

LI.—*New or little-known Tipulidæ (Diptera).—XXXVI. Australasian Species.* By CHARLES P. ALEXANDER, Ph.D., F.E.S., Massachusetts Agricultural College, Amherst, Massachusetts, U.S.A.

IN this instalment, additional descriptions of Australian and Tasmanian species of the genus *Molophilus* are given. The majority of these species belong to the *pervagatus* group, the male hypopygium of the typical form (*pervagatus*, Skuse) of which was figured in Part XXXIII. of this series of papers (Ann. & Mag. Nat. Hist. ser. 9, vol. xix. p. 17, 1927). In this group there are three dististyles, the outermost closely adnate to the mesal face of the basistyle, only the distal end being free, the elongate stem reduced to a narrow chitinized strip that extends basad to the level of the point of insertion of the two basal dististyles. The group is peculiar to Australia, where it is represented by numerous, often closely-allied species.

As before, the majority of the species described at this time were collected in Australia and Tasmania by Dr. André L. Tonnoir, to whom the types have been returned. Other material was included in large and valuable collections sent by Dr. E. W. Ferguson, collected by himself and Dr. Mackerras. This material has been returned to Dr. Ferguson. I express my deep thanks to all of these gentlemen for their kind co-operation in this study. I also wish to thank Dr. Mackerras for further notes on certain species that were described from the Skuse collection (*M. gracillimus*, sp. n., and *M. mackerrasi*, sp. n.).

Molophilus picticeps, sp. n.

Belongs to the *pervagatus* group; antennæ of moderate length; head yellow, variegated with dark brown; mesonotal præscutum light reddish brown, the pleura dark brown; knobs of halteres yellow; femora with two dark brown annuli, the outermost terminal in position; fore tibia (δ) with a swollen blackish ring; male hypopygium with the apex of the basistyle unchitinised; outer dististyle simple; basal dististyles simple, elongate, the inner one pale and filiform.

Male.—Length about 3.1 mm.; wing 4.2 mm.

Rostrum dark, the palpi dark brown. Antennæ of moderate length, if bent backwards extending about to the

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wing-root; basal segment light yellow, the second infuscated; flagellum testaceous, the terminal segments passing into brown; flagellar segments long-oval, clothed with abundant erect silvery verticils. Head yellow, the vertex with an extensive dark brown area in the centre, the broad orbits remaining of the ground-colour.

Lateral pretergites sulphur-yellow. Mesonotum light reddish brown, the præscutum a little darker anteromedially; scutellum and postnotum darker brown. Pleura brown, the dorsal pleurites almost blackish, the ventral pleurites more reddish brown, the junction between the sternopleurite and anepisternum with an obscure yellow spot. Halteres pale, the knobs clothed with pale yellow setæ. Legs with the coxæ and trochanters pale testaceous-yellow; femora yellow, with two brown rings, one apical, the other subequal, slightly paler brown, placed about its own length from the terminal ring; fore tibia (δ) with a subbasal enlarged black annulus; apex of tibiæ and the tarsi brown. Wings with a pale greyish tinge, the base narrowly yellowish; veins slightly darker; macrotrichiæ dark brown, longer and more crowded to form black patches along the anterior and posterior cords, near mid-length of vein *2nd A*, and above this point on veins *M* and *Cu*; wing-axil a little infuscated. Venation: vein *2nd A* of moderate length, extending to just beyond the cephalic end of *m-cu*.

Abdomen brown, the hypopygium more yellowish. Male hypopygium with the basistyles elongate, the outer dististyle lying far distad, the basistyle beyond it restricted, produced mesad into a weak unchitinised beak, this region of the style with numerous erect delicate setæ. Outer dististyle simple, the base broad, the apical portion with a short curved neck, the head oval. Outer basal dististyle a long, simple, gently-curved, black rod that narrows gradually to the acute point, the distal third provided with delicate subappressed setulæ along the outer face; inner basal dististyle only a trifle shorter, very slender and pale, the distal portion almost filiform, the apex very feebly expanded. Tergal plate relatively narrow, setiferous. *Ædeagus* large and conspicuous.

Hab. Tasmania.

Holotype, δ , Burnie, October 24, 1922 (*A. Tonnoir*).

Molophilus pictipes, sp. n.

Belongs to the *pervagatus* group; antennæ of moderate length; head dark grey; mesonotum brown; an obscure orange spot on humeral region of præscutum; knobs of

halteres yellow ; femora yellow with two dark brown annuli, the outermost terminal in position ; all tibiæ (♂) with a narrow brown subbasal annulus, that of the fore tibia slightly swollen ; male hypopygium with the basal dististyles simple, subequal in size and length, relatively stout.

Male.—Length about 3·8 mm. ; wing 4·6 mm.

Rostrum dark, the palpi dark brown. Antennæ of moderate length, if bent backward barely attaining the wing-root ; basal segment yellow, the remainder of the organ dark brown ; flagellar segments long-oval, with conspicuous erect pale verticils. Head dark grey.

Lateral pretergites narrowly sulphur-yellow. Mesonotal præscutum brown medially, with an obscure orange spot in the humeral region extending cephalad from the pseudo-sutural foveæ, but not reaching the lateral margin ; scutellum and postnotum dark brown. Pleura dark greyish brown, the region between the sternopleurite and anepisternum variegated with obscure yellow. Halteres pale, the knobs yellow. Legs with the coxæ and trochanters obscure yellow, with two dark brown annuli, one apical, the other post-medial, a trifle narrower, the yellow ring between about equal in extent to the darkened tip ; tibiæ testaceous, the extreme base more yellowish, the tips narrowly infuscated ; all tibiæ with a narrow subbasal brown annulus that is a trifle narrower than the yellow base, that of the fore tibia (♂) a trifle swollen ; tarsi brown, the basitarsi more or less brightened basally, especially those of the middle legs. Wings moderately broad, tinged with yellowish ; stigmal region infuscated ; brown patches of trichiæ on the anterior and posterior cords and near mid-length of vein 2nd *A* ; pre-arcular region and the axilla weakly infuscated ; veins pale, clothed with conspicuous dark macrotrichiæ. Venation : vein 2nd *A* ending just beyond the nearly transverse *m-cu*.

Abdomen brown, the hypopygium paler. Male hypopygium of the same general structure as *M. picticeps*, sp. n. (basistyle not chitinized at apex ; outer dististyle simple ; both basal dististyles simple, slender, pointed at tips), differing conspicuously in the structure of the styli. Basistyle only vaguely produced at apex, here very densely set with yellow setæ. Outer dististyle with the oval head smaller. Outer basal dististyle rather stout, the surface with triangular appressed denticles on the outer two-thirds, giving the style a feebly roughened appearance ; apex stout, but acute ; inner basal dististyle subequal in length and only a little more slender, the surface reticulated with elongate-oval plate-like areas, the apex more acute.

Hab. Tasmania.

Holotype, ♂, St. Patrick River, November 4, 1922
(*A. Tonnoir*).

Molophilus gracillimus, sp. n.

Agreeing in the essentials of body-coloration with *M. pulchripes*, Skuse, differing conspicuously in the structure of the male hypopygium.

The following comparative notes on the respective types of *pulchripes* and *gracillimus* were made by Dr. Mackerras: "Scutum yellowish brown; dark brown in *pulchripes*, but this possibly due to the gum. Wing with two well-defined spots, one extending from *r* to the fork *Rs*, the other covering the fork of *M*. These spots are due to black hair. In *pulchripes* the spots are not so clearly defined and tend rather to form a continuous band, the wing being rather rubbed. The swollen dark subbasal band on the fore tibia of *pulchripes* is not represented on any leg in the present species. The femora have a dark brown apical band and a pale yellow to creamy subapical band. The remainder is pale yellowish brown, becoming darker towards the subapical pale band, especially in the mid and hind legs, where the part proximal to the pale band is dark brown, the femur being yellowish brown on its proximal two-thirds, then a fairly broad dark brown band, followed by an equally broad pale band, and finally with a brown apical band equal in width to the others. The legs of *pulchripes* are similar, but the banding is not nearly so prominent, and the darkening proximal to the pale band is only very faintly indicated. Antennæ similar in the two species."

Male hypopygium with the basistyles relatively slender, the restricted apical portion densely setiferous; mesal apical angle further produced into a small blunt fleshy lobe; the entire mesal face of this apical hood-like portion is densely setiferous. Outer dististyle a simple blackened arm, strongly curved to the obtusely rounded apex. Outer basal dististyle a long, nearly straight rod, gently curved beyond the base, a little dilated before the apex, the extreme tip produced into a long, straight, needle-like point; the dilated portion of the style is further roughened, more especially by a series of appressed teeth-like spines on the outer margin before the end, some of the teeth larger and more conspicuous; inner basal dististyle a little shorter than the outer, nearly straight, appearing as a very slender needle-like rod, the surface of

the distal fifth indistinctly roughened. *Ædeagus* straight, shorter than the inner basal dististyle.

Hab. New South Wales.

Holotype, ♂, in the Skuse Collection, Macleay Museum, as paratype No. 1 of *M. pulchripes*, Skuse; "no exact locality data on the pin."—*Mackerras*.

Molophilus eugonia, sp. n.

Belongs to the *pervagatus* group; general coloration dark brown, including the head; basal segment of scape yellow; tips of femora abruptly and conspicuously dark brown; wings greyish, clouded and washed with brown; male hypopygium with the outer dististyle black, truncated at apex; outer basal dististyle a broad flattened black blade that extends into a long point; inner basal dististyle slender, the apex dilated into a small head that is weakly spinulose.

Male.—Length about 4 mm.; wing 5 mm.

Rostrum and palpi dark brown. Antennæ of moderate length, if bent backward extending to beyond the wing-root; basal segment of scape yellow, the remainder of the antenna dark brown; flagellar segments long-oval, with a long erect pubescence and conspicuous verticils. Head brown.

Pronotum brown, narrowly yellowish on either side of the median line. Lateral pretergites bright sulphur-yellow, broader and more conspicuous before the pseudosutural foveæ, thence narrow and inconspicuous back to the wing-root. Mesonotum uniformly dark brown, only the humeral region restrictedly sulphur-yellow; pseudosutural foveæ black; scutum concolorous with the præscutum; scutellum light brown; postnotum dark brown. Pleura uniformly dark brown, the dorso-pleural membrane dusky. Halteres pale at base, the stem a little dusky, the knobs conspicuously light yellow with golden setæ. Legs with the coxæ reddish brown, the fore coxæ darker; trochanters obscure yellow; only a single (posterior) leg remains; femora yellow, a little infuscated subbasally, the tips conspicuously and abruptly dark brown; tibiæ yellow, the tips passing into brown; basitarsi with the proximal half pale, the remainder of the tarsi dark brown. Wings greyish, conspicuously washed and clouded with brown, this including the stigma, wing-tip, cord, a conspicuous transverse wash at level of origin of *Rs*, and a brown cloud at base of cell *2nd A*; the pale ground-colour is thus restricted to a small post-arcular area, with larger discal patches before and beyond the cord; wing-base conspicuously yellowish; veins dark brown, a little paler in the ground-areas, veins *Cu*₁ and

R_5 somewhat darker; macrotrichiæ conspicuous, dark brown. Venation: r lying just proximad of $r-m$, the basal section of R_{2+3} being a little shorter than R_{4+5} ; $m-cu$ transverse, about one-half the petiole of cell M_3 ; vein 2nd A relatively short, ending about opposite the caudal end of $m-cu$.

Abdomen dark brown, including the hypopygium. Male hypopygium with the basistyles relatively short and stout, the apex not conspicuously produced, armed with a dense patch of yellow setæ. Outer dististyle short, heavily blackened, apparently simple, but the apex dilated outwardly and transversely truncated. Outer basal dististyle a broad flattened blade that tapers gradually to a long straight apical spine. Inner basal dististyle shorter and more slender, the apex only slightly dilated into an oval head that is about one-fifth the total length of the style, the base and margins of the head with conspicuous small erect spinules.

Hab. Tasmania.

Holotype, ♂, Hartz Mts., altitude 3000 feet, December 9, 1922 (*A. Tonnoir*).

Molophilus pusio, sp. n.

Belongs to the *pervagatus* group; basal segment of antenna yellow; mesonotum light reddish brown, the postnotum and pleura dark brown, the latter with a more or less distinct longitudinal pale stripe on the sternopleurite; knobs of halteres light yellow; tips of femora narrowly but not very abruptly darkened; male hypopygium with the outer basal dististyle of moderate width; inner basal dististyle slender, the apex spatulate, with a few microscopic spinules along the outer margin.

Male.—Length about 3 mm.; wing 4.2 mm.

Female.—Length about 3.5 mm.; wing 4.6 mm.

Rostrum and palpi brownish black. Antennæ (♂) of moderate length, if bent backward extending almost to the root of the halteres; basal segment of scape conspicuously light yellow; second segment light brown; remainder of antenna dark brown; flagellar segments (♂) elongate-oval, with long conspicuous erect white pubescence. In the female the antennæ are shorter, scarcely attaining the wing-root. Head brown, the front and anterior part of vertex yellowish; in some specimens the posterior orbits are paler.

Pronotum dark, the posterior notum yellow. Lateral pretergites narrowly light sulphur-yellow. Mesonotal præscutum, scutum, and scutellum light chestnut-brown, the humeral triangle yellowish; postnotum dark brown. Pleura

dark brown, the sternopleurite with the dorsal portion extensively pale to produce an indistinct longitudinal pale stripe. Halteres pale, the knobs light yellow. Legs with the coxæ yellowish testaceous; trochanters yellow; femora yellow, the tips narrowly darkened; tibiæ brownish yellow, fore tibia (δ) with a narrow subbasal dark ring; tarsal segments passing into dark brown. Wings with a light grey tinge, the cord and a broad subbasal cloud pale brown; wing-tip inconspicuously darkened; wing-base narrowly yellowish; veins darker than the ground-colour, provided with dark macrotrichiæ that are more dense and conspicuous along the cord. Venation: r lying just beyond the level of $r-m$; vein $2nd A$ ending a short distance beyond the base of the petiole of cell M_3 .

Abdomen dark brown, the large male hypopygium paler, with conspicuous black dististyles. Male hypopygium with the basistyles relatively long and slender, the apex pale, truncated, further produced into a small setiferous lobule. Outer dististyle bifid at apex, the largest lobe truncated at tip. Outer basal dististyle a moderately broad blackened blade, curved into a sickle-shaped structure, the tip acute; on lower or cephalic margin before apex with a series of small inconspicuous setulæ. Inner basal dististyle relatively long and slender, only a trifle shorter than the outer, at apex dilated into a small dark spatula that has several microscopic setiferous punctures; the outer margin before the apex with a series of small appressed teeth or spines, the outermost largest and placed before mid-length of the spatula. $\text{\AA}edeagus$ relatively long and slender, in mounts extending nearly to the end of the basistyle. Ninth tergite small, narrowed to the concave apex, the surface setiferous.

Hab. Victoria.

Holotype, δ , Sassafras, Dandenong Range, altitude 1000 feet, October 19, 1922 (*A. Tonnoir*).

Allotopotype, $\text{\textit{f}}$.

Paratopotypes, 4 δ $\text{\textit{f}}$.

Molophilus hastatus, sp. n.

Belongs to the *pervagatus* group; head dark brown, the posterior orbits paler, more yellowish; mesonotum reddish brown to dark brown, the scutellum more yellowish; femora tipped with brown; wings with a pale yellowish tinge, washed and clouded with brown; male hypopygium with the outer dististyle trilobed; both basal dististyles slender, the outer acute, the inner smaller, dilated into a small spatulate head.

Male.—Length about 3 mm. ; wing 4-4.2 mm.

Rostrum and palpi dark brown. Antennæ short, if bent backward not attaining the wing-root; scapal segments a trifle paler than the dark brown flagellum; flagellar segments oval with a short inconspicuous erect pubescence and long conspicuous whorls of verticils. Head dark brown, the posterior orbits paler, more yellowish.

Anterior pronotum dark, the posterior notum yellow. Lateral pretergites narrowly sulphur-yellow. Mesonotum reddish brown to dark brown, in the latter case the humeral region more reddish brown; remainder of mesonotum dark brown, the scutellum behind broadly yellow. Pleura dark brown, the dorsal portion of the sternopleurite with a conspicuous yellow spot, this subobsolete in the Wilmot specimen, the dorso-pleural membrane narrowly light yellow. Halteres pale, the knobs light yellow. Legs with the coxæ and trochanters brownish yellow; femora brownish yellow, the tips conspicuously dark brown, preceded by a subequal light yellow ring; in the Wilmot specimen the femora are brownish yellow with the tips narrowly darkened, gradually so on the fore femora, more abruptly so on the posterior femora; tibiæ brown, fore tibia (δ) with a dilated sub-basal ring; tarsi dark brown. Wings with a pale yellowish tinge, slightly washed with pale brown opposite the origin of *R's*, at the cord, and more broadly at the apex; anal angle darkened; cord and veins *M* and *Cu*₁ with dense patches of brown macrotrichiæ, elsewhere on the wing these being more sparse but long. Venation: *r* lying a short distance proximal of *r-m*; vein *2nd A* ending about opposite the caudal end of the short transverse *m-cu*.

Abdomen dark brown, the hypopygium paler, the abdomen with conspicuous erect pale yellow setæ. Male hypopygium with the basistyles relatively long and slender, the apex flattened and squarely truncated, fringed with delicate setæ. Outer dististyle with the apex flattened and conspicuously bilobed, with an additional third lobe at the base. Outer basal dististyle a long, slender, nearly straight spine that terminates in an acute point, the lower or cephalic margin with a few delicate setulæ; inner basal dististyle about two-thirds the length of the outer, slender, sinuous, the apex expanded into a small spatula that is provided with a few microscopic setiferous punctures but is not otherwise armed. \mathcal{A} edeagus long, slender, extending caudad almost to the apex of the basistyles, the distal portion notably narrowed.

Hab. Tasmania.

Holotype, δ , Burnie, October 25, 1922 (*A. Tonnoir*).

Paratopotypes, ♂, January 31, 1923 (*A. Tonnoir*); *paratypes*, ♂, Wilmot, January 8, 1923 (*A. Tonnoir*); ♂, Eaglehawk Neck, Tasman Peninsula, November 17, 1922 (*A. Tonnoir*).

Molophilus setuliferus, sp. n.

Belongs to the *pervagatus* group; antennæ short; head dark brown; mesonotum and pleura dark brown; femora yellow, the tips only vaguely and gradually darkened; wings pale greyish, the cord seamed with darker; male hypopygium with the outer dististyle unequally bifid at apex; outer basal dististyle a long slender spine with a group of delicate erect setulæ before apex; inner basal dististyle dilated at apex into a large spatula.

Male.—Length about 3·3–3·4 mm.; wing 4·4–4·5 mm.

Rostrum and palpi dark brown. Antennæ relatively short, if bent backward extending about to the wing-root; basal segment of scape yellow, the remainder dark brown; flagellar segments long-oval, with a short inconspicuous pubescence and very long conspicuous whorls of verticils. Head dark brown.

Pronotum dark brown. Lateral pretergites light yellow before the level of the pseudosutural foveæ, more infuscated behind. Mesonotum dark brown, the humeral region of the præscutum with a small yellow triangle. Pleura dark brown. Halteres pale yellow, the stem dusky, with dark setæ. Legs with the coxæ brownish testaceous, darker basally; trochanters yellow; femora yellow, slightly and very gradually darkened at the tips, provided with appressed dark setæ; tibiæ brownish yellow, the tips narrowly darkened, fore tibia (♂) with an unusually narrow subbasal dark ring; tarsi testaceous-brown passing into darker brown at tips. Wings with a pale greyish tinge, the cord with a broad, slightly darker seam; a vague brown suffusion across the basal and anal cells; extreme wing-base more yellowish. Venation: *r* lying immediately proximad of *r-m*; vein 2nd *A* relatively short, ending immediately before the caudal end of the transverse *m-cu*.

Abdomen dark brown, including the hypopygium. Male hypopygium with the basistyle ending in a flattened setiferous lobe. Outer dististyle bifid at outer end, the chief lobe broad and obtuse, at its base with a small blunt arm. Outer basal dististyle a slender, smooth, curved rod, narrowed to the long, acute, straight apex, before the tip with a linear row of erect straight setulæ; inner basal dististyle slender, at apex dilated into a conspicuous flattened spatula, the

margin of the stem before this apex and the surface of the spatula microscopically spinulose, including a large conspicuous appressed spine on the margin of the spatula just beyond the base. *Ædeagus* relatively long and slender.

Hab. Tasmania.

Holotype, ♂, Mt. Wellington, November 26, 1922 (*A. Tonnoir*).

Paratopotypes, 2 ♂♂, November 24–28, 1922 (*A. Tonnoir*).

Molophilus diversistylus, sp. n.

Belongs to the *pervagatus* group; general coloration of mesonotum varying from light to dark brown, the pleura dark brown; knobs of halteres yellow; male hypopygium with the outer dististyle simple; basal dististyles very unequal in shape and size.

Male.—Length about 3–3.3 mm.; wing 3.7–4.7 mm.

Female.—Length about 3.3 mm.; wing 4 mm.

Rostrum and palpi dark brown. Antennæ short, in the male, if bent backward, extending about to the wing-root; flagellar segments oval; antennæ dark brown throughout. In the female the antennæ are slightly shorter. Head brownish black.

Pronotum obscure brownish yellow, paler laterally. Mesonotum of type male and female light brown, the humeral region and narrow lateral margins of the præscutum yellowish; scutellum and postnotum passing into darker. In the Tasmanian paratypes the præscutum is a much darker brown. Pleura dark brown dorsally, paler ventrally, with a somewhat paler longitudinal stripe between the anepisternum and sternopleurite; in the paratypes, pleura more uniformly dark brown to brownish black. Halteres pale, the knobs conspicuously light yellow. Legs with the coxæ and trochanters obscure yellow; femora pale brown, the tips a little darker; remainder of the legs passing into darker brown; in the paratypes the legs are more uniformly dark brown. Wings greyish subhyaline, variegated with pale brown along the cord and in the basal and anal cells, this infuscation including the stigmal region; veins darker brown, especially Cu_1 and R_5 ; macrotrichiæ dark brown. Venation: r lying just beyond the level of $r-m$; petiole of cell M_3 relatively short, ending opposite the caudal end of the nearly transverse $m-cu$.

Abdomen dark brown to brownish black, including the hypopygium. Male hypopygium with the ninth tergite a

rectangular pale plate, slightly narrowed posteriorly, the caudal margin truncated and fringed with long conspicuous setæ. Basistyle produced caudad into a narrow, flattened, dark lobe, the upper surface of which is subglabrous, the margins densely fringed with setæ; outer face of style with sparse strong setæ; dorsal lobe very small. Outer dististyle simple, the apex dilated into an oval head. Outer basal dististyle a long powerful flattened blade that is gently curved, narrowed gradually to the long acute tip; outer margin with conspicuous appressed serrations; viewed from the side this style is seen to be slender, with the stem glabrous, only the apex dilated into a spinulose head, that is further prolonged into the apical spine described. In a position of rest, this style is directed caudad, the long apical beak strongly dorsad. Inner basal dististyle not more than half the length and much more slender than the outer style, a simple smooth gently sinuous rod, the apex obtuse. In a position of rest, this style is directed caudad. Ovipositor with the valves relatively slender; tergal valves yellowish horn-colour, gently curved to the acute tips.

Hab. Victoria, Tasmania.

Holotype, ♂, Sassafras, Dandenong Range, Victoria, altitude 1000 feet, October 21, 1922 (*A. Tonnoir*).

Allotopotype, ♀, in copula and pinned with type.

Paratypes, ♂, King River, Tasmania, February 4, 1923 (*A. Tonnoir*); ♂, National Park, Tasmania, December 15, 1922 (*A. Tonnoir*); ♂, Mt. Wellington, November 30, 1922 (*A. Tonnoir*); ♂, Fern Tree, Mt. Wellington, November 12, 1922 (*A. Tonnoir*); ♂, Eaglehawk Neck, Tasman Peninsula, Tasmania, November 18, 1922 (*A. Tonnoir*).

The thoracic coloration of the Victoria types is very different from the Tasmanian paratypes, but I cannot detect any correlated structural differences, and must consider them as being identical.

Molophilus flexilis, sp. n.

Belongs to the *pervagatus* group; general coloration greyish brown, the head grey; knobs of halteres somewhat darkened; wings narrow, pale yellow, washed with pale brown; male hypopygium with the two basal dististyles both acute at tips.

Male.—Length 2.6–3 mm.; wing 3.2–3.8 mm.

Female.—Length about 3 mm.; wing about 3.8 mm.

Rostrum and palpi dark brown. Antennæ of moderate length, if bent backward extending about to the wing-root;

scalpal segments obscure ochreous; flagellum brown, the segments oval with a short sparse pubescence and conspicuous dark verticils, these longer than the segments. Head light grey.

Pronotum ochreous. Lateral pretergites narrowly light yellow. Mesonotum greyish brown, the humeral region scarcely or only restrictedly brightened; pseudosutural foveæ narrow, blackened; scutellum paler. Pleura dark brown, sparsely pruinose. Halteres pale, the knobs faintly darkened, with pale setæ. Legs with the coxæ testaceous, darker basally; trochanters testaceous; femora pale brown, paler basally, the tips darkened; tibiæ pale brown, the tips narrowly darker; fore tibia (♂) narrowly darkened, but scarcely enlarged at base; tarsi dark brown. Wings relatively narrow, pale yellowish, the base and costal region brighter yellow; indistinct brown washes along the cord and in the bases of cells *Cu*, *1st A*, and *2nd A*; veins brown, those in the flavous areas more yellowish; macrotrichia dark brown, forming darker patches in the region of the stigma and along the cord. Venation: *r* approximately equal to *r-m*; vein *2nd A* short, ending some distance before *m-cu*, cell *2nd A* correspondingly narrow, especially on its distal half.

Abdomen dark brown, the genital segment of the female paler. Male hypopygium with the basistyles relatively broad, the apex produced into a weak fleshy lobule that is densely setiferous. Outer dististyle a simple clavate blackened rod. Outer basal dististyle stouter, a long, nearly straight rod, the tip acute, the distal half darkened and provided with microscopic appressed spinules and smaller setulae. Inner basal dististyle smaller, appearing as a broadly flattened blade, beyond mid-length narrowed to a slender acute point. *Ædeagus* only a little longer than the outer basal dististyle. *Ovipositor* with the valves long, horn-coloured, almost straight, the tips acute.

Hab. Tasmania.

Holotype, ♂, Hobart, November 8, 1922 (*A. Tonnoir*).

Allotopotype, ♀, Launceston, October 29, 1922 (*A. Tonnoir*).

Paratypes, 1 ♂, in copula and pinned with the allotype; 3 ♂♂, Burnie, October 25, 1922, and January 31, 1923 (*A. Tonnoir*).

Molophilus trianguliferus, sp. n.

Belongs to the *pervagatus* group; antennæ dark throughout; head dark brown; mesonotum reddish brown; the

postnotum and pleura dark brown; femora with the distal half darkened; wings with a pale brown tinge, variegated with darker seams; vein *2nd A* relatively short; male hypopygium with the head of the outer dististyle large, triangular, glabrous; outer basal dististyle a strongly curved blackened rod, with a few microscopic setulæ on outer face before apex; inner basal dististyle a little shorter and stouter, almost straight, dilated at apex into a small elongate head.

Male.—Length about 2·8 mm.; wing 3·5 mm.

Female.—Length about 2·7 mm.; wing about 3·2 mm.

Rostrum and palpi brownish black. Antennæ short, if bent backward not extending beyond the wing-root; brownish black throughout; flagellar segments oval with long conspicuous verticils. Head dark brown.

Mesonotum reddish brown, the median area of the præscutum broadly darker, the lateral margins slightly brighter, including a small obscure yellow mark at the humeral angle; scutum and scutellum dark reddish brown; postnotum dark brown. Pleura dark brown, somewhat paler in the allotype and paratypes. Halteres pale yellow. Legs with the coxæ and trochanters yellowish testaceous; femora brown, the distal half somewhat darker than the base, but the apex not conspicuously darkened; tibiæ and tarsi dark brown; fore tibia (*♂*) extensively dilated near base. Wings with a pale brown tinge, the stigma, cord, a seam along vein *Cu*₁ and the base of cell *2nd A* with a somewhat darker tinge; wing-base narrowly yellowish; veins darker brown, the trichiæ almost black. Venation: *r* lying proximad of *r-m*, the basal section of *R*₂₊₃ only about two-thirds the length of *R*₄₊₅; vein *2nd A* relatively short, ending just before the caudal end of *m-cu*.

Abdomen dark brown, including the hypopygium. Male hypopygium with the basistyles relatively slender, narrowed to the apex, the mesal face at apex with a group of conspicuous yellow setæ; outer face of style with conspicuous larger setæ. Outer dististyle dilated at apex into a large, glabrous, triangular head, the neck short. Outer basal dististyle a slender chitinized rod, strongly curved to the acute apex; a few very short setulæ on outer face shortly before the tip. Inner basal dististyle nearly as long as the outer, stout, at apex dilated into a small elongate head, which is sparsely microscopically spinulose and provided with a few setæ at the apex. *Ædeagus* sinuous. *Ovipositor* with long slender valves.

Hab. New South Wales.

Holotype, ♂, Wentworth Falls, Blue Mts., altitude 2844 feet, November 8, 1921 (*A. Tonnoir*).

Allotype, ♀, Narara, November 3, 1921 (*A. Tonnoir*).

Paratypes, 2 ♂ ♂, with the allotype, November 3-6, 1921; 1 ♂, French's Forest, near Sydney, July 15, 1923 (*I. M. Mackerras*); 1 ♂, Sydney, October 14, 1923 (*E. W. Ferguson*); No. 71.

Molophilus incomptus, sp. n.

Belongs to the *pervagatus* group; basal segment of antenna obscure ochreous; anterior mesonotum light brown, the postnotum and pleura darker; halteres yellow; legs brown, unvariegated; wings grey with a dense grouping of macrotrichia along the cord; male hypopygium with the outer dististyle bilobed at apex; outer basal dististyle nearly straight, the base expanded.

Male.—Length about 3.5 mm.; wing 4.3-4.5 mm.

Rostrum and palpi dark brown. Antennae relatively short, if bent backward extending about to the wing-root; basal segment of the scape obscure ochreous; remainder of antenna dark brown; flagellar segments oval with a dense erect white pubescence and unilaterally arranged verticils. Head dark brown, the anterior part of the vertex and the orbits vaguely more ochreous.

Pronotum ochraceous testaceous, with very long setae. Lateral pretergites narrowly sulphur-yellow, brighter and more conspicuous anteriorly. Mesonotum dull light brown, with conspicuous erect black setae; praescutum with the humeral region obscure yellow; scutellum brownish testaceous; postnotum darker brown. Pleura darker brown. Halteres pale, the knobs light yellow, with silken setae. Legs with the coxae and trochanters yellowish testaceous; femora light brown, unvariegated; tibiae light brown, fore tibia (♂) with a dilated, slightly darkened, subbasal ring; tarsi passing into brown at tips. Wings moderately broad, tinged with grey; veins slightly darker; the macrotrichia dark brown, conspicuous, forming a darker cloud along the cord; veins Cu_1 and Anals with similar dark patches. Venation: r lying beyond the level of $r-m$, the basal deflection of R_{2+3} being longer than R_{4+5} ; vein 2nd A of moderate length, ending just beyond the origin of the petiole of cell M_3 .

Abdomen dark brown, conspicuously clothed with erect pale setae; hypopygium a little brighter brown. Male hypopygium with the basistyles relatively slender, the apex

with the oblique mesal face with dense yellow setæ. Outer dististyle with the dilated apical portion trifold, the apex being bilobed, with a basal triangular tooth separated from the apex by a deep U-shaped notch. The two basal dististyles appear to be reversed in position to what is normal in the *pervagatus* group, the outer or more lateral one being a little shorter and stouter, narrowest near mid-length, the relatively small apex with microscopic appressed spinulæ. Inner basal dististyle a slender, nearly straight rod from a dilated yellow base, the stem narrow, thence slightly dilated, the long black apex acute. *Ædeagus* very long and slender, in slide-mounts extending caudad to opposite the tips of the basistyles.

Hab. New South Wales.

Holotype, ♂, Wentworth Falls, Blue Mts., altitude 2844 feet, November 18, 1921 (*A. Tonnoir*).

Paratopotype, ♂.

Molophilus micropteryx, sp. n.

General coloration dark grey; halteres very small; wings subatrophied, less than 1 mm. long.

Female.—Length about 2·8 mm.; wing 0·8 mm.

Rostrum and palpi black. Antennæ of moderate length, black throughout, provided with conspicuous verticils. Head grey.

Thorax entirely dark grey. Halteres pale brown, very small, the heads feebly dilated. Legs relatively short and stout; coxæ brownish black; trochanters brown; remainder of legs dark brown. Wings (of ♀, at least) very reduced, if bent backward not extending beyond the second abdominal segment, with a pale brown tinge, the base more yellowish; veins darker brown, stout. Venation distorted, but evident; cell *R*₃ barely sessile; vein 1st *A* ending opposite *m-cu*; vein 2nd *A* short.

Abdomen brownish black; basal shield of ovipositor dark, the valves light yellow, the tergal valves more slender, gently upcurved, the tips acute.

Hab. New South Wales.

Holotype, ♀, Wentworth Falls, Blue Mts., altitude 2844 feet, November 18, 1921 (*A. Tonnoir*).

Molophilus micropteryx does not agree with the known males of any of the species described by Skuse or the writer. In its general appearance it agrees most closely with *M. furvus*, Alexander, which is full-winged in both sexes.

Molophilus subapterogyne, sp. n.

Subapterous, at least in the female sex; general coloration testaceous-brown, somewhat shiny; wings subatrophied, less than one-half the length of the body, dimidiate, the distal portion darker than the base; no marginal trichiae beyond the wing-apex.

Female.—Length about 3 mm.; wing 1.2 mm.

Rostrum and palpi brownish black. Antennæ dark brown. Head dark brown.

Mesonotum dark testaceous-brown, somewhat shiny, the pleura a little paler. Helteres small, pale, the knobs very small. Legs relatively short, brownish yellow, the terminal tarsal segments passing into dark brown. Wings subatrophied (in the ♀, at least), dimidiate, the basal three-fifths grey, the distal two-fifths (beyond the cord) dark brown; costal setæ relatively few and scattered; a row of similar setæ along vein R_1 for its entire length; costal fringe ending at the wing-apex, the margin beyond vein R_5 entirely naked; veins very indistinct and ill-defined.

Abdomen dark brown, the genital segment ochreous, the valves of the ovipositor long but relatively stout, the tergal valves more slender, gently upcurved to the acute tips.

Hab. Tasmania.

Holotype, ♀, Cradle Valley, altitude 3500 feet, January 23, 1923 (*A. Tonnoir*).

Paratopotype, ♀.

I cannot reconcile this species with any males known from Tasmania of which the female sex is not known. The fly resembles *M. micropteryx*, sp. n., in its subapterous condition, differing in the body- and wing-coloration and in the slightly longer wings.

Molophilus indivisus, sp. n.

Belongs to the *plagiatus* group, allied to *M. flavonotatus*, Skuse; basal dististyle of male hypopygium a long cylindrical rod, not dilated near mid-length, but here armed with a conspicuous lateral spine; apex of style simple, curved, heavily blackened for a short distance back from the tip.

Male.—Length about 3.5 mm; wing 4.5 mm.

Generally similar to *M. flavonotatus*, Skuse, differing conspicuously in the structure of the male hypopygium.

General coloration of thorax grey, the lateral pretergites narrowly sulphur-yellow, the præscutum with three confluent brown stripes; pseudosutural foveæ conspicuous, dark

brown; scutal lobes brown, the median region grey; scutellum dark brown, the caudal margin inconspicuously paler; postnotum dark brown, the anterior lateral angles of the mediotergite paler. Pleura grey. Halteres pale. Legs with the coxæ and trochanters brownish yellow; femora dark brown, their bases more yellowish; remainder of the legs dark brown; fore tibia (δ) with an enlarged subbasal brownish-black ring. Wings subhyaline, the brown spot in the base of cell *Sc* well-defined; veins darker brown.

Male hypopygium brownish yellow, the basistyles more suffused with brown. Dorsal lobe of basistyle dusky in colour, unarmed with a spine; apical spine of ventral lobe of basistyle long and slender. Outer dististyle slender, the arms long; outer arm expanded into a spatula, the inner arm slender, blackened. Basal dististyle a slender, cylindrical, sinuous rod, near mid-length bearing a single strong black spine, the apical portion beyond this curved to the simple acute black apex. \mathcal{A} edeagus short, ending about opposite the spine of the basal dististyle.

Hab. New South Wales.

Holotype, δ , Sydney, September 14, 1923 (*E. W. Ferguson*); No. 69.

Paratype, δ , in the Skuse Collection as paratype No. 1 of the type-series of *M. canus*, Skuse; no exact locality-data.—*Mackerras*.

Molophilus mackerrasi, sp. n.

Belongs to the *plagiatus* group; legs banded quite as in *M. annulipes*, Skuse; wings narrow, yellowish, with no dark spot in the base of cell *Sc*; male hypopygium with the basal dististyle a short powerful rod, the dilated head terminating in two powerful black spines.

Although confused by Skuse with his species *annulipes*, the present form does not even belong to the same subgroup, but is more correctly referable to the typical division of the *plagiatus* group.

The following comparative notes on the two types of *mackerrasi* and *M. annulipes*, Skuse, are kindly supplied by Dr. Mackerras: "*M. mackerrasi*.—Legs not differing appreciably from those of *annulipes*. Wings narrow and yellowish; no dark spot in cell *Sc*. Antennæ uniformly greyish yellow. *M. annulipes*.—Wings rather broad, clear, the spot in cell *Sc* well-marked. Antennæ very pale, with narrow black bands at the constrictions between the segments, a very striking feature."

Male hypopygium with the apical beak of the basistyle blackened, relatively large, the apex subacute, the base of the beak surrounded by numerous setæ. Outer dististyle pale basally, the stem sinuous, the two arms unequal, the lateral arm much larger than the mesal arm, directed mesad, both arms of the style blackened. Basal dististyle a short and very powerful rod, the stem short, soon dilated into a head that terminates in two powerful black spines, the mesal spine lying along the axis of the style, gently curved, the lateral spine nearly straight, directed mesad and lying transversely across the end of the style. Ædeagus relatively long and slender, considerably longer than the basal dististyle.

Hab. New South Wales.

Holotype, ♂, in the Skuse Collection, as paratype No. 2 of the type-series of *M. annulipes*, Skuse; Hogan's Brush, August.—*Mackerras*.

This very distinct fly is named in honour of Dr. Ian Mackerras, to whom I am vastly indebted for co-operation in making known the identities of the numerous species of *Molophilus* described in 1889 by Skuse.

Molophilus inæquidens, sp. n.

Belongs to the *plagiatus* group; general coloration rich brown, the lateral pretergites conspicuously light sulphur-yellow; legs dark brown; wings greyish subhyaline; vein *2nd A* short; male hypopygium with the outer arm of the outer dististyle sinuous, acutely pointed; basal dististyle a short, straight, flattened blade, terminating in two unequal teeth.

Male.—Length, when entire, probably about 3 mm.; wing about 3.8 mm.

Head of the type destroyed by Psocids.

Lateral pretergites conspicuously light sulphur-yellow, the colour extending caudad to the wing-root. Mesonotal præscutum and scutum rich brown, the humeral region of the former paler; scutellum and postnotum vaguely darker brown, slightly pruinose. Pleura dark. Halteres broken. Legs with the coxæ and trochanters brownish testaceous; remainder of legs dark brownish black, the femoral bases only vaguely brightened; fore tibiæ (♂) with a subbasal black ring. Wings greyish subhyaline, the veins darker. Venation: vein *2nd A* short, ending before the level of *m-cu*.

Abdomen destroyed by Psocids, only the hypopygium remaining, this brownish yellow in colour. Apical spine of

basistyle short and moderately stout, heavily blackened. Outer dististyle slender, the two arms very unequal, the outer more than twice the length of the inner, sinuous to the acute point; inner arm stout, straight, both arms blackened. Basal dististyle a short straight flattened blade, the apex bifid, the two teeth straight but very unequal, the outer much larger; besides these two primary teeth, there are a few microscopic spines on the blackened distal third; the basal style is distinctly shorter than the outer dististyle. Ædeagus relatively short, the straight apical portion about as long as the basal dististyle.

Hab. New South Wales.

Holotype, ♂, Sydney, September 2, 1923 (*E. W. Ferguson*); No. 73.

Molophilus arcanus, sp. n.

Belongs to the *plagiatus* group; mesonotum light reddish brown; the pleura yellowish testaceous with a broad brown dorsal longitudinal stripe; knobs of halteres infuscated; male hypopygium with the apical beak of the basistyle microscopic; outer dististyle with the stem stout, the two arms blackened; basal dististyle a small slender rod that is about one-third the length of the ædeagus.

Male.—Length about 4 mm.; wing 5.5 mm.

Rostrum and palpi dark brown. Antennæ brown throughout, of moderate length, if bent backward extending to a short distance beyond the wing-root; flagellar segments long-oval, with conspicuous verticils. Head dark brown.

Mesonotal præscutum light reddish brown, the posterior sclerites of the notum somewhat darker. Pleura yellowish testaceous, with a conspicuous broad dorso-longitudinal brown stripe, extending from the propleura, passing caudad above the root of the halteres to the abdomen. Halteres narrowly pale basally, the stem and knobs dark brown. Legs with the coxæ and trochanters yellowish testaceous; femora pale brownish testaceous, with sparse appressed darker setæ; tibiæ and tarsi pale, the terminal tarsal segments darker; middle tarsi a little longer than the tibiæ; hind tarsi shorter than the tibiæ. The fore legs of the unique type are broken, and it cannot be stated whether there is a sexual ring on the tibiæ. Wings with a faint yellowish tinge, the veins pale brown; macrotrichia relatively short and sparse, brown. Venation: basal section of R_{2+3} a trifle longer than R_{4+5} ; vein 2nd *A* relatively short, ending about opposite the caudal end of *m-cu*.

Abdomen dark brown, the hypopygium a very little

brighter. Male hypopygium with the ventral lobes of the basistyles produced, as in the group, terminating in a tiny feebly chitinized beak, the integument surrounding this beak with abundant yellow setæ. Outer dististyle very large and powerful, the stem short and broad, the arms large, blackened, both truncated. Basal dististyle very small, shorter than the stem of the outer dististyle, a feebly chitinized rod that gradually narrows to the slender tip, the surface and apex feebly tuberculate. Ædeagus relatively long, moderately stout, approximately three times as long as the basal dististyle.

Hab. Tasmania.

Holotype, ♂, Mt. Wellington, November 25, 1922 (*A. Tonnoir*).

LII.—*Descriptions of Three new Species of Gall-Mites (Eriophyidæ) from Sudan.* By A. M. MASSEE, F.E.S., East Malling Research Station.

THESE notes are the result of the examination of a small collection of galls, preserved in spirit, which were forwarded to East Malling Research Station by Dr. G. A. K. Marshall, Director of the Imperial Bureau of Entomology.

Although it is indeed very difficult to study these minute animals when they have been preserved in spirit for any length of time, it has been possible to describe accurately and name three species, all belonging to the well-known genus *Eriophyes*.

In one of the vials containing *Eriophyes balanites*, sp. n., an inquiline belonging to the genus *Phyllocoptes* was found to be present in small numbers. Unfortunately, it has not been possible to describe this species, owing to the lack of material, but it is hoped to procure further material in order that this species may be described at a later date.

The writer is indebted to Dr. G. A. K. Marshall for much valuable assistance.

Eriophyes balanites, sp. n.

Body moderately large, drawn-out, cylindrical. Nymphal stages worm-shaped. Thoracic shield semicircular, not projecting to a marked extent over rostrum, 36 μ in breadth. Shield ornamented with longitudinal furrows, the three central