

**TAXONOMIC STUDIES ON HALTICHELLINAE
OF INDIA (HYMENOPTERA : CHALCIDIDAE)
PT. I. HALTICHELLINI**

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ABSTRACT. Nine species (8 new) of Haltichellini are described, viz. *nikolskayae* and *vulgaris* under *Hockeria* Walker; *sativa* under *Nippohockeria* Habu; *indicus*, *vitatus*, *brevicorpus*, *hyalopennis* and *indicatus* under *Antrocephalus* Kirby and *brevicorpus* under *Neotainania* Husain and Agarwal. Keys to the world species of *Hockeria* and *Antrocephalus* are given *Nippohockeria* is reported for the first time from Indian and a second new species added to the genus.

Subfamily HALTICHELLINAE

Antennae inserted below ventral margin of compound eyes, more or less near clypeus; head without horns; hind femora with pectinate, dense, small teeth on outer-ventral margin; hind tibiae truncate at apex with two distinct spurs and three carinae; petiole very short. The sub-family has only two tribes which can be distinguished as follows:

KEY TO TRIBES OF HALTICHELLINAE

1. Marginal vein of fore wings adjoining anterior margin, generally postmarginal and stigmal veins well developed HALTICHELLINI
- Marginal vein of fore wings not adjoining anterior margin but a little remote from it; postmarginal absent, stigmal very short HYBOTHORACINI

Types have been deposited with the Museum of Department of Zoology, Aligarh Muslim University, Aligarh, India.

Tribe HALTICHELLINI

Marginal vein of fore wings adjoining anterior margin; postmarginal usually more or less developed; ventral teeth and also of lobes of hind femora projecting on outer side of hind tibiae when they are bent.

KEY TO GENERA OF THE TRIBE HALTICHELLINI

1. Gaster oval, rounded at apex; tergite I at least 1.5 of gaster 2
Gaster conico-oval, acuminate at apex; tergite I less than 1.5 of gaster 3
2. Scutellum runs out backwards into two horizontal, parallel dents; postmarginal often very indistinct *Haltichella* Spinola

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- Lobate dents of scutellum very short; postmarginal very long; fore head moderately boss-like convex **Chirocera** Latr.
3. Scutellum at its apex with lobate dents; stigmal without beak-shaped rudiment 4
 Scutellum at its apex with a short but distinct unpaired dent; stigmal with long beak-shaped rudiment **Belaspidia** Masi
4. Frons with distinct pre-orbital carinae 5
 Frons without pre-orbital carinae 6
5. Head below eyes contracted; thorax long and narrow; scutellum with two short teeth at apex; hind femora with weak lobes 13
 Head below eyes without contraction; thorax short and bulging; scutellum with two triangular, closely set lobes; hind femora with median distinct lobes 14
6. Head rounded below eyes 7
 Head more or less triangular 8
7. Postmarginal much longer than radial vein; hind femora and tibiae normal; punctures on head, thorax and on tergite I usually not big **Neochalcis** Kirby
 Postmarginal almost as long as radial vein; hind femora and tibiae much thickened; punctures on head, thorax and on tergite I usually large **Verzobia** Nikolskaya
8. Hind femora without big teeth and with equal lobes 9
 Hind femora with marked teeth and lobes 10
9. Cheeks in front deeply concave, head convex; gaster (♀) acuminate at apex **Anachalcis** Steffan
 Cheeks in front slightly concave; head conico-oval; gaster (♀) oval at apex **Steffansia** Boucck
10. Antennae inserted just above clypeus, long 11
 Antennae inserted higher on frons, short **Aphasgonophora** Nikolskaya
11. Face less concave or without concavity; antennae mostly short; hind femora with fine sculpture; thorax dull 12
 Face strongly concave; antennae very long; hind femora not densely punctate; thorax more or less red; large species **Euchalcis** Dufour
12. Tergite I without basal carinae; frons seen from lateral side generally (except *H. yashjokai* Habu) concave above antennal sockets **Hockeria** Walker
 Tergite I with some longitudinal carinae; frons seen from lateral side not concave **Nippohockeria** Habu
13. Postmarginal vein well developed **Antrocephalus** Kirby
 Postmarginal vein rudimentary **Stomatoceras** Kirby
14. Head with 2 short horns; antennae inserted far from clypeus; thorax elevated; postmarginal short **Neotainania** Hussain & Agarwal
 Head normal; antennae inserted at clypeus; thorax not elevated; postmarginal long **Euopsis** Steffan

Genus **Hockeria** Walker, 1834

Type-species *Hockeria bifasciata* Walker, 1834 (Desig. Kirby, 1883).

Hockeria Walker, 1834, *Ent. Mag.*, 2 : 21, 34; Type-species : *Chalcis bispinosa* Fabr. (Desig. Kirby, 1883).

- Chalcis* Fonscolombe, 1840, *Ann. Soc. Nat. Zool.*, (2) 13 : 187; Masi, 1908, *Bol. Soc. Zool., Ital.*, 9 : 3.
- Halticella* Walker, 1871, Notes on Chalcidoidea : 3.
- Halticella* Thomson, 1875, *Scand. Hym.*, 4 : 19.
- Stomatoceras* Kirby, 1883, *Linn. Soc. Lond., Zool.*, 17 : 54, 62. Type-species : *Halticella liberator* Walker (Orig. Desig.); Nikolskaya, 1952, *Opred. Faune CCCP*, 44 : 94.
- Stomatocera* Ashmead, 1894, *Trans. Amer. Ent. Soc.*, 21 : 322. (Erroneous subsequent spelling).
- Centrochalcis* Cameron, 1905, *Zeitschr. Syst. Hym. Diptera*, 5 : 230. Type-species : *Centrochalcis oetodontata* Cameron (monobasic).
- Hypochochalcis* Girault, 1915, *Ent. News*, 26 : 325; Type-species : *Chalcis modesta* Masi.
- Orthochochalcis* Silvestri, 1943, *Boll. Lab. Zool. Gen. Agr.-agr.*, Portici, 32 : 230.
- Afrochalcis* Schmitz, 1946, *Inst. Par. Nat. Congo Belge* : 192.

Genus *Hockeria* Walker is very close to *Euchalcis* Dufour but differs from it by its dull hind femur with fine sculpture, abdomen without conspicuous pubescence; antennae mostly short and frons less concave (Boucek, 1951). Owing to many intermediate forms, Boucek (1951) has rightly felt the difficulty of placement of non-European species. There is every possibility of these genera being declared synonyms. But before it is done, an extensive study of the species shall have to be done. Two new species are described, viz. *vulgaris* and *nikolskayae*. The generic characters are given below :

Head with shallow scrobe cavity; pre-orbital carinae absent; antennal sockets situated just above clypeus; frons in lateral view generally concave above antennal sockets; fronto-genal sutures present; right mandible tridentate, left bidentate pronotum without fringe on posterior margin; apex of scutellum with two short, broad dents, sometimes dents are indistinct; costa-lateralis forming almost two lateral dents; areola media distinct; wings with dark patches (faint or absent in males); postmarginal vein either absent or well developed; hind femora with two distinct lobes; tergite I smooth in female, densely punctate in male, without carinae, though with small fovea at middle of basal area.

Largely the species of this genus are parasites of Microlepidopterous larvae, some have been observed to parasitize tse-tse fly, pupae of Strepsiptera and Ant-lions (Neuroptera).

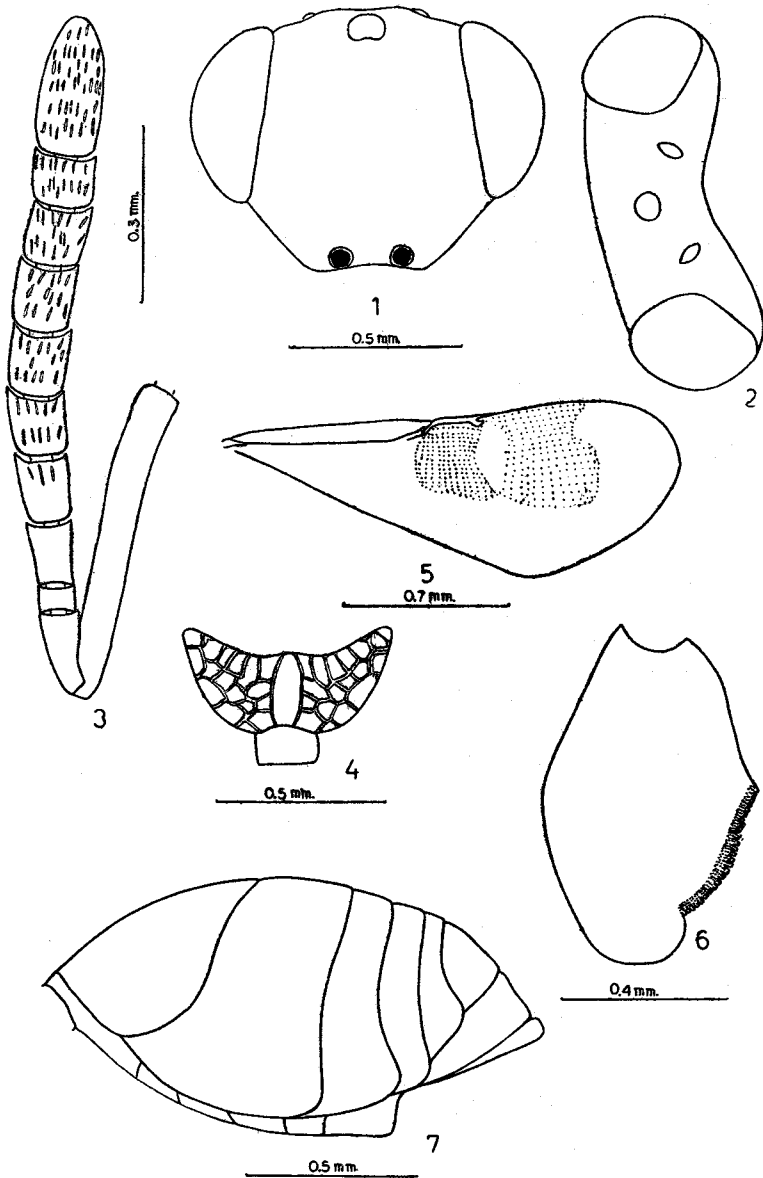
KEY TO WORLD SPECIES OF THE GENUS *HOCKERIA* WALKER

1. Dents of the scutellum always much shorter, sometimes scarcely indicated, broad, labrum simply deepened; postmarginal vein usually shorter; wing often hyaline with brown spots or vice versa 2
- Dents of scutellum as long as broad; labrum with distinct keel-shaped median elevation; postmarginal vein very distinct, as long as marginal; wings smoky-brown, without hyaline spot *hockerioides* (Boucek) (= *Neochalcis hockerioides* Boucek)
2. Largest dent of the hind femora (apparently the only one in the distal fifth; abdomen in front, basal part of antennae and legs yellowish-red 3

- Distal dent never the largest one on the hind femora, the proximal dent always atleast as large as the distal one 4
3. Annellus transverse; dorsal part of thorax closely punctured, with interspaces transversely striated, not larger than punctures themselves; abdomen shorter than thorax, posteriorly covered with sparse hair, which are shorter than to almost as long as the median keel of the epipygidium; wings at apex without white spots *masii* Boucek & *fumipennis* (Walker)
- Annellus distinctly longer than wide; thorax sparsely punctured, shiny, interspaces broader than the punctures themselves; abdomen longer than thorax, hairs posteriorly (except on the epipygidium) at least 4 times longer than the epipygidial keel; fore wings brownish with two rounded white spots, the 1st at the stigmal, the other at the apex of the wing *singularis* Boucek
4. Abdomen and antennae black 5
- Abdomen, legs and basal part of antennae light or dark reddish-brown; antennae relatively short; annellus more than twice as wide as long; postmarginal a little shorter than stigmal; wings hyaline with two brownish stripes, with a white spot between them, apical portion hyaline; 2.8 mm *mengeniilarum* (Silvestri)
5. Legs variable 6
- Legs black *exlex* (Nikolskaja)
6. At least hind femora and hind tibiae in the middle more or less black 7
- Femora and some portions of hind legs yellow 20
7. Abdomen as long or longer than head and thorax combined; large species, 4-6.5 mm 8
- Abdomen shorter than head and thorax combined; small species, 1.5-3.5 mm 11
8. Tergite I at least 0.5 as long as gaster 9
- Tergite I at most 0.3 as long as gaster 10
9. Posterior margin of tergite II straight *nudaureliae* Boucek
- Posterior margin of tergite II broadly emarginate *crassa* Boucek
10. Postmarginal as long as marginal vein; lobes of hind femora distinct; last abdominal tergite as long as penultimate *magna* Boucek
- Postmarginal 0.3 of marginal vein; lobes on hind femora indistinct; last abdominal tergite about 0.5 of the penultimate *nilgriensis* Mani & Dubey
11. Postmarginal distinctly shorter than marginal vein 12
- Postmarginal as long as marginal, distinct in all its length 18
12. Brownish spot on fore wings sharply delimited, two transversely by placed hyaline spots with a white pubescence behind the stigmal vein, apical quarter of wing entirely hyaline 13
- Yellowish-brown spot on the fore wings unsharply delimited, also quarter of wing slightly smoky, usually only one round hyaline spot behind stigmal vein 15
13. Scutellum slightly emarginate at apex; tergite I about 0.3 of gaster 14
- Scutellum bilobed at apex; tergite I about 0.5 of gaster *unicolor* Boucek
14. Last abdominal tergite with the apex of ovipositor about 0.5 of penultimate; tergite II almost glabrous, impunctate, 1st 0.33 as long as gaster; tegulae, legs and gaster reddish-brown, remaining parts black *nikolskayae*, sp. nov.*

*named after late Dr. M.N. Nikolskaya, for her contribution to the family Chalcididae.

- Last abdominal tergite with the apex of ovipositor as long as penultimate; II punctate and setose on dorsum, tergite I st 0.25 as long as gaster; body almost black *vulgaris*, sp. nov.
15. Tergite I covers about 0.5 of gaster 16
 Tergite I covers 0.25 of gaster *yashiokai* Habu
16. Postmarginal vein distinct 17
 Postmarginal vein indistinct *nipponica* Habu
17. Distal half of forewings entirely brownish-yellow, smoky only slightly lighter at the end; abdomen at least as broad as thorax, at most twice as long as wide, posteriorly abruptly narrowed, short pointed carina on the epipygidium shorter than the distance between the pygostyles; tegulae black *hofferi* Boucek
- Second dark strip on the fore wings on the outside unsharply delimited, nevertheless distinctly darker than the slightly smoky apical quarter; abdomen narrower, distinctly more than twice as long as wide, posteriorly conically narrowed in a straight line; epipygidial carina longer than the distance between the pygostyles; tegulae usually red; red coloration of the knees and of the ends of tibiae extensive *bifasciata* Walker
18. Fore wings smoky 19
 Fore wings hyaline except a faint spot just below marginal vein
 *keralensis* Mani & Dubey
19. Abdomen about 1.5 times as long as wide, oval, ovipositor with epipygidium very short, keel of the epipygidium distinctly shorter than the distance between the pygostyles; antennae short, pedicel at least 2.5 times as long as wide, last funicle segment as long as wide; both transverse spots of the fore wings dark
 *inopinata* Boucek
- Abdomen more than twice as long as wide, conical epipygidial keel distinctly longer than the distance between the pygostyles; on the slender antennae the pedicel at least 3 times as long as wide; last funicle distinctly longer than wide; spots on fore wings lighter *susterai* Boucek
20. Coxae reddish-yellow 21
 Coxae black 22
21. Fore wings with round colourless spot under radial vein; scape less than 3 times as long as wide; pits on thorax sparsely arranged with interspaces as wide as their diameter *micula* (Nikolskaya)
- Fore wings with wide colourless longitudinal area below radial vein; scape 3 times longer than wide; pits on thorax more close with interspaces less than their diameter. *caduca* (Nikolskaya)
22. Fore wings with a white ring under stigmal vein; carinae on tergite I almost twice longer than the distance between them 23
- Fore wings with two white spots below radial vein; carinae on tergite I almost equal to the distance between them *mediana* (Nikolskaya)
23. Crown very short with distinct keel; punctures on thorax more large, close with interspaces of pits less than their diameter; length of carinae on tergite I almost twice the distance between them *metula* (Nikolskaya)
- Crown very short; puncts on thorax more shallow and close, interpaces of pits more than their diameter, smooth; carinae on tergite I little short, almost twice longer than the distance between them *confusa* (Nikolskaya)



Figs. 1-7. *Hockeria nikolskayae* ♀: 1, Head, facial view; 2, Head, dorsal view; 3, Antenna; 4, Propodeum; 5, Fore wing; 6, Hind femur; 7, Gaster.

Hockeria nikolskayae, sp. nov. (Figs. 1-7)

Female : Head (Figs. 1-2) black, wider than long in facial view (1.05 : 0.83), as wide as thorax, surface compactly pitted; interspaces of pits fairly narrow and finely carinate; eyes glabrous; scrobe cavity rugose with indistinct margins, not reaching to front ocellus; inter-antennal projection thin, distinctly projecting forward; fronto-genal sutures distinct; height of malar space shorter than the major axis of eyes; ocelli in obtuse triangle. Antennae (Fig. 3) black, scape less than 9 times as long as wide (0.55 : 0.066) as long as pedicel to half of 4th funicle combined; pedicel twice as long as wide (0.14 : 0.07); annellus 1.5 times as wide as long; funicle 1-5 longer than wide, 6th as long as wide, 7th slightly wider than long; club more than twice as long as wide (0.23 : 0.11), longer than preceding 2 segments combined. Thorax black, tegulae reddish-brown with compactly pitted dorsum, pits comparatively wide on scutellum, interspaces of pits narrow, finely carinate; scutellum convex, gently declined posteriorly, slightly emarginate at apex. Propodeum (Fig. 4) with distinct submedian, sub-lateral and accessory carinae with silvery-white pubescence. Fore wings (Fig. 5) hyaline at apex and at base, remaining central portion blackish-brown with a rounded whitish spot, with white pubescence situated near stigmal vein, 2.5 times as long as wide (1.9 : 0.8); submarginal and post-marginal in ratio of 0.89, 0.19 and 0.1 mm respectively; stigmal very short. Hind wings hyaline, about 3.5 as long as wide. Fore and middle legs black on coxae, rest part blackish-brown. Hind legs blackish-brown; coxae and femora reticulate, densely pubescent; outer-ventral margin of femora with two lobes, apical rounded, basal somewhat triangular, lobes with a series of truncated teeth (Fig. 6). Gaster (Fig. 7) reddish-brown, dorsum somewhat dark; tergite I covers about 0.75 of gaster, almost glabrous; II almost glabrous, III-VII densely setose; subgenital plate with a median keel, with two later horns anteriorly, posterior margin with a deep notch in the middle; outer plates of ovipositor narrow at base, narrowly rounded at apex, with a thick muscular ridge along dorsal margin; first valvifers subtriangular with apical and basal angles at the same level, 2nd valvifers long and narrow and 3rd valvulae movably articulated to it.

Length : Female, 2.7 mm.

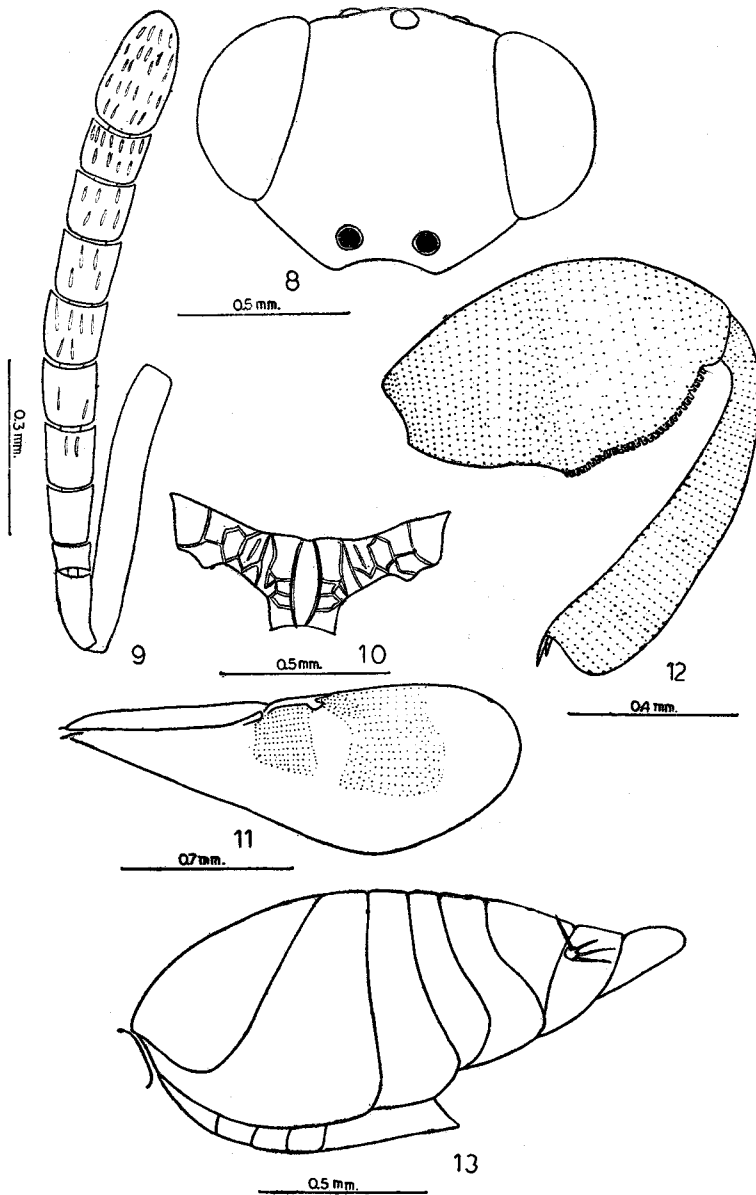
Male : Unknown.

Holotype ♀, INDIA : UTTAR PRADESH : Aligarh, ex *Diacrisia obliqua* on *Pisum vulgaris* L., 5.xii.1978, Coll. Tasawwer Husain, Cat. No. K-34. *Paratype* : 1 ♀, data same as for holotype.

H. nikolskayae, sp. nov. differs from closely related species *H. unicolor* Walker in its colour pattern, scape more than 8 times as long as wide, pedicel twice as long as wide; scutellum slightly emarginate at apex, tergite I about 0.25 of gaster.

Hockeria vulgaris, sp. nov. (Figs. 8-13)

Female : Differs from *nikolskayae*, sp. nov. in the following characters : Head



Figs. 8-13. *H. vulgaris* ♀ : 8, Head, facial view; 9, Antenna; 10, Propodeum; 11, Fore wing; 12, Hind femora & tibiae; 13, Gaster.

(Fig 8) wider than long in facial view (1.35 : 0.83), wider than thorax; interspaces of pits wide, as wide as the diameter of pits. Antennae (Fig. 9) black, scape less than eight times as long as wide as long as pedicel to 3rd funicle combined; pedicel more than twice as long as wide (0.14 : 0.06); annellus wider than long; funicle segments 1-4 longer than wide, 5-6 as long as wide, 7th wider than long; club twice as long as wide (0.23 : 0.12). Thorax moderately pitted, pits on scutellum more wide and closely set, on pronotum and scutum comparatively narrow with wide interspaces, as wide as their diameter; apex of scutellum bilobed; Propodeum (Fig. 10) with distinct carinae. Fore wings (Fig 11) hyaline at basal and apical 0.33 remaining central part rather blackish-brown, less than 3 times as long as wide (1.83 : 0.67); submarginal, marginal and postmarginal veins 0.79, 0.19 and 0.06 mm respectively, stigmal short. Fore and middle legs black, tarsi blackish-brown. Hind legs black with distinct truncated teeth on both lobes of hind femora (Fig. 12). Gaster (Fig. 13) black, tergite I covers 0.65 of gaster, II sparsely setose on dorsum.

Length : Female, 2.9 mm.

Male : Unknown.

Holotype ♀, INDIA : UTTAR PRADESH : Aligarh, ex *Spilosoma* sp. on *Pisum vulgaris* L., 7.xii.1976, Coll. T. Husain, Cat. No. K-81. *Paratypes* : 2 ♀♀, data same as for holotype.

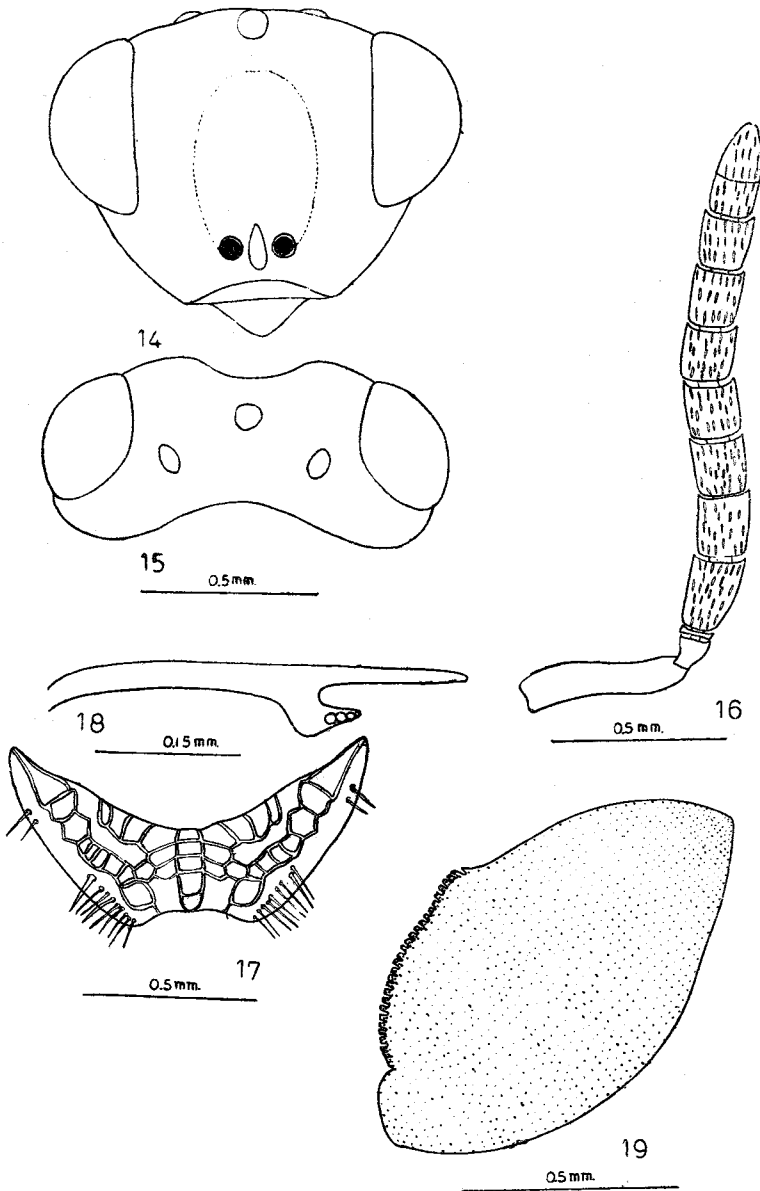
Genus *Nippohockeria* Habu

Genus *Nippohockeria* can be distinguished by the following combination of characters : Head with scrobe cavity not distinctly deep; pre-orbital carinae absent; compound eyes moderately large; antennal sockets a little remote from clypeus; frons seen from lateral side not concave above antennal sockets; mandibles tridentate; scutellum not bifid at apex; propodeum without teeth on lateral costae; fore wings with brownish patch; post-marginal vein absent; tergite I impunctate with some longitudinal carinae at basal area.

Distribution : The genus based on male is known only from Japan and is recorded for the first time from India. Besides the type-species, *N. ishii* Habu, a new species, *N. sativa* is described.

Nippohockeria sativa, sp. nov. (Figs. 14-19)

Male : Head (Figs. 14-15) black as wide as thorax, wider than long in facial view, surface rather densely pitted, pits with shallow pits, with silvery-white pubescence; scrobe cavity narrow, margins obscure, fairly shallow, apex far remote from front ocellus; interantennal projection narrow; fronto-genal angle wide and completely rounded off, genae shallowly depressed along ventral and hind margins; ocelli in obtuse triangle. Antennae (Fig. 16) black scape short, not reaching front ocellus, slightly more than 4 times as long as wide (0.47 : 0.11), as long as pedicel to 2nd funicle combined; pedicel slightly longer than wide; ring segment transverse; 1st funicle 1.5 times as long as wide, 2-7 longer than wide, with decrease in length distad; club 2-segmented, twice as long as



Figs. 14-19. *Nippohockeria sativa* ♀ : 14, Head, facial view; 15, Head, dorsal view; 16, Antenna; 17, Propodeum; 18, Fore wing venation; 19, Hind femur.

wide (0.26 : 0.13), longer than preceding segment. Thorax black, shallowly pitted with silvery-white pubescence; pronotum with a row of fringe along posterior margin; scutellum rather high in profile, apex faintly emarginate. Propodeum (Fig. 17) almost flat with distinct carinae. Fore wings hyaline except an obscure brownish patch below marginal and submarginal veins, about 2.5 times as long as wide (2.08 : 0.85); submarginal, marginal and postmarginal vein 0.9, 0.24 and 0.21 mm respectively, stigmal short (Fig. 18). Hindwings hyaline, 3.5 times as long as wide. Legs black, hind coxae and femora densely pubescent femora from apex to base with a series of dense teeth on outer-ventral margin (Fig. 19). Gaster black, tergites densely punctate, tergite I about 0.5 of gaster length and with a short fovea at base, with ridged margins.

Length : Male, 2.9 mm.

Female : Not known.

Holotype ♂, INDIA : UTTAR PRADESH : Aligarh, 9.xi.1976, Coll. T. Husain, Cat. No. K-35. *Paratype* : 1 ♂, data as for holotype.

The species under discussion differs from the only described species *N. ishii* Habu, ♂ in the following characters : Tegulae black, fore wings with faint patches, hind legs black, posterior margin of pronotum with fringe, tergites punctate.

Genus *Antrocephalus* Kirby, 1883

Type-species : *Halticella fascicornis* Walker, 187 (Orig. Desig.).

Antrocephalus Kirby, 1883, *J. Linn. Soc.*, London, Zool., 16 : 54, 63.

Dilla Strand, 1911, *Arch. Naturges.*, 77 : 210. *Type-species* : *Antrocephalus rufipes* Kieffer.

Dillisca Ghesquiere, 1946, *Rev. Zool. Bot. Afr.*, 39 : 367.

Sabatiella Masi, 1929, *Boll. Lab. Ent. R. Ist. Agr. Bologna*, 2 : 167. *Type-species* : *Sabatiella nigra* Masi.

Tainania Masi, 1929, *Boll. Lab. Ent. R. Ist. Supp. Agr. Bologna*, 2 : 159. *Type-species* : *Tainania acutiventris* Masi

The genus *Antrocephalus* was described by Kirby (1871) with *Halticella fascicornis* Walker (1871) as its type. Some authors consider *Stomatoceras* Kirby (1882) with *Halticella liberator* Walker (1862) as its type, related and cogenetic to *Antrocephalus*. The present authors are in agreement with Boucek (1951) in following Masi (1928) for the placement of species with fully developed post-marginal vein under *Antrocephalus* and species with a rudimentary postmarginal vein under *Stomatoceras* Kirby. Habu (1960, 1962) expressed some doubts regarding the generic status of *Tainania* Masi. Narendran (1977) synonymised the genus *Tainania* with *Antrocephalus*.

Distribution : Cosmopolitan.

The genus can be distinguished by the following characters : Head slightly triangular anteriorly, depression on frons deep, with well developed pre-orbital carinae reaching frontogenal sutures below compound eyes or to antennal sockets; antennal sockets directly above fronto-clypeal suture in female, usually

remote in male; hind femora with very small angular process, outer-ventral margin minutely serrate.

Mani and Dubey in Mani et al. (1974) described two species under the genus *Sabatiella* which is now a synonym of *Antrocephalus*. New combinations are, therefore, proposed for *S. naduganiensis* Mani & Dubey and *S. nepalensis* Mani & Dubey. Five new species, viz. *indicus*, *vitatus*, *brevicorpus*, *hyalopennis* and *indicatus* are described.

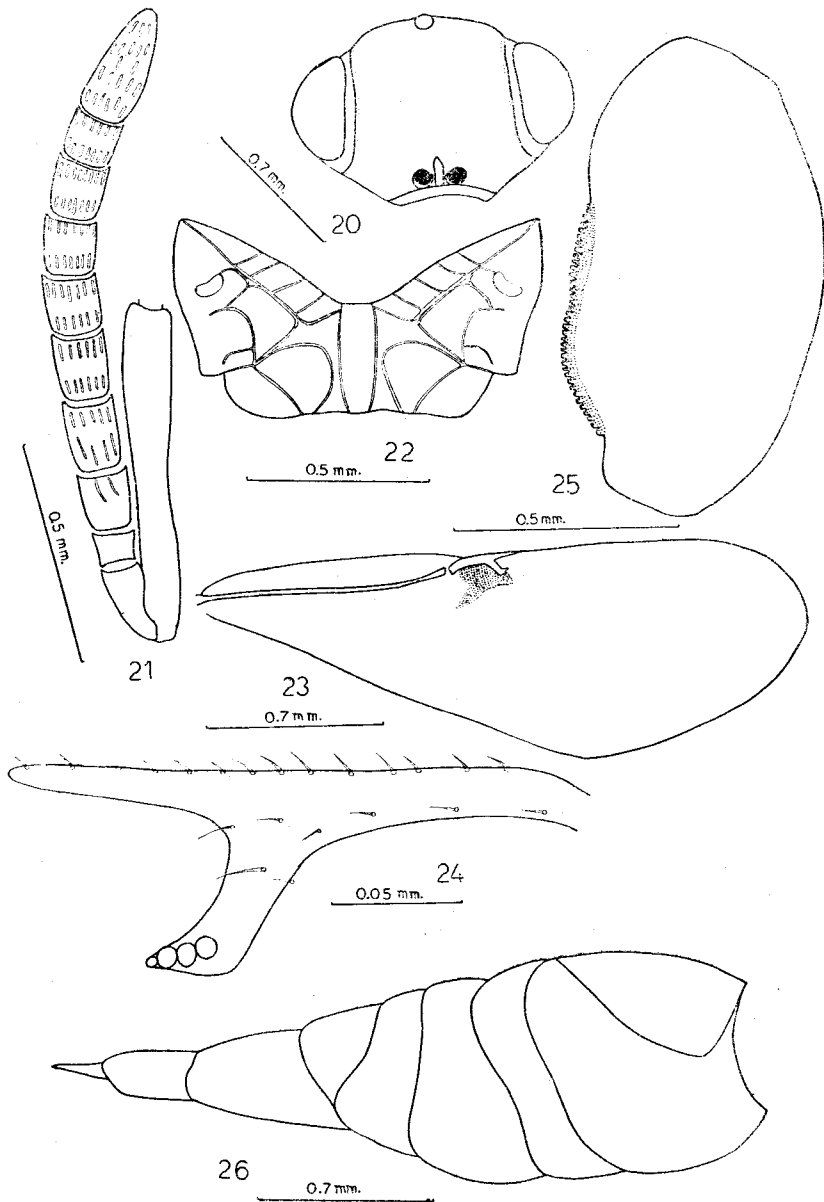
KEY TO WORLD SPECIES OF *ANTROCEPHALUS* KIRBY

1. Pre-orbital carinae reaching fronto-genal sutures below compound eyes . . . 2
 Pre-orbital carinae reaching antennal sclerites 14
2. Hind femora rust-red 3
 Hind femora black 9
3. Last abdominal tergite with the tip of ovipositor not longer than penultimate; hind femora with indistinct triangular denticles ($\text{♀} = 4\text{-}6$ mm; $\text{♂} = 3\text{-}4$ mm) *hypopygiae* Masi
 Last abdominal tergite with the tip of ovipositor longer than penultimate; hind femora with distinct triangular denticles 4
4. Antennae reddish 5
 Antennae predominantly black 6
5. Fore wings almost colourless; tergite I punctate throughout ($\text{♀} = 6$ mm) *vincens* Nikolskaya
 Fore wings with reddish-brown spot under marginal vein; tergite I impunctate, almost glabrous only with few setae on posterior margin; length of female 5.4 mm *indicus*, sp. nov.
6. Scutellum with extremely long apical denticles; hind femora with 3 distinct protrusions 7
 Scutellum slightly incised apically; hind femora with slightly developed protrusions or without proximal lobe on outer-ventral margin 8
7. Head punctations deeper, thoracic punctation larger but sparse; funicle I twice as long as annellus; scutellum with apical denticles, slightly close together, median segment with lateral denticles; last abdominal tergite of same length as penultimate *mansues* Nikolskaya
 Head punctation superficial, thoracic punctation shallower but dense; funicle I twice length of annellus; scutellum with denticles widely separated median segment without lateral denticles; last abdominal tergite longer than penultimate; female 7 mm *gracilis* Nikolskaya
8. Hind femora with slightly developed protrusions; last abdominal tergite 0.75 length of penultimate; thoracic punctation fine, thick; female 8 mm *turkestanicus* Masi
 Hind femora without proximal lobe at basal 0.33; last abdominal tergite 0.33 length of penultimate; interspaces of pits on thorax wider, almost as wide as diameter of pits on scutellum; female 3.5-5.5 mm *apicalis* (Walker)
 and *nepalensis* (Mani & Dubey), comb. nov.
 (= *Sabatiella nepalensis* Mani & Dubey)
9. Scutellum with distinct teeth or projection at apex 10
 Scutellum without distinct teeth or projection at apex 11

10. Wings almost entirely hyaline; female 3.6-4.0 mm *satoi* Habu
 Wings entirely slightly smoky with 2 unclearly delimited darker spots at the posterior margin—first spot at the marginal vein, 2nd behind the end of marginal vein; female 7.0-7.5 mm *hofferi* Boucek
11. Hind femora with proximal lobe on outer-ventral margin 12
 Hind femora without proximal lobe on outer-ventral margin; male 3.75 mm . . .
 *naduganiensis* (Mani & Dubey), comb. nov.
 (= *Sabatiella naduganiensis* Mani & Dubey)
12. Hind femora with proximal lobe at basal 0.33 on outer-ventral margin; interspaces of pits on thorax not or weakly carinate, without distinct microsculpture 13
 Hind femora with proximal lobe at middle on outer-ventral margin, interspaces of pits on thorax evidently carinate with distinct microsculpture in female; female 2.9-4.1 mm *japonicus* Habu
13. Scutellum weakly bilobed at apex; compound eyes glabrous, fronto-genal sutures present; female 4.6-5.7 mm *ishii* Habu
 Scutellum widely emarginate and bilobed at apex; compound eyes setose; fronto-genal suture absent; female 3-4 mm *murakamii* Habu
14. Scutellum with a longitudinal groove 15
 Scutellum without longitudinal groove 17
15. Legs black. 16
 Legs reddish; scape 7 times as long as wide; pedicel twice as long as wide; funicle segments longer than wide; hind femora with two weak rounded lobes
 *vitatus*, sp. nov.
16. Antennae thin; inter-antennal projection narrowly but distinctly separated from fronto-clypeal suture *hakonensis* (Ashmead)
 Antennae comparatively thick; inter-antennal projection widely but indistinctly separated from fronto-clypeal suture *lugubris* (Masi)
17. Wings hyaline 18
 Wings fumate; pedicel as long as funicle I, annellus and 7th funicle subsquare, club slightly longer than 7th funicle segment; abdomen as long as head and thorax combined *acutiventris* (Masi)
18. Hind femora with two faint lobes 19
 Hind femora with 3 distinct lobes; pedicel wider than long; ring segment transverse; funicle segments subsquare *indicatus*, sp. nov.
19. Antennae reddish; tergite I glabrous; last tergite with the tip of ovipositor longer than penultimate *brevicorpus*, sp. nov.
 Antennae black, scape and pedicel red; tergite I with few setae on lateral surfaces; last tergite with the tip of ovipositor as long as penultimate
 *hyalopennis*, sp. nov.

***Antrocephalus indicus*, sp. nov. (Figs. 20-26)**

Female : Head (Fig. 20) black except eyes and ocelli light yellow; wider than long in facial view (0.79 : 0.66), densely pitted, pits shallow, shagreened with silvery-white pubescence; scrobe cavity delimited, deeply excavated, attaining front ocellus, with transverse striations; pre-orbital carinae well developed, dorsal part uniting behind front ocellus, ventral part reaching fronto-genal suture; fronto-genal suture carinate, carinae on reaching ventral margin of eyes



Figs. 20-26. *Antrocephalus indicus* ♀ : 20, Head, facial view; 21, Antenna; 22, Fore wing; 23, Propodeum; 24, Part of Fore wing venation; 25, Hind femur; 26, Gaster.

bifurcate, one part meets pre-orbital carinae, the other part turns round compound eyes and joins post-orbital carinae; ocelli in obtuse triangle; malar space shorter than the major axis of eyes; maxillary and labial palpi 4 and 2-segmented respectively. Antennae (Fig. 21) reddish-brown, scape less than 7 times as long as wide (0.59 : 0.09), annellus transverse, funicle 1-4 longer than wide, 5-7 as long as wide, club 3-segmented, more than twice as long as wide (0.24 : 0.11), shorter than preceding 3-segments combined. Thorax black, tegulae reddish-brown, compactly pitted on dorsum with narrow ecarinate interspaces, shagreened with silvery-white hairs; pronotum shallowly depressed in the middle, anterior carinae rather distinct. Propodeum (Fig. 22) with distinct carinae. Fore wings (Fig. 23) smoky with clearly delimited brown spots near margin vein, less than 3 times as long as wide (2.4 : 0.85); submarginal, marginal, post-marginal and stigmal veins 0.95, 0.12, 0.1 and 0.06 mm respectively (Fig. 24). Hind wing 3.5 times as long as wide. Legs reddish-brown, except teeth on hind femora black, hind coxae and femora densely pitted with silvery-white pubescence, hind femora with 2 faint lobes and a series of blunt teeth on basal 0.6-7 outer-ventral margin (Fig. 25). Gaster (Fig. 26) black, acuminate at apex, tergite I short with short carinae at base; subgenital plate with two lobes on anterior margin, posterior margin with a notch in the middle, first valvifers subtriangular, second valvifers long and narrow, third valvulae movably articulated with second valvifers; outer plates of ovipositor truncated at base, rounded at apex with a thick muscular ridge along dorsal margin.

Length : Female, 5.4 mm.

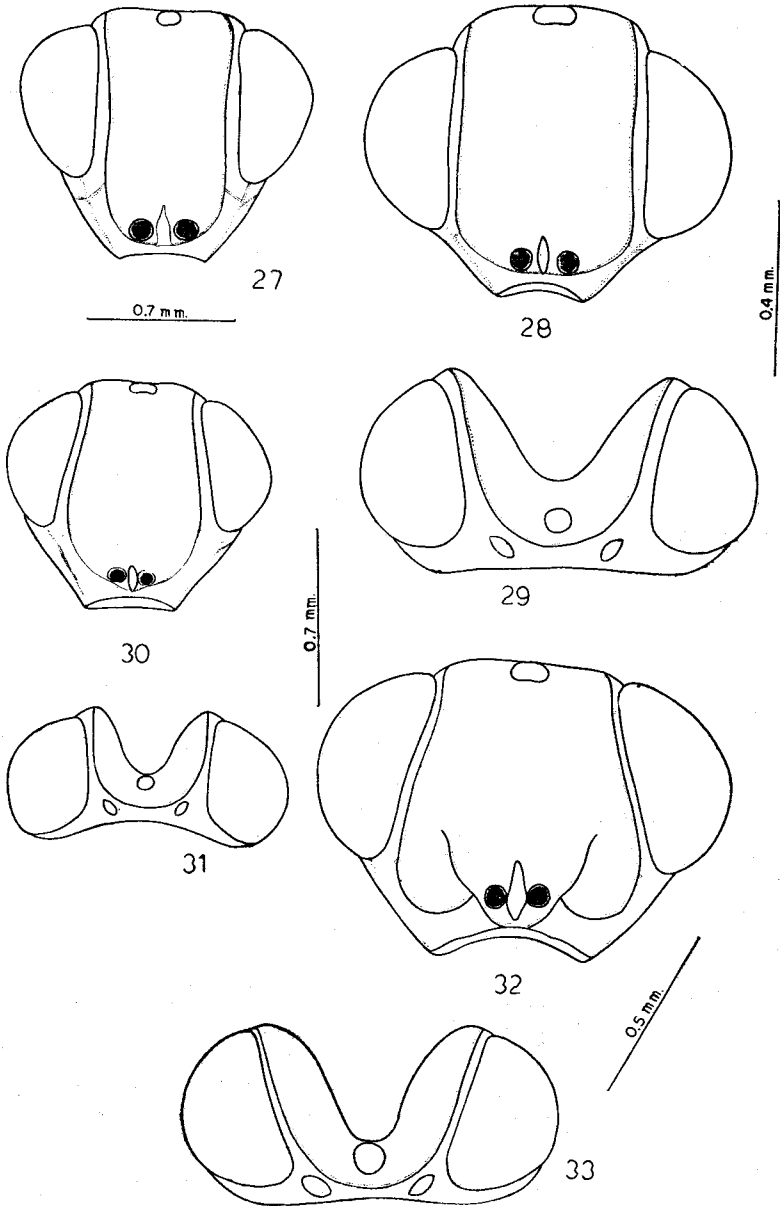
Male : Unknown.

Holotype ♀, INDIA : UTTAR PRADESH : Aligarh, ex *Marasmia trapezalis* Guen. on *Zea mays* L., 30.xii.1976, Coll. T. Husain, Cat. No. K-1. *Paratypes* : 3 ♀♀, data same as for holotype.

This species differs from closely related species *vincens* Nikolskaya for having a reddish-brown spot under marginal vein of fore wing, and impunctate I tergite.

***Antrocephalus vitatus*, sp. nov.** (Figs. 27, 34, 38, 42, 46, 50-52)

Female : Differs from *indicus*, sp. nov. in the following characters : Head (Fig. 27) wider than long in facial view (1.45 : 1.3), interspaces of pits carinate, scrobe cavity with carinated margins, ventral portion of pre-orbital carinae united just below antennal sockets. Antennae (Fig. 34) reddish-brown except basal half of scape, pedicel and 4-7 funicle dark; scape about 7 times as long as wide (0.76 : 0.11), as long as pedicel to 3rd funicle combined; pedicel twice as long as wide (0.19 : 0.1); annellus as long as wide; funicle 1-7 longer than wide; club less than 3 times as long as wide (0.36 : 0.15), shorter than preceding 3 segments combined. Thorax densely pitted with rather small pits on dorsum, interspaces of pits wide and weakly carinate on lateral parts of scutellum; pronotum shallowly depressed at middle, anterior carinae distinct on laterally, obliterated near middle; scutellum forked at apex. Propodeum (Fig. 42) with



Figs. 27-33. Head of *Antrocephalus vitatus* : 27, Head, facial view; *brevicarpus* : 28, Facial view; 29, Dorsal view; *hyalopennis* : 30, facial view; 31, Dorsal view; *indicatus* : 32, Facial view; 33, Dorsal view.

distinct carinae. Fore wings (Fig. 42) smoky, dark brown near marginal vein, about 3 times as long as wide (2.77 : 0.90), postmarginal very long, longer than marginal (0.3 : 0.25), stigmal very short (0.08) coming out at an angle and then becoming parallel to wing margin. Hind wings about 4 times as long as wide. Legs reddish-brown, hind femora with 2 weak lobes on 0.65 basal margin, lobes occupied by blunt teeth (Fig. (46)). Gaster (Fig. 52) as long as thorax, Ist tergite 0.5 of gaster, with short carinae at base, II with bristled punctures and microsculptured on lateral parts; subgenital plate (Fig. 50) and ovipositor (Fig. 51) same as in *indicus*, sp. nov.

Length : Female, 5.2 mm.

Male : Unknown.

Holotype ♀, INDIA : UTTAR PRADESH : Aligarh, ex *Ypsolophus ochrophanes* Meyr. on *Pisum sativum* L., 10.xii.1976, Coll. T. Husain, Cat. No. K-15
Paratypes : 5 ♀, data same as for holotype.

This species is easily distinguishable from closely related species *hakonensis* (Ashmead) having reddish legs, scutellum without longitudinal furrow and in the structure of its antennae.

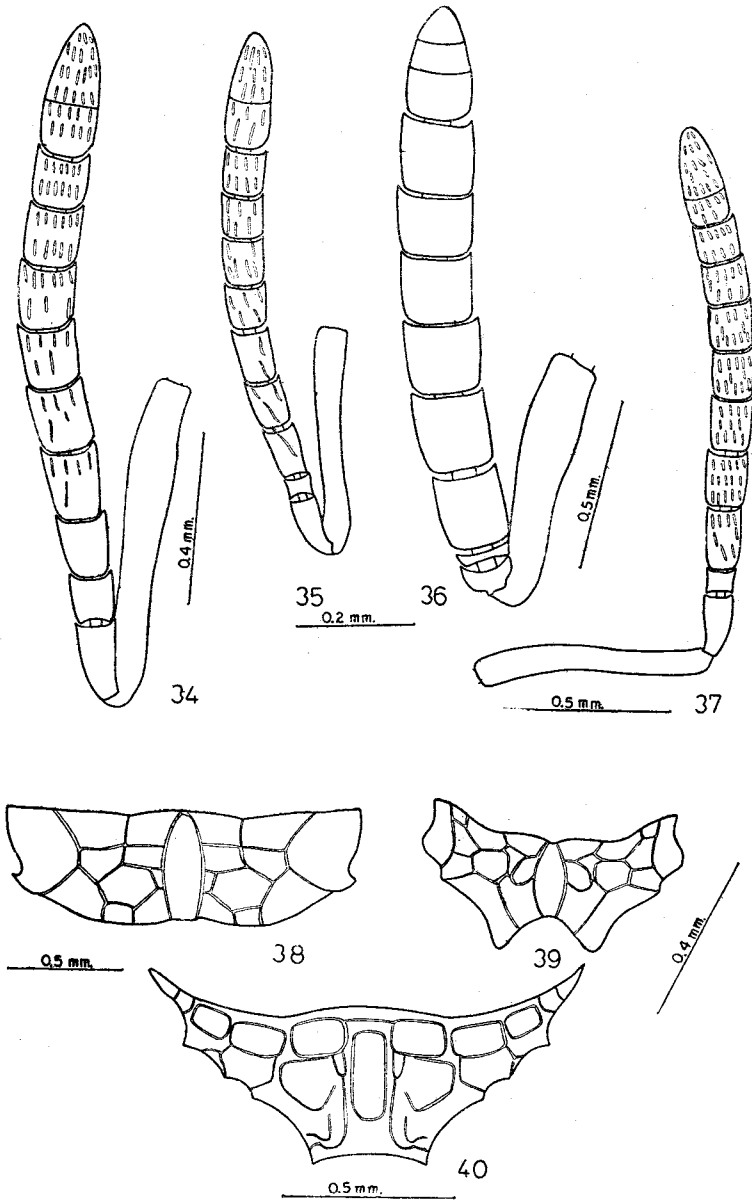
***Antrocephalus brevicorpus*, sp. nov.** (Figs. 28, 29, 35, 39, 45, 47, 53)

Female : Differs from *A. indicus*, sp. nov. in the following characters : Head (Fig. 28-29) wider than long in facial view (0.83 : 0.63); scrobe cavity with carinate margins; preorbital carinae uniting just below antennal sockets. Antennae (Fig. 35) reddish-brown, scape 7 times as long as wide (0.39 : 0.05), as long as pedicel to 3rd funicle segment combined; pedicel 2.5 times as long as wide (0.11 : 0.04); ring segment subsquare; funicle 1-3 longer than wide, 4-7 as long as wide; club less than 3 times as long as wide (0.20 : 0.07), less than preceding 3 funicle segments combined. Thorax densely pitted, pits more wider on scutellum, interspaces of pits narrow and finely carinate; pronotum shallowly depressed in the middle, anterior carinae distinct on lateral parts, obliterated near middle; scutellum rounded at apex; lateral costae of propodeum with blunt projections (Fig. 39). Fore wings slightly less than 3 times as long as wide (0.49 : 0.16); submarginal, marginal, postmarginal and stigmal veins 0.57, 0.055, 0.08 & 0.035 mm respectively (Fig. 45). Fore and middle legs with coxae and femora in the middle black, apex and base of femora, tibiae and tarsi reddish-brown; Hind legs : coxae, femora dark brown, tibiae and tarsi reddish-brown; coxae and femora fairly rough owing to dense reticulation and pubescence; ventral margin of femora without distinct lobe, apical half with truncated teeth (Fig. 47). Gaster (Fig. 53) as long as thorax; Ist tergite 0.33 of gaster, glabrous, base with short median carinae on either side of median fovea, carinae as long as fovea.

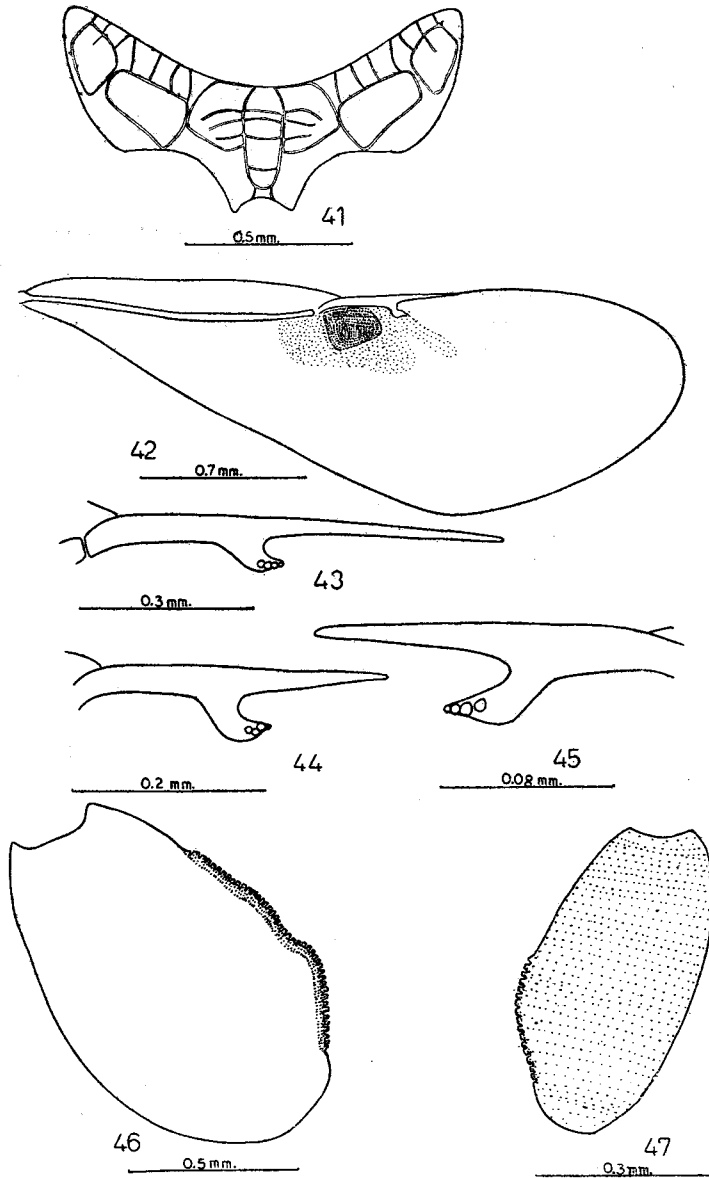
Length : Female, 2 mm.

Male : Unknown.

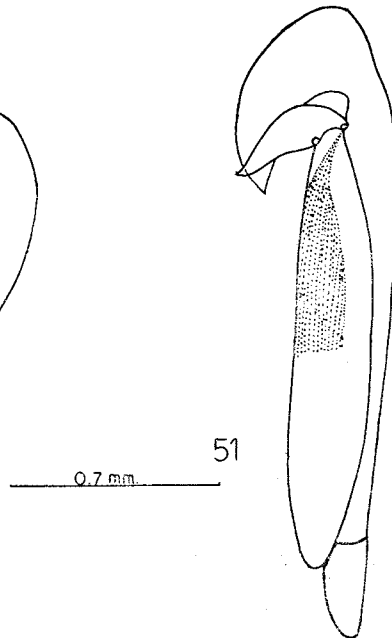
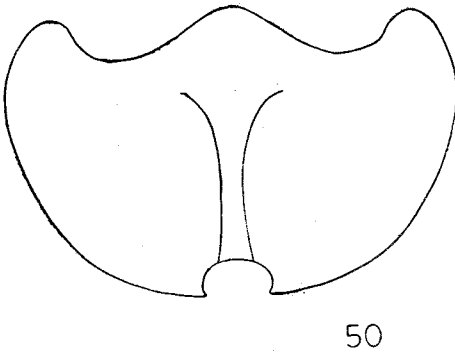
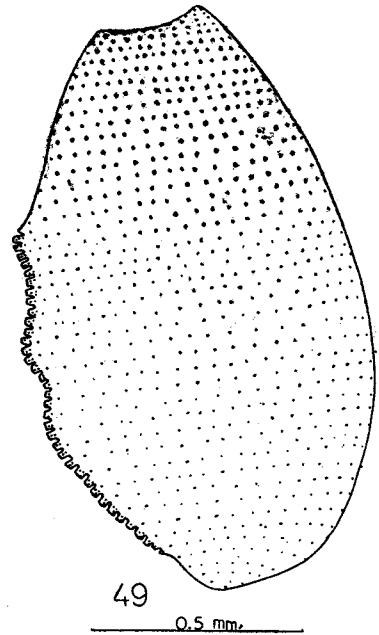
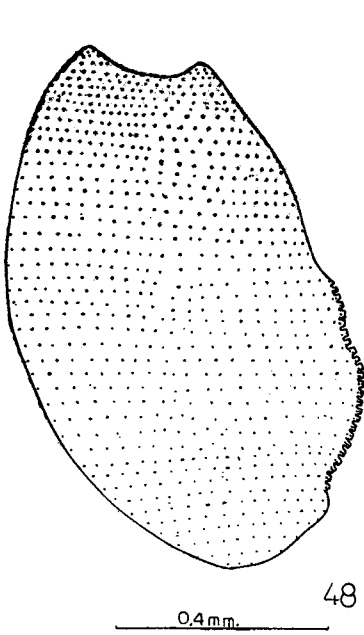
Holotype ♀, INDIA : UTTAR PRADESH : Aligarh, 22.xi.1979, Coll. T.H., Cat. No. K-3. *Paratypes* : 2 ♀♀, data same as for holotype.



Figs. 34-40. Antennae of : 34, *vitatus*; 35, *brevicorpus*; 36, *indicatus*; 37, *hyalopennis*; Propodeum of : 38, *vitatus*; 39, *hyalopennis*; 40, *indicatus*.



Figs. 41-47. *A. hyalopennis* : 41, Propodeum; *vitatus* : 42, Fore wing; Part of fore wing venation of : 43, *indicatus*; 44, *hyalopennis*; 45, *brevicorpus*; Hind femora of : 46, *vitatus*; 47, *brevicorpus*.



Figs. 48-51. Hind femora of : 48, *hyalopennis*; 49, *indicatus*; *vitatus* : 50, Subgenital plate; 51, Ovipositor.

A. brevicorpus, sp. nov. differs from closely related species *A. indicatus*, sp. nov. in having pedicel 2.5 times as long as wide, funicle longer than wide (1-3 segments); hind femora without distinct lobes.

***Antrocephalus hyalopennis*, sp. nov.** (Figs. 30, 31, 37, 41, 44, 48, 54)

Female : Differs from *A. indicus*, sp. nov. in the following characters : Head (Figs. 30-31) wider than long in facial view (1.02 : 0.98), densely pitted with narrow and finely carinate interspaces; parascrobal area and scrobe cavity with compact shallow pits; preorbital carinae reaching antennal sclerites. Antennae (Fig. 37) : scape, pedicel and ring reddish-brown, funicle and club dark; scape 7.5 times as long as wide (0.69 : 0.09), pedicel 2.5 times as long as wide (0.19 : 0.07); ring segment subsquare; funicle 1-5 longer than wide, 6-7 as long as wide; club 2.5 as long as wide (0.29 : 0.12), as long as preceding 2.5 funicle combined. Thorax densely pitted with carinate interspaces; pronotum shallow depressed in the middle, anterior carinae distinct on lateral parts, obliterated in the middle; scutellum slightly bilobed at apex; propodeum with blunt projections on lateral costae (Fig. 41). Fore wings less than 3 times as long as wide (1.63 : 0.65); submarginal 4 times of marginal (0.62 : 0.16), postmarginal as long as marginal, stigmal short (Fig. 44). Fore and middle legs black on coxae and middle of femora, apex and base of femora, tibiae and tarsi reddish-brown. Hind legs of same coloration as on fore legs, femora with proximal lobe at basal 0.33 with distinct truncated teeth (Fig. 48). Gaster (Fig. 54) as long as thorax, tergite I glabrous, base with short carinae on the sides of median fovea, 2-5 tergites sparsely setose.

Length : Female, 3.5 mm.

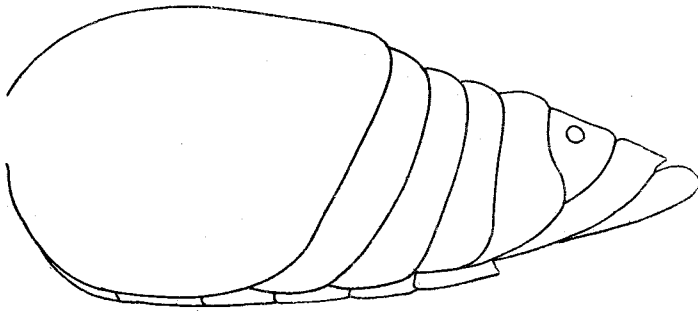
Male : Unknown.

Holotype ♀, INDIA : UTTAR PRADESH : Aligarh, 22.iii.1976, Coll. T.H.,
Paratypes : 2 ♀♀, data same as for holotype.

A. hyalopennis, sp. nov. differs from closely related species *A. brevicorpus*, sp. nov. in the following characters : Antennae black except scape and pedicel reddish; tergite I with few setae laterally; and last abdominal tergite with the tip of ovipositor as long as penultimate.

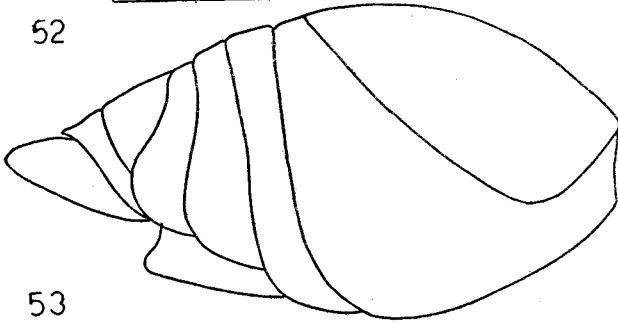
***Antrocephalus indicatus*, sp. nov.** (Figs. 32, 33, 36, 40, 43, & 49)

Male : Differs from *A. indicus*, sp. nov. in the following characters : Head (Figs. 32-33) wider than long in facial view (1.09 : 0.84), deeply pitted with carinated interspaces, eyes densely setose; preorbital carinae reaching below antennal sclerites; fronto-genial angle widely rounded; inter-antennal projection distinctly projecting. Antennae (Fig. 36) black, scape less than 5 times as long as wide (0.73 : 0.15), shorter than pedicel to 3rd funicle combined; pedicel wider than long (0.14 : 0.10); ring segment transverse; funicle segments transverse; club 3-segmented; less than twice as long as wide (0.33 : 0.18), longer than preceding funicle segment. Thorax compactly pitted with large pits, inter-



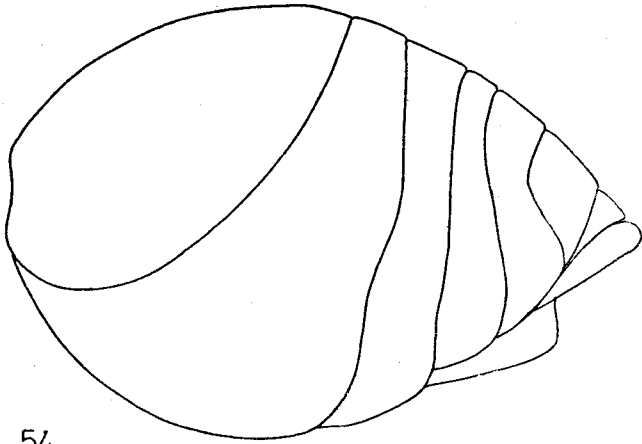
1 mm.

52



53

0.4 mm.



54

0.5 mm.

Figs. 52-54 Gaster of : 52, *vitatus*; 53, *brevicarpus*; 54, *hyalopennis*.

spaces ecarinated, pronotum shallowly depressed in middle, lateral carinae faint inwards and obliterated near middle; scutellum slightly bilobed at apex; propodeum (Fig. 40) flat, with teeth-like projections on lateral costae. Fore wings 2.5 times as long as wide (2.8 : 1.03); submarginal 4 times longer than marginal (0.99 : 0.25), postmarginal 1.5 times as long as wide (0.43 : 0.25), stigmal short (Fig. 43). Fore and middle legs black except apex of femora and tarsi reddish-brown. Hind legs black; coxae and femora densely punctate and densely pubescent, femora on outerventral margin with 2 weak lobes, teeth occupy apical 0.66 of ventral margin (Fig. 49). Gaster shorter than thorax; tergite I covers less than 0.5 of gaster, minutely punctate on dorsum, II densely setose except a median part.

Length : Male, 4.38 mm.

Female : Not known.

Holotype ♂, INDIA : MADHYA PRADESH : Bhopal, 23.iii.1976, Coll. T.H., Cat. No. 0-1. *Paratypes* : ♂, data same as for holotype.

A. indicatus, sp. nov. differs from closely related species *indicus*, sp. nov. having transverse pedicel, ring joint and funicle segments; fore wings hyaline; tergite I minutely punctate on dorsum.

Genus *Neotainania* Husain and Agarwal

Type-species : *Neotainania brevicorpis* Husain and Agarwal

This genus stands out clearly from other allied genera for its ocellar area raised into short horns; unusually raised scutellum with a longitudinal carina in the middle, bilobed at apex; hind femora with two distinct lobes, basal one distinctly raised; outer ventral margin bearing a series of comb-like teeth extending to more than 0.67 length of margin; basal 5 abdominal tergites glabrous, sixth with a single row of thick setae and seventh densely setose.

Female : Head densely pitted with silvery-white pubescence ocellar area raised into two short horns; scrobe cavity deeply excavated, preorbital carinae distinct, interrupted between ocelli, reaching below antennal sclerites; antennal sockets remote from clypeal suture; frons in profile slightly concave above antennal sockets; antennae short, scape not reaching to front ocellus, club 2-segmented; pronotum with well developed lateral carinae, posterior margin without setae; scutellum unusually raised with a distinct longitudinal carina in the middle, bilobed at apex; fore wings smoky with a hyaline patch just below marginal vein postmarginal as long as marginal; hind coxae and femora densely pubescent, outer-ventral margin of femora bilobed, basal lobe distinctly raised with teeth extending more than 0.67 length of marginal; basal 5 tergites glabrous, 6th bearing a row of thick setae, 7th densely setose.

Length : Female, 3.8 mm.

Male : Unknown.

Specimens examined : 2 ♀♀, INDIA : UTTAR PRADESH : Aligarh, 10.xii.78, Coll. T. Husain, Cat. No. K-35.

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