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ON ONE NEW GENUS AND NINE SPECIES OF SYRPHID FLIES (DIPTERA : SYRPHINAE) FROM INDIA

V. K. KOHLI[1], V. C. KAPOOR AND S. K. GUPTA
Department of Zoology, Punjab Agricultural University, Ludhiana-141 004, India

ABSTRACT One new genus *Indosyrphus* and nine new species, viz. *Baccha (Baccha) bistriatus*, *Chrysotoxum fasciatus*, *Paragus(Paragus) femoratus*, *Indosyrphus garhwalensis*, *Megasyrphus himalayensis*, *Orthonevra aenethorax*, *Helophilus sharpi*, *Eumerus kashmerensis* and *Paractophila bengalensis* have been described from India. The genus *Pipiza*, *Megasyrphus* and *Helophilus* have also been recorded for the first time from India.

KEY WORDS Genus *Indosyrphus*, new species, syrphinae, syrphid flies.

INTRODUCTION

Syrphid flies are of great economic importance as larvae of the subfamily Syrphinae are voracious predators and devour large number of aphids, besides attacking coccids, scale insects, psyllids, aleurodids and cicadellids. The adults are also beneficial to agriculture as pollinators. The larvae of some genera like *Microdon* and *Eumerus* are harmful as they attack and destroy bulbous plants like tulips, daffodils and narcissus.

Syrphid fauna is still incompletely known in India. Since the publication of a monograph (Brunetti's Fauna of British India, 1923), the work on the taxonomy of these flies by Deoras (1943), Joseph (1967, 1970), Nayar (1967 a, b, 1968), Thompson (1974), Kapoor *et al.* (1979, 1985), Hippa (1974), Knutson *et al.* (1975), Ghorpode (1982) and Agarwal *et al.* (1984) is worth mentioning. Presently, 260 species belonging to 63 genera are known from India.

Subfamily : Syrphinae

Tribe : Bacchini ; 1. *Baccha (Baccha) bistriatus* sp. nov. (Figures 1-7)

Male : Head more than spherical, distinctly broader than thorax, eyes bare, contiguous for half the length of vertical triangla, lower facets coffee brown differing in colour from the rest. Middle of posterior margin of eye slightly and gently excavated when viewed in profile. Vertex elongated, grey dusted with greyish pubescenee, ocelli glistening brown placed at lower corner of triangla, frons and face yellow, former with grey admixture and bearing erect brown hair, face slightly narrowing downwards with broad, prominent median yellow facial prominence without any facial stripe, facial pubescence fine and pale. Mouth border broad, oval cheeks little greyish, almost bare. Antennae orange, 3rd segment oval, darker on dorsal

[1] Malaria Research Centre, Mitha Talav, Sardar Baug, Kapodwanj-387 620, Gujarat

surface, arista bare, orange, upper half dark, antennal prominence well developed, black above antennae, occiput margin yellow pollinose, brownish on upper half to shining pale yellow pubescence.

Thorax almost quadrate, dorsum shining black, lateral margins up to wing roots little brassy, when viewed from behind there is a pair of well separated sub-median yellowish-grey longitudinal stripe which though faces at posterior end but joined broadly before scutellum. Mesonotal pile dull pale to brownish. Pleuron shining bluish-black, posterior half of mesopleuron and upper region of sternopleuron with yellowish-grey tomentum bearing long brown pubescence. Scutellum semitranslucent yellow, more than basal half of disc with little grey opacity, bearing few erect black strong hairs on apical margin, remaining pubescence short, pale. Legs orange, posterior femora with an extensive median brownish-black annulus, hind tibia and tarsi darker on dorsal side. Pubescence of legs pale, except on hind tibia and dorsal surface of hind tarsi Wings entirely trichose, stigma brown, costal cell little yellowish-brown and rest of wing with faint brown tinge, crossvein r-m at base of discal cell, 3rd longitudinal vein straight, squammae well developed, alula wanting, halteres orange-brown.

Abdomen ground colour black, clavate not petiolate, basal segments moderately narrowed, segments of unequal length ; 1st segment shining black, lateral margins with yellow callosity having long pale hair, 2nd segment with a basal quadrate yellow spot separated at middle by a black stripe and another transverse band below middle part of the segment, 3rd and 4th segments each with two yellow-orange to orange-brown bands—basal one covering the base of the segment and second one being placed near middle, posterior bands being slightly emarginated at centre, posterior margin of 4th segment broad and 5th segment orange-yellow, except at median up to anterior half. Abdominal pile pale yellow on lateral margins up to middle of 3rd segment, below which it is dense and dark black, pubescence also black on dorsal disc. Genitalia small, orange in colour. Sternites with markings as in tergite.

Male terminalia : Small in size, 9th tergite (T_9) broader than height with deep cercal notch, finely setose on dorso-median region, cerci large, thin, elongated, about the length of surstyli, pilosity fine and long. Surstyli broad, flat plate with only few scattered short setae, dorsal view appears elongated with narrow apices, surstylar apodeme short but broad. Theca broad at base, groove very broad and deep, superior lobes oval with an apical sharp hook, lateral in position with lateral processes of theca, lingula wanting. Aedeagus simple, basal plate without any posterior hook but ventral apical angle subacute.

Length : Body-8.8 mm; wing-7.2 mm.

Female : Similar to male. Eyes well separated, frons gradually widening from

vertex to level of antenna where it is three times wider than that at vertex, a thin black median stripe traverses from vertex to upper region of antennal prominence where it narrowly spreads at base, antennal prominence well developed compared to male and orange with two distinct black spots above antennal bases, cheeks entirely yellow with long yellow pubescence on lower half. In abdominal banding pattern and other characters it is similar to male.

Length : Body-10.0 mm; wing-8.4 mm.

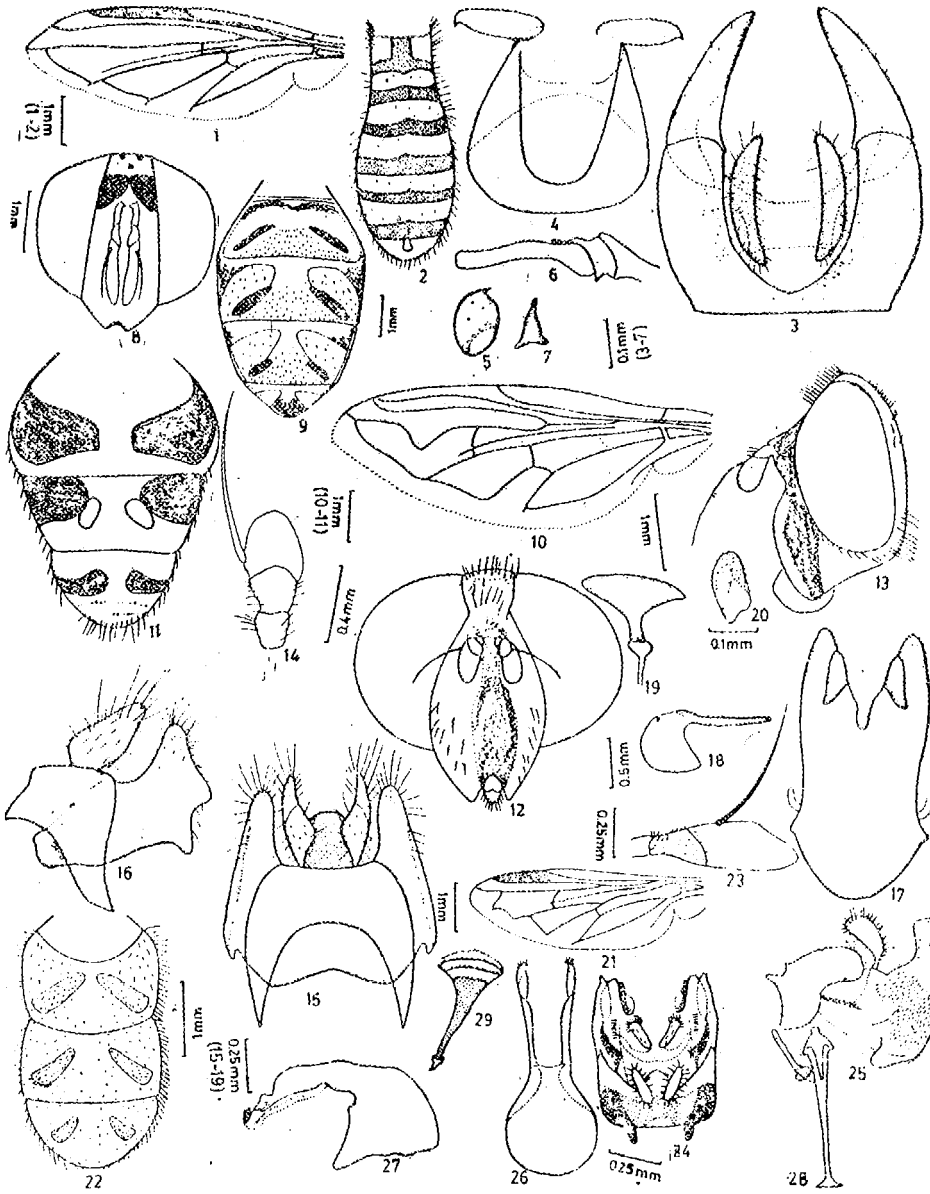
Specimens examined : HOLOTYPE Male, Pantnagar (UP) 9. xi. 1983, Coll. Ashwani Kumar; ALLOTYPE Female, same data.

Remarks : It is a new species as the abdominal shape and banding pattern, absence of alula and thoracic stripes are some of the combinations of characters which are not found in other species of the genus.

Tribe : Chrysotoxini ; 2. *Chrysotoxum fasciatus* sp. nov (Figures 8-9)

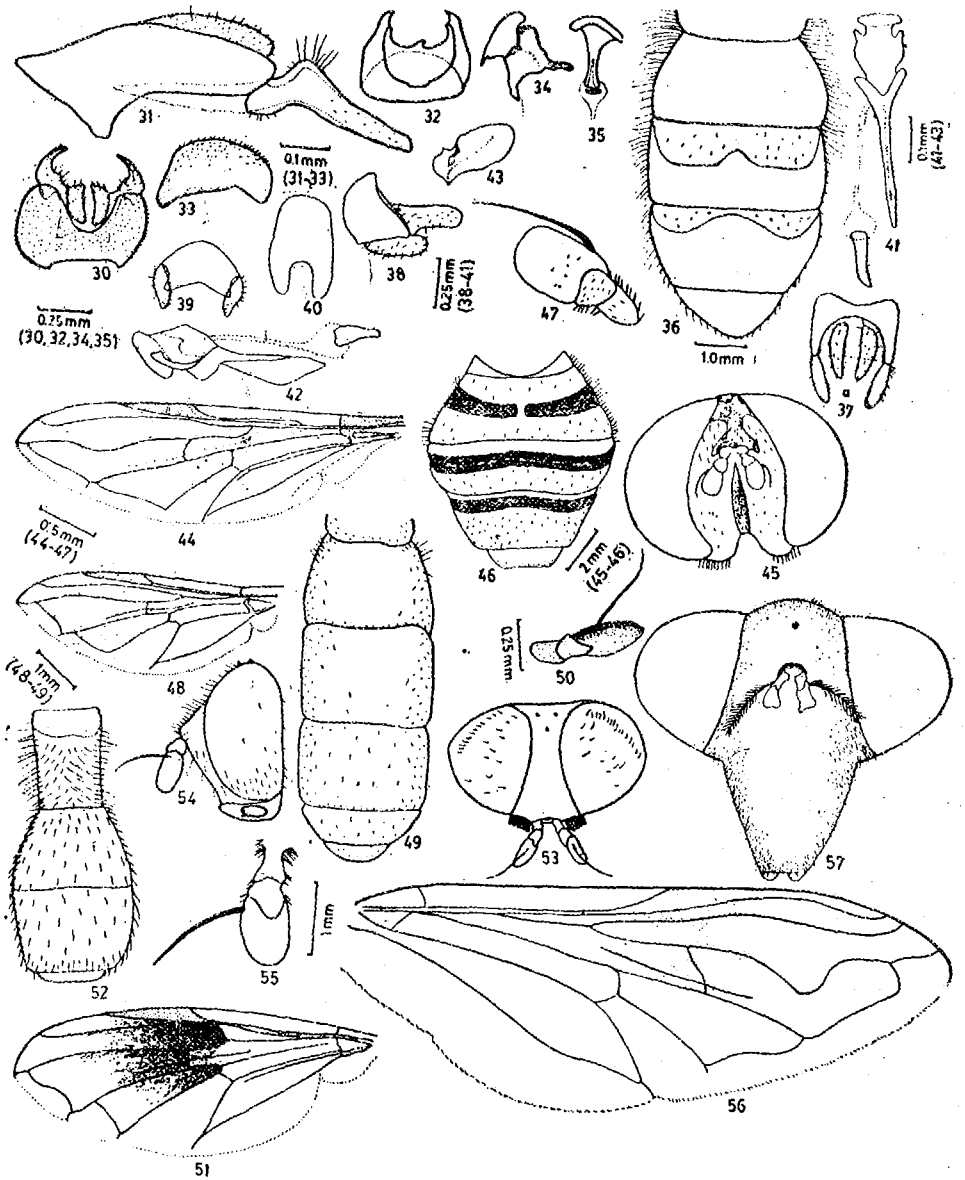
Female : Eyes well separated, bare, facets of uniform size. Vertex and frons shining black, former with few short microscopic black pubescence, a greyish dusty spot on middle of frons, almost contiguous, face flat below antennae, lemon-yellow with greyish tomentum, almost bare and with gentle protrusion above the upper mouth edge. Antennal prominence black, 1st segment wholly, 2nd orange-yellow at base, 3rd black, arista bare, sub-basal orange, almost as long as the third segment. Cheeks and mouth mainly yellow, bare, proboscis black. Occipital margin black with yellow tomentum and black pubescence. Thorax aeneous black, humeri and lateral margins broadly brownish-yellow with yellow pubescence, dorsum with two median greyish stripes, pleuron aeneous, yellow markings on mesopleura, sternopleura and near wing roots. Scutellum brownish-yellow with black hair intermixed with yellow ones.

Abodmen yellow with tan spots, strongly arched and emarginate, 1st segment mainly yellow, hind margin with a thin, transverse black line dorsally, 2nd segment yellow, a pair of thin arched spots, brownish-black, well separated at their inner narrowed ends and ending just above posterior margin away from lateral corners. Posterior area enclosed by these spots with black pubescence, rest of the segment with yellow pubescence,3rd to 5th segments each with a pair of yellow large spots, not touching at middle and broadly continued at lateral margins. Pubescence on these spots imperceable, anterior lateral margins brownish but with pale pubescence, dark thick spots on 3rd and 4th segments, black pubescence restricted to posterior half, 5th segment with dense black pubescence on middle axis, yellow spots more obliquely placed. Venter yellow with flanged lateral margins. Sternites 2nd to 4th on posterior margin curved with little emargination at centre, blackish-brown stripes with black hair, 5th sternite almost entirely tan and extreme posterior margin with



Figures 1-7. *Baccha bistriatus* sp. n., 8-9. *Chrysotoxum fasciatus* (F) sp. n., 10-20. *Helophilus sharpi* sp. n., 21-29. *Eumerus kashmerensis* sp. n., 30-35. *Paragus (Paragus) femoratus*, sp. n, 36-43. *Indosyrphus garhwalensis* sp. n., 44-47. *Megasyrphus himalayensis* (F) sp. n., 48-50. *Orthonevra aenethorax* (F) sp. n., 51-55. *Pipiza* sp. 56-57. *Paractophila bengalensis* sp. n.

Left wing : 1, 10, 21, 44, 48, 51, 56; Abdomen : M—2, 11, 22, 36; F—9, 46, 49, 52, 56;



Head : Front—3, 12, 45, 57 ; lateral —13, 54 ; upper —53 ; Antenna : 14, 23, 47, 50, 55; Male terminalia : Tergite 9 & surstyli, dorsal —3, 15, 24, 30, 37 ; lateral —16, 25, 31, 38 ; ventral —39 ; Sternite 9 & associated superior lobes, ventral —4, 17, 32 ; dorsal —26, 39; lateral —27 ; Superior lobe : 5, 20, 33, 43 ; Aedeagus : with ejaculatory apodeme —6, 18, 28 ; with associated structure, lateral —42 ; dorsal —34, 41 ; Ejaculatory apodeme : 7, 19, 35

a row of fine black hair. Legs yellow, coxae dark, almost black. Hind femora on apical half brownish-orange with black hair, hind metatarsi and tarsi brown, pubescence pale. Wings entirely covered with microtrichae, stigma large, yellowish-grey, squammae whitish-yellow, halteres pale white.

Length : Body-10.0 mm; Wing -8 mm.

Male : Unknown.

Specimen examined : HOLOTYPE Female, Punjab University, Chandigarh, 27.x. 1983, Coll. Ashwani Kumar.

Remarks : The species differ from its close one *baphyrus* Walker and all other Indian species of this genus in having unstriped face and the different abdominal pattern.

Tribe : Eristalini ; 3. *Helophilus sharpi* sp. nov. (Figures 10-20)

Male : Eyes bare, broadly separated, vertex dull black with black hair bearing few pale, pubescence behind ocelli dark brownish-black, vertex and half of frons with dense black erect hair, entire face and frons yellow with pale pubescence, face produced conically below, up to half the length of eyes, with a broad median bare stripe traversing uniformly up to bases of antennae. Antennal region above sockets black and bare, antenna black with certain brown admixture, 3rd segment rounded, arista dorsal, bare, brown-orange, tip pale. Lower mouth borders above cheeks dark with greyish tomentose and grey pubescence. Occiput prominent with yellowish-grey tomentum bearing few erect black and opaque yellow hair on upper region, lower half with brighter whitish pubescence.

Thorax dull smoky black. Humeri, lateral margins and a pair of longitudinal stripes on dorsum silvery grey. Stripes traversing uniformly up to scutellum, dorsum covered with dense yellowish-white pubescence, pleura concolourous to thorax with pale yellow to brown pubescence. Scutellum brownish-yellow, basal half dull opaque brown with long erect black hair, apical region yellow-orange with erect pale hair along with few black ones, marginal fringe below posterior margin of scutellum absent. Wings hyaline, entirely trichose, clear, marginal cell narrowly open, vein R_{4+5} dipped downward into discal cell, crossvein r-m at or behind middle of discal cell, stigma quite large, light brown, halteres brownish. Legs with greyish-black coxae, femora dark brownish-black except orange-yellow at apical one-fourth or lesser. Hind femora greatly thickened with prominent black bristles under surface. Fore and hind tibia orange-yellow on basal half, black and darker distal half, hind tibia curved, tarsi of fore and meso legs orange-yellow, hind tarsi extensively dark brown to black with black pubescence on under side.

Abdomen somewhat conical, ground colour black, 1st segment broad sbu-

shining brown at centre, 2nd segment with a pair of broad oval yellow spot separated at middle, extending entirely over lateral margins, 3rd segment with two broad, deep orange-brown round spots, at middle of segment a pair of obliquely placed whitish-yellow spot, 4th segment with similar spots but somewhat larger and transversely placed, clear at lateral margins. Posterior margin of 4th and 5th segments orange-yellow to brown. Pubescence on dorsum short, pale yellow, posterior one-third of 2nd to 3rd segment with black hair on lateral margins. Venter black, 2nd sternite with yellow markings and median black line corresponding to 2nd tergite.

Male terminalia : T_9 trough-shaped, lower corner extremely produced and acute cerci broad anteriorly, longer than surstyli, with long hair along border. Surstyli very broad at base and narrow anteriorly, bearing long pubescence on half of distal dorsal and apicoventral surface. Surstylar apodeme very broad posteriorly. Theca elongated, ventral process well developed for articulation with broad apodeme, a large triangular plate on the ventral inner surface of upper processes, superior lobes very short, anterior half covered with fine hair. Aedeagus simple, tubular with a spherical capsule, ejaculatory apodeme comparatively large funnel-shaped.

Length : Body - 9.0 mm; Wing - 4.8 mm.

Remarks : With the description of this new species, the genus is recorded for the first time from India.

Tribe : Eumerini ; 4. ***Eumerus kashmerensis*** **sp. nov. (Figures 21-29)**

Male : Eyes contiguous more than the length of upper frontal triangle, lower half with few microscopic pale pubescence, front facets larger than the rest, vertical triangle broad, hind region with grey and front with long black pubescence, ocelli black. Frons and face dull black with shining yellow pubescence, antennae black with shining yellow pubescence, 2nd segment clothed with fine yellow hair, 3rd segment as long as broad, arista dorsal, bare, black, cheeks concolourous with face and similar in pubescence. Occiput shining black with grey tomentum, broad but suddenly narrowed behind middle of eyes. Thorax aereous black with bluish-green reflection, two thin longitudinal median greyish stripes, though not very distinct but always present, which fade away before reaching scutellum, thoracic pubescence dirty yellowish-brown, pleuron shining black with bright yellow pubescence. Scutellum similar to thorax, pubescence more brighter. Abdomen shining black, punctate, 2nd to 4th segments with greyish spots, well separated at middle and clear of margins and a little obliquely placed at middle of segment with bright yellow pubescence. Abdominal pubescence microscopic except at lateral margins, on the spot and on posterior half of 4th segment where it is distinct. Venter black, 2nd sternite with dirty brown large spots. Legs black, bases of all tibiae brown, tarsi brown except at tips on fore and middle pair, hind femora black, moderately

thickened, under surface with spines on distal region, hind tibiae above base and metatarsi strongly incrassated and black, tarsi orange. Pubescence of legs pale yellow, longer on ventral surface of hind femora. Wings clear, stigma light brown, crossvein r-m obliquely placed behind middle of discal cell, halteres brownish.

Male terminalia : The peculiar feature observed is a pair of posterior processes on T_9. Cerci directed upwards ahead of T_9, surstyli also very characteristic in having long dorsal tube and at base developed into a broad flat plate, finely beset with minute hair, bearing also a small lobe ventrally, surstylar apodeme large with a well developed median darkened line. Theca rounded posteriorly, arched dorsally, lateral processes very thin, elongated, lingula absent. Superior lobes small, black, bearing spines at margins. Aedeagus simple, tubular, ejaculatory apodeme large, conical, dark coloured.

Length : Body -6.5 mm ; Wing -5.0 mm.

Specimens examined : HOLOTYPE Male, Srinagar (J & K), 5. v. 1982, Coll. M. L. Agarwal ; PARATYPE 1 Male, same data, Coll. V. K. Kohli.

Remarks : The species comes close to the *perplexus* Brun. but differs in the characters of 3rd antennal segment in being not rounded, the middle tibiae and tarsi not wholly orange and in the characters of male terminalia.

Tribe : Paragini ; 5. *Paragus* (*Paragus*) *femoratus* sp. nov. (Figures 30-35)

Male : Head with face yellow, bearing fine white pile, median stripe brownish-black reaching up to half way to antennae, oral opening large, black, cheeks small, black with some violet reflections and pale pubescence. Proboscis black, apex brown. Vertex elongate, about three times longer than width, shining black, yellow dusted beyond median ocellus which also bears pale pubescence, remaining pubescence short and black, ocelli brownish-red, somewhat away from vertex, frontal triangle small yellow, with microscopic pale pubescence. Eyes whitish, arranged in two longitudinal stripes, front one broad and split, giving appearance of three stripes. Antennae elongate, pendulous, first two segments black with brownish tinge, 3rd segment ventrobasally orange, rest dull grey, arista orange, bare. Occiput grey with silvery tomentum, pubescence brownish behind, lower ones pale.

Thorax with mesonotum shining black, with violet reflection, mesonotal stripes faint yellow, indistinct, united in front, pubescence yellowish, longer in front of suture and on posterior corner. Pleuron black with blue reflection, meso and sternopleuron with long bright yellow pubescence. Basal half of scutellum piceous, remaining yellowish, with 13 unequal teeth. Scutellar pile yellow on disc and lateral sides not longer than mesonotal pile. Legs with darkened posterior femora, shining brownish-black up to three-fourth, orange at base and yellowish subapically. More than half of fore and meso femora brownish, darker at base, apical region and

basal half of tibiae creamish-yellow. Basal half of hind tibiae bright yellow, somewhat narrower than apical portion which is brown with a subapical indistinct dark band. All tarsi dark brown. Pubescence of legs bright yellow except for darkened portion of hind femora which bear dull pale pubescence. Wings yellowish-brown at extreme base, without any suffusion, spurious vein quite elongate covering whole length of discal cell, microtrichia conspicuous, stigma yellowish-brown. Wing bordered by a dark line. Halteres with brown stalk and creamish-yellow knob. Abdomen broad, convex, punctate (sculptured). Dorsum black with reddish-orange fasciae or vittae from 2nd to 5th segments. Pubescence of abdomen shining golden yellow, except black on back regions. The knob-like protuberances of 1st segment pitch black with a brownish admixture, rest brownish-orange, leaving a black triangular mark medially behind on 2nd segment. Pair of vittae on 3rd and 4th segments placed on anterior margin and well separated at middle. Anterior margin of 5th segment slightly black, rest dull brown with bright yellow hair.

Male terminalia : T_9 finaly setose dorsally, lower corners slightly produced, upper corners round. Cerci broad, flat anteriorly. Styles enlarged at base into a protuberance which bears a few long hair, anterior portion elongate, tubular, apex slightly acute. Theca with lateral projections bearing a weakly developed process ventrally. Superior lobes strongly convex dorsally with fine pubescence above.

Variations : Body size (males) 7.7 - 9.6 mm, wing length 6.5 - 7.6 mm, facial tubercle varies from indistinct faint light brown to dark black stripe, presence of variable abdominal black colour and in paratype the vittae on 3rd and 4th segments with silvery white tomentum and the scutellar teeth nine in number.

Length : Body -5.3 mm; wing -4.8 mm.

Female : Unknown.

Specimens examined : HOLOTYPE Male on pin, Pantnagar (UP), 9.xi. 1983, Coll. V. K. Kohli; PARATYPE 1 Male, Guwahati (Assam), 9. iv. 1985, Coll. V. K. Kohli.

Remarks : The species comes close to *serratus* s.s. but differs in having extensive dark femora, mesonotal stripes and style shape. It resembles *crenulatus* Thompson but differs in the pattern of abdominal vittae, absence of wing suffusion and styles being not sinuous on upper and lower margins.

Tribe : Syrphini ; 6. *Indosyrphus* n. g.

Type species : *Indosyrphus garhwalensis* **sp. nov.** : Head shining bluish-black, frontal facets slightly large, frons with long black hairs, face shining bluish-black, tubercle short but distinct, lateral margins with grey tomentum and fine greyish pubescence, cheeks greyish-black, bare. Antennal prominence aeneous black, border slightly orange, frons area immediately above it bare. Thorax and scutellum shining bluish-black, former with small protuberance on each side of anterior corner. Scutellum

with pale yellow pubescence, metasternum bare. Wings hyaline, costa with dense short hair along whole margin, stigma large, yellowish, alula large, lower lobe of squamma with long yellowish hair, basal half of wing with extensively bare area, halteres brownish-yellow. Abdomen unmargined, sides almost paralell. Sternites yellowish-orange, venter with a keel on 2nd and 3rd sternites.

Male terminalia : Small in size, T_9 rectangular with very broad and deep cercal notch leaving lateral margins narrow, cerci very large, prominent reaching up to half the length of surstyli, latter oblong and short, with some long hair on dorsal side and short but sparse hair on rest of the disc, in lateral view uniform width throughout with round apex, surstylar apodeme short and broad. Theca moderately convex on dorsal side with well developed groove and small lateral processes, lingula absent. Superior lobes small with a sharp posterior corner and a notch on inner basal region.

Remarks : The single species (*Indosyrphus garhwalensis* sp. nov.) of this genus comes close to those of the *Syrphus* Fabr. but the black facial colour, absence of median facial and thoracic stripes, black colour of scutellum and absence of yellow spots or band on 2nd tergite are some of the striking differences which necessiated the description of this new genus.

6a. *Indosyrphus garhwalensis* **sp. nov. (Figures 36-43)**

Male : Head semispherical, broader than thorax and closely adpressed with it shielding humeral region. Eves dark brown, frontal facets narrowly larger than others, bare, contiguous as far as the length of vertical triangle. Vertex black, ocelli dark blackish-brown with erect black hair. Frons produced into broad, prominent antennal prominence, upper region black with grey tomentum and with long black hair up to level of antennae, lunular depression very large, shining bluish-black, bare, antennal sockets and antennae brownish-orange, first two segments with few black hair on both surfaces, 3rd segment not more than 1.5x of width, apex and dorsal surface dark, arista dorsal, bare, pale brown. Face aeneous black with blue and green reflections, grey pollensity, tubercle short but distinct, bare lower margin of face and cheeks concolourous, pubescence of face thin, greyish, mouth opening large, broad, oval, little oblique, upper lateral margin at each side with large dark brown spot and above to it along eye border a small depression. Proboscis brownish-black.

Thorax aeneous black, punctate, little longer than width, without any lateral, submedian or median stripes or any callosity, midway above suture a small protuberance, like a tubercle, on each side. Pleuron concolourous to thorax with some grey dusts, long pale yellowish pubescence on posterior half of meso, ptero and sternopleura, hypopleuron below spiracle with short pubescence, metasternum

bare. Scutellum entirely concolourous to thoracic dorsum with very long dense, erect, fine pale yellow pubescence. Wings extending beyond length of abdomen, hyaline, clear veins, dark brown, anterior crossvein before middle of discal cell, stigma brownish-yellow.

Abdomen elongated, unmargined, brown to brownish-black, 3rd and 4th tergites with a yellow band covering more than anterior half of 3rd segment, little emarginated at centre and passes narrowly over lateral margin on upper corner, sternite markings similar to those of tergites, 2nd and 3rd sternites with a median keel. Legs simple, dark brown, coxae darker, apical femora and about basal half of tibia of fore and middle legs lighter in colour, tarsi darker, pubescence of legs yellowish.

Male terminalia : For explanation, see under genus (Figures 37-43).

Length : Body -7.8 mm; wing -8.7 mm.

Female : Very similar to male but larger in size. Frons and abdomen broader. Abdomen colour dull black with bluish reflection on anterior and posterior segments, tarsi blackish with black pubescence, 2nd and 3rd sternites ridged medially but not so conspicuous as in male.

Length : Body -13.1 mm; wing -11.7 mm.

Specimens examined : HOLOTYPE Male, Ramgarh, DehraDun, 1900 ft, (UP, India), hovering over marshy patch in jungle, 15. iii. 1936, Coll. J.A. Graham; ALLOTYPE Female, New Forest, DehraDun, 28.xi. 1941, Coll. R. N. Mathur (All in National Pusa Collection, IARI, New Delhi, India).

7. *Megasyrphus himalayensis* **sp. nov. (Figures 44-47)**

Female : Large, robust species with broad median facial stripe, thorax laterally and pleuron with yellowish-brown markings. Abdomen margined, moderately convex, with yellow bands. Base of wing, costal and marginal cell slightly suffused or clouded with light brown colour, stigma dark brown.

Eyes broadly separated, facets of uniform size, vertical triangle small, black with prominent reddish-brown closely placed ocelli. Frons at upper half, enclosing vertex region, shining black, colour carried below medially to broad antennal lunules, thus leaving an elongated yellowish-grey oblique spot on frons which is contiguous to yellow face below. Face gradually widening from vertex to mouth border, dense pubesence on frons erect and black, while on face fine and light brown with some black hair along the facial stripe, cheeks orange-brown, bare occiput greyish with pale to brown pubescence. Antennal prominence and antennae black, 3rd segment greyish-black, length and breadth equal with broadly rounded apex, arista dorsal, brown, bare.

Thorax black, lateral margin yellowish-brown, posterior corners protruding, dorsum with dense brown pubescence, pleuron black, a brown colour patch on posterior mesopleuron and upper sternopleuron, mesopleura with pale yellowish hair posteriorly, rest of pubescence brownish-yellow, hypopleura below spiracles bare, a whitish hairy spot below squammal region, metasternum with black hair Scutellum brownish-orange with dense erect black hair. Wings grey, entirely trichose, posterior margin with microtrichae, vein R_{4+5} shallowly dipped downward, stigma dark brown; base of wing, costal and marginal cell with yellowish-brown suffusion, squamma large, lower lobe with long shining pale yellow hair.

Abdomen brownish-black, moderately convex, distinctly margined from posterior one-third of 2nd to tip of the 5th tergite, broadest at posterior margin of 2nd tergite which have two transverse oblong yellow spots narrowly but distinctly seperated at middle, 3rd and 4th tergites with a yellow band of uniform width placed nearer to anterior than posterior margin, all bands narrowed near upper corners and clearly pass over margins. Posterior margin of 2nd to 5th tergites broadly greyish-brown. Pubescence thick and large, lateral margin of 2nd tergite yellowish-brown. Sternites mostly black, 1st to 3rd sternites with yellow marking on anterior margin, markings broad at sides and narrow at centre, 4th and 5th sternites with posterior margins brown. Legs orange brown, about basal one-fourth of fore and mid femora and basal half of hind femora black, tarsi black.

Length : Body -13.5 mm; wing -13.0 mm.

Male : Unknown.

Specimens examined : HOLOTYPE Female, Kalatop (near Dalhousie, HP, India) 13.x. 1981, Coll. G. Mashesvi ; PARATYPE Female, Carignano (HP), 24.xi. 1981, Coll. M.L. Agarwal.

Tribe : Chrysogasterini ; 8. ***Orthonevra aenethorax*** **sp. nov (Figures 48-50)**

Female : Head broader than width of thorax, eyes well separated, bare, vertex elevated with deep orange-brown prominent ocelli. On vertical region, frons up to half and antennal prominence shining bluish-black, vertex with some violet reflections when seen from above, middle of frons with grey tomentum, frons up to level of antenna without any hair, face sides parallel, front from vertex to mouth border almost parallel-sided, face not cut away below antennae but with short, black, bare, facial tubercle, clothed with pale grey tomentose with short pale pubescence. Antennal prominence short, antenna orange-yellow, 3rd segment somewhat elongate but not oval, dorsal and apical surface dark greyish-black, arista basal, bare, orange. Cheeks concolourous to face with few pale hair. Occiput greyish-yellow, lower half with few light brown pubescence.

Thorax shining black with blue-green reflection, sparsely punctate, little

longer than width, almost bare, few long hair near the humeral region, pleuron dull grey-black. Scutellum aeneous black, narrow posteriorly, without any conspicuous hair or pubescence, marginal fringe small, grey and drooping behind. Legs simple, orange-yellow, coxae blackish, hind tibiae with a median broad darker ring, fore and hind tarsi little darker, pubescence of legs pale yellow. Wings hyaline, clear, with roots light brown, densely trichose except at basal one-third posterior margin with dense short microtrichae, stigma almost clear, halteres brown.

Abdomen linear, subshining, brownish-black, slightly broadened on 4th segment, under higher magnification brown colour overshadow blackish tone, pubescence short, sparse, bright yellow. Venter similarly coloured, posterior margins of 2nd to 4th sternites brownish.

Length : Body -5.8 mm; wing -5.3 mm.

Specimens examined : HOLOTYPE Female, Kasauli (HP), 25.x.1985, Coll. V. K. Kohli; PARATYPE 1 Female, same data as of holotype, 8 females, Srinagar (J & K), 13-15.ix. 1985, Coll. J.S. Grewal and S. K. Sharma.

Remarks : The species differs from the only known Indian species *Indica* Brun. characteristically in the thoracic colouration which is aeneous black in present case and cupreous in *indica*, similarly in leg colour being wholly orange-yellow instead of black and also in other facial characteristics.

Tribe : Pipizini ; 9. *Pipiza* sp. (Figures 51-55)

Female : Head mispherical, broader than thorax, aeneous black, flat from behind. Eyes with short whitish pubescence, dense and longer on lower half, facets of uniform size. Frons slightly broadening up to the level of antennae but face with parallel sides below it. Ocelli tan brown, longer on upper half of frons. Face below antennae flat, without any prominence or tubercle, upper mouth edge not produced, largely covered with long fine pale yellow hair. Antennae greyish-black, 3rd segment not more than 1.5x of breadth, arista dark, brown, bare, antennal sockets orange.

Pleura and scutellum of thorax aeneous. Scutellum triangular with a few long erect black hair on disc, scutellar fringe short, whitish. Wing venation as in figure 11a, crossvein r-m near base of discal cell,marginal call open, distal half of wing up to base of submarginal and distal cell clouded with brown suffusion, posterior wing margin with dense microtrichae, wing membrane trichose except basally at median, radial and upper half of anal cell. Stigma dark tan brown. Halteres stalk pale yellow, knob brown. Legs dark, brownish-black, coxae with greyish tomentum and few shining white pubescence near apico-ventral end, posterior femora and hind tarsi more brownish, pubescence whitish except on

dorsal surface of tarsi where it is more brownish.

Abdomen shining submetalic bluish-black, basal two segments narrow, about, half of the width of 4th segment, without any markings or bands, unicolourous, pubescence yellow-white, longer on lateral margins up to base of 2nd tergite, dorsum with brown pubescence on 3rd and 4th tergites. Posterior margin of 5th targite brownish with black hair. Venter dark shining black, a band of fine yellowish-white hair near posterior margin of 2nd and 3rd sternites.

Length : Body -7.9 mm ; wing -7.5 mm.

Specimen examined : 1 Female, Kumaon (Mukteswar), 22. viii. 1923, Coll. Sen (in National Pusa Collection, IARI, New Delhi, India).

Tribe : Sericomyini ; 10. ***Paractophila bengalensis*** **sp. nov. (Figures 56-57)**

Female : Frons greyish-black, broadening gradually from vertex to lower margins of eyes, vertical triangle small, black with long black hair, rest of pubescence pale yellow up to lower level of eyes, ocelli small brownish-black, transverse groove on frons absent. Frons, at level of antennae, one-third of width of head, face moderately cut away below antennae, produced downwardly up to length of eyes, a longitudinal suture parallel to the frontal lower margin of eyes, face yellow, tomentum with microscopic pubescence cover but without any long hair, cheeks and lateral margin of produced portion of face dark brown with few scattered bright pale pubescence, facial median stripe absent, though slightly darker at centre. First and 2nd antennal segments and 3rd narrowly at base brownish-orange, black stout setae on upper dorsal surface, 2nd segment at base with bright pale yellow row of hair, 3rd segment as broad as long, black, basal half of arista brown, upper half black, with 17 or 18 long hair on upper surface and 10 or 11 hair on lower surface. Occiput dull black with black hair on upper region. Thorax black with bluish or greenish reflection, two median, longitudinal black stripes, ending behind transverse sutur. Thorax with heavy yellowish-brown pubescence extending laterally on mesopleura and sternopleura where it is not dense and whitish. Scutellum dull brown, base black, pubescence as on throax. Abdomen dark brownish black, 1st segment wholly and 2nd up to middle with greyish tomentum, upper corners of 2nd segment with long yellow pubescence, 3rd segment mostly black, shorter than 2nd segment in width, with a triangular brownish indistinct spot, inner end reaching up to middle of segment. Apical segment black with long bright red pubescence. Legs simple, wholly brownish with some apical darkening of femora, pubescence sharp, short, black. Wings with a black smoke colour marking on its anterior-middle from the stigmatic region to down up to little beyond 4th vein of discal cell before the crossvein r-m.

Length : Body -11.5 mm; wing -11.0 mm.

Specimens examined : HOLOTYPE Female, Darjeeling (West Bengal), 4.iv. 1985. Coll. V. K. Kohli.

Male : Unknown.

Remarks : The species differs from *P. oberthuri*, the only other known species of the genus from the Oriental region, in having faint eye spots on the frontal facets, without distinct median facial stripe, having two longitudinal black thoracic stripes, wings clear except the suffusion (in *oberthuri* the marking is more brownish whereas in the present species it is rather smoky in colour), legs being brownish rather than blackish as in *oberthuri* and in other minor colour characters as given above.

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