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NEW EXOTIC DIPTERA IN THE AMERICAN MUSEUM OF NATURAL HISTORY

By C. H. CURRAN

The insects described in the following pages have been in The American Museum of Natural History collections for a number of years. The specimens described from South America formed part of the Williston collection of Diptera and were collected by H. H. Smith, from whom they were purchased about thirty-five years ago. While Dr. Williston worked up much of the material secured from South America, many of the families remain today almost as they were when received, no attempt having been made to determine the various forms. The number of Tachinidæ in the collection is fairly large and there are many quite striking forms. Large numbers of the species bear a very striking resemblance to each other yet belong to various genera and are readily separated upon most satisfactory characters. Four species of Jurinella are described herein; in other genera there are species which agree in all respects with each of the species described except for the generic differences; superficially they might well be selected as being one species.

In American Museum Novitates, Number 176, June 17, 1925, I described Condylostylus tumantumari from British Guiana. An examination of the type specimen of Sciapus guttula Wiedemann shows that tumantumari Curran is a synonym of guttula Wiedemann. The portion of Becker's key describing the color of the tibiæ for this species is quite misleading. The legs are colored as I have described them and not wholly blackish brown or black.

Syrphidæ

Cerioides victoria, new species

Length, 11.5 mm.

Male.—Face and cheeks shining black, the former with a large, subtriangular yellow spot reaching from the upper two-fifths to the oral angles; another yellow spot extending from above this to the upper angles of the eyes, the front with a moderately wide black median vitta, the very short, broad, antennal pedicle and the ground color about its base, rusty reddish; a broad black stripe (a little longer than wide) reaches from the median facial vitta to the orbits at the upper third of the face. Vertical triangle with a roundish orange spot on either side at the vertex,

otherwise black, grayish pubescent; occiput black, gray pollinose. The cinereous hair is short and sparse. The eyes touch for a distance equal to the length of the frontal triangle. Antennæ brown, the first segment on the inner surface and the third basally, rusty reddish, the third with whitish sheen; lengths of the segments as 10:6:5.

Thorax dull black; humeri yellow; posterior calli and scutellum wine-red, the latter with the basal fourth black. Pile on disc yellow, elsewhere cinereous, very short.

Legs wine-reddish, the femora black, except the broad apices and the base of the posterior pair. Anterior and posterior tarsi black, at least above, the middle pair somewhat darker above.

Wings brownish in front and broadly so along the longitudinal veins. Squamæ fuscous; halteres orange with fuscous knob.

Abdomen dull black, the second segment strongly constricted and shorter than its apical width, the third and fourth large, forming an egg-shaped club; the abdomen is narrowed from the base to the middle of the second segment. Broad apices of the second, third and fourth segments orange or yellow. Abdominal pile short, black; yellow on the sides and yellow areas.

FEMALE.—The upper yellow facial spot is square and lies opposite the antennæ, the front elsewhere black, except the roundish vertical spots.

Described from two males and one female, Victoria, Australia, (Edwards Collection).

Volucella nigropictoides, new species

Allied to nigropicta Portschinsky, from which it differs in having the black abdominal fasciæ entire, the narrow base and extreme apex of the first three sternites white, the squamal fringe brownish red and shorter; there is generally more black pile on the thorax and always less on the abdomen. Length, 19 to 24 mm.

Male.—Head rusty reddish yellow the pile wholly yellow, short on the eyes. Face deeply concave above, the lower portion more prominent than the antennal base, the tubercle long and conspicuous; face produced moderately downwards, perpendicular below the tubercle, the oral angles acute. Frontal triangle very small but prominent, only a little larger than the elongate vertical triangle; eyes touching for twice the length of the frontal triangle; vertical triangle but little prominent. Antennæ rusty reddish, the third segment broad, slightly tapering, gently curved upwards towards the end; aristal rays long, blackish on the apical half or more.

Thorax dark ferruginous; a large area on the middle of the pleura, the prothorax wholly, humeri, sides of mesonotum before the suture and a pair of more or less indefinite submedian vittæ, reddish or yellowish, the vittæ often connected along the suture with the lateral pale color; posterior calli rusty reddish. Scutellum metallic blackish with a large, obscure apical area rusty reddish. A median, geminate yellow pollinose vitta extends from the anterior margin of the mesonotum almost to the scutellum. The pile of the thorax is yellowish or reddish, but the mesonotum is usually black-haired except on the broad margins, incomplete median vitta and along the suture; scutellum wholly black-haired. Ten to twelve strong, black prescutellar bristles; scutellum with marginal row of four bristles on each side; metapleura with dense black pubescence.

Coxæ and legs rusty reddish, clothed with short black hair and appearing ferruginous.

Wings yellowish on the basal half and towards the apex of the marginal and submarginal cells, cinereous hyaline behind; with an irregular brown fascia extending from the costa over the crossveins and along the sixth vein to the apex of the anal cell and a preapical cloud in front which is more or less distinctly joined along the costa to the median fascia and is carried backwards as conspicuous clouds on the apical and discal crossveins. The petiole of the marginal cell is carried outwards to the costa. Squamæ deep brown, with brownish red or bright red fringe. Halteres yellowish tinged, the knob infuscated basally.

First abdominal segment ferruginous with an elongate, apical blackish spot on either side, the second and third segments yellow on the basal two-fifths, elsewhere brown, the second yellow on the basal half at the sides; fourth segment with a transverse, usually slightly oblique brown spot on either side situated chiefly in front of the middle of the segment, otherwise rusty yellowish with paler apical third or more. Venter shining blackish brown; immediate apex of the first three sternites and the narrow base of the second to fourth, whitish yellow, the fifth sternite rusty yellow with a large, irregular, diffuse median brownish fascia. Abdominal pile very short, fulvous, only the second segment with a very narrow black-haired apical band. First sternite, basal half of the second and transverse basal triangles on the two following, tawny pilose, the venter elsewhere with coarse black hair. Genitalia yellow.

Female.—Front slightly widening anteriorly, very prominent, strongly convex, wholly clothed with very short yellow hair. Spots on fourth abdominal segment larger, fused or almost so in the middle; fifth segment wholly yellow. Sternites with short appressed hairs.

Described from five males and two females, Yen-ping, China; the holotype, male, taken on August 13, 1917; the allotype, female, on July 26. The other specimens were captured on the following dates: June 21, July 15, 26, 28, and August 3, 1917. Collected by Mr. Harry R. Caldwell.

*This species belongs to the *inanis* group and comes nearest *nigropicta* in structure and color but differs markedly in both respects. The type of *nigropicta* came from Amur and I have a female specimen which was probably collected at the same time as the type. In this specimen the dark abdominal fasciæ are all broadly interrupted, the front is differently shaped, etc.

Milesia sinensis, new species

Large, yellow marked with black. Resembles *M. crabroniformis* Fabricius but the face is shorter, the lower edge of the cheeks scarcely oblique, the face not noticeably produced downwards, pleura paler, mesonotum more extensively black; abdomen paler yellow, with black fasciæ, etc. More like the Nearctic *M. virginiensis* Drury but the front of the male bears a black triangle and that of the female is more black; pleura yellow, with two moderately narrow black bands and the first abdominal segment is yellow instead of black. Length, 25 to 32 mm.

Male.—Face, cheeks and back of head below, yellow, the frontal triangle similarly colored on the sides, a broad median vitta black; cheeks with a black

stripe in front; head yellow pollinose except on the black areas mentioned and the posterior third of the elongate vertical triangle. Pile of the head yellowish except on the posterior portion of the vertical triangle and some short, black bristles on the occiput above. Frontal prominence subtriangular, large. Antennæ ferruginous, the first segment yellow except the base.

Thorax opaque; mesonotum black, with a pair of broad, widely separated yellow vittæ on black ground reaching to behind the suture and connected in front with the yellow humeri and along the suture with the yellow pleura; a broad, prescutellar fascia of yellow pollen. Pleura yellow with a black fascia behind the humeri extending over the pectus and an oblique band behind reaching from the middle coxæ to the black metanotum. Scutellum yellow, the base broadly shining black. Thorax with short yellow pile except that the posterior black mesonotal band bears slightly shorter, stouter black hair.

Legs yellow or reddish yellow, the tarsi brown except the basal three-fourths of the first and whole of the apical segment. Anterior femora normally widened, on the basal half below with an elongate broad black spot (situated in the depression) which bears short black setulæ. Posterior femora more or less brown below and behind, their tibiæ with an elongate brown spot on the under surface. Pile of the legs yellow, the posterior femora and tibiæ on the under side with long black pile, the dark tarsal segments also black-haired; anterior tibiæ with a patch of short, stout spines before the lower apex.

Wings cinereous hyaline, narrowly luteous in front, the subcostal cell more brownish. Wings clothed with villi except between the spurious vein and the fifth vein. Squamæ and halteres yellow, the former paler basally and with yellow fringe.

Abdomen yellow, the basal half of each segment dull, elsewhere shining; narrow base of second to fourth segments, except the sides and narrow apices of second and third segments, black; second segment marked with opaque black as follows: a slender median vitta on the basal two-thirds and a slender fascia lying across its posterior end, the sides on the outer fourth, curved strongly forward to the basal twofifths of the segment. The third segment bears an almost transverse slender fascia across the middle, but it is produced forwards in the middle to form a narrow triangle which reaches half-way to the base of the segment, the triangle cut out behind by yellow ground. On the fourth segment the black fascia rises about the middle of the segment at the sides, is strongly oblique, the inner ends carried forwards to form a triangle which reaches to the basal fourth of the segment. The abdominal pile is yellow, short and fine; on the sides below, long and abundant, but coarser and black as follows: the second segment on and behind the black fascia, on the posterior fourth of the third segment expanding as lateral triangles and on the fifth segment behind the black fascia except that there is coarser yellow pile extending to slightly behind the fascia on the broad median portion. The apex of the abdomen bears a row of dense, short, black, posteriorly directed bristles. Black pile of the abdomen subappressed. Venter vellow, the first sternite with a transverse, blackish, rectangular spot in the middle, the second with narrow median vitta and preapical fascia, the third with the broad apex; triangularly expanded in the middle, the fourth, except the basal third, black. Pile of the venter long, yellow, a few brown hairs on the apical sternite. Genitalia yellow and clothed with yellow pile.

Female.—Front densely ochreous pollinose, leaving a slender median vitta which expands anteriorly and is shining above the antennæ, black, the vertex also

black, subshining. Front clothed with fine yellow pile except that the hair is black on the black upper portion. The venter bears wider black bands and the fourth sternite bears considerable stout black hair. The fifth segment is wholly reddish and 'clothed above and below with coarse black hair.

Described from three males and two females, Yen-ping, China, taken on the following dates: female, July 14; female, August 23; male, September 1; male, September 3; male, September 6, 1917. The holotype is a male. Collected by Mr. Harry R. Caldwell.

Mesembrius tuberosum, new species

Most closely allied to *bengalensis* Wiedemann but the middle femora, while strongly constricted towards the apex, lack the mammiform projection below, being obliquely narrowed; there is a large sub-basal tubercle on the middle femora below which is decidedly more pronounced than in *bengalensis*. Length, about 12 mm.

Male.—Face, frontal triangle and occiput silvery white pollinose, the pollen on the latter becoming yellowish above. Middle of the face with a broad black vitta, less thickly pollinose and with black hairs, the face elsewhere, and occiput, with fine, white hair which, however, is yellowish tinged above; occipital cilia restricted to the upper fourth, black. Vertical and frontal triangles black pilose. Face perpendicular in profile, with faint median convexity; frontal prominence robust, moderately strong; lunula shining brown; vertical triangle very long, velvety brown in front of the slightly elongate ocellar triangle; eyes touching for a distance not greater than the width of the ocellar triangle. Antennæ brownish yellow, shining, the third segment black with whitish sheen, not longer than wide, suborbicular; arista ferruginous.

Mesonotum rather dull black, with four grayish yellow vittæ, the dorsal pair tapering slightly posteriorly but widened immediately in front of the scutellum to form a narrow fascia, the lateral ones broader, less distinct and obsolete on the posterior calli. Mesonatum short yellow pilose, with a triangle of black pile on either side of the median vittæ behind the wing root and a less distinct one on the median black vitta. Pleuro with grayish pollen and longer, fine, pale yellow pile. Scutellum translucent yellow with narrow blackish base, the pile wholly yellow.

Legs black; basal fourth of the anterior four tibiæ and immediate base of the posterior pair, reddish yellow, the tips of the anterior four femora reddish. Legs for the most part black-haired, the anterior femora posteriorly and their tibiæ on the basal half behind, clothed with fine yellow hair which is rather dense on the apical half of the femora and on the tibiæ and longer on the basal half of the femora, the long black pile on the posterior half of the tibiæ continuing onto the first tarsal segment. Middle femora with short yellow pile behind, the pile forming an apical tuft; posterior femora yellow pilose on more than the basal half above and on not more than the basal third below. Middle femora with a large, very strong shining tubercle near the base of the antero-ventral surface, greatly swollen, widest just beyond the tubercle, thence gradually narrowing to the apical fourth where the femora are strongly, obliquely narrowed. Middle tibiæ somewhat deformed on the apical third and slightly broadened. Posterior femora without any strong hair-patches below, their tibiæ compressed, their tarsi broadened, the first segment with moderately long, fine, curved hairs anteriorly, the basal nodose hairs numerous.

Wings cinereous hyaline. Squamæ and halteres yellow, the former with yellow fringe.

Abdomen dull reddish yellow, with black fasciæ; first segment with a blackish spot towards each side and also black in the middle. Second segment with an incomplete basal and entire apical, narrow, opaque black fascia, connected in the middle by a vitta which widens towards each end so as to leave the inner ends of the large yellow spots rounded, the immediate apex of the segment shining reddish. Third segment with an obscure, narrow, blackish preapical fascia which is carried slightly forward in the middle; the apex of the segment more broadly shining reddish; fourth segment with a basal yellow pollinose band which broadens strongly to the sides, followed by a dull rusty brownish arch, the apex shining rusty reddish or ferruginous. Pile fine, yellowish, coarser and black on the posterior black fasciæ and shining reddish bands.

Female.—Front dull brownish black, rather grayish on the anterior half especially towards the sides, the pile black except on the sides below where it is white. Legs simple, the anterior femora with black hair on the apical posterior third. Abdomen much darker, the first two segments similarly marked except that the posterior opaque black fascia is wider and there is no reddish apical fascia; third segment with the basal half (more laterally) reddish yellow, elsewhere black; fourth with only the basal third orange, the fifth wholly black but probably with a more or less distinct pollinose fascia or at least lightly grayish pollinose. Fifth segment wholly pale pilose.

Described from three specimens from Yen-ping, China, the type male taken on September 11, 1917, female, September 13; paratype male in the spring of 1915. Collected by Mr. Harry R. Caldwell.

The relationship of this species is best shown by the table of Oriental species which follows. I know of only six species of *Mesembrius* from the Oriental region.

Middle femora with strong, bare tubercle below near the base, strongly narrowed
near the apex
Middle femora without basal tubercle in male, evenly tapering
Middle femora of male with mammiform projection at point of apical constriction
(from the type)bengalensis Wiedemann.
Middle femora of male without such projection tuberosum Curran.
Large species, over 14 mm
Smaller species, rarely over 12 mm
Middle tibiæ wholly yellow, ending in a long, strong, apical spur gigas Curran.
Middle tibiæ blackish on the apical third (without spur?) insignis Walker.
Posterior femora with numerous, fairly long, stiff, black hairs extending along most
of the lower surface (from the type) quadrivittatus Wiedemann.
Posterior femora without numerous long, stiff, black hairs below, with only a
few black bristly hairs apically albiceps Walker.

Tachinidæ

JURINELLA Brauer and Bergenstamm

The five South American species of this genus examined by me may be separated as follows.

- 2. Third abdominal segment with only a single pair of discal bristles, the second segment with not more than two pairs, usually only one. . minor, new species. Second and third abdominal segments each with several pairs of discal spines. . 3.
- 4. First two antennal segments brownish; discals numerous and scattered.

major, new species.

Jurinella minor, new species

Thorax and scutellum densely grayish yellow or yellowish pollinose, the dark vittæ obscure; abdomen shining ferruginous or castaneous with tapering darker vitta extending almost to the apex of the third segment. Length, 12 mm.

Male.—Narrowest width of front equal to width of one eye. Face and cheeks white pruinose, the pollen of the front and occiput rather cinereous or dull yellowish. Hair of the front black, elsewhere pale yellowish and much finer. Four or five pairs of more or less reclinate frontal bristles, the anterior four pairs more or less convergent. Vertical bristles long, decussate; outer verticals three-fourths as long as the verticals, divergent; black occipital cilia extending almost to the lower edge of the eyes. Cheeks three-fifths as wide as eye-height. Antennæ reddish; third segment chiefly brown, slightly longer than the second, convex above, its lower edge almost straight; arista rusty reddish, both the basal segments about three times as long as wide.

Thorax blackish, the scutellum evidently yellowish brown above, the posterior calli and lower part of the scutellum brownish yellow. Hair of the pleura yellow; three sternopleural bristles. Scutellum with three strong marginals and two weaker, suberect pairs which evidently belong with the numerous, suberect stout bristles of the disc. Mesopleura with an oblique row of black bristles above.

Legs castaneous, the tibiæ brownish red. Front and middle femora grayish pollinose and reddish-yellow pilose behind, the pale hairs not conspicuous, the legs elsewhere black-haired. Claws reddish, with black tips, the pulvilli elongate, yellow.

Wings lightly imfumated; epaulet yellow. Squamæ white. Halteres rusty yellow.

Abdomen shining ferruginous or castaneous, the fourth segment whitish pollinose. Second segment with one pair of discals and marginals, the third with a pair of discals and row of marginals, fourth with row of discals across the basal third and a row of preapical marginals, the two rows connected laterally by scattered bristles which become numerous on the under side. All the bristles are tapering and moderately long. Sternites with tapering bristles, only those on the apical sternite inclined to be somewhat blunt. Hair black, subappressed, erect along the middle of the abdomen and on the whole of the fourth segment.

Female.—Front one and one-sixth as wide as eye; two pairs of strong orbital bristles; pile of the front mostly yellow but chiefly brown on the ocellar triangle.

Second abdominal segment with four discals (abnormal?), the second weaker pair lying in front of the normal pair and closer together. Pulvilli small.

Type, male, Chapada, Brazil, November (Williston Collection). Allotype, female, Chapada, (Williston Collection).

Jurinella fuscicornis, new species

Thorax densely grayish pollinose, less thickly so posteriorly, the scutellum only thinly so; abdomen castaneous, clothed with abundant spines. Length, 14 mm.

Male.—Face, cheeks and lower part of occiput whitish pruinose, the front and occiput with grayish pruinescence which has yellowish tinge in some lights. Hair of head pallidly yellowish, the parafrontals with black hairs outside the frontal rows. Frontal vitta reddish brown, not as wide as parafrontal; front two-thirds as wide as one eye. Vertical bristles strong, decussate, the outer verticals two-thirds as long, divergent. Palpi reddish yellow. Antennæ brownish, the third segment reddish basally and below, longer than the second, convex above; arista with the basal two segments elongate, the first shorter than the second.

Thorax black in ground color, the mesonotum blue-black; dark vittæ moderately distinct. Three sternopleural bristles; pleura yellow pilose; some black bristles on the sternopleura above and on the mesopleura above. Scutellum brownish red, with two large and one small marginal bristle on either side, the terminal marginals spinose and shorter, the disc of the scutellum with numerous rather short spines.

Legs castaneous, the anterior and middle femora grayish pollinose and yellow pilose behind, the legs elsewhere with black hair. Claws and pulvilli elongate, reddish yellow, the former with brown apices.

Wings lightly infuscated; epaulet brown. Squamæ fuscous, with brownish border. Halteres infuscated, with paler base.

Abdomen castaneous. Median half of the second segment with numerous spines; third segment with the many discal spines reaching almost to the sides posteriorly and with a row of much stronger marginals; fourth segment with numerous spines covering almost the whole surface. Sternites with long spines.

A single male, Chapada, Brazil, (Williston Collection).

Jurinella major, new species

Thorax densely gray or grayish ochreous pollinose; abdomen shining castaneous, densely bristled. Length, 15 to 17 mm.

Male.—Hair of head fine, pale yellowish, the parafrontals outside the frontal rows with coarser, short black hairs; occiput with a single row of black bristles on the upper three-fourths behind the eyes. Head whitish pruinose with slight yellowish tinge, especially on the parafrontals and upper portion of the occiput. Seven to nine strong frontal bristles in each row, the upper four or five more or less reclinate; outer verticals three-fourths as strong as the decussate verticals. Palpi reddish. Antennæ black or brown with the third segment often largely reddish, its sides almost parallel, the apex oblique with the corners rounded; both basal aristal segments three or four times as long as wide, the arista tapering and short pubescent.

Pleura, scutellum and mesonotum laterally, reddish brown beneath the dense grayish or grayish ochreous pollen which leaves the usual vittæ quite narrow from posterior view, but from anterior view these are paler in color than the more olivaceous

general color. Three sternopleural bristles; corners of scutellum and the pleura with fine yellow pile. Scutellum with many short, stout spines on the disc; no decussate bristles; mesonotum and scutellum with coarse black hairs.

Legs black or brown, the anterior femora behind and the others beneath on the basal half, grayish yellow pollinose and yellowish pilose, the coxe also yellow pilose, the hair and bristles elsewhere black. Claws and pulvilli bright yellow, elongate, the claws with black apices.

Wings lightly fuscous. Squamæ pale fuscous; halteres rusty yellowish.

Abdomen shining castaneous, a little longer than wide, convexly tapering, the base much wider than the thorax. First segment without bristles, the second with the median third covered with stout spines, the third with numerous stout spines, the large anterior angles bare; fourth segment almost wholly spinose. Coxæ with normal bristles, the sternites with stout spines.

Female.—Sometimes paler, more ferruginous. Pulvilli small, but larger than usual. Squamæ white.

Described from one male and two females, Chapada, Brazil, and one male, Rio de Janeiro, (Williston Collection).

Jurinella thoracica, new species

Thorax and scutellum densely yellowish gray pollinose; abdomen shining ferruginous, the fourth segment clothed with shining pale yellowish pollen (posterior view); second and third segments with spinose discals in an arched row, the second also with some smaller ones. Length, 15 mm.

Female.—Face and cheeks white pollinose, the latter two-thirds the eye-height. Head with fine yellow pile the front sometimes with mostly stout bristly hairs outside the frontal bristles but the orbits and ocellar triangle bear yellow pile; frontal vitta rusty red, strongly narrowed above, nowhere nearly as wide as the parafrontal opposite. Orbital bristles long; vertical bristles decussate the outer verticals three-fourths as long and divergent. Antennæ reddish, the third segment largely brownish, not quite as long as the second.

Thorax black in ground color the posterior calli and scutellum rusty yellowish, the pollen almost concealing the ground color, the slender dark vittæ distinct. Pleura yellow pilose, the mesopleura with numerous black bristles on the upper half in front. Two sternopleural bristles; three pairs of lateral marginal scutellar bristles and two or three pairs of blunt marginal bristles, the scutellum also with two irregular rows of short spines across the disc.

Femora and tarsi black or brownish, the tibiæ reddish, the anterior four femora grayish pollinose and yellow pilose behind, the legs elsewhere black haired. Claws reddish, the apical third black; pulvilli yellowish, large for female.

Wings lightly infuscated; epaulet yellow. Squamæ white; halteres reddish. Abdomen shining ferruginous, the immediate base of the third segment and its middle line, thinly whitish pruinose from posterior view. On the second and third segments there are four strong discal spines on each side of the middle arranged slightly obliquely so as to form an arch, while on the second segment there are several small spines in addition; second segment with four pairs of marginals which increase in length outwardly, the third segment with a continuous row, the two or three inner pairs shorter; fourth segment with a row of discals across the basal third and a row

of preapicals, the sides with many bristles connecting these two rows and becoming numerous below. Sternites with rows of spines apically. Hair of the abdomen black, appressed; finer and erect on the fourth segment. Venter with some fine yellowish hairs on the basal half.

Described from two females from Chapada, Brazil, (Williston Collection).

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In American Museum Novitates, Number 176, June 17, 1925, I described Condylostylus tumantumari from British Guiana. An examination of the type specimen of Sciapus guttula Wiedemann shows that tumantumari Curran is a synonym of guttula Wiedemann. The portion of Becker's key describing the color of the tibiæ for this species is quite misleading. The legs are colored as I have described them and not wholly blackish brown or black.

Syrphidæ

Cerioides victoria, new species

Length, 11.5 mm.

Male.—Face and cheeks shining black, the former with a large, subtriangular yellow spot reaching from the upper two-fifths to the oral angles; another yellow spot extending from above this to the upper angles of the eyes, the front with a moderately wide black median vitta, the very short, broad, antennal pedicle and the ground color about its base, rusty reddish; a broad black stripe (a little longer than wide) reaches from the median facial vitta to the orbits at the upper third of the face. Vertical triangle with a roundish orange spot on either side at the vertex,

otherwise black, grayish pubescent; occiput black, gray pollinose. The cinereous hair is short and sparse. The eyes touch for a distance equal to the length of the frontal triangle. Antennæ brown, the first segment on the inner surface and the third basally, rusty reddish, the third with whitish sheen; lengths of the segments as 10:6:5.

Thorax dull black; humeri yellow; posterior calli and scutellum wine-red, the latter with the basal fourth black. Pile on disc yellow, elsewhere cinereous, very short.

Legs wine-reddish, the femora black, except the broad apices and the base of the posterior pair. Anterior and posterior tarsi black, at least above, the middle pair somewhat darker above.

Wings brownish in front and broadly so along the longitudinal veins. Squamæ fuscous; halteres orange with fuscous knob.

Abdomen dull black, the second segment strongly constricted and shorter than its apical width, the third and fourth large, forming an egg-shaped club; the abdomen is narrowed from the base to the middle of the second segment. Broad apices of the second, third and fourth segments orange or yellow. Abdominal pile short, black; yellow on the sides and yellow areas.

FEMALE.—The upper yellow facial spot is square and lies opposite the antennæ, the front elsewhere black, except the roundish vertical spots.

Described from two males and one female, Victoria, Australia, (Edwards Collection).

Volucella nigropictoides, new species

Allied to nigropicta Portschinsky, from which it differs in having the black abdominal fasciæ entire, the narrow base and extreme apex of the first three sternites white, the squamal fringe brownish red and shorter; there is generally more black pile on the thorax and always less on the abdomen. Length, 19 to 24 mm.

Male.—Head rusty reddish yellow the pile wholly yellow, short on the eyes. Face deeply concave above, the lower portion more prominent than the antennal base, the tubercle long and conspicuous; face produced moderately downwards, perpendicular below the tubercle, the oral angles acute. Frontal triangle very small but prominent, only a little larger than the elongate vertical triangle; eyes touching for twice the length of the frontal triangle; vertical triangle but little prominent. Antennæ rusty reddish, the third segment broad, slightly tapering, gently curved upwards towards the end; aristal rays long, blackish on the apical half or more.

Thorax dark ferruginous; a large area on the middle of the pleura, the prothorax wholly, humeri, sides of mesonotum before the suture and a pair of more or less indefinite submedian vittæ, reddish or yellowish, the vittæ often connected along the suture with the lateral pale color; posterior calli rusty reddish. Scutellum metallic blackish with a large, obscure apical area rusty reddish. A median, geminate yellow pollinose vitta extends from the anterior margin of the mesonotum almost to the scutellum. The pile of the thorax is yellowish or reddish, but the mesonotum is usually black-haired except on the broad margins, incomplete median vitta and along the suture; scutellum wholly black-haired. Ten to twelve strong, black prescutellar bristles; scutellum with marginal row of four bristles on each side; metapleura with dense black pubescence.

Coxæ and legs rusty reddish, clothed with short black hair and appearing ferruginous.

Wings yellowish on the basal half and towards the apex of the marginal and submarginal cells, cinereous hyaline behind; with an irregular brown fascia extending from the costa over the crossveins and along the sixth vein to the apex of the anal cell and a preapical cloud in front which is more or less distinctly joined along the costa to the median fascia and is carried backwards as conspicuous clouds on the apical and discal crossveins. The petiole of the marginal cell is carried outwards to the costa. Squamæ deep brown, with brownish red or bright red fringe. Halteres yellowish tinged, the knob infuscated basally.

First abdominal segment ferruginous with an elongate, apical blackish spot on either side, the second and third segments yellow on the basal two-fifths, elsewhere brown, the second yellow on the basal half at the sides; fourth segment with a transverse, usually slightly oblique brown spot on either side situated chiefly in front of the middle of the segment, otherwise rusty yellowish with paler apical third or more. Venter shining blackish brown; immediate apex of the first three sternites and the narrow base of the second to fourth, whitish yellow, the fifth sternite rusty yellow with a large, irregular, diffuse median brownish fascia. Abdominal pile very short, fulvous, only the second segment with a very narrow black-haired apical band. First sternite, basal half of the second and transverse basal triangles on the two following, tawny pilose, the venter elsewhere with coarse black hair. Genitalia yellow.

Female.—Front slightly widening anteriorly, very prominent, strongly convex, wholly clothed with very short yellow hair. Spots on fourth abdominal segment larger, fused or almost so in the middle; fifth segment wholly yellow. Sternites with short appressed hairs.

Described from five males and two females, Yen-ping, China; the holotype, male, taken on August 13, 1917; the allotype, female, on July 26. The other specimens were captured on the following dates: June 21, July 15, 26, 28, and August 3, 1917. Collected by Mr. Harry R. Caldwell.

*This species belongs to the *inanis* group and comes nearest *nigropicta* in structure and color but differs markedly in both respects. The type of *nigropicta* came from Amur and I have a female specimen which was probably collected at the same time as the type. In this specimen the dark abdominal fasciæ are all broadly interrupted, the front is differently shaped, etc.

Milesia sinensis, new species

Large, yellow marked with black. Resembles *M. crabroniformis* Fabricius but the face is shorter, the lower edge of the cheeks scarcely oblique, the face not noticeably produced downwards, pleura paler, mesonotum more extensively black; abdomen paler yellow, with black fasciæ, etc. More like the Nearctic *M. virginiensis* Drury but the front of the male bears a black triangle and that of the female is more black; pleura yellow, with two moderately narrow black bands and the first abdominal segment is yellow instead of black. Length, 25 to 32 mm.

Male.—Face, cheeks and back of head below, yellow, the frontal triangle similarly colored on the sides, a broad median vitta black; cheeks with a black

stripe in front; head yellow pollinose except on the black areas mentioned and the posterior third of the elongate vertical triangle. Pile of the head yellowish except on the posterior portion of the vertical triangle and some short, black bristles on the occiput above. Frontal prominence subtriangular, large. Antennæ ferruginous, the first segment yellow except the base.

Thorax opaque; mesonotum black, with a pair of broad, widely separated yellow vittæ on black ground reaching to behind the suture and connected in front with the yellow humeri and along the suture with the yellow pleura; a broad, prescutellar fascia of yellow pollen. Pleura yellow with a black fascia behind the humeri extending over the pectus and an oblique band behind reaching from the middle coxæ to the black metanotum. Scutellum yellow, the base broadly shining black. Thorax with short yellow pile except that the posterior black mesonotal band bears slightly shorter, stouter black hair.

Legs yellow or reddish yellow, the tarsi brown except the basal three-fourths of the first and whole of the apical segment. Anterior femora normally widened, on the basal half below with an elongate broad black spot (situated in the depression) which bears short black setulæ. Posterior femora more or less brown below and behind, their tibiæ with an elongate brown spot on the under surface. Pile of the legs yellow, the posterior femora and tibiæ on the under side with long black pile, the dark tarsal segments also black-haired; anterior tibiæ with a patch of short, stout spines before the lower apex.

Wings cinereous hyaline, narrowly luteous in front, the subcostal cell more brownish. Wings clothed with villi except between the spurious vein and the fifth vein. Squamæ and halteres yellow, the former paler basally and with yellow fringe.

Abdomen yellow, the basal half of each segment dull, elsewhere shining; narrow base of second to fourth segments, except the sides and narrow apices of second and third segments, black; second segment marked with opaque black as follows: a slender median vitta on the basal two-thirds and a slender fascia lying across its posterior end, the sides on the outer fourth, curved strongly forward to the basal twofifths of the segment. The third segment bears an almost transverse slender fascia across the middle, but it is produced forwards in the middle to form a narrow triangle which reaches half-way to the base of the segment, the triangle cut out behind by yellow ground. On the fourth segment the black fascia rises about the middle of the segment at the sides, is strongly oblique, the inner ends carried forwards to form a triangle which reaches to the basal fourth of the segment. The abdominal pile is yellow, short and fine; on the sides below, long and abundant, but coarser and black as follows: the second segment on and behind the black fascia, on the posterior fourth of the third segment expanding as lateral triangles and on the fifth segment behind the black fascia except that there is coarser yellow pile extending to slightly behind the fascia on the broad median portion. The apex of the abdomen bears a row of dense, short, black, posteriorly directed bristles. Black pile of the abdomen subappressed. Venter vellow, the first sternite with a transverse, blackish, rectangular spot in the middle, the second with narrow median vitta and preapical fascia, the third with the broad apex; triangularly expanded in the middle, the fourth, except the basal third, black. Pile of the venter long, yellow, a few brown hairs on the apical sternite. Genitalia yellow and clothed with yellow pile.

Female.—Front densely ochreous pollinose, leaving a slender median vitta which expands anteriorly and is shining above the antennæ, black, the vertex also

black, subshining. Front clothed with fine yellow pile except that the hair is black on the black upper portion. The venter bears wider black bands and the fourth sternite bears considerable stout black hair. The fifth segment is wholly reddish and 'clothed above and below with coarse black hair.

Described from three males and two females, Yen-ping, China, taken on the following dates: female, July 14; female, August 23; male, September 1; male, September 3; male, September 6, 1917. The holotype is a male. Collected by Mr. Harry R. Caldwell.

Mesembrius tuberosum, new species

Most closely allied to *bengalensis* Wiedemann but the middle femora, while strongly constricted towards the apex, lack the mammiform projection below, being obliquely narrowed; there is a large sub-basal tubercle on the middle femora below which is decidedly more pronounced than in *bengalensis*. Length, about 12 mm.

Male.—Face, frontal triangle and occiput silvery white pollinose, the pollen on the latter becoming yellowish above. Middle of the face with a broad black vitta, less thickly pollinose and with black hairs, the face elsewhere, and occiput, with fine, white hair which, however, is yellowish tinged above; occipital cilia restricted to the upper fourth, black. Vertical and frontal triangles black pilose. Face perpendicular in profile, with faint median convexity; frontal prominence robust, moderately strong; lunula shining brown; vertical triangle very long, velvety brown in front of the slightly elongate ocellar triangle; eyes touching for a distance not greater than the width of the ocellar triangle. Antennæ brownish yellow, shining, the third segment black with whitish sheen, not longer than wide, suborbicular; arista ferruginous.

Mesonotum rather dull black, with four grayish yellow vittæ, the dorsal pair tapering slightly posteriorly but widened immediately in front of the scutellum to form a narrow fascia, the lateral ones broader, less distinct and obsolete on the posterior calli. Mesonatum short yellow pilose, with a triangle of black pile on either side of the median vittæ behind the wing root and a less distinct one on the median black vitta. Pleuro with grayish pollen and longer, fine, pale yellow pile. Scutellum translucent yellow with narrow blackish base, the pile wholly yellow.

Legs black; basal fourth of the anterior four tibiæ and immediate base of the posterior pair, reddish yellow, the tips of the anterior four femora reddish. Legs for the most part black-haired, the anterior femora posteriorly and their tibiæ on the basal half behind, clothed with fine yellow hair which is rather dense on the apical half of the femora and on the tibiæ and longer on the basal half of the femora, the long black pile on the posterior half of the tibiæ continuing onto the first tarsal segment. Middle femora with short yellow pile behind, the pile forming an apical tuft; posterior femora yellow pilose on more than the basal half above and on not more than the basal third below. Middle femora with a large, very strong shining tubercle near the base of the antero-ventral surface, greatly swollen, widest just beyond the tubercle, thence gradually narrowing to the apical fourth where the femora are strongly, obliquely narrowed. Middle tibiæ somewhat deformed on the apical third and slightly broadened. Posterior femora without any strong hair-patches below, their tibiæ compressed, their tarsi broadened, the first segment with moderately long, fine, curved hairs anteriorly, the basal nodose hairs numerous.

Wings cinereous hyaline. Squamæ and halteres yellow, the former with yellow fringe.

Abdomen dull reddish yellow, with black fasciæ; first segment with a blackish spot towards each side and also black in the middle. Second segment with an incomplete basal and entire apical, narrow, opaque black fascia, connected in the middle by a vitta which widens towards each end so as to leave the inner ends of the large yellow spots rounded, the immediate apex of the segment shining reddish. Third segment with an obscure, narrow, blackish preapical fascia which is carried slightly forward in the middle; the apex of the segment more broadly shining reddish; fourth segment with a basal yellow pollinose band which broadens strongly to the sides, followed by a dull rusty brownish arch, the apex shining rusty reddish or ferruginous. Pile fine, yellowish, coarser and black on the posterior black fasciæ and shining reddish bands.

Female.—Front dull brownish black, rather grayish on the anterior half especially towards the sides, the pile black except on the sides below where it is white. Legs simple, the anterior femora with black hair on the apical posterior third. Abdomen much darker, the first two segments similarly marked except that the posterior opaque black fascia is wider and there is no reddish apical fascia; third segment with the basal half (more laterally) reddish yellow, elsewhere black; fourth with only the basal third orange, the fifth wholly black but probably with a more or less distinct pollinose fascia or at least lightly grayish pollinose. Fifth segment wholly pale pilose.

Described from three specimens from Yen-ping, China, the type male taken on September 11, 1917, female, September 13; paratype male in the spring of 1915. Collected by Mr. Harry R. Caldwell.

The relationship of this species is best shown by the table of Oriental species which follows. I know of only six species of *Mesembrius* from the Oriental region.

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Tachinidæ

JURINELLA Brauer and Bergenstamm

The five South American species of this genus examined by me may be separated as follows.

- Third abdominal segment with only a single pair of discal bristles, the second segment with not more than two pairs, usually only one. *minor*, new species.
 Second and third abdominal segments each with several pairs of discal spines. 3.
- 4. First two antennal segments brownish; discals numerous and scattered.

major, new species.

Jurinella minor, new species

Thorax and scutellum densely grayish yellow or yellowish pollinose, the dark vittæ obscure; abdomen shining ferruginous or castaneous with tapering darker vitta extending almost to the apex of the third segment. Length, 12 mm.

Male.—Narrowest width of front equal to width of one eye. Face and cheeks white pruinose, the pollen of the front and occiput rather cinereous or dull yellowish. Hair of the front black, elsewhere pale yellowish and much finer. Four or five pairs of more or less reclinate frontal bristles, the anterior four pairs more or less convergent. Vertical bristles long, decussate; outer verticals three-fourths as long as the verticals, divergent; black occipital cilia extending almost to the lower edge of the eyes. Cheeks three-fifths as wide as eye-height. Antennæ reddish; third segment chiefly brown, slightly longer than the second, convex above, its lower edge almost straight; arista rusty reddish, both the basal segments about three times as long as wide.

Thorax blackish, the scutellum evidently yellowish brown above, the posterior calli and lower part of the scutellum brownish yellow. Hair of the pleura yellow; three sternopleural bristles. Scutellum with three strong marginals and two weaker, suberect pairs which evidently belong with the numerous, suberect stout bristles of the disc. Mesopleura with an oblique row of black bristles above.

Legs castaneous, the tibiæ brownish red. Front and middle femora grayish pollinose and reddish-yellow pilose behind, the pale hairs not conspicuous, the legs elsewhere black-haired. Claws reddish, with black tips, the pulvilli elongate, yellow.

Wings lightly imfumated; epaulet yellow. Squamæ white. Halteres rusty yellow.

Abdomen shining ferruginous or castaneous, the fourth segment whitish pollinose. Second segment with one pair of discals and marginals, the third with a pair of discals and row of marginals, fourth with row of discals across the basal third and a row of preapical marginals, the two rows connected laterally by scattered bristles which become numerous on the under side. All the bristles are tapering and moderately long. Sternites with tapering bristles, only those on the apical sternite inclined to be somewhat blunt. Hair black, subappressed, erect along the middle of the abdomen and on the whole of the fourth segment.

Female.—Front one and one-sixth as wide as eye; two pairs of strong orbital bristles; pile of the front mostly yellow but chiefly brown on the ocellar triangle.

Second abdominal segment with four discals (abnormal?), the second weaker pair lying in front of the normal pair and closer together. Pulvilli small.

Type, male, Chapada, Brazil, November (Williston Collection). Allotype, female, Chapada, (Williston Collection).

Jurinella fuscicornis, new species

Thorax densely grayish pollinose, less thickly so posteriorly, the scutellum only thinly so; abdomen castaneous, clothed with abundant spines. Length, 14 mm.

Male.—Face, cheeks and lower part of occiput whitish pruinose, the front and occiput with grayish pruinescence which has yellowish tinge in some lights. Hair of head pallidly yellowish, the parafrontals with black hairs outside the frontal rows. Frontal vitta reddish brown, not as wide as parafrontal; front two-thirds as wide as one eye. Vertical bristles strong, decussate, the outer verticals two-thirds as long, divergent. Palpi reddish yellow. Antennæ brownish, the third segment reddish basally and below, longer than the second, convex above; arista with the basal two segments elongate, the first shorter than the second.

Thorax black in ground color, the mesonotum blue-black; dark vittæ moderately distinct. Three sternopleural bristles; pleura yellow pilose; some black bristles on the sternopleura above and on the mesopleura above. Scutellum brownish red, with two large and one small marginal bristle on either side, the terminal marginals spinose and shorter, the disc of the scutellum with numerous rather short spines.

Legs castaneous, the anterior and middle femora grayish pollinose and yellow pilose behind, the legs elsewhere with black hair. Claws and pulvilli elongate, reddish yellow, the former with brown apices.

Wings lightly infuscated; epaulet brown. Squamæ fuscous, with brownish border. Halteres infuscated, with paler base.

Abdomen castaneous. Median half of the second segment with numerous spines; third segment with the many discal spines reaching almost to the sides posteriorly and with a row of much stronger marginals; fourth segment with numerous spines covering almost the whole surface. Sternites with long spines.

A single male, Chapada, Brazil, (Williston Collection).

Jurinella major, new species

Thorax densely gray or grayish ochreous pollinose; abdomen shining castaneous, densely bristled. Length, 15 to 17 mm.

Male.—Hair of head fine, pale yellowish, the parafrontals outside the frontal rows with coarser, short black hairs; occiput with a single row of black bristles on the upper three-fourths behind the eyes. Head whitish pruinose with slight yellowish tinge, especially on the parafrontals and upper portion of the occiput. Seven to nine strong frontal bristles in each row, the upper four or five more or less reclinate; outer verticals three-fourths as strong as the decussate verticals. Palpi reddish. Antennæ black or brown with the third segment often largely reddish, its sides almost parallel, the apex oblique with the corners rounded; both basal aristal segments three or four times as long as wide, the arista tapering and short pubescent.

Pleura, scutellum and mesonotum laterally, reddish brown beneath the dense grayish or grayish ochreous pollen which leaves the usual vittæ quite narrow from posterior view, but from anterior view these are paler in color than the more olivaceous

general color. Three sternopleural bristles; corners of scutellum and the pleura with fine yellow pile. Scutellum with many short, stout spines on the disc; no decussate bristles; mesonotum and scutellum with coarse black hairs.

Legs black or brown, the anterior femora behind and the others beneath on the basal half, grayish yellow pollinose and yellowish pilose, the coxe also yellow pilose, the hair and bristles elsewhere black. Claws and pulvilli bright yellow, elongate, the claws with black apices.

Wings lightly fuscous. Squamæ pale fuscous; halteres rusty yellowish.

Abdomen shining castaneous, a little longer than wide, convexly tapering, the base much wider than the thorax. First segment without bristles, the second with the median third covered with stout spines, the third with numerous stout spines, the large anterior angles bare; fourth segment almost wholly spinose. Coxæ with normal bristles, the sternites with stout spines.

FEMALE.—Sometimes paler, more ferruginous. Pulvilli small, but larger than usual. Squamæ white.

Described from one male and two females, Chapada, Brazil, and one male, Rio de Janeiro, (Williston Collection).

Jurinella thoracica, new species

Thorax and scutellum densely yellowish gray pollinose; abdomen shining ferruginous, the fourth segment clothed with shining pale yellowish pollen (posterior view); second and third segments with spinose discals in an arched row, the second also with some smaller ones. Length, 15 mm.

Female.—Face and cheeks white pollinose, the latter two-thirds the eye-height. Head with fine yellow pile the front sometimes with mostly stout bristly hairs outside the frontal bristles but the orbits and ocellar triangle bear yellow pile; frontal vitta rusty red, strongly narrowed above, nowhere nearly as wide as the parafrontal opposite. Orbital bristles long; vertical bristles decussate the outer verticals three-fourths as long and divergent. Antennæ reddish, the third segment largely brownish, not quite as long as the second.

Thorax black in ground color the posterior calli and scutellum rusty yellowish, the pollen almost concealing the ground color, the slender dark vittæ distinct. Pleura yellow pilose, the mesopleura with numerous black bristles on the upper half in front. Two sternopleural bristles; three pairs of lateral marginal scutellar bristles and two or three pairs of blunt marginal bristles, the scutellum also with two irregular rows of short spines across the disc.

Femora and tarsi black or brownish, the tibiæ reddish, the anterior four femora grayish pollinose and yellow pilose behind, the legs elsewhere black haired. Claws reddish, the apical third black; pulvilli yellowish, large for female.

Wings lightly infuscated; epaulet yellow. Squamæ white; halteres reddish. Abdomen shining ferruginous, the immediate base of the third segment and its middle line, thinly whitish pruinose from posterior view. On the second and third segments there are four strong discal spines on each side of the middle arranged slightly obliquely so as to form an arch, while on the second segment there are several small spines in addition; second segment with four pairs of marginals which increase in length outwardly, the third segment with a continuous row, the two or three inner pairs shorter; fourth segment with a row of discals across the basal third and a row

of preapicals, the sides with many bristles connecting these two rows and becoming numerous below. Sternites with rows of spines apically. Hair of the abdomen black, appressed; finer and erect on the fourth segment. Venter with some fine yellowish hairs on the basal half.

Described from two females from Chapada, Brazil, (Williston Collection).