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NEW GENERA AND SPECIES OF PACHYGASTRINAE (DIPTERA: STRATIOMYIDAE) OBTAINED IN INVESTIGATIONS OF FOREST INSECTS NEAR BULOLO, PAPUA NEW GUINEA[1,2]

By **Maurice T. James**[3]

Abstract. Three new genera and 8 new species of the stratiomyid subfamily Pachygastrinae are described from New Guinea: *Pedinocerops,* n. gen., type-species *robusta,* n. sp.; *Camelomyia,* n. gen., type-species *signata,* n. sp.; *Paradraga,* n. gen., type-species *omnihirta,* n. sp.; and the new species *Adraga varipes, A. tomentosa, A. semiglabra, Monacanthomyia stigmata* and *M. robertsi.* A key to the New Guinea species of *Adraga* is presented.

This is the 5th of a series of papers (James 1969, 1977a, 1977b, 1978) dealing with the stratiomyid subfamily Pachygastrinae in New Guinea and adjacent areas. This study is based primarily on lots of flies submitted to me by Dr Hywell Roberts from material obtained through forest insects investigations made at Stony Logging Area, elevation 760 m, Bulolo, Morobe Province, Papua New Guinea. The flies were either reared in cages from billets about 25 cm in diameter taken from trees left for varying lengths of time in the rain forest or collected from trees being studied in the same area. In addition, a considerable amount of pertinent material from the Bishop Museum, Honolulu, has been used. The immediate objective of this study is to make the names of the new taxa available for use by Dr Roberts and his associates.

In the individual descriptions, head proportions given in decimals are based on comparison with head width (taken as 1.00), unless otherwise stated.

Museum locations of types and other specimens are indicated as follows: BMNH, British Museum (Natural History), London; BISHOP, Bishop Museum, Honolulu, Hawaii; BULOLO, Forest Research Station, Bulolo, Morobe Province, Papua New Guinea; and WSU, Washington State University, Pullman, Washington.

Pedinocerops James, **new genus**

This genus traces to the South American *Pedinocera* in Kertész's (1916) key, but differs from it in many aspects. In Lindner's (1964) key to the Neotropical genera it also fits *Pedinocera* best, though imperfectly, since the 1st antennal segment is not long, the scutellum is not triangular, and the characterization of the pilosity does not

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conform. The descriptions and illustrations of Kertész indicate a number of differences. Among these, the frons in profile is well elevated above the eye level in *Pedinocera* (not so in *Pedinocerops*), and the venation differs in several respects, notably the base of R_{4+5} not being bent at crossvein r-m in *Pedinocera* (strongly angular there in *Pedinocerops*), resulting in a much differently shaped stigma in the 2 genera.

Generic characters (based on ♀). Head from anterior view oval, in profile (FIG. 4) suboval; eye almost full height of head; gena very narrow and frons not elevated above eye. Antenna set at approximately middle of head; scape about as long as wide, pedicel very short outwardly but produced thumblike about to middle of flagellum inwardly; flagellum oval, about 2× as long as wide; arista about 1⅓ as long as rest of antenna combined. Mesonotum moderately arched. Scutellum moderately large, robust, semioval and broadly rounded apically, in profile set at a strong angle to mesonotum, not margined. Wing with R_{2+3} arising distinctly before r-m, R_4 distinct and strong, R_{4+5} sharply bent at r-m, latter well developed. Abdomen broader than thorax and broader than long, its terga forming a strongly convex dorsal curvature, its sterna relatively short, abdomen beyond tergum 3 therefore directed strongly downward but not under.

Type-species: *Pedinocerops robusta* James, n. sp.

The generic name is not intended to imply a close relationship between this genus and *Pedinocera,* but rather a superficial similarity.

Pedinocerops robusta James, **new species** FIG. 4

♀. *Head* height 0.82 and head length 0.53 head width. Frons 0.28 head height at narrowest, almost parallel-sided, widening to 0.30 at vertex and 0.32 across antennal bases, face becoming 0.42 across lower angle of eyes; median line of frons only slightly elevated carinalike; transverse sulcus poorly impressed, close to antennal bases. Face fairly strongly receding to oral margin. Head black; frons and face shining, with scant, short, subappressed pile, gray on frons, whitish on face; a white tomentose spot adjacent to each eye just above transverse sulcus; narrow facial orbits white tomentose, gena next to eye partly so; gena very narrow. Occipital orbits very narrow on upper ½, shining, with subappressed hairs, broader but still narrow on lower ½, white tomentose. Occiput mostly shining, with black hairs. Antenna mostly bright orange-yellow except arista mostly white, latter thickly micropubescent when viewed at magnifications of 50× or more. Proboscis short, brownish yellow, with white hairs. *Thorax and scutellum* robust, wholly black. Scutellum about 0.4 length of mesonotum, set at an angle of about 45° to longitudinal axis of mesonotum. Mesonotum and scutellum well set with mostly appressed, some subappressed, short hairs, mostly yellow to golden but tending to become white to whitish laterally on mesonotum, black over prominences above wing bases and black laterally on scutellum. Pleura with white, mostly subappressed hairs on propleuron, posterior parts of mesopleuron, and most of sternopleuron, otherwise largely bare and shining. Legs except tarsi mostly black; femora brownish yellow at apices; tarsi pale yellow, becoming slightly brownish at extreme apices and brownish black at extreme base of front basitarsus. Wing light brown, almost hyaline at base; stigma dark brown. Halter yellow with a slight brownish tinge. *Abdomen* about 1.8 as wide as maximum width of thorax and about 1.9 as wide as its ventral length; black, subshining dorsally, shining on most of venter except sternum 1, which is opaque; well clothed with short, mostly appressed pile, white on terga 4 and 5, sides of terga 2 and 3, and on venter, black on most of terga 2 and 3; some erect or suberect mostly black pile toward base of abdomen dorsally. Ovipositor slender delicate, yellow with yellow pile.

Length: 4.4–4.8 mm; of holotype 4.8 mm.

♂. Unknown.

Holotype ♀, PNG: NEW GUINEA (NE): Morobe Prov., Bulolo, Stony Logging Area, 17.I.1978, reared from *Xanthophyllum,* H. Roberts (BMNH). Paratypes, 2♀, same data as holotype (BULOLO, WSU).

Camelomyia James, **new genus**

A fly of striking appearance, with a strongly humped mesonotum and a strongly upturned projection on the scutellum (FIG. 1), quite unlike any other pachygastrine known to me. In Kertész's (1916) key the ♀ traces to paragraphs 132–133, but it is quite unlike both *Pedinocera* Kertész and *Chalcidomorphina* Enderlein, the 2 genera that key there. The ♂ traces to *Prostomomyia* Kertész; the scutellum in that genus bears some resemblance to that of *Camelomyia,* but its development is much less pronounced. The peculiar development of the gena will distinguish *Camelomyia* from all 3 of these genera.

Generic characters. Eyes widely separated in ♀, broadly contiguous in ♂. Occipital orbits in ♂ developed only below, in ♀ developed for full length but narrow and inconspicuous. ♀ (FIG. 1): vertex well elevated above eye level, frons above transverse sulcus and vertex next to ocellar triangle strongly convex; gena produced well below eyes and oral margin, rugulose (somewhat as in *Thylacognathus,* cf Kertész, 1916, Fig. 14–15). ♂: vertex not elevated but ocellar triangle prominent; gena rugulose and distinctly produced downward but much less conspicuously so than in ♀. Eye facets of ♂ distinctly larger above than below but without sharp line of division between the 2 areas. Antennal flagellum in ♀ oval, longer than wide, pedicel strongly and acutely produced inwardly, much less prominently and more bluntly outwardly; flagellum of ♂ no longer than wide, apex of pedicel broadly rounded, base of flagellum consequently concave. Thorax robust; mesonotum strongly humped; scutellum produced strongly upward, apex of its hump rounded, scutellum with a broad apical rim below this hump. Legs without special modifications. Wing with vein R_4 present; R_{2+3} arising at or slightly beyond r-m, latter distinct but short; stigma long and narrow; discal cell fairly large and almost parallel-sided. Abdomen short, a little broader than thorax, the terga convex but not as strongly so as in *Pedinocerops,* terga 4 and 5 turned downward, slightly directed under at apex.

Type-species: *Camelomyia signata* James, n. sp.

Camelomyia signata James, **new species** FIG. 1

♀. *Head* black, entirely shining. Frons with a slight depression extending across convexity of upper part and with a median sulcus running from anterior ocellus to antennal bases; these depress but do not by any means obliterate the fronto-vertical swellings; median sulcus much more prominent than transverse sulcus of frons; latter slightly biarcuate, curved upward more prominently at eye margins; frons below transverse sulcus protruding somewhat, directed forward to antennal bases. Frons at narrowest (at transverse sulcus) 0.35 head width, at vertex 0.36, across antennal bases 0.42; face across lower margin of eyes 0.43; total head height (including gena and ocellar triangle) 0.76, eye height 0.55, apex of ocellar prominence 0.06, width of gena 0.15; length of head 0.47; of antenna less arista 0.30, of arista 0.32; maximum length of flagellum, 0.17, maximum width 0.13. Antenna inserted very close to oral margin, clypeus then receding, oral margin flanked by genae which are prominently developed and with strongly rugulose surfaces both outwardly and inwardly. Frons with scant, black, short inconspicuous hairs. A prominent white-tomentose spot on each side of frons just below transverse sulcus, connected with a narrow white tomentose facial orbit which widens noticeably at gena. Proboscis brownish black. Antenna bright yellow, becoming pale brownish yellow at apex of flagellum; pile yellow, inconspicuous, short; arista becoming brown to brownish black beyond base. *Thorax* black, subshining. Presutural pile golden, appressed; postsutural and scutellar pile black, appressed, but with a pair of large areas of dense, golden, tomentumlike pile extending from scutellar base almost to transverse suture; some less noticeable but similar pile extends from each of these areas laterally to a level behind postalar callus. Pleura black pilose. Coxae, trochanters, and femora except apices black, rest of legs including extreme apices of tarsi bright yellow. Wing hyaline; veins approximately to base of R_s dark brown, others in strong contrast yellow to pale yellow. *Abdomen* black, mostly thickly punctured dorsally except toward apices of segments, less thickly so ventrally; at

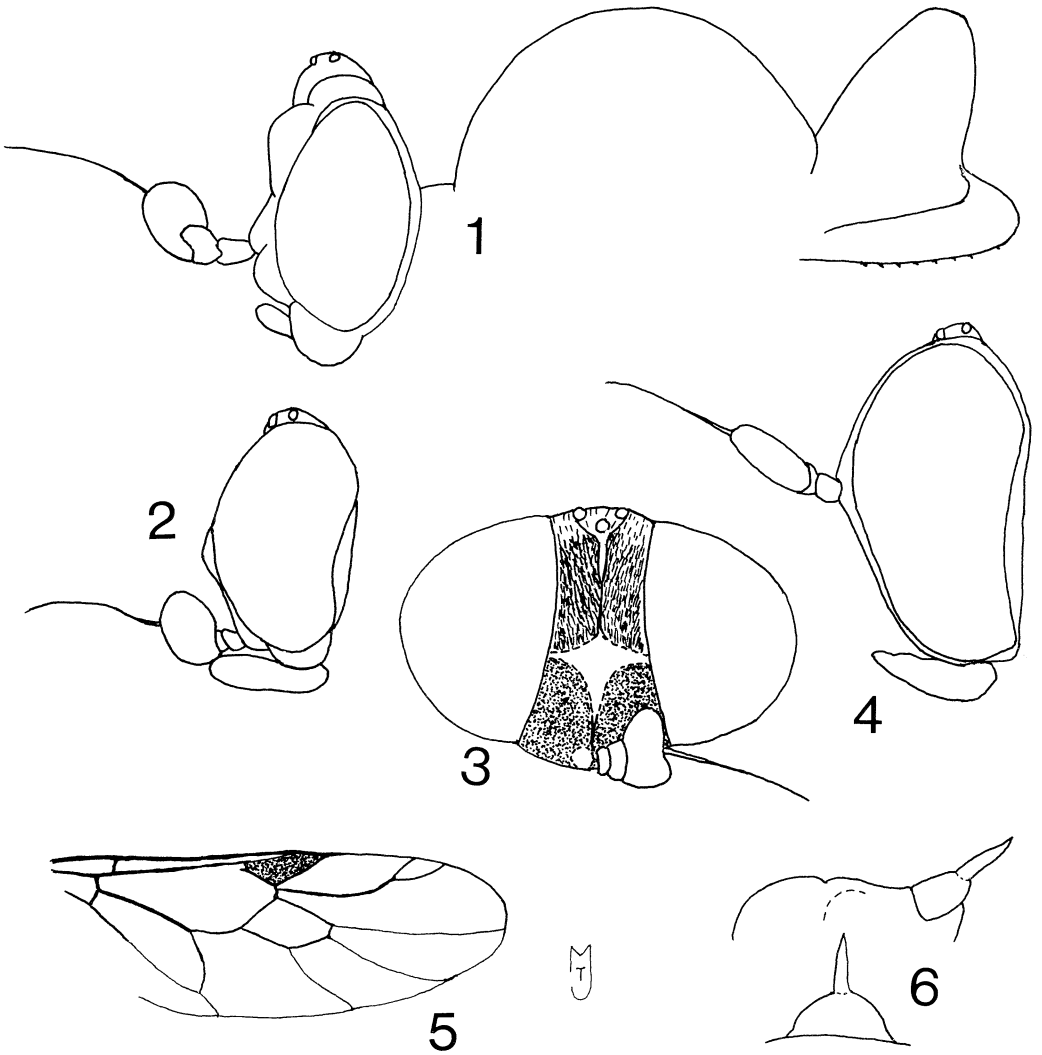

FIG. 1–6. **1,** *Camelomyia signata,* ♀ head, mesonotum and scutellum in profile. **2–3,** *Paradraga omnihirta,* ♀ head: **2,** in profile; **3,** frontal view, right antenna omitted. **4,** *Pedinocerops robusta,* ♀ head in profile. **5–6,** *Monacanthomyia stigmata*: **5,** wing; **6,** profile of mesonotum and scutellum (above), dorsal outline of scutellum (below). Pile omitted except on upper frons in FIG. 3.

maximum about 1.3 as wide as thorax and 0.6 as long as wide; strongly arched downward beyond middle of 3rd segment.

Length: 4.8–5.2 mm; of holotype 4.8 mm.

♂. Eyes contiguous about halfway from anterior ocellus to bases of antennae. Ocellar triangle subshining, with short black pile; frontal triangle and face mostly shining, with very narrow white tomentose ocular margins which converge and join only at upper part of frontal triangle. Downward extension of gena in profile only 1.1 eye height, though clearly evident, as in ♀, and with some short, white, tomentumlike hairs. Genitalia including cerci yellow with some pale yellow hairs, structurally simple, dististyles oval, somewhat curved. Length, 4.6–4.8 mm.

Holotype ♀, PNG: NEW GUINEA (NE): Morobe Prov., Bulolo, Stony Logging Area, 25.V.1978, reared from *Xanthophyllum,* H. Roberts (BMNH). Paratypes, 2♀,3♂, same data as holotype (BMNH, BULOLO, WSU).

Paradraga James, **new genus**

A distinctive genus, probably closest to *Adraga.* In Kertész's (1916) key it traces to *Obrapa,* but in that genus, among other differences, the head is rounded in profile, the antennae are set much higher on the head, and the wing margin is weakened just basad of the stigma. If allowance is made for venational variations and discrepancies in paragraphs 103 and 141 of Kertész's (1916) key (see discussion under *Adraga*), *Paradraga* will trace to *Adraga* but there are many differences; notably, the antennae are set much lower in *Paradraga,* even though the face in both genera is reduced, and the domelike process characteristic of the 5th tergum of *Adraga* is not developed in *Paradraga.* The illustration of the head profile of the South American *Popanomyia* by Kertész [1909, Fig. 11 (given erroneously in the text as 12)] is strikingly similar in the position (but not the structure) of the antennae and the development of the gena, but this is quite a different genus.

Generic characters. Robust. Eyes bare in both sexes, well separated in ♀, contiguous in ♂. Ocellar triangle elevated but slightly above vertex. Antennae set very low, barely above plane of lower margin of eyes and virtually on oral margin, face consequently apparent only toward genae; gena produced ventrad below eye margins. Occipital orbits developed only below in both sexes. Proboscis directed forward when at rest, touching antennal bases or almost so. Antennal scape and pedicel short; flagellum reniform; apex of pedicel in contact with flagellum convex; apex of flagellum truncated, arista set at its middle, bare. Mesonotum moderately arched, its curvature continuing to apex of scutellum, except a definite though very shallow transverse suture at junction of mesonotum and scutellum; scutellum about ½ length of mesonotum, semioval, margined, with a row of short denticles at apex below. Venation strong; vein R_4 present, oblique; stigma triangular; R_{2+3} arising well before r-m; latter usually distinct, sometimes almost punctiform, usually short. Abdomen distinctly broader than long and distinctly broader than thorax, arched downward at apex.

Type-species: *Paradraga omnihirta* James, n. sp.

Paradraga omnihirta James, **new species** FIG. 2–3

♀. *Head* height 0.80 and head length 0.50 head width. Frons above transverse sulcus almost parallel-sided, 0.20 head width at minimum, widening to 0.21 at vertex, 0.21 at transverse sulcus, and 0.40 across lower margins of eyes. Head black; frons above sulcus dull, with dense appressed golden hairs which become sparser near ocellar triangle; frons divided by a very narrow, slightly raised, median line and separated from each eye by an equally narrow orbital line; sulcus shining, slightly impressed, transverse or slightly convex above, produced medially below toward antennal bases, thus forming a shining, cross-shaped figure on lower frons. Frons below sulcus and on extremely reduced face densely pale yellow tomentose, more sparsely so over a rounded area laterad of each antennal base where the black background shows through. Gena dull black. Occipital hairs white, suberect on lower orbits. Scape and pedicel bright yellow, about equal in length. Flagellum bright orange, about 1.5 as high as wide and about as high as minimum width of frons; arista yellow, bare, a little more than 2× as long as height of flagellum. Labella firm, yellow posteriorly and ventrally, becoming black toward base and anteriorly. *Thorax* almost wholly covered with abundant, short but conspicuous, appressed white pile, only the pronotum, anterior slope of mesonotum, ventral surface of scutellum, and a triangular area on pteropleuron below wing base bare and shining; extent of hairy covering of pleura particularly striking. Some propleural hairs subappressed.

Leg coloration variable; in holotype front femur black except ventrally on basal ½, which is brownish to yellow; middle and hind femora yellow to yellowish brown, becoming black at apex; front tibia black; middle tibia brownish yellow, becoming black at apical ⅓; hind tibia yellow on median ½, becoming brown toward apex and toward base; tarsi mostly yellow to their apices, front basitarsus brown to brownish black below. Variation in paratypes usually expressed as greater extension of yellow areas, though brown and black areas may be more expanded. Front femur and tibia thicker than other pairs, front tibia almost as thick as its femur. Wing infuscated, more lightly so beyond r-m, most heavily so on anterior ½ of wing from base to stigma, r-m, and base of cell M_3, the greater infuscation of this area pronounced, except that a more lightly infuscated area occurs in 2nd basal cell. Veins of basal ½ dark brown, those of apical part brownish yellow. Halter variable in color, in holotype yellow except darkened base of knob, in some paratypes largely brown to blackish brown. *Abdomen* black, uniformly covered with short, appressed pile as on thorax; mostly black on terga but white on broad lateral margins of tergum 3 and base of 4, golden on apex of 4 and all of 5, white on sterna.

Length, 3.1–4.5 mm; of holotype 3.8 mm.

♂. Eyes contiguous or subcontiguous from vertical triangle to about middle of head; some yellow to golden suberect pile on vertical triangle just anterior to ocelli; frontal triangle yellow to golden tomentose, interrupted medially by an impressed, narrow median area extending toward but not reaching apex of triangle; lower ocular orbits narrowly white tomentose, interrupted medially by an impressed, narrow median area extending toward but not reaching apex of triangle; lower ocular orbits narrowly white tomentose but, as in the ♀, with a sparsely tomentose area where the ground color shows through. Antennal flagellum somewhat smaller than in the ♀. Length: 3.3–5.0 mm.

Holotype ♀, PNG: NEW GUINEA (NE): Morobe Prov., Bulolo, Stony Logging Area, 4.I.1978, reared from *Protium,* H. Roberts (BMNH). Paratypes. PNG: NEW GUINEA (NE): 5♂,5♀, same data as holotype; 1♂,1♀, same data except reared from *Xanthophyllum,* 16.I.1978; 3♂,1♀, same data except on *Protium,* 30.XI.1977; 1♂,1♀, Morobe Prov., Wau, 1200 m, malaise trap, 9.XI.1966 and 3.II.1965, J. & M. Sedlacek; 1♀, Wau, Mt Kaindi, 1230 m, J. Sedlacek. (BMNH, BULOLO, BISHOP, WSU.) 1 non-type ♀ in poor condition from Nabire, 2.VIII–2.IX.1962, malaise trap; 2♀, not types, from Bulolo and Wau, respectively.

Genus **Adraga** Walker

Adraga Walker, 1859, Proc. Linn. Soc. London **3:** 82.

This genus does not trace correctly in either the key of Kertész (1916) or that of Brunetti (1923). In couplet 103 (122) Kertész carries *Adraga* to the second alternative in which R_{2+3} arises at or beyond crossvein r-m; yet in the exit of *Adraga* from the key in couplet 166 (167) and later in his description of that genus he states that R_{2+3} arises at or *before* r-m. Brunetti merely repeats these errors in his key, though he does not mention this feature in his characterization of the genus. Also, crossvein r-m is not always punctiform, so couplet 141 (156) of Kertész and couplet 26 of Brunetti cannot be relied upon in this respect.

In describing *Adraga dimidiata* (James 1977b: 486), I was misled in referring it to this genus because of these discrepancies and the similarity between the structure of the 5th tergum in *dimidiata* and in species of *Adraga.* Kertész considered this abdominal structure as unique to *Adraga*; he says (1916: 198), ". . . wird die Gattung durch die Bildung des fünften Tergits sicher zu kennen sein." Apparently, however, this is an independent development in at least 2 genera. *A. dimidiata* is congeneric with

Pegadomyia nuda James, but I am not certain that *Pegadomyia* is the correct genus to which to refer these species. The type-species of *Pegadomyia, P. pruinosa* Kertész, from Taiwan (Formosa), is based on specimens which were lost.

A. dimidiata is not included in the following key. Its strongly humpbacked mesonotum-scutellum and much more rounded head (in profile) will readily separate it from the *Adraga* species. It differs from *P. nuda* in the structure of tergum 5, in having the origin of R_{2+3} interstitial with r-m (distinctly beyond in *nuda*) and in the black abdomen in both sexes (red in ♂ *nuda*). *Adraga australis* James, from the Solomon Is, has the sides of the abdominal terga shining, in contrast to the punctured median areas: in the species from Papua New Guinea, the sides of the terga also are punctured, though the shine of the background may be evident, as in *A. varipes,* n. sp.

Key to the New Guinea species of *Adraga*

1. Middle and hind tibiae mostly, all tarsi, base of middle femur, and basal ½ of hind femur bright yellow ..... **varipes, n. sp.**
   All femora and tibiae and fore tarsus wholly black 2
2. Knob of halter white. (♀ unknown.) ..... **crassivena** Kertész
   Knob of halter largely to wholly brown or black 3
3. Only hind tarsus white; mesonotum with a median stripe of more conspicuous yellow pile. (♂ unknown.) ..... **univitta** Walker
   Mid and hind tarsi yellow; pile of mesonotum uniform and not conspicuously bicolored 4
4. White tomentum covering most of lower frons, most conspicuous along ocular orbits ..... **tomentosa, n. sp.**
   White tomentum of lower frons confined to a small though conspicuous patch on each eye margin in ♀ (apex of frontal triangle in ♂), and to a much larger though less conspicuous triangle above antennal bases, the 2 spots separated by glabrous areas ..... **semiglabra, n. sp.**

Adraga varipes James, **new species**

♀. *Head* 0.50 as long and 0.85 as high as wide; height of eye 0.70, of gena 0.10. Width of frons at minimum 0.24, widening to 0.26 across bases of antennae, to 0.31 at vertex, and to 0.41 between lower angles of eyes. Occipital orbits developed only below. Head black; frons and vertex shining, without evident hairs; genae and lower occipital orbits subshining; face densely white tomentose. Eyes bare. First and 2nd antennal segments pale yellow, almost white; flagellum reniform, higher than long, mostly to wholly brownish black, arista brownish black at base, becoming pale yellow at apex. Proboscis brown to brownish black. *Thorax* black, brightly shining on its bare areas, especially on anterior slopes of mesonotum and large parts of pleura, otherwise subshining because of its pilosity; mesonotum low-arched; scutellum semioval from dorsal view, about $^2/_5$ length of mesonotum, not margined, set with numerous small denticles laterally and apically. Mesonotum except anterior slopes and scutellum except quadrate area at base on each side well set with appressed hairs; these are black over most of the supraalar convexities, otherwise white to deep yellow; pleura with curved, appressed to subappressed white hairs, especially on propleuron, anterior part of mesopleuron, upper margin of sternopleuron, and behind wing base. Front coxa, femur, and tibia black, trochanter bright yellow in contrast and tarsus white or pale yellow to apex; femur and tibia sometimes with brown to blackish areas and apex of femur sometimes a paler brown; apical ½ or more of middle and apical ⅓ to ½ of hind femur black; middle and hind coxa at base and apical 2 tarsomeres of middle and hind tarsi dark brown to brownish black, middle and hind legs otherwise yellow to whitish yellow. Wing hyaline; veins yellow, heavier ones on basal part brown to dark brown. Vein r-m distinctly present; R_{2+3} arising distinctly before it; stigma small, yellow. *Abdomen* slightly longer than wide, subovate; black, terga shining broadly laterally, entire 5th shining, otherwise dulled by fine, dense pollen and with appressed black hairs; sternum 1 dulled by pollen on basal part, its apex and other sterna shining

with scant, scattered hairs. Domelike prominence of tergum 5 extending forward medially into a sinus at apex of tergum 4.

Length: 3.0–1.5 mm; of holotype 3.3 mm.

♂. Eyes contiguous about halfway from anterior ocellus to antennal bases; frontal triangle small, white tomentose except for a bare median dividing line. Upper eye facets much larger than lower ones but no sharp dividing line between the 2 areas. Antennal flagellum smaller than in the ♀. Presutural thoracic pile black except on a large triangle on each side from suture to humerus where it is yellow. Front basitarsus black basally. Length: 2.7–3.2 mm.

Holotype ♀, PNG: NEW GUINEA (NE): Morobe Prov., Bulolo, Stony Logging Area, 24.II.1978, reared from *Xanthophyllum,* H. Roberts (BMNH). Paratypes: PNG: NEW GUINEA (NE): 8♀,2♂, same data as holotype; 1♀, Morobe Prov., Wau, 1200 m, 16.X.1965, malaise trap, J. & M. Sedlacek. (BMNH, BISHOP, BULOLO, WSU.)

Adraga tomentosa James, **new species**

♀. *Head.* Frons at narrowest 0.16 head width, almost parallel just above transverse sulcus, widening to 0.20 at vertex and below to 0.35 across antennal bases and to 0.45 across lower angles of eyes; genae from anterior view descending a short distance below eyes. Head black; upper frons shining, with short erect to suberect white to yellowish-white hairs; a glabrous median triangle immediately below transverse sulcus continuous with shining area of upper frons; lower frons, face, gena except lower margin, and lower occipital orbits white tomentose, densely so on upper and middle part of lower frons, ocular orbits, oral margin and upper margin of gena, elsewhere, especially in 2 oval patches on lower frons, allowing black background to show through; a small patch of subappressed white hairs below transverse sulcus, adjacent to each eye, and blending with tomentum of ocular margin; some white hairs on face between ocular orbits and oral margin. Antenna with scape and pedicel pale yellow to almost white, flagellum brown to dark brown or blackish brown; arista brown to dark brown. Proboscis brown to dark brown. *Thorax* wholly black. Mesonotum and scutellum dull and wholly finely punctured, pile forming 5 distinct but not conspicuous vittae, best seen obliquely from anterior view; median vitta pale yellow to yellowish white, lateral ones yellowish white to white, intermediate ones black; all vittae about of equal width on prescutum; lateral ones ending above wing bases, other 3 extending to apex of scutellum; median vitta abbreviated anteriorly on prescutum, the black vittae fusing there. Pleura largely shining to subshining, with white to pale yellow, mostly subappressed hairs. Scutellum about ½ length of mesonotum, basal width about equal to length. Front tarsus noticeably thickened, basitarsus as broad as its tibia, tarsomeres gradually becoming narrower toward apex of tarsus; front basitarsus about as long as remaining tarsomeres combined and about ½ length of its tibia. Middle and hind tarsi bright yellow, legs otherwise wholly black; pile concolorous with background. Wing pale brown, paler toward base and along posterior margin. Stigma little darker than cell R_3. Halter yellow except a large, oval, sharply demarcated black to brownish-black area covering most of upper of knob. *Abdomen* black; terga 1–4 mostly dull, punctured, with black hairs like those of mesonotum; sides of these terga, however, subshining and with white to pale yellow pile; tergum 5 structurally as illustrated by Kertész for *A. crassivena,* shining with scattered suberect to erect hairs except median prominence which is black-pollinose and bare. Sterna shining to subshining with scattered, appressed to subappressed, whitish hairs. Ovipositor black.

Length: 3.6–4.6 mm; of holotype 4.5 mm.

♂. Eyes contiguous about halfway from anterior ocellus to antennal bases. Tomentum of frons like that of lower frons of ♀ but less conspicuous, some of it almost pollenlike; ocullar orbital areas much narrower; upper part of frontal triangle with a pair of hair patches as in ♀ but only narrowly separated from each other along median line. Median vitta of pale mesonotal hairs narrower than in ♀. Length: 3.9–4.6 mm.

Holotype ♀, PNG: NEW GUINEA (NE): Morobe Prov., Wau, 1200 m, 11.II.1966, malaise trap, J. & M. Sedlacek (BISHOP 11,511). Paratypes. PNG: NEW GUINEA (NE): 6♀, same data as holotype except 11,15, & 25.X.1965, J. & M. Sedlacek; 4♀,

same except 29.VII.1961, 11.IX.1961, 17–20.I.1963, 21–25.I.1963, J. Sedlacek; 5♀, same except 1250 m, 22.III.1965, 16.VIII.1965, 14.IX.1965, & 24.IX.1965, J. & M. Sedlacek, and 13.IX.1962, J. Sedlacek; 2♀, same but 1230 m, 7,9.VI.1966, J. Sedlacek; 3♀, same but 1350 m, 4,11, & 16.X.1961, J. Sedlacek; 1♂, Lae, VIII.1944, F.E. Skinner; 1♂, Busu Riv, Lae, 100 m, 15.IX.1955, J.L. Gressitt; 2♀, Bulolo, Stony Logging Area, 760 m, 20.II.1968, reared from *Xanthophyllum,* H. Roberts. PNG: NEW GUINEA (SE): 1♂, Brown Riv, 5 m, 23.X.1960, Gressitt. IRIAN: NEW GUINEA (NW): 1♀, Nabire, 5–50 m, 25.VIII–2.IX.1962, malaise trap, J. Sedlacek; 1♀, Nabire, S of Geelvink Bay, 10–40 m, jungle, 5.X.1962, malaise trap, H. Holtman; 1♀, Japen I, SSE Sumberbaba, Dawai Riv, jungle, 28.X.1962. (BMNH, BULOLO, BISHOP, WSU.)

Adraga semiglabra James, **new species**

♀. Very close to *tomentosa,* the most reliable difference being the completely glabrous areas of the lower frons; these include all the area except a median triangle, above the antennal bases and extending upward toward the transverse sulcus, and the pair of small white pilose spots below the sulcus adjacent to the eyes; the sides of the lower frons including the ocular orbits otherwise entirely glabrous. The antennal flagellum is variable but usually paler than in *tomentosa*; the mesonotal vittae less definite; the middle and hind femora may be reddish brown basally; and the stigma is darker and the wing membrane usually paler, the contrast being more marked.

♂. Broad sides of frons glabrous.

Length: ♀, 3.5–4.5 mm, of holotype 4.5 mm; ♂, 3.5 mm.

Holotype ♀, PNG: NEW GUINEA (NE): Morobe Prov., Wau, 1050 m, 11.XI.1961, malaise trap, J. Sedlacek (BISHOP 11,512). Paratypes. PNG: NEW GUINEA (NE): 3♀, same data as holotype except 16.X & 4.XI.1961; 1♀, same but 1230 m, 3.XII.1964, J. & M. Sedlacek; 1♀, same but 1100 m, 17.I.1963, J.L. Gressitt; 3♀, same but 1200 m, 14.XI.1965, P. Shanahan; 1♀, Karamui, 2–3.VI.1961, malaise trap, M. & J.L. Gressitt. IRIAN: NEW GUINEA (NW): 5♀, Nabire, 25.VIII & 2.IX.1962, malaise trap, J. Sedlacek; 1♀, Biak I, Mangrowawa, 50–100 m, 30.V.1959, Gressitt; 1♂, Waris, S Hollandia, 450–500 m, 17.VIII.1959, sweeping, T.C. Maa. (BISHOP, WSU.)

Genus **Monacanthomyia** Brunetti

Monacanthomyia Brunetti, 1912, Rec. Indian Mus. **7:** 448.

Four species have been referred to this genus: *M. annandalei* Brunetti, the type-species, from India; *M. becki* James, from Guadalcanal, Solomon Is; *Ceratothyrea nigrifemur* de Meijere, from Java; and *Prostomomyia atronitens* Kertész, from Taiwan. *M. becki* is clearly congeneric with the 2 species described below and may be easily separated from them by its wholly yellow to orange thorax and abdomen. From the descriptions and illustrations, *M. annandalei* and *C. nigrifemur,* and probably also *P. atronitens,* belong here. The entire complex needs further study before final decisions on generic assignments can be made. In addition to the 2 described below, there are undescribed species to be added. I have seen 3 or 4 such, all represented by scant, defective, or extralimital material.

Monacanthomyia stigmata James, **new species**

♀. *Head* black. Frons 0.28 head width at narrowest (at transverse sulcus), widening to 0.30 at vertex and antennal bases, then on face to 0.47 between lower angles of eyes; head height 0.70, length 0.50 head width. Ocellar triangle low, extended forward almost to transverse sulcus; latter convex, bowed gently downward on each side. Frons mostly shining, without any evident hairs but with a few punctures next to ocellar triangle. Face covered entirely with white tomentum and some very short silvery hairs, broad ocular margins appearing silvery. Gena only slightly tomentose; occipital orbits shining, well developed below but evanescent above. Antennal scape and pedicel pale yellow, almost white, each no longer than wide, latter rounded apically at contact with flagellum; flagellum reniform, about 0.6 as long as high, reddish yellow, becoming brown toward apex outwardly; arista brown. Proboscis black. *Thorax* black; mesonotum only moderately arched, mostly covered with short, regularly spaced, yellow to pale golden appressed hairs which also extend over scutellum almost to apex of its spine dulling the shine of the background, only the lateral presutural areas more shining; pleura more extensively shining with yellow hairs mostly on their lower parts. Scutellum (Fig. 6) set at a slight angle to mesonotum, oval basally, terminating in a distinctly separated, narrow, sharp straight spine almost level with basal part and approximately equal to it in length. Front leg wholly black except trochanter; all trochanters, basal ½ or more of middle and hind femora, and median ½ of middle and sometimes of hind tibiae pale yellow, almost white; middle and hind tarsi becoming brown on apical 2 tarsomeres; femora and tibia otherwise black. Front and hind femora moderately thickened, more so than middle one. Wing (Fig. 5) subhyaline, only slightly smoky, evenly set with microtrichia over most of its area; stigma triangular, it and stronger veins brown. Knob of halter brown, stalk slightly paler. *Abdomen* short oval, 1.1 as long as maximum width; black with short, appressed, white hairs which become less dense laterally and on tergum 5, abdomen consequently more shining there; venter more shining than terga with more scattered, subappressed, short white hairs. Ovipositor brownish yellow.

Length: 2.6–3.8 mm; of holotype 2.8 mm.

♂. Eyes almost contiguous, frons at narrowest less than 0.02 head width. Silvery tomentose ocular orbits of face extending onto frontal triangle and covering most of it. Genitalia yellow, small, inconspicuous. Length: 3.5–3.9 mm.

Holotype ♀, PNG: NEW GUINEA (NE): Morobe Prov., Bulolo, Stony Logging Area, 13.II.1978, reared from *Xanthophyllum,* H. Roberts (BMNH). Paratypes. 3♀,5♂, same data as holotype; 1♀, same data except on *Protium,* 23.XI.1977. IRIAN: NEW GUINEA (NW): 3♀, Nabire, 5–50 m, 25.VIII–2.IX.1962, malaise trap, J. Sedlacek; 1♂, Hollandia-Binnen, 100 m, 25.XI.1958, at light, J.L. Gressitt. (BMNH, Bulolo, Bishop, WSU.)

All paratypes are similar to the holotype in structure and coloration except that in the Irian specimens the pale coloration of the legs is more clearly yellow and the yellow basal areas of the middle and hind tibiae are variable in extent, ranging from none at all of the hind tibia to almost all of the segment.

Remarks. The black coloration of the thorax and abdomen will readily distinguish this species from *M. becki.* Both *M. annandalei* and *C. nigrifemur* have quite a different leg pattern, including wholly pale tibiae; the scutellar process is also different, in *M. annandalei* blunt and with the entire scutellum directed upward, in *C. nigrifemur* constituting a "gekrummten Dorn."

Monacanthomyia robertsi James, **new species**

♀. *Head* black. Frons 0.20 head width at narrowest (just above transverse sulcus), widening to 0.28 at vertex and at antennal bases, on face to 0.46 between lower angles of eyes; head height 0.80, head length

0.64 head width. Transverse sulcus almost straight. Frons mostly shining, scantly punctured, without any evident hairs at magnifications up to 100×; face black; frons below sulcus, except for bare narrow median longitudinal area, wholly white tomentose, as is entire face, more prominently so on ocular margins; gena only lightly tomentose; occipital orbit shining, well developed below but narrow above. Antenna wholly yellow, flagellum orange-yellow, arista becoming brown toward apex. Flagellum reniform, 0.6 as long as high. Proboscis black. *Thorax* black; mesonotum only moderately arched; mesonotum and scutellum covered with short, appressed hairs, mostly yellow to golden, becoming whitish laterally on mesonotum and black on scutellar spine, those on underside of scutellum suberect and on its spine subappressed; thorax more shining laterally on mesonotum and upper parts of pleura; pleural hairs scant, white. Scutellum directed strongly upward from level of mesonotum, its spine even more so, forming an angle of 60° with longitudinal plane of mesonotum; spine narrow, tapering to an almost acute apex, about 2× as long as basal part of scutellum. Legs, including coxae and tarsi to apex, almost entirely white except front tibia tinged with brown and front tarsus distinctly brown. Wing hyaline; venation essentially as in *stigmata,* but wing narrower and most cells consequently more elongated; radius before stigma brown; stigma pale yellow; coxa and branches of radius beyond stigma tinged with brown; other veins pale yellow. Halter yellow, almost white. *Abdomen* short oval, directed downward on apical segments and therefore difficult to measure but apparently about as long as maximum width; black, subshining medially on terga, shining laterally and on venter; hairs short, inconspicuous, some suberect black ones on basal terga medially, otherwise mostly yellow and subappressed to appressed.

Length (estimated, with allowance for turned-under abdomen): 2.4 mm (holotype), 2.2 mm (paratype).

♂. Eyes contiguous about halfway from anterior ocellus to antennal bases. Frontal triangle white tomentose, interrupted only by a narrow longitudinal median line. Antennal flagellum smaller than in ♀. Halter yellow. Abdominal pile more extensively black than in ♀. Genitalia small, yellow. Length: 2.4 mm.

Holotype ♀, PNG: NEW GUINEA (NE): Morobe Prov., Bulolo, Stony Logging Area, 23.XI.1977, on *Protium,* H. Roberts, #646 (BMNH). Paratypes: 1♂,1♀, same data as holotype; 2♂,2♀, same data except #937, 25.XI.1977; 5♂,5♀, same data except #959, 10.I.1979.

Remarks. Monacanthomyia becki is readily distinguishable by its predominantly yellow coloration; the shining face, different scutellar spine, and leg pattern will distinguish it from *M. annandalei* and *C. nigrifemur*; and the larger and much more robust form, the different scutellar structure, and the extensively black legs will distinguish it from *M. stigmata.*

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