarter and on a small area at base next to stem of veins 2 and 3; submarginal cell microtrichose on a little less than distal half, bare basally; first basal cell bare near anterior crossvein; first posterior cell almost so; discal cell bare from base for about $\frac{3}{4}$ its length except for some microtrichia along median line of cell reaching almost to centre.

Dimensions. Total length 9·4 mm; width of head 4·4 mm; length of thorax 3·9 mm; length of wing 10·5 mm.

Distribution

North-east New Guinea, highlands of Morobe Province. Map reference 9*D* (Fig. 1).

Notes

A. sciotus differs from all species of Section 2 except *A. carolinae* in the combination of reduced microtrichiation of the alula and virtual absence of dark markings on the wing. For further comparison see under *A. carolinae. A. sciotus* also resembles *A. comptus*, but, in addition to its bare alula, the present species differs in its narrower non-pruinescent mesoscutal stripes and the patch of microtrichia filling the base of the second costal cell. As indicated above, the facial markings of *A. sciotus* cannot be determined from the type.

Achias melinus, sp. nov.
(Figs 70, 71)

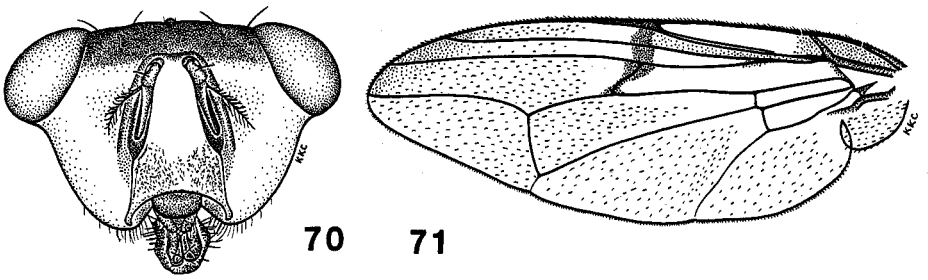
Material Examined

Holotype. ♀; NE. New Guinea: Gumi, nr Bulolo, 2010 m, 31.viii.1979, H.R. (AM).

Paratype. 1♂, 1♀, same locality as holotype, Mar., Aug. 1979–1980, H.R. (AM). Further material from Gumi reported by H.R. (FRIL).

Description

Among the palest insects in Section 2 and thus resembling *A. sciotus*, to which it is not apparently closely related.



Figs 70, 71. *Achias melinus* (♂): *70*, head; *71*, wing.

Coloration. Head fulvous; postfrons mottled and suffused with mid brown; face finely, irregularly mottled with light brown on lower half, without other dark markings; cheek stripe reduced to a few brown spots below eye, absent in male. Antenna fulvous to tawny. Prelabrum and palpus fulvous. Mesoscutum brownish tawny with yellowish hairing; surface covered with yellowish pubescence and pruinescence except on 4 shining, weakly rugose longitudinal stripes; median pruinescent stripe divided and fading posteriorly, anteriorly slightly wider than paramedian non-pruinescent stripe; scutellum rather pale brownish tawny above, slightly shining though minutely roughened, fulvous below level of marginal bristles; pleura fulvous with a little irregular darker coloration, rather densely covered with pale greyish to yellowish pubescence-pruinescence. Legs predominantly fulvous; tibiae sometimes slightly browned distally; fore tarsus with segment 1 largely tawny in male, brown with blackish suffusion in female, other segments black; other tarsi with segments 1 and 2 largely tawny in male, with segment 1 and sometimes part of segment 2 brown in female, elsewhere largely black. Wing membrane with general yellow tinge; first costal cell and base of second costal cell deep yellow; marginal cell yellow from stigmatal band to base; stigmatal band dark brown in part, narrow, often broken in submarginal cell, distinct on anterior part of anterior crossvein but linear or indistinct on posterior part; costal region with slight brown suffusion from a little before end of vein 2 to end of vein 4; discal crossvein without trace of brown cloud; a small grey spot on short section of vein 5 between anal and discal cells; squama yellow-orange. Haltere pale fulvous with pale brown capitellum. Abdomen tawny brown, with irregular dark patches in the dried material, with green-tinted reflections; hairs yellowish except for black ones towards posterior margin of tergite 5.

Head moderately broad, without eye-stalks; eye rounded, only moderately prominent in male, less so in female; inner and outer vertical bristles well developed. Palpus moderately broad.

Thorax rather stout; mesoscutum almost as wide as long; scutellum moderately large, somewhat rounded and dorsally convex, $\frac{2}{3}$ as long as wide or a little less, without hairs, with a little pubescence on either side near scutellar suture; following thoracic bristles well developed: humeral 1 + 1 notopleurals, supra-alar, postalar, intra-alar, dorsocentral, prescutellar acrostichal, 3 pairs of scutellars, the foremost a little shorter than others. Hind trochanter with moderately long ventral hairs not forming a brush; fore femur with posteroventral bristles distally of which 2–4 form moderate to long black spines; other ventral bristles of femora little developed; fore tarsus moderately stout with all segments more or less depressed, with segment 1 3·2 × as long as wide, in male, 4·1 × as long in female; segment 2 longer than wide, segment 3 wider than long; hind tarsus also moderately stout, mid tarsus less so basally. Wing venation very similar to that of *A. cheesmanae* (Fig. 28); cell-4 index = 0·59–0·62; first costal cell almost entirely microtrichose; second

costal cell microtrichose only at basal end, the bare zone almost reaching middle of humeral crossvein in female; marginal cell microtrichose apically, a narrow microtrichose tongue extending basad clear of costa and vein 2 to level of junction of costa with vein 1, also microtrichose on stigmatal band and on separate basal zone; submarginal cell microtrichose apically as for marginal cell and on stigmatal band; first posterior cell with bare basal patch which may be divided in 2; first basal cell with few microtrichia at extreme base, on spot near origin of vein 3, on small spot next to basal section of vein 4, and on stigmatal band; discal cell with large basal bare zone extending into distal half along veins 4 and 5; third posterior cell with less extensive bare zone than the last; alula almost entirely microtrichose; squama large, broadly rounded posteriorly.

Abdomen rather broad; tergite 3 with pair of bare zones anteriorly; tergite 5 in male slightly longer than tergites 3 and 4 together.

Dimensions. Total length 6·6–7·5 mm; width of head 3·6–4·4 mm; length of thorax 3·8–4·8 mm; length of wing 9·4–11·1 mm.

Distribution

North-east New Guinea, highlands of Morobe Province. Map reference 9*D* (Fig. 1).

Notes

A. melinus is among the least pigmented species in Section 2 and does not appear to have any close relative. Important distinguishing characters are the replacement of the usual bold markings on the face by inconspicuous mottling, the pale, indistinctly mottled scutellum, the absence of a continuous dark costal band and presence of a stigmatal band on the wing, and the depressed fore tarsus.

Achias punctulatus de Meijere

Achias punctulatus de Meijere, 1913: 372.—Hendel, 1914*b*: 215 (redescription).

Material Examined

Lectotype (here designated). ♀, S. West New Guinea: Alkmaar, upper Lorentz (Noord) R., 2.ii.1910, H.A.L. (AMST).

Paralectotype. 1♀, poor condition, same data except Oct. 1909 (AMST).

Other material. **West New Guinea:** 1♀, Canoe Camp, Utakwa (Otakwa) R., Nov. 1912, A.F. Wollaston (BM); 2♀, Nabire, Geelvink Bay, July–Sept. 1962, J.S. (BPB, AM); 1♀, Biak I., June 1962, J.L.G. and J.S. (BPB); 1♂, 'Holl. N. Guinea, Central geb' (Netherlands or West New Guinea, central mountains), July (?1910), S. G. Moszkowski (MNB).

Description (supplementary)

Abdomen (male). Tergite 5 1·4 × as long as tergite 4. Distal section of outer surstylus very similar to that of *A. kimi* and thus quite different from that of *A. amplividens*; aedeagus resembling that of *A. kimi* but with smaller glans and filament at least 14 × as long as glans.

Dimensions. Total length: male, 11·2 mm; female, 7·4–10·8 mm. Width of head: male, 11·0 mm; female, 4·6–4·8 mm. Length of thorax: male, 5·4 mm; female, 4·3–4·9 mm. Length of wing: male, 11·4 mm; female, 9·1–9·7 mm. Length of glans of aedeagus: 0·84 mm.

Distribution

West New Guinea, lowlands; Biak Island, Geelvink Bay. Map reference 3*B*, 4*A*, 4*C*, 5*B*, 5*C* (Fig. 1).

Notes

This species closely resembles *A. amplividens* and I am doubtful of its specific distinction. The types and other material I assign to this species differ from typical material of *A. amplividens* mainly in the characters given in the key. The brown costal band is usually, but not consistently, darker and more distinct throughout. The only available male differs from the other material in the more extensive brown pigmentation of the wing, the costal band being broader and the dark mark on the discal crossvein extended to costal band and basad through the discal cell to the stigmatal band; it also has segments 2–4 of the fore tarsus tawny (perhaps a little faded). Therefore, it is referred to *A. punctulatus* with some doubt, but its abdominal characters seem to indicate its specific distinction from *A. amplividens*.

Achias amplividens Walker

Achias amplividens Walker, 1859: 122.–Saunders, 1861: 417, pl. 13, figs 7, 7*a*, 7*b*; Osten Sacken, 1881: 89–90.

Material Examined

Holotype. ♂, Moluccas: Aru, Jan.–June 1857, A.R.W. (BM). Date inferred from Wallace (1869).

Other material. **Moluccas:** 1♂, 1♀, Aru Is., no date, anon. (det. de Meijere, BPB). **Papua:** 1♂, Eio Ck, nr Sogeri, Central Province, 400 m, 24.ix.1985, J.W.I. (AM); 1♀, Tapini, Central Province, 975 m, Nov. 1975, W.W.B. (BPB). **'Nw. Guinea':** 1♂, no other data (AMST).

Description

Somewhat related to *A. kimi* and agreeing with description given for that species except as indicated below.

Coloration. Head coloured somewhat as in *A. kimi* but with dark pigment on dorsal surface tending to form small, mainly separate, closely placed dots; cheeks, lower part of face, and most of surface of eye-stalk with numerous but not dense dark brown dots; face without pair of brownish blotches; cheek stripe absent; membranous area between epistomal margin and prelabrum with few dark dots. Mesoscutum with ground colour reddish brown, becoming tawny toward margins (including humeral and notopleural regions), where it has rather numerous blackish dots, with covering of ochraceous pruinescence interrupted by 4 broad non-pruinescent stripes, either entirely separate (holotype) or extensively fused posteriorly (other specimens); scutellum fulvous with numerous blackish dots, with inconspicuous pubescence near anterior margin; most of pleura with rather numerous, separate blackish dots; postnotum with few or no spots. Tibiae all blackish brown. Wing with costal band filling area in front of vein 2; costal and subcostal cells brownish fulvous; marginal cell fulvous to brownish fulvous, darker brown on stigmatal band and distally where costal band extends just over vein 3 from level of discal crossvein and to tip of vein 4 at apex; discal crossvein covered by a broad, separate brown mark; brown stigmatal band rather broad and well defined in submarginal cell and around anterior crossvein, barely extending into discal cell; first basal cell not strongly yellowed except in extreme base and along anterior margin on basal half.

Head shaped much as in *A. kimi* but in small male (holotype) without eye-stalks, in large male with eye-stalks resembling those of similarly sized specimens of *A. kimi*, with eyes more narrowly oblique.

Thorax with 3 pairs of marginal scutellar bristles. Hind trochanter of male with brush of dense, short, fine, black setulae and with mostly short pale hairs; hind femur very slightly curved downwards towards base so that ventral outline a little beyond base is faintly concave.

Abdomen. Tergite 5 of male 2·3 × as long as tergite 4. Distal section of outer surstylus with apex subtruncate and somewhat rounded, with series of fine setulae on distal margin; aedeagus not examined.

Dimensions. Total length: male, 10·4–13·9 mm; female, 9·3–11·2 mm. Width of head: male, 4·7–16·0 mm; female, 4·4–6·1 mm. Length of thorax: male, 4·5–5·7 mm; female, 4·5–5·9 mm. Length of wing: male, 9·8–12·2 mm; female, 10·1–12·3 mm.

Distribution

Aru Islands; northern West New Guinea; Papua, highlands of Central Province. Map reference 3*C*, 9*E* (Fig. 1).

Notes

For comparison with related species, see under *A. hendeli* and the doubtfully distinct *A. punctulatus*.

The holotype, figured by Saunders, is an unusually small male and lacks the eye-stalks which are so well developed in the larger males. For this reason, both Walker and Saunders mistook the specimen for a female.

The name *Achias amplividens* has been erroneously applied to an Australian species, probably *A. kurandanus*, by Tillyard (1926: 370–1).

Achias hendeli, sp. nov.

Achias amplividens Walker.—Hendel, 1914*a*: pl. 10, fig. 180; Hendel, 1914*b*: 212–14. Misidentification.

Material Examined

Holotype. ♂, NE. New Guinea: Finschhafen, 1881, H. Fruhstorfer (MNM).

Other material. **West New Guinea:** 1♂, Fakfak, Onin Pen., no date, A. E. Pratt (BM).

Description

Hendel's description (1914*b*) and figure (1914*a*) of *A. amplividens* are based on the holotype of this species. His description is generally apt but may be supplemented as follows.

Coloration. Face unspotted except for a few dots near lower end of antennal groove. Antennal segment 1 fulvous. Mesoscutum with distinct spots only on posterior and lateral parts, the ground colour of a large central area coppery brown, with submedian pair of stripes darker, separated from each other by a broad yellowish grey pruinescent stripe and from lateral stripe by a narrower stripe of the same colour. Costal margin of wing (in front of vein 3 and also, near base and apex, for a short distance behind it) brownish gold, only a little browner on apical part and in end of subcostal cell, the darker colouring not extending across first posterior cell apically, the darker colouring shown in Hendel's figure apparently due to dirt on membrane of both wings, even allowing for slight fading since 1914. Abdominal tergites 1 and 2 reddish brown, tergites 3–5 darker brown with green and blue reflections; general hairing of tergites blackish; tergites 1 and 2 with extensive longer pale yellowish hairs; lateral margins of tergites 3–5 with whitish hairs; tergites 3–5 with median stripe covered with rather long dense pale yellowish hairs.

Head. Eye-stalks slender; eyes somewhat rounded, but not as nearly spherical as in Hendel's figure, shaped almost as in *A. australis* but much smaller than in specimens of that species of similar head-width.

Thorax with the following bristles: humeral, 1+1 notopleurals, supra-alar, postalar, intra-alar, rather short dorsocentral, 3 pairs of scutellars; humeral callus with long yellowish hairs. Hind trochanter without noticeable prominences, with moderately long yellowish hairs and a small ventral group of black hairs, some of which are shorter, appearing as a dark spot under low magnification; hind tibia somewhat curved as in *A. amplividens*. Wing with discal crossvein much more strongly curved than in *A. amplividens*.

Dimensions. Total length 11·0 mm; width of head 17·1 mm; length of thorax 4·8 mm; length of wing 10·6 mm.

Distribution

North-east New Guinea, Morobe Province, coastal; West New Guinea, Onin Peninsula. Map reference 2*B*, 9*D* (Fig. 1).

Notes

Hendel saw no genuine specimen of *A. amplividens* or he would not have confused it with the present species. Though sharing some characters with *A. amplividens*, *A. hendeli* differs from it in having paired black facial marks, in the much more slender eye-stalks (even more slender than in Hendel's figure), in the comparatively very rounded and small eyes (shaped much as in *A. australis* but smaller), in the heavy dark spotting on fore coxae, in the less distinct brown markings on the wing (see note above), in the dense whitish hairs on median line of tergites 2–5, and in the much shorter tergite 5 of male. The presence of a small group of black setulae on the hind trochanter, not set on a prominence, appears to constitute a further difference. As the holotype is old and brittle, it is deemed advisable not to extract the genitalia for study.

The male from Fakfak resembles the holotype in most characters and in view of its geographic remoteness from the type locality it is possible that it represents a geographic variant of the same species. It differs in the much darker brown distal section of the costal band from near level of discal crossvein. Unfortunately, as the holotype had to be returned from loan before receipt of this specimen, I have not been able to make a direct comparison between the two.

Achias testaceus, sp. nov.

Material Examined

Holotype. ♂, NE. New Guinea: Wareo, nr Finschhafen, no data, Rev. L. Wagner (SAM).

Paratypes. NE. New Guinea: 1♀, same data as holotype (SAM); 1♀, Arabuka, Huon Pen., 1500–2000 m, Jan. 1968. J.S. and M.S. (BPB).

Description

Resembling both *A. hennigi* and *A. mallochi*, agreeing with description of the latter except as indicated below.

Coloration. Paired facial marks with tendency to form zones of brown mottling rather than solid brown areas; cheek without scattered spots, in male unmarked, in female with short stripe below eye margin with slight tendency to break up into spots at lower extremity. Ground colour of mesoscutum paler than in *A. mallochi*, more tawny, with yellowish pruinescence thinner, but with spotting much as in that species; submedian stripes variable, sometimes joined posteriorly in a non-pruinescent zone; scutellum with yellowish pubescence restricted to a narrow zone along scutellar suture, interrupted medially; tibiae reddish brown to dark brown. Wing with costal band darker than in *A. mallochi*, markings

more as in *A. hennigi.* Abdomen probably similarly coloured to that of *A. mallochi,* variable in available material because of state of preservation; tergites 4 and 5 with almost all hairs black.

Head structurally as given for *A. mallochi.*

Thorax. Scutellum with 3 pairs of bristles and one or several hairs on each side in front of foremost lateral bristle. Femora with ventral bristles generally weaker than in *A. mallochi* though slightly variable; fore tarsus of male very similar to that of *A. kimi,* with lateral compressed bristles much less developed than in *A. mallochi.* Wing with first basal cell microtrichose for full length medially, with narrow bare strip anteriorly and posteriorly.

Abdomen. Surstylus with discal section narrowly subtriangular, narrowly obtuse apically with small fascicle of hairs; aedeagus with glans smaller than in *A. mallochi;* terminal filament nearly 4 × as long as glans, broadly winged, not much tapered apically.

Dimensions. Total length: male, 9·6 mm; female, 8·0–9·4 mm. Width of head; male, 7·7 mm; female, 4·5–4·8 mm. Length of thorax: male, 4·6 mm; female, 4·5 mm. Length of wing: male, 10·7 mm; female, 9·7–9·8 mm. Length of glans of aedeagus: 1·00 mm.

Distribution

North-east New Guinea, Huon Peninsula. Map reference 9*D* (Fig. 1).

Notes

A. testaceus is in some characters intermediate between *A. mallochi* and *A. hennigi,* but differs from both in the less extensive dorsal pubescence and presence of one or more lateral hairs on the scutellum. As the latter character seems likely to be inconstant, I have placed the species at two points in the key to ensure identification. It further differs from *A. hennigi* in the presence of non-pruinescent stripes on the mesoscutum and the less broad fore tarsus of the male with distal segments less abbreviated. It differs from *A. mallochi* in the absence of scattered spots on the cheek and presence in the female of a cheek stripe, in the more extensive microtrichia in the first basal cell, and, in the male, the differently shaped outer surstylus and different proportions of the parts of the aedeagus.

Achias gressitti, sp. nov.

Material Examined

Holotype. ♀, West New Guinea: Karubaka, Swart Valley, 1450 m, 17.xi.1958, J.L.G. (BPB).

Paratype. West New Guinea: 1♀, Karubaka, 1350 m, Nov. 1958, J.L.G. (BPB).

Description (female)

Coloration. Head fulvous; postfrons brown, with fulvous patches and mottling mainly on a transverse zone slightly in front of centre; face with pair of large, rather narrowly separated dark brown marks, scarcely extending over parafacial suture; dark brown cheek stripe long, almost entire except at lower end, there being no additional brown spotting on cheek. Antenna tawny; segment 3 suffused with brown. Prelabrum and palpus tawny brown. Ground colour of thorax mainly reddish brown, a little paler on lower part of sternopleuron, without darker spotting; mesoscutum grey pruinescent with 4 broad non-pruinescent but roughly rugose-punctate stripes which are black except for the predominantly reddish brown posterior section of sublateral stripes; submedian stripes broader than pruinescent grey median stripe except near anterior extremities, not reaching scutellar suture, narrowly connected to sublateral stripes at both anterior and posterior extremities, but elsewhere separated from them by a linear grey stripe; a lateral reddish brown stripe present behind

suture, separated from sublateral stripe by a rather broad grey-pruinescent stripe; scutellum brown-black, more shining than in *A. mallochi* and only thinly pruinescent dorsally, with silvery grey pubescence in a relatively narrow band along scutellar suture; pleura brownish tawny, with lower parts of both sternopleuron and hypopleuron paler reddish tawny, also with some irregular paler patches elsewhere but quite without dark spotting, with general covering of whitish pubescence-pruinescence. Fore coxa dark brown; mid coxa dark brown becoming tawny laterally; hind coxa tawny with brown suffusion; fore femur reddish tawny, broadly blackish brown distoventrally; other femora fulvous, broadly dark brown distoventrally; fore tibia black to brown-black; other tibiae black with deep reddish brown markings; tarsi black. Wing almost clear centrally and posteriorly, with pale smoky brown tinge on distal third; a complete brownish yellow costal band filling area in front of vein 2, intensified in first costal cell, base of second costal cell, stigmatal section of subcostal cell, and near base of marginal cell, posteriorly extended just over vein 3 at fork of veins 2 and 3, and to vein 4 as a rather broad stigmatal band, filling distal section of submarginal cell from about level of discal crossvein, distally spilling over into first posterior cell and meeting vein 4 at apex; a pale, indistinct brownish mark on discal crossvein; squama pale buff. Haltere fulvous, with capitellum largely brown. Abdomen brown with green reflections.

Head resembling that of *A. mallochi*, but with cheek less convex anteriorly; eye more prominently gibbous on lower part than in that species.

Thorax moderately stout; scutellum longer than a semicircle and thus longer than in *A. mallochi*, with marginal bristles on tubercles; the following thoracic bristles present: humeral, 1+1 notopleurals, supra-alar, postalar, intra-alar, dorsocentral, prescutellar acrostichal, 3 pairs of marginal scutellars. Legs resembling those of *A. mallochi*; fore tarsus stout as in female of that species. Wing venation very similar to that of *A. kurandanus* (Fig. 24); microtrichiation of membrane as described for *A. mallochi* except that bare zone in submarginal cell beyond stigmatal band is larger, first basal cell is without distal patch of microtrichia before stigmatal band, and discal cell is bare on somewhat less than basal half; squama large and broadened posteriorly.

Abdomen as described for *A. mallochi* but tergite 3 with large sublateral bare zones.

Dimensions. Total length 8·0–8·2 mm; width of head 4·1–4·4 mm; length of thorax 4·0–4·5 mm; length of wing 9·1–10·1 mm.

Distribution

Central West New Guinea. Map reference *5B* (Fig. 1).

Notes

A. gressitti is similar in most respects to *A. mallochi* but differs in the bare zone on each side of the median line on tergite 3 as well as the coloration of the femora and absence of spots on the thoracic pleura.

Achias mallochi, sp. nov.
(Figs 72–74)

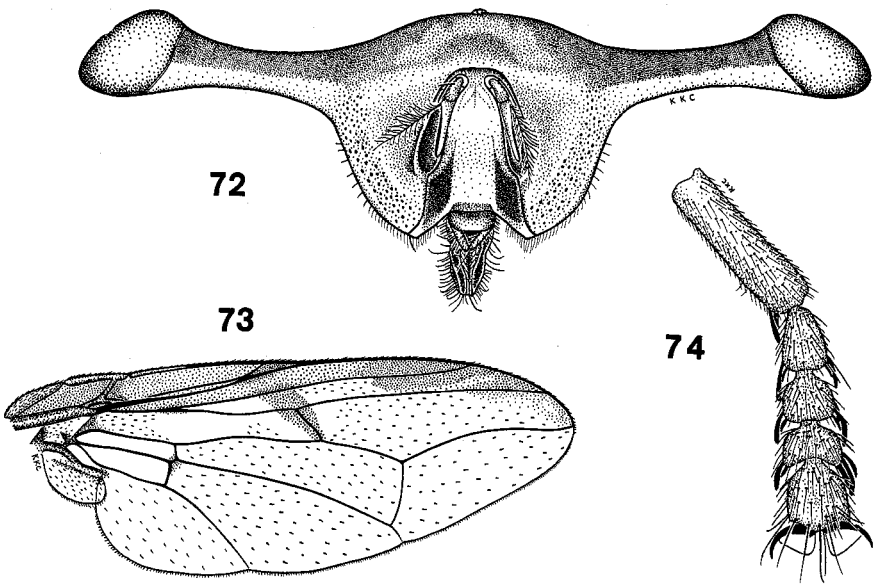
Material Examined

Holotype. ♂, NE. New Guinea: Ambunti, Sepik R., 150 m, 7.v.1963, R.S. (BPB).

Paratypes. NE. New Guinea: 7♂, 9♀, same data as holotype (BPB, AM); 1♂, 1♀, Oenake Mtns, nr Vanimo, Aug. 1983, H.R. (AM); 3♂, 1♀, May R. Patrol Stn, 100 m, May 1963, R.S. (BPB, AM); 1♂, Nengian Village, Toricelli Mtns, Nov. 1958, W.W.B. (BPB); 1♂, 3♀, Angoram, Sepik R., Apr. 1965, R.S. (BPB, AM); 1♀, Wanuma, Adelbert Mtns, Madang Province, 800–1000 m, Oct. 1958, J.L.G. (BPB).

Description

Coloration. Head tawny; postfrons and, in male, entire dorsal surface of eye-stalk with rather dense brown mottling becoming sparser or absent centrally in front of ocelli; face with pair of widely separated blackish brown marks below antennal grooves; mesofacial otherwise unspotted or almost so; cheek with numerous separate blackish spots except on posterior part; cheek stripe absent. Antenna tawny, with segment 3 more brownish. Prelabrum and palpus fulvous. Ground colour of thorax mainly tawny, becoming brownish dorsally on mesoscutum, with numerous slightly variable blackish dots on humeral callus (usually), notopleural area, part between postalar bristle and scutellum, and most of pleura; mesoscutum densely yellow pruinescent-pubescent except on 4 well-defined longitudinal stripes, which are reddish brown and very rugose, submedian pair about half as wide as broad median pruinescent stripe, posteriorly terminating about midway between transverse suture and scutellar suture and each separated from submedian stripe by a pruinescent stripe about as wide as latter; greater part of mesoscutum with rather short black hairs, giving way to yellow hairs laterally and towards scutellar suture; scutellum dark brown, sometimes tawny anteriorly with darker spotting, subshining above, glossy on margin, especially below, with long, dense yellow pubescence extending from scutellar suture to beyond middle of dorsal surface; pubescence and hairs on pleura pale yellowish. Coxae, trochanters, and femora fulvous, the last at most very narrowly browned apically; tibiae brownish tawny to reddish brown, with dark brown markings; tarsi dark brown to black. Wing membrane slightly tinged with brown, costal band running for full length of wing, somewhat diffuse and not very intensely brown, becoming yellowish brown in much of second costal cell and on an area just beyond end of vein 1; stigmatal band distinct, narrowing to vein 4 where it is discontinued; discal crossvein without marking; wing markings, as usual, paler and less extensive in immature examples. Haltere fulvous, with most of capitellum brown. Abdomen shining brown with green reflections.



Figs 72–74. *Achias mallochi*: *72*, head (♂); *73*, wing; *74*, right fore tarsus (♂).

Head. Eye of male obliquely ovoid, on very short to rather long stalk; eye of female not stalked, but very prominent, rather evenly rounded; inner and outer vertical bristles well developed. Palpus narrow.

Thorax structurally as described for *A. kimi*, except that there are usually 3 pairs of scutellar bristles. Hind trochanter without posterior gibbosity, in male with ventral group

of rather short, usually dense black hairs among the otherwise yellow hairs; femora with moderately developed spinescent anteroventral and posteroventral bristles, except the hind one on which the posteroventral bristles are reduced to yellow hairs; hind femur with only very slight curvature; hind tibia not distinctly gibbous distally; fore tarsus of male broadened and depressed, but less so than in *A. kimi*, with segment 2 longer than wide, with compressed, scimitar-like lateral bristles on segments 2–4. Wing venation resembling that of *A. kurandanus* (see Fig. 24); costal and marginal cells entirely microtrichose; submarginal cell with bare area near base and smaller bare area just beyond discal band near vein 3; first basal cell microtrichose on about basal quarter and with patch of microtrichia distally before stigmatal band; first posterior cell microtrichose except for a bare patch next to stigmatal band; discal cell microtrichose except for a small area at base extending somewhat along vein 5; alula entirely microtrichose; squama large and posteriorly broadened.

Abdomen broad; tergites 1 and 2 with numerous mostly yellowish hairs; other tergites with numerous mostly black hairs and no bare to almost bare areas; hairs on a broad median area of tergite 3 and narrow median areas of tergites 4 and 5 yellowish. Male postabdomen: outer surstylus narrowed basally, broadest beyond middle, a little narrowed again at origin of free distal section, which is short and broadly rounded in an almost transverse plane; aedeagus with preglans distinctly demarcated; glans elongate cylindrical, curved; terminal filaments obliquely truncate apically, each about 1·4 × as long as glans.

Dimensions. Total length: male, 10·0–12·6 mm; female, 10·4–12·6 mm. Width of head: male, 5·3–13·6 mm; female, 4·4–5·7 mm. Length of thorax: male, 4·3–6·0 mm; female, 4·4–5·5 mm. Length of wing: male, 9·0–10·8 mm; female, 9·1–10·5 mm. Length of glans of aedeagus: 1·29–1·35 mm (2 specimens examined).

Distribution

North-east New Guinea, lowlands of Sepik Valley, and adjacent ranges, extending into Madang Province. Map reference *6B*, *6C*, *7B*, *7C*, *8C* (Fig. 1).

Notes

A. mallochi belongs in the group of species of section 2, including *A. szentivanyi*, *A. gressitti* and *A. testaceus*, which have the mesoscutum with longitudinal non-pruinescent stripes, fore tarsus not very slender, costal band well developed, scutellum largely blackish brown, and face with dark markings restricted to ventrolateral zones. It differs from *A. szentivanyi* and *A. gressitti* in having the submedian non-pruinescent stripe well defined and much narrower than the median pruinescent stripe, and in other characters indicated under those species. From *A. testaceus* it is distinguished principally as indicated in the key.

Achias longividens Walker
(Figs 75, 76)

Achias longividens Walker, 1859: 121.–Saunders, 1861: 417, pl. 13, figs 4, 5.

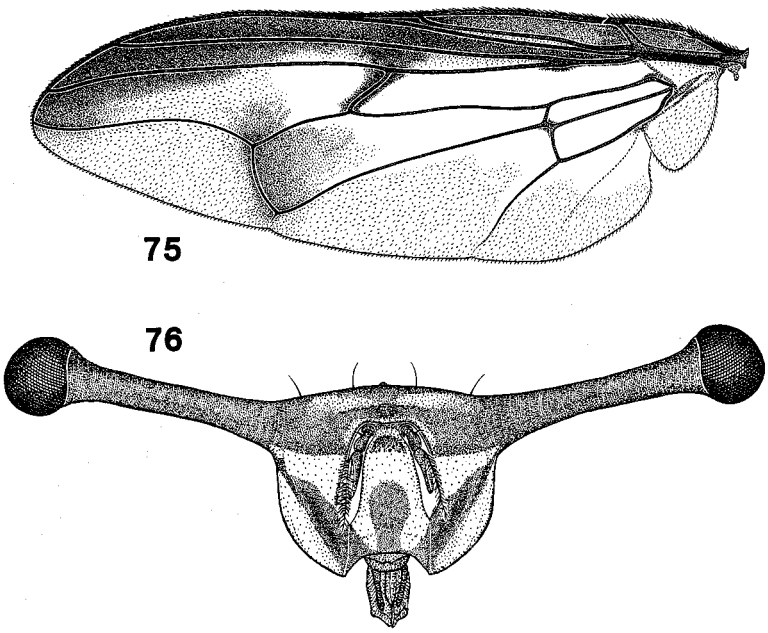
Material Examined

Lectotype (here designated). ♂, Aru Is.: Aru, Jan.–June 1857, A.R.W. (BM). Date inferred from Wallace (1869).

Paralectotype. 1♀, same data (BM).

Other material (all from Papua). **Western Province:** 2♂, 1♀, *c.* 50 km NNE. of Palmer R., Oct. 1974, P. Imlay (KONE, AM); 5♂, 3♀, Morehead Airstrip, Morehead R., Sept. 1972, J. Stibick (AM, KONE, BPB). **Central Province:** 1♂, Aroa R., no date, A.S.M. (BM); 1♂, 1♀, Doa Estate, Aroa R., Sept., Nov. 1961–62, R.S. (ANIC); 1♂, Warianata Nat. Pk, May 1973, J. Pippet (KONE); 1♂, Mamai Estate, nr Cape Glasgow, Nov. 1963, E. Kanjiri (AM). **Oro (Northern) Province:** 1♂, Mt

Lamington, 330–460 m, no date, C. T. McNamara (SAM). **Milne Bay Province:** 2♂, 2♀, Milne Bay, no date, anon. (MNM, WM).



Figs 75, 76. *Achias longividens*: *75*, wing (Morehead River); *76*, head (♂, Doa).

Description

Coloration. Head dull fulvous; postfrons suffused and mottled with brown across whole width at vertex and again towards anterior margin, where brown colour extends on to upper extremity of parafacial, thus only a relatively small central part of postfrons fulvous with variable amount of dark brown mottling; eye-stalk reddish brown, broadly blackish along centre of dorsal surface, in male also darkened along centre of ventral surface, in female with fulvous coloration extending broadly from parafacial to anteroventral margin of eye; dark brown cheek stripe somewhat oblique and passing forward at lower end to fuse with brown mark at lower lateral angle of face; typically, face with a separate narrow or broad brown median stripe discontinued a little above middle, and an isolated brown mark across facial carina just below its upper extremity, sometimes (in specimens from Central and Northern Districts of Papua) face brown across its whole width on lower part, or in extreme specimens face almost entirely brown with only a median paler spot indicating separation of upper brown mark. Antenna brown or sometimes largely tawny. Prelabrum brown, or tawny with brown suffusion; palpus reddish brown to dark brown. Thorax dorsally with blackish brown ground colour, somewhat shining with bluish or bronzy reflections; mesoscutum rather densely clothed with grey pruinescence, with 4 longitudinal very thinly pruinescent stripes and median teardrop-shaped bare shining spot in front of prescutellar acrostichal bristles; short hairs on most of mesoscutum black, the longer ones, mainly near scutellar suture and on humeral callus whitish; scutellum with dense yellowish grey pubescence anteriorly on dorsal surface, with broad marginal area smooth and shining; pleura mostly reddish brown with dense greyish white pubescence-pruinescence and, in parts, whitish hairs. Coxae brown with tawny markings or largely tawny; femora tawny, usually with large distoventral brown area at least on fore femur; tibia tawny with variable brown markings; tarsi black. Wing with continuous brown costal band of varying intensity and slightly variable width, always very dark on distal quarter of wing where it enters

first posterior cell, extending as a brown stigmatal band over anterior crossvein; typically (Aru and Morehead River specimens) costal band extending over vein 2 into submarginal cell beyond stigmatal band, in specimens from Central and Northern Districts of Papua with clear, bare zone for full width of submarginal cell in this region; a large moderately dark brown patch enclosing discal crossvein and entering first posterior cell where it is quite separate from costal band; squama pale buff. Haltere buff or tawny with capitellum largely dark brown. Abdomen with tergite 1 tawny; other tergites light to dark brown or blackish, darkest posteriorly, with green or greenish blue reflections; hairs mostly whitish or yellowish.

Head. Eye-stalk of male moderate to very long; eye-stalk of female short but distinct and somewhat constricted below eye so that outline of eye expands from outline of eye-stalk as seen from in front (an unusual feature in female *Achias*); eye very rounded; inner and outer vertical bristles well developed. Palpus narrow.

Thorax very robust; scutellum somewhat convex, in outline intermediate between a semicircle and a triangle, between apical bristles often almost straight, not or scarcely excavated, without hairs; the following thoracic bristles well developed: humeral (occasionally reduced), 1 + 1 notopleruals, supra-alar, postalar, posterior intra-alar, dorsocentral, prescutellar acrostichal, usually 3 pairs of marginal scutellars. Hind trochanter without gibbosity, with longer hairs about as long as its maximum diameter, but not forming a well defined brush; fore femur with posteroventral bristles somewhat variable, but some of them spinescent, often weakly so, with anteroventral bristles often shorter and weaker; mid femur with variably developed, often partly spinescent posteroventral bristles; hind femur almost straight, very slightly curved upwards from near middle, with ventral bristles usually short and weak, occasionally spinescent, and some rather long dorsal bristles distally; hind tibia with slight swelling distally on posterior surface about equally developed in both sexes; tarsi somewhat depressed; segment 1 of fore tarsus not depressed, 5·9–6·3 × as long as wide in male, shorter and less slender in female. Wing venation as in Fig. 75; anal crossvein distally curved to almost straight; squama large, broadly rounded posteriorly, with sinuate outer margin.

Abdomen broad; tergite 3 with large bare zone on each side of median haired area; tergite 4 sometimes with a much smaller bare area on each side towards anterior margin; tergite 5 of male 1·4–1·5 × as long as tergite 4. Male postabdomen: outer surstylus elongate, its apex only slightly exceeding that of inner surstylus, with distal section very broadly ovate and not at all parallel-sided, with rather narrowly rounded apex; aedeagus with distal part of stipe forming a distinct sclerotised segment at least twice as long as wide, in addition to the conspicuously articulated, sclerotised preglans; glans rather narrowly cylindrical; filaments each about twice as long as glans, slightly tapering distally with very slight apical thickening.

Dimensions. Total length: male, 9·2–13·7 mm; female, 6·6–12·6 mm. Width of head: male, 7·9–22·0 mm; female, 4·5–7·4 mm. Length of thorax: male, 5·0–6·8 mm; female, 3·7–6·4 mm. Length of wing: male, 12·3–15·1 mm; female, 9·1–13·9 mm. Length of glans of aedeagus: 0·81–0·90 mm.

Distribution

Aru Islands; Papua, lowlands of Western, Central, Oro, and Milne Bay Provinces. Map reference 3*C*, 6*C*, 6*E*, 9*E*, 10*E*, 11*F* (Fig. 1).

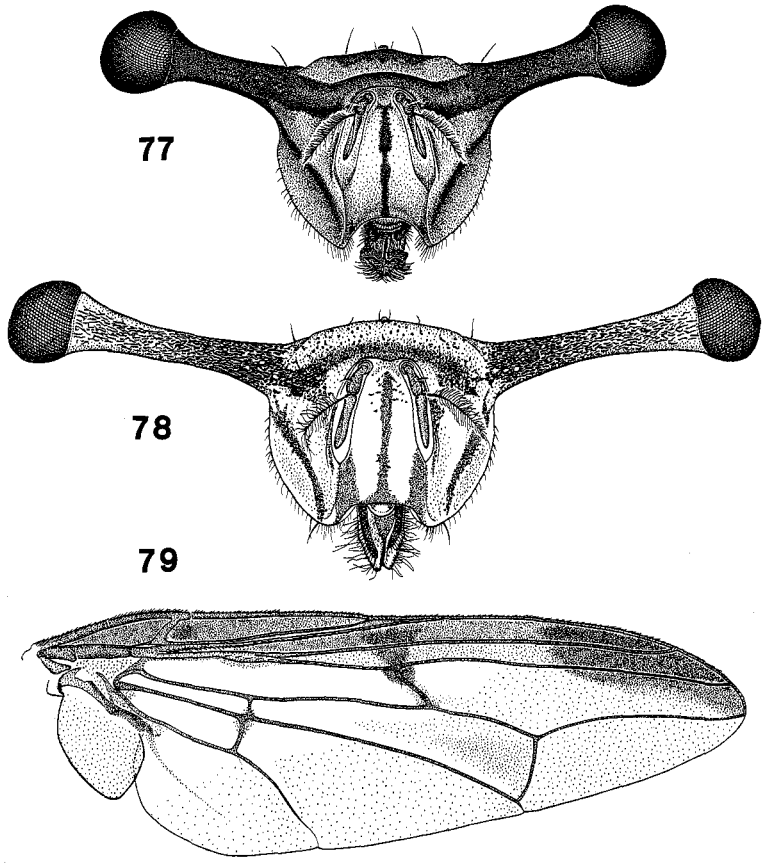
Notes

A. longividens is most closely related to *A. latividen*s and *A. australis*. See under these species for further comparison.

Hendel's description of *A. latividen*s (1914*b*: 208–10) is based mainly on the material of *A. longividens* from Milne Bay listed above. Under the heading *A. longividens* (p. 210), he simply quotes Walker's original description.

Achias lativídens Walker
(Figs 77–79)

Achias lativídens Walker, 1859: 121–2.–Saunders, 1861: 417, pl. 13, figs 6, 6*a*; Malloch, 1939: 137; Parsons, 1984: 66–7 (colour photo from life).



Figs 77–79. *Achias lativídens*: *77*, head (♂, Wau); *78*, head (♂, Rossell Island); *79*, wing (♂, Rossell Island).

Material Examined

Holotype. ♀, Aru Is: Aru, Jan.–June 1857, A.R.W. (BM). Date inferred from Wallace (1869).

Other material. **West New Guinea:** 1♀, Sarayu, Ninay Valley, central Arfak Mtns, Vogelkop district, Aug. 1872, L.M. D'Albertis (MCG); 1♀, Cyclops Mtns, *c.* 1070 m, Mar. 1936, L.E.C. (BM). **NE. New Guinea:** 2♀, Jimoni R., Western Highlands, July–Sept. 1961, W.W.B. (ANIC); 1♀, Bulolo, Morobe Province, Feb. 1974, anon. (UQ); 7♂, 8♀, Wau, Morobe Province, Feb., Mar., May, June, Oct., Dec. 1962–1979, R.W.C., H.R., B. S. Cheary, J.S., M.S. (AM, BM, BPB, FRIL); 1♂, Wantoat, Morobe Province, Apr. 1957, J.H.A. (BPB). **Papua (mainland):** 1♂, 1♀, Koroba, 40 km W. of Tari, Southern Highlands, 1650 m, Sept. 1963, R.S. (BPB); 1♂, Tapini, Owen Stanley Range, Central Province, 975 m, Nov. 1957, W.W.B. (BPB); 1♀, Boikik Plantation, nr Popondetta, Nov. 1975, E.S.C. Smith (KONE). **D'Entrecasteaux Group:** 3♂, 2♀, Wakaiuna, Sewa Bay, Normanby I., Nov., Dec. 1956, W.W.B. (BPB, AM). **Louisiade Group:** 1♂, 1♀, Rossel I. (Yela I.), Oct. 1963, W.W.B. (ANIC); 1♀, Mt Rossel, Yela I., Mar. 1939, W.C. Gagne (FRIL).

Description

Geographically variable, but similar to *A. longividens*, particularly in some races, and agreeing with description of that species except as indicated below.

Coloration. Postfrons and eye-stalks coloured approximately as in *A. longividens* (Papua New Guinea mainland populations) or with dark areas reduced or broken into spots (particularly in island populations, in Rossel Island male dorsal surface of eye-stalk orange-tawny with dark dots and streaks mainly towards anterior margin); dark brown cheek stripe almost vertical and not approaching parafacial suture at lower end; median facial stripe well developed but usually rather narrow, extending for almost full height of face, there being no separate brown mark between antennal sockets (in Normanby Island population median stripe variably reduced, often broken into spots, but always indicated); lateral brown facial marks variable in size, quite separate or sometimes narrowly joined to median stripe along epistomal margin. Thorax coloured much as in *A. longividens* or, in Papuan island populations, with metallic reflections of mesoscutum more pronounced, pruinescence of dark longitudinal stripes almost completely absent in Rossel Island population; pleura, in Papuan island populations with largely tawny ground colour and some brown mottling or suffusion. Femora with distoventral brown area well defined. Wing with costal band usually pale or indistinct over a short distance between stigmatal brown mark and level of discal crossvein, in Papuan island populations costal band largely light yellowish brown from base to near level of discal crossvein, dark brown beyond; distal section of wing from just before level of discal crossvein with membrane pale smoky brown, the colour often slightly darker around discal crossvein but not normally with a well defined brown blotch surrounding that crossvein (indication of this blotch present in specimen from Tapini).

Head. Eye-stalk of male generally moderately long, that of female shorter and thicker than in *A. longividens* (North-east New Guinea, Cyclops Mountains in West New Guinea, and Papuan islands), or a little longer and somewhat constricted, almost as in *A. longividens* (Vogelkop and Aru).

Thorax. Scutellum with 3 to 5 pairs of marginal bristles (usually 4, occasionally 3 in Wau population, 4 or sometimes 5 in Papuan island populations, 4 in Aru specimen, 3 in Vogelkop specimen). Hind trochanter generally with some long pale hairs, the longer posterior ones generally about as long as minimum diameter of trochanter or longer (in Rossel Island specimens these hairs somewhat shorter and at least partly brown, but much longer than in *A. australis*), also a tuft of rather long anterior hairs present; femora with ventral bristles somewhat variable, generally short and weakly to moderately spinescent; fore femur never with posterior spines approaching in size those of *A. australis*; fore tarsus with segment 1 about as long as other segments together or almost so.

Abdomen usually with pair of large bare zones on tergite 3 and pair of smaller ones on tergite 4 as in *A. longividens* (in specimens from Rossel Island bare zones almost completely absent). Male postabdomen: outer surstylus somewhat as in *A. longividens*, but in specimens from North-east New Guinea with distal section somewhat narrowed and almost parallel-sided, subtruncate or broadly rounded at apex, in Normanby Island material distal section at first contracted, then expanded and broadly rounded, in specimen from Tapini (Central Province of Papua) distal section unusually short and broad; aedeagus resembling that of *A. longividens*, with glans rather elongate (specimens from Wau), large and stout (specimen form Normanby Island), or rather short (specimen from Rossel Island).

Dimensions. Total length: male, 8·9–14·4 mm; female, 9·6–13·5 mm. Width of head: male, 4·9–14·5 mm; female, 6·3–8·5 mm. Length of thorax: male, 4·0–7·7 mm; female, 6·2–7·5 mm. Length of wing: male, 10·8–15·6 mm; female, 13·5–15·9 mm. Length of glans of aedeagus: 1·25–1·34 mm (Wau), 1·41 mm (Normanby Island), 1·03 mm (Rossel Island).

Distribution

Widely distributed over mainland New Guinea but not definitely known to me from southern coastal areas; possibly Waigeu (Walker); Aru Islands; Normanby and probably

Ferguson Islands (Malloch), D'Entrecasteaux Group; Rossel or Yela Island, Louisiade Group. This is the most widely distributed species of the genus, and, if Walker's (1864) record for Waigeu is correct, it also lives at the western limit for the genus. It appears possible that it does not live sympatrically with the closely related *A. longividens* on the New Guinea mainland, though both species live in the Aru Islands. In Queensland, it is replaced by the related *A. australis*, though the range of that species appears to be separated by a considerable gap from the New Guinea forms. Thus, this closely knit group of three species extends almost throughout the known range of the genus, with the principal exceptions of New Britain and Melville Island. Map reference 1*A*, 2*A*, 3*C*, 6*B*, 7*C*, 9*D*, 9*E*, 10*E*, 11*E*, 11*F*, 13*F* (Fig. 1).

Notes

A. lativides is a highly variable species, the variation being largely geographic. Individual variation in each local population is, so far as can be determined at present, generally small. At first I considered separating the Rossel Island population as a distinct species, but the intermediate characters of the Normanby Island population, together with the possibility of further annectant populations occurring on intervening islands, has caused me to regard all these as a single species. Because of this variation separation from the closely related species *A. longividens* and *A. australis* is sometimes difficult, but I believe that the evidence warrants the recognition of the three species.

A. longividens differs from *A. lativides* in the facial and genal markings, in the presence of a distinct brown blotch surrounding the discal crossvein and, at least in the Papuan populations, in the shape of the distal part of the outer surstylus and shorter glans of the aedeagus. Occasional specimens may be hard to place, especially immature ones, and a specimen from Tapini could be regarded as intermediate. On the other hand, the two species seem to be represented by readily distinguishable populations over a wide area, and, in the Aru Islands where they are evidently more or less sympatric, they maintain their distinctive characters, judging from the meagre material available.

A. australis differs from *A. lativides* in having the three brown facial marks broadly fused on the epistomal margin (occasional specimens of *A. lativides* approach this condition), in the consistently longer posteroventral spines of the fore femur, in the shorter segment 1 of the fore tarsus, and in the much shorter hairs on the hind trochanter. *A. australis* does not consistently have a paler eye-stalk than *A. lativides*, as indicated by Malloch, as this varies in the different populations of the latter species. Although Malloch succeeded in finding important differences between *A. australis* and *A. lativides*, in his key (1939: 133) these became confused, the coloration of the eye-stalk being reversed for these two species, and the reference to the genal stripe indicating that he had a specimen of *A. longividens* (probably the specimen from Milne Bay) among his material determined as *A. lativides*.

Achias australis Malloch
(Figs 80–85)

Achias australis Malloch, 1939: 137–8, pl. 5, fig. 28.—McAlpine, 1979: 221–30 (behaviour).
Zygotricha sp. Froggatt, 1907: 306, pl. 28, fig. 4.

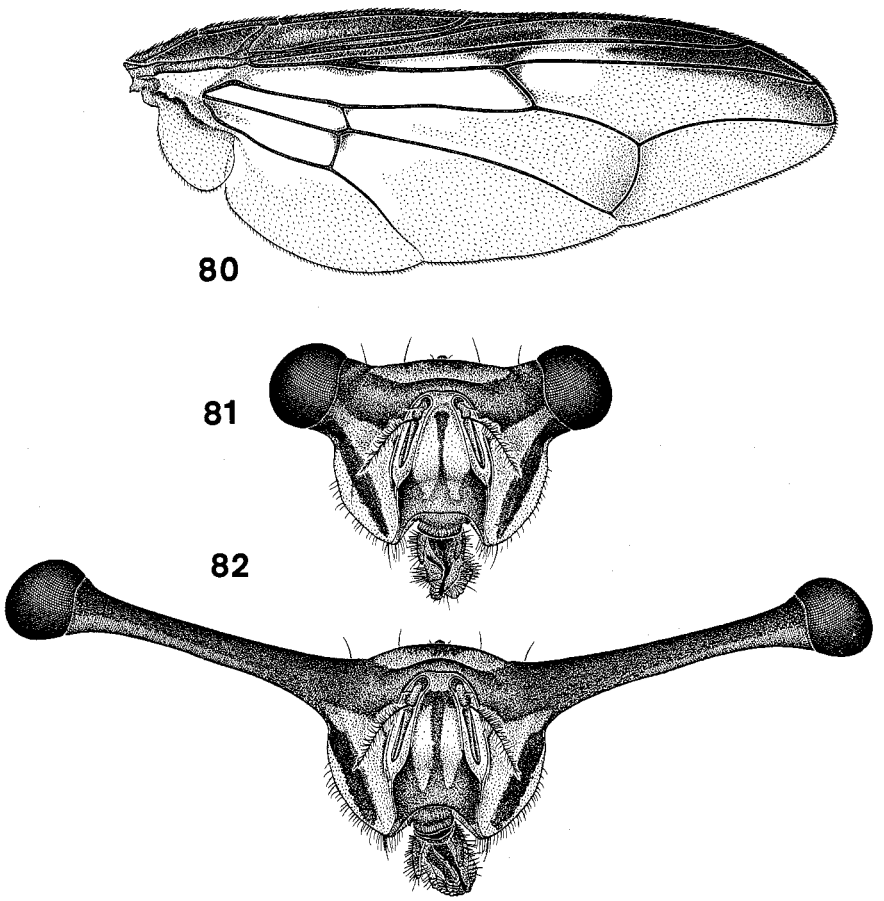
Material Examined

Holotype. ♂, North Queensland: Kuranda, Cairns district, no date, F.P.D. (AM).

Paratypes. 4 paratypes (2 damaged) are reported in USNM. Malloch listed an allotype in School of Public Health and Tropical Medicine (collection now in AM), but no specimen so labelled is known to exist.

Other material (locality and month only given). Mt Hartley, nr Cooktown, Jan. (AM); Windsor Tableland, W. of Daintree R. basin, Dec. (AM); Bailey's Ck, Cape Tribulation Rd, Daintree R. district, July (AM); Hutchinson's Ck., Daintree R. district, Jan. (AM); Daintree R., 10 km W. of Daintree,

Dec. (AM); Mt Lewis, 13 km NW. of Mt Molloy, *c.* 800 m, Mar. (ANIC); Kuranda, Jan., Mar., Dec. (AM, ANIC, BM); Crystal Cascades, nr Cairns, Dec. (AM); Tinaroo Ck, nr Mareeba, Apr. (ANIC); nr Tinaroo Dam, Feb. (AM); Whitfield Range Rd, nr Cairns, Feb. Dec. (AM); Mulgrave R., 6 km W. of Gordonvale, Jan., Dec. (AM); western slopes of Seymour Range, Dinner Ck. Rd., nr Innisfail, Nov. (ANIC); The Crater, nr Herberton, *c.* 900 m, Jan. (AM); *c.* 33 km S. of Ravenshoe, Mar. (ANIC); *c.* 3 km N. of Tully R. Bridge, Cardstone-Ravenshoe Rd., Jan. (AM); 3 km E. of Cardstone, Tully R., Jan. (AM, MNM); 3 km W. of Mission Beach, Tully district, Apr. (ANIC); 15 km W. of Kennedy, Cardwell district, *c.* 600 m, Apr. (ANIC); Mt Spec, Seaview Range, *c.* 800 m, Mar. (ANIC); Paluma, Seaview Range, Jan. (AM).



Figs 80–82. *Achias australis*: *80*, wing (♀); *81*, head (♀); *82*, head (large ♂).

Description

Resembling *A. longividens* and *A. latividens*, but much less variable than the latter; agreeing in most characters with the description here given for the former. The following notes are supplementary to Malloch's description and indicate further points of deviation from my description of *A. longividens*.

Coloration. Brown cheek stripe almost vertical and not approaching lower angle of face; brown lateral facial marks large; median facial stripe generally narrowed (occasionally broken) in middle, at its upper end terminating at about level of lower margin of antennal socket, at lower end expanded and fused with lateral marks on epistomal margin.

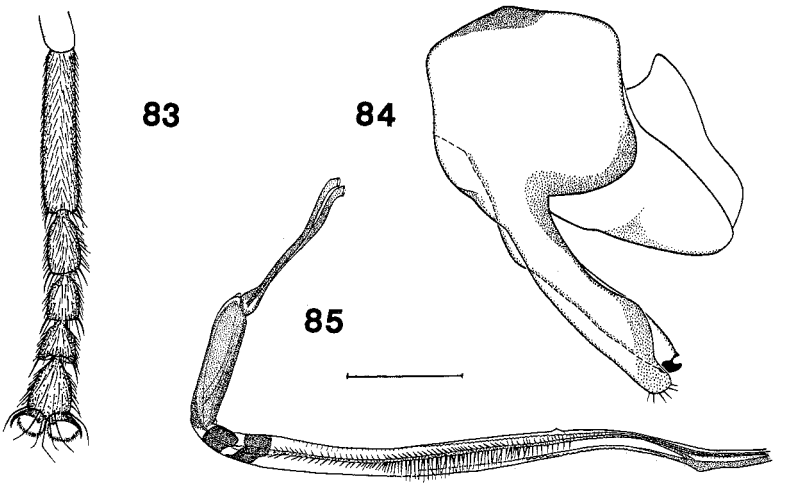
Head. Eye-stalks of female much shorter than in *A. longividens* but still distinct, not constricted below eye.

Thorax. Chaetotaxy as in *A. longividens*, i.e. only 1 postalar as distinct from intra-alar (not 2 as indicated by Malloch), and 1 dorsocentral. Hind trochanter with hairs mostly very

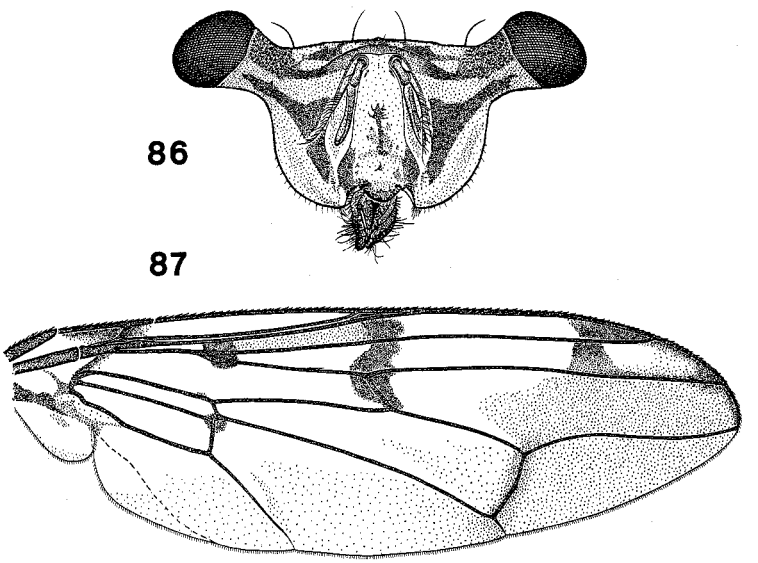
short, none on posterior surface longer than $\frac{1}{4}$ of minimum diameter of trochanter, some slightly longer ones on anterior surface; fore femur with 3 to 6 long strong posteroventral spines on distal half, the longest ones generally at least half as long as diameter of femur at their points of origin, similarly developed in both sexes; fore tarsus with segment 1 about $\frac{5}{6}$ as long as other segments together.

Abdomen. Male postabdomen: outer surstylus broader on large basal section than in *A. longividens*, its free distal section shaped somewhat as in *A. lativides* but more rounded apically; stipe of aedeagus with discal sclerotised segment distinct but short, scarcely longer than wide; filaments not noticeably tapering distally, each 1·1 to 1·2 × as long as glans.

Dimensions. Total length: male, 7·0–13·1 mm; female, 9·3–13·1 mm. Width of head: male, 4·7–18·4 mm; female, 5·2–7·4 mm. Length of thorax: male, 3·7–6·9 mm; female, 5·0–6·7 mm. Length of wing: male, 8·8–14·0 mm; female, 11·1–14·0 mm.



Figs 83–85. *Achias australis*: *83*, left fore tarsus (♂); *84*, epandrium; *85*, aedeagus. Scale = 1 mm.



Figs 86, 87. *Achias schneiderae* (♂): *86*, head; *87*, wing.

Distribution

Coastal districts of north-eastern Queensland from Daintree River district and Windsor Tableland to Seaview Range, south of Ingham. The species probably also occurs in the Cooktown district which is a continuation of the same rainforest zone as the above, but it appears to be absent on Cape York Peninsula (precisely defined as the area northwards from Princess Charlotte Bay). Map reference 8*H*, 8*I*, 9*J*, (Fig. 1).

Notes

In addition to the characters given in the key the males of *A. australis* differ from those of *A. longividens* and *A. latividen*s in the shorter sclerotised distal section of the stipe and shorter terminal filaments of the aedeagus. For further details, see under *A. latividen*s.

Achias schneiderae, sp. nov.
(Figs 86, 87)

Material Examined

Holotype. ♂ (unique), NE. New Guinea: Kandep, Enga Province, *c.* 8300 ft (*c.* 2500 m), Jan. 1962, W.W.B. (AM).

Description (male)

Coloration. Head pale fulvous, becoming paler on cheeks; postfrons with irregular but almost symmetrical brown blotches and mottling interrupted on each side anteriorly by a large almost circular fulvous patch; face with brown mark on each side below antennal grooves and an irregular brown streak near middle occupying about $\frac{1}{3}$ its height, also some irregular dots near these markings; a brown anteroventral mark on eye-stalk, not reaching eye but broadly expanded on parafacial; posterior surface of eye-stalk suffused with brown. Antenna fulvous to tawny; segment 3 becoming greyish brown beyond base. Prelabrum fulvous with brown mottling; palpus greyish brown. Mesoscutum with mainly reddish brown ground colour, with pale greyish to yellowish pubescence-pruinescence except on the 4 well-separated longitudinal stripes and on a teardrop-shaped median posterior mark which has a linear anterior extension partly dividing the rather broad median pruinescent stripe; ground colour of paramedian stripes partly blackish; scutellum shining deep reddish brown becoming almost black at apex, with large zone of whitish pubescence along scutellar suture on each side of median line which extends on to lateral surface; pleura tawny brown with pale yellowish pubescence-pruinescence on most of surface. Legs tawny; femora with brown area ventrally beyond middle not reaching apex; tibiae fulvous, mid and hind ones with slightly darker, more tawny zones distally; tarsi blackish, with segment 1 largely brown, paler basally. Wing hyaline with slight yellow tinge; thickened basal part of costa pale yellowish with hairs of same colour; costal cells slightly browned on each side of humeral crossvein; a brown blotch covering fork of veins 2 and 3; a well defined bent brown stigmatal band extending from costa to vein 4; a somewhat pale preapical band indicated in submarginal cell and in apex of marginal cell; a separate poorly defined brown mark covering discal crossvein; costal margin from end of vein 2 to vein 4 narrowly browned; approximately distal quarter of wing from vein 3 to posterior margin tinged with smoky brown; squama pale creamy. Haltere tawny with brownish capitellum. Abdomen tawny brown with pale yellowish hairs on tergites.

Head. Postfrons almost horizontal medially, with shallow transverse furrow; eye-stalk rather short but distinct, strongly compressed, sloping upwards; eye rounded-oval in anterior aspect, a little oblique; inner and outer vertical bristles well developed. Prelabrum

very broadly inflexed and sclerotised on ventral surface (in other species with at most comparatively narrowly inflexed ventral margin).

Thorax of moderate build; mesoscutum about as long as wide; scutellum convex, apically rounded but with sides almost straight in part, without hairs; the following thoracic bristles present: humeral, 1 + 1 notopleurals, supra-alar, postalar, intra-alar, dorsocentral, 3 pairs of scutellars not on prominent sockets; prescutellar acrostichal absent. Hind trochanter simple, with hairs short, not forming a brush; fore femur with 2 to 4 thickened, spinescent posteroventral bristles, 1 or 2 of which are moderately long; fore tibia slightly thickened distally, much stouter than tarsus; hind tibia slightly thickened distally, with preapical depression in posterior surface and slight gibbosity beyond; fore tarsus slender, its length 0·82 of length of tibia, with segments 1 and 2 almost cylindrical, segment 1 5·2 × as long as its maximum diameter, segment 2 1·7 × as long as wide; other segments depressed but not much dilated; other tarsi also rather short and slender; segment 1 of hind tarsus only slightly depressed. Wing with vein 4 strongly arched beyond discal crossvein, curved forward towards apex; anterior crossvein only slightly curved, meeting vein 4 at 0·55 of length of discal cell from base of that cell; anal crossvein straight, making an acute angle with vein 6; costal cells almost bare except for narrow anterodistal zone of microtrichia in first costal cell; marginal cell bare except at base, on stigmatal band, and on apical part (discal band); submarginal cell bare except narrowly at base, on stigmatal band, and on costal margin, but with bare zone between discal band and costal margin; first basal cell almost bare except on stigmatal band and on brown mark at fork of veins 2 and 3; first posterior cell bare on about basal third, except on stigmatal band; discal cell bare on somewhat more than basal half and much further distad along each side next to veins 4 and 5; third posterior cell with rather extensive bare zone at base and with microtrichose ridge parallel to vein 6; alula almost bare, narrowly microtrichose on posterior margin and with small patch of microtrichia near middle of anterior part; squama broad, with outer margin in part very slightly concave-sinuate.

Abdomen. Tergite 3 with hairs longer and denser on about median third, nowhere completely bare; tergites 4 and 5 with general hairing; tergite 5 about 1·5 × as long as tergite 4.

Dimensions. Total length 9·8 mm; width of head 6·0 mm; length of thorax 4·4 mm; length of wing 11·2 mm.

Distribution

North-east New Guinea, Enga Province. Map reference 7*C* (Fig. 1).

Notes

A. schneiderae is probably most closely related to *A. longitarsis* of Section 2 in the wing pattern and apparently in the form of the prelabrum. Otherwise, its relationships appear to be with such species as *A. rothschildi* and *A. divisus*, which also have the fore tarsus slender and basally subcylindrical and have a smooth teardrop-shaped median posterior mark on the mesoscutum. For comparison with *A. longitarsis*, see under that species.

Achias longitarsis, sp. nov.

Material Examined

Holotype. ♀ (unique), Papua New Guinea: Mt Giluwe, border of Southern Highlands and Western Highlands Provinces, 2500 m, 7.xii.1979, H.R. (AM).

Description (female)

Related to *A. schneiderae* and agreeing with description of that species except as indicated below.

Coloration. Head tawny brown, lighter tawny on face and lower part of cheek, without darker markings. Prelabrum and palpus tawny. Mesoscutum with paramedian stripes entirely black to brown-black; scutellum tawny brown, not much darkened apically (perhaps darker in mature specimens), shining only on free margins; tibiae tawny, with extensive brown markings; tarsi black. Wing probably marked much as in *A. schneiderae* but markings little developed in type because of immaturity.

Head. Eye rounded, exceedingly prominent without being stalked. Prelabrum normal.

Thorax. Scutellum pubescent from scutellar suture to centre of dorsal surface, the pubescent area not divided longitudinally, pruinescent on remainder of dorsal surface, laterally with a number of short pale hairs near and in front of foremost lateral bristle; humeral and prescutellar acrostichal bristles absent. Fore femur without spines, with fine, seriate posteroventral and anteroventral setulae, the latter more numerous; other femora with only few fine hairs ventrally; fore tibia not thickened; hind tibia also rather slender with posterodistal gibbosity little developed; fore tarsus rather slender, almost cylindrical, with only segments 4 and 5 distinctly depressed, 1·20 × as long as tibia, with segment 1 7·3 times, segment 2 2·6 × as long as wide; other tarsi also longer than in *A. schneiderae.* Wing with distal section of vein 4 slightly less curved than in *A. schneiderae*; anterior crossvein more strongly curved at posterior end than in that species; cell-4 index = 0·61; discal crossvein more oblique than in *A. schneiderae* making anterodistal angle of discal cell more acute than posterodistal angle; anal crossvein not making an acute angle with vein 6; first costal cell with zone of microtrichia filling apical part; second costal cell with more microtrichia at basal end than in *A. schneiderae*, but with bare area almost reaching humeral crossvein; submarginal cell without bare zone between discal band and costal margin; discal cell largely bare, with microtrichose zone on about distal tenth, along discal crossvein and extending a little further basad along middle of cell; alula narrower towards distal end than in *A. schneiderae*, lacking the anterior patch of microtrichia; squama slightly broader than in *A. schneiderae* with outer margin nowhere concave-sinuate, its shape thus more closely resembling that of *A. hollowayi* and allied species.

Abdomen. Tergite 5 somewhat longer than tergite 4.

Dimensions. Total length 9·8 mm; width of head 4·2 mm; length thorax 4·0 mm; length of wing 12·0 mm.

Distribution

Papua, Southern Highlands. Map reference 7*D* (Fig. 1).

Habitat

Nothofagus forest.

Notes

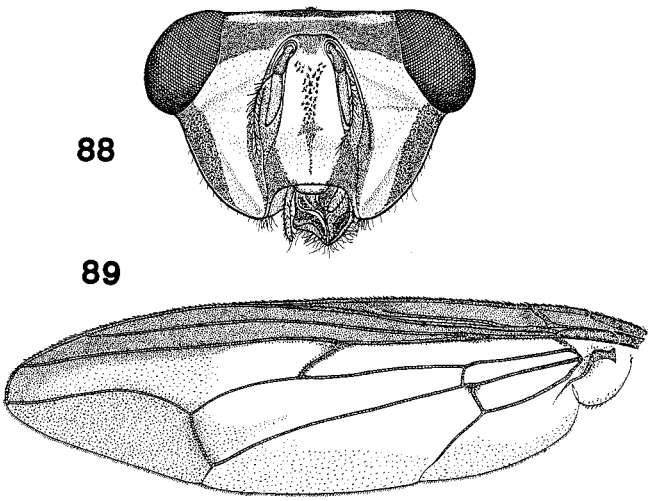
The type specimen is somewhat immature with wing pigmentation incomplete, though probably normally resembling that of *A. schneiderae*, and it is doubtful if facial markings are normally present. Nevertheless, *A. longitarsis* is a distinctive species apparently related to *A. schneiderae* but differing in the much longer fore tarsus, in the absence of strong ventral spines on femora, in the absence of the humeral bristle, in having the dorsal patch of pubescence on the scutellum undivided, and in having lateral hairs on the scutellum. On account of the last character, the species is placed far from *A. schneiderae* in the key to species among the species of Section 1. On the other hand, there is no closely related species in that section, and I list *A. longitarsis* in Section 2 near *A. schneiderae* on account of its probable phylogenetic relationships.

Achias divisus, sp. nov.
(Figs 88, 89)

Material Examined

Holotype. ♀, Papua New Guinea: Mt Giluwe, border of Southern Highlands and Western Highlands Provinces, 2550 m, Malaise trap, 23.v–6.vi.1963, J.S. (1963).

Other material. **Central West New Guinea:** 1♀, Wisselmeren, nr Enarotadi (Enarotali), 1850 m, Malaise trap, 12.vii–4.viii.1962, J.S. (BPB).



Figs 88, 89. *Achias divisus* (♀, Mount Giluwe): *88*, head; *89*, wing.

Description (female)

Coloration. Head fulvous; postfrons with a broad dark brown transverse band on upper part enclosing ocelli and another anterior one which is partly broken into brown mottling medially, intervening fulvous zone well defined but slightly narrower than brown bands; dark brown cheek stripe broad and rather long but not reaching lower extremity of head capsule, broken into dots on lower part, but almost solid on eye margin; face with lateral brown marks well developed but widely separated, extending narrowly on to lower parafacials; median stripe reduced to a zone of irregular brown dots; a brownish suffusion present between antennal bases, extending on to lunule. Antenna reddish brown with silvery grey pruinescence. Prelabrum fulvous; palpus tawny brown. Thorax coloured somewhat as in *A. longividens* but ground colour less dark on much of mesoscutum except posteriorly; 4 thinly pruinescent stripes more reddish brown (but somewhat irregularly discoloured in type); scutellum less densely pubescent anteriorly than in *A. longividens*. Coxae reddish brown, the fore and hind ones tawny basally; femora tawny to reddish brown; other tibiae tawny with reddish brown markings; tarsi black. Wing with continuous deep yellow-brown costal band from base to apex, filling area in front of vein 3 and its stem, narrowly extending behind vein 3 for much of length, more broadly so distally and reaching vein 4 at apex; a brown mark extending over anterior part of anterior crossvein but narrowed posteriorly and not distinctly reaching vein 4; an ill defined pale smoky brown cloud covering second posterior cell, extending a little beyond limits of that cell into first posterior and discal cells, slightly intensified around discal crossvein; squama pale buff. Haltere fulvous with dark brown capitellum. Abdominal tergites brown to blackish with green-tinted reflections.

Head. Postfrons rather broad, almost flat and only slightly descending anteriorly; eye-stalk quite absent; eye slightly prominent below, otherwise less prominent than in most other species of *Achias*, not bulging dorsally beyond level of vertex; face convex above and more receding below than in *A. rothschildi*, *A. longividens* and allied species; inner and outer vertical bristles well developed. Palpus moderately narrow.

Thorax moderately robust; scutellum slightly convex above and somewhat rounded in outline, convex between apical bristles, without hairs; the following thoracic bristles well developed: 1 + 1 notopleurals, postalar, intra-alar, dorsocentral, prescutellar acrostichal, 3 pairs of marginal scutellars; humeral and supra-alar bristles absent. Legs more slender than in *A. longividens* and *A. australis*; hind trochanter simple, with all hairs rather short and pale; femora rather slender, the hind ones least so, with fine almost hair-like anteroventral and posteroventral bristles, those on hind femur scarcely distinguishable; hind tibia simple; fore tarsus rather slender, segment 1 slightly bilaterally compressed, about 8·6 × as long as maximum diameter; segment 2 almost cylindrical, about 2·4 × as long as wide; segments 3–5 depressed. Wing with vein 4 even more strongly arched beyond discal crossvein than in *A. longividens* and *A. australis*, becoming almost parallel with vein 3 distally; anal crossvein a little convexly curved anteriorly, elsewhere with very slightly concave curvature; entire area in front of vein 3 microtrichose; microtrichose areas in first posterior, discal, third posterior and fourth posterior cells less extensive than in *A. longividens* and *A. australis*; alula microtrichose only near posterior margin; squama large but a little less broad than in *A. longividens* and *A. australis*.

Abdomen moderately broad; tergite 3 with large almost bare zone on each side, not reaching lateral margin; tergite 4 without bare zones.

Dimensions. Total length 10·2 mm; width of head 5·4 mm; length of thorax 5·6 mm; length of wing 14·0 mm.

Distribution

Papua, Southern Highlands; West New Guinea, central mountains. Map reference 4*B*, 7*D* (Fig. 1).

Notes

A. divisus shows some resemblance to the group of species which includes *A. longividens*, *A. lativides*, and *A. australis* but is distinguished *inter alia* by the flattened, more nearly horizontal postfrons of the female, which is quite without eye-stalks, and the absence of the supra-alar bristle. In these characters it resembles *A. planiceps* to which it is probably most closely related. It differs from that species in the less rounded eyes, broad complete brown costal band, and entirely microtrichose marginal and submarginal cells.

The specimen from Wisselmeren is atypical and may represent a population morphologically distinguishable from the type population. The eyes are more prominent, the cheek stripe is less developed, the spots on the median line of the face are absent, the femora are without brownish markings, and the wing markings are a little darker.

Achias planiceps, sp. nov.

Material Examined

Holotype. ♀ (unique), NE. New Guinea: Akuna, Kainantu Subdistrict, Eastern Highlands, 21.v.1960, J. H. Barrett (AM).

Description (female)

Resembling *A. divisus* and agreeing with description given for that species except as indicated below.

Coloration. Postfrons with central fulvous transverse band not narrower than dark brown anterior and posterior brown bands; dark brown cheek stripe extensive but broken into fine spots throughout; face without trace of median stripe but with lateral brown marks distinct but rather small; face not distinctly pigmented between antennal bases. Antenna tawny with silvery grey pruinescence on segment 3. Prelabrum and palpus fulvous. Mesoscutum (somewhat abraded in type) dark brown with pale grey pruinescence, tawny brown on the 4 broad sparsely pruinescent longitudinal stripes; scutellum coloured as in *A. longividens* and *A. divisus*; pleura paler than in *A. longividens* and *A. divisus*, in part almost fulvous. Coxae, trochanters, and femora fulvous, the first with some brownish suffusions; tibiae tawny, becoming brownish apically; tarsi dark brown, becoming tawny brown at extreme base of segment 1. Wing without distinct dark costal band, with pale yellowish distal zone which is slightly intensified anteriorly and more so around discal crossvein; first costal cell, base of second costal cell, and extreme base of marginal cell yellow-brown; remainder of second costal cell, parts of marginal and submarginal cells up to level of end of vein 1, and a mark round anterior crossvein amber yellow; much of discal and third posterior cell with pale yellowish tinge; a yellow spot or suffusion on middle of distal section of vein 6 and a yellow mark on base of basal section of vein 6; a narrow yellow suffusion around basal and anal crossveins; squama buff-white. Haltere buff with capitellum largely brown. Abdominal tergites tawny to brown, without coloured reflections, and with mainly whitish hairs.

Head with postfrons even flatter than in *A. divisus* and dropping away more abruptly to parafacials; eye much more rounded and prominent and less oblique.

Thorax. Scutellum rather strongly convex above; a total of 7 asymmetrically disposed marginal scutellar bristles. Legs a little less elongate than *A. divisus*; fore tarsus with segment 1 about 8·3 × as long as width near middle. Wing with anal crossvein distinctly curved throughout its length; marginal cell with irregular bare zones over little more than basal half, nowhere extending over full width of cell; submarginal cell microtrichose at extreme base, on a small area in front of anterior crossvein not extending full width of cell, and on a little less than distal half of cell for its whole width; microtrichiation otherwise as in *A. divisus* except that microtrichia in discal cell are confined to compact zone at distal end.

Abdomen as described for *A. divisus*.

Dimensions. Total length 10·1 mm, width of head 5·8 mm; length of thorax 5·0 mm; length of wing 12·4 mm.

Distribution

North-east New Guinea, Eastern Highlands. Map reference 8*D* (Fig. 1).

Notes

Although only one slightly damaged specimen is available, it is clear that this represents a distinct species closely related to *A. divisus*, but differing in colour pattern and microtrichiation of the wing. For further details, see under *A. divisus*.

Achias rothschildi Austen
(Fig. 126)

Achias rothschildi Austen, 1910: 459, pl. 15, figs 5–9.—Hendel, 1914*b*: 206–7; Parsons, 1984: 62–3, 66 (illustr.).

Material Examined

Holotype. ♂, NE. New Guinea: Stephansort (now Bogadjim), Madang Province, no date, anon. (BM). According to Rothschild (in Austen 1910), the type was collected by Herr Wahnes.

Paratypes. 3♂, 1♀, same data as holotype (BM). Papua: 1♂, 1♀, Milne Bay, Feb., Nov. 1898–1899, A.S.M. (BM).

Other material. **Eastern Highlands:** 1♀, Okapa, Okasa, *c.* 1400 m, Dec. 1964, R. Hornabrook (ANIC). **Morobe Province:** 2♀, Bumbu R., 8 km N. of Lae, Nov. 1972, G.A.H. (AM); 1♂, 2♀, Bubia, nr Lae, Jan., Feb. 1958, J.H.A. (BPB); 8♂, 5♀, Bulolo, Feb., Nov. 1969–1974, J.S., anon. (BPB, AM). **Oro Province:** 1♂, Hydrographer Mtns (vicinity of Mt Lamington), *c.* 760 m, Apr. 1918, Eichhorn brothers (BM). **Central Province:** 1♀, Tapini, Owen Stanley Range, 975 m, Nov. 1957, W.W.B. (BPB); 1♂, 2♀, Loloipa, Owen Stanley Range, Nov., Dec. 1957–1958, W.W.B. (BPB); 2♂ Aroa R., no date, A.S.M. (BM); 1♂, Dogon, vicinity of Amazon Bay, 700 m, Sept. 1962, W.W.B. (ANIC). **Milne Bay Province:** 3♂, 5♀, Mamai Plantation, E. of Port Glasgow, 150 m, Nov. 1965, R.S. (BPB, AM).

Description

The descriptions given by Austen and Hendel include some detail. I add a few points in amplification of these descriptions.

Coloration. Brown cheek stripe present in both sexes, often broken into fine, close spots; face without median dark stripe. Wing with costal band variably developed, sometimes almost whole area in front of vein 3 and its stem rather deep brown, sometimes this area largely light yellow-brown becoming even paler in submarginal cell near end of vein 1 and usually with intensification in and near first costal cell, in region of stigmatal band, and towards apex; a light brown poorly defined mark surrounding discal crossvein but not forming the basal limit of any well defined brownish apical zone.

Thorax. Humeral bristle absent; supra-alar bristle present; prescutellar acrostichal bristle usually present, sometimes absent; scutellum with 3 or sometimes 4 pairs of marginal bristles. Legs slender; hind trochanter with numerous moderately short fine pale hairs on ventral surface but without differentiated tuft or brush; fore femur with posteroventral and less developed anteroventral spines distally, the former rather long as in *A. australis*; hind tibia for greater part of length slender, with slight swelling near middle, on apical quarter posteriorly with large gibbosity in male, with only slight gibbosity in female; fore tarsus elongate with segment 1 subcylindrical, 9 to 10 × as long as wide in male, usually slightly shorter in female, with other segments somewhat depressed, segment 2 least so; hind tarsus with segment 1 strongly dilated and somewhat depressed in male, somewhat less modified in female.

Dimensions. Total length: male, 12·1–15·9 mm; female, 11·6–14·9 mm. Width of head: male, 19–55 mm; female, 5·9–7·8 mm. Length of thorax: male, 6·3–7·8 mm; female, 7·0–8·2 mm. Length of wing: male, 15·1–17·0 mm; female, 13·9–16·2 mm.

Distribution

North-east New Guinea, Madang, Eastern Highlands, and Morobe Provinces; Papua, Central, Oro and Milne Bay Provinces; from near sea level to *c.* 1400 m. Map reference 8*C*, 8*D*, 9*D*, 9*E*, 10*E* (Fig. 1).

Notes

This species differs from *A. latividen*s and closely related species in the absence of the median facial stripe and of the humeral bristle and in the very slender fore tarsus. From *A. divisus* and *A. planiceps*, which lack the humeral bristle and have the fore tarsus slender, it differs in the presence of the supra-alar bristle, in the shape of the head of female, and in the absence of the two well defined transverse brown zones on the postfrons.

A. rothschildi is the largest representative of the genus except for some races of *A. latividen*s and possibly *A. gjellerupi*, of which the only known specimen is within the size range for *A. rothschildi*. The holotype of this species has a head width of 55 mm and is possibly the widest-headed dipterous specimen known.

Achias gjellerupi de Meijere

Achias gjellerupi de Meijere, 1915: 130–2.

Material Examined

Holotype. ♂ (unique), NE. West New Guinea: Upper Sermowai (Sermo) R., *c.* 400 m, in forest, no date, K. Gjellerup (AMST).

Description (male)

Resembling *A. rothschildi* except as indicated below.

Coloration. Head coloured somewhat as in *A. rothschildi*; postfrons yellowish with brown reticulation; eye-stalk reddish brown, yellow along anteroventral surface, also yellowish dorsally near tip, but with narrow blackish mark on dorsal and posterior margin of eye. Palpus fulvous. Thorax very like that of *A. rothschildi*; scutellum with double basal patch of pale pubescence. All femora yellow with large distoventral brown-black mark. Wing markings mainly rather pale, brown only in base of first costal cell, on stigmatal band, and at apex for very short distance, just before end of vein 3 to end of vein 4; a light brown zone filling distal third of wing from end of discal cell, not much intensified around discal crossvein. Abdomen rather light brown with green-tinted reflections and pale hairs.

Thorax without humeral and prescutellar acrostichal bristles, with total of 7 scutellar bristles. Discal crossvein much more curved than in *A. rothschildi*, making a very obtuse angle with vein 5.

Abdomen with tergite 5 scarcely longer than tergite 4.

Distribution

North-east of West New Guinea. Map reference 6*B* (Fig. 1).

Notes

A. gjellerupi closely resembles *A. rothschildi.* The latter is a variable species, and the only characters which appear likely to distinguish the species are those given in the key. It is possible that this is a geographic variant of *A. rothschildi.* My notes are based on the holotype, which appears to be slightly immature.

Achias sphyrna, sp. nov.

Material Examined

Holotype. ♂, NE. New Guinea: Gumi, nr Bulolo, 2010 m, 31.iii.1979, H.R. (AM).

Paratypes. NE. New Guinea: 1♂, 1♀, same data as holotype (AM). An additional 27 examples from Gumi (FRIL) are reported by H. Roberts who has provided some notes on variation which I have considered in drawing up the description.

Description (male)

Somewhat resembling *A. hollowayi* and agreeing with description of that species except as indicated below.

Coloration. Postfrons densely mottled and suffused with dark brown in male except on 2 fulvous anterior blotches, less densely marked in female; paired brown marks on face very large. Mesoscutum dark brown with 4 broad reddish brown stripes, with median dark stripe obscured by a yellow-grey pruinescent stripe; some greyish pubescence-pruinescence immediately in front of scutellar suture; scutellum dark brown, unspotted. Fore femur

narrowly brown apically; mid and hind tibiae tawny brown with darker markings; all tarsi black. Wing without dark marks on crossveins. Abdomen brownish tawny, often darker laterally on tergites 3 and 4.

Head with eyes large, somewhat oblique, rounded oval, on short to quite long, depressed stalks in male; inner and outer vertical bristles well developed.

Thorax more convex dorsally and usually broader than in *A. hollowayi* and most allied species; mesoscutum with width 0·87–0·98 of length, with general but not dense covering of fine pale hairs; scutellum rather strongly convex, usually with a few hairs on each side immediately behind scutellar bridge, tending to greater development in males than in females. Fore femur with 4–6 strong posteroventral spines and 3–5 anteroventral ones; hind femur almost straight, not much narrowed at either end; fore tarsus with length 0·92–0·94 that of tibia, moderately slender, with 3 distal segments distinctly depressed, segment 1 5·1–5·4 × as long as maximum width, segment 3 about as long as wide, segment 4 slightly wider than long, segment 5 slightly longer than wide. Wing: cell-4 index = 0·62–0·63; costal cells almost completely bare; marginal cell microtrichose on about distal third and very narrowly along vein 1 for most of remainder of length; submarginal cell bare on a little more than basal half; first basal cell bare except for few microtrichia along anterior crossvein, near fork of veins 2 and 3, and at extreme base; discal cell microtrichose on distal quarter and narrrowly through centre almost to basal quarter.

Abdomen. Tergite 5 about twice as long as tergite 4. Male postabdomen: outer surstylus (*in situ*) only slightly exceeding apex of inner surstylus, its distal section rather narrow, curved, not tapering to the subtruncate apex; aedeagus not examined.

Dimensions. Total length: male, 5·8–6·0 mm; female, 6·2 mm. Width of head: male, 4·1–8·5 mm; female, 3·3 mm. Length of thorax: male, 3·4–3·7 mm; female, 3·7 mm. Length of wing: male, 8·2–9·2 mm; female, 8·9 mm.

Distribution

North-eastern New Guinea, highlands of Morobe Province. Map reference 9*D* (Fig. 1).

Notes

A. sphyrna belongs in Section 3 of the genus and agrees in most characters with other species of the section. However, it differs from them all in its shorter fore tarsus, black hind tarsus, median pruinescent stripe and extensive hairing on the mesoscutum, and more convex scutellum. In these characters it approaches species of Sections 1 and 2 and is probably more plesiomorphic than others of Section 3.

One specimen [Mount Missim, near Wau, 17.iii.1978 (AM), W.C. Gagne] closely resembles *A. sphyrna* except that the facial markings are absent. Whether this indicates a consistent difference between the Gumi and Mount Missim populations is unknown, but the markings are consistently developed in the 30 specimens from Gumi.

Achias ios, sp. nov.
(Fig. 90)

Material Examined

Holotype. ♀ (unique), southern West Sepik Province: Eliptamin Valley, nr Telefomin, 1200–1350 m, 16–30.viii.1959, W.W.B. (BPB).

Description (female)

Resembling *A. hollowayi* and agreeing with description given for that species except as indicated below.

Coloration. Head pale fulvous; vertex with very irregular but complete brown transverse band instead of spots; face with pair of brown spots smaller than in *A. hollowayi.* Antenna pale fulvous, becoming greyish brown on distal part of segment 3. Scutellum tawny, with some irregular brown blotches which may be natural. Legs apparently coloured as in *A. hollowayi* but middle pair missing beyond trochanters; fore tibia almost entirely brown. Tergite 5 dark brown with broad fulvous-yellow median stripe.

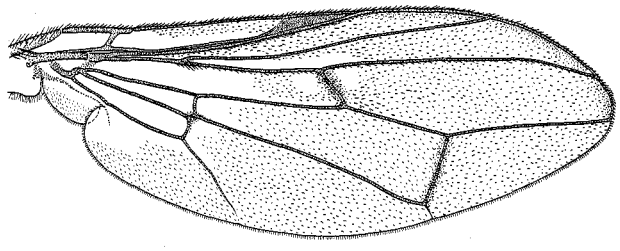


Fig. 90. *Achias ios*, wing (♀).

Head. Inner and outer vertical bristles rather long, the former almost as long as distance between their bases.

Thorax. Mesoscutum with hairing a little more extensive than in *A. hollowayi*, but tending to be restricted to same zones; humeral callus with hairs of moderate length, up to about 0·4 of length of anterior notopleural bristle; scutellum somewhat flattened dorsally but with rounded margins, almost straight between apical bristles, with fine pale lateral hairs mostly in front of foremost marginal bristle. Fore tarsus 1·30 × as long as tibia; mid legs missing in holotype. Wing: cell-4 index = 0·58; second costal cell more broadly microtrichose anteriorly than in *A. hollowayi*; marginal cell microtrichose for whole length, with narrow bare zone a little beyond base; submarginal cell bare on considerably less than basal half; first basal cell with patch of microtrichia beyond middle; first posterior cell with only small bare patch near base, not nearly extending across width of cell; discal cell with basal bare area less extensive than in *A. hollowayi.*

Abdomen as described for *A. hollowayi.*

Dimensions. Total length 6·0 mm; width of head 2·5 mm; length of thorax 2·8 mm; length of wing 6·7 mm.

Distribution

Highlands of southern West Sepik Province. Map reference 6*C* (Fig 1).

Notes

The hairing on the anterolateral part of the scutellum distinguishes this from most other species of Section 3. *A. sphyrna* often has hairs in this position, but *A. ios* lacks the other distinctive characters given above for that species. The bicoloured tergite 5 is also distinctive, though in *A. hyweli* tergites 3 and 4 are also bicoloured.

Achias hollowayi, sp. nov.
(Fig. 91)

Material Examined

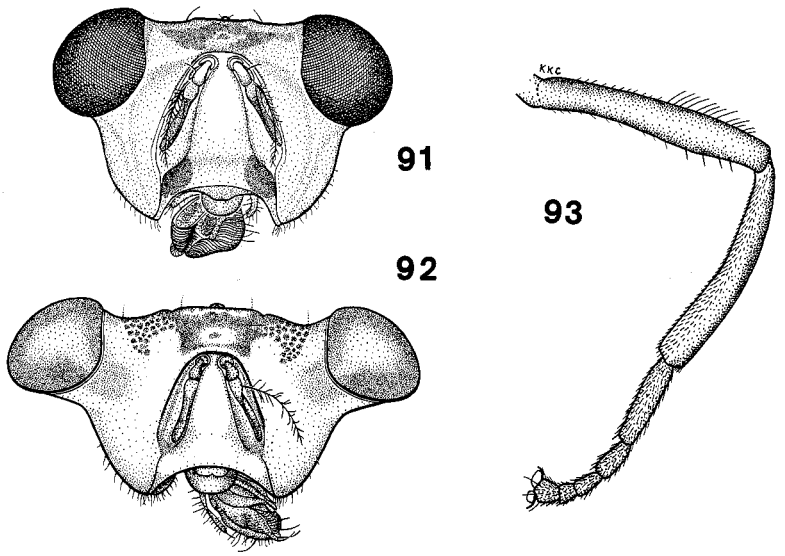
Holotype. ♀, NE. New Guinea: Wau, Morobe Province, 1700 m, 25.xi.1972, G.A.H. (AM).

Paratypes. NE. New Guinea: 2♂, Nawata Banda Logging Area, nr Bulolo, May 1980, H.R. (AM); 1♂, 1♀, Karimui, nr southern border of Eastern Highlands, July 1963, J.S. and M.S. (BPB).

Description

A small, somewhat slender fly, but evidently not a wasp-mimic.

Coloration. Head orange-fulvous; postfrons with large very irregular brown central blotch and, in male, usually with small brown spots on each side of this blotch; a few blackish spots in a transverse line at vertex; cheek stripe absent without trace; face with rather large brown spot below each antennal groove, not extending into extreme lateral angle of face. Antenna tawny, becoming greyish brown on distal part of segment 3. Palpus fulvous. Thorax orange-fulvous; mesoscutum tawny to deep reddish brown, its surface not noticeably pruinescent but minutely roughened and scarcely shining; scutellum deep reddish brown, sometimes paler along scutellar suture but scarcely spotted and not noticeably pubescent, dorsally with only broken reflections because of fine rugose-punctate sculpturing. Coxae and femora fulvous; fore femur usually brownish at apical extremity; fore tibia dark brown, sometimes becoming tawny brown distally; other tibiae tawny or brownish; fore tarsus dark brown to blackish; other tarsi tawny, becoming brown apically. Wing hyaline with a yellowish tinge; stigmatal section of subcostal cell yellowish brown; anterior and discal crossveins with narrow pale brown suffusion; costal margin of wing between veins 2 and 4 narrowly pale brown; squama orange-hyaline. Haltere fulvous, sometimes a little darker distally. Abdomen shining, without pruinescent zones, tawny to brownish, darker posteriorly, with paler median zone on tergites 3 and 4 at most poorly differentiated, absent on tergite 5.



Figs 91–93. *Achias hollowayi*: *91*, head (♀). *Achias tudes* (♂): *92*, head; *93*, left hind leg.

Head with eyes large, rounded, moderately prominent in female, more prominent or on short, thick horizontal stalks in male; facial carina with lateral margins rounded off except towards upper extremity; inner and outer vertical bristles distinct but rather short, the former shorter than half the distance between their bases. Prelabrum deep but not very broad, convex anteriorly, with lower margin somewhat receding; palpus moderately narrow.

Thorax somewhat slender; mesoscutum with width 0·89–0·91 of length, with fine hairing almost restricted to the following zones: a median strip, a single series along dorsocentral line and, behind transverse suture, along intra-alar line, a broad area just in front of scutellar suture, a small area below and in front of intra-alar bristle; humeral callus long-haired except on upper part; scutellum rounded and slightly convex, longer than a semicircle, truncate between the apical bristles, without hairs; the following thoracic bristles present: 1 + 1 notopleurals, supra-alar, postalar, posterior intra-alar, minute hair-like dorsocentral, usually 3 pairs of scutellars of which the apical pair is much the strongest, all

3 on prominent sockets; humeral and prescutellar acrostichal bristles absent. Hind trochanter simple in both sexes; fore femur somewhat thickened, with 4 to 9 strong posteroventral spines and a generally somewhat smaller number of anteroventral ones; femora with few weak ventral spines; hind femur without posteroventral spines, that of male little modified, with very slight basal narrowing and curvature; hind tibia of male slightly but distinctly more curved than in female; fore tarsus 1·17–1·20 × as long as tibia, with segments 1, 2, and often 3 obliquely compressed, segment 1 *c.* 5·7 × as long as wide, segment 2 almost twice as long as wide, segment 3 slightly less than twice as long as wide, segment 4 *c.* 1·5 × as long as wide, segment 5 almost twice as long as wide and tridentate at apex; other tarsi less elongate, with segment 4 wider than long. Wing moderately broad, slightly narrowed across anal region; vein 4 with only very slight curvature in distal section; anterior crossvein somewhat oblique and curved posteriorly; cell-4 index = 0·59–0·61 of length of discal cell from base of that cell; discal crossvein almost straight; anal crossvein somewhat curved; costal cells largely bare except towards costal margin; marginal cell bare on somewhat more than basal half (holotype), or with extensive bare zone between small basal area and large distal area of microtrichia (Karimui specimens), specimens from Nawata Banda intermediate; submarginal cell bare on about basal half or a little less; first basal cell bare except along anterior crossvein; first posterior cell with variable sub-basal bare zone; discal cell centrally with microtrichia extending into basal quarter but with basal bare area variably extended distally both anteriorly and posteriorly; second basal and anal cells almost entirely bare; third and fourth posterior cells bare basally; surface of alula with numerous microtrichia towards posterior margin in addition to marginal series; squama rather large, with outer margin almost straight in part.

Abdomen broadly oval, with segment 1 short and rapidly expanding from attachment to thorax; tergite 1 and part of tergite 2 with numerous fine pale hairs; other tergites very sparsely haired except at lateral margins; in male tergite 5 about 2·4 × as long as tergite 4. Male postabdomen: outer surstylus moderately stout, almost straight, basal part, with free distal section contracted as usual but relatively broad and short, obliquely broadly truncate and markedly angular posterior; aedeagus with preglans differentiated but not sharply defined; glans stoutly cylindrical, slightly curved, with short, largely membranous terminal lobe; each terminal filament, together with the elongate, well-sclerotised tunic, 4·7 × as long as glans.

Dimensions. Total length: male, 5·3–5·7 mm; female, 5·3–6·4 mm. Width of head: male, 2·4–3·8 mm; female, 2·9–3·1 mm. Length of thorax: male, 2·6–3·2 mm; female, 3·1–3·4 mm. Length of wing: male, 5·9–7·4 mm; female, 7·1–7·6 mm. Length of glans of aedeagus: 0·55 mm (small Karimui specimen).

Distribution

North-east New Guinea, Morobe Province and Eastern Highlands. Map reference 8*D*, 9*D* (Fig. 1).

Notes

A. hollowayi differs from most other species of Section 3 in having paired facial marks in combination with an almost uniformly dark tergite 5. *A. sphyrna* approaches *A. hollowayi* in these characters but has a median grey-pruinescent stripe on the mesoscutum, the humeral callus dark brown, and the fore tarsus no longer than the fore tibia. *A. ismayi* also has paired dark facial marks; see under that species for comparison.

Achias ismayi, sp. nov.

Material Examined

Holotype. ♂, Papua: 10 km E. of Sirinumu, Central Province, 600–800 m, 12.vi.1983, J.W.I. (AM).

Paratypes. 1♂, 4♀, same data as holotype (AM, KONE).

Description

Resembling *A. hollowayi* and agreeing with description given for that species except as indicated below.

Coloration. Postfrons with central dark brown blotch, and, in larger male (holotype), with separate oblong brown mark on anterodorsal surface of eye-stalk; postvertical region with brown median blotch which extends on to eye-stalks in larger male, this region unspotted. Antenna not darkened distally. Mesoscutum and scutellum with few to very numerous small dark brown spots; humeral callus yellow, glossy. Fore femur not much browned apically; fore tibia dark brown with tawny suffusion distally. Costal margin of wing not noticeably browned distally. Abdomen tawny with tergites 2 to 5 extensively black on lateral parts.

Head with eyes slightly larger and more prominent than in *A. hollowayi*, in larger male on moderately developed stalks.

Thorax. Mesoscutum with width 0·81–0·91 of length; humeral callus with quite short hairs on conspicuous sockets. Fore femur with 5 to 7 posteroventral spines; hind femur with slight distal narrowing and curvature in both sexes; hind tibia almost straight in both sexes; fore tarsus 1·16–1·18 (male), 1·29–1·30 (female) × as long as tibia, with segment 1 7·2–7·8 (male), 6·0–6·7 (female) × as long as wide, segment 2 3·1–3·4 (male), 2·8–3·0 (female), segment 3 2·3–2·4 (male), 2·1–2·3 (female), segments 4 and 5 *c.* 1·4–1·5 × as long as wide. Wing: cell-4 index = 0·59–0·68; second costal cell extensively microtrichose along costal margin, especially so distally; marginal cell microtrichose except on a variable, usually small area beyond base; first basal cell with small microtrichose zone anteriorly at about distal quarter in addition to that at anterior crossvein; discal cell microtrichose except on rather small basal zone.

Abdomen. In male tergite 5 less than twice as long as tergite 4. Male postabdomen: not examined in detail.

Dimensions. Total length: male, 6·2–6·9 mm; female, 5·5–7·1 mm. Width of head: male, 2·3–4·0 mm; female, 2·5–2·8 mm. Length of thorax: male, 2·4–2·7 mm; female, 2·8–3·2 mm. Length of wing: male, 5·8–6·8 mm; female, 6·4–7·0 mm.

Distribution

Papua, Central Province. Map reference 9*E* (Fig. 1).

Notes

Among the species of Section 3 with reduced hairing of the mesoscutum and hairless scutellum, *A. ismayi* agrees only with *A. hollowayi* in the paired facial marks. It differs from *A. hollowayi* in the glossy, short-haired humeral callus and extensive median tawny zone on the abdominal tergites. *A. ios* also has paired facial marks, but has the humeral callus long-haired and the scutellum haired anterolaterally. *A. hyweli* has the humeral callus short-haired as in *A. ismayi*, but has no facial markings, reduced inner vertical bristles, and a slightly clavate hind femur.

Achias tudes, sp. nov.
(Figs 92, 93)

Material Examined

Holotype. ♂ (unique), central West New Guinea: Karubaka, Swart Valley, 1400–1600 m, 9.xi.1958, J.L.G. (BPB).

Description (male)

Resembling *A. hollowayi* and agreeing with description given for that species except as indicated below.

Coloration. Postfrons with, in addition to large central brown blotch, zones of numerous dark brown dots laterally and across vertex; face unmarked. Mesoscutum with some dark brown spotting behind postalar bristle, almost unspotted elsewhere. Fore tibia mostly dark brown; other tibiae fulvous. Wing and abdomen coloured as in *A. hollowayi.*

Head with eye large, somewhat oblique, on very short but distinct thick stalk; vertical bristles broken off but both pairs evidently well developed.

Thorax. Mesoscutum damaged but apparently with hairing somewhat as in *A. hollowayi*; chaetotaxy as in that species. Hind trochanter simple; hind femur basally slender and cylindrical, with slight curvature, slightly expanding near middle to become a little thicker on distal part; hind tibia rather strongly curved; fore tarsus 1·17 × as long as tibia, markedly compressed in an almost vertical plane except for terminal segment, with segment 1 5·1 × as long as maximum diameter. Wing: cell-4 index = 0·58; second costal cell broadly microtrichose along anterior side except at base; marginal cell microtrichose with bare zone before middle extended towards base on posterior side; submarginal cell bare at base and on posterior side to beyond anterior crossvein; discal cell with small, compact basal bare area only.

Abdomen. Tergite 5 2·7 × as long as tergite 4. Postabdomen: outer surstylus rather thick, with deeply sinuate inner margin, and broad free distal section with prominent angle on outer side; aedeagus with distinct preglans; glans stoutly subcylindrical with rounded terminal lobe; terminal filament (with tunic) nearly 4 × as long as glans, distally rather attenuated with apex very slightly expanded, arising from an elongate, basally tapering tunic which is inserted at posterior edge of terminal surface of glans.

Dimensions. Total length 7·4 mm; width of head 3·6 mm; length of thorax 3·2 mm; length of wing 7·3 mm; length of glans of aedeagus, excluding terminal lobe, 0·61 mm.

Distribution

Central West New Guinea. Map reference *5B* (Fig. 1).

Notes

The form of the hind femur of the male appears to distinguish this from other species of Section 3. Further, it is distinguished from *A. hollowayi* and *A. ios* by the absence of the pair of brown facial marks, from *A. calcar* by the paler coloration and absence of a spur on the hind trochanter of the male, and from *A. venustulus* by the spotted postfrons, brown fore femur, and less extensive microtrichiation of the wing membrane. The differences separating it from *A. hyweli* are discussed under that species.

Achias hyweli, sp. nov.

Material Examined

Holotype. ♂, NE. New Guinea: Stony Logging Area, nr Bulolo, Morobe Province, 3.v.1979, H.R. (AM).

Paratypes. NE. New Guinea (Morobe Province): 2♂, Stony Logging Area, Mar., Apr. 1979, H.R. (FRIL, AM); 3♀, Upper Stony Logging Area, June, July, 1979, H.R. (AM); 1♀, Bulolo, 1200 m, Nov. 1977, anon. (AM); 1♂, Busu R., E. of Lae, 100 m, Sept. 1955, J.L.G. (BPB). Further material (not seen by author) in FRIL.

Description

Resembling *A. hollowayi* and *A. tudes*, agreeing with the more detailed description of the first, except as indicated below.

Coloration. Postfrons with dark brown dots laterally and across vertex, which are smaller and sparser than in *A. tudes*; face unmarked. Antenna fulvous. Thorax not much darkened dorsally; mesoscutum with scattered black dots variably distributed, often (as in holotype) with black median line; humeral callus spotted or unspotted; scutellum fulvous, with numerous, mostly separate black dots. Fore tibia entirely blackish brown; other tibiae fulvous, sometimes tinged with brown; fore tarsus black; other tarsi fulvous, only slightly darker apically. Wing with stigmatal section of subcostal cell fulvous; pale brown suffusion on discal crossvein rather broad posteriorly; squama hyaline with yellow tinge. Abdomen with tergites 1 and 2 fulvous, the latter with brown to blackish zone on each side posteriorly; tergites 3 to 5 black, each with broad fulvous median zone.

Head in male shaped much as in *A. tudes* (Fig. 92), in female shaped somewhat as in that sex of *A. hollowayi* (Fig. 91) but cheeks less convex; outer vertical bristle large, inner small and hair-like.

Thorax. Width of mesoscutum 0·77–0·92 of length; humeral callus with all hairs rather short; scutellum straight or slightly concave between apical bristles. Fore femur with 5 or 6 posteroventral spines and 3 to 5 anteroventral ones; hind femur not noticeably modified, almost straight, slightly narrowed towards each end; fore tarsus in male 1·34–1·37, in female 1·46 × as long as tibia. Wing with anterior crossvein oblique, 0·47–0·57 of length of discal crossvein; cell-4 index = 0·57–0·61; second costal cell more extensively microtrichose than in *A. hollowayi*, bare on basal part and along posterior margin; marginal cell with variable bare area beyond base; submarginal cell bare in base and along vein 3 to a little beyond anterior crossvein; first basal cell often with patch of microtrichia at about distal quarter; first posterior cell with relatively small bare area near base, not extending to vein 4; discal cell with only small bare basal area, with microtrichia extending close to base along its central part; alula microtrichose on about posterior half of surface.

Abdomen with tergite 5 less than twice as long as tergite 4. Male postabdomen: surstyli somewhat as in *A. tudes* but outer surstylus more slender with inner margin only slightly sinuate, and outer angle of distal section less prominent; aedeagus as described for *A. tudes*, with glans slightly smaller and terminal lobe larger; terminal filament (with tunic) *c.* 2·4 × as long as glans, less attenuated distally than in *A. tudes*, with distinct apical expansion.

Dimensions. Total length: male, 5·6–6·6 mm; female, 4·4–5·9 mm. Width of head: male, 2·6–3·4 mm; female, 1·9–2·3 mm. Length of thorax: male, 2·5–2·9 mm; female, 2·2–2·6 mm. Length of wing: male, 5·6–6·3 mm; female, 5·1–5·8 mm. Length of glans of aedeagus (excluding terminal lobe) 0·54–0·55 mm (Bulolo vicinity), 0·58 mm (Busu River).

Distribution

North-east New Guinea, Morobe Province. Map reference 9*D* (Fig. 1)

Notes

A. hyweli is distinguished from other species of Section 3 by the reduced inner vertical bristles, the absence of facial markings, the spotted scutellum, and the bicoloured abdominal tergites 3–5. The hairs of the humeral callus are shorter than in other species of the section except *A. ismayi*; the latter has a similarly coloured abdomen to *A. hyweli*, but differs in the presence of facial markings and the strong inner vertical bristles.

Achias opipes, sp. nov.
(Figs 94, 95)

'Another new stalk-eyed fly' Parsons, 1984: 65 (colour photograph of holotype from life).

Material Examined

Holotype. ♂, Papua (Central Province): Eilogo Ck, nr Sogeri, 2.v.1981, M.J. Parsons (AM).

Paratype. 1♀, same locality, Aug. 1981, J.W.I. (AM).

Description

Resembling *A. hollowayi* and allied species, agreeing with the description of that species, except as indicated below.

Coloration. Head with transverse brown stripe just behind vertex, which extends on to eye-stalk and to within short distance of eye; eye-stalk (in male) with large dorsal brown zone; face without brown markings, except for 1 or 2 minute irregular dots at lower end of antennal groove. Antenna orange-fulvous. Scutellum orange-tawny, unspotted. Fore tibia brown-black; mid tibia fulvous; hind tibia brownish tawny. Abdominal tergite 1+2 fulvous, suffused with brown laterally; tergites 3 to 5 fulvous medially, black laterally, with lateral margins narrowly fulvous.

Head. Eyes of male on moderately long, thick stalks; eyes of female slightly larger, more prominent, and more rounded than in *A. hollowayi*. Inner and outer vertical bristles long and strong.

Thorax. Mesoscutum with width 0·88–0·89 of length; scutellum truncate to slightly concave between apical bristles, with 1–3 fine hairs on each side in front of foremost lateral bristle. Hind trochanter with short, posteriorly directed, thorn-like spine in male only; fore femur with 4–6 posteroventral spines; hind tibia with very slight curvature in both sexes; fore tarsus 1·19–1·29 × as long as tibia, with segments somewhat similar to those of *A. hollowayi*. Wing: cell-4 index = 0·61–0·62; second costal cell with numerous microtrichia on anterodistal half; submarginal cell bare on considerably less than basal half; first basal cell with patch of microtrichia beyond middle in addition to those along anterior crossvein; sub-basal bare zone in first posterior cell small or absent; discal cell with smaller basal bare zone than in *A. hollowayi*; alula microtrichose on about $\frac{2}{3}$ of its surface.

Abdomen apparently more elongate than in *A. hollowayi* (in dried material); hairing on tergites a little more developed than in that species; in male tergite 5 about 1·7 × as long as tergite 4. Male postabdominal structures not examined.

Dimensions. Total length: male, 7·5 mm, female, 8·0 mm. Width of head: male, 5·6 mm; female, 2·9 mm. Length of thorax: male, 3·2 mm, female, 3·2 mm. Length of wing: male, 7·0 mm, female, 7·1 mm.

Distribution

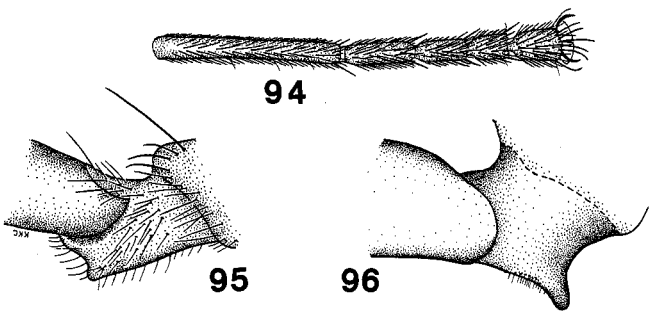
Papua, Central Province. Map reference 9*E* (Fig. 1).

Habitat

Holotype 'resting on leaf of shrub, primary rain forest'.

Notes

Within Section 3, *A. opipes* agrees only with *A. hyweli* and *A. ismayi* in having a median pale zone on the abdominal tergites. *A. hyweli* differs from *A. opipes* in its reduced inner vertical bristles, reduced hairing on the humeral callus, and spotted scutellum. *A. ismayi* differs from *A. opipes* in the large paired dark blotches on the face, the spotted scutellum, and paler humeral callus with shorter, sparser hairing. Of the species in Section 3, only *A. calcar* and *A. opipes* have a process on the male hind trochanter. *A. opipes* differs from *A. calcar* in its more slender form, generally paler coloration, entirely dark fore tibia, and extensive microtrichiation of the alula.



Figs 94–96. *Achias opipes* (♂): *94*, right fore tarsus; *95*, right hind trochanter. *Achias calcar* (♂): *96*, left hind trochanter.

Achias calcar, sp. nov.
(Fig. 96)

Material Examined

Holotype. ♂ (unique), NE. New Guinea: Karimui, nr southern border of Eastern Highlands, 1080 m, 11–12.vii.1963, J.S. (BPB).

Description (male)

A more robust insect than *A. hollowayi* and allied species, agreeing with description given for that species except as indicated below.

Coloration. Postfrons almost entirely mid to dark brown, with fulvous colouring encroaching a little from parafacial on each side of ptilinal suture; face unmarked. Mesoscutum largely dark brown, reddish brown to tawny towards lateral and anterior margins, medially in front of suture, and along each transverse suture; scutellum dark brown. Fore tibia pale ivory, with ventral brown zone from base to a little beyond middle and narrow dorsal brown stripe basally, fading before middle; other tibiae tawny. Wing possibly normally coloured as in *A. hollowayi*, but paler in type because of immaturity, markings on crossveins undeveloped. Haltere uniformly fulvous. Abdomen tawny to brown (badly squashed in type).

Head with broad central capsule, extended laterally towards base of eye-stalks; eye-stalk short, but longer than in *A. tudes*; inner and outer vertical bristles fairly strong.

Thorax rather robust; mesoscutum probably not longer than wide (distorted in type), almost smooth on median stripe, rugose on each side; scutellum only a little longer than twice its width, rather depressed; excavated between the apical bristles, the excavated surface meeting dorsal surface at slight angle. Hind trochanter with short but prominent, compressed, round-tipped spur, pubescent on posterior surface, its length slightly over half diameter of trochanter; hind femur rather stout, somewhat narrowed but only very slightly curved basally; hind tibia rather robust, moderately curved; fore tarsus slender, 1·13 × as long as tibia, with segments 1 and 2 somewhat compressed, segments 4 and 5 depressed; segment 1 6·6 × as long as maximum diameter; segments 4 and 5 only slightly longer than wide. Wing with vein 4 somewhat arched, becoming straight apically; anterior crossvein somewhat curved throughout, meeting vein 4 at 0·61 of length of discal cell from base of that cell; second costal cell rather broadly microtrichose along costa except at base; marginal cell sparsely microtrichose at base and along anterior margin, more densely microtrichose on distal half; submarginal cell almost bare from base to beyond middle; alula bare except for marginal series of microtrichia, only about 3 of which extend on to dorsal surface; microtrichiation otherwise as in *A. hollowayi*.

Abdomen. Tergite 5 of male about 1·5 × as long as tergite 4. Male postabdomen: free distal section of outer surstylus gibbous at origin anteriorly, darkly pigmented on part of inner surface, compact but giving rise to a long finger-like terminal process and a short blunt posterior process; aedeagus somewhat resembling that of *A. tudes*; terminal filament, including the short compact tunic, 1·2 × as long as glans, not markedly tapering distally, slightly expanded at extreme apex.

Dimensions. Total length *c.* 7 mm; width of head *c.* 5·6 mm; length of thorax *c.* 4·3 mm; length of wing 9·8 mm; length of glans of aedeagus 0·97 mm.

Distribution

North-east New Guinea, Eastern Highlands. Map reference 8*D* (Fig. 1).

Notes

A. calcar appears to be stouter than other species of Section 3 and is distinguished by the extensively infuscated dorsal surface of head and thorax, without spotting. It is the only species of the section with the alula bare. The presence of a spur on the hind trochanter, the large glans, and shape of the outer surstylus help to distinguish the male.

Achias venustulus Walker
(Fig. 127)

Achias venustula Walker, 1865*a*: 119–20.—Osten Sacken, 1881: 89.
Achias venustulus Walker.—Hendel, 1914*b*: 219; Malloch, 1939: 134.

Material Examined

Holotype. ♀, West New Guinea: Dorey (now Manokwari), Vogelkop district, Mar.–July 1858, A.R.W. (BM). Date inferred from Wallace (1869).

Other material. **West New Guinea:** 1♀, Kebar Valley, W. of Manokwari, 550 m, 4–31.i.1962, S. Quate (BPB). **NE. New Guinea:** 2♂, 5♀, Upper Stony Logging Area, nr Bulolo, Morobe Province, Nov., Dec. 1979, H.R. (AM). Further material from Bulolo Valley in FRIL not seen by author.

Description

Agreeing with description given for *A. hollowayi* except as indicated below.

Coloration. Vertex without spots or other markings; face unmarked or with few reddish brown dots only. Antenna orange-fulvous. Thorax not much darkened dorsally; mesoscutum

unspotted; scutellum tawny with few to numerous brown dots, or, in Morobe Province specimens, dots indistinct or absent. Fore tibia pale yellowish to ivory with brown ventral zone on basal half; other tibiae fulvous. Wing with brownish mark on discal crossvein broadened posteriorly, often extended anteriorly into middle of first posterior cell; costal margin distally with only trace of brown pigment. Abdomen with tergite 1+2 fulvous becoming blackish on posterior margin; tergites 3–5 shining black; in female segment 7 fulvous.

Head in male very broad, but with at most rudimentary eye-stalks; inner and outer vertical bristles moderately long.

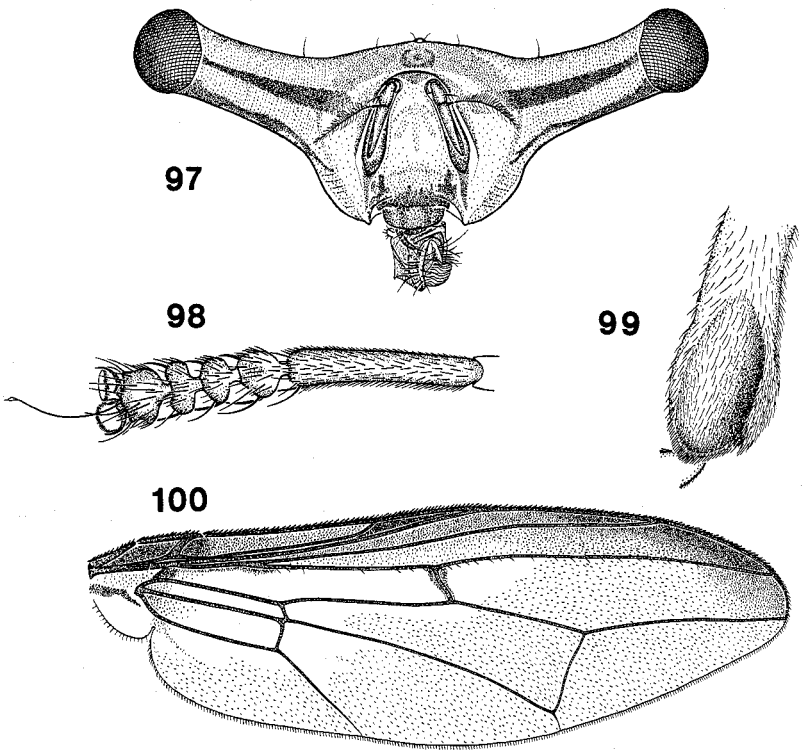
Thorax. Mesoscutum with width 0·83–0·87 of length, with hairing a little less restricted than in *A. hollowayi*; scutellum somewhat depressed. Fore tarsus 1·06–1·08 × as long as tibia in male, 1·13–1·15 × as long in female, with segment 1 obliquely compressed, other segments depressed, slightly less elongate than in *A. hollowayi.* Wing: cell-4 index = 0·55–0·58; second costal cell microtrichose except in basal fifth and narrowly along posterior margin; marginal cell microtrichose except in a narrow posterior zone near base; submarginal cell also with rather narrow basal posterior bare zone only; first basal cell with irregularly shaped patch of microtrichia in distal part, often joined to zone surrounding anterior crossvein; first posterior cell with rather small but variable bare patch near base, not reaching full width of cell; discal cell with compact bare patch at base, sometimes extended along vein 5.

Abdomen moderately broad.

Dimensions (Kebar Valley). Total length 8·1 mm; width of head 3·2 mm; length of thorax 3·4 mm; length of wing 7·3 mm.

Distribution

West New Guinea, Vogelkop Peninsula; north-east New Guinea. Map reference 2*A*, 9*D* (Fig. 1).



Figs 97–100. *Achias apictipennis*: *97*, head (largest ♂); *98*, left fore tarsus (♂); *99*, apex of left hind tibia, posterior veiw (♂); *100*, wing (♀).

Notes

Achias venustulus is typical of Section 3 and differs from the most closely related species of the section in the absence of spotting on the vertex. It may be further distinguished from *A. hollowayi* by the absence of facial markings and largely pale fore tibia, from *A. calcar* by the more extensively microtrichose alula and lack of a hind trochanteral spur in the male, from *A. hyweli* by the pale fore tibia and lack of a median pale zone on tergites 3–5, and from *A. tudes* by the paler fore tibia and shape of the male hind femur. It lacks the peculiar characters given for *A. ios*, *A. calcar*, and *A. sphyrna*.

Achias apictipennis Hennig
(Figs 97–100, 128)

Achias apictipennis Hennig, 1940: 316.
Achiosoma apictipenne (Hennig).—McAlpine, 1973: 29, 31.

Material Examined

Holotype. ♀, North Queensland: Herberton, Jan. 1910, anon. but probably F.P.D. (DEI).

Other material. **North Queensland:** 1♂, 1♀, Herberton, Jan., Feb. 1910–1911, F.P.D. (BM); 6♀, 2 km NW. of Tully Falls, Jan. 1976, D.K.M. (AM, BPB); 2♀, 18 km S. of Ravenshoe, Mar. 1964, I.F.C. and M.S.U. (ANIC); 1♂, Mt Lewis, Mossman district, Nov. 1976, A. and M. Walford-Huggins (AM); 1♂, Windsor Tableland, W. of Daintree R. basin, Dec. 1976, B.J.M. and M.S.M.

Description

The original description is in some respects inadequate, as it is based on a single very immature female specimen in which the wing pigmentation is undeveloped and the abdomen has lost its natural shape. The following description is based on mature specimens in good condition.

Coloration. Head fulvous; postfrons with complete transverse dark brown band across vertex, which is narrowed but not broken medially, also with variable oval to subtriangular median anterior brown mark enclosing pale area; a dark brown stripe extending from lower anterior margin of eye across parafacial to or almost to ptilinal suture; another brown stripe from lower margin of eye extending on to cheek; antennal grooves brown (paler in male) with heavy coating of grey pruinescence; approximately lower third of face dark brown, upper limit of brown area very irregular and variable, in largest male face with only irregular brown markings restricted to epistomal margin. Antenna tawny brown, arista beyond base dark brown. Prelabrum brown, sometimes paler in male; palpus yellowish brown. Mesoscutum reddish brown with some obscure and variable subcuticular markings, with yellowish pruinescence forming a broad transverse band just in front of but not touching scutellum, an isolated median area just in front of centre, and an area round each transverse suture extending on to notopleuron; humeral callus and scutellum dark brown, without pale pruinescence, the latter minutely roughened; postnotum tawny brown with yellowish pubescence dorsally and laterally, elsewhere shining; pleura reddish brown to dark brown, with whitish pruinescence and pubescence not evenly distributed. Fore coxa blackish brown; other coxae dark brown, reddish brown in part; fore femur tawny, brown basally and distoventrally; other femora pale yellowish, narrowly browned apically; tibiae blackish brown to reddish brown; fore tibia with dense whitish hairing anteroventrally except on basal third; fore tarsus black; other tarsi tawny grading to black on 2 distal segments. Wing membrane faintly yellowish with very poorly defined, diffuse yellowish costal band in front of vein 3, becoming brownish in subcostal cell and at apex where it reaches to vein 4. Haltere buff, with brownish capitellum. Abdominal tergites tawny to brownish with mostly pale hairs; tergite 3 with pale translucent pruinescence on most of surface; tergite 4 pruinescent at sides, shining medially; tergite 5 without obvious pruinescence, there being no lateral marginal pruinescent zones on tergites.

Head shaped much as in the *dacoides* group of species, less massive for size of insect than in such Australia species as *A. kurandanus* and *A. australis*; eye-stalk not at all dorsoventrally compressed as in males of those two species, present in both sexes but very short in female; eye rounded; facial carina strongly elevated and convex, but sharply margined only on upper part, often with weak median and lateral grooves; a series of fine almost horizontal grooves on cheek in narrow zone below eye; inner vertical bristle weak and hair-like; cheek bristle absent. Antenna rather slender. Palpus rather slender.

Thorax. Scutellum matt on account of the fine, dense, punctate sculpturing, rounded and convex, its outline shorter than a semicircle, with only 1 pair of really strong bristles near apex, and 1 or 2 weaker pairs intergrading with the paler lateral hairs which are very variable in number, basal sockets of the more distinct bristles markedly raised; both notopleural bristles well developed; humeral, supra-alar, and prescutellar acrostichal bristles absent; dorsocentral and intra-alar bristles very weak and pale; suprasquamal ridge with short pubescence only. Fore femur distally with about 3 strong posteroventral spines and usually 2 or 3 shorter anteroventral spines; other femora with ventral spines much less developed; hind tibia normal in female, in male distally dilated and excavated on posterior surface, ventral margin of excavation with strongly raised, rounded, densely short-haired ridge; fore tarsus (Fig. 98) broader and more depressed in male than in female, in former sex only very slightly depressed apically, the terminal dorsal hair of last tarsal segment with a minute, acuminate apical expansion; basal segment of hind tarsus somewhat thickened in male, not noticeably thickened in female. Wing with anterior crossvein somewhat oblique, posteriorly curved; cell-4 index = 0·56 of length of discal cell from base of that cell, i.e. closer to middle of discal cell than in *A. stiva* and allied species; vein 4 apically with only very slight curvature; submarginal cell bare on much of basal half, except for a microtrichose strip of varying width along vein 2; first posterior cell bare on much of basal quarter; first basal cell largely bare, narrowly microtrichose along margins other than posterior margin; discal cell extensively microtrichose centrally and distally, bare basally and along anterior and posterior margins to beyond middle; squama intermediate in development between 'Achiosoma' and *Achias* s.str., not much expanded posteriorly and with outer margin forming a continuous curve, but with posterior auricle extending beyond line of attachment to thorax.

Abdomen intermediate in shape between 'Achiosoma' and *Achias* s.str. but showing affinity with the former; tergite 1 longer and narrower than in *Achias* s.str but wider than long and somewhat expanding towards junction with tergite 2; tergites 3 and 4 with an anterior marginal strip devoid of hairs which is narrowed medially and on lateral margins; tergite 5 with an area, differentiated by very short hairing, on each side of median line and touching anterior margin; tergite 5 (male and female) scarcely longer than tergite 4.

Dimensions. Total length: male, 5·5–8·4 mm; female, 6·0–7·4 mm. Width of head: male, *c.* 2·8–7·6 mm; female, 2·9–3·7 mm. Length of thorax: male, 2·4–4·0 mm; female, 2·6–3·3 mm. Length of wing: male, 6·6–10·4 mm; female, 7·2–8·7 mm.

Distribution

North Queensland, mountainous areas from ranges west of Daintree River basin to upper Tully River. Map reference 8*I* (Fig. 1).

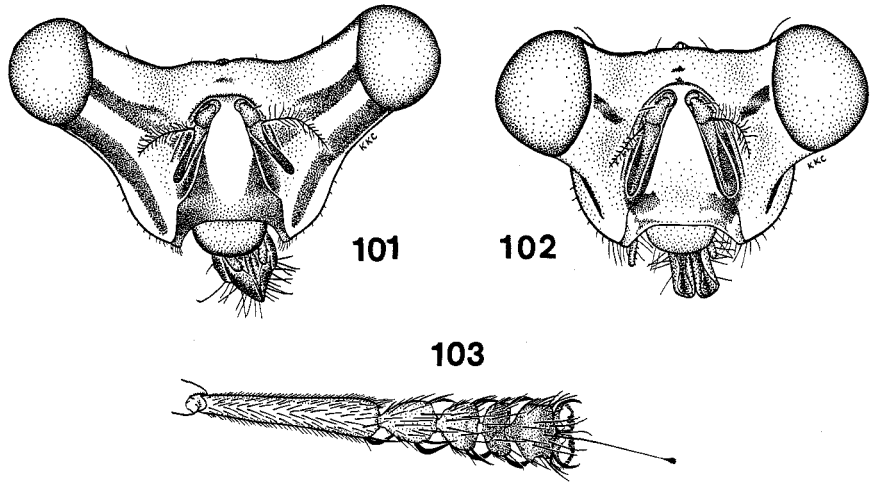
Habitat

Rainforest.

Notes

A. apictipennis resembles *A. polyonychus* and to some extent *A. costalis* and *A. xyrion*, but is sharply distinguished from all these by the much larger squamae and shorter, broader compound tergite 1+2. Among the Australian species, it is differentiated from *A. kurandanus*, *A. kimi*, and *A. australis* by its slender form, reduced mesoscutal chaetotaxy

(only the notopleurals being strongly developed), vestigial inner vertical bristles, largely bare alula, and narrower squama; it differs from *A. minax*, with which it shares several of the above features, in having the wing markings restricted to the nebulous yellow-brown costal band, in the large bare zone in the submarginal cell, in the only indistinctly petiolate abdomen, and in the more widely separated eyes of both sexes.



Figs 101–103. *Achias costalis*: *101*, head (♂, Bokondini). *Achias polyonychus* (♂): *102*, head; *103*, right fore tarsus.

Achias costalis (Malloch)
(Fig. 101)

Achiosoma costalis (*sic*) Malloch, 1939: 130–1.
Achias costalis (Malloch).—Evenhuis, 1989: 485.

Material Examined

Holotype. ♀, NE. West New Guinea: Mt Nomo, S. of Mt Bougainville, 700 ft (*c.* 210 m), Feb. 1939, L.E.C. (BM).

Other material. **Central West New Guinea:** 1♂, Bokondini, 40 km N. of Baliem Valley, *c.* 1300 m, 5–11.xi.1961, L. W. Quate (BPB).

Description (male)

Malloch gave a fairly detailed description of the female. I add some notes on the only known male, which is not topotypical and disagrees with Malloch's description in some minor points of coloration. It was not available when I examined the holotype and I am not completely certain that it is conspecific.

Coloration. Face very pale yellowish on somewhat less than upper half, below this light tawny with a large reddish brown patch on each side from antennal groove to epistomal margin. Greater part of mesoscutum goldish pruinescent-pubescent except on humeral callus and area immediately mesad of it. Legs fulvous; fore femur with 2 brown marks near apex; fore tibia tinged with brown basally; other femora and tibiae unmarked; fore tarsus brown, with yellow marks on segments 2–5; mid tarsus (and possibly the damaged hind tarsus) brownish on segments 4 and 5. Abdomen without distinct dark markings other than those due to subcuticular discoloration; tergites 2 and 3 with median yellow pruinescent zone; tergites 3–5 with yellow pruinescent lateral marginal zones.

Head shaped somewhat as in *A. apictipennis* but eye-stalks shorter, basally thickened, and more strongly inclined upwards; eyes more oblique and narrowed below; outer vertical bristle distinct but shorter; inner vertical indistinguishable.

Thorax. Hind tibia slightly curved, unmodified except for a very slight preapical depression on posterior surface; fore tarsus with segment 1 depressed, slender basally, broader distally, other segments almost as short as in *A. apictipennis* but segment 4 angular on each side, segment 5 without lateral tubercles, with pale, black-tipped spatulate bristle arising from near distal margin. Wing with submarginal cell entirely microtrichose; first posterior cell with large basal bare area extending its entire width; first basal cell entirely bare except for a few microtrichia next to vein 3 and stem of 2+3 and a few around anterior end of anterior crossvein.

Abdomen strongly petiolate; tergite 4 with pair of small very short-haired zones at anterior margin and tergite 5 with pair of larger such zones.

Dimensions. Total length 8·2 mm; width of head 3·8 mm; length of thorax 2·9 mm; length of wing 8·4 mm.

Distribution

West New Guinea, extreme north-east and central mountains. Map reference *5B*, *6B* (Fig. 4).

Notes

This little-known species is currently distinguished mainly by the characters indicated in the key. Otherwise, it is similar to *A. polyonychus* and *A. xyrion.*

Achias polyonychus, sp. nov.
(Figs 102, 103)

Material Examined

Holotype. ♂ (unique), Papua: Kiunga, upper-lowland Fly R., 26–28.x.1957, W.W.B. (BPB).

Description (male)

Somewhat similar to *A. apictipennis*, agreeing with characters given for that species except as indicated below.

Coloration. Postfrons with narrow dark brown stripe across vertex for its full width, with only a couple of small irregular brown spots anteriorly on median line; a small brown mark between antenna and eye at summit of parafacial; cheek stripe below eye present but narrow, antennal groove pale; face with only a very irregular and rather small light brown lateral mark on each side. Antenna fulvous. Prelabrum and palpus fulvous. Thorax with orange-tawny ground colour; mesoscutum with golden pruinescence posteriorly, extending anteriorly as a broad but poorly defined median stripe, the 4 pale longitudinal stripes (characteristic of some other sections of genus) indistinctly outlined by means of some brown subcuticular markings; scutellum fulvous with brown markings restricted to extreme anterior margins; humeral callus light tawny with brown markings; pleura with irregular brown subcuticular markings and a broad, ill defined vertical whitish pubescent stripe across sternopleuron and posterior part of mesopleuron. Legs fulvous, with tarsi somewhat browned distally (beyond segment 2). Wing with costal band entirely pale yellow and even less distinct than in *A. apictipennis*, obsolete distally but visible around anterior crossvein; squama buff. Haltere fulvous. Abdominal tergites tawny with yellow hairs; tergites 4 and 5 with noticeable yellow pruinescence quite restricted to narrow distinct lateral marginal zone.

Head. Eyes very prominent but not stalked, larger than in female of *A. apictipennis.*

Thorax as described for *A. apictipennis* but anterior notopleural bristle indistinguishable. Fore femur with 4 posteroventral spines and 3 or 4 anteroventral spines; other femora with much weaker anteroventral spines only; hind tibia simple, without the distal modifications described for *A. apictipennis*; fore tarsus resembling that of *A. apictipennis* in shape and proportions of segments except that segment 2 is somewhat narrower and more symmetrical, compressed bristle on posterior side of segments 1–4 very much broader and more strongly falcate, claw-like (hence the specific name), compressed bristle on anterior side of segment 4 also somewhat broadened, terminal dorsal bristle with apical expansion broader than in *A. apictipennis* and distally emarginate; hind tarsus with segment 4 almost semicircular, with lateral lobes only slightly developed. Wing with submarginal cell microtrichose except for minute areas near base; first posterior cell with only small bare area anteriorly near base; first basal cell with large irregular patch of microtrichia distally; discal cell bare only in a small basal area occupying about $\frac{1}{8}$ its length; squama narrower than in *A. apictipennis* and without posteriorly extended auricle, shaped more as in *A. minax.*

Abdomen much more attenuated basally than in *A. apictipennis* but without defined petiole; compound tergite 1+2 gradually narrowed anteriorly and much less expanded posteriorly; hairs on other tergites moderately long except for a small very short-haired median area near anterior margin of tergite 4 and a pair of larger such areas narrowly connected anteriorly on tergite 5; tergite 5 about 1·6 × as long as tergite 4.

Dimensions. Total length 8·9 mm; width of head 3·4 mm; length of thorax 3·2 mm; length of wing 8·6 mm.

Distribution

Papua, lowlands of Western Province. Map reference 6*D* (Fig. 1).

Notes

A. polyonychus is most similar to *A. xyrion.* See under that species for comparison.

Achias xyrion, sp. nov.
(Figs 104–106)

Material Examined

Holotype. ♂, Papua: Loloipa, Goilala Subdistrict, Central Province, 16–30.i.1958, W. W. Brandt (BPB).

Paratypes. Papua: 1♂, 2♀, 5 km NW. of Brown R. bridge, Central Province, Oct., Dec. 1985, J.W.I. (AM).

Description

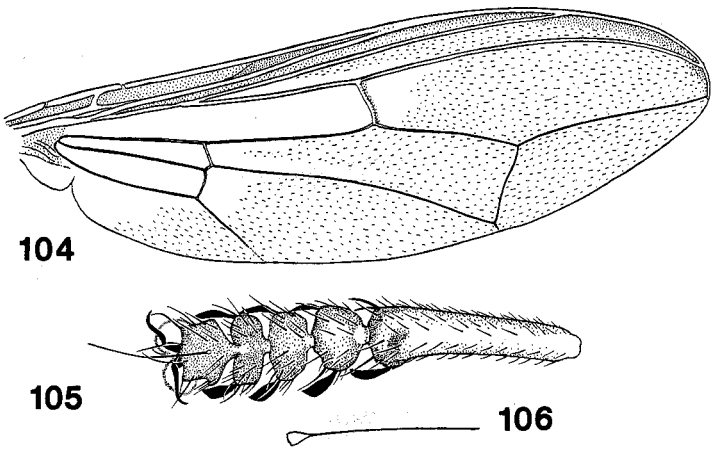
Somewhat similar to *A. polyonychus*, *A. costalis* and *A. apictipennis*, agreeing with description of last except as indicated below.

Coloration. Head: transverse band at vertex enclosing ocelli; postfrons without dark brown central markings, with horizontal brown mark at summit of parafacial; cheek stripe present in both sexes; antennal groove not browned; face with pair of brown marks removed from lower margin, only very narrowly browned on margin. Prelabrum and palpus fulvous. Humeral callus tawny to reddish brown; scutellum fulvous to tawny, brown-margined at scutellar suture. Coxae fulvous to tawny; femora fulvous, fore one slightly browned apically; tibiae brownish tawny; tarsi fulvous, each with 3 distal segments largely dark brown; segment 2 of fore tarsus also partly browned. Costal, subcostal, and marginal cells more distinctly browned than in *A. apictipennis.* Haltere entirely pale yellowish. Abdomen

as described for *A. apictipennis*, but lateral margins of tergites 3 to 5 with dense pale yellow pruinescence.

Head, in female, shaped much as in female of *A. apictipennis* but with larger eyes, in small male eye-stalk a little more elongate (larger male unknown).

Thorax. Anterior notopleural bristle very thin and pale. Fore femur with 4 or 5 posteroventral spines and *c.* 3 smaller anteroventral spines; hind tibia and tarsus without male modification; fore tarsus of male with segment 1 elongate, dilated and depressed at distal end, other segments all short, depressed, more or less expanded laterally; segments 1 to 4 with compressed bristle on outer side very broad and blade-like (least so on segment 1), not falcate but with outer margin more strongly curved than inner; segments 2 to 4 also with similar but narrower bristle on anterior side; long, spatulate bristle on segment 5 inserted mid-dorsally instead of terminally. Wing: cell-4 index = 0·53–0·57; first posterior cell more narrowed apically than in *A. apictipennis*; submarginal cell with bare area reduced to narrow ill-defined strip along posterior margin near base; bare areas in first posterior and discal cells less extensive than in *A. apictipennis*; squama much reduced, narrower than in *A. polyonychus*.



Figs 104-106. *Achias xyrion*: *104*, wing (♂, Loloipa); *105*, left fore tarsus (♂, Loloipa), spatulate bristle damaged; *106*, spatulate bristle of fore tarsus (♂, near Brown River).

Abdomen broadly clavate; tergite 1 almost parallel-sided, forming a distinct petiole; tergites 4 and 5 each with pairs of contiguous short-haired zones anteriorly; tergite 5 of male *c.* 1·6 × as long as tergite 4.

Dimensions. Total length: male, 6·7 mm; female, 7·1–7·5 mm. Width of head: male, 2·6 mm; female, 3·0–3·5 mm. Length of thorax: male, 2·3–2·4 mm; female, 2·9–3·2 mm. Length of wing: male, 6·1–6·7 mm; female, 7·1–7·7 mm.

Distribution

Papua, Central Province at low to moderate (unstated) altitudes. Map reference 9*E* (Fig. 1).

Habitat

Forest (J.W.I.).

Notes

A. xyrion belongs in the same group as *A. costalis* and *A. polyonychus*. It lacks the distinctive characters of *A. costalis* given in the key. In addition to the key characters,

A. xyrion differs from *A. polyonychus* in the more distinctly petiolate abdomen, the more brownish costal margin (making the submarginal cell, except towards the costa, paler than the costal cell), and the more elongate eye-stalks of the male (even though the available males of *A. xyrion* are smaller than that of *A. polyonychus*). There is also a strong resemblance to the Queensland species *A. apictipennis*, which is placed in a separate group because of its much larger squama and non-petiolate abdomen.

Achias aspiciens Walker

Achias aspiciens Walker, 1864: 229–30.
Achiosoma aspiciens (Walker).—Hendel, 1914*b*: 201.

Material Examined

Holotype. ♀ (unique), West New Guinea: Waigeo (Waigeu), July–Nov. 1860, A.R.W. (BM). A.R.W. collected nr villages of Muka and Bessir on southern side of Waigeu in months indicated (Wallace 1869).

Description (female)

The following brief notes were made from the holotype.

Coloration. Head with brown transverse stripes not reaching to eye, the dorsal and anterior ones diffuse and ill defined; paired brown facial marks present, well separated. Mesoscutum dark brown with 4 longitudinal rusty orange stripes; scutellum rust-coloured, heavily spotted with dark brown. Femora fulvous; fore femur marked with brown distally. Wing with conspicuous brown mark, separate from the complete costal band, surrounding discal crossvein. Abdomen yellow-brown; tergite 3 with conspicuous yellowish pruinescent median stripe; tergites 3 to 5 (especially 4 and 5) with conspicuous yellow-pruinescent lateral margins; hairs on median line and lateral margins of tergites 4 and 5 conspicuously pale yellowish, those hairs immediately behind the large short-haired zones of these tergites dark brown.

Other characters. Eyes on short but definite stalks. Palpus very slender. Scutellum with 4 pairs of bristles of which only the apical pair is very strong.

Distribution

West New Guinea, Waigeu Island. Map reference 1*A* (Fig. 1).

Notes

Osten Sacken synonymised *A. aspiciens* under *A. dacoides*, although *A. dacoides* was described at a later date. *A. dacoides* is apparently quite distinct, differing in the absence of the brown discal mark on the wing and virtual absence of eye-stalks in the female. The wing markings of *A. aspiciens* distinguish it from all related species, as indicated in the key.

Achias dacoides Walker

Achias dacoides Walker, 1965*b*: 133–4.—Osten Sacken, 1881: 87–9.
Achiosoma dacoides (Walker).—Hendel, 1914*a*: 101, pl. 10, figs 172–4; Hendel, 1914*b*: 200–1.

Material Examined

Holotype. ♂, West New Guinea: Salwatty (Salawati), no date, C. Allen (BM, ex A.R.W. collection). Wallace (1869) states that Allen, his assistant, collected on Salawati, but does not give a date. It is

clear from the account of his voyages, that Wallace did not visit that island, and had no first hand knowledge of its people or natural history.

Other material. **West New Guinea:** 1♀ (det. Osten Sacken, figured Hendel), Dorei (now Manokwari), Vogelkop Pen., 1875, O. Beccari (MCG); 1♀, Fak-fak, Onin Peninsula, no date, A. E. Pratt (BM).

Description

See Hendel (1914*a*, 1914*b*).

Distribution

West New Guinea, Vogelkop and Onin Peninsulas, and Salawati Island. Map reference 1*A*, 2*A*, 2*B* (Fig. 1).

Notes

This is a little-known species that has been confused with more than one other species. Osten Sacken (1881) incorrectly gave *A. aspiciens* Walker as a synonym, and recorded a specimen from 'Dorei Hum'. Hendel (1914*a*, 1914*b*) gave *Z. robusta* Bigot and *A. gracilis* de Meijere as synonyms of *A. dacoides*, but correctly distinguished *A. aspiciens*. I retain *A. robustus* as a distinct species, as it is sharply distinguished from and possibly sympatric with *A. dacoides*. I provisionally retain *A. gracilis* as also distinct.

As here distinguished, *A. dacoides* includes flies from the westernmost parts of West New Guinea, having very short eye-stalks (almost absent in female), anterior crossvein surrounded by microtrichia, and no trace of terminal dorsal gibbosity on the hind femur, in addition to the characters mentioned in the key.

Achias stiva, sp. nov.
(Figs 107–108)

Material Examined

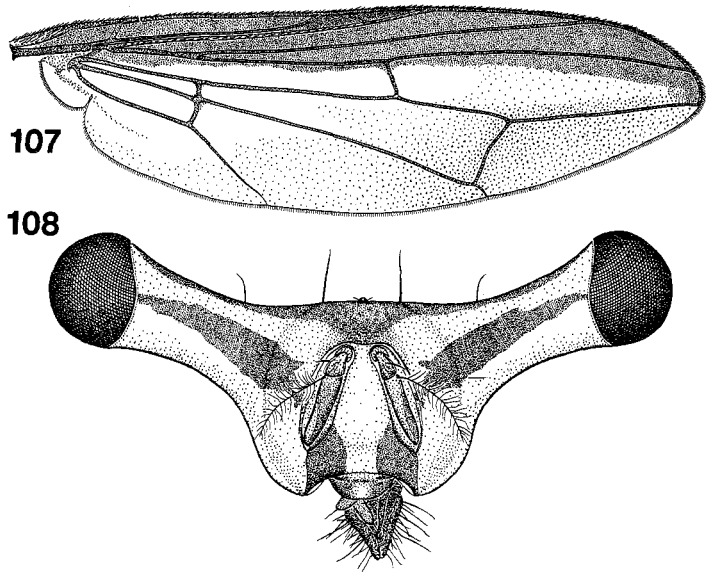
Holotype. ♂, NE. West New Guinea: Cyclops Mtns, *c.* 1000 m, Mar. 1936, L.E.C. (BM).

Paratypes. 3♂, 2♀, same data as holotype (BM, AM).

Description

Coloration. Head dull fulvous; vertex with very broad light to dark brown transverse band from eye to eye, extending well down on to posterior surface of eye-stalk and with median extension to occipital foramen; eye-stalk anteriorly with brown stripe from eye to ptilinal suture, sometimes this stripe partly fused with dorsal stripe, sometimes both stripes tending to be broken into small closely placed spots by a fulvous reticulum; a broad brown cheek stripe present in female, absent in male; face with large dark brown blotch on each side below, otherwise unmarked; antennal groove brownish with light grey pruinescence. Antenna fulvous; segment 3 suffused with light brown. Prelabrum light brown, fulvous medially; palpus tawny. Ground colour of thorax largely dark reddish brown; mesoscutum broadly suffused with a variable amount of blackish brown centrally, with pair of submedian reddish brown stripes, the whole thinly greyish pruinescent; scutellum deep reddish brown with traces of paler mottling, not shining; pleura with unevenly distributed pale grey pruinescence-pubescence. Legs with coxae and trochanters brown; fore coxa predominantly dark brown; femora fulvous, without the sharply defined dark distoventral zones seen in some species; fore femur suffused with brown on about distal half and basal sixth or sometimes more extensively suffused; mid femur rather broadly, hind femur narrowly brownish apically; tibiae of male tawny, variably darkened apically; tibiae of

female darker, reddish brown, generally becoming dark brown apically; fore tarsus of male dark brown, with a little reddish brown near base of segment 1; other tarsi with segment 1 and part of segment 2 tawny, distally dark brown, with a little reddish brown near base of segment 1; other tarsi with segment 1 and part of segment 2 tawny, distally dark brown, tarsi of female somewhat darker. Wing with well defined dark brown costal band for its entire length, extending rather narrowly over vein 3 and its stem, except at apex and in base of first basal cell where it extends to vein 4 over a short distance, enclosing only anterior extremity of anterior crossvein; an indistinct smoky suffusion surrounding discal crossvein and apical section of vein 4, and covering adjacent parts of membrane, separated from costal band except at extreme apex; remainder of membrane colourless; squama buff. Haltere fulvous. Abdominal tergites with predominantly dark brown ground colour, and pale hairs; a median greyish pruinescent stripe on tergites 2–4, broadest on tergite 3; a dull yellowish pruinescent marginal stripe on tergites 3–5 and posterior corner of tergite 2; apex of tergite 5 fulvous, more distinctly so in male.



Figs 107–108. *Achias stiva* (♂): *107*, wing; *108*, head.

Head. Eye-stalks present in both sexes, moderately developed and thick in male, distinct and cylindrical but quite short in female; eye rather large, rounded; inner and outer vertical bristles distinct, subequal. Palpus rather narrow.

Thorax somewhat slender; mesoscutum with short, fine hairs on most of surface; scutellum short, moderately convex, not evenly rounded in outline, without hairs or distinct pubescence; the following bristles present: 1 + 1 strong notopleurals, supra-alar, postalar, posterior intra-alar, weak dorsocentral, pair of long apical scutellars and 2 pairs of shorter but fairly strong lateral marginal scutellars; humeral and prescutellar acrostichal bristles absent. Legs rather elongate; hairs on hind trochanter short, their length not greater than half diameter of trochanter; fore femur with 3 or 4 strong posteroventral spines on distal part and a similar number of smaller anteroventral spines; other femora not spinose or with very weak anteroventral spines only; hind tibia similar in both sexes, not markedly dilated distally, with slight depression on posterior surface preapically; tarsi similar in both sexes; fore tarsus very slender, with segments 1 and 2 almost cylindrical, segment 2 about 2·6 × as long as wide, segments 4 and 5 depressed but not notably dilated, without modified lateral or terminal bristles; hind tarsus stouter than fore tarsus, with segment 1 subcylindrical. Wing elongate, slightly narrowed basally; distal section of vein 4 nearly straight for most

of length, a little curved distally; anterior crossvein only slightly oblique, meeting vein 4 at about 0·63 of length of discal cell from base of that cell; wing membrane entirely microtrichose on brown costal band; first basal cell microtrichose only on pigmented area; first posterior cell bare on about basal quarter, except for the pigmented area next to vein 3; anterior crossvein not surrounded by microtrichia except towards anterior end; discal cell bare on about basal third, the bare area extending further distad next to veins 4 and 5; squama quite narrow, approximating to a sector of a circle about half height of a semicircle.

Abdomen slender (though its apparent slenderness exaggerated even in mature specimens, by a rolling inwards of sides of tergites), apparently not strongly clavate; tergite 1 forming a parallel-sided petiole, but tergite 2 only slightly expanding posteriorly; tergites 4 and 5 each with pair of rather large zones of very short hairing; hairing of tergite 5 becoming sparse posteriorly in male; tergite 5 of male about 1·3 × as long as tergite 4. Male postabdomen: outer surstylus somewhat elongate, with distal section elongate, obtuse, blade-like, lying in an almost transverse plane and greatly exceeding inner surstylus; stipe of aedeagus with conspicuously pubescent strip distally on posterior surface; glans somewhat elongate and a little tapered distally; terminal filaments somewhat thickened and heavily sclerotised basally, more slender beyond base, each about 1·4 × as long as glans.

Dimensions. Total length: male, 7·6–11·7 mm; female, 9·0–9·9 mm. Width of head: male, 5·8–8·1 mm; female, 3·5–4·6 mm. Length of thorax: male, 3·6–4·0 mm; female, 3·3–3·9 mm. Length of wing: male, 10·0–11·1 mm; female, 9·0–10·9 mm. Length of glans of aedeagus, 0·86 mm (2 males of different size).

Distribution

West New Guinea, north-east coast district. Map reference 6*B* (Fig. 1).

Achias sp. 1

Material Examined

West New Guinea: 2♀, Karubaka, Swart Valley, 1300 m, Nov. 1958, J.L.G. (BPB); 1♀, Guega, W. of Swart Valley, 1200 m, Nov. 1958, J.L.G. (BPB).

Description

The specimens dealt with under this heading differ from *A. stiva* mainly in the characters given in the key and in the broader costal band which covers at least the anterior third of the first basal and first posterior cells on its full length. The facial markings resemble those of *A. pexatus*. The eye-stalks are similarly developed to those of females of *A. stiva*.

Distribution

Central West New Guinea. Map reference 5*B* (Fig. 1).

Notes

Although these specimens clearly represent a distinguishable population, I consider it unwise to add another name to this difficult group of species on the basis of the available material, particularly as there are no males.

Achias pexatus, sp. nov.
(Fig. 109)

Material Examined

Holotype. ♂ (unique), Siaute, (foot of) Torricelli Mtns, sea level, 9–17.xi.1958, W.W.B. (BPB).

Description

Resembling *A. gracilis*, *A. stiva* and allies; agreeing with description of *A. stiva* except as indicated below.

Coloration. Postfrons rusty brown on a broad central zone, becoming dark brown posteriorly; a broad brown-black band dissected by fine fulvous reticulum along dorsal surface of eye-stalk; a separate brown to blackish stripe, in part similarly dissected on anterior surface of eye-stalk, terminating broadly medially on ptilinal suture and central brown zone; a broad blackish partly dissected cheek stripe extending on to ventral surface of eye-stalk but not reaching eye; face with large dark brown blotch on each side below, giving way to irregular spots and streaks on upper part. Mesoscutum, except near margins and transverse suture, largely dull blackish, with distinct broad grey-pruinescent median stripe on anterior half and less distinct transverse yellowish pruinescent stripe bearing longer yellow hairs a short distance in front of scutellar suture; scutellum dark brown, unspotted. Fore coxa dark brown with some tawny markings; fore femur reddish brown, darker brown ventrally beyond middle but paler at apex; other femora deep fulvous with brown distoventral zone not extending to apex; tibiae tawny, with brown markings; tarsi tawny, becoming dark brown distally. Costal band broad, largely yellowish brown in marginal and submarginal cells with numerous small darker dots, extending rather broadly into first posterior cell for whole length of cell, where it is uniformly rather dark brown; first basal cell yellowish brown in about basal quarter, beyond this narrowly brown along vein 3, pale yellow thence to centre of width of cell; first posterior cell without preapical brown spot near vein 4; membrane elsewhere faintly and almost uniformly tinged with yellow. Haltere fulvous with large part of capitellum dark brown. Abdominal tergites predominantly reddish brown with pale hairs; some black hairs bordering posteriorly the short-haired zones on tergite 4; the rather long, dense hairs on tergites 4 and 5 of a rich gold colour; only tergites 4 and 5 with broad lateral yellow-pruinescent zones; tergite 3 with yellow-pruinescent stripe extending mesad from each posterolateral corner, diverging a little from posterior margin, fading near median line; apex and median part of tergite 5 orange-tawny.

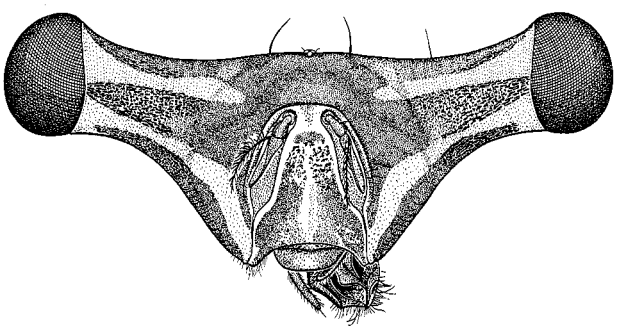


Fig. 109. *Achias pexatus*, head (♂).

Head. Eye-stalk well developed, stout, thickening basally where they gradually merge with head capsule; eye large and rounded; outer vertical bristle weak and pale; inner vertical bristle somewhat stronger, black.

Thorax moderately robust; mesoscutum with few short distinct black setulae (absent or less developed in related species) immediately behind transverse suture and level with

supra-alar bristle; scutellum very short, evenly rounded in outline, with 2 small hairs in front of each outer lateral bristle. Fore femur with about 5 strong posteroventral spines of various sizes and a similar number of similarly developed anteroventral spines; other femora with only vestigial ventral spines; hind tibia curved, thicker than mid tibia, slightly clavate distally; hind tarsus with segment 1 somewhat broadened, widest near middle. Wing a little less elongate than in *A. stiva*; basal section of vein 3 distinctly curved; vein 4 not noticeably curved apically; anterior crossvein meeting vein 4 at 0·62 of length of discal cell from base of that cell; first basal cell largely microtrichose, bare on a central strip for about $\frac{1}{3}$ length of cell; first posterior cell entirely microtrichose; discal cell bare on somewhat less than basal quarter. Abdomen broad beyond base, with tergite 1 forming a short, well defined petiole; tergite 2 much expanded posteriorly; tergite 5 of male about 1·2 × as long as tergite 4. Male postabdomen: distal section of outer surstylus even longer than in *A. stiva*.

Dimensions. Total length 11·7 mm; width of head 8·0 mm; length of thorax 4·6 mm; length of wing 12·1 mm.

Distribution

Papua New Guinea, West Sepik Province. Map reference 7*B* (Fig. 1).

Notes

A. pexatus is readily distinguished from all other named species of the *dacoides* group by the entirely microtrichose first posterior cell, the fine black setulae near the supra-alar ridge in front of the supra-alar bristle, and the transverse yellow-pruinescent stripe on tergite 3. These characters are to some extent shared with specimens from other inadequately known populations here discussed under the headings '*Achias* sp. 2' and '*Achias* sp. 3'.

Achias sp. 2

Material Examined

West New Guinea: 1♀, Mt Eiori, Japen I. (Camp 2), Oct. 1938, L.E.C. (BM).

Description

The single female of this form differs from other known species of the *dacoides* group in the entirely microtrichose first basal cell. Otherwise it resembles *A. pexatus*, particularly in the entirely microtrichose first posterior cell, but differs in the spotless, almost uniformly coloured costal band, the almost straight basal section of vein 3 and the reduction of the yellow-pruinescent markings on abdominal tergite 3 to a spot on each side near the posterolateral angle and a faint median stripe.

Dimensions. Total length 9·8 mm; width of head 4·7 mm; length of thorax 4·0 mm; length of wing 11·4 mm.

Distribution

Japen Island, Geelvink Bay. Map reference 4*A* (Fig. 1).

Notes

This is an inadequately known taxon that could prove to be a geographic variant of *A. pexatus* when, or if, intermediate populations become known.

Achias sp. 3

Material Examined

NE. New Guinea: 1♂, Sapi R. plantation, Madang Province, 11–15.vii.1983, H.R. (AM).

Description (male)

Somewhat related to *A. pexatus* and *A. stiva*, agreeing with description given for the latter species except as indicated below.

Coloration. Head with major markings as for *A. stiva* except that male has well developed cheek stripe reaching almost to eye; central part of postfrons suffused with brown from vertical region to ptilinal suture; each facial blotch somewhat broken into small spots at upper extremity next to antennal groove, otherwise well defined and solid. Antennal segment 2 tawny; segment 3 greyish brown. Prelabrum and palpus tawny with darker suffusion. Mesoscutum with some irregular but mainly symmetrical reddish brown marks in the broad blackish median zone, with yellowish grey transverse prescutellar pruinescent band separated from scutellar suture by a linear glabrous reddish brown zone, which is less developed in allied species; scutellum dark reddish brown, paler at lateral extremities. Coxae variegated tawny and blackish; fore femur brownish tawny, with predominantly dark brown distoventral zone; other femora pale fulvous, with similar dark distoventral zones; tibiae brownish tawny with darker markings. Wing coloration very similar to that of *A. pexatus*; first posterior cell with small brown spot enclosing denser microtrichiation next to slight preapical flexure of vein 4; general suffusion of membrane behind vein 4 very indistinct. Haltere tawny with brown capitellum. Abdominal tergites brownish, tergites 1 and 2 largely paler brown, with pale hairing; other tergites with dark zones, bearing blackish hairing, and with yellowish zones as follows: tergite 3 with transverse, densely yellow-pruinescent band from one posterolateral corner to the other, but free from posterior margin over much of its extent, this band and brownish tawny lateral parts of tergite with numerous yellow hairs; tergite 4 with tawny-based, posteriorly widened median zone bearing dense, coarse yellow hairs, and broad lateral marginal yellow-pruinescent zone bearing numerous finer yellow-hairs; tergite 5 with pair of brown zones touching anterior margin, and pair of broad lateral marginal yellow-haired yellow-pruinescent zones, with remainder of surface (posterior and median parts) shining yellow, with long yellow hairs and no pruinescence.

Head, in form, very similar to that of *A. pexatus* (Fig. 109); eye-stalk thicker than in *A. stiva*; eye slightly smaller than in *A. pexatus*.

Thorax stouter than in *A. stiva*. Fore tarsus resembling that of *A. stiva*, with segment 2 1·9 × as long as wide; hind tarsus stouter than in *A. stiva*, with segment 1 somewhat obliquely compressed. Wing with distal section of vein 4 with slight kink or flexure almost as far from apex as apex of vein 4 is from apex of vein 3; anterior crossvein 0·48 as long as discal crossvein; cell-4 index = 0·59; first posterior cell with reduced basal bare zone; discal cell only bare on about basal quarter, the region near anterior crossvein entirely microtrichose.

Abdomen somewhat collapsed in type making precise shape and proportions difficult to determine; tergite 1 apparently forming a parallel-sided petiole; tergites 4 and 5 each with large paired short-haired areas on brown zones; tergite 5 about 1·4 × as long as tergite 4. Outer surstylus rather similar to that of *A. stiva*; aedeagus not examined.

Dimensions. Total length 11·1 mm; width of head 7·8 mm; length of thorax 4·8 mm; length of wing 12·7 mm.

Distribution

North-east New Guinea, Madang Province. Map reference 8*C* (Fig. 1).

Notes

This specimen is so similar to *A. pexatus* that I am doubtful if it represents a distinct species. Coloration of the wing and abdomen is exceedingly similar, but as each form is known from a single male it is not known if any sexual dimorphism of these characters is present. In other species with yellow markings on the abdomen (e.g. *A. minax*) the sexes are similar in this respect. This form differs from *A. pexatus* in the bare zone in the first posterior cell and much more extensive bare zone reaching the anterior crossvein in the first basal cell; also in facial markings which are more like those of *A. stiva* (Fig. 108). The presence of a small brown spot in the first posterior cell, covering a minute zone of denser microtrichiation, and associated with a flexure in the adjacent part of vein 4, is known only in this form. Without further material to check for consistency, it is difficult to evaluate this character taxonomically. It is, however, quite symmetrical, unlike most teratological conditions of the wing.

Achias gracilis de Meijere

Achias gracilis de Meijere, 1913: 373.

Material Examined

Holotype. ♂, West New Guinea: Alkmaar, Lorentz (Noord) R. district, Oct. 1909, H.A.L. (AMST).

Other material. **West New Guinea:** 1♂, 'Holl. Niew Guinea', probably Lorentz R. district, no date, H.A.L. (AMST). **Papua:** 2♂, 1♀, Loloipa, Owen Stanley Range, Goilala Subdistrict, Jan., Feb., Dec. 1957–1958, W.W.B. (BPB, AM); 1♂, 2♀, Tapini (Loloipa), Nov. 1957, W.W.B. (BPB, AM); 1♀, 10 km E. of Sirinumu, Central Province, June 1983, J.W.I. (KONE); 1♂, Aieme (Musgrave) R., Central Province, Nov. 1982, J.W.I. (AM). **North-east New Guinea:** 1♂, Garaina, W. of Morobe, 800 m, Jan. 1968, J.S. (BPB); 4♂, 3♀, Karimui, S. of Goroka, 1000 m, June 1961, J.L.G. (BPB).

The female mentioned by de Meijere (1913) from Etna Bay (but not used in the description and thus not a type) is atypical and possibly referable to another species.

Description

As in *A. dacoides*, the eye-stalks are short and the male possesses a broad cheek-stripe, but the first basal cell is largely glabrous (except at base), and the bare area in base of first posterior cell is larger and extends broadly to anterior crossvein. The type has the scutellum ochraceous with brown spotting, but in both the Karimui and Loloipa-Tapini populations this feature is variable. In some specimens the spots are dense and tend to coalesce, while in others the scutellum is almost uniformly brown. Wing markings appear to be uniform in local populations, but specimens from North-east New Guinea have the costal band extending a little behind vein 3 over a greater length of that vein.

The length of the glans of aedeagus is as follows for those specimens in which it is visible: Loloipa, 0·79 mm; Aieme R., 0·82 mm; Garaina, 0·79 mm; Karimui, 0·84 and 0·87 mm. In these and the second Lorentz male (uncertain locality but possibly topotypical), the terminal filaments are unequal, shorter than the glans, with an oblique flange across their bases.

Distribution

Southern West New Guinea, Papua, and North-east New Guinea. Map reference *5C*, *8D*, *9D*, *9E* (Fig. 1).

Notes

Hendel (1914*a*) included this nominal species in the synonymy of *A. dacoides*. Malloch (1939) mentioned the possibility of Hendel's having included more than one species under *A. dacoides*.

I provisionally accept *A. gracilis* as a distinct species, characterised as indicated in the key. Because of the inadequacy of the available material it cannot be decided with certainty whether more than one distinct species is represented in the material listed above.

Achias flyensis, sp. nov.

Material Examined

Holotype. ♂, Western Province of Papua: Kiunga, Fly R., 9–14.x.1957, W.W.B. (AM, BPB).

Paratypes. 1♂, 1♀, same data, except ♀, July 1957 (AM, BPB).

Description

Resembling *A. gracilis* and *A. stiva*; agreeing with description of *A. stiva* except as indicated below.

Coloration. Head with markings of postfrons variable, in larger male (holotype) postfrons, including dorsal surface of eye-stalk, mostly mottled with blackish brown on a fulvous ground but with almost unspotted rusty brown median zone and a large fulvous patch on each side of this, in female paratype postfrons fulvous with brown markings mainly consisting of blotches near vertex and a few on median part anteriorly, in smaller male coloration of postfrons intermediate between these extremes; in female and smaller male a separate brown stripe at summit of parafacial between antennal socket and eye, in larger male this stripe not distinguishable from the mottled brown zone of postfrons of which it forms the anterior limit; a well developed brown-black cheek stripe present in both sexes, divided into closely placed spots by a fine fulvous reticulum in male; palpus greyish brown. Ground colour of mesoscutum reddish brown towards margins, extensively dull blackish elsewhere, with broad somewhat diffuse median grey pruinescent stripe which is much expanded posteriorly; scutellum reddish brown with mostly separate blackish spots on entire dorsal surface. Coxae and trochanter predominantly mid brown; femora fulvous; fore femur brownish at base and more extensively browned distoventrally; other femora almost unmarked; tibiae tawny with brown markings (holotype) to almost entirely brown (female); male with fore tarsus reddish brown, most of segment 1 tawny, other tarsi tawny, becoming brownish distally; female with fore and mid tarsus predominantly dark brown. Wing with costal band paler than in *A. stiva*, yellowish brown, bounded posteriorly by vein 3 for most of length, extending narrowly to vein 4 at apex, extending into basal part of first basal cell, and extending as a stripe around anterior crossvein for full length of latter; rest of wing membrane faintly almost uniformly tinged with yellowish brown, but the colour appearing somewhat more intense on microtrichose areas. Haltere with brown capitellum. Abdomen with median pruinescent stripe almost obsolete; marginal pruinescent stripe more distinct; apex of tergite 5 not noticeably paler.

Head. Eye-stalk shorter and much stouter than in *A. stiva*, in larger male barely as long as thick, in female only just defined; eye larger than in *A. stiva*.

Thorax robust in larger specimens; dorsocentral bristle not distinguishable in smaller specimens. Fore femur with 3–6 posteroventral and 2–4 anteroventral spines; hind tibia of male markedly thicker than mid tibia and slightly clavate distally; hind tibia of female only very slightly thicker than mid tibia; hind tarsus with segment 1 somewhat thickened basally in male only. Wing a little less elongate than in *A. stiva*; membrane somewhat more extensively microtrichose than in that species, anterior crossvein enclosed in microtrichia; bare area in first posterior cell smaller but approaching closer to vein 3; bare areas in basal parts of discal and third posterior cells smaller, especially the former.

Abdomen broad; tergite 1 forming a short but distinct petiole; hairing of tergite 5 extending uniformly almost to posterior margin, with short-haired zones as in *A. stiva*; tergite 5 of male about 1·4 × as long as tergite 4. Male postabdomen: outer surstylus with distal section smaller than in *A. stiva*, with rounded apex; glans of aedeagus subcylindrical; terminal filaments stout for most of length, much tapered on apical quarter, each almost as long as glans.

Dimensions. Total length: male, 8·8–10·9 mm; female, 9·0 mm. Width of head: male, 3·5–6·1 mm; female, 3·6 mm. Length of thorax: male, 3·0–4·1 mm; female, 3·4 mm. Length of wing: male, 8·3–10·8 mm; female, 8·7 mm. Length of glans of aedeagus: 0·94 mm.

Distribution

Papua, lowlands of upper Fly River. Map reference 6*D* (Fig. 1).

Notes

A. flyensis most resembles *A. gracilis* among species of the *dacoides* group in having a dark brown costal band largely restricted to the area in front of vein 3, but differs in having the anterior crossvein enclosed in a well developed brown mark and in the structure of the male hind tibia. The glans of the aedeagus is longer than in any measured specimen of *A. gracilis*, which appears to have a much wider distribution than *A. flyensis*.

Achias robustus (Bigot)
(Fig. 130)

Zygothrica robusta Bigot, 1880: 93.
Achias robustus (Bigot) (combination inferred).—Osten Sacken, 1882: 17.

Material Examined

Holotype. ♂, West New Guinea: 'Nouv. Guinée', no date, anon. (OX, ex Bigot collection).

Other material. **West New Guinea:** 1♂, Kebar Valley, W. of Manokwari, 550 m, S. Quate (BPB).

Description

This resembles *A. pexatus* and *A. stiva*. The following descriptive notes are based on the type and one additional male.

Coloration. Head with markings resembling those of *A. stiva*; dark brown stripe on cheek and ventral surface of eye-stalk well developed, broadest on cheek; face with 2 large, sharply defined brown blotches on lower part, broadly (in type) or narrowly touching on median line, otherwise unspotted. Thorax dark brown, with reddish brown markings on mesoscutum indistinct but corresponding to the 4 longitudinal stripes in many species of other sections of the genus; scutellum tawny with dense dark brown mottling on dorsal surface (in Kebar Valley specimen, coloration not noted in type). Femora fulvous, fore and mid ones with dark brown distoventral area; at least the fore femur marked with brown basally; tibiae dark brown, variably suffused with reddish brown; tarsi black to blackish brown, the mid and hind ones reddish brown basally. Wing with costal band yellow-brown and not very sharply defined, limited posteriorly by vein 3, but in first posterior cell extending narrowly over vein 3 basally, broadly and very diffusely over vein 3 distally, reaching vein 4 apically; remainder of wing membrane faintly and almost uniformly brownish yellow. Abdomen reddish brown; tergite 3 narrowly, tergites 4 and 5 more broadly margined with yellowish pruinescence.

Head. Eye-stalks stout, as long as thick (in anterior aspect) or longer.

Thorax with intra-alar bristle rather weak, dorsocentral absent. Hind tibia dilated distally, with prominent terminal dorsal gibbosity which has a very slight apical excavation on posterior surface; fore tarsus slender, but less so than in *A. stiva*, with segment 2 about 2·2 × as long as wide, without modified lateral or terminal bristles; hind tarsus with segment 1 depressed, much dilated basally, especially on posterior side. Wing membrane with rather large bare area in base of first posterior cell, extending to anterior crossvein; first basal cell almost bare except at base and narrowly along vein 3; discal cell with rather small bare area near base.

Abdomen with segment 1 forming a well-defined petiole; tergite 2 markedly expanding posteriorly but abdomen nowhere very broad. Outer surstylus with short, obtuse terminal section which is prominently angular just beyond apex of inner surstylus.

Dimensions (Kebar Valley specimen). Total length 10·9 mm; width of head 5·4 mm; length of thorax 3·5 mm; length of wing 10·0 mm.

Distribution

West New Guinea, perhaps restricted to Vogelkop Peninsula, but type locality not known. Map reference 2*A* (Fig. 1).

Notes

A. robustus appears to be a distinctive species of the *dacoides* group, combining characters of *A. pexatus* and *A. stiva*, but differing in having the costal band yellow-brown and not very well defined, and in the distinctive form of the male hind tibia and basitarsus.

Achias sp. 4

Material Examined

NE. New Guinea: 1♀, Mt Missim (Misson), nr Wau, Mar. 1978, W.C. Gagne (FRIL).

Description (female)

The single available specimen appears to represent a very distinct species somewhat allied to the *dacoides* group but differing sharply in the shape of the head. Because the specimen is immature, the head is slightly collapsed and the wing pattern is quite undeveloped. I therefore refrain from naming the species at present.

Coloration. Head pale fulvous; postfrons with broad light brown anterior zone, brown across whole width of vertex, brown coloration extending to middle at sides; face with pair of well separated brown spots connecting lower part of each antennal groove to epistomal margin, otherwise unmarked; a broad brown cheek stripe from eye margin to lower margin of cheek. Antenna tawny with segment 3 beyond base greyish brown. Prelabrum pale fulvous, with brown ventral zone; palpus tawny. Thorax with mostly reddish brown ground colour; mesoscutum with broad yellowish grey pruinescent median stripe and transverse yellowish grey stripe a short distance from scutellar suture, almost reaching to postalar bristle on each side, also with greyish pruinescent marks behind humeral callus and around transverse suture; scutellum deep reddish brown, unmarked; pleura with vertical grey-pubescent stripe across mesopleuron and sternopleuron from notopleural suture to mid-coxal cavity, and a grey pubescent zone between prothoracic spiracle and fore-coxal cavity, the area between these 2 pruinescent zones somewhat shining and almost devoid of pruinescence; a more diffuse grey-pruinescent stripe from squama to metasternum. Legs with coxae and trochanters brown; fore femur tawny, marked with brown basally and

apically; other femora pale fulvous with brownish distal marks; tibiae tawny brown; fore tarsus with segments 1 and 2 dark brown, other segments black; other tarsi tawny brown, becoming darker distally, with segments 5 black. Squama creamy white. Haltere fulvous with brown suffusion on capitellum. Abdomen shining brown; tergites 2–4 each with grey-pruinescent stripe along anterior margin, that on tergite 4 extended as a median stripe which fades posteriorly; tergites 3 and 5 narrowly grey-pruinescent on lateral margin, tergite 4 broadly so.

Head shaped somewhat as in *A. mitis* (Fig. 120) but with postfrons and facial carina narrower, eye larger and deeper, there being no indication of eye-stalk; inner vertical bristle represented by a minute hair; outer vertical bristle short but rather strong. Antenna with segment 2 more slender than in *A. stiva* but less attenuated than in *A. mitis*; segment 3 elongate; arista with shorter hairs than in *A. stiva*, more as in *A. mitis*; scutellum slightly more than twice as wide as long, with bristles as in *A. stiva* but lateral bristles weaker and paler; notopleural bristles subequal, slender but not very short; supra-alar and postalar bristles fairly strong; dorsocentral and intra-alar bristles distinguishable as small yellowish hairs. Fore femur with 4 or 5 very strong posteroventral spines and 3 or 4 somewhat smaller anteroventral spines; other femora with ventral armature largely reduced to fine hairs; tarsi less slender than in *A. stiva* and other species of *dacoides* group; fore tarsus with segments 1 and 3 somewhat compressed, other segments strongly depressed. Wing venation resembling that of *A. stiva* (Fig. 107); cell-4 index = 0·63; membrane entirely microtrichose in front of vein 3, but costal microtrichose zone limited posteriorly by this vein except on apical quarter of wing; first basal cell bare except for very few microtrichia; first posterior cell bare on about basal third except for a very few microtrichia along vein 3 and anterior part of anterior crossvein, this crossvein thus not standing in a microtrichose zone; fourth posterior (postanal) cell with only small posterodistal zone of microtrichia; microtrichiation otherwise as given for *A. stiva*; squama more reduced than in *A. stiva* and *A. robusta*, tapering to a point posteriorly.

Abdomen strongly clavate, basally petiolate; tergite 1 almost parallel-sided, about as long as broad; tergite 2 narrow anteriorly, expanded posteriorly; tergite 5 with pair of well defined short-haired zones anteriorly, these zones less distinct on tergite 4.

Dimensions. Total length 6·7 mm; width of head 2·1 mm; length of thorax 2·6 mm; length of wing 7·6 mm.

Distribution

North-east New Guinea, mountains of southern Morobe Province. Map reference 9*D* (Fig. 1).

Habitat

Understorey, montane forest.

Notes

As the wing pattern is unknown, I have been forced to infer its likely conformation from that of the apparently most closely related species in order to place the species in the key. In many characters, this species resembles species of the *dacoides* group, particularly in wing venation and thoracic chaetotaxy. It differs from these species in its smaller size, sharply defined pleural striping, and much narrower head with the eye not at all prominent. It is possible that the male head will be found to be similar to that of the female, as in forms with comparable head-shape (e.g. *A. trivittatus*, *A. hapsis*), there appears to be little or no sexual dimorphism in this feature.

Achias nigrifacies (Malloch)

Achiosoma nigrifacies Malloch, 1939: 131–2, pl. 5, fig. 26 (wing).
Achias nigrifacies (Malloch).–Evenhuis, 1989: 485.

Material Examined

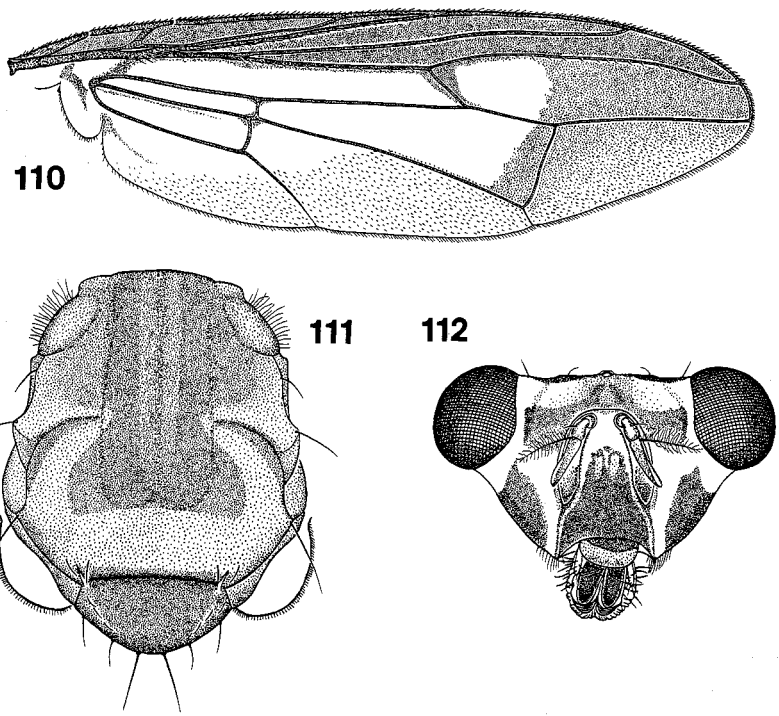
Holotype. ♀, Papua: Mt Lamington district, vicinity of Popondetta, Oro Province, Jan.–Feb. 1929, C. T. McNamara (AM). Right wing mounted on slide.

Other material. **Papua:** Igora, nr Popondetta (AM); Sivipi, nr Sasembata, vicinity of Mt Lamington (AM); Ajeka to Kumusi R. (AM); Kovelo, nr Kokoda (AM). **NE. New Guinea:** Garaina, Bulolo, and Wau, Morobe Province (BPB); 50 km N. of Mt Hagen (AM); Baiyer R. (BPB).

Description

Very similar to *A. minax*, the chief differences being as follows.

Face and parafacial more extensively infuscated than in *A. minax*, with very little fulvous colouring; brown mark on cheek large and reaching eye margin anteriorly. Mesoscutum with well-marked pruinescent prescutellar zone pale yellow-buff, continued forwards as a very well marked median stripe almost to anterior extremity, and also extending as a lateral stripe to transverse suture on each side. Hyaline, bare area near base of first posterior cell extending to vein 3 on broad front, with at most a single series of microtrichia on membrane next to vein.



Figs 110–112. *Achias minax* (♂): *110*, wing; *111*, thorax; *112*, head.

Distribution

Papua New Guinea, widely distributed on the northern side of the Main Range. Map reference *7C*, *9D*, *10E* (Fig. 1).

Notes

A. nigrifacies agrees with *A. minax* among species of the *nigrifacies* group in the relatively large hyaline bare zone near the base of the first posterior cell of the wing and the pale pruinescent zone in front of the scutellar suture. The differences from *A. minax* are given below.

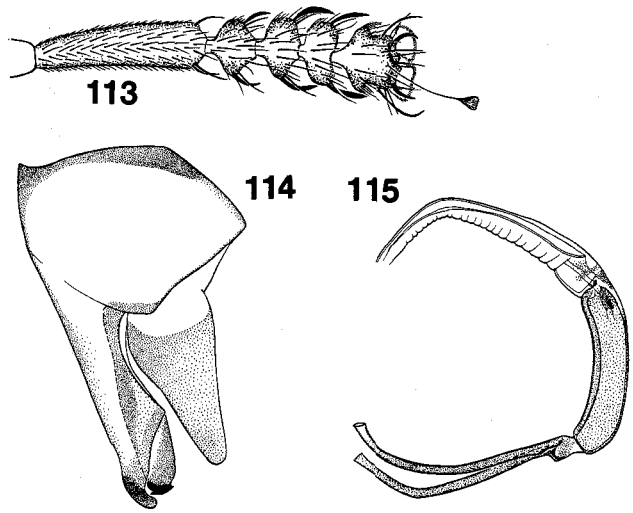
Achias minax, sp. nov.
(Figs 110–115)

Material Examined

Holotype. ♂, N. Queensland: Claudie R., 5 miles (*c.* 8 km) W. of Mt Lamond, Iron Range District, 30.xii.1971, G.A.H., D.K.M. (AM).

Paratypes. N. Queensland: 22♂, 2♀, same locality as holotype, Dec. 1971–Jan. 1972, G.A.H., D.K.M. (AM, BM, BPB, AMST); 5♂, 3♀, vicinity of Mt Lamond, June 1966, Dec. 1971–Jan. 1972, G.A.H., D.K.M. (AM); 2♂, 2♀, Iron Range (probably vicinity of Mt Lamond), Apr. 1964, I.F.C., M.S.U. (ANIC); 2♂, 2♀, Iron Range, 2 miles (*c.* 3 km) S. of Mt Lamond, Dec. 1971, G.A.H., D.K.M. (AM); 1♀, Rocky R., nr Coen, Dec. 1964, G.B. Monteith (UQ).

Other material. **Northern Territory:** 1♀, Paru Ck, Melville I., Nov. 1978, G. Fitt (ANIC). **South-western Papua:** 3♂, 1♀, Rouku, Mar.–May 1962, W.W.B. (ANIC, AM); 1♂, 1♀, Oriomo Government Stn, Oriomo R., J.L.G. (BPB).



Figs 113–115. *Achias minax* (♂): *113*, right fore tarsus; *114*, epandrium; *115*, distal part of aedeagus.

Description

Coloration. Head fulvous; postfrons with very irregular transverse stripe at vertex which is usually discontinued a short distance from each eye; a large subquadrate dark brown mark between each antenna and eye, not reaching eye margin; median part of postfrons between ocelli and ptilinal suture tinged with red or orange and variably blotched with dark brown; cheek region with large irregular separate blotch not reaching to eye; face dark brown on somewhat more than lower half, with frequently a few brown blotches above the continuous brown zone; parafacial mainly fulvous, unspotted. Antenna fulvous. Prelabrum tawny with variable brown mottling; palpus light brown with greyish pruinescence. Thorax with predominantly reddish brown ground colour; mesoscutum non-shining because

of its densely rugose surface, with pair of narrow, indistinct dark dorsocentral lines anteriorly, dark median line, and overlying median band of thin, inconspicuous pruinescence discontinued behind middle of mesoscutum; a patch of silvery pubescence in anterior slope of groove of transverse suture on each side; a transverse zone of conspicuous golden pubescence-pruinescence across whole width of mesoscutum posteriorly, narrowly separated from scutellar suture, on each side extending forwards in a curve almost to transverse suture; scutellum rather dark reddish brown, not shining; pleura with greyish pruinescence and pubescence of varying density, most conspicuous on propleuron and on a vertical band from mid coxa to notopleuron. Coxae dark brown with some tawny markings; trochanters brown; fore femur reddish brown with large dark brown ventral patch centred beyond middle; other femora fulvous, with large distal brown patch not reaching to median dorsal line, and extreme apex tawny; fore tibia reddish brown ventrally, dark brown dorsally; other tibiae brownish tawny; fore tarsus blackish, in male with median dorsal fulvous stripe for its full length, sometimes more extensively fulvous on segment 1, in female paler dorsal stripe indistinct; other tarsi fulvous. Wing with dark brown costal band extending quite narrowly behind vein 3 on much of length, covering both costal cells, expanded distally to cover full width of wing including distal extremity of discal cell, but becoming paler towards posterior margin; a posteriorly narrowed brown mark covering anterior crossvein; much of central part of wing hyaline, almost colourless; much of wing towards posterior margin somewhat smoky; hyaline area in first posterior cell relatively large, covering several × the area of brown mark around anterior crossvein; squama pale cream. Haltere yellowish with dark brown capitellum. Abdominal tergites brown with mostly pale hairs; an ill defined pale grey mark situated approximately at junction of fused tergites 1 and 2; tergite 4 with pair of large conspicuous yellow-pruinescent zones, each occupying almost entire lateral part of tergite and separated from the other medially by often not more than half its width; tergite 5 with lateral margins rather broadly yellow-pruinescent; hairs on non-pruinescent parts of tergites 4 and 5 mainly brown.

Head. Eye not stalked, rather large and rounded, more prominent in male than in female; outer vertical bristle distinct but short; inner vertical weak or poorly differentiated. Palpus moderately narrow.

Thorax of moderate build; mesoscutum slightly longer than wide, with numerous fine inconspicuous hairs on most of surface; scutellum rounded, convex, nearly half as long as wide, with a few hairs above lateral bristles and minute amount of pubescence near anterior margin of dorsal surface; following bristles present: anterior notopleural distinct but variable and always smaller than the fairly strong posterior one, postalar, pair of strong apical and usually 2 pairs of small but distinct lateral marginal scutellars all on prominent, tubercle-like sockets; dorsocentral and intra-alar bristles vestigial; humeral, supra-alar, and prescutellar acrostichal bristles absent. Legs of moderate length; hind trochanter with rather short hairs, without special modification in male; fore femur somewhat swollen, with usually 3–5 strong posteroventral spines (often fewer and longer in male than in female), and a similar number of shorter anteroventral spines; other femora with vestigial ventral spines only; hind tibia of male distinctly stouter than mid tibia and stouter than hind tibia of female, very slightly curved but without other modification; fore tarsus of male depressed from distal part of segment 1 to apex; segment 1 with rather short, curved compressed bristle on posterior side near apex, often arising from a prominence; segments 2–4 dilated and much shortened, each with a curved, broadly compressed bristle on each side; segment 5 with prominent tubercle and long often somewhat compressed bristle on each side and long, broadly spatulate terminal dorsal bristle; fore tarsus of female without any of the modified bristles described for male; segments 1 and 2 less depressed than male; segments 2–5 much less shortened and dilated; segment 5 without pair of tubercles; hind tarsus with segment 1 of male somewhat swollen, that of female rather slender, subcylindrical. Wing somewhat elongate, a little narrowed basally, widest slightly beyond middle; distal section of vein 4 very slightly curved, becoming straight apically; anterior crossvein oblique, curved posteriorly, 0·53–0·67 of length of discal crossvein; cell-4 index = 0·66 to 0·70; hyaline areas of central part of wing, including that in first posterior cell and large area in base of third posterior cell, bare; most of remainder of

wing membrane microtrichose, including a broad posterior marginal zone; squama much narrower than in such species as *A. australis* and *A. attrahens* but less reduced than in *A. stiva* and allied species, somewhat narrower than in a semicircle.

Abdomen broadly clavate; tergite 1 forming a well-defined, parallel-sided petiole, nearly as long as wide; tergite 2 posteriorly becoming more than twice as wide as tergite 1; tergite 4 with much reduced median short-haired zone at anterior margin; tergite 5 with pair of moderately large short-haired zones anteriorly, in male about 1·5–1·7 × as long as tergite 4. Male postabdomen: outer surstylus with distal section short, curved, obtuse, only slightly exceeding apex of inner surstylus; stipe of aedeagus without pubescence; preglans short and poorly defined; glans subcylindrical, curved; terminal filaments of almost uniform thickness, slightly longer than glans.

Dimensions. Total length: male, 7·8–9·4 mm; female, 6·2–8·1 mm. Width of head: male, 3·0–4·0 mm; female, 2·6–3·3 mm. Length of thorax: male, 2·9–3·4 mm; female, 2·5–3·3 mm. Length of wing: male, 7·0–8·2 mm; female, 6·7–8·0 mm. Length of glans of aedeagus: 0·84–0·95 mm.

Distribution

Queensland, Cape York Peninsula; Northern Territory, Melville Island; Western Province of Papua south of Fly River. Map reference 1*F*, 6*E*, 7*E*, 7*G* (Fig. 1).

Notes

For comparison with related species, see under *A. nigrifacies*.

Specimens from the Western Province of Papua evidently belong to a race distinct from that of the type population. Of the six available specimens all but one are markedly more robust than any of the available specimens from Queensland; they also differ in the darker mesoscutum with a pair of broad black longitudinal stripes anteriorly and the anterior lateral (postsutural) extension of the golden-pruinescent prescutellar zone obsolete or almost so. The specimen from Melville Island is distinctly paler than those from the type population, but immersion in alcohol may have slightly changed the colour.

Two of the paratypes were taken in copula on the base of a tree trunk (8 km W. of Mount Lamond, 9.i.1972).

Achias hapsis, sp. nov.
(Figs 116, 117)

Material Examined

Holotype. ♂, Papua: Brown R., nr Port Moresby, 30.viii.1959, T.C. Maa (BPB).

Paratype. Papua: 1♀, 5 km NW. of Brown R. bridge, Sept. 1984, J.W.I. (AM).

Description

Resembling *A. nigrifacies*, *A. minax* and allies, and agreeing with description of the latter except as indicated below.

Coloration. Head dull tawny; postfrons with broken dark brown blotch on each side level with ocelli, in female with dark brown to blackish zone centrally and anteriorly which extends to eye margin on each side, in male with reddish brown median anterior zone which does not extend distinctly to eye margins; cheek with dark brown blotch irregularly incised, in male smaller than in *A. minax*; postgenal region greyish brown (quite pale in *A. minax* and *A. nigrifacies*); face with irregular brown streaks and spots distributed over most of surface but without more continuous brown zones. Antenna fulvous; segment 3 beyond base

pale greyish brown. Prelabrum fulvous; palpus brown to tawny. Ground colour of thorax largely dark brown with extensive median area of mesoscutum black; mesoscutum with pruinescence dark grey, becoming paler towards lateral margins, prescutellar pruinescent zone obsolete but patch of paler grey pruinescence present on each side between postalar bristle and lateral corner of scutellum. Fore coxa tawny with variable dark markings; other coxae predominantly dark brown to blackish; femora reddish brown with some irregular darker patches; tibiae reddish brown to dark brown; fore tarsus coloured as in *A. minax*; other tarsi tawny. Wing with brown mark enclosing anterior crossvein much broader than in *A. minax*; hyaline zone in first posterior cell reduced to a relatively narrow bar, as wide as the narrow posterior end of mark on anterior crossvein, separated from vein 3 only by a linear brown strip; anterior part of anal cell yellow for its full length. Abdominal tergites reddish brown to dark brown; a pale grey-pruinescent mark at junction of tergites 1 and 2; tergite 4 with pair of very large golden-pruinescent patches covering most of lateral parts of tergites and approaching or reaching median line anteriorly, but only reaching posterior margin at lateral corner.

Head. Eyes larger, less prominent and less widely separated than in corresponding sex of *A. minax.*

Thorax. Fore tarsus of male resembling that of male of *A. minax* but with segments 3–5 broader (thus very unlike that of *A. fuligo*), rather similarly armed with compressed bristles, but, except on segment 5, these bristles much longer and those on posterior side of segments 1–4 strongly falcate, those on posterior side of segments 1–3 slender, that on segment 4 almost as broad as those on anterior sides of segments 2–4; dorsal subapical bristle of segment 5 long, spatulate; hind tarsus with segment 1 somewhat more slender than in *A. minax.* Wing with anterior crossvein about 0·80–0·84 as long as discal crossvein; cell-4 index = 0·72–0·76; third posterior cell with only small bare spot near base.

Abdomen. Tergite 4 with short-haired zone somewhat larger than in *A. minax*, V-shaped with vertex touching centre of anterior margin; tergite 5 about 1·8 × as long as tergite 4. Male postabdomen; distal section of outer surstylus very short, scarcely exceeding apex of inner surstylus; aedeagus not examined.

Dimensions. Total length 10·9 mm; width of head 3·9 mm; length of thorax 5·0 mm; length of wing 9·5 mm.

Distribution

Papua, lowlands of Central Province. Map reference 9*E* (Fig. 1).

Notes

A. hapsis is most closely related to *A. fuligo* and *A. strictus*, each of which is known from a single, geographically remote locality. It differs from these in the shape of the yellow markings on abdominal tergite 4, in the larger clear zone in the first posterior cell, and the broader fore tarsus of the male with a tubercle on each side of segment 5.

Achias strictus, sp. nov.
(Fig. 119)

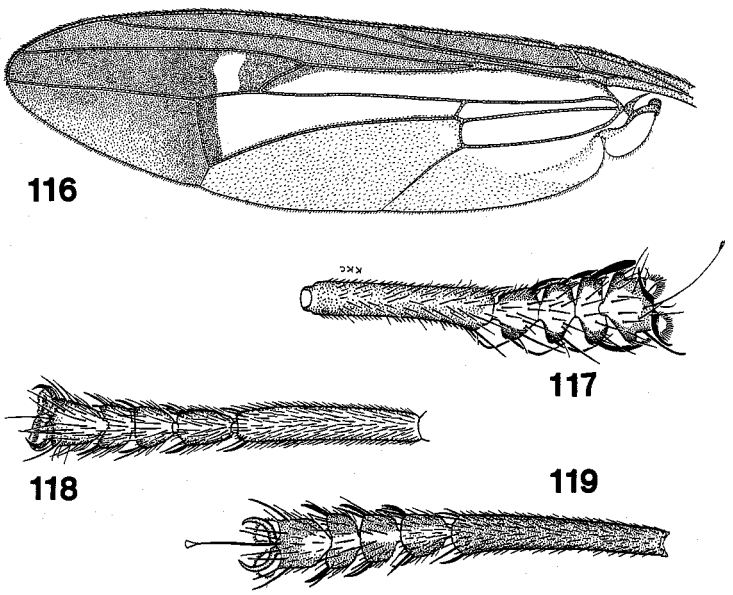
Material Examined

Holotype. ♂ (unique), NE. New Guinea: 20 km E. of Vanimo, West Sepik Province, 29.viii.1983, H.R. (AM).

Description (male)

Resembling *A. minax*, *A. hapsis*, and *A. fuligo*, especially the two latter, and agreeing with description of *A. minax*, except as indicated below.

Coloration generally darker than in *A. minax*, more as in *A. hapsis* and *A. fuligo*. Head with brownish ochraceous ground colour; postfrons dark brown; cheek with irregular dark brown streaks and reticulation; postgenal and occipital regions blackish with grey pruinescence; face with irregular dark brown reticulum, less developed on upper part, but without solid dark zone. Prelabrum ochraceous, brownish laterally. Thorax with predominantly blackish ground colour, becoming reddish brown on limited areas of sides of mesoscutum and fore parts of sternopleuron and mesopleuron; mesoscutum with indistinct grey-pruinescent between postalar bristle and scutellar bridge, but other pale pruinescent markings absent; scutellum dark reddish brown. Coxae tawny with darker markings; femora as in *A. minax*; tibiae almost entirely dark brown; fore tarsus blackish with median yellow mark on segments 2–5 and apex of segment 1. Wing markings and microtrichiation very similar to those of *A. hapsis* (Fig. 116) and *A. fuligo*; hyaline-bare zone in first posterior cell smaller than in *A. hapsis*, not as reduced as in *A. fuligo*; brown zone in discal cell continued basally as a distinct brown microtrichose stripe along vein 5 (this stripe much narrower and less pigmented in allied species). Abdominal tergites mostly blackish with some reddish brown coloration on tergite 1 and anterior part of tergite 2, that on the latter covered with greyish pruinescence; tergite 4 with large yellow pruinescent zone on each side extending to posterior margin except on narrow medial extent but these zones less approximated on anterior part of tergite; tergite 5 more narrowly yellow-pruinescent on lateral margins than in *A. minax* and *A. hapsis*; all hairs (except minute ones on short-haired zones) of tergite 4 and 5 glistening yellow and coarser than in *A. minax*.



Figs 116–119. *Achias hapsis* (♂): *116*, wing; *117*, right fore tarsus. *Achias fuligo* (♂): *118*, left fore tarsus. *Achias strictus* (♂): *119*, left fore tarsus.

Head and associated structures as given for *A. hapsis*.

Thorax resembling that of *A. minax* and *A. hapsis* in form; scutellum not pubescent anteriorly on dorsal surface. Hind tibia slightly stouter than mid tibia; fore tarsus somewhat as in male of *A. minax* and *A. hapsis*; segment 1 rather slender and subcylindrical, not apically depressed; segment 2 a little longer than wide; segment 3 distinctly wider than long but less dilated than in *A. hapsis*; segment 4 *c.* $\frac{2}{3}$ as long as wide; segment 5 without

tubercle on each side, with the usual long spatulate bristle; major bristle on posterior side of segments 1 to 4 shorter, broader and straighter than in *A. hapsis*, thus more like the corresponding bristle on anterior side of segment. Anterior crossvein 0·82 of length of discal crossvein, meeting vein 4 at about 0·74 of length of discal cell from base of that cell.

Abdomen. Tergite 4 with short-haired zone better developed than in *A. minax* and *A. hapsis*; tergite 5 about 1·9 × as long as tergite 4. Surstyli rather similar to those of related species; aedeagus not examined.

Dimensions. Total length 9·3 mm; width of head 3·2 mm; length of thorax 3·5 mm; length of wing 8·7 mm.

Distribution

North-east New Guinea, coast of West Sepik Province. Map reference 6*B* (Fig. 1).

Notes

A. strictus differs from closely related species in the distinct extension of the brown zone in the discal cell along vein 5. It further differs from *A. hapsis* in the differently shaped yellow-pruinescent zones on tergite 4 and absence of anterior and posterior tubercles on segment 5 of the male fore tarsus and quite different bristling of its other segments. It differs from *A. fuligo* in the broadened male fore tarsus with long, spatulate subterminal bristle.

Achias fuligo, sp. nov.
(Fig. 118)

Material Examined

Holotype. ♂, West New Guinea: Nabire, Geelvink Bay district, 5–50 m, 25.viii-2.ix.1962, J.S. (BPB).

Paratype. 1♂, Nabire, 0–30 m, July 1962, J.L.G. (AM). This specimen is immature.

Description (male)

Very closely related to *A. hapsis* and *A. strictus* and differing from *A. minax* for the most part in the characters given for *A. hapsis*. The following characters are noteworthy.

Coloration. Head coloured as in *A. hapsis* except that postfrons is more heavily blotched with brown. Thorax with even darker ground colour than in *A. hapsis*, with most of mesoscutum black and scutellum brown-black. Fore coxa dark brown, becoming tawny apically; femora coloured as in *A. hapsis* or somewhat darker; all tibiae tawny brown with some darker markings; mid and hind tarsi fulvous. Wing with hyaline mark near base of first posterior cell narrowed anteriorly, not nearly reaching vein 3; a narrow brown mark (absent in *A. hapsis* and *A. minax*) surrounding anal crossvein. Abdomen coloured as in *A. hapsis* except that tergite 1 is darker and paired pruinescent zones on tergite 4 extend broadly to posterior margin.

Head structurally as in *A. hapsis*.

Thorax. Fore tarsus without modified or enlarged compressed bristles, with segment 1 almost cylindrical, not at all depressed distally; segment 2 about 1·9 × as long as wide, only slightly depressed; 3 distal segments compressed, but not markedly dilated as in male of related species, resembling the corresponding segments of hind tarsus; segment 5 with apical dorsal bristle not spatulate. Wing with anterior crossvein 0·86 to 0·91 as long as penultimate section of vein 4, almost or quite as long as discal crossvein; cell-4

index = 0·72–0·74; discal cell with very narrow but distinct microtrichose strip along vein 5 for full length of cell (with few or no microtrichia in basal half in related species, except *A. strictus*); third posterior cell entirely microtrichose; apex of anal cell broadly microtrichose on its full width.

Abdomen structurally similar to that of *A. hapsis*. Male postabdomen not examined.

Dimensions. Total length 9·0–9·7 mm; width of head 3·3 mm; length of thorax 3·6 mm; length of wing 8·1–8·9 mm.

Distribution

West New Guinea, Geelvink Bay. Map reference 3*B* (Fig. 1).

Notes

Unlike the related species, *A. minax*, *A. nigrifacies*, *A. strictus* and *A. hapsis*, there appears to be no sexual dimorphism of the fore tarsus. The male fore tarsus of *A. fuligo* is very similar in detail to that of females of *A. minax* and *A. hapsis*.

Achias mitis, sp. nov.
(Figs 120, 121)

Material Examined

Holotype. ♀, S. West Sepik Province: Feramin, nr Telefomin, 120–150 m, 7–14.vi.1959, W.W.B. (BPB).

Paratype. 1♀, Feramin, May 1959, W.W.B. (BPB).

Description

Coloration. Head fulvous, postfrons with an irregular transverse dark brown band enclosing ocelli and irregular brown blotches anteriorly extending on to upper end of parafacial; cheek and postgena brown, with pale grey densely pruinescent zone from posterior margin of eye to lowest extremity; face brown on about lower third, elsewhere fulvous with darker brown blotches; parafacial fulvous with brown suffusion or blotches, narrowly whitish pruinescent along eye margin. Antenna fulvous. Prelabrum tawny with brown suffusion; palpus tawny. Thorax with predominantly dark brown ground colour, somewhat shining dorsally; mesoscutum with distinct pale greyish pruinescent markings as follows: a pair of submedian stripes converging and fusing anteriorly but discontinued on posterior third, an irregular patch surrounding transverse suture of each side and continued forwards to cover humeral callus, a broad separate transverse band posteriorly almost in contact with scutellar suture for whole width of mesoscutum; scutellum with broad pale greyish pubescent-pruinescent patch covering a little more than anterior half of dorsal surface; remainder of scutellum subshining; pleura not distinctly shining; propleuron, sternopleuron, hypopleuron, and postnotum rather densely pale grey-pubescent; mesopleuron and pteropleuron almost bare. Coxae brown; femora reddish brown, generally paler distally; tibiae and tarsi tawny; fore tarsus brownish on 3 distal segments. Wing with costal band reduced to a brownish streak in marginal and submarginal cells and distal part of subcostal cell, discontinued at a very short distance beyond end of vein 1, most intense along vein 2, extending over vein 3 in vicinity of anterior crossvein and narrowly to posterior end of crossvein; a quite separate dark brown patch covering slightly less than apical third of wing, extending along discal crossvein, but elsewhere fading towards posterior margin; squama whitish. Haltere fulvous. Abdomen reddish brown to tawny, shining; tergites 3 and 4 with lateral margins narrowly grey-pruinescent.

Head. Postfrons descending anteriorly, not making an angle with face in profile; eyes large, rounded, less protruding than in *A. minax* and *A. hapsis*, separated on anterior part of postfrons by about half width of head; cheek not, as in *A. trivittatus* becoming vertical towards eye margin, but less sloped outward than in *A. minax* and *A. hapsis*; facial carina somewhat convex, narrower between antennal bases than width of antennal segment 1; parafacial at narrowest part no wider than antennal groove; inner and outer vertical bristles weak or scarcely differentiated. Palpus rather short, of moderate width. Antennal segment 2 elongate, attenuated basally; segment 3 moderately elongate, about 1·8 × as long as segment 2.

Thorax of moderate build; mesoscutum slightly longer than wide, with numerous fine hairs on most of surface, but with bare area on each side between upper part of transverse suture and scutellar bridge; scutellum very rounded and convex, distinctly more than half as long as wide with few lateral hairs and pale pubescence as indicated above; the following bristles present: strong posterior notopleural, strong postalar, strong rather widely separated apical scutellars not mounted on tubercles; dorsocentral and intra-alar bristles weak and pale; lateral scutellar bristles scarcely distinguished from adjacent hairs; humeral, anterior notopleural, intra-alar, and prescutellar acrostichal bristles absent. Legs of moderate length; hind trochanter with rather short fine hairs; femora without ventral spines; fore femur slightly swollen, with fine anteroventral and posteroventral hairs; tibiae without special modification; fore tarsus depressed for its whole length; hind tarsus somewhat depressed, with segment 1 distinctly shorter than combined length of other segments. Wing somewhat elongate, less narrowed basally than in *A. minax*; subcosta obsolete apically from about point of maximum curvature; distal section of vein 3 twice undulate; vein 4 arched basally, slightly curved in reverse direction beyond base; anterior crossvein slightly oblique, about 0·34 of length of discal crossvein; cell-4 index = 0·69; anal crossvein almost straight, transverse; second costal cell and most of first costal cell bare; other unpigmented areas of wing membrane bare except for second posterior cell, which is entirely microtrichose, and the microtrichose posterior marginal areas; squama rather narrow, almost as wide as in *A. minax*.

Abdomen ovoid, not at all petiolate and no more narrowed basally than in *A. ios*, *A. venustulus*, etc.; tergites without any well-defined zones of shorter hairing.

Dimensions. Total length 6·6–6·7 mm; width of head 2·4–2·6 mm; length of thorax 2·5–2·7 mm; length of wing 7·1–7·3 mm.

Distribution

North-east New Guinea, highlands of West Sepik Province. Map reference 6*C* (Fig. 1).

Notes

A. mitis is closely related to *A. trivittatus* and *A. fritillus* but differs in the complete separation of the apical dark zone of the wing from the costal band, in the much more convex and rounded scutellum, in the distinctive pruinescent pattern of the mesonotum, in the absence of the anterior notopleural bristle, in the differently shaped head, and in having the fore tarsus shorter than the fore tibia (at least in female). For comparison with *A. lachlani*, see under that species.

Achias lachlani, sp. nov.
(Fig. 122)

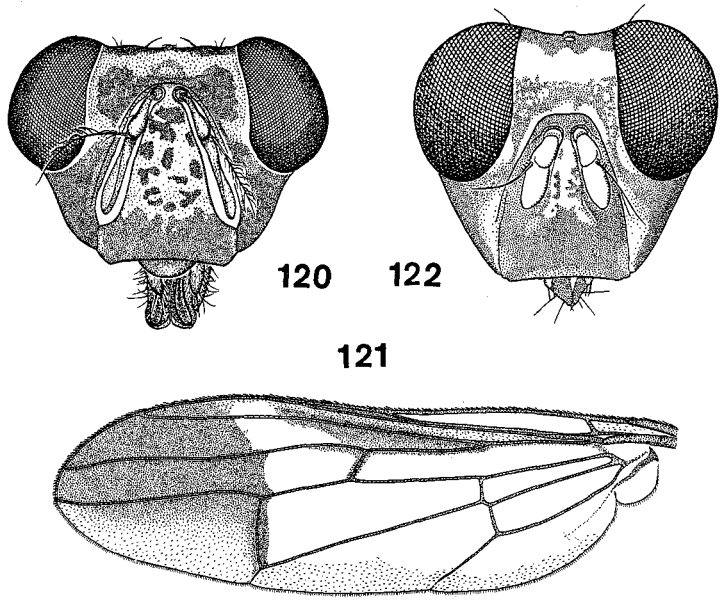
Material Examined

Holotype. ♂, Western Province: SE. slopes of Mt Akrik (Ian), 15 km NW. of Tabubil, 1625 m, 24.x.1992, R.B.L. (AM).

Description (male)

Resembling other species of the *mitis* group and agreeing with description given for *A. mitis* except as indicated below.

Coloration. Postfrons with dark zones more diffuse than in *A. mitis*; cheek largely blackish, non-pruinescent, fulvous towards parafacial suture; postgena extensively pale fulvous with dense whitish pruinescence; face brown-black, dull fulvous with few dark blotches on upper third of height, with a little fulvous colouring on epistomal margin; prelabrum and palpus apparently brownish. Mesoscutum with following pale yellow-grey pruinescent zones: large anterior zone extending to notopleura laterally but not to anterior margin or to humeral calli, extensive but smaller posterior zone on scutellar suture, these zones with no tendency to divide into longitudinal stripes; scutellum with pale pubescent-pruinescent dorsal zone slightly smaller than in *A. mitis*. Femora fulvous on at least basal halves, brown-black distally; tibiae dark brown, mid and hind ones with some tawny coloration near mid-length; tarsi dark brown to blackish. Wing with costal band scarcely defined; apex of second costal cell yellowish; distal part of subcostal cell brown; marginal cell yellowish on little more than basal half, brownish distally; stigmatal brown band broad and well defined on anterior crossvein and similarly developed in submarginal cell, not merged with a more extensive brown zone in the latter cell as in *A. mitis*; clear zone in first posterior cell extending a little beyond posterior crossvein near vein 4. Haltere with brown capitellum. Abdominal tergites entirely dark brown to black, without pale pruinescent zones.



Figs 120–122. *Achias mitis* (♀): *120*, head; *121*, wing. *Achias lachlani* (♂): *122*, head.

Head. Eyes larger and postfrons even narrower than in *A. mitis*, width of latter at narrowest level 0·37 of that of head; cheek slightly convex; facial carina small, both narrower and shorter than in related species, but with normal precipitous sides; parafacial narrower than antennal groove; outer vertical bristle well developed; inner vertical undifferentiated. Length of antenna 0·55 of that of face on median line; segment 2 short, not attenuated basally; segment 3 also short, 1·7 × as long as segment 2; arista with reduced hairing, 6–8 dorsal and no ventral rays, all within basal half.

Thorax. Mesoscutum about as long as wide, without bare area mentioned for *A. mitis*; scutellum not as broad as in *A. mitis*, without hairs; dorsocentral and intra-alar bristles

well developed but smaller than postalar; 2 pairs of well developed lateral scutellar bristles present, shorter than apical scutellar, all located on posterior third of scutellum. Fore femur with *c.* 5 somewhat spinescent posteroventral bristles and much smaller anteroventral bristles; other femora without bristles; fore tarsus very slender, depressed only on distal segments, *c.* 1·3 × as long as tibia. Wing: subcosta sclerotised to within short distance of costa; distal section of vein 3 with slight almost continuous curvature; anterior crossvein very oblique, about 0·80 of length of discal crossvein; cell-4 index = 0·68; anal crossvein slightly curved; marginal cell with extensive bare zone interrupting stigmatal band.

Abdomen slender, slightly clavate but not petiolate; tergite 5 *c.* twice as long as tergite 4.

Dimensions. Total length 6·9 mm; width of head 2·2 mm; length of thorax 2·6 mm; length of wing 6·7 mm.

Distribution

Papua New Guinea, highlands in far north-west of Western Province. Map reference 6*C* (Fig. 1).

Notes

A. lachlani belongs in the *mitis* group as indicated by its slender form, small squama, reduced chaetotaxy, broad apical brown wing zone, and largely clear, bare costal cells. The wing pattern most resembles that of *A. mitis*, but *A. lachlani* lacks a clear, unpigmented zone in the marginal cell beyond the level of the stigmatal band, and has the outer vertical bristle much larger than the inner vertical, a sharply defined pale zone on the postgena, sharply bicoloured femora, and much darker and more elongate tarsi. It differs from *A. trivittatus* and *A. fritillus* in the clear, bare zone in the submarginal cell and absence of longitudinal pruinescent striping on the mesoscutum. It further differs from all these species of the *mitis* group and most or all other *Achias* species in the very short antenna, absence of ventral rays on the arista, reduced size of the facial carina, narrower postfrons, and unusual arrangement of the scutellar bristles.

Achias trivittatus, sp. nov.
(Figs 123, 124)

Material Examined

Holotype. ♀, NE. New Guinea: Edie Ck, nr Wau, 6.iv.1965, J.S. (BPB).

Paratype. 1♂ (damaged), Bulldog Rd, 60 km S. of Wau, 2070 m, May 1969, J.S. (AM).

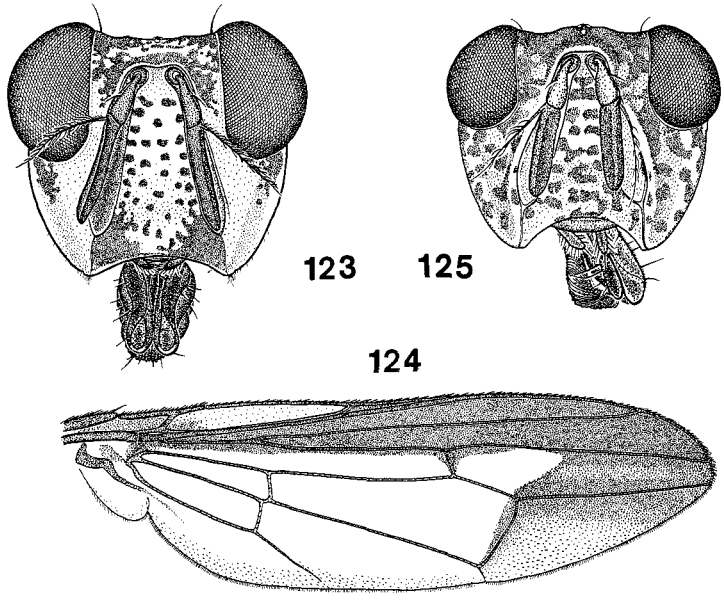
Description

Agreeing with description of *A. mitis* except as indicated below.

Coloration. Postfrons with heavy brown-black blotches which merge to form a large blackish patch on each side between ocelli and eye; cheek with compact group of spots partly coherent at lower margin of eye, otherwise entirely fulvous without pruinescence; face with dark brown patch on side between lower end of antennal groove and epistomal margin, elsewhere with rather numerous, separate, regular dark brown spots; antennal groove greyish brown; parafacial unmarked except for some blotches at upper extremity. Antenna tawny or reddish brown; segment 3 dark brown beyond base. Prelabrum fulvous with some irregular brownish marks; palpus blackish brown. Thorax with tawny brown ground colour, a little darker dorsally, scarcely shining but without noticeable rugose sculpture; grey pruinescence on mesoscutum forming a median and pair of lateral broad, distinct longitudinal stripes,

the latter not covering notopleural area and outer edge of humeral callus, the median one extending on to centre of scutellum but not reaching apex; pleura with grey pruinescence as in *A. mitis* in addition to some on upper part of mesopleuron. Fore femur reddish brown, tawny near base, mainly on ventral surface; other femora reddish brown, narrowly fulvous basally in male, fulvous on at least basal half in female; fore tibia deep reddish brown; other tibiae tawny with some brownish suffusion, darker in male than female; fore tarsus dark brown; other tarsi with segment 1 tawny to reddish brown, other segments darker brown, at least on dorsal surface. Wing markings approximately as described for *A. minax*; second costal cell hyaline except for a brown mark near base posteriorly; hyaline area in first posterior cell prolonged distally beyond level of discal crossvein where it reaches vein 3, broadly separated from vein 3 on its basal half; infuscation in distal end of discal cell much narrower than in *A. minax*, becoming linear along posterior end of discal crossvein; posterior margin of wing, including that part in second posterior cell, not noticeably smoky. Abdomen brown with slight broken bluish lustre; parts of tergites 1, 2 and 5 tawny.

Head of unusual shape for the genus, narrower than in most species, with postfrons posteriorly a little sunken between eyes, its anterior median part not descending but almost horizontal, in profile making a prominent angle with face; cheek not as high as eye, somewhat gibbous posteriorly below eye margin, in anterior aspect its outline becoming vertical just below eye; eyes in anterior aspect about 1·8 × as high as wide, bulging dorsally, with inner margins almost parallel; facial carina more elongate than usual, its sides almost straight for much of length diverging below, between antennal bases narrowed to slightly less than width of antennal segment 1; outer vertical bristle strongly developed; inner vertical absent. Antennal segment 2 moderately elongate, a little attenuated basally; segment 3 very elongate, about 2·0 × as long as segment 2 and 5·2 × as long as wide.



Figs 123–125. *Achias trivittatus* (♀): *123*, head; *124*, wing. *Achias fritillus*: *125*, head (small ♂).

Thorax. Scutellum almost trapezoid in outline, almost straight between apical bristles, somewhat flattened dorsally, more elongate than in any other species of *Achias*, with length 0·68 of width; anterior notopleural bristle long and strong; intra-alar bristle also rather strongly developed; chaetotaxy of mesoscutum otherwise as given for *A. mitis*; apical pair of scutellar bristles strong and rather closely placed; lateral scutellars represented by 2

pairs of fine hairs displaced on to dorsal surface. Legs somewhat elongate; fore femur not swollen, with 4 fairly strong elongate posteroventral spines and 2 to 3 finer anteroventral spines on distal part in male, these spines somewhat weaker in female; other femora without ventral spines; fore tarsus very elongate, 1·3 × as long as tibia, with segment 1 very slender, cylindrical, without noticeable sexual dimorphism; other tarsi also much more elongate than in *A. minax* and *A. mitis*, slightly shorter than their respective tibiae. Wing very elongate, slightly narrowed basally; subcosta traceable to junction with costa though weak distally; undulation of distal section of vein 3 weak but distinguishable; vein 4 scarcely arched basally, with slight forward curvature through most of its length; anterior crossvein short, slightly oblique, about 0·33 of length of discal crossvein; cell-4 index = 0·74; anal crossvein straight, somewhat oblique, making posterior distal angle of anal cell an acute angle; first costal cell microtrichose; second costal cell bare except on basal brown area.

Abdomen as described for *A. mitis*; in male tergite 5 about 1·4 × as long as tergite 4. Male postabdomen: inner surstylus unusually short; outer surstylus with large straight distal lobe, broadly rounded apically and greatly exceeding apex of inner surstylus; aedeagus with long slender stipe, short but distinct preglans, small glans, and long, fine terminal filaments very slightly cylindrically thickened apically, each about 7 × as long as glans.

Dimensions. Total length: male, 8·0 mm; female, 7·2 mm. Width of head: male, –, female, 2·4 mm. Length of thorax: male, 3·1 mm; female, 3·4 mm. Length of wing: male, 8·6 mm; female, 8·5 mm. Length of glans of aedeagus: 0·40 mm.

Distribution

Papua New Guinea, highlands of southern Morobe Province. Map reference 9*D* (Fig. 1).

Notes

A. trivittatus differs from almost all others of the genus in the very long fore tarsus and more elongate scutellum. It is approached in these and other characters by *A. fritillus*, from which it differs in the markings of face and cheeks, the presence of ventral spines on the fore femur, and details of wing pattern. See also under *A. lachlani*.

Achias fritillus, sp. nov.
(Figs 125, 129)

Material Examined

Holotype. ♂, NE. New Guinea: Asaro-Chimbu Divide, nr Mt Wilhelm, 3000 m, 29.vi.1955, J.L.G. (BPB).

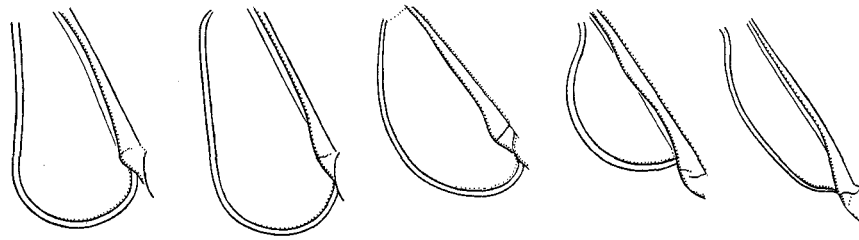
Paratype. NE. New Guinea: 1♀ (immature), Mt Gahavisuka Provincial Park, nr Goroka, 20–23.vi.1983, H.R., J. Dobunaba (AM).

Description (male)

Agreeing with *A. mitis* and *A. trivittatus* in most characters; but differing from the former in the same characters as *A. trivittatus*, except as indicated below.

Coloration. Postfrons with about posterior half brown, anterior part with blotches as in *A. trivittatus*; anterior half of cheek and parafacial with scattered mostly separate brown spots, in addition to larger brown blotch below posterior margin of eye; face heavily spotted with brown, but without pair of dark brown patches on lower part; antennal groove fulvous with some brownish blotches on outer margin. Palpus tawny. Thorax distinctly shining dorsally; mesoscutum with grey-pruinescent stripes a little narrower than in *A.*

trivittatus, the median stripe not extending on to centre of scutellum. Femora fulvous, fore one brownish apically; fore tibia reddish brown; other tibiae fulvous to tawny; fore tarsus reddish brown; other tarsi tawny. Wing with hyaline area in first posterior cell somewhat smaller than in *A. trivittatus* and *A. minax*; costal band extending quite broadly to vein 4 over anterior crossvein.



Figs 126–130. Left squama. *126, Achias rothschildi*; *127, A. venustulus*; *128, A. apictipennis*; *129, A. fritillus*; *130, A. robustus.*

Head. Cheek almost as high as eye; outer vertical bristle distinct but weaker than in *A. trivittatus*. Antenna less slender than in *A. trivittatus*; segment 3 about 3·7 × as long as wide.

Thorax. Scutellum slightly shorter and more rounded than in *A. trivittatus*, with pair of weak bristles near middle of dorsal surface and a weak pale anteroventral hair; intra-alar bristle somewhat weaker than in *A. trivittatus*. Fore femur without ventral spines; fore tarsus about 1·3 × as long as tibia. Wing with subcosta indistinct distally; distal section of vein 4 as in *A. mitis*; anterior crossvein about 0·43 of length of discal crossvein; cell-4 index = 0·74; anal crossvein very slightly curved.

Abdomen. Tergite 5 of male apparently nearly 3 × as long as tergite 4, but tergite 4 too shrivelled in type for accurate measurement. Male postabdomen not examined in detail; apices of terminal filaments of aedeagus thickened, but slightly contracted again towards terminal gonopores.

Dimensions. Total length: male, 3·9 mm; female, 8·3 mm. Width of head: male, 1·3 mm; female, 3·1 mm. Length of thorax: male, 1·5 mm; female, 3·6 mm. Length of wing: male, 4·6 mm; female, 9·2 mm.

Distribution

North-east New Guinea, Western and Eastern Highlands Provinces. The type locality is probably the most elevated recorded *Achias* habitat. Map reference 8*C*, 8*D* (Fig. 1).

Notes

See under *A. trivittatus* for comparative details.

The holotype of *A. fritillus* is much the smallest specimen of *Achias* that I have seen, but the size is probably the result of unfavourable larval environment, as the more recently obtained female is much larger.

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Appendix 1. Etymology of *Achias* Taxa

Achias. According to Butterick (1962: **1**, 27, 67–8), a form of the biblical name Ahijah (also given as Ahiah), used in the King James Version of the Apocrypha. It is the name of nine persons mentioned in the Old Testament, apparently all males, and the generic name has been regarded as masculine, except for occasional lapses.

additus. A. Latin, watching in a hostile manner, in reference to the prominent eyes presumably used in agonistic behaviour.

alutarius. A. Latin, of or resembling leather, in reference to the texture of the mesoscutum.

calcar. N. Latin, spur, in reference to the process on the hind trochanter.

carolinae. N. (gen.). Caroline Sinclair, secretarial worker with entomological interests.

cauda. N. Latin, a tail, in reference to the long terminal filaments of the aedeagus.

celaenops. A. Greek, *kelainops* (*celaenops*, latinised), dark-faced.

cheesmanae. N. (gen.). L. Evelyn Cheeseman, entomologist, collector.

clastus. A. Latinised Greek, broken up, in reference to the fragmented cheek stripe.

cogani. N. (gen.). Brian H. Cogan, dipterist.

comptus. A. Latin, ornamented, in reference to the markings on the head.
crosskeyi. N. (gen.). Roger W. Crosskey, dipterist, collector.
divisus. A. Latin, divided, in reference to the pigmentation of the postfrons.
fabricii. N. (gen.). J. C. Fabricius, first entomologist to describe Australian insects, describer of genus *Achias*.
flyensis. A. Latinised from place-name, Fly River.
fritillus. N. Latin, dice box, in reference to the squarish, spotted head.
fuligo. N. Latin, soot, in reference to the colour of the thorax.
gressitti. N. (gen.). J. Linsley Gressitt, entomologist, collector.
hapsis. N. Greek, a joining, in reference to the metathoracic postcoxal bridge.
hendeli. N. (gen.). Friedrich Hendel, dipterist.
hennigi. N. (gen.). Willi Hennig, dipterist, taxonomic theorist.
hollowayi. N. (gen.). Geoffrey A. Holloway, entomologist, collector.
hyweli. N. (gen.). Hywel S. Roberts, entomologist, collector.
ios. N. Greek, *ios*, rust, in reference to the coloration.
ismayi. N. (gen.). John W. Ismay, entomologist, collector.
janus. N. Latin. A mythological figure depicted as facing simultaneously in two directions, in reference to the widely separated eyes.
kentae. N. (gen.). Deborah S. Kent, entomologist, illustrator.
khooi. N. (gen.). Kay Chye Khoo, entomologist, illustrator, collector.
kimi. N. (gen.). Se Pyong Kim, dipterist, illustrator.
lachlani. N. (gen.). Robert B. Lachlan, entomologist, collector.
longitarsis. A. Latin, *longus*, long; *tarsus*, tarsus.
mallochi. N. (gen.). John R. Malloch, dipterist.
meeki. N. (gen.). Albert S. Meek, collector of natural history specimens, particularly for Walter Rothschild.
meijerei. N. (gen.). Johannes C. H. de Meijere, dipterist.
melinus. A. Latin, resembling honey (in coloration).
minax. A. Latin, menacing, in reference to its wasp-like appearance.
mitis. A. Latin, gentle, in reference to the reduced armature of the fore femur.
molysma. N. Greek, spot or stain, in reference to the wing markings.
nigricoxa. N. Latin, *niger*, black; *coxa*, coxa.
obliquus. A. Latin, oblique, in reference to the wing markings.
opipes. N. Latin, one who stares, in reference to the prominent eyes.
parilis. A. Latin, similar, in reference to the deceptive resemblance to other species.
penicillus. N. Latin, brush, in reference to the hind trochanter of the male.
pexatus. A. Latin, covered with a napped garment, in reference to the well-developed microtrichia of the wing membrane.
planiceps. A. Latin, *planus*, flat; *-ceps*, -headed.
polyonychus. A. Latinised Greek, *polys*, many; *onyx*, claw; in reference to claw-like bristles on the fore tarsus.
pumex. N. Latin, pumice, in reference to the rough, porous appearance of the mesoscutum.
pygmosus. A. Latinised Greek, of or pertaining to the fist, in reference to the broad fore tarsus.
reses. A. Latin, calm or inactive, in reference to apparent lack of agonistic modifications in male.
rufus. A. Latin, red-brown, in reference to the thorax and abdomen.
sackeni. N. (gen.). Charles Robert Osten Sacken, dipterist.
schneiderae. N. (gen.). Margaret A. Schneider, entomologist, illustrator.
sciotus. A. Latinised Greek, shaded, in reference to the wing pigmentation.
sedlacekae. N. (gen.). Maria Sedlacek, entomologist, collector.
sphyrna. N. New Latin, the generic name of the hammer-head shark, in reference to the shape of the male head.
steyskali. N. (gen.). George C. Steyskal, dipterist.
stigon. N. Greek, a tattooed or branded person, in reference to the cephalic markings.
stiva. N. Latin, a plough handle, in reference to the shape of the male head.
straatmani. N. (gen.). Raymond Straatman, entomologist, collector.
strictus. A. Latin, drawn together or constricted, in reference to the petiolate abdomen.
sursividens. A. Latin, *sursum*, upwards; *videns*, seeing; in reference to the largely upwardly directed eyes.
szentivanyi. N. (gen.). Joseph J. H. Szent-Ivany, entomologist.
tawii. N. (gen.). Mr Tawi, collector for the B. P. Bishop Museum and Wau Ecology Institute.
testaceus. A. Latin, clay- or horn-coloured.

trivittatus. A. Latin, three-striped, in reference to the mesoscutum.
tudes. N. Latin, a hammer, in reference to the shape of the head.
wallacei. N. (gen.). Alfred Russell Wallace. First entomologist known to have collected *Achias* spp.; codiscoverer of principle of natural selection.
xyrion. N. Greek, a little blade, in reference to the blade-like bristles of the fore tarsus.

Index to *Achias* species descriptions and key references (key couplet numbers in parentheses)

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