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THE GENUS RHAMPHOMYIA MEIGEN FROM FUKIEN, CHINA (Diptera: Empididae)[1]

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Abstract: Three new species of genus *Rhamphomyia* are described from Fukien, South China, and 3 undetermined species are recorded. Also their relationships to Japanese and Taiwan species are given.

The genus *Rhamphomyia* is a large group of subfamily Empidinae and contains several hundred known species which are mainly distributed in the temperate or subarctic regions of the Northern Hemisphere. In the eastern Palaearctic Region many species of this genus are described from Japan and Siberia, but from China, only one species, *R. klapperichi* Frey, 1953, is known. The majority of Asian subgenera and species groups of *Rhamphomyia* are palaearctic or holarctic in distribution, but several groups have limited distribution only in Japan and Taiwan or the arctotertiary relict distribution in the Far East and North America. The *Calorhamphomyia*, the *umbilicata* group of *Pararhamphomyia* and the *arakawae* group of *Collinaria* show the arctotertiary relict distribution, and *Orientomyia*, the *fluvirostris* group and the *ciliatopoda* group of *Pararhamphomyia* are confined to Japan or Japan and Taiwan. Though the records of Empididae from China are very limited, it would be an interesting problem to see how these groups are distributed in China.

Recently, I have had the opportunity to examine a considerable number of empid specimens from Fukien, South China, which were collected by Dr T. C. Maa and are in the collection of the Bernice P. Bishop Museum. A total of eight species of *Rhamphomyia* were found in the collection. These are two species of the *ciliatopoda* group of *Pararhamphomyia*, one species each of *Orientomyia*, *Rhamphomyia* (s. str.), *Eorhamphomyia*, and the *arakawae* group of *Collinaria*, and two species of uncertain subgenera. Distribution patterns of *Orientomyia* and the *ciliatopoda* group are similar and these groups are hitherto found in Southern Japan, Ryukyus and Taiwan. The *Calorhamphomyia* and *fulvirostris* group are more strongly represented in Northern Japan than *Orientomyia* and the *ciliatopoda* group. The *arakawae* group was hitherto known only from Japan and North America. However, after examining specimens of the *arakawae* group of Taiwan and Nepal, I presumed the occurrence of this group to be in the mountain region of Fukien. The Fukien species

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of *Eorhamphomyia* does not resemble any of the species found in Japan. I am reluctant to name the present species because the specimens are in poor condition. The subgenus *Rhamphomyia* is represented by several species including undescribed ones ranging from Hokkaido to Kyushu in Japan. Fukien is the southernmost locality of this subgenus. The *Calorhamphomyia*, which is known to be an outstanding group in the Japanese *Rhamphomyia*, and *Megacyttarus* are not included in this collection. Because of limited materials, it was difficult to evaluate whether two subgenera are found in the Fukien area; *Calorhamphomyia* does not occur in Taiwan.

The following abbreviations are used in the description: TT, thickness of tibia; LT, length of tibia; TF, thickness of femur; LF, length of femur; so LT2 is length of middle tibia. "Bristles (1.5× TT3)" means the bristles 1.5× as long as thickness of hind tibia.

I express my thanks to Dr J. L. Gressitt for the opportunity to study the collection at the Bernice P. Bishop Museum, and to Dr Carl M. Yoshimoto for reading the manuscript.

Rhamphomyia (Orientomyia) basisetosa Saigusa, n. sp. Fig. 1.

♂. *Head* black, dark gray pollinose; compound eyes separated by narrow but distinct frons, with facets almost of same size. Frons shining black, slightly wider than a frontal ocellus, and almost parallel-sided between frontal ocellus and just above antenna; face wide, grayish pollinose on dorsal 1/2, shining black on ventral 1/2 except for pollinose eye-margins; ocellar tubercle weak, with a pair of ocellar bristles and a few setulae; occiput with a row of short postocular bristles and a row of strong occipital bristles which are scattered on ventral 1/2 of occiput, occiput also covered with some fine black hairs on ventral surface. *Antenna* long, slender and black, seeming to be longer than head; relative lengths of antennal segments 1 : 2 : 3 : style=11 : 5 : 25 : 5; segment 1 characteristically long; 2 basal segments clothed with short fine hairs. Labrum almost as long as head height, brown; labella dark brown, clothed with a few fine black hairs; palpus concealed in holotype. *Thorax* black in ground color, densely dark gray pollinose; when viewed from above with naked eyes, mesoscutum with 3 broad grayish brown stripes. Chaetotaxy: bristles and hairs black; pronotal and pro-episternal hairs fine, prosternum bare; acrostichals absent, uniserial dorsocentrals short and fine; humerus with many fine hairs and a strong humeral bristle; 3 notopleural bristles with a few fine hairs, a weak presutural, a strong supra-alar, and a strong postalar; scutellum with 2 pairs of strong marginal bristles; metapleural cluster of many long hairs and a few bristles. *Legs* slender, predominantly yellow and short black-haired; coxae with integument brownish black, and grayish pollinose, femora yellow; front tibia brownish black except on yellowish base, middle and hind tibiae yellow, apex of the latter darkened, tarsi black except for basal 1/2 of middle and hind metatarsi. Femora short-haired, middle and hind femora with a double row of ventral hairs, which are weak even on apical 1/2 of hind femur. Front tibia with 3-4 posterodorsal and 1-2 posteroventral bristles on apical 1/2 in addition to 5-6 preapical ones; middle tibia with a double row of 4-5 dorsal bristles and a similar row of 2-3 ventral bristles (as long as TT2): hind tibia clothed with longish hairs ventrally, and with 2 dorsal rows of 5-6 bristles which are almost as long as TT3. Tarsi slender, metatarsi with many long bristles (1-1.5× thickness of metatarsus) on ventral

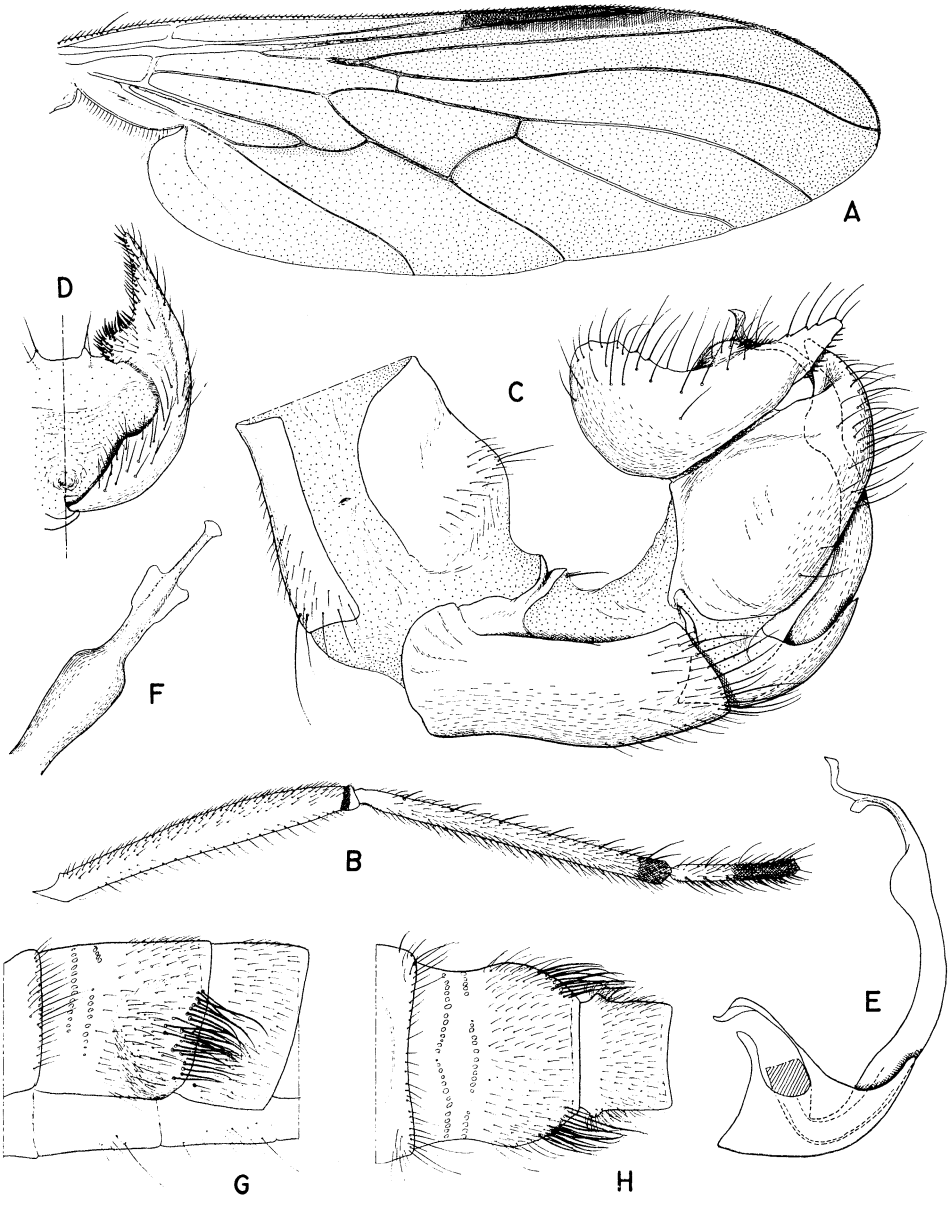

Fig. 1. *Rhamphomyia* (*Orientomyia*) *basisetosa* n. sp. ♂. A, wing; B, left hind femur, tibia and metatarsus; C, genitalia, lateral aspect; D, left cercus, dorsal aspect; E, aedeagus and ventral plate, lateral aspect; F, apical portion of aedeagus, posterior (ventral) aspect; G, abdominal segments 1–3, lateral aspect; H, ditto, dorsal aspect.

surface, tarsomere 2 also with shorter bristles. *Wing* long, moderately broad and weakly infuscate, but slightly yellowish on basal portion; axillary incision very acute, axillary lobe

well developed; stigma slender and brown; veins brown except for M_1, M_2, and basal portions of Sc, R and M which are more or less yellowish; veins R_{4+5}, M_1 and M_2 sinuate; latter two converging apically and basally, discal cell 2/3× as long as apical section of M_1 (first vein from discal cell), weakly pointing apically; vein A_1 complete to wing margin. *Abdomen* entirely blackish brown, thinly dark grayish pollinose, clothed with short black hairs; tergum 2 weakly swollen laterally on posterior 1/2 and adorned there with dense submarginal bristles, which are strong, curved and 1.5× as long as TF3, and conceal fine erect hairs on anterior portion of tergum 3; tergum 7 more or less dilated apically, and its sclerotization gradually shifting to intersegmental membrane; sternum 8 long, nearly 1.5× as long as sternum 7; tergum 8 being a very narrow transverse sclerite with a transverse glove, a pair of bristles on the dorsomedian line close to hind margin of tergum 8; lateral portions of tergum 8 connected with anterolateral corners of sternum 8; on large dorsal area of segment 8 behind tergum 8 there is a pair of weakly sclerotized concave portions which are connected with the lateral margins of sternum 8. *Genitalia*: cercus large, high and arched on basal 1/2, gradually tapering apically, and with an inner tubercle which bears numerous minute denticles; tergal lobe larger than cercus; ventral lamella moderately large, weakly emarginate at narrowed tip; aedeagus moderately long, thick on basal 1/2, weakly convex anteriorly (dorsally) beyond middle, then becoming much more slender and sinuate, bearing narrow lateral keels and a small lamellate ventral process preapically. *Length.* Body 6.2 mm; wing 6.8 mm.

Holotype ♂ (BISHOP 6939), Ta-chu-lan, 1000 m, Shaowu, Fukien, S. China, 25-30.IV. 1943, T. C. Maa (left wing on a slide, macerated genitalia glued on a card pinned under the whole insect).

Remarks. This new species somewhat resembles *R.* (*Orientomyia*) *heterogyna* Frey, 1952 and *R.* (*Orientomyia*) *spirifera* Frey, 1955 by the yellowish legs, but can be separated from the two known species by the weakly setulose hind femur, wide frons, and more generalized genitalia with weakly curved tergal lobes and stouter aedeagus. Two Taiwan species of the subgenus *Orientomyia*, *rostrifera* Bezzi, 1912 and *sauteri* Bezzi, 1912 have yellowish legs, but the present new species is distinguished by its stout aedeagus and broad tergal lobes.

Rhamphomyia (**Pararhamphomyia**) **maai** Saigusa, n. sp. Fig. 2.

♂. *Head* black, rather densely grayish pollinose; compound eyes contiguous for a long distance on frons, and upper facets slightly enlarged, but much smaller than frontal ocellus. Frons and face bare, the latter moderately broad and grayish pollinose; ocellar tubercle prominent, with a pair of distinct ocellar bristles and a few fine hairs; occiput with a row of moderately long, curved, black postocular bristles, and a row of occipital bristles on upper 1/2 of head, and bearing some fine long hairs along oral margin and neck. *Antenna* slightly longer than 2/3 × head length, black; relative lengths of segments 1 : 2 : 3 : style=10 : 8 : 24 : 7; 2 basal segments normally black-haired. Labrum as long as head height, brown; palpus short, brown, with 2 fine hairs, of which preapical one is long; labella pale brown. *Thorax* black in ground color, rather thinly covered with palegray pollen, mesonotum without prominent vittae. Coaetotaxy; all bristles and hairs black; 2 rows of 6-7 acrostichals, dorsocentrals uniserial, 13 in number, ending in 2 strong bristles behind; a strong humeral, a presutural, 3 strong notopleural, a weak

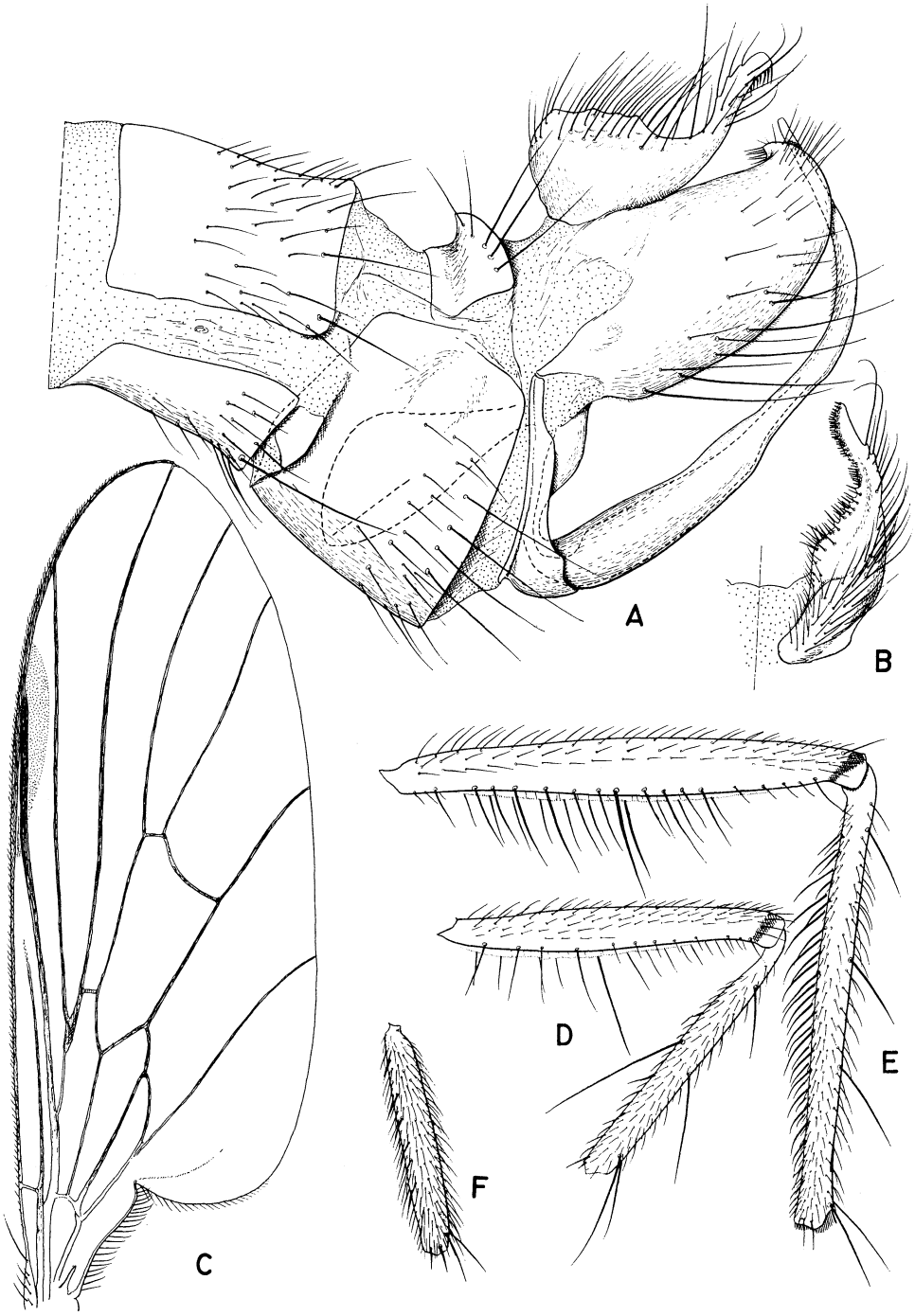

Fig. 2. *Rhamphomyia* (*Pararhamphomyia*) *maai* n. sp. ♂. A, genitalia, lateral aspect; B, left cercus, dorsal aspect; C, wing; D, left middle femur and tibia; E, left hind femur and tibia; F, left hind metatarsus, lateral aspect.

supra-alar and a strong postalar; a few fine hairs also covering humerus and notopleural region. Scutellum with a pair of strong inner bristles and another pair of very weak outer bristles; prosternum bare, pro-episternum with 4–5 fine hairs; metapleural cluster of many long bristly hairs. *Legs* moderately slender, simple, black-haired and entirely yellow including coxae, which are very thinly covered with whitish pollen. Front coxa with curved frontal preapical bristles. Femora sparsely short-haired above, front femur almost bare beneath; middle femur with an anteroventral row of 3–4 bristles (as long as TF2) on basal 1/2 and several much shorter weaker ones on apical 1/2, and with a posteroventral row consisting of 3–4 short bristles on basal 1/3, a strong bristle (2.5× TF2) slightly before middle and 9–10 long bristles (middle ones nearly as long as TF2, but apical ones shorter) on apical 1/2; hind femur with an anteroventral row of 12–13 strong bristles (1.5× TF3) on basal 3/4 and a stiff longer bristle at middle of femur, this row also represented by a few short hairs on apical 1/4; hind femur also with a similar row of posteroventral bristles, but shorter and not many in number. Front tibia covered with short pubescense and with a few preapical bristles; middle tibia with short fine bristles posteriorly, and bearing anterodorsally a subbasal (1/5× LT2), a middle (1/3× LT2), a preapical (1/3 × LT2) bristle and anteroventrally a very long bristle (1/2 × LT2) situated a little basad of the middle anterodorsal bristle, among a row of short posteroventral bristles, the middle one being longer than other bristles; hind tibia clothed with fine hairs above, mixed with 3 anterodorsal bristles (2 × TT3), 2 preaical dorsal bristles, and 2 rows of rather dense ventral bristles hairs (the longest being nearly as long as TT3), anterior row longest at middle, posterior one longest at 1/3 from base, both rows diminishing in length apically and basally. Tarsi all slender, prominent bristles only on preapical portion of metatarsi and following tarsomere, but metatarsi with a few short bristles on anterior and ventral surface. *Wing* almost as in *Rhamphomyia ciliatopoda* Saigusa, 1963, clear; basal portion with a slight yellowish tinge, veins brown, stigma elongate, pale brown, discal cell rather truncate apically as illustrated; haltere yellow. *Abdomen* subshining dark brown, thinly covered with brownish pollen, clothed with fine black hairs which are longer on terga 1 and 2; intersegmental membrane between terga 7 and 8 weakly sclerotized into a pair of broad subventral bands, which connect these sterna; tergum 8 short, sternum 8 long and broad, its hind marginal reflexed membrane also weakly sclerotized. *Genitalia* resembling those of *ciliatopoda*, but basal portion of cercus not much arched, apical process slenderer; tergal lobe more weakly produced apically; aedeagus shorter, stouter basally, and with fine pile on anterior surface of apical 1/3. *Length.* Body 4.1 mm; wing 4.8 mm.

Holotype ♂ (BISHOP 6940), Ta-chu-lan, Shaowu, Fukien, S. China, 23–28.XI.1942, T. C. Maa (left wing on a slide, macerated genitalia glued on a card pinned under the whole insect).

Remarks. This new species belongs to the *ciliatopoda* group of the subgenus *Pararhamphomyia* by the middle tibia bearing a long ventral bristle at the middle. The *ciliatopoda* group contains *rotundicauda* Saigusa, 1964 from Central Japan, *ciliatopoda* Saigusa, 1963, from Amami-Oshima, *yasumatsui* Saigusa, 1963, from Okinawa-Jima, and *curvitibia* Saigusa, 1965 from Taiwan. The new species is easily distinguished from these species by its most generalized genitalia with weakly arched cercus and shorter aedeagus, and by the entirely yellow legs.

Rhamphomyia (Pararhamphomyia) tachulanensis Saigusa, n. sp. Fig. 3.

♂. *Head* black, rather densely dark brown pollinose; compound eyes contiguous for a long distance on frons, with upper facets much enlarged, only slightly smaller than frontal ocellus. Frons and face bare, the latter broad and dark brown pollinose; ocellar tubercle very prominent, with a pair of weak ocellar bristles and a few fine hairs. Occiput dark brown pollinose, with similar bristling as in *Rhamphomyia maai* Saigusa. *Antenna* short, black, but head of holotype is parched, so I cannot state the relative lengths of head and antenna; relative lengths of segments 1 : 2 : 3 : style=7 : 6 : 21 : 7; segment 3 1.5× as long as basally thick; 2 basal segments with black setulae. Labrum brown, as long as head height; palpus and labella as in *maai*. *Thorax* black in ground color, mesonotum rather thinly covered with dark brown pollen, without vittae; pleura with a thin coating of grayish pollen. Chaetotaxy: almost quite as in *maai*; but acrostichals and dorsocentrals slightly shorter, the latter about 10 in number, foremost notopleurals weaker than the other two, outer scutellars slightly stronger than in *maai*. *Legs* slenderer than in other species of the *ciliatopoda* group, entirely brown. Coxae thinly grayish pollinose, preapical bristles of front coxa weaker than in *maai*; front and middle femora short-haired above, the former with 2 rows short ventral hairs (1/2× TF1), the latter with a double row of fine ventral bristles, anteroventral row consisting of less than 10 bristles, nearly as long as TF1 basally, but abruptly shortening apically, posteroventral bristles a little longer than anteroventral ones, about 10 in number, and mixing a very long stiff bristle (3.5 × TF2) just before middle of femur; hind femur with dorsal bristly hairs as long as TF3, or slightly shorter, an anteroventral row of about 20 bristly hairs decreasing their length towards both ends of femur, but the longest one at the middle of femur is nearly 1.5 × as long as TF3, and a posteroventral row of similar, but shorter hairs, and posteroventral long bristle (2× TF2) at middle. Front tibia short-haired anteriorly and ventrally, and with 1-2 long stiff anterodorsal hairs and a posterodorsal row of about 8 bristles which are lengthened apically, the longest being 3× as long as TT1; middle tibia with 3 anterodorsal bristles (subbasal one very short, middle one 2× as long as TT2, preapical one 4× as long as TT2) and a very long anteroventral bristle (1/2× LT2) at middle, and several longish posterodorsal bristly hairs; hind tibia similar to that of *maai*, but ventral hairs much weaker, and not so distinctly arranged in 2 rows as in *maai*, dorsal surface with 2 rows of 3-4 weak long bristles on apical 1/2. Tarsi long ane slender, but font and hind metatarsi slightly thicker than the corresponding tibia; front metatarsus clothed with several long bristles (1.5-2.5 × as long as thickness of metatarsus), tarsomeres 2-4 of front tarsus also with a few longish bristles at tip; middle tarsus simple except for a few weak preapical bristles; hind metatarsus clothed with longish hairs, and bearing each 3-4 antero- and posterodorsal bristles which are 2-2.5× as long as thickness of metatarsus, and 3-4 shorter anteroventral bristles, hind tarsomeres 2-4 with 2 preapical dorsal bristles. *Wing* slightly broader than in *maai*, with a pale brownish tinge; venation as in *maai* but discal cell shorter and more pointed apically; relative lengths of discal cell : 1st : 2nd : 3rd veins from discal cell=44 : 76 : 61 : 45. Haltere yellow. *Abdomen* dark brown, thinly brown, pollinose; pubescense of abdomen black, longer on hind margin of terga; intersegmental structures of apical abdominal segments almost as in *maai*. *Genitalia*: cercus small, its dorsal margin produced into a short preapical process, apical process short, curved inwards; tergal lobe slenderer basally; subanal sclerite bearing a pair of slen-

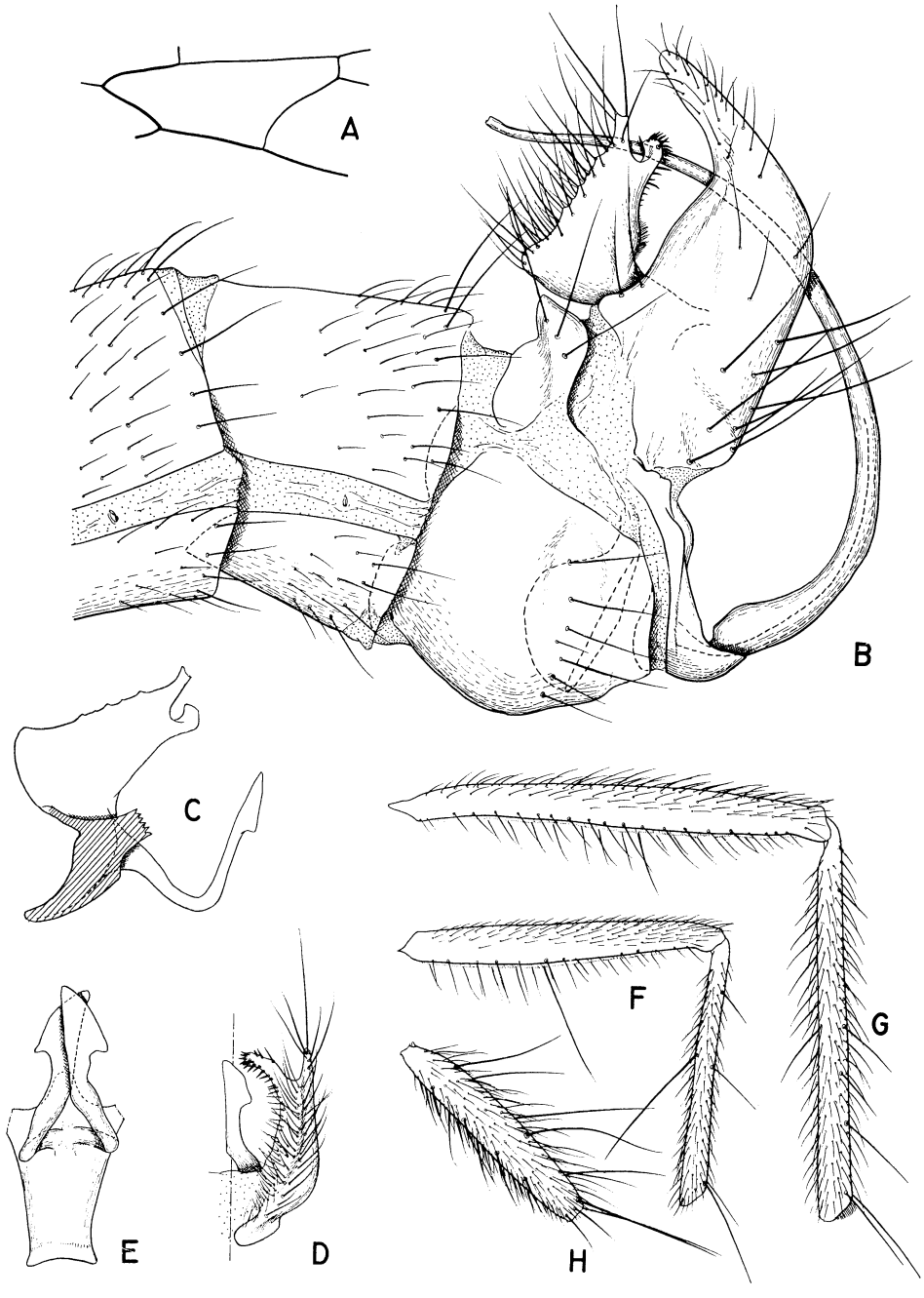

Fig. 3. *Rhamphomyia* (*Pararhamphomyia*) *tachulanensis* n. sp. ♂. A, discal cell of wing; B, genitalia, lateral aspect; C, cercus, subanal plate, and its process, lateral aspect; D, cercus and subanal process, dorsal aspect; E, subanal plate and its processes, posterior aspect; F, left middle femur and tibia; G, left hind femur and tibia; H, left hind metatarsus, lateral aspect.

der geniculate processes, of which apical portion is more or less spatulate. *Length.* Body 3.9 mm; wing 4.5 mm.

Holotype ♂ (BISHOP 6941), Ta-chu-lan, Shaowu, Fukien, S. China, 10-19.III.1943, T. C. Maa (right wing on a slide, macerated genitalia glued on a card pinned under the whole insect).

Remarks. This new species belongs to the *ciliatopoda* group of the subgenus *Pararhamphomyia*, but it is isolated from the other species of this group by its reduced bristles on legs and a subgenital sclerite bearing a pair of geniculate processes. This species is known to be present when other species of this group are dormant; except for a Taiwan species which appears in June, all species of the *ciliatopoda* group fly in late summer to autumn, while *tachulanensis* is known to be present in March.

Rhamphomyia (**Rhamphomyia**) sp.

1♀, Shaowu, Fukien, S. China, 15.III.1945, T. C. Maa.

This species is most closely related to *Rhamphomyia sulcatina* Collin, 1926, from Europe in the small size of body, biserial acrostichals, 6 scutellars, and weakly bristled hind femur, infuscate wings and mesonotum with 3 brown stripes. *Length.* Body 5.2 mm; wing 5.7 mm.

Rhamphomyia (**Collinaria**) sp. belonging to the *arakawae* group.

1♀, Upper Kuatun, 1400 m, Chungan, Fukien, S. China, 12-13.IV.1943, T. C. Maa.

This species is very closely related to *R. arakawae* Matsumura, 1915, in every respect. I cannot compare the detailed structure because the specimen is not in good condition. *Length.* Body 4.0 mm.

Rhamphomyia (**Eorhamphomyia**) sp.

1♀, Ta-chu-lan 1000 m, Shaowu, S. China, 25-30.IV.1943, T. C. Maa. 1♂, same locality, 20-25.IV.1943, T. C. Maa. 1♀, same locality, 20-21.IV.1945, T. C. Maa.

Entirely blackish brown, dark pollinose species; compound eyes contiguous in ♂, widely separated in ♀; antenna slender; mesonotum with dark dorsocentral stripes, 2 rows of acrostichals and 1 row of dorsocentrals, both very minute; in ♂, legs without long bristles except for a double row of ventral bristles on middle femur, 2 (possibly 4 in complete condition) dorsal bristles on middle tibia, longish dorsal hairs on hind tibia and metatarsus; ventral surface of hind tibia bare except for a few short bristles on extreme base; ♀ legs much shorter haired, apical 2/3 of hind tibia with a very short pennate fringe dorsally; vein A_1 complete; ♂ genitalia small and compact, without long processes on cerci and tergal lobes. Length: Body 7.0 mm (♂), 4.9-5.0 mm (♀); wing 7.0 mm (♂), 6.2-6.9 mm (♀).