

The species of *Hydrochus*  
(Coleoptera; Hydrochidae; Hydrophiloidea)  
described from South America

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Abstract

*Typical specimens of the following species have been examined, figured and redescribed: Hydrochus metallipes KNISCH, 1920; H. ducalis KNISCH, 1921; H. secretus KNISCH, 1921; H. drakei KNISCH, 1920; H. purpureus KNISCH, 1920; H. variabilis KNISCH, 1921; H. argutus KNISCH, 1921; H. pumilio KNISCH, 1920; H. bruchi KNISCH, 1924; H. obscurus SHARP, 1882; H. corruscans BRUCH, 1915; H. richteri BRUCH, 1915; H. pupillus ORCHYMONT, 1939.*

Résumé

*Des exemplaires typiques des espèces suivantes ont été examinés, illustrés et redécrits: Hydrochus metallipes KNISCH, 1920; H. ducalis KNISCH, 1921; H. secretus KNISCH, 1921; H. drakei KNISCH, 1920; H. purpureus KNISCH, 1920; H. variabilis KNISCH, 1921; H. argutus KNISCH, 1921; H. pumilio KNISCH, 1920; H. bruchi KNISCH, 1924; H. obscurus SHARP, 1882; H. corruscans BRUCH, 1915; H. richteri BRUCH, 1915; H. pupillus ORCHYMONT, 1939.*

Resumen

*Ejemplares típicos de las especies siguientes han sido examinados, ilustrados y redescritos: Hydrochus metallipes KNISCH, 1920; H. ducalis KNISCH, 1921; H. secretus KNISCH, 1921; H. drakei KNISCH, 1920; H. purpureus KNISCH, 1920; H. variabilis KNISCH, 1921; H. argutus KNISCH, 1921; H. pumilio KNISCH, 1920; H. bruchi KNISCH, 1924; H. obscurus SHARP, 1882; H. corruscans BRUCH, 1915; H. richteri BRUCH, 1915; H. pupillus ORCHYMONT, 1939.*

Introduction

This paper originated from a grant by the CONICET (Consejo nacional de Investigaciones científicas y técnicas), of Argentina, to study the collections of Neotropical Hydrophilidae kept at the Institut royal des Sciences naturelles de Belgique. When studying the genus

*Hydrochus* I found that the collection of A. D'ORCHY-MONT included types of nearly all the species described from South America, since the Belgian specialist had bought the Neotropical Hydrophilidae from the collection of A. KNISCH. As I had begun some inconclusive work on the type-material of the two species described by C. BRUCH, kept at the Museo argentino de Ciencias naturales (Buenos Aires), I borrowed these specimens to complete the study of the genus *Hydrochus* in South America, excepting the Patagonian Andes. Two species have been described from this last region; I have examined the type of *H. bruchi* KNISCH, 1924, but as it is a female, and as I have not seen any additional material, this can hardly be considered as a revision of the species. I have not seen any material of *H. stolpi* GERMAIN, 1902. In the light of present knowledge it is quite possible that these two species are synonyms; they require a separate study.

The genus *Hydrochus* comprises small (5 mm in length) to minute (2 mm) beetles, narrow and elongate in shape, with coarsely sculptured dorsum and with the venter covered by a dense hydrofuge pubescence. They are aquatic, but not swimmers; as far as known they live on floating plants such as *Azolla*. The shape is flat and narrow for Hydrophiloidea; the long, slender legs have no adaptations for swimming; the ventral pubescence does not extend to the femora, so that the ventral bubble of air is flat; all these features appear to be related to the mode of life. The maxillary palpi are short. The dorsal surface is usually covered by a thick crust, under which they often have bright, metallic-shining colours. They are sluggish in their motions, and when caught they usually remain motionless, which makes them resemble minute chips of rotten wood (personal field observation).

The elytra have a prominent humeral hump and ten well defined striae, densely punctured; there is no basal stria between first and second. The interstriae have small hair-bearing punctures, that under the stereo-microscope may appear as minute granules just on the limit of resolution. On the elytral disk the sculpture is usually regular; the interstriae appear more convex on the elytral declivity, while on the outer portion of the elytron the whole sculpture appears (in most species) irregular with respect to the discal. In the descriptions, interstriae 1st to 7th have been called "inner", and interstriae 8th to 11th "outer". On the inner face of the elytron there is a peculiar ridge (Fig. 14), which appears to be an elytron-locking structure. It corresponds with a deepening and coarsening of the striae punctures on the outer face; this appears to be a mere effect of mechanical reinforcement. No stridulating apparatus, such as appears in other genera of Hydrophilidae, has been found in *Hydrochus* under scanning electronmicroscope.

The South-American species show a remarkable uniformity of shape, of sculpture and of types of male genitalia when compared with, v.g., the European species. The described species have all dorsal sculptures composed of sunken punctures; only in a few species some raised granules are found on the pronotal sides. There is a distinct hump on the fifth elytral interstria (about the beginning of the elytral declivity), but this can be minute; no species with several pairs of distinct humps has been found. The ninth interstria usually forms a bulge at the point of the inner ridge, but this is never very large or abruptly raised.

Examination with scanning electronmicroscope has shown several features of interest, which shall be discussed in a forthcoming paper. Here it should be mentioned only that the translucent fenestrae that appear near the elytral apex do not appear to correspond with any external structure.

The general shape, as it has been mentioned, is rather uniform in the South-American species. Some variation is found, however, and it has been illustrated in figures 1 to 11. To describe the shape, a coefficient called for convenience "elytral Index" has been used:

$$\text{Elytral index} = EI = \frac{X^2}{Y^2 - Z^2}$$

where X = distance between humeral hump and maximal width of elytra

Y = maximal width of elytra

Z = humeral width

This index takes on values over 10 for the elongate *H. metallipes* (see Fig. 1), under 3 for the elongately oval *H. richteri* (Fig. 8). The values given for each species correspond to the mean value for the measured series.

A tentative analysis in principal components, using the direct measurements, gave a good separation of *H. metallipes*, some superposition of *H. ducalis*, *H. secretus* and *H. drakei* but a hopeless muddle for the other species. Morphometry does not appear to be a good technique for analysing population samples.

Some general points should be made about colour. The sternites are always black. The legs are (with two exceptions) testaceous, darkened at the apices of the femora and of the distal tarsite; the palpi are testaceous with a small apical darkening. The dorsum shows more variation. In most species there is some metallic sheen or iridescence. The term "sheen" has been employed when the bright colours produced by the "metallic patina" predominate in the observer's eye, while "iridescence" has been reserved for cases where the actual colour of the cuticle is dominant. The metallic sheen can produce practically every bright colour, but emerald green and gold-green appear to be the most common, with gold, bronze, purple and blue not rare. Colours vary with the angle of light; the bottom of the punctures is often a different colour from the ground. It must be stressed that differences in colour produced by the metallic sheen are not good diagnostic character. It is the presence/absence of metallic colours that may have importance, although some species show a remarkable diversity. It often happens that the elytra are only iridescent when the other dorsal surfaces have a strong sheen, or lack an iridescence when this is present on the rest of the dorsum.

It must be remembered as well that the state of the cuticle affects the appearance of metallic colours. A screen of deep melanine is needed to bring out a strong sheen with bright colours, and this may be lacking in immature individuals. Iridescence appears most often on testaceous or weakly melanized parts, a state which may or may not be due to incomplete cuticle hardening, according to cases. Immature individuals, of course, may present intermediate conditions.

Male genitalia are very simple, of the trilobed type, and give good characters for specific diagnosis. Those illustrated here have been mounted between glass slides; it is therefore possible that the drawings show some artificial broadening, especially in the aedoeagus, but it has been considered preferable to obtain a clear view of the apices of distal pieces.

#### Key to south-American species of *Hydrochus*

- 1 - Size large (over 4.5 mm). Dorsum grey with slight metallic iridescence. Femora black . . . . . 2
- 1' - Size usually under 4.5 mm. Femora testaceous save for dark apex . . . . . 3
- 2 - Shape very narrow. Elytral interstriae wider than striae on elytral disk. Ninth interstria not overhanging 10th. Femora iridescent . . . . . *H. metallipes* KNISCH, 1921
- 2' - Shape rather broad. Interstriae a little narrower than striae; 9th overhanging 10th. Femora not iridescent . . . . . *H. ducalis* KNISCH, 1920

- 3 - Size large, shape broad, sharply narrowed in posterior third. Pronotum coarsely and densely punctured, disk raised, depressions ill-defined. Third elytral interstria raised on elytral declivity; hump on 5th large, taking up 4th . . . . . *H. secretus* KNISCH, 1920
- 3' - If size is large, then the shape is not sharply narrowed in posterior third. Hump on 5th interstria moderate, small or absent . . . . . 4
- 4 - Size moderate to large (3.0-4.5 mm). Interstriae at least as wide as half the width of striae . . . . . 5
- 4' - Size small (rarely over 2.5 mm). Interstriae less than half the width of striae . . . 9
- 5 - Sides of pronotum coarsely granulated. Interstriae slightly narrower than striae, convex, the outer ones cost-shaped; 9th not overhanging 10th . . . . . *H. bruchi* KNISCH, 1924 (south-west of Argentina)
- 5' - Sides of pronotum not coarsely granulated . . . . . 6
- 6 - Pronotum flat, squarish, with shallow depressions. Interstriae about as wide as striae, 9th not overhanging 10th. Size up to 3.3 mm . . . . . *H. variabilis* KNISCH, 1920
- 6' - Pronotum narrowed in posterior third, with well-defined depressions . . . . . 7
- 7 - Striae on elytral disk with square punctures. Interstriae about half the width of striae, raised, 9th overhanging 10th in anterior half, both convex in posterior half. Males with inner posterior claw toothed . . . . . *H. purpureus* KNISCH, 1921
- 7' - Striae with round punctures. Interstriae as wide as striae or slightly narrower . . . 8
- 8 - Interstriae 3rd and 4th raised in front of hump on 5th; 9th overhanging 10th only behind humeral hump. Dorsum usually with bright colours . . . . . *H. obscurus* SHARP, 1882
- 8' - Interstriae 3rd and 4th not raised. Ninth interstria overhanging 10th in most of its length. Dorsum usually dark, weakly iridescent . . . . . *H. drakei* KNISCH, 1921
- 9 - Shape elongately oval. Head and scutellum with metallic sheen, pronotum and elytra testaceous. No hump on 5th interstria; 9th overhanging 10th . . . . . *H. richteri* BRUCH, 1915
- 9' - Shape narrow or moderately broad. Dorsum melanice, with or without metallic sheen . . . . . 10
- 10 - Elytral apices with crescent-shaped depression. Sides of pronotum finely granulated. Third interstria raised on disk; 9th overhanging 10th. Shape moderately broad. . . . . *H. argutus* KNISCH, 1920
- 10' - Elytral apices without depression. Third interstria flat on disk; 10th convex. Shape rather narrow . . . . . 11
- 11 - Sides of pronotum sinuate, smooth. Ninth interstria not overhanging convex 10th. Dorsum usually with bright metallic colours . . . . . *H. pupillus* ORCHYMONT, 1939
- 11' - Sides of pronotum straight, finely granulated. Ninth interstria overhanging cost-shaped 10th. Usually only the head with bright metallic colours . . . . . *H. pumilio* KNISCH, 1921

#### Redescription of species

##### *Hydrochus metallipes* KNISCH, 1920 (Figs 1, 12, 23)

1920 *Hydrochous metallipes* KNISCH, Arch. Naturgesch. 85 A (8) (1919) 1920: 56

Diagnosis: Large, narrow, elongate. Dorsum grey with slight iridescence. Femora black, tibiae testaceous, all with slight iridescence. Pronotum nearly square, with small, geminate anterior depressions (Fig. 12), weakly convex, sparsely punctured. Punctures on

elytral striae a little larger than pronotal ones, spaced by at least half their diameter. Interstriae on disk flat, wider than striae. Hump on fifth interstria minute; interstria 9th convex, not overhanging 10th. Male genitalia as in figure 23.

Description: Length: 4.7 - 5.6 mm (measured on typical series). Shape narrow and elongate. EI= 11.03 (6.94-14.22)

Dorsum of head, pronotum, scutellum and elytra of the same dark, dull grey, with slight iridescence, which sometimes appears only at the bottom of the punctures. Slight iridescence on femora (melanic), and on tibiae (testaceous), on the later less apparent due to lighter background. Tarsi testaceous, apex of each segment dark.

Punctures on head sparse, fine on clypeus, rather coarse on frons, here often restricted to the suture and to a pair of lines which run parallel to the inner edge of eyes. Pronotum almost square, with the sides very weakly convex, entire (Fig. 12). Depressions small; a pair of small geminate depressions replacing the single anteromedial depression found in most species of the genus. Disk not raised. Pronotal punctures about the size of those on frons. Elytral striae rather shallow, with round punctures slightly larger than the pronotal ones, spaced by the equivalent of 1/2 to 1 times their diameter; very regular save for sudden narrowing of 8th stria on lateral bulge. Inner interstriae wider than striae, flat on disk, convex on elytral declivity; outer interstriae convex. Hump on 5th minute, often marked only by the density of punctures. Interstria 9th convex in the second 1/3 of its length, not overhanging 10th, and forming a small bulge about the middle of the elytral length. Elytral apices broadened and rounded (Fig. 1).

Male genitalia (Fig 23): Basal piece subrectangular, much shorter than paramera. Paramera long and narrow, with apices slightly turned inwards. Aedoeagus much shorter than paramera, spindle-shaped.

Material examined: Holotypus ("TYPUS") and 17 paratypes ("COTYPUS") ex coll. KNISCH, from Brasil: Mato Grosso: Corumba. In coll. A. D'ORCHYMONT, at the Institut royal des Sciences naturelles de Belgique (IRSNB).

Discussion: This species can be distinguished from *H. ducalis* by the peculiar elongate shape, by the 9th elytral interstria not overhanging 10th (which contributes to the narrow shape), by the iridescence on the legs and by the male genitalia, with the aedoeagus much shorter than the paramera and the basal piece rather short, symmetrical at the base. It cannot be mistaken for any other South-American species.

##### *Hydrochus ducalis* KNISCH, 1921 (Figs 2, 24)

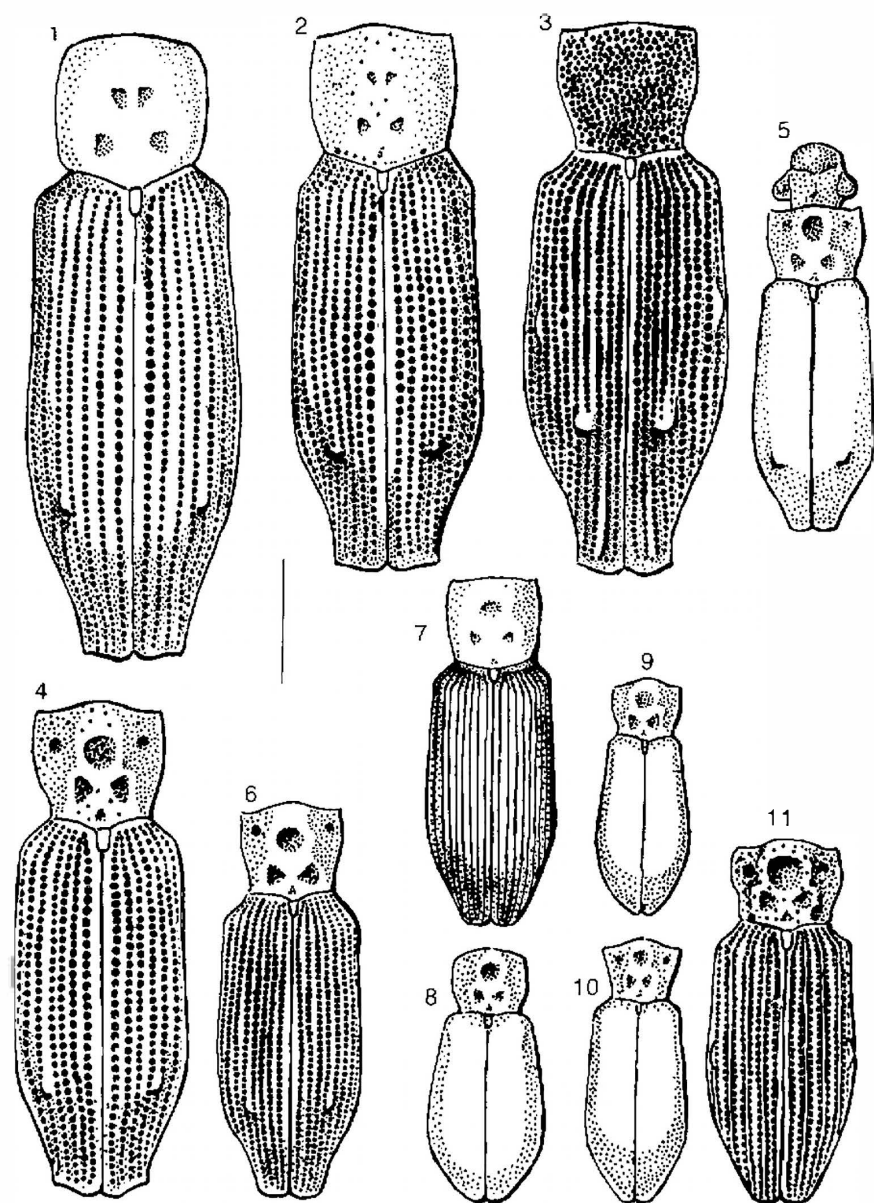
1921 *Hydrochous ducalis* KNISCH, Arch. Naturgesch. 87 A (6), 1921: 1

Diagnosis: Large, moderately narrow. Colour as in *H. metallipes* but no iridescence on legs. Dorsal sculpture moderately dense. Elytral interstriae narrower than striae on disk, but wider than half the stria width. Interstriae 7th and 9th more convex than the others, the last overhanging 10th interstria. Male genitalia as in figure 24.

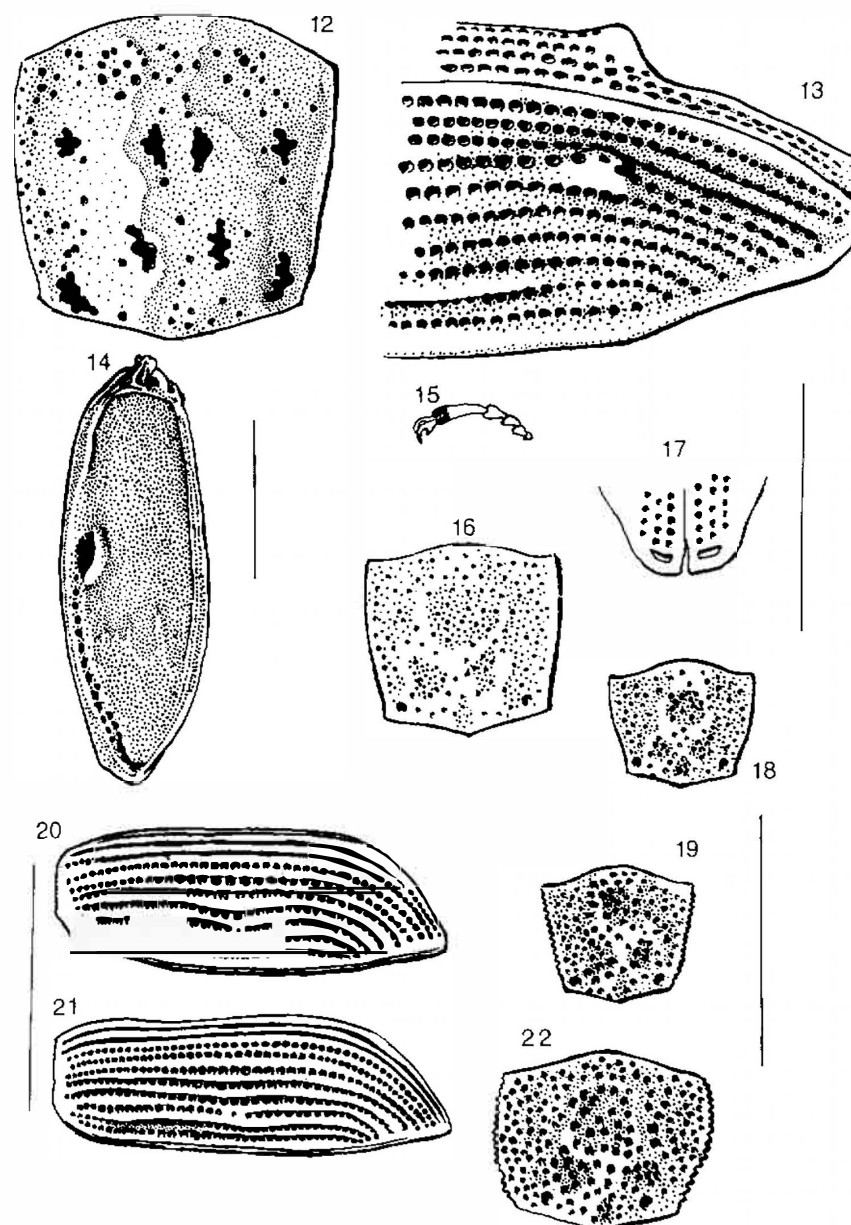
Description: Length: 4.6 - 5.5 mm. Shape moderately narrow, not elongate. EI= 6.54 (5.64-9.48).

Dorsum dark grey with slight iridescence. Femora black, without iridescence; tibiae testaceous; tarsi as in *H. metallipes*.

Punctures on head and pronotum moderately dense. Pronotum almost square; depressions small, the anteromedial replaced by a pair of small geminate ones. Strial punctures about twice the size of those on the pronotum, the spaces between them about half their diameter. Discal interstriae a little narrower than striae. Hump on interstria 5th small. Outer interstriae convex, 7th and 9th slightly more raised than the others; 9th overhanging 10th.



Figs 1-11. Pronotum and elytra in dorsal view, semischematic (head included in fig. 5). 1: *Hydrochus metallipes*; 2: *H. ducalis*; 3: *H. secretus*; 4: *H. drakei*; 5: *H. obscurus*, head, pronotum and elytra, semichematic; 6: *H. purpureus*; 7: *H. variabilis*; 8: *H. richteri*; 9: *H. pupillus*; 10: *H. pumilio*; 11: *H. bruchi*. (All the scales represent one millimeter).



Figs 12-22. 12: *H. metallipes*: pronotum in dorsal view; 13: *H. secretus*, elytral declivity; 14: Elytron of *Hydrochus* sp., inner view (redrawn from a SEM photograph); 15: *H. purpureus*, posterior tarsus of male with inner claw toothed at base; 16: *H. variabilis*, pronotum in dorsal view; 17: *H. argutus*, elytral apices in dorsal view, showing crescent-shaped depressions; 18: *H. pupillus*, pronotum in dorsal view; 19: *H. pumilio*, pronotum in dorsal view; 20: *H. pupillus*, elytra in lateral view; 21: *H. pumilio*, elytra in lateral view; 22: *H. bruchi*, pronotum in dorsal view. (Note: Fig. 14 drawn at a different scale).

Male genitalia (Fig. 24): Basal piece rather shorter than paramera, asymmetrical at base. Paramera narrow, turned inward in an obtuse angle about 2/3 of their length. Aedoeagus as long as the paramera, subcylindrical.

Material examined: Three syntypes ex coll. KNISCH, from Brasil: Mato Grosso: Corumbá, in coll. ORCHYMONT at the IRSNB. Also: one specimen from Brasil: Porto Alegre, ex coll. ORCHYMONT, at the IRSNB.

Discussion: see *H. metallipes*.

***Hydrochus secretus* KNISCH, 1921 (Figs 3, 13, 25)**

1921 *Hydrochous secretus* KNISCH, *Arch. Naturgesch.* 87 A (6), 1921: 2

Diagnosis: Large, broad, posterior third of elytra narrowing strongly backwards (fig 3). Dorsum with metallic iridescence on a grey or brownish ground; elytra with small melanistic spots. Dorsal sculpture coarse and dense. Pronotal depressions ill-defined. Elytral punctures larger than the pronotal ones, contiguous; interstriae narrow. Third interstria cost-shaped on the elytral declivity. Hump on 5th interstria very large (Fig. 13). Male genitalia as in figure 25.

Description: Length: 4.4 - 4.7 mm. Shape broad, rather abruptly broadened at 2/3 of the elytral length, behind this abruptly narrowing towards elytral apices (Fig. 3). EI: 3.50 (2.40-4.57)

Dorsum of head, pronotum and scutellum with strong metallic iridescence; elytra with slight iridescence. Ground colour grey or brownish. Elytra alutaceous, with small, nitid melanistic spots.

Head coarsely and sparsely, pronotum coarsely and densely punctured (fig 3). Pronotal sides weakly convex in anterior 3/5. Pronotal disk moderately raised, depressions ill-defined; ground between impressions as densely punctured as these. Punctures on elytral striae larger than those on pronotum, round, sometimes rather polygonal due to closeness. Interstriae very narrow, on elytral disk flat, but with some stretches distinctly raised on 3rd, 4th and 5th (see figure 3). Interstria 5th very strongly raised in a hump that takes up part of interstria 4th at its base. On elytral declivity interstriae convex, 3rd raised (Fig. 13). Interstria 9th raised in anterior 3/5, a little less strongly so on the humeral hump, swollen in a small oval bulge about 1/2 of the length, overhanging interstria 10th. Elytral apices broadened and rounded.

Male genitalia (Fig. 25): Basal piece much shorter than paramera, asymmetrical at base. Paramera sinuate, dilated at the apices. Aedoeagus as long as the paramera, broad, rounded at the apex.

Material examined: Holotype ("TYPUS") and four paratypes ("COTYPUS") ex coll. KNISCH, from Brasil: Mato Grosso: Corumbá, in coll. ORCHYMONT at the IRSNB.

Discussion: The shape, the coarse sculpture and the large hump on the fifth interstria distinguish this species from all others described from South America. With respect to the male genitalia, the broadly rounded aedoeagus should be remarked, as well as the short basal piece.

***Hydrochus drakei* KNISCH, 1920 (Figs 5, 26)**

1920 *Hydrochous drakei* KNISCH, *Arch. Naturgesch.* 85 A (8) (1919) 1920: 57

Diagnosis: Large, narrow. Dorsum blackish with strong iridescence. Pronotum distinctly, but not strongly, narrowed backwards (Fig. 4); depressions distinct, with a single large anteromedial one. Elytral striae with large, round, moderately dense punctures;

interstriae slightly narrower than striae, convex, on disk nearly flat. Hump on interstria 5th small but distinct; 9th swollen in part of its length, overhanging 10th which is slightly convex. Male genitalia as in figure 26.

Description: Length: 3.7 - 4.5 mm. Shape moderately narrow (Fig. 5). EI = 4.89. (2.72-6.58)

Dorsum of head, pronotum, scutellum and elytra usually of the same colour, blackish with a strong metallic iridescence. No black elytral spots in typical specimens.

Head and pronotum rather sparsely punctured, save for shallow, but distinct pronotal depressions; these densely punctured; there is a single large anteromedial one. Pronotum distinctly, but not strongly, narrowed backwards; sides convex in anterior 3/4, entire. Disk only slightly raised, but spaces between depressions swollen, almost unpunctured. Elytral striae with round punctures, twice as large as the pronotal ones, the spaces between them about equal to the diameters. Interstriae slightly narrower than striae, densely punctured, convex, on elytral disk almost flat. Hump on 5th interstria small but distinct, elongate, very thickly punctured. Interstria 9th swollen from 2/5 to 3/5 of the elytral length, convex in its whole length, overhanging interstria 10th which is convex and narrow. Elytral apices rounded and broadened.

Male genitalia (Fig. 26): Basal piece a little shorter than the paramera, symmetrical. Paramera narrow with sagittate apices. Aedoeagus a little shorter than the paramera, spindle-shaped, with large elyptical membranous area.

Material examined: 14 syntypes ex coll. KNISCH, from Brasil: Mato Grosso: Corumbá, in coll. ORCHYMONT at the IRSNB. Also 2 specimens ex coll. ORCHYMONT: "Brasilien/S. Leopoldo/Eing. 1925 nr 10"; one specimen ex coll. ORCHYMONT, from Brasil: Mato Grosso: Corumbá.

Discussion: *H. drakei* can be distinguished by the testaceous femora, by the single large anteromedial depression on the pronotum and by the shape of the latter, from *H. metallipes* and *H. ducalis*. The sparse pronotal punctures and the small hump on the 5th elytral interstria distinguish it from *H. secretus*. Only a few specimens of *H. obscurus* are large enough to be mistaken for *H. drakei* and these usually have a strong metallic sheen with bright colours, at least on the head and the pronotum. Also, the interstria 9th overhangs 10th for most of its length in *H. drakei* but only just behind the humeral hump in *H. obscurus*.

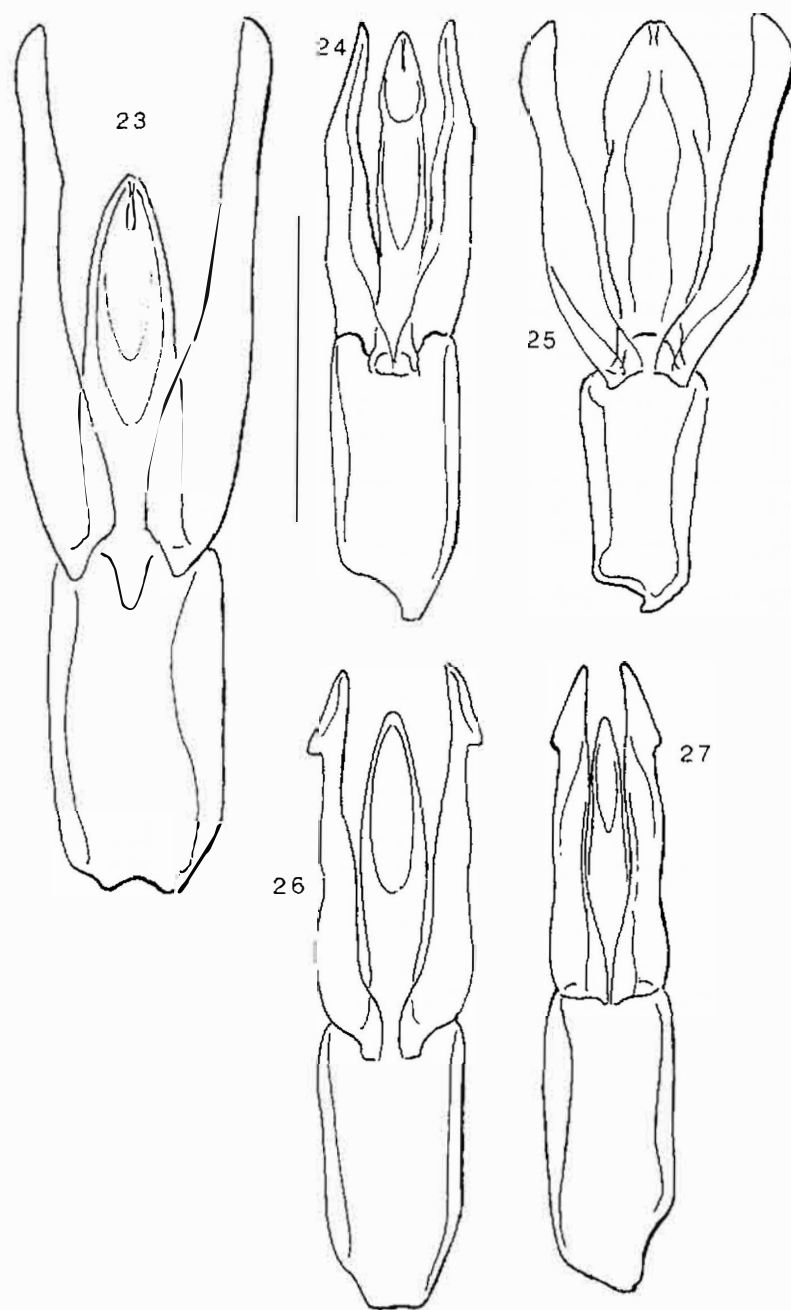
***Hydrochus obscurus* SHARP, 1882 (= *H. corruscans* BRUCH, 1915, syn. nov.) (Figs 5, 27)**

1882 *Hydrochus obscurus* SHARP, *Biol. Centr-Am. Col.* 1 (2): 90

1915 *Hydrochus corruscans* BRUCH, *Revta Mus. La Plata* 19 (2) 1915: 462

1920 *Hydrochous corruscans*: KNISCH, *Arch. Naturgesch.* 85 A(8) (1919) 1920: 58

Diagnosis: size very variable, medium to large; shape narrow. Dorsum usually with strong metallic sheen, sometimes elytra duller; these with small melanistic spots. Pronotum narrowed backwards, with sides convex in anterior 3/5. Pronotal depressions deep, densely punctured; the spaces between them smooth. Punctures on elytral striae about twice the size of the pronotal ones, dense; interstriae as wide as, or slightly narrower than, the striae. Hump on interstria 5th small but distinct, interstriae 3rd and 4th raised just in front of this. Interstriae 7th and 9th cost-shaped on humeral hump, 9th overhanging 10th only behind humeral hump. Elytral apices slightly broadened. Male genitalia as in figure 27.



Figs 23-27. Male genitalia. 23: *H. metallipes*; 24: *H. ducalis*; 25: *H. secretus*; 26: *H. drakei*; 27: *H. obscurus*.

Description: Length of lectotype of *H. obscurus*: 2.8 mm. Length of series measured (ex coll. ORCHYMONT): 2.7 - 3.2 mm. Shape narrow.  $El = 3.32$  (1.75-5.88)

Head, pronotum and scutellum well melanized, with strong metallic sheen; elytra not (or indistinctly) melanic, usually with weaker sheen, bearing some small dark spots on which no sheen appears, one in front of each hump on fifth interstria, another on 4th interstria just before swelling; these spots are nitid, the ground alutaceous.

Head rather finely and sparsely punctured, save for a pair of lines of coarse punctures on the frons. Pronotum slightly narrowed backwards, sides convex in anterior 3/5, smooth or with a few minute granules. Disk slightly raised, smooth, alutaceous, nearly unpunctured except a stretch just before the anteromedial depression. Depressions deep, coarsely and densely punctured. Punctures on elytral striae about the size of those on pronotal depressions, save at some points (noticeably on 4th stria) where they are enlarged to nearly twice the size of the others; punctures round, spaces between them about half of their diameter. Inner interstriae as wide as striae, outer ones a little narrower; all of them raised, thickly punctured. Hump on 5th interstria small but distinct, 3rd and 4th raised for a short stretch of their length just in front of this hump. Interstriae 7th and 9th cost-shaped on the humeral hump; 9th swollen in a small bulge about the middle of the elytral length, swollen behind this, overhanging 10th before the bulge, but not behind, where 10th is raised. Elytral apices rounded, slightly dilated.

Male genitalia (Fig 27): Basal piece about as long as paramera, asymmetrical at base. Paramera narrow, with weakly sagittate apices. Aedeagus distinctly shorter than paramera, narrowly spindle-shaped, with oblong subapical membranous area.

Material examined: Syntypes of *H. obscurus* SHARP, 1882, labelled as Lectotypus (a male) and Paralectotypi (two specimens) by Dr L. HELLMAN. All three from Guatemala: Paso Antonio, leg. CHAMPION, at the British Museum (Natural History). Two paralectotypi in coll. ORCHYMONT, at the IRSNB. Typical series of *H. corruscans* BRUCH, ex coll. BRUCH, from Argentina: Prov. Buenos Aires, at the Museo argentino de Ciencias naturales (Buenos Aires). Also: four specimens from Argentina: Buenos Aires, ex coll. BRUCH, collected by him, but not syntypic; two from Argentina: Prov. Buenos Aires: Rauch, leg. DAGUERRE; two from Brasil: Matto Grosso, ex coll. KNISCH; one from Brasil: Sao Paulo: Ypiranga, leg. REH, and one from Brasil: Santa Rita, leg. SAHLBERG, all in coll. ORCHYMONT at the IRSNB.

Discussion: Most specimens are quite smaller than any of the species described before (see discussion of *H. drakei*). *H. obscurus* can be distinguished from *H. purpureus* by the round shape of the punctures on elytral striae and by the interstriae only a little narrower than striae (in *H. purpureus* the punctures are almost square because of their closeness, and the interstriae about half the width of striae). The male genitalia are quite distinctive; the main differences with those of *H. drakei* are that in SHARP's species the basal piece is asymmetrical at base, the paramera less distinctly sagittate and the aedeagus shorter.

This species appears to have a remarkable intraspecific diversity and an unusually wide geographic range. For some time, it had been suspected that the type-series of *H. corruscans* included two or more species; in particular, it had been assumed that the larger specimens must undoubtedly be a different taxon. I have found no significant differences between the large specimens and the small ones, either in the male genitalia or in the external characters. Larger specimens appear to be restricted to the province of Buenos Aires, but this can be explained partly because of the scarceness of the collections, partly because in wide-ranging species of Hydrophilidae larger adults are often found in temperate regions than in tropical ones.



***Hydrochus purpureus* KNISCH, 1920** (Figs 6, 15, 28)1920 *Hydrochous purpureus* KNISCH, Arch. Naturgesch. 85 A (8) (1919), 1920: 57

Diagnosis: Size moderate; shape narrow. Dorsum black, sometimes elytra dark with small melanic spots; metallic iridescence present or absent. Pronotal depressions densely punctured, the rest of the pronotum sparsely so. Pronotal sides convex in anterior half. Punctures on elytral striae twice as large as the pronotal ones, contiguous, on elytral disk almost square. Interstriae narrow, convex, raised; hump on 5th oblong; 9th overhanging 10th in anterior half. Inner claw of the posterior legs toothed at the base in the males (Fig. 15). Male genitalia as in figure 28.

Description: Length: 3.0 - 3.4 mm. Shape narrow. EI = 5.52 (3.60-6.37)

Dorsum dark, never with strong metallic sheen. Some specimens are entirely black, nitid; others have an iridescence with bright colours on the well-melanized dorsum of head, pronotum and scutellum, while the elytra are dark (it is difficult to decide whether there is some sparsely deposited melanine or not) and have small, deep-black spots; one specimen out of five shows some iridescence at the bottom of the elytral punctures.

Head and pronotum with sparse, moderately coarse punctures, only the shallow pronotal depressions densely punctured; on the lateral depressions the punctures are quite coarse. Pronotal disk hardly raised; sides sinuate, convex in anterior half, smooth, although the coarse punctures may give to them a granulated appearance. Punctures on elytral striae about twice the size of those on the pronotal disk (but those on lateral depressions quite as coarse as the elytral ones), contiguous, on elytral disk almost square because of their closeness. Interstriae narrow (about half the width of striae), convex, raised with respect to the narrow spaces between punctures; fifth with an oblong hump; 9th overhanging 10th in anterior half, both interstriae convex in posterior half, behind the small bulge formed by the 9th. Elytral apices slightly broadened. In the males, the inner claw of the posterior legs has a large basal tooth (Fig. 15).

Male genitalia (Fig. 28): Basal piece shorter than paramera, slightly asymmetrical at base. Paramera narrow, with dilated and rounded apices. Aedoeagus as long as paramera, spindle-shaped, with very large membranous area.

Material examined: Five syntypes ex coll. KNISCH, from Brasil: Mato Grosso: Corumbá, one labelled as a lectotype by Dr HELLMAN, in coll. ORCHYMONT, at the IRSNB. Also: one specimen from Argentina: Prov. Buenos Aires, ex coll. BRUCH, at the Museo argentino de Ciencias naturales (Buenos Aires). It has no metallic sheen and it is labelled by KNISCH: "KNISCH det./1924/Hydrochus/n.sp. propre/variabilis m./Unicum".

Discussion: The sculpture of the elytral disk, with coarse dense punctures and narrow interstriae, is very characteristic of this species. See also discussion of *H. obscurus*

***Hydrochus variabilis* KNISCH, 1921** (Figs 7, 16, 29)1921 *Hydrochous variabilis* KNISCH, Arch. Naturgesch. 87 A (6) 1921: 2

Diagnosis: Size moderate, shape narrow. Colour varying even within the typical series; when the elytra are grey with slight iridescence, the rest of the dorsum is more deeply melanic and there are elytral spots. Pronotum almost square, flat, with very shallow depressions. Punctures on striae about the size of the pronotal ones. Interstriae about as wide as striae, flat on disk, convex elsewhere. Hump on interstria 5th small, oblong; 9th convex but not overhanging 10th and not forming a lateral bulge. Male genitalia as in figure 29.

Description: Length: 2.7 - 3.3 mm. Shape narrow. EI = 3.66 (2.02-6.86)

Colour very variable. Some specimens entirely black, with slight iridescence on head and pronotum; others with head and pronotum black, with iridescence or even strong sheen, and the elytra greyish, with slight iridescence and imprecise black spots.

Head sparsely punctured. Pronotum almost square; sides very weakly sinuate, convex in anterior 4/5, smooth; disk not raised. Depressions marked only by a greater density of punctures; these round, moderately coarse. Punctures on elytral striae about the same size as pronotal ones, contiguous. Interstriae as wide as striae, flat on disk, convex on the rest of the elytra. Hump on interstria 5th elongate; 9th more convex than 10th but not overhanging it and not forming a lateral bulge. Elytral apices rounded.

Male genitalia (Fig. 29): Basal piece slightly shorter than the paramera, broad, asymmetrical at base. Paramera narrow and sinuate. Aedoeagus much shorter than the paramera, broad, rounded at the apex, with apical membranous area.

Material examined: Twelve syntypes ex coll. KNISCH, from Brasil: Mato Grosso: Corumbá, in coll. ORCHYMONT, at the IRSNB.

Discussion: this species is unmistakable by the flat squarish pronotum with shallow depressions (Fig. 16), the striae punctures not (or hardly) larger than the pronotal ones, the regularity of the elytral sculpture and the absence of a lateral bulge formed by the 9th interstria.

***Hydrochus richteri* BRUCH, 1915** (Figs 8, 30)1915 *Hydrochus richteri* BRUCH, Revta Mus. La Plata 19 (2) 1915: 463

Diagnosis: Small, elongately oval. Head and scutellum melanic with strong metallic sheen; pronotum testaceous with or without some iridescence; elytra testaceous. Head and pronotum with dense, moderately coarse punctures. Strial punctures coarse, contiguous; interstriae narrow, convex. No distinct hump on interstria 5th; the 9th convex, overhanging 10th, forming a small lateral bulge. Male genitalia as in figure 30.

Description: Length: 1.7 - 2.3 mm. Shape elongately oval (Fig. 8). EI = 2.60 (1.53-4.26)

Head and scutellum with strong metallic sheen, in mature specimens with a screen of melanine. Pronotum testaceous, iridescent in some specimens, including the lectotype. Elytra testaceous, in the lectotype with a narrow iridescent band at base.

Head and pronotum with dense, moderately coarse punctures. Elytral striae with punctures about twice the size of the pronotal ones, contiguous, polygonal. Pronotum slightly narrowed at base; sides convex in anterior 3/4, smooth; disk not raised; depressions shallow, marked rather by denser punctures. Interstriae narrow (half the width of striae or less), convex, the odd-numbered ones a little more so, almost cost-shaped. No distinct hump on the 5th interstria. Interstria 9th swollen in small lateral bulge and overhanging 10th, which is hardly convex. Elytral apices narrowly rounded.

Male genitalia (Fig. 30): Basal piece much shorter than the distal ones, asymmetrical at base. Paramera long and narrow, curving inwards strongly in the distal half. Aedoeagus nearly as long as paramera, narrow at basal 2/3, dilated and rounded at apex.

Material examined: Two syntypi ex coll. BRUCH, at the Museo argentino de Ciencias naturales, both labelled "Rca. Argentina/Prov. Buenos Aires/- 190-/C. BRUCH". I designate as Lectotype the specimen labelled "TYPUS", "*Hydrochus/ Richteri/BRUCH*", the second label in BRUCH's hand. The specimen labelled "COTYPUS", without a name label, is designated paralectotype. I have considered these as syntypi because BRUCH used his labels in a somewhat erratic manner (while KNISCH used "typus" in the sense of "holotypus", as can be inferred from his discussion of new species). Another paralectotype: from Argentina: Prov. Buenos Aires, 2. VII. 1905, labelled "COTYPUS", in coll. ORCHYMONT. The

actual locality, as precised by BRUCH in his paper, was a ditch somewhere on the way from Buenos Aires to La Plata. Also: one specimen from Buenos Aires, labelled "Hydrochus Richteri" by BRUCH in 1923; two specimens from Prov. Buenos Aires, ex coll. BRUCH; one specimen from Prov. Buenos Aires: Rosas, leg. DAGUERRE, n° 97134 of the catalogue of the Museo argentino de Ciencias naturales; two specimens from Argentina: Prov. Buenos Aires: Tigre, leg. M. VIANA, 1936; two specimens from Brasil: Mato Grosso: Corumba, ex coll. KNISCH; one specimen from Brasil: Porto Alegre, ex coll. KNISCH; all in coll. ORCHYMONT, at the IRSNB.

Discussion: The short, broad shape (Fig. 8), the absence of elytral humps and the testaceous pronotum and elytra are enough to recognize this species. The male genitalia are very distinctive, with very long distal pieces, the aedoeagus nearly as long as the paramera and with a rounded, dilated apex.

The shape and coloration of this species are exceptional in the genus (as far as the South-American species are concerned) and rather like those of many species of the genus *Hemiasus*. This is possibly a primitive condition.

*Hydrochus argutus* KNISCH, 1921 (Figs 17, 31)

1921 *Hydrochous argutus* KNISCH, *Arch. Naturgesch.* 87 A (6) 1921: 3

Diagnosis: small, shape rather broad. Dorsum melanic; head, pronotum, scutellum, and often a narrow band at the base of elytra, iridescent. Dorsal sculpture coarse. Pronotum narrowed backwards; sides convex in anterior 2/3, finely granulated. Elytral interstriae very narrow, convex, the 7th, 9th and 11th cost-shaped; 10th flat, overhung by 9th which forms a considerable lateral bulge; no hump on 5th. Elytral apices rounded, with a crescent-shaped depression (Fig. 17). Male genitalia as in figure 31.

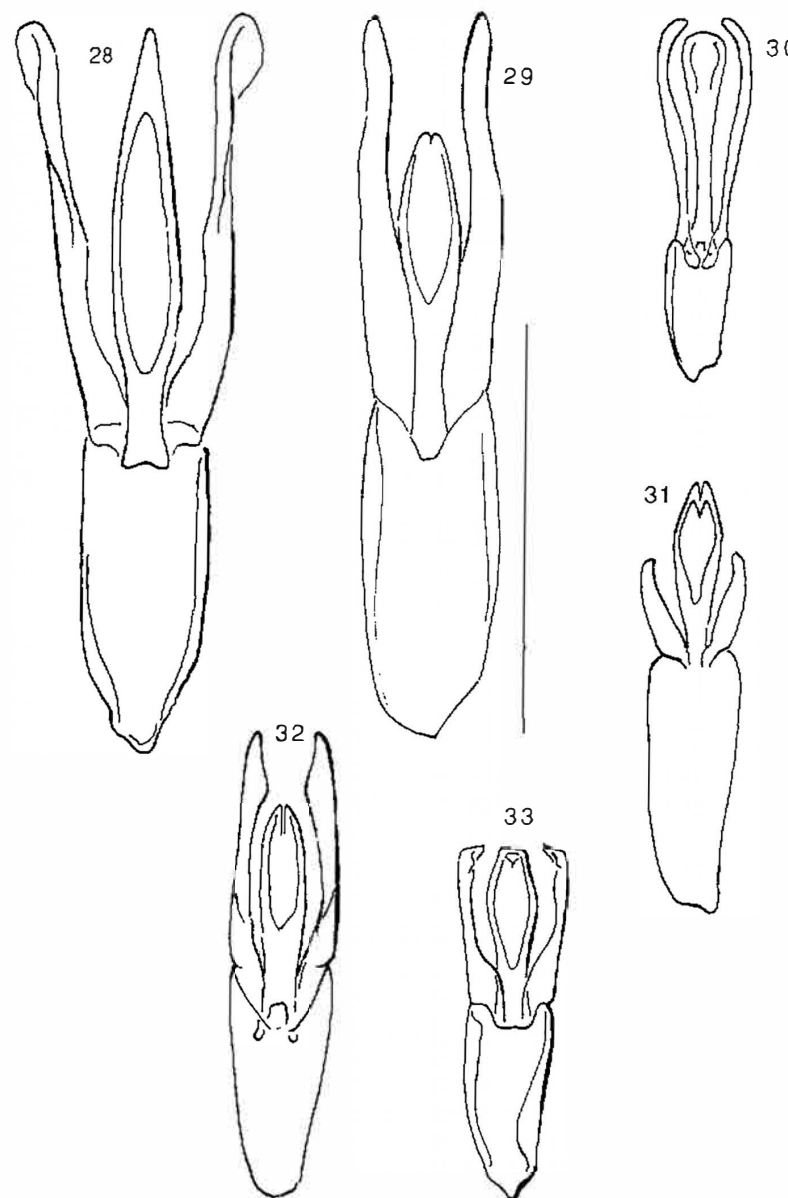
Description: Length: 2.5 - 2.6 mm. Shape rather broad. EI: 3.02 (2.53-4.76)

Dorsum more or less intensely melanic in different specimens, possibly in relation to age. Head, pronotum, scutellum and often a narrow band at the base of the elytra with metallic iridescence (never strong sheen in examined material).

Pronotum narrowed backwards; sides weakly sinuate, convex in anterior 2/3, finely granulated. Pronotal disk slightly raised; depressions deep but ill-defined, with contiguous punctures; between the depressions the punctures are coarse, dense, irregular. Punctures on elytral striae about twice the size of the pronotal ones, round, regular, very deep. Interstriae much narrower than striae (often hardly wider than the space between two striae punctures), convex, the 3rd raised in two portions on disk, the 7th, 9th and 11th cost-shaped. No distinct hump on 5th interstria; the 9th swollen in a long, narrow bulge that accounts in part for the broad shape; interstria 10th flat, overhung by 9th. Elytral apices narrow, semicircular when taken together, each with a crescent-shaped depression comprising the two inner striae, as in figure 17. Elytral edge finely granulated.

Male genitalia (Fig. 31): Basal piece twice as long as distal ones, asymmetrical at base. Paramera short, narrowed at apex. Aedoeagus longer than paramera, broadened about distal 2/3, with narrowed apex and a subapical membranous area.

Material examined: Eight syntypi ex coll. KNISCH, from Brasil: Mato Grosso: Corumba, in coll. ORCHYMONT; four specimens of the same locality with white (not violet) labels, in coll. ORCHYMONT; all at the IRSNB. Also one specimen ex coll. BRUCH, from Argentina: Prov. Buenos Aires, labelled by KNISCH (1924) as "Hydrochus Richteri BRUCH. grosses Exemplar", at the Museo argentino de Ciencias naturales. The elytra of this specimen are not completely melanized, which explains that KNISCH should fail to recognize a species described by himself, although from a different locality.



Figs 28-33. Male genitalia. 28: *H. purpureus*; 29: *H. variabilis*; 30: *H. richteri*; 31: *H. argutus*; 32: *H. pupillus*; 33: *H. pumilio*.



Discussion: The subapical depressions on the elytra are not found in any other species. The male genitalia are also most characteristic, with the very long basal piece and short distal ones.

***Hydrochus pupillus* ORCHYMONT, 1939** (Figs 9, 18, 20, 32)

1939 *Hydrochus pupillus* ORCHYMONT, *Revta Soc. ent. arg.* 10, 1939: 254

Diagnosis: Small, narrow but not elongate. Strong metallic sheen with bright colours on the whole dorsum, sometimes duller on elytra. Pronotum strongly narrowed backwards, sides sinuate, convex in anterior 2/3, smooth (Fig. 18); depressions deep, disk slightly raised. Punctures on elytral striae coarse, contiguous, almost square. Interstriae very narrow, convex; hump on 5th minute or absent; 9th swollen in part of its length, but not overhanging 10th (Fig. 20); all the outer interstriae convex. Male genitalia as in figure 32.

Description: Length: 1.8 - 2.2 mm. Shape narrow, but not much elongate, which explains the low EI= 3.79 (2.77-5.40)

In most specimens the whole dorsum with strong metallic sheen, brought out by a layer of melanine. In some specimens the elytra are slightly or not melanic and bear only a metallic iridescence.

Punctures on head and pronotum moderately coarse and dense. Pronotum strongly narrowed backwards; sides convex in anterior 2/3, smooth (Fig. 18). Depressions large, deep; disk only slightly raised. Punctures on elytral striae large, contiguous, square because of their closeness. Interstriae much narrower than striae, convex. Hump on interstria 5th minute or absent; 9th swollen between 2/5 and 3/5 of elytral length, not overhanging the narrow, but markedly convex, 10th interstria (Fig. 20). Elytral apices narrowly rounded.

Male genitalia (Fig. 32): Basal piece a little shorter than distal ones, symmetrical. Paramera narrow, the inner edge produced subapically into an angle. Aedoeagus much shorter than paramera, broad, with a blunt apex.

Material examined: Four paratypes ex coll. ORCHYMONT, three labelled "Argentina/Prov. Buenos Aires/C. BRUCH leg."; one labelled "Buenos Aires-Argentina/Tigre/1936 M. VIANA", all at the IRSNB. Also: nine specimens ex coll. KNISCH, from Brasil: Mato Grosso: Corumba, in coll. ORCHYMONT; another four specimens from the same locality, in coll. ORCHYMONT, with a white (not violet) label; one specimen from Brasil: Mato Grosso: Cuiaba; one specimen from Argentina: Prov. Buenos Aires, isla Martin García, leg. VIANA, 1937; all at the IRSNB. Four specimens ex coll. BRUCH, labelled by him "Hydrochus corruscans", from Argentina: Prov. Buenos Aires; another specimen from Argentina: Prov. Buenos Aires: Rosas, leg. DAGUERRE; both at the Museo argentino de Ciencias naturales.

Discussion: This is the smallest species of *Hydrochus* found in South America, save for *H. pumilio*, which is discussed further on. Most specimens of *H. pupillus* have a stronger metallic sheen and brighter colours than in any other small species. The shape of the pronotum, the absence of granules on the sides of the same and the 9th interstria not overhanging 10th distinguish *H. pupillus* from *H. pumilio* (see Figs 18, 19, 20, 21). The male genitalia, which are of a similar type in both species, differ mainly in the fact that the aedoeagus is much shorter than the paramera in *H. pupillus* but nearly as long as them in *H. pumilio*.

***Hydrochus pumilio* KNISCH, 1920** (Figs 10, 19, 21, 33)

1920 *Hydrochus pumilio* KNISCH, *Arch. Naturgesch.* 85 A (8) (1919) 1920: 59

Diagnosis: small, narrow. Head with strong metallic sheen; pronotum, scutellum and a narrow band at the base of elytra usually iridescent; elytra dark, rarely iridescent. Pronotum almost trapezium-shaped (Fig. 19), sides straight, finely granulate. Elytral striae with coarse punctures, interstriae narrow, convex; hump on 5th minute; 9th, 10th and 11th cost-shaped in most of their length, but 9th overhanging 10th save under humeral hump (Fig. 21). Male genitalia as in figure 33.

Description: Length: 2.2 - 2.4 mm. Shape narrow, moderately elongate. EI= 5.59 (3.26-7.69)

Dorsum of head melanic, usually with a strong metallic sheen. Pronotum, scutellum and (in most specimens) a narrow band at the base of elytra, dark with metallic iridescence. Elytra testaceous or dark, sometimes with slight iridescence.

Head sparsely and rather coarsely punctured. Pronotum sharply narrowed backwards, almost trapezium-shaped; sides straight, finely granulate (Fig. 19). Depressions rather deep, disk moderately raised; punctures coarse, dense, on depressions contiguous. Punctures on elytral striae coarse, contiguous. Interstriae narrow (half the width of striae, or less), convex. Hump on interstria 5th minute; 9th, 10th and 11th cost-shaped in most of their length, but 9th overhanging 10th in anterior half, save under humeral hump (Fig. 21). Elytral apices narrowly rounded.

Male genitalia (Fig. 33): Basal piece slightly longer than the distal ones, asymmetrical at base. Paramera broad at base, narrow in the rest of their length, with apices strongly turned inwards. Aedoeagus about as long as paramera, broadened about 2/3 of its length, narrowed and truncate at apex, with large membranous area.

Material examined: Holotypus ex coll. KNISCH, from Paraguay, labelled "Paraguay/Dr DRAKE 188-" "Coll. KRAATZ" "det. KNIZ/Hydrochus (sic)/pumilio m./det. KNIZ/n. sp. Type", a male, in coll. ORCHYMONT, at the IRSNB. Two paratypes from Brasil: Mato Grosso: Corumba, one labelled "KNIZ det/pumilio m.", the other labelled "det. KNIZ/Hydrochus/spec?"; both at the IRSNB. Also: one specimen from Brasil: Santa Rita "IX/1850 F. SAHLBERG"; one specimen from Brasil: Porto Alegre; one specimen from Argentina: Entre Ríos: Paracito; all ex coll. ORCHYMONT, at the IRSNB.

Discussion: see discussion of *H. pupillus* for characters that distinguish the two species. *H. pumilio* can be easily separated from *H. argutus* by the absence of crescent-shaped depressions near the elytral apices, and from *H. richteri* by the narrow shape and the dark dorsum.

***Hydrochus bruchi* KNISCH, 1924** (Figs 11, 22)

1924 *Hydrochus bruchi* KNISCH, *Wiener ent. Ztg* 41, 1924: 115

Diagnosis: Size moderate; shape narrow. Head, pronotum and scutellum melanic with slight iridescence; elytra testaceous. Dorsal sculpture dense, coarse on frons, on the sides of the pronotum and on the elytral striae. Sides of pronotum convex in anterior 3/4, granulated (Fig. 22). Interstriae a little narrower than striae, convex, the outer ones cost-shaped. Interstria 5th raised for a short stretch, but with no distinct hump. Interstria 10th less convex than 9th and 11th, but not overhung by the first of these.

Description: Length of holotypus (female): 3.1 mm. EI= 4.98.

Dorsum of head and scutellum deeply melanic, with slight metallic iridescence; a rather stronger sheen on pronotum. Elytra testaceous, without iridescence.

Punctures on head dense; on clypeus moderately coarse, regular; on frons coarse, irregular. Pronotum narrowed backwards; sides convex in anterior 3/4, granulated (Fig. 22). Pronotal disk raised, finely alutaceous, with moderately coarse and dense punctures. Depressions deep, coarsely and densely punctured, specially the lateral ones. Strial punctures coarse, on elytral disk 2-3 times the size of those on pronotal disk. Width of interstriae less than width of striae, but greater than half of this width. Interstriae convex, densely punctured, the odd-numbered ones more convex than the others, the outer ones cost-shaped; 5th raised for a short stretch before the elytral declivity, but not forming a distinct hump. Interstria 9th forming a small lateral bulge that connects striae 8th and 9th. Interstria 10th less raised than 9th and 11th, but not overhung by the first of these. Elytral apices narrow.

Male genitalia unknown (holotypus a female).

Material examined: only the holotypus, a female ex coll. KNISCH, labelled "Argentine/ Neuquen/-190-/C. BRUCH" "KNISCH det. 1923/Hydrochus/Bruchi m." "Coll. A. KNISCH/ Typus". In coll. ORCHYMONT, at the IRSNB.

Discussion: This is the only species described from the locality. As I said in the introduction, I think that a revision of this species and of *H. stolpi* GERMAIN, 1902 should be made.

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#### Révision du genre

*Brachynema* Mulsant & Rey, 1852

(Heteroptera, Pentatomidae, Pentatominae)

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#### Avant-propos

Les *Brachynema* sont des "punaises vertes" de taille assez grande (7,5-14,8 mm), au corps ovale, convexe, plutôt épais, avec un cal blanchâtre à l'apex du scutellum et les marges latérales pigmentées de jaunâtre ou de rouge (FABRICIUS, 1775, déjà), largement répandues dans la péninsule ibérique, l'Afrique du Nord (Maghreb), les Canaries. Le genre est typiquement méditerranéen. L'aire de distribution de l'espèce la plus commune (*B. cinctum* (FABR.)) débordé au sud du Sahara. Une autre espèce (*B. signatum* JAK.) habite le paléarctique oriental, de l'Anatolie à la Chine. Une autre encore est largement distribuée dans la sous-région érémitique du paléarctique. Une grande confusion régnait dans la taxonomie du genre. Nous avons tenté d'y remédier. D'autres espèces qui sont, ou furent, indûment classées dans le genre *Brachynema*, appartiennent en fait à d'autres genres, éventuellement nouveaux. Nous en précisons le statut. Concernant la distribution géographique, nous nous en sommes tenus, dans l'ensemble, aux travaux significatifs (jusqu'en 1986), évitant de surcharger l'exposé.

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