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11. Small species (length 1.62–3.08 mm). **sp. group 4**
- Larger species (length 3.38 mm). **sp. group 8**
12. Apex of penis (dorsal aspect) laterally distinctly expanded (Figs 1095, 1110). **sp. group 12**
- Apex of penis laterally not distinctly expanded 13
13. Apex of penis broadly truncate (dorsal aspect), often with a distinct constriction near apex (Figs 1233, 1271); general punctation evenly distributed on elytron (exception: *H. sumatrensis* p. 547); male antenna often modified (Fig. 1251) (Oriental region, China, Japan, Australia). **sp. group 14**
- Apex of penis different (dorsal aspect), sometimes obtuse but never with distinct constriction near apex; general punctation unevenly distributed on elytron (coarser and denser frontally at suture than laterally and apically); male antenna not modified 14
14. Big species (length 3.76–5.28 mm); penis (lateral aspect) without distinct strengthening lobes (Fig. 1202); male protarsal claws symmetric to almost symmetric, not distinctly modified (Africa). **sp. group 13**
- Small to large (length 1.92–5.02 mm); large species with penis provided with distinct lateral strengthening lobes (Fig. 975) (exception: *H. gravis* p. 380); large species generally with asymmetric male protarsal claws (Fig. 940). **sp. group 11**

6.4. Key to the species

Species group 1 (sp.gr. *pictulus*)

Length of body: 1.80–2.86 mm, breadth: 1.08–1.94 mm. Shape of body globular to slightly elongated. Colouration of dorsal aspect of body varies between unicoloured and distinct dorsal colour pattern.

Head: Frontal outline of male head angular, medially straight, and at least there distinctly margined (Fig. 23). Sometimes margin thickened and in one species male provided with a minute upwards curved process (Figs 30–31). Female head frontally not modified, except in one species medially a little inwardly curved (Fig. 29). Antennae and palpi in both sexes simple.

Ventral side: Stridulatory apparatus absent.

Legs: Claws simple.

Male genitalia: Penis in dorsal view medially broad (Fig. 25). Weakly sclerotized medial part of penis (dorsal view) provided with

backwards-projecting pointed processes (Fig. 39). Apex of penis distinctly bent downwards and provided with hairs (Fig. 34). Apical part of paramere broad, without distinct sclerotized hook (Fig. 27).

Three species are recognized in this subgroup distributed in South and Central America and the Ethiopian region of Africa.

The posteriorly projecting dorsal processes of the penis and the modified frontal part of the male head are probably synapomorphies indicating monophyly of this subgroup.

Key to species

1. Elytra with distinct colour pattern (Fig. 21) (Ethiopian region).
H. pictulus Sharp (p. 125)
- Elytra practically unicoloured (America) 2
2. Male head frontally without a minute process (Fig. 37); penis medially with curved lateral processes (Fig. 40).
H. hintoni n. sp. (p. 131)
- Male head frontally with a process (Figs 30–31); penis medially without curved lateral processes (Fig. 34).
H. crassulus Sharp (p. 129)

Description of species, see p. 125.

Species group 2 (sp. gr. *turbinatus*)

Length of body: 1.82–1.96 mm, breadth: 1.24–1.32 mm. Body fairly globular. Elytra without distinct colour pattern, darker than main colour of head and pronotum.

Head: In both sexes frontally rounded, distinctly margined (Fig. 44). Antennae and palpi in both sexes simple.

Legs: Mesotarsal claws asymmetric, one of claws distinctly prolonged (Fig. 46).

Ventral side: Stridulatory apparatus absent.

Male genitalia: Penis quite broad. Weakly sclerotized medial part without processes. Apex of penis straight (Fig. 48), in dorsal view apex rounded and nude (Fig. 47). Apical part of paramere quite broad, without a well sclerotized hook, but with a peculiar modification (Fig. 49).

A monobasic group, only known from South America.

Details in anatomy of male genitalia, mentioned above, and asymmetry of mesotarsal claws in male are unique characters for *H. turbinatus* Zimm. Probably they represent apomorphous structures.

For description of species, see p. 133.

Species group 3 (sp.gr. *pustulatus*)

Length of body: 1.92–3.76 mm, breadth: 1.22–2.72 mm. Shape of body varies between somewhat elongated and globular. Unicoloured species to those with distinct colour pattern are represented in this group.

Head: Frontal outline rounded to angled, margined (Figs 64, 112). Sometimes frontal margin indistinct or absent close to eyes and for a short distance medially (Fig. 119). Antennae and palpi in both sexes simple, except one species, the male of which is provided with enlarged antennal segments (Fig. 126).

Elytra: Two species with a distinct lateral furrow on each elytron (Fig. 141). A unique structure in *Hydrovatus*.

Ventral side: Without stridulatory apparatus.

Legs: In both sexes generally simple or almost simple. Male of one species provided with distinctly thickened protarsal claws (Fig. 114).

Male genitalia: Groundplan of penis and paramere similar throughout the subgroup. Apex of penis always long, narrow, and tip curved downwards (Fig. 67). Paramere lacks apical hook, almost evenly sclerotized, and apex often provided with a small membranous region (Fig. 74).

Sixteen species are recognized in this subgroup. Most species occur in America, from USA to South America including the Caribbean archipelago. One species is known only from India and another species occurs in southeastern Asia (Oriental region).

This subgroup seems to be a quite uniform monophyletic group characterized by synapomorphous structures exhibited in male genitalia (see above).

Key to species (non-American species are marked)

1. Male antenna modified, segments 3-10 distinctly enlarged (Fig. 126). **H. platycornis** Young (p. 163)
- Male antenna not modified, slender (Fig. 52) 2
2. Elytra with deep lateral furrow (Fig. 141) 3
- Elytra without lateral furrow (sometimes weakly depressed at same place. 4
3. Ventral outline of penis basally evenly curved (Fig. 143); penis narrows quite abruptly towards long and almost parallel-sided apex (Fig. 142). **H. hornii** Crotch (p. 166)

- Ventral outline of penis close to base with a minute process (Fig. 135); penis narrows gradually towards apex (Fig. 134).
H. youngi n. sp. (p. 165)
- 4. Apex of penis laterally expanded (Fig. 155).
H. inexpectatus Young (p. 171)
- Apex of penis narrow (Fig. 66) 5
- 5. Penis narrows evenly towards apex (Figs 53, 149) 6
- Penis narrows abruptly towards apex (Figs 60, 72) 7
- 6. Body elongated (Fig. 145); elytra without distinct colour pattern; penis apically with minute ventro-lateral expansion (Fig. 150).
H. longior n. sp. (p. 169)
- Body subglobular; elytra with distinct colour pattern (Fig. 50); penis apically without expansions (Fig. 54) (India).
H. cardoni Severin (p. 134)
- 7. Narrow apical part of penis quite short (Fig. 60); margin between elytra and epipleura clearly visible from above, (SE Asia).
H. subrotundatus Motsch. (p. 137)
- Narrow apical part of penis long (Fig. 66); margin between elytra and epipleura for a long distance medially not visible from above 8
- 8. Male protarsal claws distinctly thickened (Fig. 114); elytra with distinct colour pattern (Fig. 111).
H. kavanaughi n. sp. (p. 158)
- Male protarsal claws not thickened; (species with or without elytral colour pattern) 9
- 9. Basal half of penis broad (Fig. 121); big species (length of body 3.02–3.18 mm).
H. peninsularis Young (p. 161)
- Basal half of penis narrower (Fig. 66); generally smaller species (length of body max. 3.02 mm) 10
- 10. Apical half of paramere broad (Fig. 109); in apical half ventral outline of penis almost straight (Fig. 108).
H. concolor Sharp (p. 157)
- Apical half of paramere narrower (Fig. 68); in apical half ventral outline of penis at least slightly curved (Fig. 66) 11
(Determination is uncertain from this point onwards, because of considerable morphological overlap between different taxa. Species status unclear!)
- 11. Narrow apical part of penis medially generally somewhat expanded (Fig. 101); elytra often with quite distinct colour pattern (Fig. 96).
H. pustulatus (Melsh.) (p. 153)

- Narrow apical part of penis medially not expanded (Fig. 66); elytral colour pattern absent or different (Fig. 63) . . . 12
- 12. Ventral outline of penis quite abruptly bent downwards (Fig. 86, note the arrow); elytral punctures fine to very fine, rather sparse.
H. leconteii Clark (p. 148)
- Ventral outline of penis evenly curved to almost straight, never abruptly bent downwards (Fig. 67); elytral punctures generally coarser and denser 13
- 13. Body broad, posterior half pointed (Fig. 89); in general elytra laterally with quite distinct depression (Fig. 92).
H. brevipes Sharp (p. 150)
- Body slightly elongated, posterior half not pointed (Fig. 63); elytra laterally sometimes with a slight depression.
H. davidis Young (p. 141)
H. caraibus Sharp (p. 144)
H. sharpi Van dem Branden (p. 145)

(For this complex of three taxa I am not able to construct any tentative key
- I refer to the respective diagnosis and description.)

For description of species, see p. 134.

Species group 4 (sp. gr. *confossus*)

Length of body: 1.62–3.08 mm, breadth: 0.92–1.98 mm. Shape of body varies between elongate to globular. Colouration of body variable: unicoloured species to species with distinct colour pattern represented in the species group.

Head frontally rounded, medially often straightened and rarely medially slightly concave (Figs 534, 587). A number of species have an uneven outline: on each side of an almost straight medial part, distinctly concave (Fig. 515). Head frontally margined from eye to eye (Fig. 356). Many species have a more or less reduced margin, and margin sometimes indicated only by indistinct medial rudiments (Figs 546, 557). Male antenna exhibits great variation. Thus there are species with an unmodified slender antenna, species with an indistinctly thickened antenna, species with a distinctly thickened antenna etc. (Figs 182, 223, 343, 310). Shape of male antenna seems to be the most reliable feature in determination of species. Palpi in both sexes always simple.

Elytra: One species has elytral punctures provided with minute but clearly visible scales.

Ventral side: Stridulatory apparatus absent.

Legs: Male protarsal claws exhibit considerable variation. There are thus species with simple unmodified claws, species with symmetric extended claws and species with asymmetric extended claws (Figs 455, 486).

Male genitalia: Penis generally quite slender and apically distinctly curved downwards (Figs 212–213). Apical part of paramere always hooked (Fig. 220). There is considerable variation in details of penis apex and paramere apex. However, closely related species have generally similar or almost similar male genitalia, which makes determination difficult.

Sixty-nine species are with some hesitation recognized in this species group. Most species occur in Africa, but there are also a few species with a oriental distribution.

No definite synapomorphies can be demonstrated for this species group. It is most probably a paraphyletic subgroup, which still needs a lot of investigation.

Key to species (to be considered tentative)

Non-African species are marked with their range in brackets. Five species are excluded from the present key because only the female has been available for study. Their location in this species group is unclear and is based on examination of the female specimen and what is suggested in literature dealing with the taxon in question.

H. duponti Rg. (p. 189): probably close to *H. confossus*.

H. brunneus Guignot (p. 244): according to original description (GUIGNOT, 1961a) close to *H. spadix*.

H. coracinus Guignot (p. 284): possibly close to species *H. crassicornis*-*H. medialis*.

H. macrocephalus Gschw. (p. 288): probably close to *H. globulosus*.

H. parameces Guignot (p. 294): according to original description (GUIGNOT, 1958b) close to *H. capnius*.

1. Penis apically strongly sinuate (Fig. 596); paramere apically with a lateral process (Fig. 597). ***H. nephodes*** Guignot (p. 303)
- Penis apically different; paramere lacks such apical process 2
2. Penis asymmetric (in dorsal view right lobe provided with a process) (Fig. 575). ***H. bicolor*** Guignot (p. 296)

- Penis symmetric (lacks lateral processes) 3
- 3. Apical hook of paramere long (Fig. 240) 4
- Apical hook of paramere shorter (Fig. 334) 5
- 4. Apical segment of antenna in male distinctly enlarged (Fig. 236);
bigger species (length 2.32–2.66 mm).
H. senegalensis Rég. (p. 198)
- Apical segment of antenna in male not enlarged (Fig. 405); small
species (length 2.06–2.30 mm). **H. eximius** n. sp. (p. 250)
- 5. Male antenna strongly modified (Fig. 249).
H. aristidis Leprieur (p. 204)
- Male antenna slender or differently modified 6
- 6. Second segment of male antenna distinctly enlarged and modi-
fied (Fig. 317) 7
- Second segment of antenna slender, not modified 8
- 7. Antennal segments 3–8 in male almost equally broad (Fig. 317).
H. satanas Guignot (p. 224)
- Antennal segments 3–8 in male not equally broad (segments
narrow distinctly from eighth segment towards third segment
(Fig. 326). **H. satanoides** Ped. & Rocchi (p. 226)
- 8. Eighth antennal segment in male with sharp lateral process
(Fig. 382). **H. brownei** Omer-Cooper (p. 242)
- Male antenna different 9
- 9. Apical antennal segment with a distinct lateral process
(Fig. 420). **H. validicornis** Rég. (p. 254)
- Male antenna different 10
- 10. Penis posterior to apex strongly expanded (Fig. 559); small
species (length 1.62–1.80 mm).
H. charactes Guignot (p. 291)
- Shape of penis different; bigger species (min. length 1.82 mm)
. 11
- 11. Penis distinctly curved inwards posterior to broad rounded apex
(Fig. 566). **H. capnius** Guignot (p. 292)
- Apex of penis different 12
- 12. Penis in dorsal view only slightly narrowing towards steeply bent
apex (Figs 582, 608) 13
- Penis in dorsal view different 15
- 13. Head foremargin reaches eyes (Fig. 579); bigger species (length
2.90–3.08 mm). **H. concii** Bil. & Ped. (p. 298)
- Head foremargin does not reach eyes (Fig. 606); small species
(length 2.14–2.24 mm) (SE Asia) 14

14. Head frontally with clearly visible punctures.
H. similis n. sp. (p. 306)
- Head frontally with very indistinct punctures.
H. maai n. sp. (p. 304)
15. Apex of penis long, narrow, only slightly curved downwards (Fig. 617); (oriental region). **H. fractus** Sharp (p. 308)
- Apex of penis always distinctly curved downwards . . . 16
16. Frontal outline of downwards curved penis apex straight (Fig. 437) or concave (Fig. 521) . . . 17
- Frontal outline of penis rounded (eg. Figs 300, 333) . . 34
17. Frontal outline of head uneven (Fig. 498); male protarsal claws long, generally asymmetric (Fig. 501) (cf. also *H. medialis*, p. 282) . . . 18
- Frontal outline of head evenly curved (Fig. 425); male protarsal claws simple or medium long, often symmetric . . . 23
18. Large species (length 2.70–2.94 mm); penis voluminous (Fig. 503). **H. unguicularis** n. sp. (p. 273)
- Smaller species (length max. 2.70 mm); penis smaller . . 19
19. Male antenna medially with indistinctly enlarged segments (Fig. 526). **H. tydaeus** n. sp. (p. 280)
- Male antenna medially with distinctly enlarged segments (Fig. 492) . . . 20
20. Male antenna medially with strongly enlarged segments (Fig. 492) . . . 21
- Male antenna medially with moderately enlarged segments (Fig. 516) . . . 22
21. Seventh segment of male antenna almost two times broader than segment eight (Fig. 485); male protarsal claws (Fig. 486). **H. crassicornis** (Kolbe) (p. 268)
- Seventh segment of male antenna only slightly broader than segment eight (Fig. 492); male protarsal claws (Fig. 493). **H. madagascariensis** Rég. (p. 270)
- (Note! Separation of species in point 22 very tentative - synonymy of taxa cannot be excluded.)
22. Medial segments of male antenna generally broader and antenna longer (Fig. 516); elytral microsculpture often strongly reduced. **H. longicornis** Sharp (p. 278)
- Medial segments of male antenna generally narrower and antenna shorter (Fig. 507); elytral microsculpture generally well developed. **H. cribratus** Sharp (p. 274)

23. Downwards projecting penis apex long in relation to length of rest of penis (Fig. 429). **H. dama** Guignot (p. 256)
 – Downwards projecting penis apex shorter in relation to length of rest of penis (Fig. 416) 24
24. Body broad, apical half somewhat pointed (Fig. 410); apical hook of paramere sharp and straight (Fig. 417).
H. spissicornis Rég. (p. 252)
 – Body more elongate, apical half rounded (Fig. 545); apical hook of paramere more blunt at the point and slightly curved (Fig. 550) 25
25. Sinuate apex of penis projects partly forwards, tip obtuse (Fig. 249); apex weakly attached to rest of penis.
H. globulosus Gschw. (p. 285)
 – Apex of penis projects downwards (Fig. 267); penis apex firmly attached to rest of penis 26
26. Penis apex for a quite long distance narrow (Fig. 266).
H. asemus n. sp. (p. 209)
 – Penis apex broader (Fig. 539) 27
27. Penis apex almost obtuse (Fig. 540).
H. medialis B.-Br. (p. 282)
 – Penis apex pointed (Fig. 479) 28
28. Penis apex long (Fig. 479). **H. guignoti** Omer-Cooper (p. 267)
 – Penis apex shorter (Fig. 471) 29
29. Medial segments of male antenna sharp-edged (Fig. 469).
H. nilssoni n. sp. (p. 265)
 – Medial segments of male antenna with rounded edges (Fig. 461) 30
30. Male antenna broadest apically (Fig. 434) 31
 – Male antenna broadest medially (Fig. 461) 32
31. Apical segments of male antenna broad (Fig. 434).
H. verisae Bil. & Rocchi (p. 259)
 – Apical segments of male antenna narrower (Fig. 441).
H. angusticornis n. sp. (p. 260)
32. Three apical segments of male antenna distinctly narrower than enlarged medial segments (Fig. 447). **H. tristis** Guignot (p. 261)
 – Apical segments of male antenna only slightly narrower than enlarged medial segments (Fig. 461) 33
33. Pronotal punctures concentrated to marginal regions of pronotum (Fig. 462); scutellar reticulation clearly discernible.
H. imitator n. sp. (p. 264)

- Pronotal punctures more evenly distributed (Fig. 454); scutellar reticulation indistinct. **H. subparallelus** Gschw. (p. 263)
- 34. Male antenna with distinctly enlarged medial segments (Figs 331, 343) 35
- Male antenna evenly broad or with weakly enlarged medial segments (Figs 277, 290) 38
- 35. Male antenna narrows evenly from segment four towards apex (Fig. 349) 36
- Male antenna with fourth segment narrower than fifth (Fig. 343) 37
- 36. Male antenna with segments three to five sharp-edged (Fig. 349).
H. cristatus Guignot (p. 233)
- Male antenna with rounded segments (Fig. 243).
H. flammulatus Sharp (p. 202)
- 37. Male antenna with seventh segment broadest (Fig. 331); body almost parallel-sided (Fig. 329).
H. pilitibiis Omer-Cooper (p. 228)
- Male antenna with fifth segment broadest (Fig. 343); body oval (Fig. 341).
H. amplicornis Rég. (p. 231)
- 38. Male antenna with segment eight distinctly broader than segments seven and nine (Fig. 310). **H. difformis** Rég. (p. 222)
- Male antenna different 39
- 39. Male antenna long, with segments five to eleven distinctly enlarged (Fig. 283); head foremargin distinct from eye to eye 40
- Male antenna different (if long and segments apically enlarged, head foremargin reduced at eyes) 43
- 40. Elytra without distinct colour pattern.
H. flebilis Guignot (p. 215)
- Elytra with colour pattern (rarely quite vague) (Fig. 288) 41
- 41. Male antenna with segments seven to eleven almost evenly broad, ninth and tenth segments on one side edged (Fig. 304).
H. bomansi Guignot (p. 220)
- Male antenna with three apical segments slightly narrower than segments seven and eight; ninth and tenth segments not edged (Fig. 297) 42
- 42. Large species (length 2.84–3.00 mm); male antenna with segments three to five somewhat enlarged (Fig. 297).
H. visendus n. sp. (p. 219)

- Smaller species (length 2.50–2.76 mm); male antenna with segments three to five slender (Fig. 290).

H. megalocerus Bil. & Ped. (p. 217)

- 43. Elytra with colour pattern (rarely indistinct) (eg. Fig. 355)
 44

- Elytra without distinct colour pattern (sometimes elytron becomes gradually paler from suture to epipleuron) 52

- 44. Male antenna with segments four to ten short (broader than long) (Fig. 588).

H. exochomoides Rég. (p. 300)

- Male antenna different (segments longer than broad or length and breadth of segments almost equal (Fig. 364) 45

- 45. Male antenna with somewhat enlarged segments (Figs 223, 364) 46

- Male antenna unmodified (segments sometimes very indistinctly enlarged) (Figs 199–200) 49

- 46. Apical segment of male antenna broad, with a distinct apical extension (Fig. 364).

H. fernandoi n. sp. (p. 236)

- Apical segment of male antenna narrower, lacks apical extension (Fig. 223) 47

- 47. Body globular (Fig. 221); male antenna broadest at segments eight to ten (Fig. 223).

H. scholaeus Guignot (p. 194)

- Body quite elongate (Fig. 355); male antennal segments almost equally broad or antenna broadest at segments four to seven 48

- 48. Male antenna almost evenly broad (Fig. 357); penis broad (Fig. 359).

H. noumeni Bil. & Rocchi (p. 235)

- Male antennae broadest at segments four to seven (Fig. 370); penis narrower (Fig. 371).

H. glaber Guignot (p. 238)

- 49. Separate elytral punctures provided with a minute, clearly visible scale (50 × magnification).

H. brevipilis Guignot (p. 196)

- Separate elytral punctures nude (50 × magnification) . . . 50
 (Note! Separation of species at points 50-51 very tentative - synonymy cannot be excluded)

- 50. Penis almost evenly broad for a long distance (Fig. 201).

H. confossus Guignot (p. 185)

- Penis narrows quite evenly towards apex (Fig. 212) . . . 51

- 51. Pronotum anteriorly often distinctly darkened (Fig. 208); curved apex of penis generally shorter (Fig. 213).

H. pescheti Omer-Cooper (p. 189)

- Pronotum anteriorly not distinctly darkened (Fig. 215); curved apex of penis longer (Fig. 219).
H. postremus Guignot (p. 193)
- 52. Ventral outline of penis in basal half distinctly expanded (Fig. 401).
H. sanfilippo Bil. & Rocchi (p. 249)
- Ventral outline of penis in basal half not expanded (eg. Fig. 170) 53
- 53. Male antenna modified, with enlarged segments (Figs 193, 376) 54
- Male antenna not modified, slender (male variation of *H. parvulus* apically with weakly enlarged segments) (Figs 167–168) 57
- 54. Body globular (Fig. 191); male antenna broadest at segments seven to nine (Fig. 193).
H. fulvicollis Guignot (p. 183)
- Body elongated (Fig. 374); broad segments of male antenna differently arranged (Figs 175, 376, 392) 55
- 55. Male antenna broadest at segments five to seven (Fig. 376).
H. oblongiusculus Rég. (p. 241)
- Male antenna broadest at segments four to eight (Fig. 175) 56
- 56. Larger species (length 2.32 mm); male antenna (Fig. 175).
H. spadix Guignot (p. 178)
- Small species (length 2.00–2.18 mm); male antenna (Fig. 392).
H. occidentalis Guignot (p. 247)
- 57. Penis with a long, narrow apical part (Fig. 272) 58
- Apical part of penis short (Fig. 169) 60
- 58. Body oblong (Fig. 254); downwards curved penis apex long (Fig. 259).
H. absonus Guignot (p. 206)
- Body globular (Fig. 269); downwards curved penis apex short (Fig. 273) 59
- 59. Small species (length 1.94–2.16 mm); dorsal side of body submat, microsculptured.
H. abraeoides Rég. (p. 211)
- Larger species (length 2.42 mm); dorsal side of body rather shiny, although with microsculpture.
H. piceus Guignot (p. 213)
- (Note! From point 60 onwards determination very tentative.)
- 60. Body oblong (Fig. 335) 61
- Body globular (Fig. 186) 62
- 61. Head frontally obtuse (Fig. 336); body elongate (Fig. 335); penis slender (Fig. 338).
H. oblongus Omer-Cooper (p. 229)

- Head frontally generally rounded (Fig. 165); body broader (Fig. 164); penis broader (Fig. 169). **H. parvulus** Rég. (p. 174)
- 62. Head foremargin reaches eyes (Fig. 159); penis medially almost parallel-sided (Fig. 161). **H. vicinus** Guignot (p. 172)
- Head foremargin reduced at eyes (Fig. 181); penis narrows slightly towards apex medially (Fig. 183) 63
- 63. Apical hook of paramere robust (Fig. 185). **H. granosus** Guignot (p. 179)
- Apical hook of paramere pointed, less robust (Fig. 190). **H. pyrrus** Guignot (p. 181)

For descriptions of species, see p. 172.

Species group 5 (sp.gr. *balfourbrownei*)

Length of body: 3.46–4.00 mm, breadth: 2.08–2.24 mm. Body somewhat elongated. Without distinct colour pattern.

Head: Frontal outline of head rounded. Head frontally in middle with fine margin (Fig. 620). Male antenna distinctly modified (with enlarged segments) (Fig. 621). Palpi simple.

Ventral side: Stridulatory apparatus absent.

Legs: Male protarsal claws simple. Third segment of male protarsi asymmetric (Fig. 622).

Male genitalia: Penis slender, apically obtuse (Fig. 623). Paramere hooked. Apical part of paramere strongly bent forwards (Fig. 625).

A monobasic species group (see below under Note!), known only from Malaysia (Oriental region).

The character, elytral punctures coarsest posteriorly on disc, is most probably an apomorphous character of this species group.

Note! With some hesitation I also include *H. semirufus* Zimm. in this subgroup although the male of this species is unknown. Female characters fit quite well with what is diagnostic for *H. balfourbrownei* n.sp., except that the *H. semirufus* female has a truncate elytral apex (Fig. 630). As long as the male of *H. semirufus* is unknown, its position remains unclear.

For description of species, see p. 310.

Species group 6 (sp. gr. *pumilus*)

Length of body: 1.74–2.26 mm, breadth: 0.96–1.38 mm. Shape of body varies between globular and parallel-sided depending on species. Dorsal aspect of body without distinct colour pattern.

Head: Between eyes, rounded; medially generally somewhat straightened. Frontal margin always present but at eyes always reduced. Visible only medially, sometimes very indistinct and hardly discernible (Figs 639, 651). Both sexes with unmodified antenna and palpi.

Ventral side: Without stridulatory apparatus.

Legs: Male protarsal claws simple, unmodified.

Male genitalia: Penis always with a distinct apex provided with a strongly curved tip (Figs 642, 667). Paramere apically always hooked and near apex with a distinct fold (Fig. 655).

Six species are recognized in this species group. Five species have an Oriental range, while one species occurs in Australia.

I believe that this species group is a monophyletic unit, however characterized by the uncertain synapomorphy: Small body size. Monophyly is supported by the fact that all species in this subgroup have a basically similar penis provided with a distinct apex on a different level than the basal part of the penis. A similar structure lacking in outgroups.

Key to species

1. Penis apex very strongly bent (apex points almost at base of penis) (Fig. 667). 2
- Penis apex less strongly bent (apex points almost straight downwards (Figs 635, 642). 3
2. Body almost parallel-sided (Fig. 663); apex of penis almost evenly broad (Fig. 666). **H. parallelus** Sharp (p. 325)
- Body quite globular (Fig. 657); apex of penis narrows slightly anteriorly (Fig. 660). **H. pisiformis** n.sp. (p. 323)
3. Elytral punctation coarse, quite dense. **H. saundersi** n.sp. (p. 321)
- Elytral punctation rather fine to very fine, rather sparse to sparse. 4
4. Body quite globular (Fig. 644); apex of penis with edged outline (Fig. 647). **H. laosensis** n.sp. (p. 319)
- Body somewhat elongate (Fig. 631); apex of penis with rounded outline (Fig. 641). 5
5. Apex of penis almost parallel-sided, longer (Fig. 634). **H. pudicus** (Clark) (p. 314)
- Apex of penis narrows towards extreme apex, short (Fig. 641). **H. pumilus** Sharp (p. 318)

For description of species, see page 314.

Species group 7 (sp.gr. *gabonicus*)

Length of body: 3.00–3.60 mm, breadth: 2.00–2.26 mm. Shape of body fairly globular to somewhat elongated (Figs 681, 689). Both unicoloured species and species with dorsal colour pattern are represented in the species group.

Head: Male with frontal outline medially straight to slightly rounded. Margined from eye to eye except in one species where margin reduced, not discernible at eyes (Figs 671, 682). Frontal outline of female head rounded. Male antenna quite slender, almost unmodified (Fig. 673) or with distinctly enlarged segments (Fig. 683). Male maxillary palpus always modified, flattened, in one species triangle-shaped (Figs 676, 684).

Ventral side: Without stridulatory apparatus.

Legs: Male protarsal claws symmetric, simple or extended (Fig. 677).

Male genitalia: Principally as in species group 4. Penis quite slender, apically quite evenly curved, tip pointed (Fig. 686). Paramere with distinct hook (Fig. 695).

Three species are recognized in this subgroup, all of which occur in Africa.

Outgroup-comparison highly indicates apomorphy of modified male maxillary palpus. Thus this feature, exhibited in *Hydrovatus* only by these three species, is probably a synapomorphy, and the species group is accordingly monophyletic.

Key to species

1. Male antenna quite slender, practically unmodified (Figs 673–674). **H. gabonicus** Rég. (p. 327)
- Male antenna distinctly modified, with enlarged segments (Fig. 691). 2
2. Male maxillary palpus triangle-shaped, with sharp corners (Fig. 684). **H. latipalpis** n. sp. (p. 330)
- Male maxillary palpus not triangle-shaped, apically pointed but sides rounded (Fig. 692). **H. macrocerus** Rég. (p. 331)

For description of species, see page 327.

Species group 8 (sp.gr. *rocchii*)

Externally very similar to species group 7.

Length of body: 3.38 mm, breadth: 2.10 mm. Body fairly globular (Fig. 696). Body without distinct colour pattern.

Head: Male head medially straight, margined from eye to eye (Fig. 697). Male antenna distinctly modified, with enlarged segments (Fig. 698). Male maxillary palpus simple.

Ventral side: Stridulatory apparatus absent.

Legs: Male protarsal claws symmetric, somewhat extended.

Male genitalia: As in species group 7.

Female: Unknown.

On species with African distribution is recognized in this species group (*H. rocchii* n.sp.).

Most probably an exceptional species, belonging to species group 7 or possibly species group 4. The only actual difference from species group 7 is the unmodified male maxillary palpus.

For description of species, see page 334.

Species group 9 (sp.gr. *acuminatus*)

Length of body: 2.00–2.72 mm, breadth: 1.20–1.70 mm. Shape of body quite uniform: quite globular to slightly elongated (Figs 702, 741). Body dorsally without distinct colour pattern. Rarely a very indistinct pattern may be discerned.

Head: Outline of frontal part of head rounded, medially often to a variable degree straightened. From eye to eye margined but margin often reduced. Sometimes only indistinct rudiments of margin can be discerned (Figs 748–750). Male antenna and palpi always simple, not with enlarged segments (Fig. 751).

Ventral side: Without stridulatory apparatus.

Legs: Male protarsal claws simple.

Male genitalia: Penis generally more or less straight, in a few species apex bent downwards (Figs 732, 719). Shape of penis apex variable. Apex of paramere hooked. Apical hook sometimes reduced or somewhat extended (Figs 746, 713).

Eight species are recognized in this species group with a comparatively wide range: Africa, the Oriental region, Australia and Micronesia. Representatives of this species group are also known from areas in the southern Palearctis: Turkey, Iraq, China, South Japan.

The status of this species group is unclear and needs further study. Possibly a paraphyletic group, but similar details in the shape of the

penis apex, exhibited by many species in the subgroup, may provide a synapomorphy of the subgroup. Further splitting may become necessary?

Key to species

1. Penis almost evenly broad, apically with a broad but quite short, sharp-cornered extension (Fig. 752).
H. acuminatus Motsch. (p. 351)
 - Penis apex different. 2
2. Penis becomes broader towards well-defined, quite narrow apex (Fig. 711) 3
 - Penis almost evenly broad or narrows gradually towards apex (Figs 744, 705) 4
3. Tip of penis obtuse (Fig. 712); paramere apex distinctly extended (Fig. 713).
H. fasciatus Sharp (p. 339)
 - Tip of penis pointed (Fig. 719); paramere apex with only slight extension (Fig. 720).
H. irianensis n.sp. (p. 342)
4. Penis apically curved inwards slightly posterior apex (Fig. 705).
H. ovalis Sharp (p. 336)
 - Penis not curved inwards posterior to apex. 5
5. Apical hook of paramere short, weakly developed (Fig. 746).
H. baptus Guignot (p. 349)
 - Apical hook of paramere long, well developed (Fig. 740). . . 6
6. Extreme apex of penis narrow (Fig. 724).
H. reclusus Guignot (p. 343)
 - Apex of penis broad (Fig. 731). 7
7. Apex of penis slightly curved downwards (Fig. 739); penis posterior to apex distinctly enlarged (Fig. 738).
H. schawalleri n.sp. (p. 348)
 - Apex of penis straight (Fig. 732); penis posterior to apex not enlarged (Fig. 731).
H. collega Guignot (p. 345)

For description of species, see page 336.

Species group 10 (sp.gr. *parallelipennis*)

Length of body: 3.24–4.40 mm, breadth: 1.88–2.52 mm. Body oval or almost parallel-sided (Figs 756, 769). Unicoloured species, except one species which often has a quite distinct colour pattern.

Head: Frontal outline rounded, medially generally straightened. Margined, but margin often reduced (broken in middle or reduced close to eyes) (Figs 757, 771). Male antenna simple, not modified (Fig. 758). Palpi simple.

Ventral side: Stridulatory apparatus absent.

Legs: Protarsal claws simple, except in the male of one species: claws distinctly thickened, symmetric (Fig. 765).

Male genitalia: Penis principally similar throughout subgroup. Basally on each side with a strengthening lobe and apex quite long and somewhat curved downwards (Fig. 760). Extreme tip of penis quite narrow but obtuse (Fig. 766). Paramere apex with a distinct hook (Fig. 761).

Five species are recognized in this species group known only from the Ethiopian region.

Most probably a monophyletic species group defined by probable synapomorphy (narrow but obtuse apex of penis).

Key to species

1. Body oval (Fig. 756). 2
- Body almost parallel-sided (Fig. 769). 3
2. Large species (length 3.60–4.20 mm); male protarsal claws thickened (Fig. 765); penis narrowing unevenly towards apex (Fig. 766).
H. nimbaensis Guignot (p. 361)
- Smaller species (length 3.24–3.40 mm); male protarsal claws simple; penis narrows quite evenly towards apex (Fig. 759).
H. niokolensis Guignot (p. 359)
3. Penis with a basal expansion (Fig. 785).
H. vividus Guignot (p. 368)
- Penis lacks basal expansion (Fig. 782).
4. Body broad (Fig. 779); long apex of penis distinctly bent downwards (Fig. 782). **H. mollis** n.sp. (p. 366)
- Body narrower (Fig. 769); long apex of penis only weakly bent downwards (Fig. 776). **H. parallelipennis** Rég. (p. 363)

For description of species, see pages 359.

Species group 11 (sp.gr. *oblongipennis*)

Length of body: 1.92–5.02 mm, breadth: 1.20–3.16 mm. Body shape varies between quite globular and somewhat elongated (Figs

990, 937). Posterior half of body rarely somewhat pointed (Fig. 937). Most species unicoloured – species with dorsal colour pattern being scarce.

Head: Frontal outline of head varies between evenly rounded and rounded but medially distinctly straightened. Always margined but margin often reduced: not discernible at eyes; indicated only by indistinct medial rudiments; broken in middle (Figs 788, 810, 826). Male antenna slender, not modified (Fig. 789), except in one species, which has indistinctly enlarged segments (Fig. 1064). Male palpi always simple, unmodified.

Ventral side: Provided with stridulatory apparatus. In most species apparatus consists of numerous minute ridges forming a file, located approximately between metathorax and metacoxal plate (Fig. 3). In many species apparatus modified or reduced: Ridges may be enlarged and their number reduced. The most extreme file has only a few ridges (Figs 1031–1032). In one species only fine striae indicate a file, and in three species the file has disappeared. Their placement in this species group is supported by a number of other features exhibited, which are characteristic for the subgroup. Other solutions would be difficult to defend.

Legs: Male protarsal claws simple, unmodified. In many species modified and symmetric or asymmetric. Modification is mostly exhibited as a basally thickened and strongly bent claw (Fig. 820).

Male genitalia: Shape of penis variable. Often quite robust and apex bent downwards (Figs 840, 897). Apical outline of penis varies between truncate and sharply pointed (Figs 1085, 806). Penis of many species provided with strengthening lateral lobes (Fig. 848). In dorsal view penis varies between quite broad to very broad (Fig. 1021). Penis apex in one species with lateral hairs (Fig. 891), and, in a few species, penis apex “hammer”-shaped (Fig. 981). Paramere apically always hooked (Fig. 794). Hook sometimes reduced (Fig. 887) or sharp and almost straight (Fig. 1087).

Distribution: Representatives of the species group are distributed in the Ethiopian region, the Oriental region, Australia and in the southwestern Palearctis and southern Japan.

No synapomorphous characters can be demonstrated for this group. Accordingly, I find it probable that it is a paraphyletic group which urgently need further examination.

Key to species (to be considered tentative)

Species occurring outside Africa are marked with their approximate range in brackets. Two species are excluded from the key because only the female has been available for examination. Their location in this species group is primarily based on study of female specimens, as well as statements in papers dealing with the species in question.

H. bedoanus Bruneau de Miré & Legros (p. 422): probably close to *H. oblongipennis*.

H. seydeli Guignot (p. 478): according to original description (GUIGNOT 1953c) close to *H. bredoi*.

1. Stridulatory apparatus absent (sometimes indicated by a few minute striae). 2
 - Provided with stridulatory apparatus (always with minute ridges or tubercles) (Figs 3, 4, 1031–1032). 5
2. Penis apex obtuse (Fig. 1059). **H. testudinarius** Rég. (p. 467)
 - Penis pointed or quite pointed (Figs 862, 1008). 3
3. Penis apex only slightly bent downwards (Fig. 863) (Oriental region). **H. rufescens** Motsch. (p. 397)
 - Penis apex strongly bent downwards (Figs 995, 1009). 4
4. Large species, length of body over 3 mm; penis apex robust (Fig. 995). **H. suturalis** Bil. & Ped. (p. 438)
 - Smaller species, length of body under 3 mm; penis apex weaker (Fig. 1009). **H. regimbarti** Zimm. (p. 444)
5. Parameral hook straight and sharp (Fig. 936); male protarsal claws strongly modified (Fig. 933). **H. mundus** Omer-Cooper (p. 417)
 - Parameral hook not straight and sharp; if straight, male protarsal claws simple 6
6. Penis apex almost trifid (Fig. 1071); paramere hook weakly developed (Fig. 1073). **H. heterogynus** Zimm. (p. 471)
 - Aedeagus different 7
7. Penis ends abruptly, apex broad and straight (Fig. 1085). **H. bredoi** Gschw. (p. 476)
 - Penis apex different 8
8. Penis apex quite broad and blunt (Fig. 885); penis apex almost straight (Fig. 886); paramere hook weakly developed (Fig. 887). **H. otiosus** Guignot (p. 404)
 - Aedeagus different 9

9. Penis narrows almost evenly towards obtuse apex (dorsal view) (Fig. 986); body dorsally with colour pattern (Fig. 983).

H. sobrinus Omer-Cooper (p. 435)

 - Penis different; body dorsally rarely with colour pattern . . . 10
10. Penis broad, narrows almost evenly towards long, moderately curved apex; penis ventrally with a few stiff hairs (Figs 806–807).

H. insolitus Guignot (p. 377)

 - Penis different 11
11. Penis laterally in basal half with strengthening lobes (Figs 813, 832). 12
 - Penis laterally without distinct strengthening lobes (Figs 800, 1015). 30
12. Penis apex “hammer”-shaped (Fig. 975). 13
 - Penis apex not “hammer”-shaped 15
13. Apical half of body quite pointed (Fig. 977); penis basally broad (Fig. 980); outline of penis apex (Fig. 981).

H. compactus Sharp (p. 433)

 - Apical half of body rounded (Fig. 971); penis basally narrower (Fig. 974); outline of penis apex different (Figs 969, 975). . . 14
14. Penis apex dorsally strongly sinuate (Fig. 975).

H. stappersi Guignot (p. 432)

 - Penis apex dorsally weakly sinuate (Fig. 969).

H. nigricans Sharp (p. 429)
15. Male protarsal claws simple, not distinctly modified (Fig. 869) 16
 - Male protarsal claws modified (often asymmetric) (Figs 838, 820). 18
16. Apex of penis long, ventral outline straight, extreme apex distinctly curved downwards (Fig. 814). **H. gravis** Guignot (p. 380)
 - Apex of penis shorter, slightly curved downwards (Fig. 856) (Oriental region, Australia) 17
17. Penis abruptly expanded posterior to apex (Fig. 855) (Oriental region). **H. picipennis** Motsch. (p. 395)
 - Penis gradually expanded posterior to apex (Fig. 870) (Australia) **H. weiri** n.sp. (p. 399)
18. Outline of lateral strengthening lobe of penis straight (Fig. 879).

H. obsoletus Peschet (p. 402)

 - Outline of lateral strengthening lobe of penis distinctly curved (Fig. 823). 19
19. Penis apex with distinct lateral flaps (Figs 916, 926). . . 20

- Penis apex lacks distinct lateral flaps (Fig. 901) 21
20. Lateral flaps of penis apex project forwards (Fig. 926); male protarsal claw more slender (Fig. 923) (Philippines).
H. naviger n.sp. (p. 416)
- Lateral flaps of penis apex project downwards (Fig. 916); male protarsal claw thick (Fig. 914) (New Guinea, Australia).
H. nigrita Sharp (p. 412)
- (Note! Determination between point 20–29 is very tentative.)
21. Head foremargin complete or near eyes broken for a very short distance (Figs 905, 938) 22
- Head foremargin never complete, always broken for quite a long distance near eyes (Figs 818, 826–827). 27
22. Penis apex somewhat undulate (Fig. 909).
H. omentatus Guignot (p. 411).
- Penis apex evenly curved or rarely very indistinctly undulate (Figs 892, 942) 23
23. Penis apex laterally with distinct hairs (Fig. 891).
H. perrinae Bil. & Ped. (p. 406)
- Penis apex without distinct lateral hairs (Fig. 941) 24
24. Large species (length 4.08–5.02 mm); lateral strengthening lobes of penis clearly visible from above (Fig. 941).
H. oblongipennis Rég. (p. 419)
- Smaller species (max. length 3.92 mm); lateral strengthening lobes of penis not or hardly visible from above (Fig. 900) 25
25. Paramere hook well developed (Fig. 903).
H. lintrarius Guignot (p. 408)
- Paramere hook weakly developed (Fig. 954) 26
26. Body broad (Fig. 948); penis not curved inwards before slender apex (Fig. 952).
H. guignotianus Guignot (p. 425)
- Body slightly elongated (Fig. 955); penis weakly curved inwards before quite slender apex (Fig. 959).
H. pederzanii Bil. & Rocchi (p. 427)
27. Penis apex almost straight, ventrally with hairs (Fig. 822).
H. hamatus Guignot (p. 382)
- Penis apex distinctly bent downwards, ventrally nude (Fig. 832) (Oriental region, Australia) 28
28. Penis narrows evenly towards apex (Fig. 831) (Oriental region).
H. castaneus Motsch. (p. 385)
- Penis slightly expanded posterior to apex (Fig. 839) (Oriental region, Australia) 29

29. Penis often narrower (Fig. 847) (Oriental region).
 H. bonvouloiri Sharp (p. 392)
 – Penis often broader (Fig. 839) (Oriental region, Australia).
 H. rufoniger (Clark) (p. 388)
 – Apex of penis (Fig. 840) (Oriental region).
 H. r. rufoniger (Clark)
 – Apex of penis (Fig. 842) (Australia). **H. r. politus** Sharp
 30. Penis long, quite slender, apically quite obtuse (Figs 799, 1053)
 31
 – Penis shorter, broader, apically more pointed (Figs 1000, 1021)
 34
 31. Apex of penis without lateral flaps (Fig. 800) (SW Palearctis).
 H. cuspidatus (Kunze) (p. 372)
 – Apex of penis with small lateral flaps (Fig. 1066) 32
 32. Penis expands distinctly towards apex (Fig. 1065); stridulatory
 apparatus with approximately 20 clearly visible ridges (50
 x magnification). **H. galpini** Omer-Cooper (p. 469)
 – Penis does not expand distinctly towards apex (Fig. 1046); stri-
 dulatory apparatus with about 30 ridges or more 33
 33. Penis narrower (Fig. 1053); stridulatory apparatus with nume-
 rous minute ridges; small species (length 2.28–2.74 mm).
 H. reticuliceps Rég. (p. 463)
 – Penis quite broad (Fig. 1046); stridulatory apparatus with about
 30 minute but clearly visible ridges (50 x magnification); larger
 species (length 2.72–3.02 mm). **H. facetus** Guignot (p. 460)
 34. Paramere apex straight (Fig. 1002). **H. simoni** Rég. (p. 441)
 – Paramere apex curved (Figs 1080, 1016) 35
 35. Penis apex long, slender, hook-shaped (Fig. 1079).
 H. impunctatus Guignot (p. 472)
 – Penis apex different 36
 36. Dorsal portion of penis apex projects forwards (Fig. 1041).
 H. dentatus Bil. & Ped. (p. 459)
 – Dorsal portion of penis apex bent downwards (Fig. 1015)
 37
 (Note! Determination very tentative from point 37 onwards.)
 37. Body quite broad, its posterior half somewhat pointed (Fig.
 1011); male genitalia (Figs 1014–1016).
 H. nefandus Omer-Cooper (p. 448)
 – Posterior half of body rounded (Fig. 1017); male genitalia diffe-
 rent 38

- For description of species, see pages 368.

Most probably a monophyletic subgroup of species belonging to the *Hydrovatus* characterized by the possession of a stridulatory apparatus. The enlarged penis apex, unique for this species group, is

an apomorphous character which unifies the five species into a monophyletic group.

Key to species (to be regarded as tentative)

1. Ventral outline of penis apex truncate (Figs 1137–1138); body quite globular (Fig. 1130). **H. villiersi** Guignot (p. 489)
 - Ventral outline of penis apex not or only somewhat truncate (Figs 1096, 1128); if penis apex truncate, body somewhat elongated (Fig. 1122) 2
2. Body quite globular (Fig. 1091); penis apex slender (Fig. 1095). **H. vulpinus** n.sp. (p. 480)
 - Body somewhat elongated (Fig. 1098); apex of penis broader (Fig. 1102) 3
3. Penis narrows quite abruptly to apex (Fig. 1128). **H. contumax** Guignot (p. 488)
 - Penis narrows evenly or almost evenly to apex (Fig. 1120) . . . 4
4. Penis short, robust, strongly curved (Fig. 1120); elytral punctures between suture and discal row of punctures very fine. **H. niger** Gschw. (p. 485)
 - Penis longer, quite slender, moderately curved or almost straight (Figs 1110, 1103); elytral punctures between suture and discal row of punctures somewhat coarser 5
5. Apical half of penis narrow (lateral view); ventral outline of penis partly straight (Fig. 1103); male protarsal claws almost unmodified, slightly extended but almost symmetric (Fig. 1101). **H. unguiculatus** n.sp. (p. 481)
 - Apical half of penis broader (lateral view); ventral outline of penis curved (Fig. 1110); male protarsal claws distinctly modified, not extended but strongly asymmetric (Fig. 1108). **H. mucronatus** Rég. (p. 482).

For description of species, see pages 480.

Species group 13 (sp.gr. *pulcher*)

Length of body: 3.76–5.28 mm, breadth: 2.40–3.56 mm. Body shape varies between globular and somewhat elongated (Figs 1223, 1191). Colour pattern of body variable. Unicoloured species and species with a more or less distinct colour pattern are represented in this subgroup (Figs 1223, 1141).

Head: Frontally rounded, medially somewhat straightened. From eye to eye margined (Fig. 1142). Male antenna and palpi always unmodified.

Ventral side: Provided with stridulatory apparatus with minute ridges (approximately as in Fig. 3).

Legs: Protarsal claws of male generally simple. In one species I have observed slight asymmetry (see below) (Fig. 1221).

Male genitalia: Penis medially broad to fairly broad, narrows apically, and extreme apex mostly distinctly curved downwards (Figs 1188–1189). Paramere apex distinctly hooked (Fig. 1190).

Fourteen species are recognized in this species group, which has an Ethiopian distribution.

A quite uniform subgroup of *Hydrovatus*, which is particularly characterized by large body and penis shape. Possibly a paraphyletic group, because I cannot demonstrate any apomorphs in common for the different species.

Key to species (to be considered tentative)

H. uniformis (Fairmaire) (p. 516) is excluded from the key because the single male examined lacked penis. Possibly this species can be separated from the other species in this group by its exhibiting slightly asymmetric male protarsal claws (Fig. 1221). This feature is, however, difficult to see and may easily be overlooked.

1. Large species (length 3.76–4.84 mm) 2
- Larger species (length 5.20–5.28 mm) (male unknown).
H. pilula Guignot (p. 519)
2. Extreme penis apex slightly bent downwards (Fig. 1182) . . . 3
- Extreme penis apex distinctly curved downwards (Figs 1189, 1164) 4
3. Apical hook of paramere long (Fig. 1177).
H. pulcher Gschw. (p. 503)
- Apical hook of paramere shorter (Fig. 1183).
H. vulneratus n.sp. (p. 505)
4. Penis narrows almost evenly towards apex (Figs 1214, 1169)
. 5

- Penis narrows more abruptly towards apex (Figs 1195, 1207)
 7
- 5. Apical hook of paramere long (Fig. 1171); penis broad (Fig. 1169).
H. cruentatus Kolbe (p. 501)
- Apical hook of paramere shorter (Fig. 1217); penis narrower (Fig. 1214) 6
- 6. Male elytral reticulation discally clearly visible; body colour almost black; generally larger species (length 4.40–4.60 mm).
H. confusus Rég. (p. 515)
- Male elytral reticulation discally indistinct; body colour dark ferrugineous; generally smaller species (length 3.96–4.48 mm).
H. frater Rég. (p. 512)
- 7. Penis narrows abruptly to apex (Fig. 1144); elytra with distinct colour pattern (Fig. 1141) 8
- Penis narrows more gradually to apex (Figs 1207, 1195); elytra generally with more vague colour pattern 9
- 8. Penis apex with ventral outline uneven (Fig. 1145); penis apically broad (Fig. 1144).
H. balneator Guignot (p. 494)
- Penis apex with ventral outline almost straight (Fig. 1151); penis apically slightly narrower (Fig. 1150).
H. sitistus Omer-Cooper (p. 496)
- 9. Body broad, with quite distinct colour pattern (Fig. 1154); downwards bent penis apex quite short (Fig. 1158).
H. bullatus Guignot (p. 498)
- Body more elongated, without any or with very indistinct colour pattern (Figs 1185, 1204); downwards bent penis apex longer (Fig. 1189) 10
- 10. Big species (length 4.04–4.84 mm) 11
- Smaller species (length 3.80–4.00 mm) 12
- 11. Big species (length 4.36–4.84 mm); apical half of penis moderately bent downwards (Fig. 1189).
H. badeni Sharp (p. 506)
- Smaller species (length 4.04–4.32 mm); apical half of penis strongly bent downwards (Fig. 1164).
H. wittei n.sp. (p. 500)
- 12. Penis for a long distance almost parallel-sided (Fig. 1207); penis apex broader (Fig. 1208).
H. soror n.sp. (p. 514)
- Sides of penis distinctly curved (Fig. 1195); penis apex narrow (Fig. 1195).
H. leonardi Bil. & Ped. (p. 510)

For description of species, see pages 494.

Species group 14 (sp.gr. *confertus*)

Length of body: 2.26–3.10 mm, breadth: 1.48–1.94 mm. Body dorsoventrally somewhat flattened, fairly globular to somewhat elongated. Body sometimes oval (Figs 1226, 1293, 1306). Unicoloured throughout species group.

Head: Frontal outline rounded, medially often straightened, sometimes outline slightly uneven. Margined, but margin more or less reduced, sometimes very indistinct (only rudiments discernible) (Figs 1244, 1301). In *H. sumatrensis* margin almost complete (Fig. 1307). Male antenna slender, unmodified or with modifications (enlarged segments arranged differently depending on which species) (Figs 1308, 1238, 1257). Palpi simple.

Ventral side: Generally provided with stridulatory apparatus or in two species with a glabrous area (regarded as a modification) at site of apparatus (one variation with a strongly rudimentary stridulation file). Two species with male totally lacking stridulatory apparatus or glabrous area (regarded as a probable loss of a once-possessed feature). Appearance of stridulatory apparatus variable: From about ten ridges to numerous minute ridges; rarely rudimentary.

Legs: Male protarsal claws simple.

Male genitalia: Penis with an apically finely hooked apex (Fig. 1240). Paramere apically hooked (Fig. 1241).

Fifteen species are recognized in this predominantly Oriental species group, but there are records from China.

A morphologically quite homogenous species group, which probably also is monophyletic. The appearance of the penis apex, deviating from other *Hydrovatus* species, may be a synapomorphous character supporting the monophyly.

Key to species (to be considered tentative)

H. punctipennis Motsch. is excluded from the key because only the female is known (p. 549).

1. Male ventrally without stridulatory apparatus or glabrous area 2
- Male ventrally with stridulatory apparatus (rarely rudimentary) or glabrous area 3
2. Small species (length 2.44–2.50 mm); body-shape quite globular (Fig. 1287); penis narrows unevenly to obtuse apex (Fig. 1290).

***H. jaechi* n.sp. (p. 543)**

- Bigger species (length 2.90–3.02 mm); body-shape elongated (Fig. 1293); penis narrows gradually to obtuse apex (Fig. 1296).
H. agathodaemon n.sp. (p. 544)
- 3. Male antenna with segments 4–11 strongly enlarged (Fig. 1257).
H. samuelsoni n.sp. (p. 533)
- Male antenna different, slender or less strongly enlarged (Figs 1228, 1283) 4
- 4. Male at region of stridulatory apparatus with a distinct glabrous area (rarely with a rudimentary file) 5
- Stridulatory apparatus consists of separate ridges 6
- 5. Male antenna with segments 3–8 somewhat enlarged (Fig. 1283); body globular (Fig. 1281) (rarely with a rudimentary stridulation file).
H. enigmaticus n.sp. (p. 541)
- Male antenna practically with non-enlarged segments (Fig. 1276); body somewhat elongated (Fig. 1274) (never with rudimentary file).
H. opacus Sharp (p. 538)
- 6. Hook of penis apex projecting somewhat forewards (Fig. 1304).
H. grabowskyi Rég. (p. 545)
- Hook of penis apex projects downwards (Fig. 1253) 7
- 7. Male antenna slender, not modified (Figs 1228, 1270) 8
- Male antenna with at least slightly enlarged segments (Figs 1245, 1264) 10
- 8. Penis ventrally near apex with hairs (Fig. 1310).
H. sumatrensis Sharp (p. 547)
- Penis ventrally near apex nude (Fig. 1272) 9
- 9. Small species (length 2.40–2.68 mm); body fairly globular (Fig. 1226).
H. sinister Sharp (p. 521)
- Larger species (length 3.06 mm); body somewhat elongated (Fig. 1268).
H. rangoonensis Guignot (p. 537)
- 10. Body broad (Fig. 1262); male antenna almost unmodified (Fig. 1264).
H. pinguis Rég. (p. 535)
- Body more elongated (Fig. 1249); male antenna with distinctly enlarged segments (Figs 1232, 1251) 11
- 11. Male antenna with segments 5–11 almost equally broad (Fig. 1245).
H. stridulus n.sp. (p. 529)
- Male antenna with differently arranged enlarged segments (Figs 1238, 1251) 12
- 12. Male antenna broadest at segments 4–6 (Fig. 1251).
H. obtusus Motsch. (p. 530)
- Male antenna broadest between segments 6–8 (Fig. 1238) 13

13. Apex of penis almost straight (Fig. 1234); penis narrows quite abruptly towards apex (Fig. 1233); elytral punctation fairly dense; outline of paramere apex rounded (Fig. 1235).

H. confertus Sharp (p. 524)

- Apex of penis curved (Fig. 1240); penis narrows quite evenly towards apex (Fig. 1239); elytral punctation sparse; outline of paramere apex somewhat obtuse (Fig. 1241). **H. subtilis** Sharp (p. 526).

For description of species, see pages 521.

Species group 15 (sp.gr. *clypealis*)

Length of body: 2.30–2.64 mm, breadth: 1.46–1.66 mm. Body fairly globular, without colour pattern.

Head: Male head frontally slightly extended, medially almost straight, and from eye to eye margined (Fig. 1316). Female head with frontal outline rounded. Male antenna with segments three to ten quite short (Fig. 1317). Palpi simple.

Ventral side: Male provided with stridulatory apparatus, which consists of approximately 15 ridges.

Legs: Male protarsal claws simple.

Male genitalia: Penis with extended narrow apex (Fig. 1320). Paramere apically not distinctly hooked, provided with minute tubercles (Fig. 1323).

One species is recognized in this subgroup and it has a western palearctic distribution (*H. clypealis* Sharp).

A deviating species of *Hydrovatus*, which is provided with a stridulatory apparatus, but which lacks a distinctly hooked paramere. This combination is unique in *Hydrovatus*. Minute tubercles on paramere apex is probably an apomorphous character.

For description of species, see page 551.

6.5. Descriptions of the species

Abbreviations used: m = male specimeu, f = female specimen.

6.5.1. Species group 1 (sp.gr. *pictulus*)

Hydrovatus pictulus Sharp

Figs 21-27, 42.

Hydrovatus pictulus Sharp, 1882a:323 (orig. descr.); BRANDEN, 1885:26 (faun.); SEVERIN, 1892:472 (list.); RÉGIMBART, 1895b:105 (descr., faun.); 1903:11 (faun.); ZIMMERMANN, 1920a:35 (faun., list.); GUIGNOT, 1959a:150, 157 (descr., faun.).