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CONTRIBUTION TO THE STUDY OF THE GENUS STERNOLOPHUS SOL
SOLIER, HYDROPHILUS LEACH, HYDOUS LEACH. (Contribution
a l'etude des genres Sternolophus Solier, Hydrophilus
Leach, Hydrous Leach (Fam. Hydrophilidae)).

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CONTRIBUTION TO THE STUDY OF THE GENUS STERNOLOPHUS SOLIER,
HYDROPHILUS LEACH, HYDOUS LEACH.

IN: Memoires de la Societe Entomologique des Belgique,
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(Article by D'Orchymont, A.).

Genus Sternolophus Solier.

In this monograph about Sternolophus, (1) my colleague and friend Mr. Zaitsev, from Saint - Petersburg divided this genus and created a Sub-genus Neosternolophus for the species which have a notched clypeus on the anterior side revealing in the cleft at the joint of the labrum. He placed in it: 1^o the *S. artensis* Montrouz., to which he unites the *tenebricosus* Blackburn; 2^o the *S. nitidulus* Mac L. J'ai, in several parcels. I received several specimens of an Australian species belonging to this sub-genus and which seemed to me distinct by its facies. In view of discovering in it distinctive characters, I re-examined the Sternolophus of my collection and determined those placed in

(1) Zaitsev: Russian Review of Entomology, 1908, n^o 3 and 4.
Jan. 1909, p. 228 to 233.

the supplements of the Museum of Natural History of Brussels.

I discovered that all the *Neosternolophus* described up to now, ♂ and ♀ alike, bear at the tip of the last ventral segment - 5th visible one - a small rounded notch, fringed with the hair like entire outline of the ventral segments (Pl. fig. 1). But the samples I mentioned have not this character; the 5th ventral segment is complete; moreover, they differ in several particularities of structure which will be further described. It separates them, in fact, from known species. I named them *immarginatus*.

Further, Zaitsev very rightly divides the *Sternolophus* s. str. into two groups based on the relative length of the metasternal spine. The first group includes *angolensis* En., *brachyacanthus* Reg. and *oceanicus* Zaitz. These species have the metasternal carinal ending into a spine hardly overlapping the posterior coxae; the carina is fringed on the inferior ridge by small, erect hair. The other group includes *S. Solieri* Cast., *S. rufipes* Fab., etc. which have a metasternal carina ending into a much longer and a not hair-fringed spine. But, all the insects from the first group which I could examine only *brachyacanthus* and *angolensis*, have also the 5th ventral segment notched as said above. On the other hand, nothing like this is noticed in the second group or at least in the *S. Solieri* Cast., *rufipes* Fab., *unicolor* Cast, and *decenz* Zaitz; all these species are known to me. I was able to re-examine quite a numerous series of

angolensis and brachyaconthus; they all bore the small characteristic notch of the 5th ventral segment. Mr. Zaitsev should re-examine also his oceanicus from Borneo (1) from this point of view.

My *Neosternolophus artensis* Montr. - 4 Specimens - came from New - Caledonie and coincide with the description of the species given by Montrouzier (2). I also possess two *neosternolophus* from localities of great interest; one is from Wallardi, Travancore - R.P. Favre, 5-9-1905 -; the insect was determined by Regimbart and on the label is written: *Hydrophilus angustatus* Reg; the other one comes from the surrounding of Mahe on the Malabar coast, - native hunters, 2nd Semester 1902. It had also been examined by Regimbart, who had not been able to determine it. On the label is written "unique specimen". But these two specimens belong to the same species; the second one is slightly abnormal because the superior surface of its body shows broad and shallow depressions which give it a pockmarked appearance. According to Fauvel and Sharp, this particularity does not count as incidental.(3). Moreover, there is in the

(1) Zaitsev, I, quotation, 1910, n°3. p. 225.

(2) Ann Soc. Ent. Fr., 1860, p. 247 (3) III.

(3) Fauvel, Review of Ent., Caen, II 1883, p. 352 and XXII, 1903, p.352. Sharp, trans. Entom. Soc., London, 1883, p. 92 (for genus *Tropisternus*).

Brussels Museum a third identical specimen coming from Bandoeng (Java) - Fruhstorfer. These three coleoptera are clearly labelled and there is no possibility of an error as to their origin. Besides the first two were part of a collection of Hydrophilides classified and determined by Regimbart, which I am now owning and which mainly comes from India and also from America. The three of them belong to a close species of *artensis* Montr., but I could not decide to unite them to it. In my opinion, it is the *tenebricosus* of Blackburn, described by Palmerston (Northern Territory) which I consider distinct, at least for the moment, and which spreads geographically from India to the North of Australia passing by the Sonde islands. Only the examination of many individuals will decide whether it must be considered a variety of *artensis* or vice-versa, or to be totally included as believed by Mr. Zaitsev. (quoted Brochure).

We shall give now an arrangement of the species of the sub-genus *Neosternolophus*, the number of which is raised to four.

Sub-genus *Neosternolophus* Zaitsev.

1. Last ventral segment (5th visible one) furnished with a small notch rounded at the tip. Longer metasternal carina often overlapping the middle of the first conspicuous ventral segment but not reaching the top. - Unguis of the anterior tarsi of the ♂ grapnel shaped, but slightly and simply dilated or tumid at the base, thinning down regularly from the base to the extremity

without being as much tapered off, Pl. fig.2.

2. Metasternal carina ending into a spine the tip of which is formed by the superior ridge of the carina (the one which is nearest to the body).

3. Bigger form - 12 mm - more elongated - antero - external series of the pronotum: less abundant, often interrupted in the middle, not looking double, quite curved - median - external series also less abundant, straight, with dots placed close to each other in one uninterrupted line (fig. 1). Broader semi-circular notch of the clypeus, revealing more of the labrum joint - fig. 2 - In the three examined samples the metasternal carina hardly overlaps the posterior coxae; but the terminal spur is very sharp at the tip and clearly directed towards the body in the shape of a bird-beak; I cannot examine the unguis of anterior tarsi of the male, because the only male individual had lost them.

Fig.1. - Externo - anterior series and median - external tenebricosus Blackburn.

Fig.2. - Clypeus notch in the same one.

3. Smaller form - 10 to 11 mm - anterior - external series of the pronotum more abundant, mainly inward, where with its thickness, looking double, uninterrupted in the middle, quite curved - median - external series also more abundant thickened inward, straight, but irregular - fig. 3 - much smaller, triangular notch of the clypeus - fig. 4. - In the four examined samples, the metasternal spur is not very sharp; the tip is formed by the superior ridge of the carina as for *tenebricosus*, but is not clearly directed to the body..... *artensis* Montrouz.

Fig.3. Anterior - external series and median external series in *Neosternolophus artensis* Montr.

Fig.4. Notch of the clypeus in the same one.

2'. Metasternal carina with more obtuse spine which is not directed towards the body. The not so sharp tip is formed by the inferior ridge of the carina. The form is sometimes very elongated usually reddish in color (immature?), Discal and

median series of elytra not so well marked nitidulus
Mac Leay.

1'. Last ventral segment (5th visible one), not furnished with
a small notch 0 extremely short metasternal carina, not
overlapping the middle of the posterior trochanters, almost
completely rounded at the tip. Punctuation of the head and of
the pronotum much denser and coarser and consequently more
impressed; unguis of the anterior tarsi of the ♂, furnished
with a sharp tooth at the base, sharply curved, grapnel - like;
even the unguis is attenuated immediately after the tooth, then
thickens and finally ends into a very sharp point. - Pl. fig. 3
. immarginatus n. sp.

Neosternolophus immarginatus n. sp.

Size: 11 mm in length, 5 mm in width.

Slightly shorter - oval form than nitidulus Mac L., none of
the examined individuals is an elongate as some specimens of this
last species. Denser and coarser punctuation on the head and
pronotum. Top shiny, black in color, and reddish marginated
elytra; seen through transparency. Reddish legs and tarsi -
rusty maxillary palpi, sometimes slightly darkened at the tip of
the fourth segment. Dark beneath with a reddish spot on each
side of the ventral segment as for *S. nitidulus*. Small,
triangular anterior notch on the clypeus as for the latter and
for *S. artensis* Montr. Systematical series of the labrum, the

head and the pronotum looking almost like those in the first. One Discal, elytral series, as for this one, are not even impressed but, however, prolonged to the base with, in front, a wiped off median. Extremely short metasternal carina, almost rounded at the tip, not reaching the top of the posterior trochanters and hardly overlapping the first ventral segment. Intermediary femora are sparsely and finely punctuated as in nitidulus. The last ventral segment is not notched at the tip.

♂ . Anterior unguis are different from the nitidulus. They are furnished with a strong tooth and are sharply curved in a graphel-like shape as already said (Pl. fig.2 and 3).

♀ . Anterior unguis with denticulated protuberance at the base which is more angular at the tip than in the ♀ nitidulus. (Pl. fig. 2a and 3a).

This species has always been confused with nitidulus as they look very much alike. I first received 4 specimens of them from Australia, from Mr. Donckier de Donceel; then two others (1) determined as nitidulus from Mr. Alex. Heyne; there is a seventh specimen in the Brussels Museum, also from Australia (Ch. French).

Sternolophus angolensis Er.

Hydrophilus mundus Bohemann. Ins. Caffrar. I, 1851, p. 596,

(1) Northern Territory

Caffraria (J. Wahlb), n° 62, Museum of Stockholm; 14 mm in length, 6½ mm in width.

After examining the type of *Hydrophilus mundus*, I can place this insect in the genus *Sternolophus* because of: 1° the characteristic tuft of hair in front of the prosternal carina; 2° the pubescence accentuated at the base of all legs; 3° the last segment of the maxillary palpi being longer than the previous one; moreover its metasternal carina is armed with small hair on the inferior ridge and this carina ends into a sharp spine hardly overlapping the posterior coxae. These last characters place it in the second group of *Sternolophus* according to Zaitsev's monography. The clypeus is not notched as in the sub-genus *Neosternolophus*, but the last ventral segment bears at the tip the small rounded notch as I mentioned. This insect is also entirely like the *angolensis* Erichs, 1843, as shown by the description. Thus, the name given by Bohemann is a synonymy. In my collection, I had associated the *gracilis* of Regimbart (1) with the *angolensis*. So, I was happy to hear that Mr. Zaitsev was of the same opinion (2). This species is remarkable by its very long maxillary palpi, the second segment

(1) Regimbart, A. del Mus. Civ. di Storia di Genova, 1907, p. 47

(2) Zaitsev, 1, cit. 1910, p. 226, renvoi (3).

of which reaches the posterior brim of the eye, whereas in Solieri Cast., it hardly reaches the middle of this organ.

The dispersion area of the *angolensis* Er. (*mundus* Boh., *gracilis* Reg.) is thus very vast: from Gabon, Congo, Angola and Kilimanjaro to the Bay of Delagoa, Natal and Madagascar. I examined a beautiful series from Gabon (communicated by Staudinger), as well as another one, found in the Falls of Samlia (Riv. N. Gamia) by Mocquerys (Museum of Brussels).

Sternolophus decens Zaitz.

I found in my collection four specimens belonging to this species, coming from Muscat on the Gulf of Oman and which I had received under the name of Solieri. They answer exactly to the description of the author: these specimens had been captured in Persia.

Genus Hydrophilus Leach.

With the study of the genus *Hydrophilus* I reached the conclusion that the species of this genus can be distributed into two divisions. Their characters are so constant in their opposition from one group to another made me raise these divisions to the rank of sub-genera. One of them, *Hydrophilus* s. str. is mainly seen in the temperate regions of the globe; two or three species exist, however, in South Africa, in Madagascar and perhaps also in the tropical regions of America and Asia. I am not yet sufficiently informed on the subject. The characters

of this sub-genus are the usual ones expected in the *Hydrophilus* as given in the most classical works on the *Hydrophilidae* (3). There the descriptions apply only to *H. caraboides* L., *flavipes* Stev. and the affined species which are those coming into this new sub-genus. I am going to sum up these characters of the other group:

Clypeus is not notched behind the labrum, truncated into a line almost straight in front and no denticulated projections on its anterior angles; not, extraordinary long maxillary palpi, the last segment being about half as short as the penult; 7 or 8 - jointed antennae not or slightly lunated, slightly prolonged into a crescent shape, not ciliated at the superior extremity, the 9th one being irregular, sub-pentagonal, compressed; frail unguis of the tarsi, more or less bowed, furnished beneath with a small sharp tooth in the ♀, obtuse in the ♂; the posterior point of the metasternal carene hardly overlaps the base of the posterior trochanters. Moreover, the labre is not furnished towards the middle with two quite close pores from which sticks out a tuft of small silk hair, but bears in the middle at the back a transversal, straight uninterrupted row of

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- (3) Solier, Ann. Soc. Ent. Fr, 1834, p. 302.
Mulsant, French Coleoptera, Palpicornia, 1844, p. 111.
Lacordaire, genera of Coleoptera I 1854, p. 452.
Rey, Ann. Soc. Linn: Lyon, XXXI, 1884, p. 230.
Everts, Coleoptera Neerlandica I, 1899, p. 642.
Ganglbauer, Die Kafer von Mitteleuropa IV, (1) 1904, p. 233.

big setigerous punctures (1). The posterior spine of the prosternal corene, when it exists, is never very long; finally the facies is more convex, the general form shorter and broader.

In the other sub-genus which I shall name *Neohydrophilus*, existing only in the tropical regions of Africa, Asia and America the clypeus is broadly notched in front, so that its projection is tooth-shaped on its anterior angles; the notch reveals the labrum joint; the latter bears towards the middle and in front of two setigerous pores, not far from each other, from which sticks out a small tuft of stiff silk hair (2) and which were noticed by Say only (3); moreover, the straight posterior row of setiferous punctures is broadly interrupted in the middle,

(1) In the genus *Sternolophus* - 8 examined species - the labrum is armed in the middle with a transversal series of setigerous punctures, but it is not punctuated at the back.

(2) In all the examined *Hydrous* s. str. (21 species) and the *Temnopterus aculeatus* Solier, the labrum is also furnished at the back with a straight row of setigerous punctures broadly interrupted in the middle. In the examined *Dibolocelus* - 3 species - this line curves and comes to the middle of the labrum, it is also interrupted in the middle. The two setigerous; isolated pores, so constant in the *Neohydrophilus*, exist only in the *Hydrous australis* Montrouz. and *albipes* Cast. both are from Australia and in *H. ater* Oliv. from America. I found no trace of it either in *H. brevispina* Farn and *latipalpus* Cast from Australia, *H. insularis* Cast., *foveolatus* Reg. and *triangularis* Say from the new world, or finally in the *Hydrous* from Europe, Asia and Africa.

(3) S. description of his castus; *Bost Journ. of Sc.*, I 1837, p. 170.

at the back of the two anterior pores. The club of antennas is asymmetrical, strongly perfoliate and exactly reminds of the Hydrous Leach: the 6th segment is big, in blade or cone shape covering or embracing a great part of the 7th, the 7-9 are hollow on the posterior side, the 7th and 8th lunate shaped into an irregular crescent with a ciliated, superior net-like process; the maxillary palpi are extremely long, reaching in most of the cases the base of the pronotum when they are spread; the last segment having a tendency to be as long as the 3rd one. The characters enumerated above are very constant and I always found them in the species which I examined up to now. I must add that the unguis of the anterior tarsi of the ♂ are grapnel-shape as for the *Hydrophilus s. str.*, but the basic tooth is much bigger and often broadens into a spatula. (Pl. fig. 16-17). In the ♀, the tooth exists on all the unguis even on those of the posterior tarsi. It is particularly big and well placed toward the middle of the unguis on the front legs. (Pl. fig. 15 and 18). The prosternal carene is posteriorly prolonged in some species into a stout spine (Pl. fig. 19) almost as long as the prosternal carene. The tip of this spine lays on the anterior tubercle of the mesosternum; this tubercle can be notched or bifid for this reason. The metasternal carene tends to prolong posteriorly ending into a spine which can reach the 2nd or 3rd ventral suture in some species. All these particularities are to be found still more pronounced in the *Hydrous Leach*, with

which this new sub-genus must be compared, mainly when some species are studied like the big *deplanatus*, n.s. from German, East Africa. From some aspects, it also reminds of the genus *Sternolophus*; the *Neohydrophilus distinctus* Hope, for example, has obvious similarities with the *Sternolophus angolensis* Erichs. They have in common the length of the maxillary palpi, though the last segment is always slightly shorter than the previous one, the absence of spine on the prosternal and metasternal carina, the latter hardly overlapping the posterior coxae; finally the facies, the form of the body being not convex, but elongate and well elliptical; this is also the rule in the *Neohydrophilus*.

The *Neohydrophilus* are to *Hydrophilus* s. str. what the *Neosternolophus* Zaitz are to the *Sternolophus* proper. The *Neosternolophus* have also a notched clypeus, which is the only difference of their character, because they have also, like the *Sternolophus angolensis-brachyacanthus - oceanicus*, the short metasternal carina and a fine coating of straight small silk hair on the inferior ridge. On the other hand, my *Neohydrophilus* have a constant series of characters which are really interesting. The Geographical distribution of the *Neosternolophus* is restricted and limited to regions on the South of India, in Java and in Australia, whereas that of the *Neohydrophilus* spreads from America to Africa, to Southern Asia up to the Sunda Islands, meaning almost whatever is left of the vast Australian-Brazilian

land of the geological epochs. So I think that further studies on the geographical distribution of each species might reveal important facts about their origin and phylogenic relationship with the other genera of the Hydrophilini tribes (sensu Ganglbauer).

Australia has no representative of the genus *Hydrophilus*; this one is replaced there by the *Hydrobiomorpha* Blackburn, I think it is proper to expatiate on them. This genus is embarrassing; it could not have directly given rise to the first one and consequently does not seem to me an intermediary between the *Hydrobiides* and the *Hydrophilides* of Lacordaire as believed by Blackburn. Indeed, in some points, the sexual dimorphism is much more evolved in these insects than in *Hydrophilus*. To a certain number of strongly coenogenetical characters they add up some rather more primitive ones. So, amongst the first ones we must include: 1° the antennae absolutely similar to those of the *Neohydrophilus*; 2° a broadly notched clypeus as in the same subgenus; 3° the prosternal carina ending at the back into a stout spine; 4° the last abdominal segment not notched, smooth one a narrowly triangular space, slightly risen into a carina at this place; 5) the unguis of all the tarsi similar also to those of the *Neohydrophilus*; 6° maxillary palpi with the 4th segment much shorter than the 3rd one, as in *Hydrophilus* s. str; finally, as I already said, a highly developed sexual dimorphism; the 3rd segment of the same palpi being highly dilated in the male

reminding of what exists in some Hydrous. The metasternal carina strongly flattened in the middle and almost wiped off, the meso - and metasternal carinae not intimately welded, not dilated; finally the posterior tarsi broadened, not dilated; almost not remiform, certainly constitute more primitive characters.

The following species are included in the new sub-genus *Neohydrophilus*, according to my present study:

From Tropical Asia

- ? *cambodiensis* Reg. (according to description).
- elongatus* Reg.
- rufiventris* Nietner. (Horni Reg.)
- spiniollis* Eschsch.

From Africa

- ? *cultrifer* Reg. (according to description)
- distinctus* Hope (? *rufofemoratus* Hope, *laticollis* Reg.)
- spiniollis* Eschsch
- deplanatus* n.s.

From America

- castus* Say (according to discription).
- perfectus* Sharp (according to discription).
- politus* Cast (according to four samples from my collection determined by Regimbart).
- tenebrioides* Jacq. Duv (according to a sample from my collection determined by Regimbart)

I could not yet examine the *Hydrophilus inconspicuous* Nietner (Ceylon), *grandis* Casteln, (Brazil), *irinus* Brulle (Parana) and *medius* Brulle (Brazil, Antillae and Patagonia). They are described with limitations which prevent the definite inclusion of these species in the new sub-genus *Neohydrophilus*. The same case is with the *viridescens* and *Wencki* Oliveira, from Angola. As I could not obtain their types. - The insufficient description of the latter makes me believe it to be a close form of *H. distinctus* Hope, if not identical to this species.

Owing to Mr. Severin's kindness, the curator of the Museum of Natural History of Brussels, I could examine several types of coleoptera described as *Hydrophilus*. I have the observations suggested by their examination under study. As the description of old authors are usually limited and do not mention in a descriptive way the systematic series of the head and pronotum as well as other structural characters brought out by modern entomologists, I wrote a new diagnosis about the *H. flavipalpis*, *distinctus* and *rufiventris* - I add up to it a new species from German East Africa.

Hydrophilus s. str. *flavipalpis* Bohemann - Ins.,
Caffr. I, 1851, p. 595.

Type in the Museum of Stockholm, n^o 63, Caffraria (J. Wahlberg). 14 mm in length: 7½ mm in width sex ♂.

Shiny black top.

Convex, oval form. Quite fine punctuation, but dense and conspicuous on the head, pronotum and elytra (15 diameters). Head;

antaro - lateral punctuated series formed by big and few punctures, well impressed, curved at right angle in front, with sometimes quite an irregular internal branch which makes it look diffuse, close to the intra ocular series and often continuing with it. Intra ocular series with big and confluent punctures, concentrated in two small groups or depressions close to the internal brim of the eye. No notched clypeus in front, with an anterior edge very straight. Labrum broadly margined with rust color and cinate in front with an uninterrupted line of setigerous points at the back. Frail light rust or yellow maxillary palpi with 2nd segment overlapping the middle of the eye regularly thickened from base to tip slightly arched, the 3rd smaller than the precedent one which is about half as long as the 3rd one. Finely and quite sparsely punctuated mentum, shiny between punctuation. Dark-rusty, testaceous club - antennae - the last three segments - darkened very much like those of the caraboides L, Pronotum; antero-external series broadly disjointed, formed with a few punctures only; the internal group formed with a straight and oblique line, deeper than in the external group which is always slightly irregular and continued at the external gutter which is coarsely punctuated from middle to the tip. Medio - external group: very irregular, scattered on a roughly triangular space, limited in front by a more regular series and more or less continued into the antero - external group through the punctuated gutter Elytra: the two discal series well provided, well traced and well impressed, almost regular continued to the

base. The outside ones with more diffuse, sparse punctures difficult to isolate. The median is also scattered, looking double and evanescent in front. In the intervals, we notice two series of finer, more regular punctures more or less greenish or bluish in color. Prosternal carina shaped into a blade, quite variable, straight or convex or furnished with a kind of tubercle in front; the posterior angle sharp, without spine, mesosternal carina with a simple anterior tubercle, which is highly declivous just before this tubercle, metasternal carina slightly depressed in the middle with a light straight hardly impressed longitudinal furrow. The not so sharp spine top reaches or slightly goes beyond the middle of the first ventral segment. Femora red or black in color, with red knees, non or hardly punctuated anterior or posterior ones; tibiae and tarsi red more or less dark in color; unguis denticulated at the base and graphel-shaped in the ♂, just broadened in the ♀. An onychium between the unguis. Ventral segments: red spot more or less spread on the edges. Last segment with a smooth triangular - shaped, rounded - top plate.

This insect belongs to the sub-genus *Hydrophilus* s. str., with non-indented clypeus, with clubs of antennae like those of caraboides, etc. This description was made according to the type of Bohemann and 7 other specimens; one from Africa, with no other locality mentioned, two from Galam (Senegal) and four from Madagascar (Plateau of the Androy, Region of Ambovombe), all

perfectly identical. Before seeing the type, I had determined the last four as *fulvofemoratus* Fairm. Its description (1) completed by Regimbart (2) perfectly applies to the insect of Bohemann. Though I have not yet seen the typical specimen of Fairmaire, I conclude now that the two species are identical. The presence of *fulvofemoratus* was noticed also in East Africa by Regimbart (3).

Nechydrophilus Distinctus Hope - Ann. Mag. Nat.
Hist. XI, 1843, 364.

Type in the Oxford Museum, Palmas (4) (Guinea); 19 mm in length. 9 mm in width - Sex ♀ .

Shiny black top oval - elongate, elliptical, slightly convex form. Very fine punctuation, visible only when enlarged (15 diameters), better printed on the head and pronotum than on the elytra; the background finely chitinized (60 diameters). Head: antero - lateral punctuated series, well impressed, irregular, formed with uneven, subgeminated and angular punctures in front. Intra - ocular series more impressed and irregular with confluent punctures mainly in the first two-third. Broadly notched clypeus in front, with rounded anterior angles, revealing in the notch, the labrum joint constituted by a chitinized membrane, more or less reddish or yellowish (5). Sub-sinuated labrum broadly

(1) French Soc. Ent. Ann. (4) VIII, 1863, 193 and 194.

(2) Op. quot. LXXII, 1903, 24

(3) Op. quot. LXXV, 1906, 259

(4) According to the label tied to the pin of the type.

(5) This particularity is found in the *Hydrous* and other genera

margined with russet in front, furnished with two deep, quite spaced punctures in its first anterior half, out of which a tuft of rusty hair emerges, behind a transversal and regular row of setigerous punctures, which is broadly interrupted in the middle behind the two anterior punctures Russet-colored palpi. The labial palpi with a very short first segment, length and width alike; the second one measuring one third of about the length of the second segment of the maxillary palpi; the third one noticeably shorter than the previous one - by half. The maxillary palpi are particularly elongated, reaching the base of the pronotum, with a short first segment, length and width alike; a second segment, the longest, sub-bowed, slightly thickened at the tip reaching, even overlapping the middle of the eye; the third one of about the same length; the 4th one not much shorter than the previous one, not thickened at the tip. Strongly and densely punctuated mentum chitinized between punctuation. Antennae (Pl. fig. 13) russet in color except for the club which is dark. Basal segment strongly compressed; the second one, cylindrical, with the same width at the base and at the tip; 3rd, 4th and 5th ones: transverse, cylindrical; the 5th one having a width almost equal to its length, the three of them together as long as the second one; perfoliate asymmetrical club: big, cone-shaped 6th segment, covering a great part of the 7th; 7th to 9th hollowed out on the posterior 7th and 8th with highly ciliated branching process 9th sub-triangular

of coleoptera, the Necrephorus for example - Rhinarium was the name given to the Chitinized membrane.

ular tapered off, ending into a more or less acute angle (this according to the samples of my collection and another one from the Museum of Brussels, because the type lost a great part of the right antenna and the 9th segment of the left one). Pronotum: disjointed antero - external series; the partial series which are thus formed are quite regular, broadly separated; the last punctures of the second series being sometimes concentrated at the back in a small depression. Medio - external group: very irregular, sparse, limited in front by an oblique, more abundant but irregular and sparse series. Elytra: two abundant well traced discal series the inner one evanescing in the basal quarter, the two outer ones with more spaced and more irregular punctures. Between these two groups of serial punctures, there is a fifth series, the median one, the punctures of which - 15 to 16 - are finer, more sparsed; this series only appears in the posterior two third of the elytral - margins armed with numerous, finer punctures than those of the series; Prosternal carina simply angular and not spiny at the back. Metasternal carina bearing a simple anterior tubercle neither notched, nor bifid. Metasternal carina, sharp, quite narrow, not at all depressed, with a light, slightly impressed, straight, longitudinal furrow; very short spine which does not extend beyond the base of the posterior coxae. Pitch - brown legs with more or less reddish femora and tarsi. Not punctuated posterior and anterior femora; the intermediary femora covered with dense

and fine punctuation. Unguis with a tooth near the middle in ♂ and ♀. An onychium between the unguis. Last abdominal segment furnished with a smooth, quadrangular front - rounded plate.

This description was given partly due to the type I had in communication. This insect reminds of some representatives of the genus *Sternolophus*, mainly the *angolensis* with which it shares the same facies. I had determined primitively the other specimens I mentioned such as *laticollis* Reg: some had even been sent to me under this name by Mr. Staudinger. By comparing Regimbart's description with the type of Hope, I find it perfectly adapted to it. So I can just transcribe several passages of the excellent diagnosis of the French entomologist (1). Thus the name of *laticollis* falls into synonymy. The specimen of the Brussels Museum was brought back by Mocquerys from the Falls of Samlia, Riv. N. Gamia mines come from Gabon.

H. rufofemoratus Hope. Ann. Mag. Nat. Hist. XI, 1843, p.364

After very careful examination of the type (2) and of that of *H. distinctus* from the same author, I cannot see any difference except for the large size which is really remarkable 27½ mm in length - 10 mm in width. By comparing the two description of Hope, we notice, however, that he found no other

(1) Estratto dagli Annali del Museo Civico di Storia Naturale di Genova (3), III, XLIII, 1907, p. 46.

(2) Oxford Museum. ♀ . Palmas (Guinea).

distinctive character than the femora being reddish for one and black in distinctus.

distinctus Hope.
8 x 9 lin.

rufofemoralus Hope.
11 x 5 lin.

Niger.

Niger.

forma oval elongate.

palpis rufo-testaceous

palpi rufo-testaceous,
thorax glabrous

Elytra glabrous punctis haud
sub lente distinguendis,

elytris que quibusdam lineis-
punctato straitis, punctis
parum distinctis,

Corpus infra obscure atrum
subtomentosum,

Corpus infra atrum,

femoribus tibiisque nigris
et nitidis.

femoribus rubris, tibiis
nigricantibus nitidis.

But this part of the body is not at all black in distinctus as I realized after checking. The femora are also red in the typical specimen, but a darker red close to black or pitch-brown. *Hydrophilus distinctus* which is then described should become, therefore, a synonym of *H. rufofemoratus*. But as I only saw the type, a unique representative of the latter species, and as none of the many examined specimens of the first species reaches the large size of the other one. I shall give a definite answer after studying more material.

Neohydrophilus rufiventris Nietner. Ann. Mag. Nat. Hist.
XIX, 1857, p. 387.

Type in the Royal Museum of Berlin, Ceylon (Nietner), n^o

10,534. 16 mm in length; 9 mm in width.

Shiny black on top, metallic on the sides and top, mainly on the pronotum and the back of the head. Convex, oval form. On top: visible punctuation, on the head slightly more indicated (60 diameters). Head: antero - lateral punctuated series strongly impressed, quite regular, simple, with slightly more scattered punctures to the inner, semi-circular extremity. Intra-ocular series along the eye, quite narrowly divided into 2 or 3 groups, in which each is concentrated in a small depression; these series are formed of uneven and often confluent punctures. Clypeus, broadly cleft as in *distinctus* Hope. Front-sinulated labrum, with the two depressed punctures seen in the latter. Russet-colored palpi: the labial ones with the last segment shorter than the previous one, by about half the length; the maxillary ones with the second segment reaching about the middle of the eye, arched, thickened at the tip; the 3rd segment slightly less longer than the 2nd one; the 4th segment slightly less longer than the 3rd one. Strongly and densely punctuated mentum, smooth between punctuation. Antennae; russet in color except for the club which is dark, perfoliated asymmetrical as in *distinctus*. Pronotum: disjointed antero - external series, which are thus forming partial series, broadly separated with ordinary, shallow more or less confluent punctures. Medio - external group formed with punctures of the same size, quite confluent, arranged in a simple, quite regular line in front and

scattered into a few punctures at the back of this line.

Elytra: the two discal series mainly the 2nd one, abundant, well-indicated, with shallow punctures, the median one attenuated into the basal quarter with a tendency to disappear also at the back as well as the first discal one into the basal part. The outer ones are closer disappearing at the back to be assimilated with the marginal punctuation which is quite dense and as fine as that of the series. Prosternal carina bearing a stout posterior spine and almost as long as carina. Metasternal carina bearing an anterior bifid tubercle, divided by a small groove which receives the prosternal spine in the inflexion. Metasternal carina depressed in the middle, quite broadened, furnished at that place with a short groove hardly printed shaped into a simple line, with a very short but stout spine, hardly extending beyond the base of the posterior coxae and reaching or extending a little beyond the first ventral segment. Black legs with more or less reddish tarsi. Anterior and posterior femora with sparse, fine and hardly visible punctuation. Denticulated ungues. An onychium between the ungues. ♂ : ungues of the anterior tarsi grapnel - shaped with a spatula - shaped tooth (Pl. fig. 16). Abdominal segments dark reddish in color which are noticeable even through the pubescence. This pubescence is absent on a smooth, more or less square space at the tip of the last ventral segment.

In my collection I have a series of 18 individuals from

around Mahe (Malabar Coast), native hunters, 2nd Semester 1902, which were determined by Regimbart labelled: "H. spinicollis Eschsch. v. Horni Reg." I cannot see any difference between these insects and the type rufiventris which I have in front of me. The name given by Regimbart (1) falls into synonymy. I do not understand how this excellent entomologist could compare his Horni with caraboides L. as they have nothing in common. The particularities of its structure had not escaped the attention of Nietner who said: "As far as my resources allow me to ascertain, a very anomalous species, having the perfoliated antennae and toothed claws of a Hydrophilus and the cultriform prosternal carina and the elytra of a Hydrous." (2).

Neohydrophilus deplanatus (Reg. in litt. ?) n.s.

♂ : 22 mm in length, 10½ mm in width; ♀ : 24 mm in length 12 mm in width.

Elongate, parallel forme particularly in the ♂, plane not convex. Blurred punctuation even on the head. Its antero-external series well - printed each broadly separated in the middle, irregular, angular in front, with the punctures of the inner branch, scattered at the tip on an irregular space. Intra-ocular series well-printed also, well-limited, very close to the inner brim of the eye with a punctuation concentrated in two or three clearly separated depressions. Clypeus broadly cleft in

(1) Ann. Soc. Ent. Fr. LXXI. 1902, p. 471.

(2) L. c., p. 387. To understand this sentence, one must

front, labrum-joint conspicuous. Frontly - subsinuated labrum of the same color as the head, slightly reddish in front with, in its first half, the two setigerous ordinary punctures and at the back a regular and transverse row of setigerous punctures broadly interrupted in the middle, behind the two anterior punctures. Russet color palpi: the maxillary one formed as in the *distinctus* Hope, almost reaching the posterior edge of the pronotum. Russet - colored antennae, except for the last three segments more or less formed as those of the *distinctus*, except for the last segment which is almost of the same width and length, subquad-rangular with rounded and broadly truncated angles at the tip. Pronotum. Antero - external series not well printed, disjointed and the partial series which are thus formed, are broadly separated, the punctures of the partial inner series irregularly distributed with a tendency together in turn in two or three small, isolated groups. Medio - external groups, scattered, limited, in front by an oblique series, more abundant, but still irregular and scattered. Elytra with series arranged as in *distinctus* but with relatively finer, more numerous, closer punctures, the inner series having also a tendency of disappearing in front in its basal quarter. Prosternal carina rounded in front, cultriform, furnished at the back with a long spine as stout and as long as that of the *rufiventris* Nietner

remember that today. *Hydrophilus Geoffr = Hydrous Leach (Stethoxus); Hydrous Brulle = Hydrophilus Leach (Hydrocharis).

from India which leans on the mesosternum with a flattened anterior tubercle which bears in its middle quite a broad, small groove. Metasternal carina, with no groove, and smooth with no punctuation. Metasternal carina also smooth, either not or hardly depressed, bearing in its middle a light straight, shallow groove behind a stout spine the tip of which reaches or extends beyond the posterior suture of the 2nd ventral segment; completely black legs, with the tips of the tarsi slightly reddish. Intermediary femora with dense and smooth punctuation which is very scattered on the anterior femora as well as on the tip of the posterior femora. An onychium between unguis; these ones are armed with a strong tooth toward the middle, even in the ♀ (Pl. fig. 18). This tooth broadens and becomes spatuliform at the anterior tarsi of the ♂ (Pl. fig. 17). Last abdominal segment armed with a narrow, elongate smooth plate twice as long as broad, tapered off neither at the back nor in front in the ♀; broader in the ♂, mainly at the posterior tip.

This remarkable species is typified by its size which is longer than in other *Hydrophilus*. Absence of punctuation, its elongate prosternal tip and mainly the extraordinary length of the metasternal spine, the tip of which reaches or extends beyond the posterior suture of the 2nd ventral segment. Amongst the *Hydrophilus* which have been described so far, only one has this particularity; it is named *cultrifer* Reg. from Madagascar, which I do not know. Its size is much smaller (14 mm), the

reticulation well - impressed; the thighs are bright red in color and the last abdominal segment has no smooth plate which is an exceptional character for a *Hydrophilus*. But this should, however, be checked. The *deplanatus* seems to me the most evolved of the species of the genus *Hydrophilus* and definitely brings closer the sub-genus *Neohydrophilus* to the *Hydrous* Leach.

I received two specimens ♂ ♀ (my collection) from Mr. Staudinger under the name *deplanatus* Reg. (in litt....?) which I kept. They come from German East Africa, Dar-es-Salam.

Genus *Hydrous* Leach

Hydrous pallidipalpis Mac Leay and *fuscipalpis* Mac L. in litt. Annul. Jav., p. 141. Ed. Lequien, 1825, p.35 (Java).

Kuwert, in *Deutsche Ent. Ztschr.*, 1893, p. 81, had described a new, a *Hydrous Sumatrae* which, according to its label, came from Sumatra. Regimbart, in his revision of the large *Hydrophiles*, *Ann. Soc. Ent. France*, LXX, 1901, p. 211, identified this species, after examination of the type, to *acuminatus* Mots. (*cognatus* Sharp., *viridicollis* Bed.); he added that the word "Sumatra" was an error, but in determining the *Hydrous* of the supplements of the Museum of Natural History in Brussels, I examined a series of 5 ♂ ♂ and 8 ♀ ♀ from Java (Pasteur), of a *Hydrous* which does not differ at all from the *acuminatus* Mots. From the same collector and from the same country, there was also a very large series of *picicornis* chev., which was broadly spread there. Still doubting about the

authenticity of the insect, I enquired from the curator, Mr. Severin, who confirmed the authenticity of the origin. Therefore, Mr. Kuwert information must also be exact.

So, I wonder if *acuminatus* Mots is identical to *pallidipalpis* Mac Leay. The size given by Mac Leay is $1\frac{1}{2}$ (39 mm); that of the *acuminatus* varies from 28 to 42. He compares his species with a *Hydrous* from the Trinity Island (America), the *H. fuscipalpis* Mac Leay, a name in litteris, because I found no such name in the literature. It certainly is the *Hydrous insularis* Cast. spread in Central and Insular America. Indeed, this coleoptera is less convex, more elongated, less diluted in color, blacker than the *acuminatus* Mots; the palpi are more slender and the 6th segment of the antennae dilated into an auricle almost covering the club, reaches the length of the previous segments, including the basal segment, whereas in *acuminatus* the 6th segment which has just been mentioned hardly exceeds in length the three previous segments put together. This is what Mac Leay expressed in his sentence: "antennarum articulo 6^o praecedentibus simul sumptis multo brevior".

Hydrous bilineatus Mac Leay, l. cit., p. 141 and 36.

The character pointed out in the diagnosis of Mac Lay,, mainly the last segment of the maxillary palpi which is shortly thickened and subsecuriform fit well only for *olivaceus* Fab. But

this species is particular to India and has not yet been found anywhere else. Would it be the picicornis of Chevrolat widely spread in Java? I cannot decide as I have not enough material.

As I wish to prepare a monography of the genus *Hydrophilus* Leach, I would like to receive in communication all available specimens belonging to this genus. I am, therefore, requesting my colleagues who happen to have in their collection non classified *Hydrophilus* to help me in this matter. I would be pleased to determine these insects for them.
