

FIVE NEW SPECIES OF *COLAULUS* TOWNES FROM INDIAN SUBREGION  
(Hymenoptera : Ichneumonidae)

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The genus *Colaulus* Townes is recorded from the first time from India and Nepal from material collected from the states of Assam, Himachal Pradesh, Karnataka, Maharashtra, Tamil Nadu, Kerala, Uttar Pradesh and Nepal. This genus belongs to subtribe Goryphina, tribe Mesostenini of the subfamily Mesosteninae.

The genus is chiefly recognized by having evenly convex clypeus, its apical margin without median tooth ; mandibular teeth subequal ; occipital carina joining hypostomal carina before the base of mandible ; propodeal spiracles round to elliptic, first tergite about 3x as long as wide at apex, with a weak lateral angulation at base, nervellus intercepted below the middle, brachiella present or absent, axillus vein parallel to anal margin of the hind wing.

*Colaulus* Townes can be recognized from its allied genera, viz., *Tricapus* Townes and *Pseudotricapus* Jonathan by the following key :

1. Genal carina weakly sinuate, joining hypostomal carina above base of mandible ; clypeus weakly convex, without apical median tooth ; mandible with its lower tooth shorter than upper tooth     ...     ...     ...     ...     **Colaulus** Townes
- Genal carina strongly sinuate or curved, joining hypostomal carina at the base of mandible ; clypeus with a median apical tooth ; lower tooth of mandible more or less equal to or half as long as upper tooth     ...     ...     2
2. Mandible with its lower tooth half as long as upper tooth ; epomia absent ; sternaulus short, reaching about 0.4 the distance to middle coxa ; nervellus intercepted a little above its center ; brachiella reaching 0.7 the distance to wing margin     ...     ...     ...     ...     ...     ...     ...     **Tricapus** Townes
- Mandible with almost equal teeth ; epomia present ; sternaulus reaching 0.6 the distance to middle coxa ; nervellus intercepted at its lower 0.4 ; brachiella faintly present.     ...     ...     ...     ...     **Pseudotricapus** Jonathan

Genus *Colaulus* Townes

1970. *Colaulus* Townes, *Mem. Amer. Ent. Inst.*, 12 : 269.

*Type species* : *Colaulus carinatus* Townes, Original designation.

Body moderately slender. Head wider than long. Clypeus evenly convex, its apical margin arched or sometimes straight and impressed, without a median tooth

or irregularity. Mandibles stout, lower tooth slightly shorter than the upper tooth. Frons evenly arched, with a short to long median vertical carina. Occipital carina complete, joining hypostomal carina above the base of mandible. Epomia short to moderately long. Mesoscutum weakly to moderately convex, notauli short to long and deep reaching far beyond the middle. Mesopleurum with prepectal carina extending 0.5 or upto the base of subtegular ridge. Sternaulus short (0.4) to long. Juxtacoxal carina present. Both the transverse carinae of propodeum complete, spiracle round to short elliptic. First tergite slender, about 3.5x as long as wide at apex, tergite at base without a distinct lateral tooth, except for a weak angulation, petiolar area narrow and tubular. Postpetiole rectangular; dorso-median carinae almost absent, dorso-lateral carinae extending from base to apex, ventro-lateral carinae absent except near the apex, tergite roundish in cross-section. Postpetiole 2.0x as long as wide, spiracles close to each other than to apex. Areolet of moderate size, higher than wide, pentagonal, 0.8x as high as the portion of second recurrent vein above bulla, intercubiti convergent, second recurrent curved. Nervulus interstitial or little based. Nervellus intercepted at its lower 0.4, mediella strongly arched, brachiella present or absent, axillus parallel to wing margin, Ovipositor long, about 0.9 to 1.3x as long as hind tibia, its tip long and pointed, lower valve with weak teeth.

*Length* : Female, 4.75-7 mm ; fore wing 3-6 mm ; ovipositor sheath 1.5-2.5 mm. Male, 4.5-5.0 mm ; fore wing 4.0-5.5 mm.

*Type-species* : *Colaulus carinatus* Townes.

This genus is confined to Oriental Region and widely distributed in India. The specimens have been collected from various localities of Southern and North-Eastern regions of India and Nepal. Townes (1970) described this genus based on a species from Philippines and Burma. Five new species viz., *C. lucidus*, *C. erugus*, *C. punctatus*, *C. septentrionalis* and *C. flavofaciatus* are described from India and Nepal. The species under this genus from Oriental Region can be distinguished by the following key :

#### *Key to the Oriental species of COLAULUS*

1. First, second and third abdominal tergites almost entirely, black. Species from Philippines and Burma. ... .. **carinatus** Townes
- First abdominal tergite almost entirely, second tergite broadly at apex and third tergite narrowly to broadly at apex yellowish-brown to reddish (not black). Species from India and Nepal ... .. 2
2. Thorax entirely yellowish-brown. Pronotal collar narrowly yellow. (Mesoscutum and scutellum smooth and shiny. Mesopleurum, metapleurum and propodeum largely smooth and shiny with minute scattered punctures)... 1. **lucidus**, sp. nov.

- Thorax not entirely yellow (yellowish-brown), atleast its mesoscutum and/or pronotum black ; pronotal collar with or without a yellow band ... .. 3
- 3. Face entirely black. Clypeus black or yellow. Hind tarsus entirely dark brown. ... .. 4
- Face and clypeus, yellow. Hind tarsus from apical 0.25 of 1st segment to 4th segment whitish. ... .. 5
- 4. Clypeus yellow. Frons with broad yellow orbital marks. Body largely with weak punctures and regosities. Lateral carina more or less confined to its base. Antennal segments 6th to 12th, whitish ... .. 2. *erugus* sp. nov.
- Clypeus and frons entirely black. Body largely densely punctate. Lateral carina of scutellum extending at its basal 0.25. Antennal segments 6th to 10th, whitish. ... .. 3. *punctatus*, sp. nov.
- 5. Face laterally black, in the middle yellow. Pronotum (except the collar) and mesopleurum, black. Face densely punctate. Pronotal collar above the base of fore coxa shallowly punctate. Brachiella in hind wing represented by a short stump ... .. 4. *septentrionalis*, sp. nov.
- Face laterally and in the middle yellow. Pronotum (except collar) and mesopleurum, deep yellow. Face rugoso-punctate. Pronotal collar above the base of fore coxa smooth and shiny. Brachiella in hind wing present. ... .. 5. *flavofaciatus*, sp. nov.

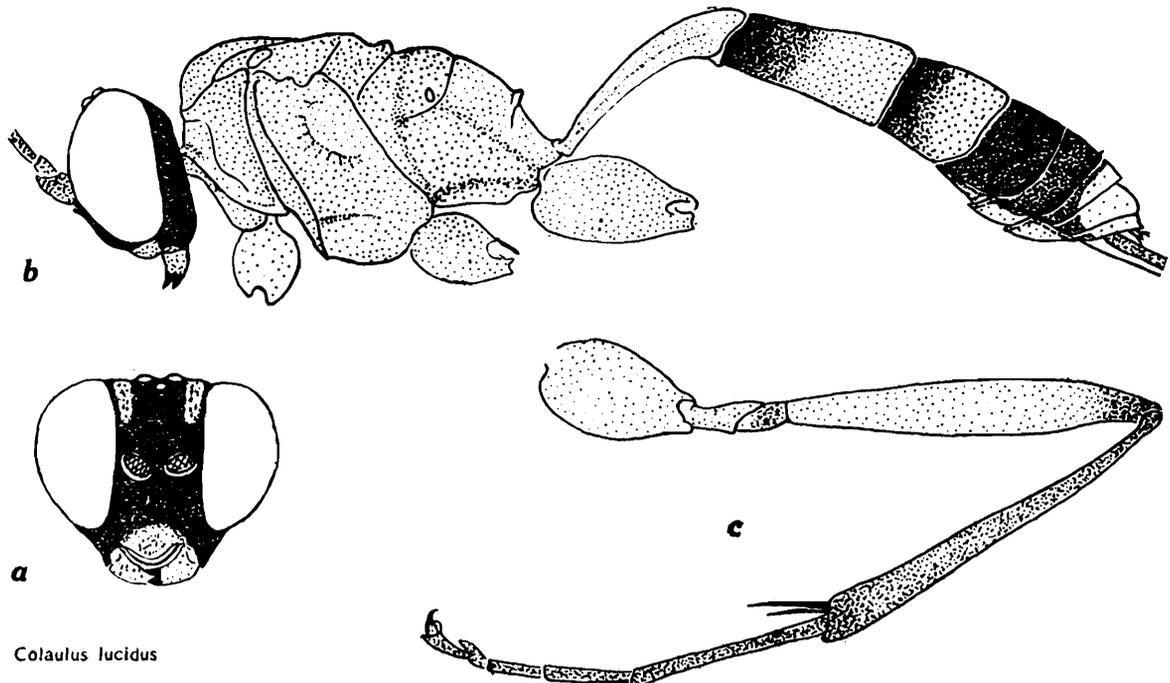
1. *Colaulus lucidus*, sp. nov.

(Fig. 1 : a, b, c)

This species is distinguished by having thorax entirely yellowish-brown ; pronotal collar yellow and body largely smooth and shiny.

*Female* : Body in general subpolished. Face finely and shallowly punctate all over. Clypeus sparsely and shallowly punctate. Malar space granulose, 0.7x the basal width of mandible. Frons largely smooth and shiny, with a few scattered punctures in the middle. Vertex and temple shiny, with minute sparse punctures, punctures on vertex not well defined. Pronotum with pronotal collar and upper margin broadly smooth and shiny, its posterior margin weakly rugose, epomia long extending up to upper margin. Mesoscutum, scutellum and metascutellum smooth and shiny. Lateral carina of scutellum more or less confined to its base. Mesopleurum, metapleurum and propodeum largely smooth and shiny, except for a few scattered shallow punctures on meso- and metapleurum and a few striation along the anterior margin of speculum. Propodeum apical of apical carina rugose, apical carina of propodeum in the middle in broken line,

apophysis crest-like. First tergite smooth, second and third tergites strongly granulose, fourth and following tergites mat and subpolished. Brachiella vein present as a small stump. Other structures and wings as under generic description.



Figs 1. *Colaulus lucidus*, sp. nov. : a. head front view ; b. body side view ; c. hind leg.

Yellowish-brown. Antenna black with scape brown, 6th-12th flagellar segments white above. Head black except clypeus and mandible, brown ; mandibular teeth dark brown. Frons along the eye margin with two moderately wide and elongated orbital stripes, pronotal collar, subtegular ridge (faintly) and tegula, yellow (Fig. 1, a, b). Legs in general yellowish-brown, except middle and hind tarsus, hind tibia almost wholly and extreme apex of hind femur, dark brown (Fig. 1, c). Abdomen blackish-brown to black, except its first tergite wholly, second and third tergites broadly at apex (sometimes second and third tergites wholly) yellowish-brown. Fourth to sixth tergites black, except sixth tergite apico-medially, and seventh and eighth tergites almost wholly, white. Wings clear hyaline.

*Male* : Essentially similar to female in sculpture and colour, except as follows : Body largely smooth and shiny ; face with distinct punctures. Epomia short. Apical carina of propodeum indistinct. Second to seventh tergites mat and closely punctate.

10th-15th flagellar segments white above. Scape and clypeus, reddish-brown. All the tergites with broad apical yellowish-brown bands, the bands on apical tergites faint. Hind leg with trochanter largely, femur at apex, wholly of tibia, first and fifth tarsal segments, dark brown to blackish. Second to fourth hind tarsal segments white ; rest of colour similar to female.

*Length* : Female, 6.0 mm ; fore wing 4.5 mm ; ovipositor sheath 2.5 mm. Male, 5.0 mm ; fore wing 4.0 mm.

*Holotype* Female and *Allotype* Male, India : Tamil Nadu ; Oothu in Kodai Hills, 1200 m, 3.xii.1966, M. K. Kamath, Coll. No. K 146. *Paratypes* 5 Females. India : Tamil Nadu : Oothu in Kodai Hills, 1200 m, 4 F, 3-4.xii.1966, Colls J. K. Jonathan and M. K. Kamath, Coll. Nos. J 195, K 146 & 147. Kerala : Walayar Forest, 1 F, 8.xii.1966, J. K. Jonathan, Coll. No. 197 (Z. S. I. Calcutta and two paratypes in Gupta Collection, Florida).

*Distribution* : South India : Tamil Nadu and Kerala States.

## 2. *Colaulus erugus*, sp. nov.

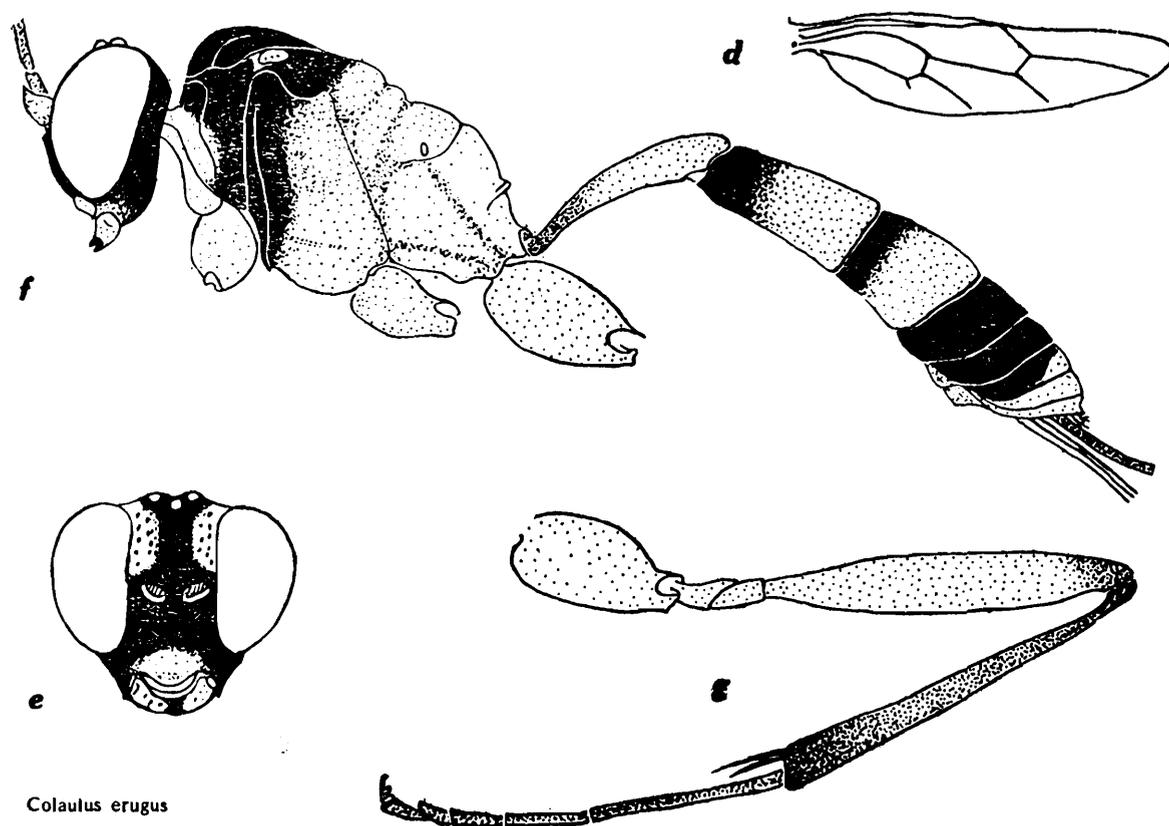
(Fig. 1 : d, e, f, g)

This species is characterized by having face entirely black ; clypeus yellowish or reddish-brown. Frons with yellow orbital marks. Antennal segments 6th to 12th whitish. Pronotum largely rugose in its lower 0.5 and lateral carina of scutellum confined to its base.

*Female* : Face subpolished, finely rugoso-punctate. Clypeus subpolished, sparsely and minutely punctate. Malar space granulose, 0.75x the basal width of mandible. Frons and Vertex smooth and shiny. Temple with minute scattered punctures. Pronotum coarsely striate in the lower half, upper half with fine oblique striations, extreme upper margin with indistinct punctures. Mesoscutum shiny, minutely and sparsely punctate. Scutellum and metascutellum largely smooth and shiny, except scutellum with sparse and minute punctures at base, lateral carina of scutellum more or less confined to its base. Mesopleurum shiny with fine and sparse punctures, coarsely striate above near subtegular ridge and speculum, prepectral carina extending up to the base of subtegular ridge. Metapleurum shiny, sparsely and shallowly punctate, juxtacoxal carina present. Propodeum subpolished, based of basal carina smooth, apicad of apical carina rugose, area between apical and basal carinae sparsely and shallowly punctate ; apical carina absent in the middle. First tergite smooth and shiny, second and third tergites densely and finely punctate at base, granulose towards the apex, following tergites mat and subpolished. Nervulus basad of basal vein by a distance greater than the width of the vein ; brachiella present as a short stump (Fig. 1d). Ovipositor long and its tip pointed.

Colour similar to *Colaulus lucidus*, sp. nov. except as follows : clypeus entirely yellow. Mesoscutum, pronotum (except the collar, yellow) and anterior half of

mesopleurum, black. First tergite at its basal 0.3 with brownish hue. Second and third tergites at their basal 0.33 blackish, apical 0.6 yellowish-brown (Fig. 1, e. f. g).



Figs 1. *Colaulus erugus*, sp. nov. : d. hind wing, ; e. head front view ; f. body side view ; g. hind leg.

**Male** : Essentially similar to female in sculpture and colour except as follows : Body more slender and polished, sculpture weak. Pronotal collar broadly yellow. First tergite wholly, second and third broadly, fourth and fifth narrowly at apex, yellowish-brown. Sixth tergite wholly blackish-brown. Seventh tergite yellow, except its extreme base blackish. Third and fourth segments of hind tarsus whitish-yellow.

**Length** : Female, 6.0 mm ; fore wing 4.5 mm ; ovipositor sheath 2.0 mm. Male, 5.0 mm ; fore wing 4.0 mm.

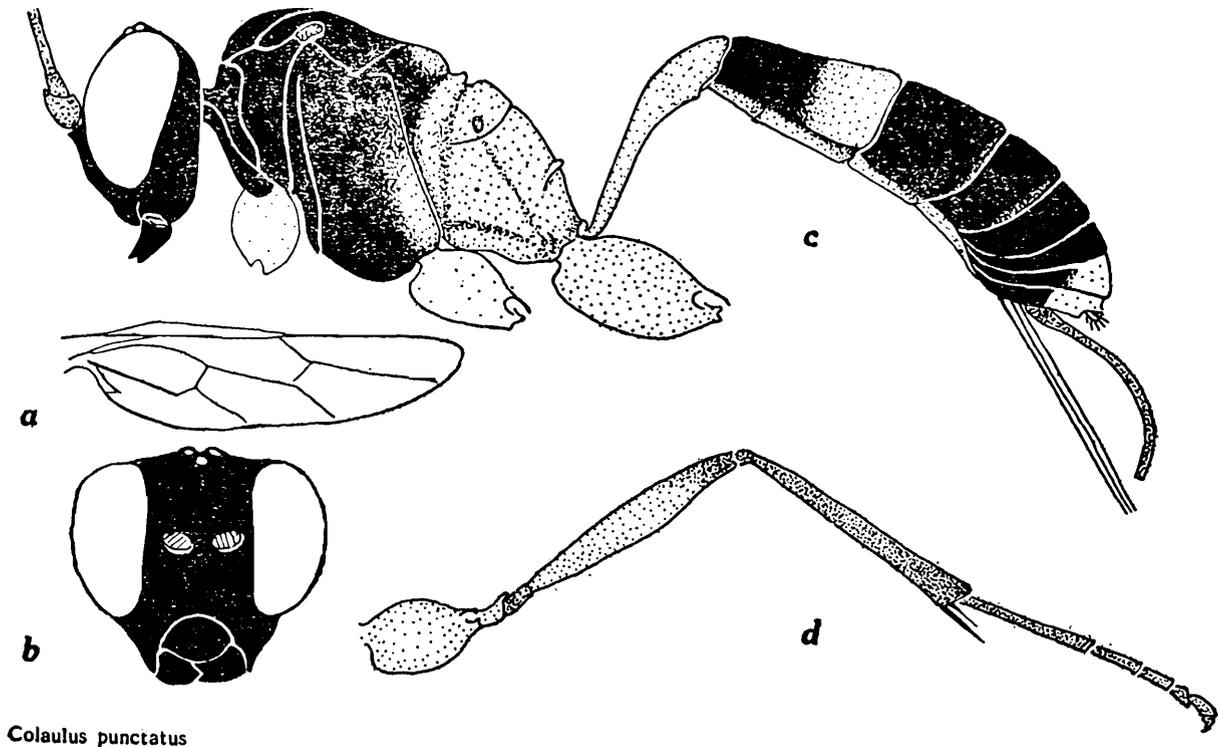
**Holotype** Female, India : Karnataka : Kottegehar, 665 m, 29.xi.1965, J. K. Jonathan, Coll. No. J 104. **Allotype** Male, India : Tamil Nadu : Yercaud, 1364 m. in Shevarey Hills, 22.xi.1966, M.K. Kamath, Coll. No. K. 138. **Paratypes** 1 Female, 1 Male. India : Karnataka : Marcara, 1 F, 1150 m, 19.xii.1965, M. K. Kamath, Coll. No. K 64 ; 1 M, same data as allotype (Z.S.I., Calcutta and one female paratype in Gupta Collection, Florida).

**Distribution** : India : Karnataka and Tamil Nadu States,

3. *Colaulus punctatus*, sp. nov.

(Fig. 2 : a, b, c, d)

This species is close to *Colaulus erugus*, sp. nov. by having face yellow and hind tarsus dark brown. It can be easily distinguished by having body densely punctate; frons without orbital marks and antennal segments 6th to 10th whitish.

*Colaulus punctatus*

Figs 2. *Colaulus punctatus*, sp. nov. : a. hind wing ; b. head front view ; c. body side view ; d. hind leg.

**Female** : Body subpolished. Face with moderately dense punctures, surface appears to be reticulo-punctate. Clypeus closely punctate at basal half, tending to be smooth and shiny towards the apex. Malar space strongly granulate, 0.83x the basal width of mandible. Frons and vertex with moderate size punctures. Pronotum moderately strongly punctate, punctures in the groove dense and with running striations. Mesoscutum closely punctate. Scutellum shiny with sparse small punctures, lateral carina of scutellum confined to its basal 0.25. Mesopleurum wholly with dense, moderately strong punctures, prepectal carina extending up to the base of subtegular ridge. Metapleurum densely punctate, surface appears to be reticulo-punctate, juxta-coxal carina present. Propodeum between basal carina and apex reticulo-punctate, basal of basal carina smooth and shiny, apical carina weak in the middle, lateral apophysis crest-like. First tergite smooth and shiny, with a few indistinct punctures. Second and third tergites strongly granulate, following tergites mat and subpolished. Brachiella in hind wing absent (Fig. 2a).

Black. Antennal flagellum from extreme apex of 6th to 10th segment above white. Scape in front yellowish-brown. The following are reddish : mesopleurum along the

posterior margin, scutellum at apex, tegula, metascutellum, metapleurum, propodeum, first tergite, apical 0.4 of second tergite, extreme apical margins of third and fourth tergites. Seventh and eighth tergites dorsally white, abdomen ventrally reddish-brown (Fig. 2 : b, c). Fore leg with coxa and trochanter yellowish, rest deep yellow. Middle leg with coxa and trochanter, yellowish, femur deep yellow, tibia and tarsus brownish. Hind coxa, trochanter and femur reddish-brown, extreme apex of femur, tibia and tarsus wholly, dark brown (Fig. 2d). Wings clear hyaline.

*Male* : Unknown.

*Length* : Female, 4.75-6.5 mm ; fore wing 3-4.5 mm ; ovipositor sheath 1.5-2.2 mm.

*Holotype* : Female, India : Assam : Rangapara, Sonajuli Tea Estate, 25.iv.1966, J. K. Jonathan, Coll. No. J 137. *Paratypes* 5 Females. India : Assam : Rangapara, Sonajuli Tea Estate, 1F, 26.iv.1966, T. Chand, Coll. No. T207 ; 1F (abdomen damaged), 29.iv.1966, D. T. Tikar, Coll. No. T219 ; Tarajuli Tea Estate, 1F, 26.iv.1966, D. T. Tikar, Coll. No. T204. Kerala : Walayar Forest, 1F (damaged specimen), 14.xii.1966, J. K. Jonathan, Coll. No. J200. Nepal : Gorakna, 1F, 30.ix.1970, V. K. Gupta, Coll. No. 349 (Z.S.I., Calcutta and two paratypes in Gupta Collection, Florida)

*Distribution* : India ; Assam, Kerala, Nepal.

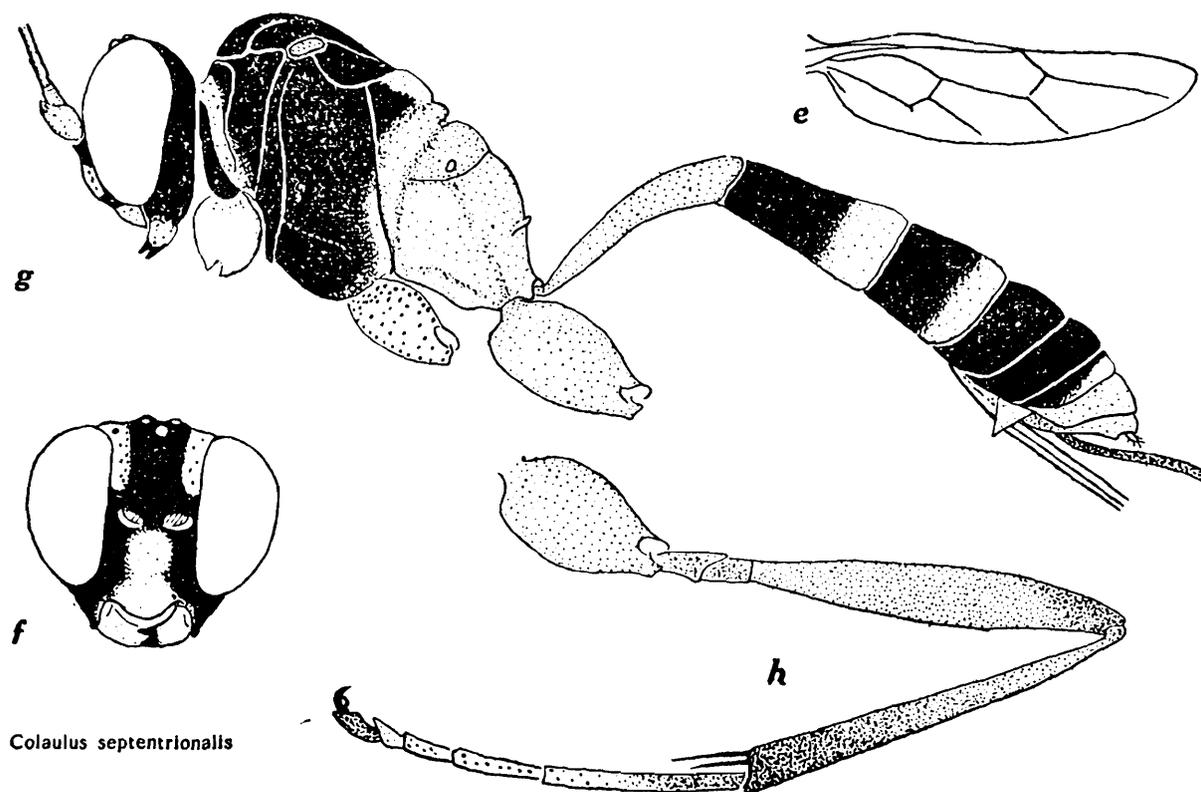
#### 4. *Colaulus septentrionalis*, sp. nov.

(Fig. 2 : e, f, g, h)

This species is close to *Colaulus flavofaciatus*, sp. nov. in having face and clypeus yellow and hind tarsus largely whitish. It is distinguished by having face in the middle and clypeus wholly yellow. Pronotum and mesopleurum largely black. Face densely punctate. Pronotal collar above the base of fore coxa shallowly punctate.

*Female* : Face subpolished, densely granuloso-punctate. Clypeus subpolished sparsely and shallowly punctate. Malar space granulate, 0.7x the basal width of mandible. Frons sparsely and finely punctate, punctures weak along the eye margin. Vertex and temple subpolished, sparsely and finely punctate, punctures on vertex weak. Mandible punctate. Pronotum at its lower 0.5 coarsely trans-striate, upper 0.5 shiny with sparse fine punctures ; pronotal collar just above the base of fore coxa shallowly punctate. Epomia moderately long and strong. Mesoscutum and metascutellum shiny with sparse and indistinct punctures. Lateral carina of scutellum confined to its basal 0.2. Mesopleurum shiny with fine and sparse punctures, short but strong striae present at the anterior margin of speculum, prepectal carina extending up to the base of subtegular ridge. Metapleurum shiny, sparsely punctate above, closely punctate below, juxtacoxal carina present. Propodeum shiny, basal of basal carina with a few scattered shallow punctures, between basal and apical carinae sparsely punctate, apical of apical

carina rugose ; apical carina complete, apophysis weak, low crest-like. First tergite shiny, its petiolar area smooth, postpetiole sparsely punctate. Second to fourth tergites with dense fine punctures, tergites apically appears to be granulose, following tergites mat and subpolished. Ovipositor and wings similar to *Colaulus erugus* (Fig. 2c).



*Colaulus septentrionalis*

Figs 2. *Calaulus septentrionalis*, sp. nov. : e. hind wing ; f. head front view ; g. body side view ; h. hind leg.

Black, Antennal flagellum from 6th-12th segments white ; scape and pedicle brown in front. Face in the middle, clypeus (mark on these two fused), mandible (except the teeth), orbital stripes on frons, pronotal collar, tegula, subtegular ridge faintly, scutellum (except at base, brownish), fore and middle coxae and their first trochanteral segments, apices of sixth to eight tergites, yellowish-white. Metapleurum, base of hind wing, metascutellum, mesopleurum along the pleural suture, propodeum, first tergite (except at base brownish) and hind coxae, red. Second and third tergites broadly at apex and legs in general, yellowish-brown. Apex of fore tarsus, middle tarsus almost wholly, hind tarsus with the basal 0.75 of first segment and fifth segment wholly, dark brown ; rest of hind tarsus whitish. Wings clear hyaline.

*Male* : Similar to female, except more polished, slender and weakly sculptured. Colour also similar to female except flagellum with 9th-16th segments white ; face and clypeus wholly and temple near the base of mandible, yellowish. Second tergite broadly at apex brown, following tergites blackish-brown. Seventh tergite except at base, broadly whitish.

*Length* : Female, 7-8 mm ; fore wing 5-5.5 mm ; ovipositor sheath 1.75 mm. Male, 7-7.5 mm ; fore wing 4.5-5.5 mm.

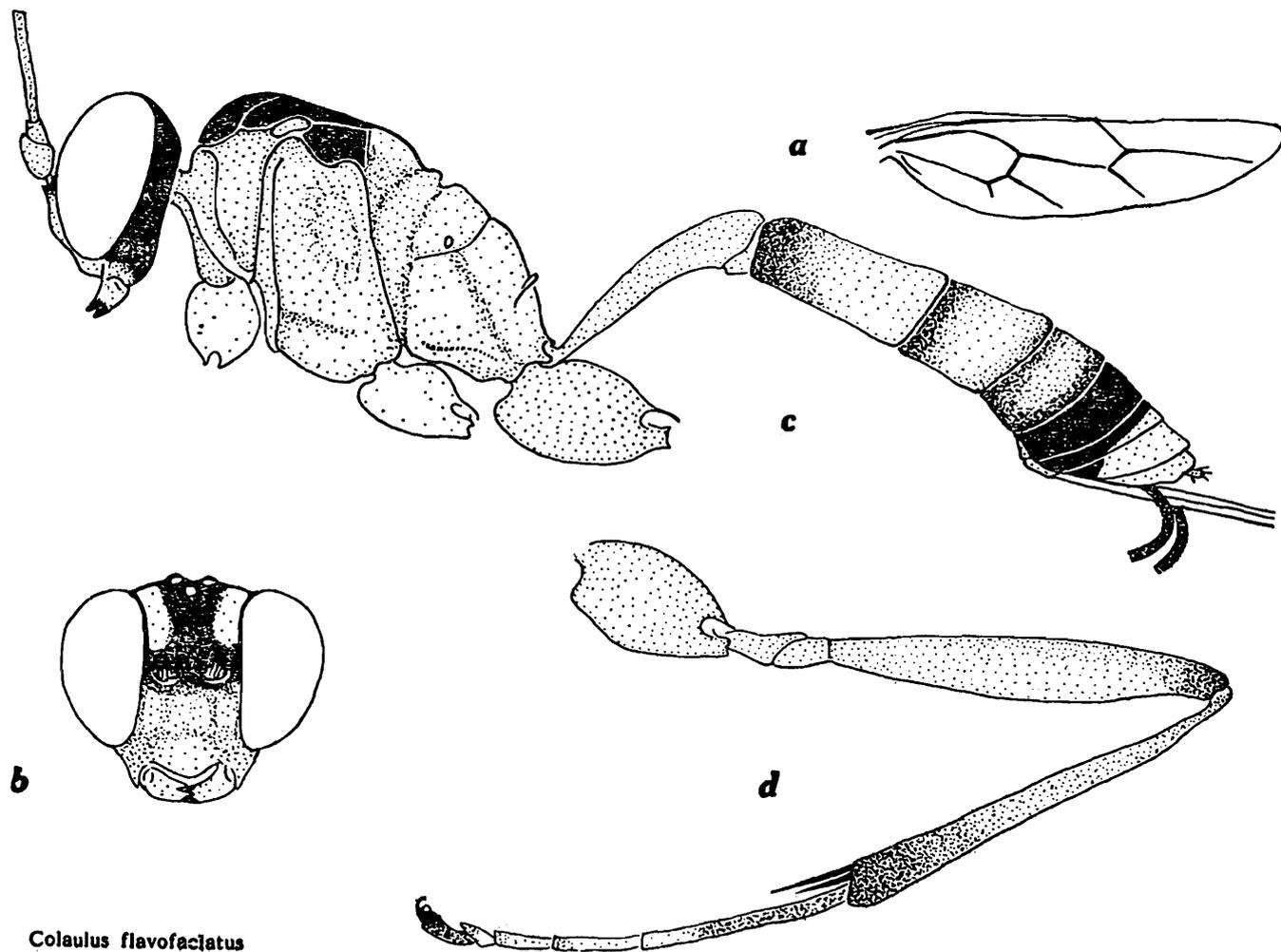
*Holotype* : Female and *Allotype* Male, India : Himachal Pradesh : Banikhet, 1524 m, 7.v.1971, D. Ram, Coll. No. DH 35. *Paratypes* 3 Females, 30 Males. 2 M, same, data as above. Manali, 1828 m, 12 M, 1F, 13.v.-2.vi. 1970, Colls. A. K. Gulati, D. Ram, M. K. Kamath, M. Gupta, V. K. Gupta, Colln. Nos. K 195, 200, 234, 235, 237, 252, 257, 260, 261 ; M 4, 19 ; 336. Nichar, 2400 m, 1 M, 8.vi.1972, Girish Chandra, Coll. No. G 8. Uttar Pradesh : Barkot, 1212m, 2 M, 16.v.1967, Colls. J. K. Jonathan & M. K. Kamath, Colln. Nos. J 223 & K 181 ; Chaubattia 200 m, in Kumaon Hills, 2 F, 9 M, 16.vi.1968, V. K. Gupta Coll. No. 321 (Gupta and Z.S.I., Calcutta.)

*Distribution* : India : Himachal Pradesh and Uttar Pradesh.

### 5. *Colaulus flavofaciatus*, sp. nov.

(Fig. 3 a, b, c, d)

This species is distinguished by having face in the middle and at sides, yellow. Face rugoso-punctate. Pronotal collar above the base of fore coxa smooth and shiny and brachiella present in hind wing.



Figs 3. *Colaulus flavofaciatus*, sp. nov. : a. hind wing ; b. head front view ; c. body side view ; d. hind leg.

*Female* : Body subpolished. Face largely weakly rugoso-punctate. Clypeus largely smooth and shiny, except minutely punctate along the clypeal groove. Malar space

granulose, 0.75x the basal width of mandible. Frons largely smooth and shiny. Vertex and temple shiny with sparse minute punctures. Pronotum above the base of fore coxa smooth and shiny, rest somewhat trans-rugoso-punctate. Mesoscutum sparsely and minutely punctate. Scutellum with indistinct punctures at base, lateral carina extending at it basal 0.4. Metascutellum smooth and shiny. Mesopleurum smooth and shiny except above minutely punctate. Prepectal carina extending up to the base of subtegmental ridge. Metapleurum with sparse minute weak punctures; juxtacoxal carina present. Propodeum with both the transverse carinae complete, smooth and shiny between apical carina and base; apical of apical carina rugose; apophysis crest-like. First tergite smooth, second and third strongly granulose, fourth and following tergites mat and subpolished. Brachiella in hind wing present (Fig. 3a).

Body largely yellowish-brown. Antennae dark brown, with scape yellowish-brown. 6th to 12th flagellar segments white above. Face brownish. The following are yellow: the face with two elongate mark along the eye margin and a bilobed mark in the middle, clypeus wholly, mandibles (except the teeth), frons along the eye margin, pronotal collar below, tegula, fore and middle coxae, scutellum and metascutellum, mesoscutum black (Fig. 3b). Abdomen yellowish-brown, except its second and third tergites at base and fourth to sixth tergites wholly, dark brown. Extreme apex of sixth tergite and seventh and eighth tergites almost wholly, white (Fig. 3c). Legs yellowish-brown, except extreme apex of hind femur, tibia wholly, basal 0.8 of first segment and whole of 5th segment of hind tarsus, dark brown, rest of hind tarsus whitish (Fig. 3d). Wing clear hyaline.

*Male* : Unknown.

*Length* : Female 7 mm; fore wing 4.5 mm; ovipositor sheath 2.5 mm.

*Holotype* : Female, India : Kerala : Connanore, 8.xi.1970, M. K. Kamath, Coll. No. 296. (Z. S. I., Calcutta).

*Distribution* : India : Kerala.

#### SUMMARY

Five new species of *Colaulus* viz., *C. lucidus*, *C. erugus*, *C. punctatus*, *C. septentrionalis* and *C. flavofaciatus* are described from India. The genus *Colaulus* is new to India.

#### ACKNOWLEDGEMENTS

I gratefully acknowledge the courtesy of Prof. (Dr.) V. K. Gupta, University of Florida, Gainesville, Florida for the loan of some material for this study. I am thankful to the Director, Zoological Survey of India for providing necessary facilities and constant encouragement to carry out the research work.

#### REFERENCE

Townes, H. 1970. The Genera of Ichneumonadae, Part II. *Mem. Amer. Ent. Inst.* 12 : 1-537.