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8. Studies on the Ischnoceron Mallophaga Infesting Birds in Pakistan.

By M. Atiqur Rahman Ansari, Health Service, Lahore.

The genus *Degeeri-ella* Neumann, 1906.

(i) DEGEERIELLA MASUMAE sp. nov.

This species differs from other Degeeriellids in the male genitalia and in the shape of the head. The basal plate is oblong and narrow, about seven or eight times as long as the parameres. The details of the mesosomal plates are very characteristic. The proximal heads of the parameres are specific.

*Holotype (male)*: Preantennal region  $0.25 \times 0.38$  mm, hind head  $0.24 \times 0.41$  mm, prothorax  $0.10 \times 0.25$  mm, pterothorax  $0.20 \times 0.55$  mm, and abdomen  $1.01 \times 0.54$  mm.

*Allotype (female)*: Preantennal region  $0.26 \times 0.38$  mm, hind head  $0.26 \times 0.42$  mm, prothorax  $0.10 \times 0.28$  mm, pterothorax  $0.17 \times 0.41$  mm, and abdomen  $1.27 \times 0.54$  mm.

*Type-host*: The Lagger Falcon (*Falco jugger* Gray).

(ii) DEGEERIELLA SPLENDIDUS sp. nov.

This species differs mainly in the shape of the head, abdominal chaetotaxy and male genitalia. The basal plate is about five times as long as the parameres. The parameres are short but with well developed proximal heads.

*Holotype (male)*: Preantennal region  $0.23 \times 0.32$  mm, hind head  $0.24 \times 0.37$  mm, prothorax  $0.09 \times 0.23$  mm, pterothorax  $0.14 \times 0.35$  mm, and abdomen  $0.99 \times 0.51$  mm.

*Allotype (female)*: Preantennal region  $0.23 \times 0.35$  mm, hind head  $0.27 \times 0.39$  mm, prothorax  $0.10 \times 0.26$  mm, pterothorax  $0.16 \times 0.35$  mm, and abdomen  $1.27 \times 0.51$  mm.

*Type-host*: The Himalayan Kestrel (*Cerchneis tinnunculus interstinctus* McClell).

(iii) DEGEERIELLA BEAUFACIES sp. nov.

This species resembles *D. masumae* from which it can be easily separated by the shape of the head. Male genitalia is very long and slender. The mesosomal plate is longer than broad. The tips of the parameres are highly sclerotised.

*Holotype (male)* : Preantennal region  $0.26 \times 0.31$  mm, hind head  $0.23 \times 0.36$  mm, prothorax  $0.09 \times 0.22$  mm, pterothorax  $0.18 \times 0.36$  mm, and abdomen  $1.01 \times 0.49$  mm.

*Allotype (female)* : Preantennal region  $0.26 \times 0.35$  mm, hind  $0.28 \times 0.42$  mm, prothorax  $0.09 \times 0.26$  mm, pterothorax  $0.49 \times 0.45$  mm, and abdomen  $1.28 \times 0.61$  mm.

*Type-host* : The White Eyed Buzzard Eagle (*Butastur teesa* (Frankl.)). ✓

(iv) DEGEERIELLA VITTATA (Giebel)

This species was described from *Milvus migran migrans* (Boddaert). Our specimens were collected from the Common Indian Pariah Kite (*Milvus migrans givinda* Sykes).

9. The genus *Strigiphilus* Mjoberg, 1910

By M. Atiqur Rahman Ansari, Health Services, Lahore.

(i) STRIGIPHILUS ROSTRATUS (Burmeister)

It is one of the long known species, and was described in 1838 from *Tyto a. alba* (Scopoli). Our specimens are from the Indian Barn Owl (*Tyto alba stretens* Hartert).

(ii) STRIGIPHILUS NUDIPES (Piaget)

Piaget described this species from *Asio f. flammeus* (Pontoppidan). The specimens referred to here were collected from the Long-eared European Owl (*Asio otus otus* Linn.). The *S. asionis* from *Asio otus canariensis* does not resemble our specimens.

(iii) STRIGIPHILUS CURSOR (Burmeister)

This species from *Asio f. flammeus* (Pontoppidan) was described earlier than the above species. A few specimens from *Asio otus otus* Linn. in our collection closely resemble this species.

(iv) STRIGIPHILUS GONIODICERUS Eichler

This is the *Nomen Novum* for *Docophorus heteroceros* Nitzsch, which was described from *Bubo b. bubo* (Linn.). We collected several specimens of this species from the Great Horned Owl (*Bubbo bubo bengalensis* (Franklin)).

(v) STRIGIPHILUS STRIGIS (Pontoppidan)

This is probably the earliest species of lice described from the family *Asionidae*. The type-host of this louse is *Bubo bubo bubo* (Linn.). We refer to this species the collection obtained from the Indian Great Horned Owl (*Bubo bubo bengalensis* (Franklin)).

VI. STRIGIPHILUS BOOMAE sp. nov.

This species differs from the allied forms in the shape of the head, distinct and considerably narrow clypeus, III apendiculate antennal segment, form of pterothorax and general abdominal chaetotaxy.

*Holotype (female)*: Preantennal region  $0.27 \times 0.39$  mm, Hind head  $0.28 \times 0.48$  mm, prothorax  $0.09 \times 0.26$  mm, pterothorax  $0.20 \times 0.45$  mm, and abdomen  $0.99 \times 0.61$  mm.

*Type-host*: The Central Indian Collared Scop Owl [*Otus bekamoena plumpeis* (Hume)].

10. The genera *Cuculicola* Clay and Meinertzhagen, 1939 *Cuculoecus* Ewing, 1926, and *Upupicola* Clay and Meinertzhagen, 1939.

By Muhammad Atiqur Rahman Ansari, Health Services, Lahore.

(i) CUCULICOLA CONCOLOR sp. nov.

Head subgivial in front, pterothorax hexagonal with a conspicuous posterior angle. Abdominal chaetotaxy scarce. Male genitalia very characteristic. Basal plate elongate with subparallel sides diverging slightly posteriorly. Mesosome transverse, quadrangular. Mesosome transverse, quadrangular. Parameres long, rod-like structures with modified proximal heads.

*Holotype (male)*: Preantennal region  $0.22 \times 0.31$  mm, hind head  $0.23 \times 0.34$  mm, prothorax  $0.05 \times 0.14$  mm, pterothorax  $0.18 \times 0.32$  mm, and abdomen  $0.99 \times 0.48$  mm.

*Allotype (female)*: Preantennal region  $0.21 \times 0.31$  mm, hind head  $0.25 \times 0.34$  mm, prothorax  $0.06 \times 0.14$  mm, pterothorax  $0.18 \times 0.32$  mm, and abdomen  $1.01 \times 0.44$ .

*Type host*: The Indian Pied Crested Cuckoo [*Clamator j. jacobinus* (Bodd.)]

(ii) CUCULICOLA JAMILAE sp. nov.

In this species the shape of the head, pterothorax and general chaetotaxy and male genitalia are considerably distinct from other *Cuculicola*. The basal plate is long and broad, mesosomal plate transverse. Parameres are rod-like structures. Female genital plate sinuous with 8-9 small marginal setae.

*Holotype (male)*: Preantennal region  $0.16 \times 0.20$  mm, hind head  $0.20 \times 0.25$  mm, prothorax  $0.08 \times 0.18$  mm, pterothorax  $0.14 \times 0.22$  mm, and abdomen  $0.81 \times 0.36$  mm.

*Allotype (female)*: Preantennal region  $0.18 \times 0.23$  mm, hind head  $0.18 \times 0.28$  mm, prothorax  $0.09 \times 0.18$  mm, pterothorax  $0.15 \times 0.27$  mm, and abdomen  $1.00 \times 0.41$  mm.

*Type host*: The Indian Koel [*Eudynamus s. scolopaceus* (Linn)].

(iii) CUCULOECUS DISTINCTUS sp. nov.

This species differs from the allied forms in the shape of the head, pleural plates, torgal plates, abdominal chaetotaxy and male genitalia. The male genitalia is elongate with subparallel sides. Mesosomal plate is rectangular, solid piece with typical central sclerotisation. Parameres are short, tooth-like structures with typical proximal heads.

*Holotype (male)* : Preantennal region  $0.22 \times 0.37$  mm, hind head  $0.25 \times 0.40$  mm, prothorax  $0.08 \times 0.22$  mm, pterothorax  $0.16 \times 0.32$  mm, and abdom  $0.62 \times 0.49$  mm.

*Allotype (female)* : Preantennal region  $0.24 \times 0.37$  mm, hind head  $0.26 \times 0.44$  mm, prothorax  $0.11 \times 0.22$  mm, pterothorax  $0.23 \times 0.37$  mm, and abdomen  $0.71 \times 0.57$  mm.

*Type host* : The Indian Pied Crested Cuckoo [*Clamator j. jacobinus* (Bodd.)]

(iv) UPUPICOLA UPUPAE (Schrank)

This is one of the most familiar species and was described from *Upupa e. epops* Linn. The present specimens were obtained from the Indian subspecies of this bird (*Upupa epops orientalis* Stuart Baker).

11. The genera *Alcedoecus* Clay and Menertzhagen, 1939 ; *Alcedoffula* Clay and Meinertzhagen, and *Capraiella* Conci, 1941.

By Muhammad Atiqur Rahman Ansari, Health Services, Lahore.

(i) ALCEDOECUS ANULARIS sp. nov.

This species differs from other species of the genus from the ratio of the preantennal region and the hyaline area, shape of the head, pterothorax and abdominal chaetotaxy. Male genitalia with long feeble sclerotised basal plate. Endomerical plate heart-shaped with long tubular penis protruding beyond the posterior margin. Parameres well developed, short sickle-shaped with characteristically modified proximal heads.

*Holotype (male)* : Preantennal region  $0.19 \times 0.32$  mm, hind head  $0.27 \times 0.48$  mm, prothorax  $0.09 \times 0.29$  mm, pterothorax  $0.19 \times 0.43$  mm, and abdomen  $0.77 \times 0.56$  mm.

*Allotype (female)* : Preantennal region  $0.25 \times 0.35$  mm, hind head  $0.27 \times 0.52$  mm, prothorax  $0.09 \times 0.31$  mm, pterothorax  $0.19 \times 0.47$  mm, and abdomen  $1.01 \times 0.66$  mm.

*Type-host* : The Egyptian White Breasted King Fisher (*Halcyon*<sup>S.</sup>/<sub>K</sub> *smyr-nensis* (Linn)).

(ii) ALCEDOFFULA MAHIGIR sp. nov.

In this species the body is very feebly sclerotised. The tergal and pleural plates are not well formed. The abdominal chaetotaxy is characteristic.

*Holotype (male)* : Preantennal region  $0.30 \times 0.47$  mm, hind head  $0.27 \times 0.67$  mm, prothorax  $0.13 \times 0.34$  mm, pterothorax  $0.26 \times 0.59$  mm, and abdomen  $0.89 \times 0.79$  mm.

*Allotype (female)* : Preantennal region  $0.30 \times 0.44$  mm, hind head  $0.31 \times 0.58$  mm, prothorax  $0.11 \times 0.29$  mm, pterothorax  $0.22 \times 0.57$  mm, and abdomen  $1.21 \times 0.81$  mm.

*Type-host* : The Egyptian White Breasted King Fisher [*Halcyon s. smyrnensis* (Linn)].

(iii) ALCEDOFFULA MACHERA sp. nov.

In this species the tergal and pleural plates are well formed. The basal plate of the male genitalia is slightly longer than the parameres. Parameres are curved inwards at the tip.

*Holotype (male)* : preantennal region  $0.19 \times 0.29$  mm., hind head  $0.25 \times 0.42$  mm, prothorax  $0.15 \times 0.24$  mm, pterothorax  $0.21 \times 0.35$  mm, and abdomen  $0.74 \times 0.55$  mm.

*Allotype (female)* : preantennal region  $0.23 \times 0.33$  mm, hind head  $0.26 \times 0.46$  mm, prothorax  $0.12 \times 0.25$  mm, pterothorax  $0.19 \times 0.39$  mm, and abdomen  $0.95 \times 0.58$  mm.

*Type-host* : The Indian Pied Kingfisher (*Cerylerudis leucomelanura* Reichenb.) shot in Shujawal (Tatta), Sind, 13-11-1953.

(iv) CAPRAIELLA SABZAK sp. nov.

This species differs from other *Capraiella* in the shape of the head, pterothorax and abdominal chaetotaxy. The male genitalia is oblong, with elongate basal plate. Basal plate is about six times as long as the mesosomal plate. Mesosomal plate heart-shaped. Parameres arched, with typical proximal heads.

*Holotype (male)* : Preantennal region  $0.31 \times 0.41$  mm, hind head  $0.27 \times 0.47$  mm, prothorax  $0.11 \times 0.26$  mm, pterothorax  $0.17 \times 0.41$  mm, and abdomen  $1.09 \times 0.62$  mm.

*Allotype (female)* : Preantennal region  $0.31 \times 0.41$  mm, hind head  $0.29 \times 0.47$  mm, prothorax  $0.13 \times 0.26$  mm, pterothorax  $0.14 \times 0.41$  mm, and abdomen  $1.26 \times 0.69$  mm.

*Type-host* : The Indian Roller (*Coracias b. bengalensis* Linn.).

(v) CAPRAIELLA MASUMAE sp. nov.

In this species the head is elongate, front is truncate and clypeal signature is squarish. The tergal plates are with one row of long hairs, alternating with one small hair. Very profusely hairy. Pleural plates very feeble.

*Holotype (female)* : Preantennal region  $0.29 \times 0.42$  mm, hind head  $0.31 \times 0.56$  mm, prothorax  $0.17 \times 0.34$  mm, pterothorax  $0.29 \times 0.49$  mm, and abdomen  $1.16 \times 0.81$  mm.

*Type-host* : The Indian Roller [*Coracias b. bengalensis* (Linn.)].

12. The genera Columbicola Ewing 1929, Coloceras Taschenberg, 1882 and Campanulotes Keler, 1939.

By Muhammad Atiqur Rahman Ansari, Health Services, Lahore.

(i) COLUMBICOLA FULMEKI Eichler

This species is very recently described by Eichler (1942) from *Streptopelia chinensis tegrina* (Temminck). We refer to this species the specimens obtained from the Indian Spotted Dove *Streptopelia chinensis suratensis* (Gmel).

(ii) COLUMBICOLA THERESAE sp. nov.

This species differs from other *Columbicola* in the shape of the head, III antennal segment, general abdominal chaetotaxy and details of male genital armature. The parameres are delicate, long structures with characteristic proximal head.

*Holotype (male)* : Preantennal region  $0.27 \times 0.17$  mm, hind head  $0.20 \times 0.20$  mm, prothorax  $0.09 \times 0.15$  mm, mesothorax  $0.09 \times 0.16$  mm, metathorax  $0.18 \times 0.19$  mm, and abdomen  $1.16 \times 0.22$  mm.

*Allotype (female)* : Preantennal region  $0.30 \times 0.17$  mm, hind head  $0.23 \times 0.25$  mm, prothorax  $0.11 \times 0.18$  mm, mesothorax  $0.10 \times 0.19$  mm, metathorax  $0.19 \times 0.22$  mm, and abdomen  $1.56 \times 0.36$  mm.

*Type-host* : The Indian Little Brown Dove [*Streptopelia senegalensis cambayensis* (Gmell)].

(iii) COLUMBICOLA CONFUSISSIMUS Eichler

Eichler (1947) proposed this name for *Columbicola baculus baculus* from *Streptopelia decaocta decaocta* (Frivaldszky). We obtained several representatives of this species from the type-host.

(iv) COLUMBICOLA HOPKINSI sp. nov.

This species has narrower but slightly longer clypeal region. III antennal segment is very characteristic. Mesosomal plate heart-shaped. Parameres extremely delicate.

*Holotype (male)* : Preantennal region  $0.27 \times 0.17$  mm, hind head  $0.20 \times 0.19$  mm, prothorax  $0.09 \times 0.15$  mm, mesothorax  $0.08 \times 0.19$  mm, metathorax  $0.17 \times 0.22$  mm, and abdomen  $1.21 \times 0.25$  mm.

*Allotype (female)* : Preantennal region  $0.29 \times 0.19$  mm, hind head  $0.24 \times 0.21$  mm, prothorax  $0.09 \times 0.15$  mm, mesothorax  $0.09 \times 0.19$  mm, metathorax  $0.14 \times 0.22$  mm, and abdomen  $1.46 \times 0.26$  mm.

*Type-host* : The Indian Red Turtle Dove [*Oenopopelia t. tranquebarica* (Herm)].

(v) COLOCERAS AEGYPTICUM (Kellogg et Paine)

This is one of the best known *Goniocotes*. It was described from the *Columba livia domestica* Linn. Our specimens were obtained from the Indian Blue Rock Pigeon (*Columba livia intermedia* Strick).

(vi) COLOCERAS LATIVENTRE (Unchida)

Unchida (1916) gave this name to the specimens obtained from *Streptopelia c. chinensis* (Scopoli). We collected the representatives of this species from the Indian Spotted Dove (*Streptopelia chinensis suratensis* Gmel).

(vii) COLOCERAS SOFLOTICUS Eichler

The true host of this species is the Indian Ring Dove [*Streptopelia d. decaocta* Frivoldszky]. The specimens referred to here were also collected from this host.

(viii) CAMPANULOTES COMPAR (Burmeister)

This is very familiar *Goniocotes* from the Domestic Pigeon *Columba livia domestica* Linn. The specimens referred here were taken off from the Indian Blue Rock Pigeon (*Columba livia intermedius* Strick)

13. The genera *Falcolipeurus* Bedford, 1931 and *Craspedorrhynchus* Keler, 1938.  
By Muhammad Atiqur Rahman Ansari, Health Services, Lahore.

(i) FALCOLIPEURUS GALLIVALERIOI Eichler

This species was described from the Himalayan Griffon Vulture (*Gyps himalayensis* Hume). Our specimens were also obtained from the type-host.

(ii) CRASPEDORRHYNCHUS SPATHULATUS (Giebel)

Giebel described it from *Milvus migrans migrans* (Boddaert). Our specimens were obtained from the Common Indian Periah kite (*Milvus migrans govinda* Sykes).

(iii) CRASPEDORRHYNCHUS CHIQUERAE sp. nov.

The head is truncate. Clypeal signature squarish, confined to the pre-sutural region. Tergal plates entire, feebly sclerotised. Pleural plates club shaped, narrow posteriorly and broader anteriorly.

**Holotype (male)** : Preantennal region  $0.11 \times 2.29$  mm, preantennal region  $0.30 \times 0.40$  mm, hind head  $0.29 \times 0.50$  mm, prothorax  $0.09 \times 0.31$  mm, pterothorax  $0.19 \times 0.49$  mm, and abdomen  $1.11 \times 0.69$  mm.

**Type-host** : The Red Headed Merlin (*Falco c. chiquera* Daudin).

(iv) CRASPEDORRHYNCHUS TRIANGULARIS (Rudow)

Rudow (1869) described this species from the Short-toed Eagle : *Circaetus gallicus* (Gmelin). The specimens referred to here were also collected from the type host shot in Shujawal (Tatta), Sind, 15-11-1953.

**Male** : preantennal region  $0.42 \times 0.62$  mm, hind head  $0.38 \times 0.81$  mm, prothorax  $0.19 \times 0.43$  mm, pterothorax  $0.25 \times 0.56$  mm, and abdomen  $0.96 \times 0.90$  mm.

**Female** : preantennal region  $0.46 \times 0.69$  mm, hind head  $0.41 \times 0.91$  mm, prothorax  $0.22 \times 0.53$  mm, pterothorax  $0.28 \times 0.71$  mm, and abdomen  $1.20 \times 1.00$  mm.

(v) CRASPEDORRHYNCHUS RANJHAE sp. nov.

This species differs from the allied form in the shape of tergal plates, male genitalia and tergal chaetotaxy.

**Holotype (male)** preantennal region  $0.41 \times 0.61$  mm, hind head  $0.36 \times 0.84$  mm, prothorax  $0.22 \times 0.48$  mm, pterothorax  $0.21 \times 0.61$  mm, and abdomen  $0.91 \times 0.98$  mm.

**Allotype (female)** : preantennal region  $0.47 \times 0.57$  mm, hind head  $0.42 \times 0.84$  mm, prothorax  $0.26 \times 0.52$  mm, pterothorax  $0.22 \times 0.70$  mm, and abdomen  $1.31 \times 1.10$  mm.

**Type-host** : The Booted Eagle *Hieraaetus pennatus* (Gmelin), shot in Shujawal (Tatta), Sind, 15-11-1953.

14. The genera *Carduiceps* Clay et Meinertzhagen, 1939 ; *Luniceps* Clay et Meinertzhagen and *Quadriceps* Clay et Meinertzhagen, 1939.

By Muhammad Atiqur Rahman Ansari, Health Services, Lahore.

(i) CARDUICEPS SCALARIS (Piaget)

Several specimens of this species were collected from the type-host the Ruff and Reeves [*Philomachus pugnax* (Linn)].

(ii) LUNACEPS HOLOPHAEUS (Burmeister)

This species was described from the Ruff and Reeves [*Philomachus pugnax* (Linn.)] and the specimens referred to were also obtained from this bird.

(iii) LUNACEPS HUSAINII sp. nov.

This species is separated from the allied forms by the shape of the head, slender body with subparallel sides and male genitalia. The basal plate is short



and narrow. Parameres are long curved, rod like structures of the shape of a scythe blade. Mesosomal plate well formed, projecting as far as the tip of the parameres.

*Holotype (male)* : Preantennal region  $0.16 \times 0.16$  mm, hind head  $0.17 \times 0.20$  mm, prothorax  $0.09 \times 0.14$  mm, pterothorax  $0.15 \times 0.17$  mm, and abdomen  $0.77 \times 0.33$  mm.

*Allotype (female)* : Preantennal region  $0.14 \times 0.16$  mm, hind head  $0.18 \times 0.20$  mm, prothorax  $0.08 \times 0.14$  mm, pterothorax  $0.15 \times 0.17$  mm, and abdomen  $0.92 \times 0.36$  mm.

*Type-host* : The Little Stint (*Erolia m. minuta* Leist).

(iv) QUADRACEPS LOTUS (Nitzsch)

The type-host of this species is Cream Coloured Courser (*Cursorius cursor cursor* (Latham)). We obtained several examples of this species from this bird shot in Lahore.

(v) QUADRACEPS DASI Tandon

Several specimens of this species were collected from the Indian Red Wattled Lapwing (*Lobivanellus i. indicus* Bodd).

(vi) QUADRACEPS SEMIFISSUS (Nitzsch)

Several specimens of this species were obtained from the Black Winged Stilt (*Himantopus h. himantopus* (Linn)).

(vii) QUADRACEPS HEMICHROUS (Nitzsch)

The specimens of this species were collected from the Black Winged stilt (*Himantopus h. himantopus* Linn)).

(viii) QUADRACEPS OCHROPI (Denny)

The species was described from the Green Sand Piper (*Tringa ochropus* Linn). The specimens before us were also collected from the type-host.

(ix) QUADRACEPS LAHORENSIS sp. nov.

In this species the preantennal region is about as long the hind-head. Clypeal signature is large. Parameres are well developed, dagger-like structures with simple proximal heads.

*Holotype (male)* : Preantennal region  $0.18 \times 0.20$  mm, hind head  $0.17 \times 0.28$  mm, prothorax  $0.09 \times 0.18$  mm, pterothorax  $0.14 \times 0.26$  mm, and abdomen  $0.73 \times 0.38$  mm.

*Allotype (female)* : Preantennal region  $0.20 \times 0.19$  mm, hind head  $0.19 \times 0.28$  mm, prothorax  $0.09 \times 0.16$  mm, pterothorax  $0.17 \times 0.21$  mm, and abdomen  $1.01 \times 0.33$  mm.

*Type-host* : The Ruff and Reeves (*Philomachus pugnax* Linn).

15. The genera *Anaticola* Clay, 1936 ; *Anatoecus* Cummings, 1916 and *Incidifrons* Ewing, 1929.

By Muhammad Atiqur Rahman Ansari, Health Services, Lahore.

(i) ANATICOLA MAGNIFICUS sp. nov.

This species differs from the allied forms in the shape of the head, III antennal segment and male genital armature. The blunt tubercular processes on the III abdominal sternite of female ear shaped.

*Holotype* (male) : Preantennal region  $0.26 \times 0.27$  mm, hind head  $0.30 \times 0.38$  mm, prothorax  $0.18 \times 0.26$  mm, pterothorax  $0.42 \times 0.38$  mm, and abdomen  $1.67 \times 0.48$  mm.

*Allotype* (female) : Preantennal region  $0.26 \times 0.27$  mm, hind head  $0.34 \times 0.38$  mm, prothorax  $0.11 \times 0.26$  mm, pterothorax  $0.45 \times 0.38$  mm, and abdomen  $1.77 \times 0.52$  mm.

*Type-host* : The Ruddy Sheldrake (*Casarca ferruginea* (Vroeg)).

(ii) ANATICOLA SORDIDUS (Giebel)

This species was recorded by Giebel (1866) from the Common Duck (*Anas crecca* Linn.). We obtained several examples of this species from the same host.

(iii) ANATICOLA FULIGULAE (T. Muller)

The type host of this species is the Common Pochard (*Nyroca ferina* (Linn.)). The specimens referred to were obtained from the type-host.

(iv) ANATOECUS DIFFICILIS Cummings

Cummings described it from the common Pochard (*Nyroca ferina* (Linn.)) Our collection was also obtained from the Dun Bird.

(v) ANATOECUS REGINA sp. nov.

This species resembles *Anatoecus icterodes* (Nitzsch) from which it can be separated by the pterothoracic chaetotaxy and shape of the head.

*Holotype* (female) : Presutural region  $0.11 \times 0.17$  mm, preantennal region  $0.24 \times 0.31$  mm, hind head  $0.22 \times 0.43$  mm, prothorax  $0.11 \times 0.27$  mm, pterothorax  $0.13 \times 0.37$  mm, and abdomen  $0.77 \times 0.55$  mm.

*Type-host* : The Ruddy Sheldrake (*Casarca ferruginea* (Vroeg)).

(vi) INCIDIFRONS FULICAE (Linn.)

It is one of the best known louse from the Coot (*Fulica a. atra* Linn.). We obtained several specimens from the type-host.

16. Ischnoceron Parasites from the Pakistan Zoological Survey, of Pakistan, Karachi.

By M. Atiqur Rahman Ansari, Health Services, Lahore.

(i) PHILOPTERUS VAGABUNDA sp. nov.

This species differs from the *Phlopterus* species infesting crows in the male genitalia. The shape of the head, pterothorax and abdominal chaetotaxy are also very reliable to separate the allied forms.

*Holotype (male)*: preantennal region  $0.20 \times 0.37$  mm, hind head  $0.28 \times 0.52$  mm., prothorax  $0.20 \times 0.29$  mm., pterothorax  $0.20 \times 0.44$  mm., and abdomen  $0.71 \times 0.71$  mm.

*Type-host*: The Indian Tree Pie: *Dendrocitta vagabunda pallida* Blyth. shot in Jati (Tatta); Sind (16-11-1953).

(ii) PHILOPTERUS EXTRANEUS (Piaget)

Piaget (1885) described this species from the Jungle Crow: *Corvus macrorhynchus* Wagler. Our specimens were collected from the type-host shot in Harbang (Chittagong), 4-3-1954.

(iii) PHILOPTERUS VITTUTI sp. nov.

This species differs from *Phlopterus bijas* in the clypeal region. The clypeal signature in this species is considerably pulled backwards.

*Holotype (female)*: preantennal region  $0.20 \times 0.33$  mm., hind head  $0.32 \times 0.52$  mm., prothorax  $0.15 \times 0.31$  mm., pterothorax  $0.19 \times 0.46$  mm., abdomen  $0.93 \times 0.72$  mm.

*Type-host*: *Lanius vittatus* Valche, shot in Karachi, 26-4-1954.

(iv) BRUELIA PAKISTANAISE sp. nov.

An elongate species with narrow and long clypeal region. The male genitalia is very characteristic. The parameres are short and delicate. Abdominal chaetotaxy scarce.

*Holotype (male)*: preantennal region  $0.18 \times 0.21$  mm., hind head  $0.17 \times 0.26$  mm., prothorax  $0.10 \times 0.17$  mm., pterothorax  $0.14 \times 0.24$  mm., abdomen  $0.91 \times 0.31$  mm.

*Allotype (female)*: preantennal region  $0.19 \times 0.24$  mm., hind head  $0.19 \times 0.28$  mm., prothorax  $0.11 \times 0.18$  mm., pterothorax  $0.16 \times 0.27$  mm., abdomen  $1.13 \times 0.36$  mm.

*Type-host*: *Lanius vittatus* Valche, shot in Karachi, 26-4-1954.

(v) BRUELIA DICRURI sp. nov.

An elongate species, head ovate, male genitalia delicate, parameres and endomeres showing specific characters.

*Holotype (male)* : preantennal region  $0.15 \times 0.23$  mm., hind head  $0.19 \times 0.31$  mm., prothorax  $0.08 \times 0.19$  mm., pterothorax  $0.11 \times 0.27$  mm., abdomen  $0.82 \times 0.37$  mm.

*Type-host* : The Drongo (*Dicrurus macrocercus* (Vieill)), shot in Jatti (Tatta), Sind, 17-11-1953.

## 17. Studies on Ischnoceron Mallophaga Infesting Birds in Pakistan.

By Muhammad Atiqur Rahman Ansari, Health Services, Lahore.

The genus *Bruelia*, Keler, 1936 from Timailidae, Pycnonotidae and Turdidae.

(i) BRUELIA SEHRI sp. nov.

*Male* : Head triangular with broadly concave apex. Marginal carina interrupted in the anterior part. Ventral carina continuous with the marginal carina. Temples with narrow marginal carina, running as far as the antennal fossae. Prothorax transeverse with one medium sized hair in the posterior angle. Pterothorax trapezoidal, posterior margin angulate on abdomen with six hairs beset submarginally. Abdomen orbicular. Tergal plates well developed, interrupted in the middle. Male genitalia characteristic.

*Female* : It is similar to the male. Abdominal chaetotaxy and antennae show significant sexual differences.

*Holotype (male)* : preantennal region  $0.16 \times 0.29$  mm, hind-head  $0.18 \times 0.34$  mm, prothorax  $0.08 \times 0.20$  mm, pterothorax  $0.12 \times 0.30$  mm, and  $0.58 \times 0.41$  mm.

*Allotype (female)* : Preantennal region  $0.20 \times 0.29$  mm, hind head  $0.18 \times 0.36$  mm, prothorax  $0.08 \times 0.21$  mm, pterothorax  $0.16 \times 0.31$  mm, and abdomen  $0.91 \times 0.45$  mm.

*Type-host* : The Simla Streaked Laughing Thrush (*Trochalopteron lineatum griscenter* (Harert)).

(ii) BRUELIA CHILCHIL sp. nov.

*Male* : Head conical, marginal carina interrupted in the middle. Ventral carina interrupted and the sclerotisation carried forward as a flattened surface each side. Prothorax transverse, quadrangular with a short posterior hair. Meso and metathoraces well separated. Abdomen ovate. Tergal plates not well sclerotised, interrupted in the middle. Sternal plates well formed. Chaetotaxy scarce. Genital armature delicate.

*Female* is similar to male.

*Holotype (male)* : Preantennal region  $0.18 \times 0.26$  mm, hind head  $0.20 \times 0.31$  mm, prothorax  $0.10 \times 0.17$  mm, mesothorax  $0.06 \times 0.19$  mm, metathorax  $0.17 \times 0.32$  mm, and abdomen  $0.85 \times 0.49$  mm.

*Allotype (female)* : Preantennal region  $0.22 \times 0.32$  mm, hind head  $0.20 \times 0.37$  mm, prothorax  $0.11 \times 0.17$  mm, mesothorax  $0.08 \times 0.26$  mm, metathorax  $0.16 \times 0.40$  mm, and abdomen  $1.06 \times 0.60$  mm.

*Type-host* : The Common Indian Babbler (*Turdoides c. caudata* (Dumont)).

(iii) BRUELIA GULDUM sp. nov.

This species closely resembles *B. chilchil*, from which it can be easily separated by narrow head and abdominal chaetotaxy. Genital armature is similar in the two species. The characters of the proximal head of parameres and the development of the mesosomal plate also help in distinguishing the two forms.

*Holotype (male)* : Preantennal region  $0.16 \times 0.21$  mm, hind head  $0.16 \times 0.28$  mm, prothorax  $0.08 \times 0.29$  mm, mesothorax  $0.08 \times 0.24$  mm, metathorax  $0.11 \times 0.34$  mm, and abdomen  $0.82 \times 0.43$  mm.

*Allotype (female)* : Preantennal region  $0.20 \times 0.34$  mm, hind head  $0.19 \times 0.30$  mm, prothorax  $0.10 \times 0.29$  mm, mesothorax  $0.07 \times 0.24$  mm, metathorax  $0.40 \times 0.34$  mm, and abdomen  $1.15 \times 0.51$  mm.

*Type-host* : The Punjab Red-Vented Bulbul (*Pycnonotus cafer intermedius* (Jerdon)).

(iv) BRUELIA CAMBAYENSIS sp. nov.

This species resembles *B. guldum* from which it can be easily separated by more pointed head and scarce chaetotoxy. Tergal plates approximate. Sternal plates as in allied forms.

*Holotype (female)* : Preantennal region  $0.23 \times 0.24$  mm, hind-head  $0.17 \times 0.29$  mm, prothorax  $0.09 \times 0.18$  mm, mesothorax  $0.08 \times 0.22$  mm, metathorax  $0.11 \times 0.29$  mm, and abdomen  $0.98 \times 0.42$  mm.

*Type-host* : The Brown Backed Indian Robin (*Saxicoloides fulvicata cambaiensis* (Lath.)).

18. The genus *Bruelia* Keler, 1936 from Sturnidae.

By Muhammad Atiqur Rahman Ansari, Health Services, Lahore.

(i) BRUELIA GULABITILYAR sp. nov.

*Male* : This species resembles *B. guldum*. The two forms differ in the length of the pterothorax and abdominal chaetotaxy. The male genitalia is similar but the basal plate in this species is almost half in length. The mesosomal plate is transverse. The proximal heads of the parameres very salient.

*Female* : It differs from the allied females in the abdominal chaetotaxy.

*Holotype (male)* : Preantennal region  $0.19 \times 0.25$  mm, hind head  $0.17 \times 0.31$  mm, prothorax  $0.08 \times 0.22$  mm, mesothorax  $0.06 \times 0.26$  mm, metathorax  $0.11 \times 0.36$  mm, and abdomen  $1.10 \times 0.48$  mm.

*Allotype (female)* : Preantennal region  $0.21 \times 0.31$  mm, hind head  $0.20 \times 0.36$  mm, prothorax  $0.11 \times 0.26$  mm, mesothorax  $0.08 \times 0.31$  mm, methorax  $0.16 \times 0.37$  mm, and abdomen  $1.21 \times 0.49$  mm.

*Type-host* : The Rosy Pastor (*Pastor roseus* (Linn.)).

(ii) BRUELIA CHITLATILYAR sp. nov.

This species is similar to *B. gulabitylar*, from which it differs in having smaller head, in the modification of the marginal carinae in the frontal region, and in the shape of the pterothorax and abdominal chaetotaxy. Tergal plates are not interrupted in the middle. Burmeister (1838) described *B. nubulosa* from *Sturnus v. vulgaris* Linn. Our specimens do not resemble it.

*Holotype (female)* : Preantennal region  $0.14 \times 0.27$  mm, hind head  $0.20 \times 0.32$  mm, prothorax  $0.09 \times 0.21$  mm, mesothorax  $0.18 \times 0.28$  mm, and abdomen  $0.9 \times 0.51$  mm.

*Type-host* : The Himalayan Starling (*Sturnus vulgaris humii* Brooks).

(iii) BRUELIA PAGODARUM sp. nov.

This species resembles *B. gulabitylar* from which it differs in narrower head, elongate abdomen and in scarce abdominal chaetotaxy. The dorsal setae in the two species originate from significantly different places.

*Holotype (male)* : Preantennal region  $0.22 \times 0.24$  mm, hind head  $0.17 \times 0.29$  mm, prothorax  $0.09 \times 0.16$  mm, pterothorax  $0.15 \times 0.26$  mm, and abdomen  $0.4 \times 0.41$  mm.

*Type-host* : The Black Headed Mynah (*Temenuchus pagodarum* (Gmel)).

(iv) BRUELIA CHAYANH sp. nov.

This species differs from all the allied species in abdominal chaetotaxy and male genitalia. The female is very similar to *B. gulabitylar*.

*Holotype (male)* : Preantennal region  $0.20 \times 0.24$  mm, hind head  $0.18 \times 0.28$  mm, prothorax  $0.09 \times 0.18$  mm, mesothorax  $0.07 \times 0.17$  mm, metathorax  $0.08 \times 0.29$  mm, and abdomen  $0.89 \times 0.42$  mm.

*Allotype (female)* : Preantennal region  $0.25 \times 0.27$  mm, hind head  $0.3 \times 0.31$  mm, prothorax  $0.10 \times 0.18$  mm, mesothorax  $0.08 \times 0.20$  mm, metathorax  $0.3 \times 0.29$  mm, and abdomen  $1.16 \times 0.48$  mm.

*Type-host* : The Common Indian Mynah (*Acridotheres tristis tristis* Linn.).

(v) BRUELIA GINGINIANUS sp. nov.

This species is also similar to *B. gulabitylar* and *B. guldum*. It differs from the two in abdominal chaetotaxy in general and the male genitalia in particular.

Basal plate is not well developed. Mesosomal plate is trough like. Parameres are considerably reduced.

*Holotype (male)* : Preantennal region  $0.18 \times 0.25$  mm, hind head  $0.24 \times 0.30$  mm, prothorax  $0.08 \times 0.14$  mm, pterothorax  $0.18 \times 0.31$  mm, and abdomen  $0.94 \times 0.39$  mm.

*Allotype (female)* : Preantennal head  $0.18 \times 0.24$  mm, hind head  $0.17 \times 0.27$  mm, prothorax  $0.09 \times 0.14$  mm, pterothorax  $0.14 \times 0.28$  mm, and abdomen  $0.86 \times 0.37$  mm.

✓ *Type-host* : The Black Mynah (*Acridoheres ginginianus* (Lath)).

19. The genus *Bruelia* Keler, 1936 from Plcceiidae, Fringillidae and Motacillidae.

By Muhammad Atiqur Rahman Ansari, Health Services, Lahore.

✓ (i) BRUELIA MUNIA sp. nov.

*Male* : This species is similar to *B. gulabitylar*. It differs from it in the shape of the head, abdominal chaetotaxy and male genitalia. The female of the two species, apart from general chaetotaxy, also differs in genital plate. In this specie the vulvar chaetotaxy is invisible.

*Holotype (male)* : Preantennal region  $0.20 \times 0.22$  mm, hind head  $0.16 \times 0.27$  mm, prothorax  $0.08 \times 0.14$  mm, mesothorax  $0.07 \times 0.15$  mm, metathorax  $0.11 \times 0.25$  mm, and abdomen  $0.84 \times 0.37$ .

*Allotype (female)* : Preantennal region  $0.22 \times 0.24$  mm, hind head  $0.19 \times 0.27$  mm, prothorax  $0.09 \times 0.16$  mm, mesothorax  $0.07 \times 0.15$  mm, metathorax  $0.13 \times 0.27$  mm, and abdomen  $1.04 \times 0.41$  mm.

*Type-host* : The White-throated Munia (*Uroloncha malabarica* (Linn)).

(ii) BRUELIA XANTHOCOLLIS sp. nov.

*Male* : This species is also allied to *B. gulabitylar*. It differs from it and other allied forms in its pointed, wedge-shaped head and dorsal abdominal chaetotaxy.

*Holotype (female)* : Preantennal region  $0.21 \times 0.21$  mm, hind head  $0.16 \times 0.28$  mm, prothorax  $0.09 \times 0.15$  mm, mesothorax  $0.07 \times 0.18$  mm, metathorax  $0.11 \times 0.24$  mm, and abdomen  $1.01 \times 0.41$  mm.

✓ *Type-host* : The Indian-yellow Throated Sparrow (*Gymnoris x. xanthocollis* (Burt)).

(iii) BRUELIA SUBTILIS (Nitzsch)

This species is found quite commonly from the house sparrow (*Passer d. domesticus* (Linn.)). We obtained several specimens from the Indian House Sparrow (*Passer domesticus indicus* Jard et Selby).

(iv) BRUELIA PARAE sp. nov. ✓

This species resembles *B. munia*, but the difference in the abdominal chaetotaxy is sufficiently significant. The metathorax is considerably small.

*Holotype (female)*: Preantennal region  $0.18 \times 0.21$  mm, hind head  $0.16 \times 0.26$  mm, prothorax  $0.08 \times 0.15$  mm, mesothorax  $0.11 \times 0.23$  mm, and abdomen  $0.93 \times 0.35$  mm.

*Type-host*: The Indian Pipit (*Anthus richardi rufulus* Vieillot). ✓

20. The genus *Philopterus* Nitzsch 1818 from Corvidae, Laniidae, Dicruridae and Fringillidae.

By Muhammad Atiqur Rahman Ansari, Health Services, Lahore.

(i) PHILOPTERUS ATRATUS Nitzsch.

This is long known species, and was described from the European Rook (*Corvus f. frugilegus* Linn.). The specimens before us were collected from the Eastern Rook (*Corvus frugilegus tschusii* Hartert).

(ii) PHILOPTERUS LAHORENSIS sp. nov. ✓

*Male*:—This species resembles *Philopterus corvi* from the Punjab Raven (*Corvus corax laurencei* Hume), but is easily separated from the tegal plates and ventral chaetotaxy. The male genitalia is also characteristic in various respects.

*Holotype (male)*:—Preantennal region  $0.31 \times 0.46$  mm., hind head  $0.31 \times 0.57$  mm., prothorax  $0.19 \times 0.35$  mm., pterothorax  $0.26 \times 0.51$  mm., and abdomen  $0.92 \times 0.88$  mm.

*Allotype (female)*:—Preantennal region  $0.31 \times 0.44$  mm., hind head  $0.36 \times 0.61$  mm., prothorax  $0.14 \times 0.35$  mm., pterothorax  $0.29 \times 0.56$  mm., and abdomen  $1.01 \times 0.90$  mm.

*Type-host*:—The Common Indian House Crow (*Corvus s. splendens* Vieillot). ✓

(iii) PHILOPTERUS FUSCICOLLIS (Burmeister)

This species was described from the Great Gray Shrike (*Lanius e. excubitor* Linn.). The specimens referred to here were collected from the Indian Great Gray Shrike (*Lanius excubitor lahtora* (Sykes)).

(iv) PHILOPTERUS BIJAE sp. nov.

This species resembles *P. fuscicollis*. It differs from it in the shape of the pterothorax and abdominal chaetotaxy.

*Holotype (male)*:—Preantennal region  $0.21 \times 0.31$  mm., hind head  $0.28 \times 0.49$  mm., prothorax  $0.15 \times 0.26$  mm., pterothorax  $0.18 \times 0.35$  mm., abdomen  $0.74 \times 0.53$  mm.



*Allotype (female)*:—Preantennal region  $0.25 \times 0.37$  mm., hind head  $0.27 \times 0.49$  mm., prothorax  $0.13 \times 0.31$  mm., pterothorax  $0.18 \times 0.42$  mm., abdomen  $0.87 \times 0.66$  mm.

✓ *Type-host*:—The Rufus Backed Shrike, (*Lanius schach erythronotus* (Vigors)).

✓ (v) PHILOPTERUS KALKALICHI sp. nov.

This species differs from all the allied species in the shape of the head, pterothorax, abdominal chaetotaxy and male genitalia. The tergal plates are entire and feebly sclerotised. Sternal plates rectangular and confined to the middle.

*Holotype (male)*:—Preantennal region  $0.20 \times 0.25$  mm., hind head  $0.20 \times 0.33$  mm., prothorax  $0.09 \times 0.16$  mm., mesothorax  $0.05 \times 0.11$  mm., metathorax  $0.11 \times 0.29$  mm., and abdomen  $0.68 \times 0.43$  mm.

*Allotype (female)*:—Preantennal region  $0.24 \times 0.28$  mm., hind head  $0.21 \times 0.37$  mm., prothorax  $0.10 \times 0.16$  mm., mesothorax  $0.07 \times 0.11$  mm., metathorax  $0.12 \times 0.34$  mm., and abdomen  $0.92 \times 0.52$  mm.

✓ *Type-host*:—The Indian Black Drongo (*Dicrurus macrocercus peninsularis* Ticehurst).

(vi) PHILOPTERUS FRINGILLAE (Soopoli)

We collected several specimens of this species from the Common Indian House sparrow (*Passer domesticus indicus* Jard et Selby). The type host is *Passer domesticus domesticus* Linn.

✓ (vii) PHILOPTERUS ZOHRAE sp. nov.

This species is similar to *Philopterus fringillae*, but differs considerably in male genitalia and its components.

*Holotype (male)*:—Preantennal region  $0.24 \times 0.29$  mm., hind head  $0.22 \times 0.42$  mm., prothorax  $0.09 \times 0.27$  mm., pterothorax  $0.18 \times 0.39$  mm., and abdomen  $0.67 \times 0.52$  mm.

*Allotype (female)*:—Preantennal region  $0.24 \times 0.31$  mm., hind head  $0.23 \times 0.45$  mm., prothorax  $0.09 \times 0.27$  mm., pterothorax  $0.16 \times 0.39$  mm., and abdomen  $0.83 \times 0.58$  mm.

✓ *Type-host*:—The Red Headed Bunting (*Emberiza bruniceps* Brendt).

21. The genus *Philopterus* Nitzsch, 1818 from Oriolidae, Motacillidae, and Capitonoidae.

By Muhammad Atiqur Rahman Ansari, Health Services, Lahore.

(i) PHILOPTERUS ORNATUS (Nitzsch)

Nitzsch (1866) described this species from the European Golden Oriole (*Oriolus o. oriolus* (Linn.)). We obtained several specimens from the Indian Oriole (*Oriolus o. kundoo* Sykes).

(ii) PHILOPTERUS PASSERINUS (Denny)

Several specimens of this species were obtained from the Indian White Wagtail (*Motacilla alba dukhunensis* (Sykes). The type-host of this species is (*Motacilla alba alba* (Linn).

3. PHILOPTERUS BINEDICTAE sp. nov.

This species differs from all the *Philopterus* species in male genitalia.

*Holotype* (male) :—Preantennal region  $0.32 \times 0.39$  mm., hind head  $0.32 \times 0.58$  mm., prothorax  $0.12 \times 0.31$  mm., pterothorax  $0.27 \times 0.48$  mm., and abdomen  $0.84 \times 0.49$  mm.

*Allotype* (female) :—Preantennal region  $0.33 \times 0.43$  mm., hind head  $0.36 \times 0.63$  mm., prothorax  $0.11 \times 0.34$  mm., pterothorax  $0.25 \times 0.48$  mm., and abdomen  $1.01 \times 0.56$  mm.

*Type-host*—The Great Indian Barbet (*Megalaima vivens marshallorum* Swinh).

22. The genus *Sturnidoecus* Eichler, 1944 from Timaliidae, Pycnonotidae, Dicruridae and Alaudidae.

By Muhammad Atiqur Rahman Ansari, Health Services, Lahore.

(i) STURNIDOECUS CHILCHIL sp. nov.

*Male* :—The tergal plates are approximate. Dorsal abdominal chaetotaxy very long. Sternal plates not well formed. Ventral chaetotaxy arranged in two, submarginal and median rows. Genital armature characteristic. Parameres with modified tips.

*Holotype* (male) :—Preantennal region  $0.23 \times 0.38$  mm, hind head  $0.28 \times 0.54$  mm, prothorax  $0.11 \times 0.29$  mm, pterothorax  $0.24 \times 0.42$  mm, and abdomen  $0.89 \times 0.65$  mm.

*Type-host* :—The Common Babbler (*Argya c. caudata* (Dumont).

(ii) STURNIDOECUS GULDUM sp. nov.

This is very typical species and does not resemble any form so far described. The tergal plates are approximate. The abdominal chaetotaxy is profuse.

*Type-host* :—The Red Vented Bulbul (*Molpastes cafer intermedius* (Jerdon).

(iii) STURNIDOECUS BITUBERCULATUS (Giebel)

Several specimens were obtained from the Indian Black Drongo (*Dicrurus macrocercus peninsularis* Ticehurst).

(iv) STURNIDOECUS CHENDOOLA sp. nov.

In this species the male genitalia is very characteristic. The basal plate is about 8 times as long as the parameres. The mesosomal plate is heart shaped.

*Holotype (male)*:—Preantennal region  $0.21 \times 0.29$  mm, hind head  $0.22 \times 0.39$  mm, prothorax  $0.09 \times 0.31$  mm, pterothorax  $0.16 \times 0.36$  mm, and abdomen  $0.72 \times 0.56$  mm.

*Allotype (female)*:—Preantennal region  $0.21 \times 0.29$  mm, hind head  $0.25 \times 0.39$  mm, prothorax  $0.09 \times 0.43$  mm, pterothorax  $0.17 \times 0.31$  mm, and abdomen  $0.89 \times 0.55$  mm.

*Type-host*:—The Franklin Indian Crested Lark (*Galerida cristata chendoola* Frankline).

### 23. The genus *Sturnidoecus* Eichlrr. 1944 from Turdidae.

By Muhammad Atiqur Rahman Ansari, Health Services, Lahore.

#### (i) STURNIDOECUS IRRITANS sp. nov.

This species is easily separated from other species by the shape and size of dorsal anterior plate, pterothorax in general and pleural plates in particular. The pleural plates are club-shaped and of uniform thickness throughout. The tergal plates are well formed and approximate. Almost all the abdominal segments are furnished with 3-5 long hairs. Ventrums are also equally hairy. Genital armature typical.

*Holotype (male)*:—Preantennal region  $0.29 \times 0.39$  mm, hind head  $0.26 \times 0.48$  mm, prothorax  $0.11 \times 0.29$  mm, pterothorax  $0.18 \times 0.44$  mm, and abdomen  $0.98 \times 0.65$  mm.

*Allotype (female)*:—Preantennal region  $0.29 \times 0.39$  mm, hind head  $0.27 \times 0.49$  mm, prothorax  $0.11 \times 0.29$  mm, mesothorax  $0.32 \times 0.44$  mm, and abdomen  $1.10 \times 0.66$  mm.

*Type-host*:—The Indian Bush Chat (*Saxicola torquata indica* Blyth),

#### (ii) STURNIDOECUS SALEIMI sp. nov.

*Male*:—This species differs from the allied species in the shape of the head, pleural sclerotisations and abdominal chaetotaxy. The genitalia is typical. The basal plate is considerably dilated apically. The mesosomal plate is transverse. Parameres are very short structures. Proximal heads are greatly modified.

*Female*:—The female is similar to the male. Vulvar plate is beset with 9 small setae on both sides.

*Holotype (male)*:—Preantennal region  $0.21 \times 0.33$  mm, hind head  $0.20 \times 0.41$  mm, prothorax  $0.09 \times 0.32$  mm, pterothorax  $0.14 \times 0.36$  mm, and abdomen  $0.89 \times 0.59$  mm.

*Allotype (female)*:—Preantennal region  $0.20 \times 0.33$  mm, hind head  $0.22 \times 0.45$  mm, prothorax  $0.09 \times 0.32$  mm, pterothorax  $0.18 \times 0.36$  mm, and abdomen  $0.99 \times 0.64$  mm.

*Type-host*:—The Pied Chat (*Oenanthe picata* Blyth).

(iii) STURNIDOECUS ATHAREA sp. nov.

In this species pterothorax is very strongly angulate posteriorly. Tergal plates well developed and almost run right across the segments. Pleural plates well built and characteristic.

*Holotype (female)* :—Preantennal region  $0.23 \times 0.35$  mm, hind head  $0.27 \times 0.49$  mm, prothorax  $0.09 \times 0.20$  mm, mesothorax  $0.24 \times 0.41$  mm, and abdomen  $0.69 \times 0.60$  mm.

*Type-host* :—The Western Red-Spotted Blue Throat (*Cyanosylvia s. suecica* (Linn)).

(iv) STURNIDOECUS CAPITIS sp. nov.

*Male* :—This species is very hairy, with well formed approximated tergal plates. The male genitalia is with short and broad basal plate. The mesosomal plate and parameres are very characteristic.

*Female* :—It resembles the male. The pterothorax is angulate posteriorly whereas in male it is broadly convex on the abdominal segment.

*Holotype (male)* :—Preantennal region  $0.22 \times 0.38$  mm, hind head  $0.29 \times 0.55$  mm, prothorax  $0.09 \times 0.36$  mm, pterothorax  $0.11 \times 0.45$  mm, and abdomen  $0.76 \times 0.64$  mm.

*Allotype (female)* :—Preantennal region  $0.25 \times 0.33$  mm, hind head  $0.30 \times 0.41$  mm, prothorax  $0.09 \times 0.33$  mm, pterothorax  $0.19 \times 0.36$  mm, and abdomen  $0.74 \times 0.51$  mm.

*Type-host* :—The Brown Backed Indian Robbin (*Saxicoloides fulicata cambaensis* (Lath)).

24. The genus *Sturnidoecus* Eichler, 1944 from Sturnidae.

By Muhammad Atiqur Rahman Ansari, Institute of Hygiene and Preventive Medicine, Lahore.

(i) STURNIDOECUS PASTORIS (Denny).

This is one of the most familiar species and was recorded from the Rosy Pastor (*Pastor roseus* (Linn.)). The specimens referred to here were also collected from the type-host,

(ii) STURNIDOECUS STURNI (Schrank).

This species was described from the Starling (*Sturnus vulgaris* Linn.) and the specimens before us were collected from the Himalayan Starling (*Sturnus vulgaris humii* Brooks).

(iii) STURNIDOECUS AFFINIS (Piaget)

The true host of this species is *Acridotheres fuscus javanicus* Cabanis. The specimens we are referring to this species were taken off the Common Indian Mynah (*Acridotheres t. tristis* Linn.). Further studies of this host will probably provide more data and clear the identity.

(iv) STURNIDOECUS BANNOO sp. nov.

*Male*:—This species resembles *Sturnidoecus affinis*, but can be easily separated from it by the general abdominal chaetotaxy, pleural plates and the male genitalia. In *S. affinis* the parameres are almost twice as long as the mesosomal plate. In our specimens the parameres are short, squat and do not extend beyond the posterior margin of the mesosomal plate. The parameres of the two species also differ in the details of the proximal heads.

*Female*:—The genital plate is very characteristic, with two small sclerotised, button-like structures in the middle.

*Holotype (male)*:—Preantennal region  $0.24 \times 0.30$  mm, hind head  $0.20 \times 0.43$  mm, prothorax  $0.09 \times 0.22$  mm, pterothorax  $0.17 \times 0.33$  mm, and abdomen  $0.63 \times 0.45$  mm.

*Allotype (female)*:—Preantennal region  $0.25 \times 0.33$  mm, hind head  $0.28 \times 0.49$  mm, prothorax  $0.09 \times 0.26$  mm, pterothorax  $0.18 \times 0.42$  mm, and abdomen  $0.78 \times 0.68$  mm.

*Type-host*:—The Bank Mynah (*Acridotheres ginginianus* (Lath.)).