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Revision of some genera of tribe Fiebrigellini and description of nine new species of *Anacamptoneurum* BECKER from the Oriental Region (Diptera: Chloropidae: Oscinellinae)

Panameduthathil Thomas CHERIAN

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Abstract. Genera *Polyodaspis* DUDA and *Fiebrigella* DUDA of the tribe Fibrigellini are revised and synonymised with *Anacamptoneurum* BECKER. Revised key to all the genera of the tribe and all the species of *Anacamptoneurum* from India and adjacent countries are given. Nine new species under the genus from the Oriental Region are described and additional notes on all the species reported from India are also given.

Key words: Diptera, Chloropidae, Oscinellinae, Anacamptoneurini, *Anacamptoneurum*, generic synonyms, new species.

✉ *Panameduthathil Thomas CHERIAN, Department of Zoology, University of Kerala, Kariavattom, Trivandrum – 695581, India.*
Email: cherian_pt07@yahoo.co.in

I. INTRODUCTION

NARTSHUK placed eight genera, namely *Anacamptoneurum* BECKER, *Chaetochlorops* MALLOCH, *Epimadiza* BECKER, *Fiebrigella* DUDA, *Heteroscinis* LAMB, *Lasiambia* ENDERLEIN, *Polyodaspis* DUDA and *Pseudogoniopsit*a DUDA under Fiebrigellini when she erected the tribe in 1983. CHERIAN & SHINIMOL (2008) synonymised *Pseudogoniopsita* with *Heteroscinis* and placed *Heteroscinoides* CHERIAN also under the tribe.

SABROSKY (1951) while dealing with most of the genera belonging to the complex had suggested that a comprehensive study would reduce the number of the genera which was later supported by ANDERSSON (1977). Based on the study of many new and some known species from the Oriental Region and those from other regions in the collections of the Smithsonian Institution and Rutgers University, U.S.A., genera *Polyodaspis* and *Fiebrigella* are synonymised with *Anacamptoneurum*. As the type genus *Fiebrigella* of tribe Fiebrigellini proves to be a synonym of *Anacamptoneurum,* it can no longer be the type genus of the tribe. Hence tribe Fiebrigellini with type genus *Anacamptoneurum* is proposed as the replacement name for the type genus *Fiebrigella*. Notes on and revised key to all the genera of the world recognized under the tribe are given. Besides, nine new species of *Anacamptoneurum*, all endemic to India, are described and a key to and additional notes on all the species reported from India are also given.

II. MATERIALS

The paper is based mainly on the specimens collected by the author and those in the National collections of the Head office, Zoological Survey of India, Kolkota (Calcutta) and its Regional Centers. Besides, those in the depositories of Tamil Nadu Agricultural University, Coimbatore; Indian Forest Research Institute, Dehradun, Rutgers University, U.S.A. and the Smithsonian Institution, U.S.A. were also studied during visits to these centers.

The type specimens are retained at present in the collections of the Department of Zoology, University of Kerala, Trivandrum and shall later be deposited in the National Collections, Western Ghats Regional Centre, Zoological Survey of India, Kozhikode (Calicut), Kerala, India.

Abbreviations for morphological structures:

Morphology nomenclature is followed after MC ALPINE et al. (1981).

acr – *acrostical* line
anepm – anepimeron
anepst – anepisternum
ant 2 – second antennal segment
ant 3 – third antennal segment
as – apical scutellar bristle
dc – *dorsocentral* line
1 *dc* – first dorsocentral bristle
fr – frontal hair
h – humeral bristle
if – interfrontal bristle
ivt – inner vertical bristle
kepst – katepisternum
npl – notopleural bristle
oc – ocellar bristle
orb – frontoorbital bristle
ovt – outer vertical bristle
pa – postalar bristle
psc – prescutellar bristle
pvt – postvertical bristle
r-m – radio-medial cross-vein
ss – subapical scutellar bristle
CER – cercus
EP – epandrium
HY– hypandrium
M1+2 – median vein 1+2
PH – phallus
PHE – phallapodeme
POG – postgonite
R1+2 – radius 1+2
R3+4 – radius 3+4
SUR – surstylus

III. SYSTEMATICS

Tribe **Fiebrigellini** NARTSHUK

Fiebrigellini NARTSHUK, 1983. *Entomologicheskoe obozrenie* **62**(3): 645.

Type genus: *Anacamptoneurum* BECKER (=*Fiebrigella* DUDA). Syn.nov.

A small tribe of usually stout bodied flies with frons often having oily lusture, broad gena divided by a diagonal ridge, usually naked eye with horizontal (rarely slightly vertical) long axis, usually strongly oblique *m-m* cross-vein and no femoral organ.

D i a g n o s t i c c h a r a c t e r s. Head wider than long; frons often with oily lustre; frontal triangle sometimes not clearly demarcated, *if* in one or two rows on each side or

densely scattered on triangle; face concave; facial carina reaching middle of face or epistomal margin as a low or raised ridge; eye bare, rarely with scattered pubescence; arista microscopically to distinctly pubescent; gena broad, divided by a diagonal ridge running from lower posterior angle of eye to vibrissal corner. Thorax usually glabrous with coarse microsculpture; scutum with punctate hairs rarely arranged in rows; scutellum semicircular, subtriangular or subconical with flat to convex disc and a few to numerous *ss* borne on small or prominent warts or small tubercles. Wing generally hyaline with strongly oblique m-m cross-vein and well developed anal area but rarely dark brown with receding anal area and m-m cross-vein of *Oscinella*-type. Legs rather stout, rarely slender with distinct tibial but no femoral organ. Abdomen short, with rather long hairs; female cerci slender; sursty-lus often large and broad; hypandrium not closed.

D i s t r i b u t i o n. All the Regions except Australia.

R e m a r k s. Various genera were brought together by different authors to constitute the complex of eight genera representing the tribe Fiebrigellini NARTSHUK. SABROSKY (1951) first recognized the close relationship existing among species of genera *Anacamptoneurum, Epimadiza* BECKER, *Fiebrigella* DUDA, *Polyodaspis* DUDA and the new world genus *Chaetochlorop*s MALLOCH when he mentioned them as belonging to a distinct group. KANMIYA (1983) rightly suggested transfer of *Pseudogoniopsita* DUDA to this group. NARTSHUK (1983) added *Lasiambia* ENDERLEIN and *Heteroscinis* LAMB to the group when she placed all the above eight genera under the tribe Fiebrigellini NARTSHUK. CHERIAN (2008) synonymised *Pseudogoniopsita* with *Heteroscinis* and placed *Heteroscinoides* CHERIAN (1989) also under this tribe. Thus eight genera coming under the tribe Fiebrigellini are so far known.

Very close relationship exists among many genera of this tribe rendering it rather difficult to determine precise generic limits. It may be easy to distinguish *Heteroscinis* LAMB as it possesses mostly regular rows of punctuate hairs on scutum. Even species of *Epimadiza* BECKER and *Chaetochlorops* MALLOCH may not present much problems because of the presence of greatly enlarged fore femur with its row of spines or denticles in the former and the strongly bristled nature of the latter, though in the case of *Chaetochlorops* some species may appear as exaggerated forms of *Polyodaspis* type as observed by SABROSKY (1951). Study of species of *Chaetochlorops* determined by SABROSKY and a few more undetermined specimens in the collections of Rutgers University, New Jersey and Smithsonian Institution, Washington convinces me that there is justification in retaining *Chaetochlorops* a distinct genus because of its bristly nature, especially the spines on scutellum, recalling to an extent the condition in some species of Elachipterini. *Heteroscinoides* stands apart from other genera in possessing receding anal field of wing, *Oscinella*-type *m-m* cross-vein and discal cell and partly deeply dark brown wing with concolorous veins. Of the rest, *Lasiambia* ENDERLEIN is recognizable by its short head and rounded eyes with vertical long axis though some of its species up to a degree show resemblance to members of *Fiebrigella* and the two in all probability are congeners. However, pending further study of the relationships of *Lasiambia* with related genera of the tribe based on more abundant material, it is recognized a distinct genus along with *Chaetochlorops, Heteroscinis, Heteroscinoides* and *Epimadiza* as they are understood today.

While dealing with species of *Anacamptoneurum, Polyodaspis* and *Fiebrigella* especially of the Oriental Region, many characters used in defining generic limits intergrade so much that it becomes difficult to place the species in well defined segregations. On studying some intermediate forms belonging to these three related genera, SABROSKY (1951) rightly observed that a "comprehensive revision might reduce the number of genera". ANDERSSON (1977) also stated that 'the decision about their validity as separate genera must be based on larger material'. Members of typical *Anacamptoneurum* have angulate *ant* 3, oval eyes with horizontal long axis, well developed facial carina reaching epistomal margin, 2 posterior *npl*, flat broadly rounded semicircular scutellum with short, usually basally approximated *as* and about 5-8 pairs of *ss* that are barely longer than hairs. But in typical *Fiebrigella* head is higher and shorter, *ant* 3 is rounded apically, facial carina does not reach epistomal margin, eyes are rather rounded with nearly vertical long axis, there is only one posterior *npl* and scutellum is usually more elongate and conical or subconical and only rarely rounded. SABROSKY (1951) is of the opinion that the acutely angulate nature of *ant* 3 may not hold as a character of generic significance in *Anacamptoneurum* just as it has been abandoned in *Scoliophthalmus* BECKER. When this character is left out, the differences between some of the species of *Fiebrigella* and *Anacamptoneurum* are reduced to insignificance. In a new species, *A. bengalense* described below, *ant* 3 shows some signs of angulate nature, eyes are oval with horizontal long axis, scutellum is rather flat and rounded but otherwise belongs to *Fiebrigella*, especially because of the abbreviated nature of facial carina. Another new species, *A. indicum*, shows affinities to *Fiebrigella* in the rounded nature of *ant* 3 but otherwise cannot be differentiated from *Anacamptoneurum*, especially because of the nature of eye and facial carina. In a third new species *parafacialis*, though the head is higher and shorter, facial carina is abbreviated and eye is somewhat rounded yet *ant* 3 is acutely angulate as in typical species of *Anacamptoneurum*. In all these three species there are 2 posterior *npl*. Though 2 posterior *npl* are normally found in species of *Anacamptoneurum* yet in a new species, *A. tanjorense*, there is only one well developed posterior *npl* with a second one hair-like. In *A. parafacialis,* a typical *Anacamptoneurum* species parafacialia is well developed and more prominent than in many species of *Fiebrigella.* These intermediate forms leave no choice but to consider them all as belonging to the same genus.

Species of *Polyodaspis* have been differentiated from *Anacamptoneurum* on the basis of usually convex, conical, subconical or triangular nature of scutellum, stout (7-12) *ss*, number of *npl* and nature of *ant* 3. I have before me six, including four new species, belonging to *Polyodaspis* of which in two, *A. kalingum* and *A. vanchiu*m scutellum is very slightly convex on disc and half way between subconical and semicircular. Besides, while *A. vanchium* has only 1+2 *npl*, in *A. kalingum* in addition to 2 posterior well developed *npl*, there are additional posterior *npl* discernable under high magnification. In *A. shillongense*, another more stout bristled species with comb-like *ss*, scutellum is flat and half way between subtriangular and semicircular and it has only 1+2 *npl*. In *A. indicum* scutellum is short and semicircular and *ss* are hair-like as in some typical species of *Anacamptoneurum*. In *A. venadensis* which is a true *Anacamptoneurum* species there are 1+4 *npl* as in some species of *Polyodaspis* and even of *Chaetochlorops*. The *ss* in all these species show various ranges in their development and number (5-11). In members of the same species and even on either side of the same specimen there is disparity in the number of *ss*. Besides, the

arista of these species varies from being virtually naked or with very fine microscopic pubescence as in typical species of *Anacamptoneurum* to having very well developed dense pubescence as in some species of *Polyodaspis*. The genitalia of these three genera also do not exhibit differences of generic significance. Hence all the species of *Anacamptoneurum, Fiebrigella* and *Polyodaspis* are considered congeneric with the oldest name *Anacamptoneurum* serving to place them under and there by relegating *Fiebrigella* and *Polyodaspis* to the status of junior synonyms of *Anacamptoneurum.*

NARTSHUK (1983) erected the tribe Fiebrigellini NARTSHUK with type genus *Fiebrigella*. As the name *Fiebrigella* is only a junior synonym of *Anacamptoneurum* and can no longer serve as the type genus of the tribe, genus *Anacamptoneurum* is proposed to replace *Fiebrigella* as the type genus of tribe Fiebrigellini NARTSHUK.

While revising the tribe it is found that it represents two distinct groups of genera, one represented by *Heteroscinis* LAMB and *Heteroscinoides* CHERIAN in which some scutal hairs are arranged in distinct rows along *acr* and *dc* lines and rest of the hairs, when present, in regular rows, irregular rows or not in rows. In the second group comprising *Anacamptoneurum* BECKER, *Chaetochlorops* MALLOCH, *Epimadiza* BECKER and *Lasiambia* ENDERLEIN, scutal hairs are dense, evenly distributed on scutum and not in rows on *acr* and *dc* lines. In the general shape and build of scutellum also most species of *Heteroscinis* group differ from those of *Anacamptoneurum* group of species. Six genera under the tribe Fiebrigellini are recognized here and a key to the genera is also given.

Key to world genera of tribe Fiebrigellini

1. Scutum with at least some punctate hairs arranged in regular rows 2

– Scutum densely pubescent with punctate hairs not in regular rows. . . . . .

2. Scutum with more or less regular rows of punctate hairs in upper half and fairly dense punctate hairs not in rows medially and in lower half; anal area of wing receding*; m-m* cross-vein only weakly oblique; discal cell nearly of *Oscinella*-type; wing is partly dark brown and partly hyaline . . . . . *Heteroscinoides* CHERIAN

– Scutum usually with punctate hairs mostly in regular and some in irregular rows, rarely regular rows of hairs are confined to *acr* and *dc* lines with the areas in between with fairly dense hairs; anal area of wing well developed, almost a right angle; *m-m* cross-vein strongly oblique; discal cell not of *Oscinella*-type; wing is entirely pale white to hyaline. . . . . *Heteroscinis* LAMB

3. Fore femur greatly enlarged, with a row of spines or denticles on ventral surface. . . . . *Epimadiza* BECKER

– Fore femur normal, at most slightly thickened and without a row of spines or denticles. 4

4. Head short and high; eyes rounded with vertical long axis; *m-m* cross-vein hardly oblique . . . . . *Lasiambia* ENDERLEIN

– Head not short and high as above; eyes oval, mostly with horizontal and rarely oblique or slightly vertical long axis; *m-m* cross-vein oblique. 5

5. Body bristles usually slender, rarely stout (Figs 2,7,10); *npl* 1+1, 1+2, 1+3 or 1+4; *ss* 4-12 (Fig. 23); presutural bristles very rarely present (in some African species), almost always absent; scutellum always with normal hairs (Pl. II) . . . . . *Anacamptoneurum* BECKER

– Body bristles always very stout; *npl* 1+5 or more; *ss* numerous; presutural bristles always present; scutellum often with bristly hairs . . . . . *Chaetochlorops* MALLOCH

Of these genera, *Anacamptoneurum* BECKER, *Heteroscinoides* CHERIAN and *Heteroscinis* LAMB have been reported from the Oriental Region and are also known from India. *Heteroscinoides* is endemic to India.

Genus ***Anacamptoneurum*** BECKER

Macrothorax LIOY, 1864. *Atti del Reale Istituto Veneto di Scienze*, (3) 9*:* 1121.Type species: *Macrothorax ruficornis* (MACQUART) (=*Siphonella ruficornis* MACQUART). By monotypy. Preoccupied by DESMAREST, 1851-52, SABROSKY, 1941.

Anacamptoneurum BECKER, 1903. *Mitteilungen aus dem Zoologischen Museum* Berlin, 2: 155. Type species: *Anacamptoneurum obliquum* BECKER. By monotypy.

Fiebrigella DUDA, 1921. *Tijdschrift voor Entomologie*, 64: 123-125. Type species: *Fiebrigella verrucosa* DUDA. By original designation. Syn. n.

Goniopsis DUDA, 1929. *Konowia,* 8*:* 166.Type species: *Goniopsis verrucosa* DUDA, 1929 *nec* DUDA, 1921 (=*Fiebrigella boliviensis* SABROSKY, 1970). By designation of SABROSKY, 1941.

Goniopsita DUDA, 1930. *Folia Zoologica Hydrobiologie,* 69: 72. *Goniopsis verrucosa* DUDA (=*Fiebrigella boliviensis* SABROSKY, 1970). By designation of SABROSKY, 1941.

Polyodaspis DUDA, 1933. *In Lindner: Die Fliegen der palaearktischen Region* Lfg .**72**: 224. Type species: *Polyodaspis ruficornis* (MACQUART) (=*Siphonella ruficornis* MACQUART). Change of name for *Macrothorax* LIOY, 1864, *nec* DESMAREST (1851-1852). syn. n.

Genus type species: *Anacamptoneurum obliquum* BECKER.

A m e n d e d d i a g n o s i s. Stout bodied flies of medium size with oily lustre on frons, diagonally divided gena, rounded subtriangular or triangular scutellum usually bearing numerous scutellar bristles borne on warts, strongly oblique *m-m* cross-vein and no femoral organ.

D e s c r i p t i o n. Head: usually longer than high, rarely higher than long, black or with partly yellowish or reddish gena, face and frons. Eye oval with mostly horizontal and rarely oblique or slightly vertical long axis, bare or with sparse fine pubescence. Gena broad, divided by a diagonal ridge extending from lower posterior angle of eye to vibrissal corner, upper part generally yellow and silvery or white tomentose; lower part black, polished and with or without hairs; vibrissal corner normally angulate, projecting much beyond eye; parafacialia often indistinct but sometimes very prominent. Frons somewhat projecting, longer than wide, shiny with a few or numerous *fr;* frontal triangle sometimes indistinct, reaching usually beyond middle of frons with piliferous punctures and *if* in one, often irregular row on the side or scattered on its surface. Face yellow, rusty or white; antennal fovea deep to very deep; facial carina very distinct, reaching epistomal margin, rarely fading away at middle of face. Antennae yellow or often darkened above; *ant* 2 short; *ant* 3 sometimes acutely angulate at apex above or with somewhat projecting upper corner

but mostly rounded, broader than long, with fine pubescence; arista slender, sometimes short, with microscopic to distinct pubescence. Proboscis usually short but in some a little prolonged; palpi rather stout, yellow. Head bristles slender but some stout, short to very short, mostly black, rarely yellow; *ovt* and the parallel to slightly convergent *pvt* usually well developed*; ivt* shorter than *ovt*; *orb* 8-10, very short, reclinate; *oc* short, reclinate, convergent.

Thorax shiny black with white, yellow or black hairs and bristles; scutum moderately arched, convex or even flattened, evenly covered with dense short punctate hairs; scutellum semicircular to conical or subconical with flat, convex or slightly arched disc, pubescent and punctate like scutum; pleura often shiny, at times with coarse microsculpture; *anepst* bare; *kepst* with a few hairs; *h* 1, very rarely 2; *npl* 1+1, 1+2, 1+3 or rarely more; *pa* 1 equal to *npl*; *pa* 2 shorter than *pa* 1; *pa* 3 very rarely seen as also one prescutellar bristle; 1 *dc* equal to *npl; as* approximated, slender to very stout, borne on wart; *ss* 4-12, normally 6-8, slender to very stout with or without basal warts.

Legs short, rather stout, mostly black, partly yellow; tibial organ present; femoral organ absent.

Wing short, broad, normally white or hyaline with pale or yellow veins; first basal cell broadened in the middle; *m-m* cross-vein strongly oblique. Haltere black or yellow.

Abdomen short, oval, black, subshiny with pale or dark hairs. Female cerci slender. In male epandrium usually wider than high; cerci medially incised, each circus triangular to squarish; surstylus broader than long to longer than broad, often with serrate inner margin; hypandrium open, with relatively narrow opening; gonites form a single broad plate; phallopodeme often projects beyond basomedian margin of hypandrium which may be shallowly or distinctly concave medially; phallus relatively short.

D i s t r i b u t i o n. All the Regions except Australia.

This genus is represented by 10 species in the Oriental Region of which only two, *A. obliquum* BECKER and *A. ruficornis* (MACQUART), have been reported from India and Adjacent countries. Nine new species are described, *A. compressiceps* (DUDA) is reported for the first time from India and additional notes on and a key to all the species known from India and adjacent countries are given.

Key to species of *Anacamptoneurum* BECKER from India and Adjacent countries

1. Frons forming a roof over bases of antennae (Fig. 19); facial carina short, not extending beyond middle of face. . . . . *A. bengalense,* sp. n.
– Frons not forming a roof over bases of antennae; facial carina usually well developed, extending to epistomal margin. 2
2. Segment *ant* 3 angulate at apex above; scutellum short and semicircular with flat disc; *ss* usually slender 3
– *Ant* 3 usually rounded, almost rectangular at apex above and not angulate; scutellum not short, usually conical or subconical with convex disc, if flat and broadly semicircular *ss* spine-like 6
3. Head and thorax with dark brown hairs; *npl* 1+1; *as* rather widely separated at base (Fig. 7). . . . . *A. tanjorense*, sp. n.
– Head and thorax with white or yellowish white hairs; *npl* 1+2 or more of which at least two posterior ones well developed and subequal; *as* not widely separated, often somewhat approximated at base 4

4. Parafacialia very prominent, almost one-fourth as broad as *ant* 3 (Fig. 9); *if* dense, well developed, lying scattered on frontal triangle; *fr* numerous, very well developed, distributed over all frons . . . . . *A. parafacialis*, sp. n.

– Parafacialia linear, almost inconspicuous; *if* very short, fine, often in one row on frontal triangle on each side; *fr* very short, less numerous and confined mostly to anterior half of frons 5

5. Thoracic bristles pale yellow; frontal triangle reaching only three fourths length of frons; terminal sectors of R4+5 and M1+2 distinctly concave above along their entire lengths . . . . . *A. obliquum* BECKER

– Thoracic bristles black; frontal triangle linearly, though somewhat indistinctly, reaching almost anterior margin of frons; terminal sectors of R4+5 and M1+2 gently diverging distally, the latter almost straight (Fig. 3) . . . . *A. arunachalum*, sp. n.

6. Frontal triangle indistinctly demarcated, subshiny; *if* in one row on triangle on each side; *ss* not more than 7 7

– Frontal triangle distinctly demarcated, *if* in more than one row on triangle on each side or triangle with dense hairs (if *if* is in one row, then *ss* 9-10); *ss* 9 or more, if rarely less, then *if* in more than one row 8

7. Facial carina low and linear; frontal triangle of medium size; *orb, fr*, and *if* very short; arista with dense, well developed pubescence (Fig. 22); wing brownish . . . . . *A. indicum*, sp. n.

– Facial carina very high and well developed; frontal triangle narrow; *orb*, *fr,* and *if* relatively well developed; arista with dense, very short, fine pubescence (Pl. VI); wing entirely hyaline, almost whitish . . . . . *A. vanchium*, sp. n.

8. Frontal triangle black with blue sheen and oily lustre; *if* in one row on frontal triangle on each lateral margin; *fr* very short and fine; scutellum greatly arched . . . . . *A. compressiceps* (DUDA)

– Frontal triangle black*; if* in two regular or irregular rows laterally or evenly distributed on frontal triangle; *fr* dense, very well developed; scutellum with flat or slightly convex disc 9

9. Frons whitish yellow anteriorly and dark brown posteriorly; mid and hind femora distally and fore and hind tibiae wholly whitish yellow; head and thoracic bristles yellowish white; *npl* 1+4 of which 2 inner posterior also fairly well developed; wing whitish; terminal sectors of R4+5 and M1+2 parallel (Fig. 16); haltere yellowish white . . . . . *A. kalingum,* sp. n.

– Frons reddish brown or dark brown anteriorly and blackish brown posteriorly; femora and tibiae brownish black; at least some thoracic bristles black; *npl* 1+2, 1+4 or 1+5, in the last two instances two or three inner posterior ones very short and hair-like; terminal sectors of R4+5 and M1+2 slightly diverging distally; wing deeply brownish; haltere partly or wholly dark brown 10

10. Frontal triangle dull, densely dark grey tomentose; arista with short hairs; scutum and scutellum very densely and coarsely punctate and dark grey tomentose; pleura dull, densely dark tomentose; *ss* 10-11 11

– Frontal triangle subshiny, less densely dark tomentose; arista with well developed hairs; scutum and scutellum subshiny, less densely and coarsely punctate and dark tomentose; pleura less tomentose and partly shiny; *ss* 6-8 . . . . . *A. ruficornis* (MACQUART)

11. Frontal and thoracic hairs yellowish white; *if* dense, evenly distributed on frontal triangle; *npl* 1+2; terminal sector of M1+2 nearly straight along its entire length (Fig. 14); scutellum wider than long, with flattened disc (Fig. 13) . . . . . *A. shillongense*, sp. n.

– Frontal and thoracic hairs brownish black; *if* in one regular row, far inside on each side of frontal triangle; *npl* 1+4 of which two inner posterior ones are hardly distinguishable from scutal hairs; terminal sector of M1+2 concave above along its length (Pl. V) scutellum nearly as long as wide . . . . . *A. venadensis*, sp. n.

Anacamptoneurum arunachalum sp. n.

(Figs 1-5)

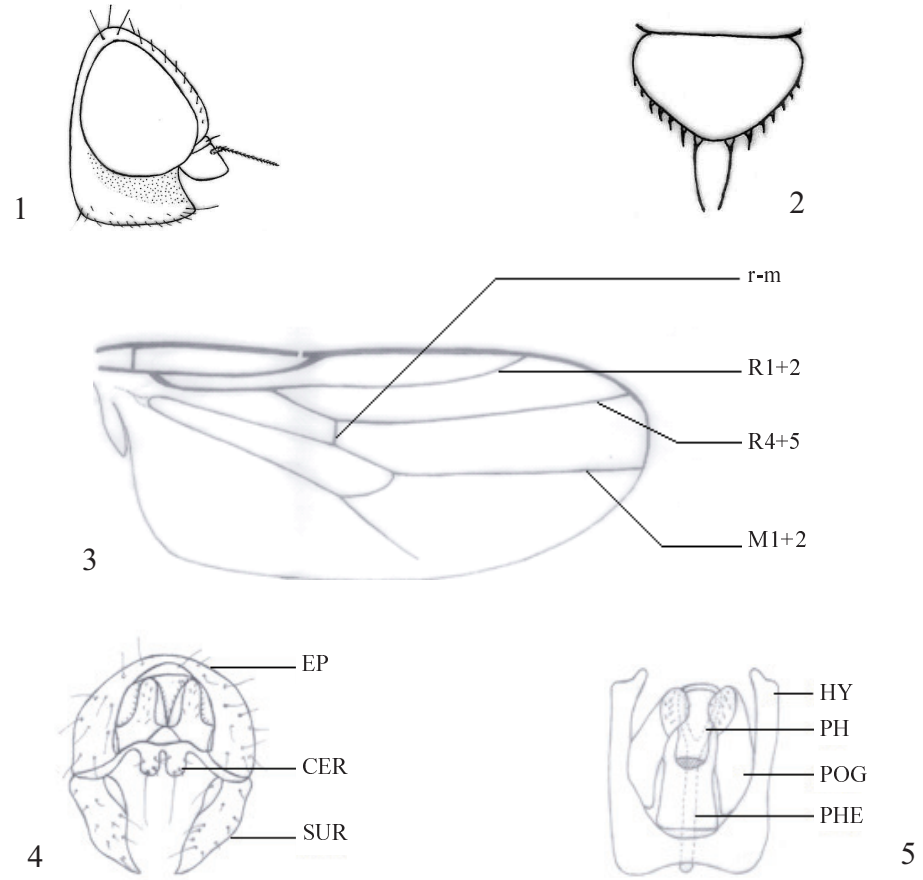
D i a g n o s i s. Small black species having anteriorly linear frontal triangle reaching anterior margin of frons, one row of *if* , black thoracic bristles and straight R4+5.

E t y m o l o g y. The species is named after the name of the Indian state from where the holotype was collected.

M a t e r i a l e x a m i n e d. Holotype: female, India: Arunachal Pradesh: Bomdila, alt.1950 m, 18.iii.1973, coll. A.N.T. JOSEPH. Paratypes: 1 male, India: Maharashtra: Mahabhaleswar: Lingmala, 17.i.1972, coll. K.S. PRADHAN; 1 male, India: Andhra Pradesh: Hyderabad, 5.xi.1971, coll. A.C. PONT; 1 male, India: Gujarat: Junagadh Dist: Chorward, 6.ii.1973, coll. S.K. GUPTA; 1 male, I female, India: Maharashtra; Kolhapur, 21.xii.1971, coll. K.S. PRADHAN; 1 male, India: Tamil Nadu: Tanjore Dist; Papanasam, 23.iv.1989, coll. K.R. RAO. Housing institution: see Materials.

D e s c r i p t i o n. Male and female: head (Fig. 1): height, length and width ratio 5:5:7. Frons slightly narrowing and a little raised up above level of eye anteriorly, width at vertex half that of head and 0.8 x its own length, reddish brown to dark reddish brown with scattered white punctate *fr*; frontal triangle shiny bluish black, reaching two-thirds length of frons whence it is continued linearly almost to anterior margin of frons*; if* punctate, in a regular row on surface of triangle along each lateral margin. Eye bare, oval, long axis oblique. Face deeply concave; facial carina prominent, dividing antennae at base and continuing ventrad to nearly arched epistomal margin as a thin but raised ridge. Antennae yellowish brown with dark tinge especially on *ant* 3; *ant* 2 partly flanked by overgrowing carina; *ant* 3 slightly wider than long, acutely angulate at apex above; arista very slender, dark brown with very minute, concolourous pubescence. Gena very wide, width one-third height of head, 0.56x width of eye and a little more than width of *ant* 3, diagonal ridge dividing gena not highly raised up, area above ridge narrow and silvery white while lower part is dark brown anteriorly and brownish black behind; vibrissal corner angulate, projecting little beyond anterior eye margin; parafacialia linear. Mouth wide; palpi yellowish brown; proboscis black. Head and thoracic bristles black but for white *orb* and *if; ovt* stout, one- third width of eye; *ivt* half length of *ovt; orb* about 9, hardly distinguishable from *fr; pvt* straight, parallel, equal to *ovt*; *oc* short, slender, convergent, turned slightly caudad, one-third length of *ovt.*

Thorax wholly black. Scutum as wide as long with slightly convex (in some specimens almost flat) disc bearing dense piliferous punctae and short, slender, white hairs. Scutellum (Fig. 2) 1.3x as wide as long, the latter more than one-third that of scutum, semicircu-



Figs 1-5. *Anacamptoneurum arunachalum* sp. n. 1– head, profile; 2 – scutellum; 3 – wing; 4 – epandrium; 5 – hypandrium and phallic complex.

lar, with flat disc which is pubescent and punctate like scutum. Pleura shiny but upper part of *anepst* shagreened; *h* 1 short, slender, about half as long as *ovt*; *npl* 1+2, equal, a trifle longer than *ovt; pa* 1 and 1 *dc* equal to and *pa* 2 two-thirds as long as *npl*; *as* slender, not very closely approximated unlike in some species, five-sevenths as long as scutellum; *ss* 6, very short but spinuous, one-fourth the *as; as* and *ss* borne on distinct warts.

Wing (Fig. 3) almost whitish with pale veins except for costa and R1+2 which are light brown; costa extends slightly beyond R4+5 whence it is faint up to M1+2; proportions of costal sectors 2 to 4 in the ratio 16:9:6; *r-m* cross-vein greatly distad of middle of discal cell, opposite 0.7 of its length; terminal sectors of R4+5 and M1+2 gradually diverging distally, the former straight, the latter only very slightly concave above. Haltere dark brown to blackish brown with pale tinge around base of knob in some specimens; in some specimens knob appears yellow with dark brown tinge confined to dorsum.

Legs: coxae, femora and fore and hind tibiae almost wholly and mid tibia except for yellow distal end, brown to black; trochanters dark brown; fore femur slightly thickened;

tarsi infuscated but for yellow first three basal segments each of mid and hind legs; mid tibia with short, black apical spur; hairs on legs short, white.

Abdomen slightly elongated, basal segments brownish black, distal segments black, with short white hairs. Female cerci short and slender. Male genitalia (Figs 4 and 5): epandrium wider than high; surstylus broadened submedially and ending with blunt apex; cerci confluent at base, subquadrate; hypandrium open, medially distinctly concave on basomedian margin; postgonites broadened distally with short hairs; dorsodistal plate of phallapodeme broad and subrectangular.

Body size. Male 1.5-1.8 mm; wing 1.6-1.8 mm. Female 1.8-2 mm; wing 1.8-2 mm.

R e m a r k s. This species is related to *obliquum* BECKER but differs in frontal triangle reaching linearly almost anterior margin of frons and having only one row of *if*, black thoracic bristles, straight terminal sector of R4+5 and only slightly curved last sector of M1+2.

Anacamptoneurum obliquum BECKER

Anacamptoneurum obliquum BECKER, 1903, *Mitteilungen aus dem Zoologischen Museum* Berlin, 2: 155. Type locality: Luxor, Assiut and Fayum, Egypt.

This species is not represented in my collection nor was it available for study. Hence some diagnostic features of the species based on the original description by BECKER are given below.

D i a g n o s i s. Black species with frontal triangle reaching three-fourths length of frons, distinctly diverging and concave R4+5 and M1+2, and pale yellow thoracic bristles.

D e s c r i p t i o n. Male and female black. The setation of the strongly punctate dorsum of thorax short and whitish; even the shorter bristles are of the same colour. Scutellum with two apical bristles, pleura strongly shiny, nonpunctate and without hairs. Haltere brown. The transverse eyes are 1.5x as long as high. Gena moderately wide. Head reddish, rather shiny. Occiput, frontal triangle and the lateral orbital border black, punctate with pale yellow hairs. Antennae red, of the structure described above (**ant* 3 above with rectangular tip, below rounded, not longer than wide with naked arista). Palpi yellow, the inner lateral oral margin striped black. Proboscis as usual. Abdomen shiny, blackish brown, brighter at base, almost naked.

Legs: coxae, femora and tibiae black, tarsi rusty yellow. The legs strongly punctate on the outer side, wholly dull and with distinctly short white hairs, the inner lower side of femora and tibiae shiny. Wing milky white with pale yellow veins as mentioned above (*the three midlongitudinal veins are slightly arched forwards; posterior cross-vein very oblique, parallel to hind border of the wing).

Body length: 2 mm.

D i s t r i b u t i o n. Tanzania, Niger, Gambia, Yemen, Egypt, Israel, Sudan, Nigeria, Oman, Turkey, S. Arabia, Mali, India.

* Some characters of *Anacamptoneurum* reproduced from the original description of the genus of which *obliquum* is the type species and to which reference is made in the description of the species by BECKER (1903).

R e m a r k s. Of the species of *Anacamptoneurum* known so far, *A. obliquum* comes closer to *A. arunachalum* but while in the former thoracic bristles are pale yellow, frontal triangle reaches only three-fourths length of frons, terminal sectors of R4+5 and M1+2 are distinctly diverging and concave above along their entire lengths, in *A. arunachalum* thoracic bristles are black, frontal triangle linearly though some what indistinctly reaches almost anterior margin of frons, terminal sectors of R4+5 and M1+2 only gently diverge distally and the latter is almost straight.

I have examined in 1977 one specimen not in good condition, from Coimbatore, labelled *A. obliquum* BECKER by C.G. LAMB in the collections of Tamil Nadu Agricultural University, Coimbatore, Tamilnadu (formerly Madras State). LAMB (1918) gave the following comments in his publication " the present specimen is practically identical with his (BECKER's) description". The specimen actually represents *A. arunachalum* which is widely distributed in India. In all probability the species *A. arunachalum* was wrongly identified by LAMB, named *A. obliquum* and reported from India. Besides, *A. obliquum* has not been reported from anywhere else in the Oriental Region other than Madras (present day Tamilnadu).

Anacamptoneurum compressiceps (DUDA) comb. n.

Polyodaspis compressiceps DUDA, 1934. *Tijdschrift voor Entomologie*, 77: 82.

D i a g n o s i s. Medium sized flies with black frontal triangle having blue sheen and oily lusture, one row of *if* , very short and fine *fr*, and greatly arched scutellum.

Type locality. Sumatra: Fort de Kock.

M a t e r i a l e x a m i n e d. 1 male, 1 female, India: Kerala: Eraviperoor, 25.xii.1966, coll. P.T. CHERIAN; 1 male, India: Tamil Nadu: Chengalpet, 25.xi.1987, coll. P.T. CHERIAN; 1 female, India: Kerala: Kasargod Dt., Pullody, 27.x.1993, coll. K.C. GOPI; 1 female, India: Tamil Nadu: Nilgiri Dt., Anaikatti; 21.ii.1992, coll. G. THIRUMALAI; 1 female, India: Tamil Nadu: Nilgiri Dt., Naduvattom, 2100 m, 26.iii.1991, coll. G. THIRUMALAI.

A d d i t i o n a l d e s c r i p t i o n. Head longer than high and much wider than long; frontal triangle distinct, sides and anterior part concolourous with rest of frons in some specimens, otherwise predominantly bluish black, shagreened, partly tomentose, at vertex about half as wide as frons, reaching about three-fourths length of frons and with a shallow, median longitudinal sulcus; *ant* 3 almost rounded, reddish yellow, length and width subequal; arista basally dark brown, the rest slender, pale brown with fine, concolourous microscopic pubescence; gena very wide, width a little more than that of *ant* 3, upper half polished, with a few scattered hairs; area around oral margin hairy; vibrissal corner angulate, projecting much beyond anterior margin of eye; parafacialia linear, at times not distinct; eye long, naked with horizontal long axis; head bristles black; *ovt* and *pvt* stout, subequal, the latter parallel, in one specimen an equally stout additional *ovt* present on one side; *ivt* very short, subequal to *oc*; *orb* 10-12; *ovt, pvt* and *ivt* borne on small warts; scutellum triangular, more coarsely sculptured than and pubescent like scutum with convex rather arched disc; *npl* 1+2 or 1+3, but inner most posterior *npl* when present is hair-like, subequal and equal to *ovt*; *pa* 1 a little longer than and *pa* 2 slightly shorter than *npl*; 1 *dc* equal to *npl*; *as* stout, convergent, approximated at base, three-fifths length of scutellum;

ss 9-11, stout, all subequal in length and having a comb-like appearance; all scutellar bristles borne on prominent warts; proportions of costal sectors 2 to 4 in the ratio 56:25:18; *r-m* cross-vein distad of middle of discal cell, opposite 0.65 of its length; terminal sector of R4+5 slightly and M1+2 distinctly concave above along much of their lengths and slightly divergent; *m-m* cross-vein oblique; discal cell progressively widening distally; coxae, femora, tibiae and tarsi infuscated regionally; female cerci slender. Male genitalia (Figs 25-26): epandrium wider than high, distinctly produced dorsad as a membranous flap on either side of distal margin; surstylus in the form of a broad, elongated triangular plate; cercus medially incised on ventral margin, each lobe ending with broad blunt apex; hypandrium without laterodistal bifurcation, shallowly concave on basomedian margin; basiphallus very broad.

Length. Male 2.3-3 mm; wing 2.2-2.9 mm. Female 2.6 mm; wing 2.5 mm.

D i s t r i b u t i o n. Malaysia: Malaya; Indonesia: Sumatra; India: Kerala, Tamil Nadu.

R e m a r k s. DUDA (1934) in his description of the species did not indicate the number of *ss* other than referring to them as "mehrzähl". In the specimens studied their number varies from 9-11. Besides, in some specimens scutellum is arched while in one it is less so and slightly flattened. Shape of scutellum also varies from nearly triangular to subtriangular. But for these minor variations of intraspecific value they are similar and hence all are considered belonging to the same species. This is the first record of the species from India.

Anacamptoneurum tanjorense sp. n.

(Figs 6-8)

D i a g n o s i s. Small flies with one row of *if,* 1+1 *npl*, straight terminal sectors of R4+5 and M1+2, 4 *ss* bristles and semilunar scutellum.

E t y m o l o g y. This species is named after the name of the district from which the types were collected.

M a t e r i a l s e x a m i n e d. Holotype: Male, India: Tamil Nadu: Tanjore Dist., Papanasam, 23. iv. 1989, coll. K. R. RAO. Paratype: 1 female, collection data same as of holotype.

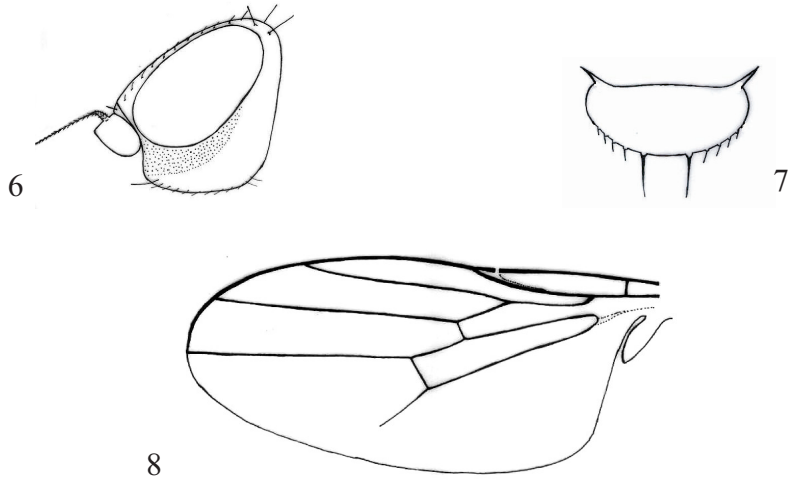
D e s c r i p t i o n. Male and female: head (Fig. 6) dorsoventrally compressed, longer than high; height, length and width ratio 15:16:24. Frons projecting above and slightly beyond eyes in front, widened at vertex and slightly narrowing anteriorly, width at vertex 0.85x its own length and half that of head, reddish brown in front and dark brown posteriorly, with very fine pale *fr* arising from punctae; posterior corners of frons and area behind ocellar triangle dull black and grey tomentose; frontal triangle somewhat distinct, dark grey tomentose, reaching three-fourths length of frons whence continuing almost to anterior margin of frons*; if* arising from punctae and arranged on surface of triangle in an irregular row along each lateral margin. Face brown to dark brown, subshiny; epistomal margin slightly withdrawing; facial carina prominent, reaching epistomal margin as a thin but slightly raised ridge. *Ant* 2 brownish yellow; *ant* 3 acutely angulate at apex above, yellowish brown with reddish brown tinge, covering much of the lower half, only a trifle

wider than long; arista very slender, length about 2.5x that of *ant* 3, dark brown, appearing almost naked with very fine pubescence visible under high magnification. Gena prominent, width in the middle 1.2x that of *ant* 3, lower half brownish black, tomentose with black punctate hairs of which a few are seen on vibrissal corner; vibrissae hardly distinguishable from other hairs at vibrissal corner. Parafacialia linear. Palpi slightly flattened, yellow with black hairs; proboscis short, brownish black. Head bristles and *fr* black to dark brown; *ovt* and the parallel *pvt* fairly stout; *ivt* very short, slender than *orb; orb* about 10, very fine, hardly distinguishable from *fr*; *if* equal to *orb; oc* reclinate, equal to longest *orb*.

Thorax black, but for brownish humeral callus, dorsoventrally compressed. Humeral callus well marked off from scutum. Scutum nearly subsquarish, as wide on head with flat disc bearing very short dense brownish black punctate hairs. Scutellum (Fig.7) only half as long as wide, semilunar with flat disk which is punctate and pubescent like scutum. Pleura subshiny, with a few fine hairs. Thoracic bristles slender*; h* 1 half the *npl*, besides one distinct *h* 1 there are a few prominent hairs on callus of which one is more prominent than the rest and appear as a second *h*; *npl* 1+1, subequal and equal to *pa* 1 and 1 *dc*; *pa* 2 very short, hair-like; *as* not approximated, rather fairly widely separated at base unlike in other species of the genus; *ss* 4 short, hair-like.

Wing (Fig. 8) hyaline, 2.5x as long as wide with yellow costa and pale veins; proportions of costal sectors 2 to 4 in the ratio 17:11:16; *r-m* cross-vein distad of middle of discal cell, opposite 0.66 of its length; terminal sectors of R4+5 and M1+2 straight, distinctly diverging towards their distal ends. Haltere pale yellow with brownish tinge on knob in one specimen.

Legs. Coxae partly, fore and hind femora almost wholly and mid femur but for its yellow basal and distal ends, black; trochanters yellow; fore and hind tibiae broadly in middle



Figs 6-8. *Anacamptoneurum tanjorense* sp.n. 6 – head, profile; 7 – scutellum; 8 – wing.

and hind tibia but for its yellow distal ends, black to brownish black, rest of tibia brownish yellow; fore tarsi blackish brown; first three tarsi of mid and hind legs yellow, last two segments of each infuscated; fore femur slightly thickened.

Abdomen nearly half as long as body, two basal segments dark brown, rest of the segments subshiny, tomentose, black to brownish black and with fairly dense black hairs of which those on distal segments are fairly long. Female cerci short, slender.

Length: male 1.9 mm, wing 1.7 mm; female 2.6 mm, wing 2.3 mm.

R e m a r k s. This species is related to *A. parafacialis* but differs in possessing only 1 posterior *npl*, straight terminal sectors of R4+5 and M1+2, only 4 *ss*, not approximated *as,* short semilunar scutellum, black or brownish black head and thoracic bristles, only one row of *if* and linear parafacialia. Unlike in other species of the genus in *A. tanjorense, as* are not approximated at base.

Anacamptoneurum parafacialis sp. n.

(Figs 9-11)

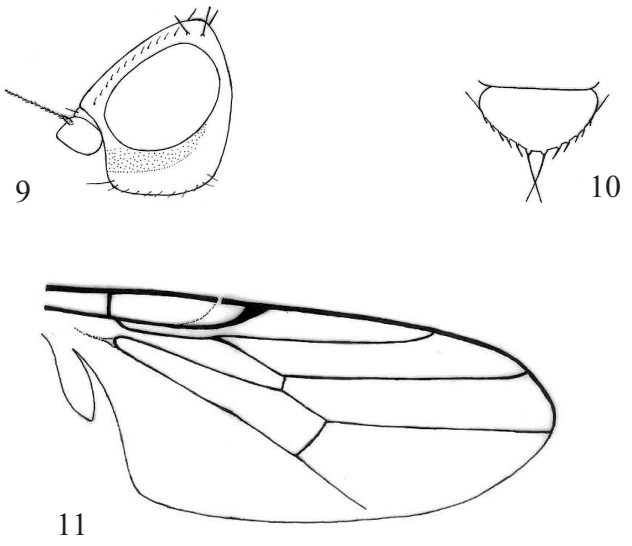
D i a g n o s i s. Medium sized flies with well developed facial carina and parafacialia, dense irregularly arranged *if* , horizontal eyes and angulate *ant* 3.

E t y m o l o g y. The species derives its name from its very prominent parafacialia.

M a t e r i a l e x a m i n e d. Holotype male, India: Tamil Nadu: Tanjore Dt., Papanasam, 23.iv.1989, coll. K.R. RAO.

D e s c r i p t i o n. Male: head (Fig. 9) as high as long, length, height and width ratio 14:14:19; frons longer than wide, width at vertex half that of head and 0.8x its own length, slightly narrowing anteriorly, whitish yellow in front and blackish brown posteriorly, anteriorly projecting a little above and beyond eye margin, with numerous white *fr* arising from punctae; frontal triangle somewhat distinct, subshiny black, partly finely tomentose, reaching a little beyond middle of frons and ending with nearly blunt apex*; if* fairly dense, reclinate arising from punctae and lying scattered on frontal triangle. Face pale yellow, deeply concave; facial carina triangular between antennae and running as a low linear ridge to epistomal margin; antennae brownish yellow; *ant* 3 angulate at apex above and rounded below, width and length in the ratio 4:3; arista slender, yellowish white, with very fine concolorous hairs. Eye oval with scattered, microscopic pubescence, long axis horizontal. Gena in the middle 1.25 x as wide as *ant* 3, brownish yellow in anterior half and blackish brown posteriorly, area below ridge smooth and polished with short punctate hairs; vibrissal corner subangulate, projecting a little beyond eye margin; oval vibrissae hardly distinguishable from rest of hairs on vibrissal corner; parafacialia very prominent one-third as wide as *ant* 3, rugulose, brownish yellow. Palpi yellow; proboscis slender, blackish brown with slender white hairs. All head bristles and *fr* slender, white; *ovt* and the parallel *pvt* subequal; *ivt* two-thirds as long as *ovt*; *oc* cruciate, equal to *ivt*; *orb* about 12, reclinate hardly distinguishable from *fr* and *if* but for their position.

Thorax as wide as head. Scutum finely tomentose, as wide as long with nearly flat disk, bearing dense, setigerous punctae and white hairs of medium size. Scutellum (Fig. 10) only a trifle wider than long, half way between semicircular and subtriangular in outline, with flat disk bearing dense punctae and white hairs as on scutum; pleura subshiny, partly



Figs 9-11. *Anacamptoneurum parafacialis* sp. n. 9 – head, profile; 10 – scutellum; 11 – wing.

finely tomentose; *kepst* with slender white hairs. All thoracic bristles slender, white; *h* 1 a trifle shorter than *ovt*; *npl* 1+2 subequal; *pa* 2 and 1 *dc* equal to and *pa* 2 shorter than *npl*; *as* slender, approximated at base, seven-sixths as long as scutellum; *ss* about 5, very slender, longest one nearest to *as*, one-third as long as *as*; the rest progressively becoming shorter and not much different from hairs; all scutellar bristles borne on small warts.

Wing (Fig. 11) 2.4x as long as wide, milky white with pale veins but for yellow costa; proportions of costal sectors 2-4 in the ratio 28:17:10; *r-m* cross-vein greatly distad of middle of discal cell, opposite 0.7 of its length; terminal sectors of R4+5 and M1+2 a trifle concave above and slightly diverging towards their distal ends. Haltere yellowish white with dark tinge.

Legs slender; coxae basally brownish black and distally yellow; trochanters yellow; femora but for their yellow basal and distal ends brownish black; fore and mid tibiae almost wholly and hind tibia but for the infuscated median area brownish yellow; fore tarsi entirely and last one or two tarsal segments of mid and hind legs yellowish brown to dark brown, rest of the tarsi yellow; hairs on legs white.

Abdomen longer than wide, subshiny brownish black, whitish grey tomentose with short, slender white hairs. Male genitalia partly damaged in the specimen.

Length: Male 2.1 mm; wing 1.9 mm.

R e m a r k s. In general appearance, especially in the nature of gena, parafacialia, scutellum and such other characters, *A. parafacialis* shows affinities to members of *Fiebrigella* group of species of DUDA's concept but differs in having well developed facial carina reaching epistomal margin, distinctly horizontal eyes, 1+2 *npl*, *if* being fairly dense and ar-

ranged irregularly on frontal triangle, and angulate *ant* 3. This species is related to *A. obliquum* BECKER but can be differentiated by its well developed parafacialia, arrangement of *if* and not prominently curved terminal sectors of R4+5 and M1+2.

Anacamptoneurum shillongense sp. n.

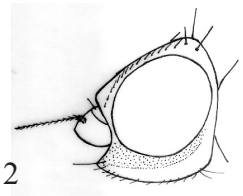
(Figs 12-14, Plate I)

D i a g n o s i s. Moderately large species with greatly tomentose frontal triangle, dense *if*, shagreened greatly convex scutum, flattened scutellum and 10-11 *ss* bristles.

E t y m o l o g y. The species derives its name from the place of collection of the holotype.

M a t e r i a l e x a m i n e d. Holotype female, India: Meghalaya: Shillong, 19. vi. 1979, coll. P.T. CHERIAN.

D e s c r i p t i o n. Female: head (Fig. 12, Plate: 1) higher than long, length height and width ratio 16:18:27. Frons projecting above but not much beyond eye in front, width at vertex 0.48 x that of head and 0.93x its own length but slightly narrowing anteriorly and brownish black posteriorly, glabrous with dense well developed yellowish white punctate *fr*; frontal triangle clearly demarcated, dull black, densely and extraordinarily dark tomentose, reaching five-sixths length of frons and ending with pointed apex. Face deeply concave, dull reddish brown; facial carina large, triangular between and covering bases of antennae and running as a raised ridge to concave epistomal margin; *ant* 2 brown, only partly visible because of development of carina; *ant* 3 reddish brown with dark tinge on upper and distal margins, upper angle nearly angulate, width and length ratio 5:4; arista



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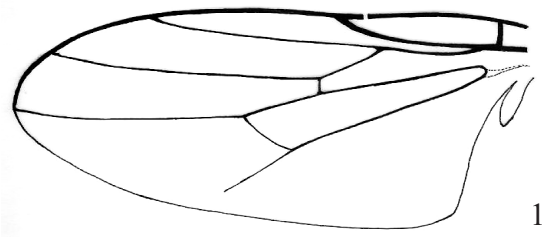

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Figs 12-14. *Anacamptoneurum shillongense* sp.n. 12 – head, profile; 13 – scutellum; 14 – wing.

slender, dark brown with conspicuous concolorous pubescence. Gena well developed, width in the middle more than that of *ant* 3, lower part subshiny brownish black and without hairs, upper part grey; vibrissal corner angulate, projecting far beyond anterior margin of eye; parafacialia distinct, width one-fifth that of *ant* 3. Eye oval with horizontal long axis. Palpi reddish brown; proboscis black. Head bristles and frontal hairs yellowish white but *pvt* on one side black; *ovt* and the parallel *pvt* subequal, well developed; *ivt* half the *ovt*; *oc* a trifle shorter than *ivt*; *orb* about 16, anterior ones hardly distinguishable from *fr; if* fairly dense, reclinate, subequal to *fr,* arranged uniformly on surface of frontal triangle; oral vibrissae short but distinct.

Thorax black, very densely dark grey tomentose. Scutum shagreened, a trifle longer than wide (10:9) with greatly convex disc bearing very dense coarse punctae and short dense yellowish white hairs; scutellum (Fig. 13) two-thirds as long as wide, outline halfway between subtriangular and semicircular with distinctly flat disc which is shagreened, punctate and pubescent like scutum; pleura dull, shagreened. All thoracic bristles well developed, black; *h* 1 slender yellow, a little shorter than *ovt*; *npl* 1+2 subequal and a trifle longer than *ovt*; *pa* 1 longer than *pa* 2; 1*dc* equal to *npl*; *as* approximated at base, 0.8x as long as scutellum; *ss* 10 (on one side 11) rather spinuous, distal ones progressively becoming longer, longest three-sevenths as long as *as; as* and *ss* borne on distinct warts.

Wing (Fig.14) brownish with dark brown veins, especially costa and R1+2; length and width ratio 32:13; proportions of costal sectors 2 to 4 in the ratio 5:3:2; *r-m* cross-vein greatly distad of middle of discal cell, opposite 0.7 of its length; terminal sectors of R4+5 and M1+2 sub-parallel, the latter nearly straight along its entire length. Haltere dark brown with pale tinge at basal part of knob.

Legs. Coxae, trochanters, femora and tibiae brownish black; all fore tarsi and last two tarsal segments each of mid and hind legs infuscated, rest of tarsi yellow, mid tibia with black, slender apical spur; fore femur slightly thickened.

Abdomen dull brownish black, partly tomentose with a few short hairs. Female cerci short, with a few short, yellowish white hairs.

Length: female 2.9 mm, wing 2.4 mm.

R e m a r k s. This species is related to *A. ruficornis* (MACQUART) but can be distinguished by its extraordinarily tomentose frontal triangle, dense *if*, shape and flattened nature of scutellum, nature of punctae on thorax and number of *ss*.

Anacamptoneurum ruficornis (MACQUART) comb. n.

Siphonella ruficornis MACQUART, 1835. *Histoire naturelle des Insectes*, *Diptera* Paris, 2: 1-703. Type locality: Belgium: Liege.

Syphonella nucis PERRIS, 1839, *Annales de la Société Entomologique de France*, 8*:* 39.

Oscinis marginata LOEW, 1858, *Wiener Entomologische Monatschrift*, 2: 62.

Polyodaspis ruficornis var. *tarsalis* FREY, 1923. *Notulae Entomologicae*, 3: 71-112. Synonym by NARTSHUK, 2010.

Polyodaspis ruficornis (MACQUART) DUDA, 1933. *In Lindner: Die Fliegen der palaearktischen Region* Lfg, 72*:* 224.

Polyodaspis flavipila DUDA 1934, *Tijdschrift voor Entomologie*, 77: 83. Synonym by NARTSHUK, 2010.

Polyodaspis endogena DE MEIJERE 1938, *Entomologische Berichte*, 10: 84-87. *Trudy Zoologicheskogo Instituta* Synonym by NARTSHUK, 2010.

Polyodaspis flavisetosa NARTSHUK, 1991. *Trudy Zoologicheskogo Instituta Akademii Nauk SSSR,* 240: 77-120. Synonym by NARTSHUK, 2010.

Polyodaspis similis NARTSHUK, 1991. *Trudy Zoologicheskogo Instituta Akademii Nauk SSSR*, 240; 77-120. Synonym by NARTSHUK, 2010.

D i a g n o s i s. Flies with subshiny less densely tomentose frontal triangle, scutum, scutellum and pleura, long pubescent arista dense, *if* on frontal triangle, 6-8 *ss* bristles, slightly concave and weakly diverging R4+5 and M1+2, and darkened halteres.

M a t e r i a l s e x a m i n e d. 1 male, India: U.P., Delhousi, 17.vi.1961. coll. P.W. OMAN; 1 male, 3 females, India: W. Bengal, Darjeeling Dt., Goke F.R.H., 18.iv.1973, coll. H.S SHARMA; 1 male, India: Meghalaya: Chirapunji, 28.vii.1979, coll. P.T. CHERIAN; 1 male, Chirapunji, 18.ix.1979, coll. C. RADHAKRISHANAN; 1 male, India: Mizoram: Bairaby, 7.iii.1979, coll. P.T. CHERIAN; 2 males, 1 female, Meghalaya: Nongpo, 18.iv.1980, coll. P.T. CHERIAN; 1 male, Meghalaya: Shillong, 22.iv.1980, coll. P.T. CHERIAN.

D e s c r i p t i o n. Head longer than high; frontal triangle reaching slightly beyond middle of frons, black tomentose with one irregular row of reclinate *if* on margin besides a few scattered ones nearer to the margin than to the middle. Eye bare with nearly horizontal long axis; antenna brownish yellow with darkish tinge on parts of basal segments and on dorsodistal margin of *ant* 3; *ant* 3, 0.73 x as long as wide; arista slender, yellowish brown with short to very conspicuous concolourous pubescence; gena as wide as *ant* 3, lower part yellowish brown anteriorly and brownish black around oral margin and behind and with scattered punctate white hairs, upper part pale yellow and silvery tomentose; vibrissal corner angulate, projecting distinctly beyond eye; parafacialia almost linear; head bristles golden yellow; *ovt* 0.4x as long as width of eye; *pvt* parallel, turned slightly caudad, equal to *ovt; ivt* two-thirds the *ovt*; *orb* about 12, reclinate; scutellum wider than long, nearly subtriangular to almost rounded in outline with slightly convex disc, sculptured and hairy like scutum; thoracic bristles black except for golden yellow *h* (in two specimens even *as* and some *ss* also yellow); *h* 1, in some specimens one hair on humeral callus a trifle longer giving the appearance of an additional *h*; *npl* 1+2 to 1+4, subequal; *as* 0.7x as long as scutellum; *ss* 6-8, longest one nearest to *as* 0.4x the *as*, rest progressively becoming shorter; *as* borne on distinct and *ss* on small warts; proportions of costal sectors 2-4 in the ratio 22:16:9; *r-m* cross-vein distad of middle of discal cell, opposite 0.68 - 0.7 of its length; terminal sectors of R4+5 and M1+2 slightly concave above; fore coxa dark brown, rest of coxae, all femora and tibiae black; trochanters dark brown with yellow tinge; fore tarsi and last two tarsal segments each of mid and hind legs infuscated, rest of tarsi yellow; all legs with fairly dense white to yellow hairs; female cerci slender; epandrium wider than high, produced dorsad on dorsodistal margin and with prominent hairs confined to posterior part; hypandrium without laterodistal bifurcation, broad in profile; mesolobus deeply incised on ventral margin; gonites form a single plate; basiphallus about 2x as long as wide; dorsodistal plate of phallapodeme broad and nearly rectangular.

Length: male 1.6- 2.5 mm, wing 1.9- 2.5 mm; female 1.8- 2.8 mm, wing 1.9- 2.5 mm.

Food habits. According to KIAUKA and NARTSHUK (1972) the larvae can adapt to saprophagous, phytophagous and endoparasitic modes of existence. KANMIYA (1983) found

it a scavenger on decaying plants in Japan and reared some specimens from *Miscanthus simensis*.

D i s t r i b u t i o n. Srilanka; India: Himachal Pradesh, Karnataka, U.P., Meghayala, Mizoram, West Bengal; Afghanistan; Pakistan; Europe; Japan; Korea; Kazakhstan; Mangolia; Kuril Is.,Taiwan; Russia; New Guinea.

R e m a r k s. The specimens from some areas show differences in colour of wings and veins so that in some wing is hyaline with pale veins while in others it is with brownish tinge and costa and *r* 1 are distinctly darkened. Convexity of scutellar disc and nature of pubescence of arista also show variations. Besides, in some specimens vibrissal corner projects far beyond eye while in others it is less so. Proportions of second and third sectors of costa also vary, as also colour of thoracic hairs. Thus in one, they are yellowish brown, while in all the rest they are milky golden yellow. But all these minor differences are intraspecific in nature and hence all the specimens are considered belonging to the same species. NARTSHUK (2010) has given an account of other variations observed in specimens collected from different regions which resulted in her synonymising seven species with *A. ruficornis* in recent years.

Anacamptoneurum kalingum sp. n.

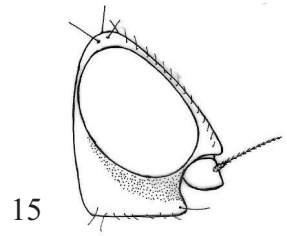
(Figs 15-16, Plate II)

D i a g n o s i s. Median sized flies with sublinear parafacialia, two rows of *if* on each side of frontal triangle, 1+4 *npl* and straight and parallel terminal sectors of R4+5 and M1+2.

E t y m o l o g y. The species derives its name from Kalinga, the historical name of present day Orissa State.

M a t e r i a l e x a m i n e d. Holotype female, India: Orissa: Bhuvaneswar, parasite of sugarcane borer, coll. M.K. GHOD (collection date not given).

D e s c r i p t i o n. Female: head (Fig. 15) as long as high; length, height and width ratio 3:3:5. Frons longer than wide, width at vertex half that of head and 0.86x its own length, almost parallel sided, yellow in front and dark reddish brown posteriorly, with fairly dense yellowish white *fr* arising from distinct punctae; frontal triangle clearly demarcated, subshiny with bluish tinge, very finely tomentose, reaching about three-fourths length of frons; *if* punctate, arranged on triangle in two rows along each side; area of frons beyond frontal triangle a little raised up and on either side of triangle rather depressed. Face pale yellow, subshiny, finely tomentose and deeply concave; facial carina triangular between antennae and running as a raised thin yellow ridge to raised up epistomal margin; frons in side view projecting a trifle beyond anterior margin of eye and forming a short roof over bases of antennae; antennae yellowish brown; *ant* 3 angulate at apex above as in typical species of *Anacamptoneurum* and rounded below, width and length ratio 4:3; arista slender, yellowish white with very fine concolourous pubescence, long axis horizontal. Gena 1.4x as wide as *ant* 3, yellowish brown anteriorly and blackish brown posteriorly in the area below ridge, with pale punctate hairs of which some are arranged in two longitudinal somewhat regular rows; vibrissal corner broadly angulate, projecting a little beyond anterior eye margin; oral vibrissa hardly distinguishable from rest of hairs on vibrissal corner.



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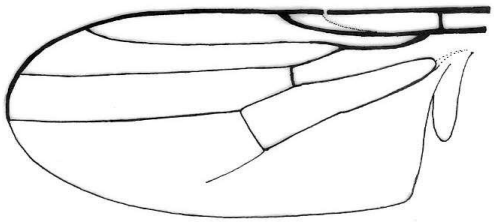

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Figs 15-16. *Anacamptoneurum kalingum* sp. n. 15 – head, profile; 16 – wing.

Prafacialia sublinear. Palpi yellow; proboscis slender, yellowish brown with slender yellowish white hairs. Head bristles slender, yellowish white; *ovt* and *pvt* subequal, the latter parallel; *ivt* two-thirds as long as *ovt*; *oc* cruciate, equal to *ivt; orb* about 13, reclinate, punctate, hardly distinguishable from *fr* and *if* but for their position.

Thorax black, as wide as head. Scutum a trifle wider than long, subshiny, finely tomentose with convex disc bearing dense setaceous punctae and yellowish white hairs of medium size, hairs on humeral callus longer than on scutum. Scutellum (Plate: II) 0.6x as long as wide, nearly semicircular with gently convex disc which is more coarsely punctate than and pubescent like scutum; pleura glabrous; *kepst* with slender white hairs. Thoracic bristles rather slender, yellow; *h* 1, a trifle longer than *ovt*; *npl* 1+4 of which anterior and two outer posterior ones subequal and a trifle longer than *h* while 2 inner posterior ones more slender and hair-like; *pa* 1 and 1 *dc* equal to and *pa* 2 shorter than anterior *npl*; *as* not closely approximated at base, a trifle shorter than scutellum; *ss* 9, distal ones progressively becoming longer, longest one about one-third as long as *as*, basal one hardly distinguishable from scutellar hairs but for its position; all scutellar bristles borne on fine warts.

Wings (Fig. 16): 2.5x as long as wide, milky white with pale veins but for yellow costa; proportions of costal sectors 2 to 4 in the ratio 18:9:5; *r-m* cross-vein greatly distad of middle of discal cell, opposite 0.72 of its length; terminal sectors of R4+5 and M1+2 straight and parallel. Knob of haltere white, stalk deeply brown.

Legs. Coxae almost wholly slender, with fairly dense white hairs; mid and hind femora but for their whitish yellow distal ends and fore femur wholly blackish brown; trochanters yellow; fore and mid tibiae wholly and hind tibia, but for slightly infuscated area in the middle, brownish yellow; fore tarsi entirely and last two tarsal segments of hind legs

slightly dark brown, rest of tarsal segments whitish yellow; mid tibia with a short, slender, white apical spine.

Abdomen longer than wide, subshiny, brownish black, whitish grey tomentose with short slender white hairs. Female cerci short, slender, with short yellowish white hairs.

Length: female 2.4 mm, wing 1.9 mm.

R e m a r k s. This species is closely related to *A. parafacialis* but differs apart from other characters in having sublinear parafacialia, two rows of *if* on triangle on each side, 4 posterior *npl* and terminal sectors of R4+5 and M1+2 being straight and parallel whereas in *A. parafacialis* parafacialia is prominently developed; *if* are fairly dense and not in rows, only 2 posterior *npl* are present and terminal sectors of R4+5 and M1+2 are a little concave above and slightly diverging distally. In the nature of frons, gena, angulate *ant* 3, arista, vibrissal corner and scutellum, *A. kalingum* resembles typical species of *Anacamptoneurum*. However it has more numerous *if* arranged in two rows each on either side of frontal triangle, 4 posterior *npl*, though inner two are shorter and slender, and more number of *ss* bristles typical of species of *Polyodaspis* as understood by DUDA (1934). Thus *A. kalingum* is distinctly intermediate between the two genera as it possesses some of the typical characters of both there by rendering drawing of generic limits rather impossible. As some of the other new species described also in some measure show characters intermediate between the two genera, all are considered congeners.

Anacamptoneurum venadensis sp. n.

(Plates III-V)

D i a g n o s i s. Large flies with black *fr* and thoracic hairs, one row of *if*, 1+4 *npl*, broadly subtriangular and convex scutellum and concave last section of M1+2.

E t y m o l o g y. The species derives its name from Venad, the historical name of Travancore, the southern part of present day Kerala state where Travancore is located.

M a t e r i a l e x a m i n e d. Holotype female, India: Kerala: Trivandrum Dist., Kariavattom, 25 m., 25.vi.2004. Coll. J. JASMIN.

D e s c r i p t i o n. Male: head (Plate: III, Male fly) as long as high, length, height and width ratio 12:12:17. Frons medially projecting a little above head and sloping anteriorly, width at vertex 0.45x that of head and 0.85x its own length, subshiny with oily lustre, blackish brown posteriorly and light reddish brown in front, with punctate dark *fr* some of which are in regular longitudinal rows and a few irregularly arranged; frontal triangle clearly demarcated, dull black, very densely dark grey tomentose as in *A. shillongense*, reaching three-fourths length of frons and ending with pointed apex. Face short subshiny dark brown; facial carina very large, covering nearly basal two segments each of antennae and running as a raised, prominent, fairly broad ridge to raised well developed epistomal margin which is brownish yellow but is blackish in the median anteriorly projecting area. Basal antennal segments brown; *ant* 3 subrectangular, 1.3x as wide as long, upper angle nearly angulate as in *A. shillongense,* brownish yellow; arista slender brownish with short concolorous pubescence. Gena well developed, width in the middle 1.3x that of *ant* 3 lower part with dark punctate hairs, dull black posteriorly and brownish anteriorly, area above ridge grayish; vibrissal corner broadly angulate and projecting beyond anterior eye

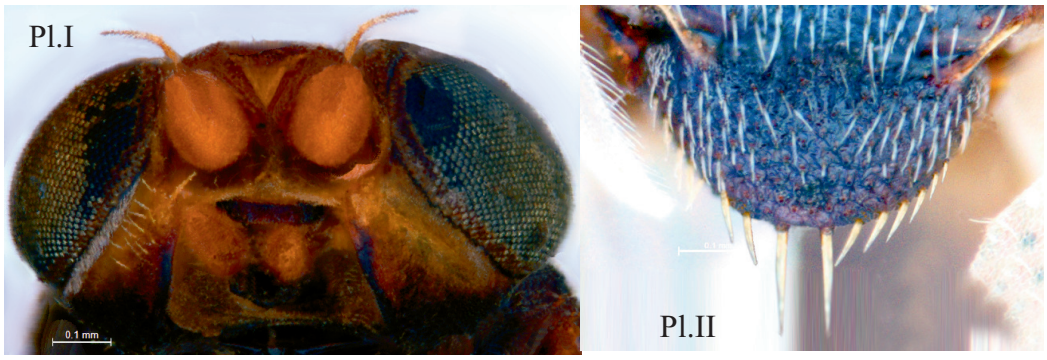
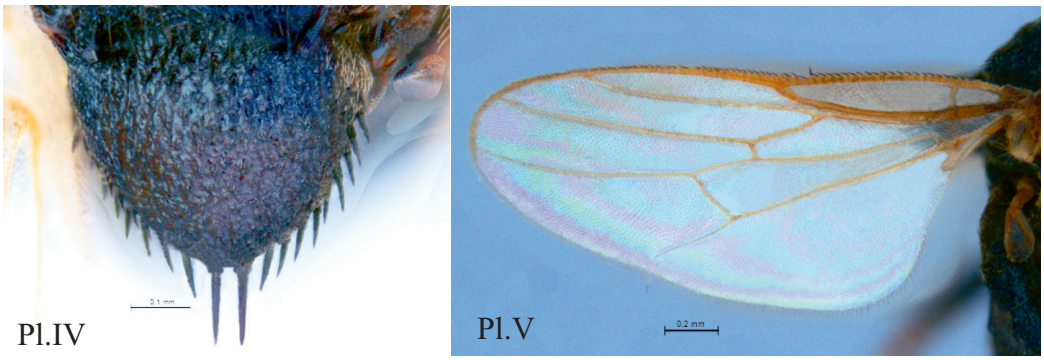


Plate I. *Anacamptoneurum shillongense* sp. n. Head, front view.
Plate II. *Anacamptoneurum kalingum* sp. n. Scutellum.



Plates III-V. *Anacamptoneurum venadensis* sp.n. III. male fly, IV. scutellum, V. wing.

margin. Parafacialia sublinear. Palpi yellow; proboscis dull black but for brownish yellow distal part which bears stout hairs. Head bristles black; *ovt* and the parallel *pvt* subequal; *ivt* half as long as *ovt*; *oc* a little shorter than *ivt*; *orb* about 14, hardly distinguishable from *fr*; *if* deeply punctate, about 10, subequal to *orb,* in a row arranged far inner to lateral margin of frontal triangle posteriorly which progressively becomes nearer to the margin in the anterior narrow part of the triangle.

Thorax subshiny black, finely dark tomentose. Scutum as long as wide and as wide as head, with convex disk bearing dense and coarse punctate and fairly short brownish black hairs. Scutellum (Plate VI) nearly as long as wide broadly subtriangular with convex disc which is shagreened, punctate and pubescent like scutum. Propleuron partly nontomentose and shiny, rest of pleural region densely tomentose. Thoracic bristles well developed, black; *h* 1 slender, besides 1 *h* there are 2-3 well developed hairs on humeral callus; *npl* 1+4 of which 2 inner posterior ones hardly distinguishable from scutal hairs, the rest well developed and subequal; *pa* 1 a little longer than, *pa* 2 shorter than and 1 *dc* equal to anterior *npl*; *as* somewhat approximated at base as in *A. shillongense*, half as long as scutellum; *ss* 10, spiny, almost comb-like, posterior ones progressively being longer, longest one one-third as long as *as.*

Wing (Plate: V): 2.5x as long as wide, hyaline with yellow veins except for costa and R1+2; proportions of costal sectors 2 to 4 in the ratio 25:11:8; *r-m* cross-vein distad of middle of discal cell, opposite 0.72 of its length; discal cell distinctly widening distally; *m-m* cross-vein strongly oblique; terminal sectors of R4+5 and M1+2 subparallel, the latter concave above its entire length and joining costa beyond tip of wing; anal area moderately developed. Haltere dark brown with deep brown tinge around base of knob.

Legs of moderate size and thickening; all coxae, femora and tibiae black; trochanters brownish yellow; all fore tarsi and last two tarsal segments each of mid and hind legs infuscated, rest of tarsi yellow.

Abdomen only slightly narrower than thorax, dull brownish black and densely and finely tomentose; 6th and 7th segments laterally with a few bristly hairs. Female cerci short, slender, with short black hairs.

Length: female 3.1 mm, wing 2.1 mm.

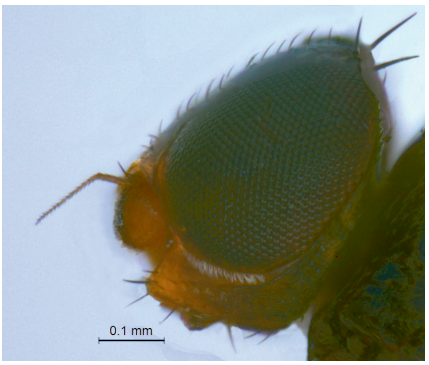
R e m a r k s. *A. venadensis* keys near *A. shillongense* but differs in having brownish black *fr* and thoracic hairs, only one row of *if*, 1+4 *npl,* broadly subtriangular convex scutellum which is nearly as long as wide and in the last sector of M1+2 being concave along its entire length while in the latter species *fr* and thoracic hairs are yellowish white, *if* are dense and evenly distributed on frontal triangle, there are only 2 posterior *npl*, scutellum is wider than long with convex disc and terminal sector of M1+2 is nearly straight.

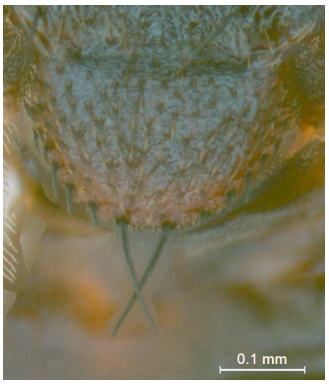
Anacamptoneurum vanchium sp. n.

(Figs 17-18, Plates VI-VIII)

D i a g n o s i s. Small flies having narrow, indistinct frontal triangle, angulate *ant* 3, brownish black frons with blue sheen and flat broadly subtriangular scutellum.

Pl.VI

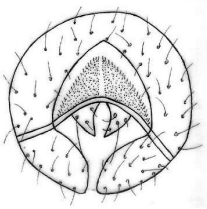


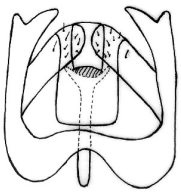


Pl.VII

Pl.VIII

17





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Figs 17-18. *Anacamptoneurum vanchium* sp.n. 17 – epandrium; 18 – hypandrium and phallic complex.
Plates VI-VIII. VI – head, profile, VII – scutellum, VIII – female fly.

E t y m o l o g y. The species derives its name from ‘Vanchi Bhumi’, the land of boats which is one of the historical names of Travancore, the southern part of present day Kerala State from where the majority of type specimens were collected.

M a t e r i a l s e x a m i n e d. Holotype male, India: Kerala: Cochin: Thrikkakara, Alt. 60 m., 24.xii.2005. Coll. A.K. SHINIMOL. Paratypes: 1 male, 2 females, collection data same as of holotype; 3 males, 2 females, India: Kerala: Pathanamthitta Dist., Eraviperoor, 12.xii.1966, coll. P.T. CHERIAN; 5 males, 4 females, India: U.P. Gorakhpur: Sekuvenia, 25.xi.1967, coll. P.T. CHERIAN; 2 males, 1 female, India: W. Bengal: Jalpaguri: Chalasa, 1.v.1975, coll. B. C. NANDI; 8 males, 9 females, Kerala: Alleppey, 3. i. 1984, coll. M.S. MOLLY; 1 female, Kerala: Pallivasal,7.xi. 1983, coll. M.S. MOLLY; 1 male, Tamil Nadu: Chingleput, 25.xi.1987, coll P.T. CHERIAN; 1 male, Tamil Nadu: Nagercoil, 2.iii.1988, coll. KOSHY MATHEW; 2 males, Tamil Nadu: Tanjore Dist., Papanasam, 23.iv.1989, coll. K.R. RAO; 1 male, Kerala: Alleppey Dist., Pathiyoor, 40 m, 6. xi.2005, coll. JYOTHI TILAK.

D e s c r i p t i o n. Male and female. Head (Plate VI): height, length and width ratio 41:43:55. Frons slightly projecting above eyes in front, width at vertex 0.47x that of head, glabrous with two depressions which may be continuous submedially and more conspicuous in some specimens, dark reddish brown to dark brown in front, deep brownish black behind (in some specimens wholly brownish black) with blue sheen; frontal triangle subshiny, finely and densely dark to purple tomentose, more brownish than rest of frons in most of the specimens, narrow, very faintly demarcated, in some specimens appearing more distinct and slightly longer, pointed at apex reaching three-fourths length of frons whence continuing nearly a little beyond in some specimens. Eye bare, long axis oblique. Face reduced; antennal foveae deeply concave and occupying almost whole of face; facial carina strongly developed, forming a triangular roof over bases of antennae and continuing ventrad to epistomal margin which is curved inwards; *ant* 2 only partly visible externally, almost as wide as *ant* 3, yellowish red; *ant* 3 angulate at apex above, brownish yellow to reddish yellow with dark tinge on dorsodistal margin; arista pale reddish brown to dark brown with fine concolourous pubescence. Gena 0.9x as wide as *ant* 3, reddish brown to dark brown with punctate hairs below and grey tomentose area above, diagonal ridge not very wide; vibrissal corner strongly angulate, projecting slightly to prominently in front of eye; parafacialia sublinear, yellow to brown. Mouth wide; palpi reddish yellow; proboscis long, slender, dark brown basally, yellowish brown distally and with long, slender black hairs. Head and thoracic bristles black; *ovt* stout, one third as long as width of eye; *ivt* slender, 0.6x *ovt*; *orb* 8, slender, hair-like, one-third as long as *ovt*; *if* about 8, punctate, slender, hair-like, arranged in a row far inner to margin of triangle; *pvt* parallel to slightly convergent, subequal to *ovt*; *oc* slender, reclinate, shorter than *ivt;* oral vibrissa short but distinct; one to two irregular rows of slender punctate *fr* present between *if* and *orb* and these are more scattered in the anterior half of frons.

Thorax subshiny black. Scutum with faint longitudinal depressions along *dc* lines, especially in some specimens, 0.92x as long as wide, with gently convex disc bearing dense, coarse setigerous punctae and dark brown hairs. Scutellum (Plate VII) broadly subtriangular, 1.5x as wide as long with flat disc bearing punctae and dark brown hairs as on scutum; pleura glabrous; *h* 1, short, slender, shorter than *ovt; npl* 1+2, all equal and equal to *ovt* as also *pa* 1 and 1 *dc*; *pa* 2 short slender; *as* not very stout, as long as scutellum, convergent; *ss* 6-7, 3 nearest to *as* a trifle more developed, one-third the *as*, the rest progressively becom-

ing shorter; *as* and *ss* set on warts. In some specimens a presutural bristle a little shorter than *npl* is present on either side.

Wing (Plate VIII): almost whitish with pale veins, except costa and R1+2 which are pale brown; proportions of costal sectors 2 to 4 in the ratio 42:27:16; *r-m* cross-vein greatly distad of middle of discal cell, opposite 0.72 of its length; terminal sectors of R4+5 and M1+2 a little diverging from their bases, the latter weak. Haltere black to brownish black but with pale tinge all around margin of knob in some specimens.

Legs: all femora, particularly fore and hind, black to brownish black; fore femur a little flattened; tibiae and fore tarsi brownish black; mid and hind tarsi yellow but for last two segments of each leg which are infuscated; mid tibia with short, black apical spur.

Abdomen longer than broad, length about two fifths that of body, glabrous, black to brownish black with black hairs of which those around distal end are long and slender. Female cerci slender.

Male genitalia (Figs 17 and 18): epandrium only a trifle broader than long; surstylus almost as broad as long and broadly obtuse apically; cerci united at base but medially incised, each short, subtriangular and pointed distally unlike in most of the related species, basal plate broad and thickened. Hypandrium broadly open, deeply concave medially on basomedian margin, lateral arms rather short, ending almost in line with basiphallus; postgonites nearly uniformly thickened, with slightly serrate inner margin and ending with broadly obtuse apex; phallapodemic sclerite with a prominent submedian spine, projects beyond basal margin of hypandrium.

Length. Male 1.6-1.8 mm, wing 1.62-1.82 mm. Female 1.9- 2 mm, wing 1.9-2 mm.

R e m a r k s. This species keys near *A. compressiceps* (DUDA, 1934) but differs in possessing narrow, indistinct frontal triangle, flat broadly subtriangular scutellum and angulate *ant* 3. Besides, in *vanchium* frons is brownish black with blue sheen while in *A. compressiceps* it is reddish brown to dark brown with green tinge. In the nature of angulate *ant* 3 the species shows affinities to typical species of *Anacamptoneurum* but otherwise it comes closer to *A. ruficornis* (MACQUART) and related species.

Anacamptoneurum bengalense sp. n.

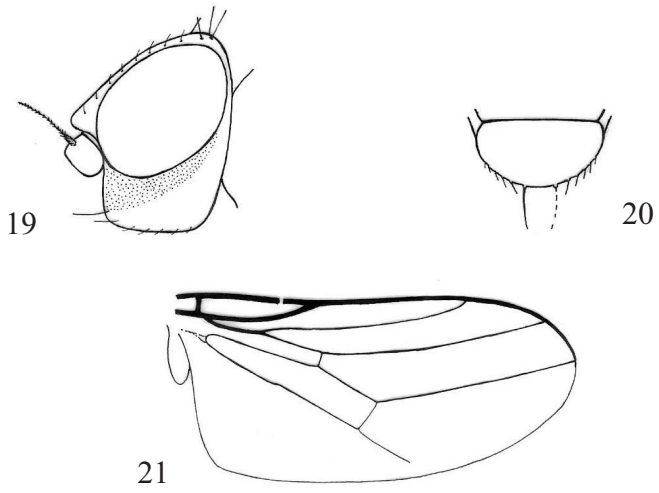
(Figs 19-21)

D i a g n o s i s. Medium sized flies having projecting frons which forms a roof over bases of antennae, blunt vibrissal corner, abbreviated facial carina, non-angulate *ant* 3 and horizontal eyes.

E t y m o l o g y. The species derives its name from West Bengal, the Indian State from where the holotype was collected.

M a t e r i a l e x a m i n e d. Holotype female, West Bengal: Calcutta, 25.ii.1907 (name of the collector is not given). Original collection label was damaged and been replaced by the author, incorporating data on label using a microscope.

D e s c r i p t i o n. Female: head (Fig. 19) higher than long; length, height and width ratio 11:12:18. Frons nearly parallel sided, only very slightly widened at vertex, dark brown posteriorly and yellowish brown anteriorly, width at vertex and length ratio 13:15,



Figs 19-21. *Anacamptoneurum bengalense* sp.n. 19 – head, profile; 20 – scutellum; 21 – wing.

the former 0.47x that of head, projecting a little beyond anterior margin of eye and forming a roof over bases of antennae, ending with convex anterior margin and with a few short scattered dark brown *fr*; frontal triangle reaching about three-fourths length of frons, subshiny blackish brown, very thinly tomentose and with one row of *if* on margin of triangle. Face deeply concave, pale yellow with dark tinge medially; facial carina distinct, triangular between antennae and reaching only a little beyond middle of face in the form of a thin, low ridge. Basal antennal segments hidden by projecting frons; antenna brownish yellow but dorsodistal margin of *ant* 3 infuscated; *ant* 3 wider than long, length and width ratio 7:10, rectangular at apex above but rounded below; arista very short, slender, brown with very fine concolourous pubescence. Eye bare, oval, long axis distinctly horizontal. Width of gena in the middle 1.3x that of *ant* 3, upper part anteriorly grey tomentose, lower part subshiny brown to dark brown; oral margin brownish black; vibrissal corner not projecting beyond eye, nearly rounded. Parafacialia not developed. Proboscis and palpi slender, yellowish brown with dark tinge and short hairs. Head bristles short, slender, brownish black; *ovt* curved outwards; *ivt* two-thirds as long as *ovt*; *orb* about 8, a little shorter than *ivt*; *pvt* parallel, turned caudad, equal to *ovt*.

Thorax dull black but part of humeral callus and area behind up to transverse suture with diffused yellowish brown tinge. Scutum dark tomentose, as long as wide, with slightly convex disk bearing short, dark punctate hairs. Scutellum (Fig. 20) wider than long rounded in outline with nearly flat disk bearing punctae and hairs as on scutum; pleura almost wholly subshiny and thinly tomentose. Thoracic bristles black; *h* 2, nearly equal and equal to *ovt*; *npl* 1+2, inner posterior shorter than other two which are subequal;

pa 1 and I *dc* equal to anterior *npl*; *pa* 2 half as long as *pa* 1; *as* 0.6 x as long as scutellum; not closely approximated at base; *ss* 5, longest one-third as long as *as*; *as* and *ss* borne on warts.

Wing (Fig. 21): hyaline with deeply brown R1+2 and costa; proportions of costal sectors 2 to 4 in the ratio 13:7:6; *r-m* cross-vein distad of middle of discal cell, opposite 0.6 of its length; terminal sectors of R4+5 and M1+2 parallel, the former a trifle concave above in basal half, the latter straight along its entire length; *m-m* cross-vein oblique. Haltere brownish black.

Legs: coxae, femora and tibiae black to brownish black; fore tarsi and last two tarsal segments each of mid and hind legs infuscated; rest of tarsi yellow.

Abdomen nearly as wide as thorax, brownish black, with dark hairs.

Length: female 2.5 mm, wing 2.1 mm.

R e m a r k s. The specimen was studied by C.W. SABROSKY who identified it as *Fiebrigella* sp. and his determination label is appended to the specimen. As rightly identified by SABROSKY, bengalense belongs to the *Fiebrigella* group of species of DUDA's concept as it has projecting frons which forms a roof over bases of antennae, blunt and not projecting vibrissal corner, abbreviated facial carina, non-angulate *ant* 3 and only one row of *if* arranged along margin of frontal triangle. Besides, in the shape of scutellum and nature of scutellar bristles also it shows affinities to *Fiebrigella.* However, in possessing distinctly oval and horizontal eyes, in the nondevelopment of parafacialia and presence of 1+2 *npl*, *A. bengalense* shows relationship to typical species of *Anacamptoneurum*. Such a combination of characters discussed above is not found in any of the species of the genus so far known.

Anacamptoneurum indicum sp. n.

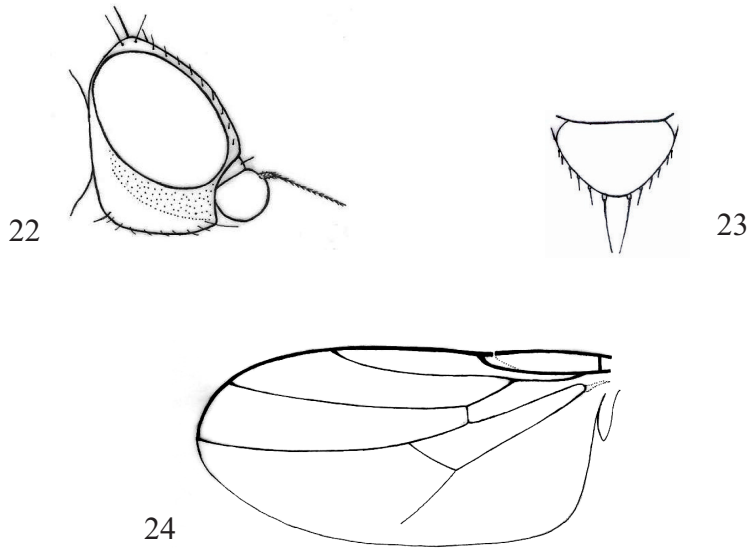
(Figs 22-24)

D i a g n o s i s. Small flies with angulate and projecting vibrissal corner, well developed aristal pubescence and facial carina and diverging terminal sectors of R4+5 and M1+2.

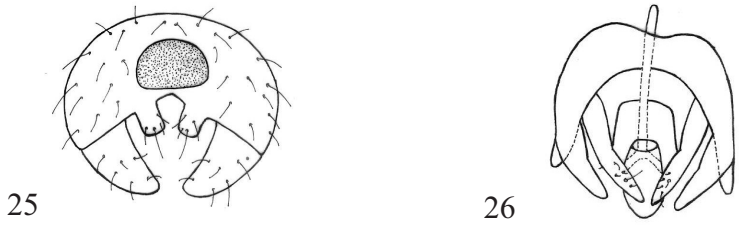
E t y m o l o g y. The species is named after India, the country in which it is distributed.

M a t e r i a l e x a m i n e d. Holotype male, India: Meghalaya: Nangpo, 18.iv.1980. Coll. P. T. CHERIAN.

D e s c r i p t i o n. Male: head (Fig. 22) a trifle longer than high; height, length and width ratio 10:11:16. Frons shiny, a little widened at vertex, width at vertex half that of head and 0.9x its own length, dark reddish brown in front and brownish black behind, with a depression on either side of frontal triangle at around three-fifths its length from vertex; frontal triangle, indistinct much larger than in *A. vanchium*, subshiny black with blue sheen, finely and densely dark tomentose, reaching three-fourths length of frons whence continuing in some angles of illumination a little further to anterior margin of frons. Face broader than high, yellowish brown; facial carina triangular between antennae and running prominently to middle of face whence continued as a very low linear ridge to broadly U-



Figs 22-24. *Anacamptoneurum indicum* sp.n. 22 – head, profile; 23 – scutellum; 24 – wing.



Figs 25-26. *Anacamptoneurum compressiceps* (DUDA) 25. Epandrium; 26. hypandrium and phallic complex.

shaped epistomal margin. *Ant* 2 dark brown; *ant* 3, 1.5x as wide as long, with nearly rounded distal margin, brownish yellow; arista of medium size, pale brown with well developed, fine concolourous pubescence. Eye bare, oval with horizontal long axis. Width of gena in the middle a little more than that of *ant* 3, yellowish brown in front and brownish black behind, upper part finely tomentose; vibrissal corner projecting a little beyond anterior margin of eye, nearly angulate; parafacialia linear. Palpi brownish with dark hairs; proboscis black but for short slender, brownish labella. Head bristles black; *ovt* and the parallel *pvt* well developed and subequal and rest of the bristles slender and hair-like; *ivt* half as long as *ovt*; *oc* a trifle shorter than *ivt*; *orb* about 8, longest one equal to *oc*; *fr* short, punctate, subequal to *orb*; *if* almost in a row along margin of frontal triangle.

Thorax subshiny black. Scutum a trifle longer than wide and as wide as head, with convex disc bearing fine punctate and short dark brown hairs. Scutellum (Fig. 23) wider than

long, suborbicular in outline with flat disc bearing punctate hairs as on scutum; pleura subshiny, partly tomentose especially *anepst*. Thoracic bristles black; *h* 1 a trifle shorter than *ovt; npl* 1+2, inner posterior a little shorter than the rest which are slightly longer than *ovt; pa* 1 and 1 *dc* equal to and *pa* 2 shorter than anterior *npl*; *as* nearly approximated at base, 0.8x as long as scutellum; *ss* 5, longest one one-third as long as *as*; scutellar bristles borne on small warts.

Wing (Fig. 24) brown with dark brown veins especially first sector of costa and vein R1+2; length and width ratio 43:17; proportions of costal sectors 2 to 4 in the ratio 12:8:5; *r-m* cross-vein greatly distad of middle of discal cell, opposite 0.70 of its length; terminal sectors of R4+5 and M1+2 gradually diverging distally and both concave above their entire lengths as in *A. obliquum* BECKER. Haltere blackish brown.

Legs slender brownish black but for some tarsi; all fore tarsi and last two segments each of mid and hind legs infuscated, rest of tarsal segments brownish yellow; all legs including tarsi with dark hairs imparting dark tinge to even the first three tarsal segments each of even mid and hind legs.

Length: male 1.9 mm, wing 1.4 mm.

Abdomen longer than wide, brownish black with slender black hairs of which a few on lateral margins and distal end are longer.

R e m a r k s. This species is related to *A. bengalense* but can be distinguished by its nearly angulate vibrissal corner which projects distinctly beyond eye, facial carina which reaches epistomal margin, well developed aristal pubescence and distinctly diverging terminal sectors of R4+5 and M1+2.

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REFERENCES

ANDERSSON H. 1977. Taxonomic and phylogenetic studies on Chloropidae (Diptera) with special reference to Old World genera. *Entomologica Scandinavica Suppl*. **8**: 1-100.

BECKER, 1903. Aegyptische Dipteren (Fortsetzung und Schluss). *Mitteilungen aus dem Zoologischen Museum* Berlin, **2**: 155.

CHERIAN P.T. 1989. Some new genera of Oriental Chloropidae (Diptera). *Oriental Insects* **23**: 219-229.

CHERIAN P. T., SHINIMOL A. K. 2008. Generic placement and new synonymy in tribe Fiebrigellini (Diptera: Chloropidae: Oscinellinae) and description of new a species of *Heteroscinis* BECKER from India. *Biosystematica* **2**(2): 5-9.

DUDA O. 1921. Fiebrigella und Archiborborus, zwei neue südamerikanische Borboriden-gattungen (Dipteren). *Tijdschrift voor Entomologie*, **64**: 119-146.

DUDA O. 1929. Die Ausbeute des deutschen Chaco- Expedition 1952/26 (Diptera). X. Chloropidae. *Konowia*, **8**: 165-169.

DUDA O. 1930. Die neotropischen Chloropiden (Dipt.). *Folia Zoologica Hydrobiologie*, **2**: 46-128.

DUDA O. 1933. Fam.Chloropidae. In Lindner, E., Die Fliegen der palaearktischen Region. Stuttgart. **6**(1):1-248.

DUDA O. 1934. Fauna Sumatrensis, Bijdrage No 74, Chloropidae (Diptera). *Tijdschrift voor Entomologie*, **77**(1/2): 55-161.

FREY R. 1923. Philippinische Diptere.1. Fam. Chloropidae. *Notulae Entomologicae*, Helsingfors, **3**: 71-112.

KANMYIA K. 1983. A systematic study of the Japanese Chloropidae (Diptera). *Memoirs of theEntomological Society of Washington*. **11**: 1-370.

LAMB C. G. 1918. Notes on exotic Chloropidae. *Annual Magazine of Natural History*, London. **9**(1): 385-399.

LIOY P. 1864. I ditteri distribuiti secundo un nuovo metodo di classificazione natural. *Atti del Reale Instituto Veneto di Scienze*, **9**(3): 1087-1126.

MACQUART M. 1835. Suite a Buffon. Dipteres. Histoire naturelle des Insectes. Diptera Paris, **2**: 1-103.

MC ALPINE J. F. 1981. Morphology and terminology of adults. [In:] Manual of Nearctic Diptera. *Research Branch Agriculture Canada*. Monograph, **1(**27): 9-64.

MEIJERE J. C. H. DE. 1938. *Polyodaspis endogena* n.sp. eine endoparasitisch in Raupen lebende Chloropide aus Java. *Entomologische Berichte*, **10**: 84-87.

NARTSHUK E. P. 1983. A system of superfamily Chloropidae (Diptera: Cyclorrhapha). *Entomologicheskoe obozrenie*, **62**(3): 638-648.

NARTSHUK E. P. 1987. Grass flies (Diptera: Chloropidae). Their systematics, evolution and biology. *Trudy Zoologicheskogo Instituta Akademii Nauk SSSR*, **36**: 1-280. (In Russian).

NARTSHUK E. P. 1993. Diptera of the family Chloropidae from Vietnam and southern China. *Trudy Zoologicheskogo Instituta Akademii Nauk* SSSR, **240**: 77-120.

NARTSHUK E. P. 2010. Grassflies of the genus *Polyodaspis* DUDA (Diptera: Chloropidae) in the Fauna South-Eastern Asia. *Entomologicheskoe obozrenie*, **89**(2): 473-478. (In Russian).

NARTSHUK E. P. 2011. Two new synonyms of Polyodaspis ruficornis (MACQUART, 1835) (Diptera: Chloropidae). *International Journal of Dipterological Research*, **22**(2): 99-102.

PERRIS E. 1839. Notice sur une nouvelle espèce de Syphonella Macquart, *Annales de la Société Entomologique de France*, **8**: 39-46

SABROSKY C. W. 1940. Chloropidae (Diptera) of the Oriental Region: Notes and synonymy. *Annual Magazine of Natural History*, London, **6**(11): 418-427.

SABROSKY C. W. 1941. An annotated list of genotypes of the Chloropidae of the world (Diptera). *Annals of the Entomological Society of America*, **34**: 735-765.

SABROSKY C. W. 1951. Chloropidae. Ruwenzori Expedition 1934-1935. *British Museum of Natural History*, London, **2**(10): 711-828, 21figs.

SABROSKY C. W. 1977. Family Chloropidae. [In:] DELFINADO, HARDY (eds) – A catalog of the Diptera of the Oriental Region. Suborder Cyclorrhapha- (excluding Division Aschiza). **3**: 277-319.