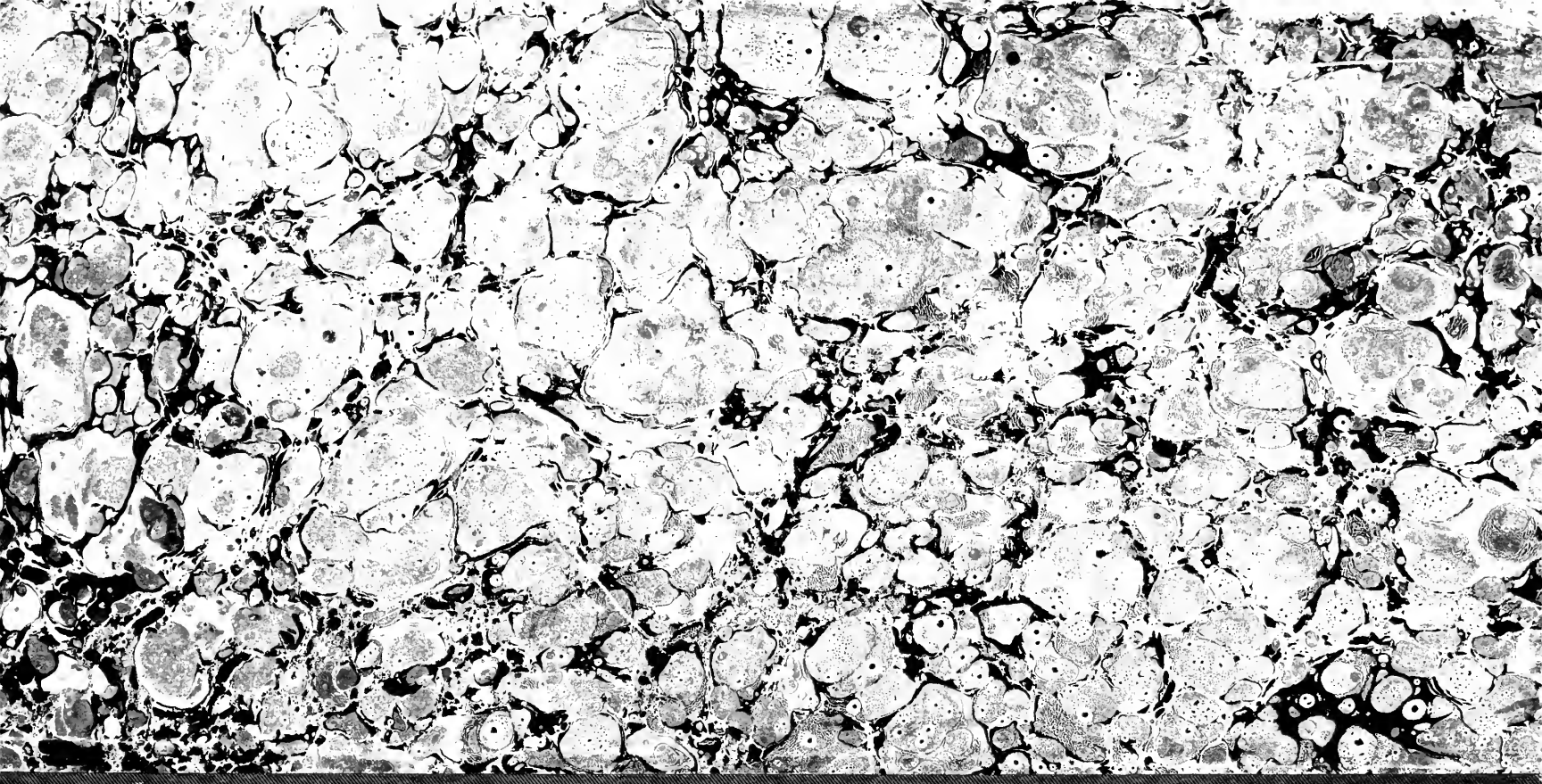

NOTES

FROM THE

ROYAL ZOOLOGICAL MUSEUM

OF THE NETHERLANDS

AT LEYDEN

EDITED

BY

Prof. H. SCHLEGEL

Director of the Museum.

VOL. I.

LEYDEN

E. J. BRILL.

1879.

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FROM THE

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Prof. H. SCHLEGEL,
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N°. 1. January 1879.

LEYDEN,
E. J. BRILL.

This periodical, edited in collaboration with the scientific staff of the establishment, viz. Dr. F. A. JENTINK, Dr. A. A. W. HUBRECHT, C. RITSEMA CZN. and Dr. J. G. DE MAN JR., and other naturalists, will be published every three months, in parts similar to the first number.

H. SCHLEGEL.

LEYDEN,
January 1879.

NOTE I.

ON NISUS RUFITORQUES AND N. POLIOCEPHALUS.

BY

H. SCHLEGEL.

Since my treating of these two species in my work entitled «Muséum d'histoire naturelle des Pays-Bas", I have had an opportunity of examining a larger series of specimens of them and am now enabled to confirm the results of my former studies.

I consider these birds with the allied Nisus iogaster of Amboina and Ceram and a certain number of other species as belonging to a group of Sparrow-hawks, differing from the common sparrow-hawk and its allied species by a greater head, stronger bill, larger eyes, less slender tarsus and especially by shorter but thicker toes, the last characteristic applying more especially to the middle toe.

Of these three species, Nisus rufitorques has the widest range: being found in Bouro, in the Halmahere Isles, New-Guinea and the adjacent islands, and even in the Fidji Archipelago. The distribution of Nisus poliocephalus is confined to New-Guinea, the Papoa islands and the Aru islands; and Nisus iogaster has only been observed in Ceram and Amboina. The latter species, is very conspicous: in perfect plumage by the deep rusty red color of its lower parts; in immature plumage by the white color of the lower parts being only interrupted by a small

number of dark heart-shaped spots, commonly somewhat larger at the sides of the body.

NISUS RUFITORQUES.

It is known, that Nisus rufitorques was established by Cassin and that he has published drawings of two specimens, viz. an adult male and a young female [1]), both killed in the Fidji islands. We possess four adult specimens of this locality. There is some variation in the distribution of the vinous color in the two sexes. This color is somewhat deeper in the females and spreading over the under tail-coverts, it becomes a little lighter on the under wing-coverts and passes on the middle of the throat to a grayish white. In the males, the vinous color is confined to the under part of the body, the under coverts of the tail are grayish white, the throat is still more inclining to white, and the under coverts of the wings are of a pure white. The thigh feathers have with both sexes a vinous tint.

Two adult males of the Arfak mountains in New-Guinea present a coloration exactly similar to that of the old female of Fidji.

In an adult female of Little Key island the vinous color reaches only to the middle of the abdomen, the rest of the belly, the thigh feathers, the under coverts of tail and wings being of a pure white. Besides this, the slate color of the upper parts is much lighter and inclining to a whitish grey.

The entire head, neck and throat up to the mantle and the breast of a fine adult male killed in the isle of Bouro is of a pure grayish-white to rust color and occupies the whole of the breast, the belly, the thigh feathers and also the under coverts of tail and wings.

The late Dr. Bernstein collected three adult specimens

1) United States exploring expedition, Philadelphia, 1858, pl. 2.

in the island of Guebeh. Two of these, male and female, hardly differ in color from the adult female of the Fidji islands. The second old female is, on the contrary a much larger and stouter bird; the vinous color is much deeper passing almost to rufous, and intercepted by numerous narrow and pale bars of a grayish white color.

There is no difference between this latter specimen and an adult female killed in Obi-island.

We observe exactly the same system of coloration in four adult specimens collected in the island of Morotay, but in an adult male shot in the same island, the vinous tint is strongly inclining to rufous, and without any trace of clear bars. It is almost superflous to state, that Mr. Wallace established his Accipiter Muelleri on specimens of Nisus rufitorques of Morotay-island.

Ten adult individuals shot in the isle of Ternate are like those of Morotay, but the light cross bars are in general less conspicous and entirely wanting in three of the specimens. Besides these individuals we received from this island two specimens of the dark variety living in Halmahera.

Neither is there any decided difference between four adult specimens of the island of Batjan and those of Morotay, but a fifth adult female of Batjan shows the coloration of the black variety common in Halmahera.

Five of our adult specimens of Halmahera can in no way be distinguished from those of Morotay, except that four of them have the light cross bars of the lower parts more pronounced; but in the fifth specimen these bars are entirely wanting. There exists, however, in the island of Halmahera, besides the specimens with the usual coloration, others that form a dark variety similar to what is observed in the common hawk (Falco communis.) Their upper parts are of a darker slate color and the vinous collar of the neck is entirely wanting. The color of the lowerparts is much deeper, and every where, that is to

say, even at the under coverts of wings and tail crossed by very distinct grayish white bars, lastly, the quills and great under coverts of the wings show the black bars, distinguishing the first plumage of the species. We possess ten specimens of this variety killed in Halmahera [1]).

As to the immature individuals of this species, the markings of their plumage is liable to variations; and in those of New-Guinea and the adjacent islands, the color of the markings is in general paler and inclining to rufous, but all of them have the great under coverts of the wing and the quills furnished with black cross bars, which fade more or less completely away in the adult bird.

We must observe, that our young specimen of the island of Bouro agrees in every sense with the description of the young Astur Wallacii of the same island, given by Mr. Sharpe.

The length of the wing varies with Nisus rufitorques of from 7 to 10 inches and 3 lines; that of the tail of from 5 and a half to 8 inches (french measure).

Our Museum possesses specimens of this species killed in the Fidji islands, in the isle of Mefoor (bay of Geelvink), in the North-West peninsula of New-Guinea, and in the islands of Misool, Great and Little Key, Aru, Banda, Gebeh, Obi-lattu, Morotay, Ternate, Batjan, Halmahera and Bouro.

It may be seen from the foregoing review, that Nisus rufitorques has an unusual wide geographical range, and that this range is subject to a no less remarkable interruption, the species being excluded from Ceram and Amboina where it is represented by Nisus iogaster, although it occurs again in the isle of Bouro. A similar example of this kind is presented by the Carpophaga perspicillata, living in Halmahera and Bouro, and being re-

1) Mr. Sharpe assigns to this variety a longer middle too; but I could not make out this characteristic.

presented in Ceram and Amboina by another species, viz. the Carpophaga neglecta.

These lines may be sufficient to show, that an establishment of more than one species on Nisus rufitorques is well-nigh impossible, and is to be considered as a loss, not a gain to science.

NISUS POLIOCEPHALUS.

The first specimens of this species brought into Europe, were collected by a civil officer of the Dutch Government sent in 1825 to explore the Aru-islands by the late Governor-General of Dutch India, Baron van der Capelle. I examined this specimen in 1827, but did not think it convenient to establish a new species on a single individual apparently in immature plumage. I could not procure this specimen for the museum earlier than in 1866. In the meanwhile Mr. Wallace had sent to England the adult female of a bird shot in the Aru islands, which I recognized at belonging to the same species as my specimen. It was described by G. R. Gray [1]) under the name of Accipiter poliocephalus.

Nisus poliocephalus has only been observed in the North-Western peninsula of New-Guinea, and in the neighbouring islands of Batanta, Salawatti, Mysol and Aru. The specimens of New-Guinea were collected near Dorey, Andaï and in the Arfak-mountains.

We have seen that Nisus rufitorques is coexistent with Nisus poliocephalus in all those countries, but that the former has a far more extended range, and is found in tracts not frequented by the latter species.

Both these birds, though closely allied, exhibit constant distinctive characteristics, and can by no means be confounded: Nisus poliocephalus being generally a little smaller

1) Proceed. Zool. Soc. London, 1858, p. 170.

than Nisus rufitorques and presenting a different system of coloration.

The following measures are taken from eleven specimens of our collection.

Wing $6^3/_6$ to $7^3/_6$ inches. Tail $5^1/_2$ to $6^1/_2$ inches.

As to the legs and toes, cere and eyes, it appears that their color presents, instead of the more or less deep yellow observed in those parts in Nisus rufitorques, a fine reddish orange inclining sometimes, in the eye, even to reddish brown.

The system of coloration of the plumage may be stated as follows. In the first plumage, the upper parts of the bird are rufous, the lower parts of a yellowish white interrupted, along the middle of each feather by a black streak, a marking equally observed in the young of Nisus trinotatus, Buteo (Poliornis) poliogenys, Buteo (Bacha) rufipectus, and, as an accidental characteristic in Haliaëtus vocifer and Haliastur indus. The perfect plumage which is produced by a change of color of the feathers and not by moulting, shows the upper parts to be of a slaty gray, passing on head and neck more or less to a whitish gray, whereas the lower parts are of a pure white. The black streaks of the under surface of the body, disappear however only gradually which is proved by specimens, in which their number is considerably less or even reduced to a few. The same is more or less the case with the black bars of the primaries.

NOTE II.

ON VARIOUS SPECIES OF MUS, COLLECTED BY S. C. I. W. VAN MUSSCHENBROEK ESQ. IN CELEBES,

BY

Dr. F. A. JENTINK.

Dec. 1878.

Last year we received from S. C. I. W. van Musschenbroek, Ex-Resident of Menado, a large collection of Mammalia and Birds; and among them the following species of the genus *Mus* of Celebes. Four species are new to science and another species is new to the Celebian Fauna.

It should here be observed, that the different authors, describing new species of Mice, have not paid attention enough to the nature of the fur which is nevertheless of special importance. For instance, *Mus speciosus* and *Mus argenteus*, both described and figured by Temminck, Fauna japonica, 1843, p. p. 51 and 52, tab. 15, may be very easily confounded. Reading the descriptions one would think them to be the same species, the only difference being the longer tail of *Mus argenteus*. But in studying the types found in the Leyden Museum, it is evident that Temminck has omitted to remark that the fur of *Mus argenteus* consists of woolly hair only, that of *Mus speciosus* on the other hand of hair which is woolly and spinous. In fact, in the latter species the woolly hairs of the upper and lower parts of the body are mixed with numerous flex-

ible spines: on the back they are slate-coloured near the base, rusty towards the tip, on the belly they are entirely white; the woolly hairs being here slate-coloured near the base and for the rest of a pure white.

A simular phenomenon may be observed in the African Squirrels, among which occur the only species with harsh spines. Every one who has been engaged in the study of these species must confess that it is exceedingly difficult to distinguish them accurately, because the describers of new species hardly ever pay attention to the nature of the fur. Without having seen the types it is next to impossible to determine the species with exactness.

My reason for not giving a generic name, for instance *Acanthomys* or *Acomys*, to the species of Mice with spinous hairs, is that, in doing so, I should make an artificial division, dislocating species which belong together in a natural system. If moreover it would be advisable to distinguish by a generic name the Mice with harsh and strong spines, it would be equally necessary to combine into a separate genus those species of Mice of which the spinous hairs, although flattened and mostly channeled, are so narrow and flexible as not to deserve the name of »spines".

With the African Squirrels the case is different. The sciuri with harsh spines are here separated under the name »*Xerus*", and with good reason. They are Ground-Squirrels and differ in habits and habitation from the other soft hairy African Squirrels.

I. WITH SPINOUS HAIRS.

1. *Mus leucopus.*

Acanthomys leucopus, Gray, P. Z. S. L. 1867, p. 598.

n. i. toerean in pate.

Upper parts grayish brown; sides of nose, cheeks, chin,

throat, belly and inside of legs, white. Tail longer than head and body, thinly covered with short hairs, longer near the tip, forming a little tuft. Whiskers, much longer than the head, brown at the base, for the rest white. The fur of the back is composed of three kinds of hair: 1°. woolly hairs, very thin, undulating, white: 2°. bristles, brown, longer than the rest of the fur, and: 3°. spinous hairs, very flat, white, channeled, brown near the tip. The fur of the under surface with two kinds of hair: 1°. woolly as on the back, but shorter, and 2°. spinous hairs, entirely white.

The ears are nearly naked, rounded at the tip. The upper cutting-teeth are orange, the lower ones much lighter coloured.

This species agrees with the species described by Gray, l. c., but Gray gives no measurements.

Two specimens (Leyden Museum).	m. m.
Head and body	150
Tail with tuft	168,5
Ear	14,5
Hind foot	25
Length upper molar series	5
Distance between incisor and first upper molar.	9
» » » » » lower »	4,5

Hab: Cape York (Mr. Damen); Celebes, Menado (v. Musschenbroek).

Alston, P. Z. S. L. 1877, p. 124, remarks in a note: »that this species requires to be renamed, Gray's specific »name being preoccupied by the common North-American »Mouse, *Mus leucopus*, Rafinesque". But as the latter species belongs to the group, named »*Hesperomys*", we will retain Gray's name for the Indian Mouse in question. If, however, Alston objects to the name of this species, he should also reject the name (*Uromys*) »*rufescens*", P. Z. S. L. 1877, p. 743 and adopt the specific name »*musavora*" Pierson-Ramsay, because under the name of *Mus rufescens*, a mouse was already described by Gray, Ann. and Mag. Nat. Hist. 1837, p. 585.

Notes from the Leyden Museum.

2. *Mus Musschenbroekii*, n. sp.

n. i. kalendang and wangetan.

Upper parts chestnut. Cheeks, throat, chest, belly and inside of legs, white. The back is covered with two kinds of hair: 1°. woolly hairs, slate-coloured, with chestnut tips, and 2°. spinous hairs, white with dark brown tips; the latter especially numerous from the neck to the rump, thus giving a darker tint to these parts. The hairs on the under parts of the body are soft, slate-coloured with white tips.

Tail shorter than head and body, thinly covered with hairs. Ears rounded at the tip, elongated, nearly naked. Whiskers dark with white tips, short. Upper cutting-teeth light orange, the lower ones bright yellow.

Two specimens (L. M.).	m. m.
Head and body	175
Tail	124
Ear	16
Hind foot	31
Length molar series	6
Distance between incisor and first upper molar	8,5
» » » » » lower »	4

Hab: Celebes, Menado (v. Musschenbroek).

I propose to name this new species after Mr. v. Musschenbroek, who has frequently given ample proofs of his strong and unceasing interest in the science of zoology.

3. *Mus xanthurus*.

Gray, P. Z. S. L. 1867, p. 598.

n. i. torean.

Upper parts generally tawny, on the back mixed with black. The woolly hairs are gray with brownish tips: intermixed are a few flexible spines, white near the base, with dark brown tips. The bristles are entirely dark brown.

On the neck these bristles are as long as the woolly hairs, longer and blacker on back and rump and projecting beyond the base of the tail. Cheeks, chin, throat, chest, belly and inside of legs entirely of a pure white. Tail longer than head and body, with a few short hairs, longer towards the tip, forming a little tuft. Tail black at the base for about one third of its length, for the rest yellow.

Ears rounded, short and naked. Whiskers short, dark with white tips.

Upper cutting-teeth yellow, lower ones nearly white.

Nine specimens (L. M.)	m. m.
Head and body	245
Tail with tuft	300
Ear	22
Hind foot	50
Length of molar series	8
Distance between incisor and first upper molar	16
» » » » » lower »	8

Hab: Celebes, Tondano (Wallace), Menado (v. Musschenbroek).

II. WITHOUT SPINOUS HAIRS.

4. *Mus Hellwaldii*, v. Musschenbroek, in litt.

n. i. loemandeng.

Upper parts chestnut, darker on the back. Throat, chest, belly, and inside of legs, pure white. Tail shorter than head and body, thinly covered with hairs. Whiskers larger than head and ear, entirely white or brown with white tips. Ear elongated, rounded at the tip, naked. Back with two kinds of hair: 1°. woolly hairs, slate-coloured, chestnut at the tip and 2°. bristles, longer, cylindrical, slate-coloured with black tips. Cutting-teeth yellow.

Two specimens (L. M.).	m. m.
Head and body	235
Tail	160

Ear	24
Hind foot	41
Length molar series	7
Distance between incisor and first upper molar	11
» » » » » lower »	6

Hab: Celebes, Menado (v. Musschenbroek).

5. *Mus callitrichus*, n. sp.

n. i. mea, pengaladen, pangoesaio, tangkara and loemalapait.

Upper parts bright brown. Woolly hairs slate-coloured with light brown tips; before the tip a brown ring. Longer and more solid hairs, slate-coloured with long brown tips are intermixed with them. Throat, chest, belly and inside of legs covered with short hairs, slate-coloured with bright yellowish-brown tips. Lips with pure white hairs. Tail shorter than head and body, white towards the tip, for the rest black, with a few hairs. Whiskers entirely brown or white tipped.

Ears very widely opened, broad, rounded.

Upper cutting-teeth orange, the lower ones lighter coloured.

Twelve specimens (L. M.).	m. m.
Head and body	240
Tail	210
Ear	20
Hind foot	46
Length upper molar series	10
Distance between incisor and first upper molar	13
» » » » » lower »	7

Hab: Celebes, Menado (v. Musschenbroek).

6. *Mus Meyeri*, v. Musschenbroek, in litt.

n. i. pengaladen.

The upper parts generally tawny. Head, back and outside of legs covered with two kinds of hair. 1°. woolly, light brown with very long sparkling white tips, and 2°. longer hairs, brown at the base and also sparkling white towards the

tips. The under parts of the body and inside of legs are covered only with the first kind of hairs.

Tail shorter than head and body, with only a few hairs, black near the base, yellowish white towards the end. Ears elongated, short, rounded.

Whiskers brown, white tipped.

Cutting-teeth yellowish white, the upper ones very large and solid.

One specimen (L. M.).	m. m.
Head and body	290
Tail	270
Ear	22
Hind foot	46
Length upper molar series	13
Distance between incisor und first upper molar	13,5
» » » » » lower »	8

Hab: Celebes. Menado (v. Musschenbroek).

NOTE III.

ON A NEW GENUS AND SPECIES OF PYTHONIDAE FROM SALAWATTI

BY

Dr. A. A. W. HUBRECHT.

Dec 1878.

The snake about to be described formed part of the collection which the late Dr. Bernstein brought together in the island of Salawatti. It must be regarded as the representative of a new and interesting genus, which takes its place between the existing genera *Liasis* and *Nardoa*.

It differs from *Nardoa* in having pits not only on the inferior labials but on the rostral and upper labial plates as well, whereas it approaches this genus by the number and disposition of the shields on the head. The tail is rather long, the form of the animal is slender and graceful, the head less broad and at the same time longer and flatter than in most other Pythonidae. This as well as the small, smooth scales might characterize the genus; whereas the peculiar coloration and the metallic hues reflected by the skin will suffice to distinguish the species at first glance.

Leiopython n. gen.

Nostrils lateral in the middle of the nasal plate, followed by a groove which extends backwards and downwards.

Shields on the head extending beyond the eyes; no prefrontals; the number of frenals and preoculars considerably reduced; pits on the rostral, the upper and lower labials; scales short, smooth, rombic.

Leiopython gracilis n. sp.

The number of shields on the top of the head is reduced to eleven: two small internasals, two frontonasals about thrice as large as the foregoing, one frontal, two suboculars, two larger anterior and two smaller posterior parietals with a few smaller scales enclosed between the two latter pairs. The nasal plates are rather elongated; there is only one frenal and one preocular on either side. Three or four postoculars. Rostral plate with two well marked pits; fourteen upper labials, the two foremost of which are distinctly pitted; sixteen lower labials, the seven last but three of which are deeply pitted.

There are 284 ventral shields, 79 subcaudals divided into two along the median line and 49 to 51 longitudinal rows of scales. Scales short and smooth, more or less polygonal towards the tail.

The colour (in spirits) of the back is a rather light violet brown with a well marked iridescence, and a uniform yellowish white on the belly and chin. The top of the head is much darker than the back, although uniform as well. There is a very small white spot behind the eye; the upper and lower labials have their anterior half dark and their posterior half light colored which gives a characteristic expression to the mouth.

The only specimen in the Leyden Museum was found in Salawatti, as stated above; it measures 102.5 cm., of which the head occupies 3.5 cm., the tail 14 cm.

NOTE IV.

LIASIS PETERSII. N. SP.

BY

Dr. A. A. W. HUBRECHT.

Dec. 1878.

In the August number of the »Monatsberichte der Akademie der Wissenschaften zu Berlin", for 1876, p. 533, Prof. Peters notices a specimen of what he calls: *Liasis amethystinus*, var. *timoriensis*, which was brought from Timor by the German man-of-war »Gazelle" on her cruise in the Indian and Australian seas. On the accompany ing plate he gives figures of the head and anal region of this species, together with corresponding drawings taken from a true *Liasis amethystinus*.

The above mentioned figures look different in many respects and I was surprised to find in our museum a snake, hitherto undescribed, which corresponds, as far as the configuration of the scales on its head goes, with Prof. Peters' socalled Timorese variety of *Liasis amethystinus*.

I cannot find the slightest difference between Prof. Peters' figure and our specimen; even the black line advancing from the nape of the neck till between the parietals in fig 3a might pass for the exact reproduction of the corresponding line in the specimen from Flores.

But then a closer inspection immediately enforces the conviction that this animal can never be a *Liasis ame-*

thystinus, nor even a variety of it. A series of specimens of the last-named species, which I own to be widely spread and subject to considerable variation is now before me, together with the Flores specimen, and I do not hesitate in regarding the latter, with its greater number of scales, each of them so much smaller, as a distinct species for which I propose the name of

Liasis Petersii.

The configuration of the scales on its head need not be entered upon more fully, after the very good figure mentioned above, which Peters has given of it. The four prefrontals in one row, as well as the considerably reduced number of frenals are perhaps the characters which most strike the observer at first sight. The parietals appear to be less developed than they are in *Liasis amethystinus*.

The number of ventral shields is 288, whereas Dumeril et Bibron give 303 to 316 for *L. amethystinus*, numbers with which those of all our specimens of the last-named species correspond. I cannot decide whether this diminution number in applies to the caudal shields as well, the specimen under examination having lost its tail which was beginning to cicatrize and be restored when the animal was captured and killed.

A still greater difference lies, as noted above, in the number and size of the scales on the body, which becomes exceedingly evident on comparing two specimens of about equal dimensions.

The number of longitudinal rows of scales in *Liasis Petersii* is about 56 near the head, 60 in the middle of the body, and 43 towards the tail. On specimens of *L. amethystinus* of the same average size, I counted in the corresponding body regions 45, 47 and 28 rows of scales. The difference in size is most striking just behind the head, along the neck and the upper parts of the back.

Although the ground colour of the animal (in spirits) does not seem to differ greatly from that of *L. amethys-*

tinus, the black markings along the back do. They resemble much more the pattern as it is found in *Python reticulatus* and *bivittatus*; a network of patches of darker scales distributed among others of a lighter colour. The rings encircling the hinder part of the body and tail in *L. amethystinus* of which I never missed the traces either in old or in young examples are wanting in *Liasis Petersii*.

Our specimen was collected by Dr. Semmelink at Larantoeka on the E. coast of Flores; the Berlin one came from Kupang, Timor. Explorations of the neighbouring islands must decide how far its geographical range extends.

NOTE V.

ON THE GEOGRAPHICAL RANGE OF EREBOPHIS ASPER GTHR.

BY

Dr. HUBRECHT.

Having completed the description of an unknown and interesting snake, three specimens of which form part of the collections in the Leyden Museum, Dr. Günther's paper in the Proceedings of the Zoological Society, Part I, 1877: »On Reptiles from Duke-of-York-Island" came into my hands and I was convinced at a glance that the snake there described and figured under the name of *Erebophis asper* was the same as our specimens.

I have little to add to the details already published by Dr. Günther, but I am able to give comparative notes respecting the young and the adult specimens of this species, and can indicate three new localities where this snake may be sought for.

Our largest specimen measures 78 cm.; when captured it was in the act of shedding its skin which has come off partially, thereby causing the specimen to appear of a very bright colour when compared with the two others. It was sent to our museum by Mr. Hoedt, from Mysool.

Another specimen with only 133 ventral shields (the two others have 139 and 145 respectively) and measuring 69.5 cm. is exceedingly well preserved, of a dark chocolate brown and with patches on the back which are darker still. A few lighter coloured scales serve to border off these patches anteriorly and posteriorly. This specimen was captured in Jobie by Mr. von Rosenberg, the well-known naturalist to the Leyden Museum.

The third specimen represents a younger stage; its length does not exceed 36.5 cm. and its coloration differs in so far from the adult specimens that here the darker patches on the back are no longer indistinct but well defined, whereas a second series of smaller patches occurs on both sides of the body, along the sides of the belly. This specimen was forwarded to us some twelve years ago by the late Dr. Bernstein who collected it in Salawatti.

The finding of this snake not only in Duke-of-York-Island, but in other islands west of the mainland of New-Guinea as well as in the Bay of Geelvink, makes it very probable that it may yet be brought from intermediate regions.

NOTE VI.

ARSES BATANTAE ET A. ARUENSIS.

A description of two apparently overlooked species of Flycatchers, of the genus *Arses*. By R. Bowdler Sharpe, F. L. S., F. Z. S. etc. Senior assistant, Department of Zoology, British Museum.

If it were a rule in Ornithology that species could only be described from the male birds, it is quite certain that some very different birds would be unchronicled. It often happens that two allied species are quite distinct as regards the males, and yet the females and young are indistinguishable one from the other. Cases in which the males are alike and the respective females quite different, are far rarer in ornithology, and yet a very positive case occurs in the genus *Edoliisoma* among the *Campophagidae* and another instance may apparently be found in the genus *Arses* among the Flycatchers. In fact the species usually called *Arses telescophthalmus* from New Guinea has been made to include two other species which seem quite different, and which we propose to found upon the female plumage alone.

Arses batantae, sp. n.

♀ maculâ anteoculari albâ: pileo semper cinereo: dorso aurantiaco, alis dorso concoloribus, secondariis intimis omnino aurantiacis, medialiter haud brunneis, vel saturatioribus: uropygio et supracaudalibus dorso concoloribus: caudâ aurantiaco-castanea, haud ad apicem brunnescente.

Hab. in insulis papuanis 'Batanta' 'Waigiou' dictis.

The male, as well as the female, is larger than *A. telescophthalmus*, and the eye-wattle in the male bird appears to have been yellow during life.

Arses aruensis, sp. n.

♀ ad. maculâ anteoculari aurantiacâ: pileo nigro: dorso fuscescenti-brunneo, collo postico aurantiaco dissimili: supracaudalibus vix aurantiacis, pallidioribus: cauda fuscescenti-brunnea.

Hab. in insulis Aruensibus et in Novâ Guinêa meridionali.

The male in this species only differs from that of *A. telescophthalmus* in being rather smaller and in having the black on the throat less extended.

The genus *Arses* now consists of the following species.

1. A. telescophthalmus (Garn.). New Guinea.
2. A. batantae, Sharpe. Batanta: Waigiou.
3. A. aruensis, Sharpe. Aru Islands: S. E. New Guinea.
4. A. insularis (Meyer). Jobi: N. W. New Guinea.
5. A. kaupi, Gould. N. E. Australia.

Leyden Museum, Nov. 6, 1878. R. B. S.

NOTE VII.

RHIPIDURA ELEGANTULA.

On a new *Rhipidura* from the Island of Lettie.

By R. Bowdler Sharpe, F. L. S. etc.

It is much to be regretted that we do not know more of the natural history of the island of Lettie, the little that we do know tending to shew that its Ornithology embraces some highly peculiar forms, witness the *Ptilopus cinctus lettiensis* of Schlegel (Mus. Pays-Bas, Columbae, p. 35). Lettie is a small island to the east of Timor.

The species of *Rhipidura* found there is a very striking one, and I propose to call it

Rhipidura elegantula, sp. n.

R. affinis *R. squamatae* ex Bandâ, sed capite nuchâque cinnamomeis dorso concoloribus, et pectore albo, nec nigro alboque squamato, valde diversa.

Hab. in insulâ 'Lettie' dictâ.

Adult male. General colour above bright cinnamon-rufous, rather lighter on the back, rump, and upper tail-coverts: wings ashy brown with reddish margins to the wing-coverts and quills, a little plainer on the secondaries, the greater coverts fulvescent at their tips: tail-feathers ashy brown, rufous at the extreme base and for a little extent of the margins of both webs, all tipped with white, increasing in extent on the outer feathers, and extending also some distance up the outer web of the exterior feather: forehead conspicuously white, extending backwards above

the fore part of the eye: a narrow frontal line of black plumelets tipped with rufous: lores, feathers round the eye and ear-coverts black: cheeks and throat white, extending backwards in a triangular mark on the sides of the neck: across the throat a black band, separating the white throat from the rest of the under surface, which is also white, slightly washed with buff on the sides of the body: the feathers on the fore neck adjoining the black throat-band with black bases, producing a mottled appearance, when the plumage is disturbed: thighs white with brown bases: under wing-coverts white: quills ashy brown below, whitish along the inner web. Total length 6.5 inches, culmen 0.5, wing 2.9, tail 3.9, tarsus 0.85.

Leyden Museum, Nov. 6, 1878. R. B. S.

NOTE VIII.

POECILODRYAS CINEREA.

On a new species of *Poecilodryas*.

By R. Bowdler Sharpe, F. L. S. etc.

The genus *Poecilodryas* was founded by Gould in 1865 (Handbook to the Birds of Australia, vol. I, p. 287), for the reception of the *Petroeca cerviniventris*, which he had described in 1857 from North-Western Australia. He also placed in the new genus, *P. superciliosa* (Gould, P. Z. S. 1846, p. 106), and that these two birds are rightly separated from the genus *Petroeca*, no one who has compared the two forms will reasonably doubt. This is not the case with Mr. Gould's genus *Amaurodryas*, which, in my opinion, cannot be separated from *Petroeca*.

When the first collection of Signor D'albertis came from the Arfak Mountains and was described by Dr. Sclater in 1873, the latter gentleman brought forward a new genus *Leucophantes*, with a new species, *L. brachyurus;* but on comparing this species, of which there are examples in the Leyden Museum, with *Poecilodryas* as represented by the Australian species, it will be seen that they are generically inseparable, and that *Leucophantes* is synonymous with *Poecilodryas*. Lastly I consider that the fine species, *Megalestes albinotatus*, described in 1875 by Count Salvadori (Ann. Mus. Civic. Genov. VII, p. 769) is a true *Poecilodryas* also, and I believe that the following will be a correct list of the members of this genus, as at present known.

1. Poecilodryas cerviniventris (Gould).
2. » superciliosa (Gould).
3. » cinerea, sp. n.
4. » brachyura (Sclater).
5. » hypoleuca (Gray).
6. » bimaculata (Salvad.).
7. » albinotata (Salvad.).
8. » leucops (Salvad.).
9. » capito (Gould).
10. » nana (Ramsay).
11. » papuana (Meyer).

The new species which I propose to describe is the above-mentioned

Poecilodryas cinerea.

P. similis *P. brachyura* sed maculâ mentali nigra nullâ et caudâ basali albâ distinguenda.

Adult female. General colour above bluish grey, a little duller on the head: wings browner than the back, the least wing-coverts alone grey like the latter, the secondaries with a small brown spot at the tip: upper tail-coverts black: the two central tail-feathers black, the remainder white for the basal half, black for the remainder: a line across the base of the forehead, lores and feathers round the eye dusky blackish, the ear-coverts also washed with dusky: cheeks and under surface of body white, washed with grey on the sides of the breast and flanks: under wing-coverts blackish, with a white spot near the edge of the wing: quills dusky blackish below, with a considerable amount of white near the base of some of the quills. Total length 5.6 inches, culmen 0.65, wing 3.35, tail 2.4, tarsus 0.8.

Hab. Noisaroe, Arfak Mountains, Jan. 16th 1876. (*coll. Bruijn*).

Typus in Mus. Lugd.

Leyden Museum Nov. 6, 1878. R. B. S.

NOTE IX.

MUSCICAPA RUFIGULA.

Note on *Muscicapa rufigula*. »Kuhl."

By R. Bowdler Sharpe, F. L. S. etc.

'Musc. rufigula, K. v. H. Mus. Lugd.

Latere superiori bruneo olivaceo, collo infra pectoreque ochraceo-fulvis, abdomine albido: rostro bruneo: oculis bruneis: pedibus albo-brunescentibus, pallidis.'

'In sylvis ad lacum vernam. In den Rosamalawäldern d. Pangerango. Zerstückte Coleopt. im Magen.'

The following is a literal transcript, kindly made for me by my friend Mr. Büttikofer, to whom I am indebted for so much assistance during my visit to Leyden, of the original description given by Kuhl in his MSS., which are still preserved in the Archives of the Leyden Museum. Unfortunately, although the description indicates the existence of a type in the latter collection, no specimen can be found which will answer at all to the characters given by the author above quoted. The specific name, however, was adopted by S. Müller, and subsequent authors, as follows.

Erythrosterna rufigula, Müller, in van der Hoeven's Tijdschrift, 1835, p. 351: Bp. Consp. 1, p. 319.

Muscicapa rufigularis, Gray, Handl. B. 1, p. 323, n°. 4845.

A careful perusal of the description convinces me that *Muscicapa rufigula* is the female of *Muscicapa luteola*, Pall. (*M. mugimaki*, Temm.). There are some specimens

of this bird from Java in the Leyden collection, though of more recent date than Kuhl's expedition, and it would appear to visit the Indo-Malayan islands on migration, as the British Museum has recently obtained a considerable series from North-Western Borneo, collected by the Hon. Hugh Low.

Leyden Museum, Nov. 6, 1878. R. B. S.

NOTE X.

PSEUDOGERYGONE RUBRA.

On *Pseudogerygone rubra*, a remarkable new species of Flycatcher, from the Arfak Mountains, North-Western New Guinea. By R. Bowdler Sharpe, F. L. S. etc.

In the course of examination of the genus *Gerygone* I encountered the greatest difficulty in classifying and arranging the species, which are very numerous, but I found at last that it would be better to divide the genus into two, for which the wing-formula proved a great assistance. Thus all the species of true *Gerygone*, of which *G. albigularis* (Gould) is the type, have the second primary lengthened, and exceeding the secondaries. The species which I place in this genus are the following:

1. Gerygone albigularis (Gould). Hab. Australia.
2. » cinerascens, Sharpe. Hab. S. E. New Guinea.
3. » inornata, Wall. Hab. Timor.
4. » simplex, Cab. Hab. Luzon.
5. » sulfurea, Wall. Hab. Solor.
6. » flaveola, Cab. Hab. Borneo, Celebes.
7. » xanthogastra, Salvad. Hab. Misori.

On the other hand there remain a large number of species in which the second primary is equal to the secondaries in length, and these I am going to place in the new genus *Pseudogerygone*, the most typical of which will be *P. personata* (Gould), which I make the type of the genus.

1. P. personata (Gould). Hab. N. E. Australia.
2. P. palpebrosa (Wall.). Hab. N. W. New Guinea; Aru-Islands.

3. P. conspicillata (Gray). Hab. New Guinea: Jobi.
4. P. magnirostris (Gould). Hab. N. Australia.
5. P. brunneipectus, Sharpe. Hab. Aru-Islands. S. E. New Guinea.
6. P. rufescens, Salvad. Hab. N. W. New Guinea.
7. P. flavilateralis (Gray). Hab. New Caledonia.
8. P. igata (Q. et G.). Hab. New Zealand.
9. P. culicivora (Gould). Hab. W. Australia.
10. P. albifrontata (Gray). Hab. Chatham Islands.
11. P. fusca (Gould). Hab. Australia.
12. P. laevigastra (Gould). Hab. Australia.
13. P. chloronota (Gould). Hab. N. Australia.
14. P. modesta (Pelz.). Hab. Norfolk Island.
15. P. notata (Salvad.). Hab. Waigiou. N. W. New Guinea.
16. P. neglecta (Wall.). Hab. Mysol.
17. P. arfakiana (Salvad.). Hab. N. W. New Guinea.
18. P. ruficollis (Salvad.). Hab. » » »
19. P. cinerea (Salvad.) Hab. » » »
20. P. rubra, Sharpe. Hab. » » »
21. P. trochiloides, Salvad. Hab. » » »
22. P. poliocephala, Salvad. Hab. » » »
23. P. maforensis (Meyer). Hab. Mafoor Island.
24. P. chrysogastra (Gray). Hab. Aru. S. E. New Guinea.

The following is a description of *P. rubra*, mihi.

P. supra saturate coccinea: subtus pallide cinerascens, abdomine et subcaudalibus albis: tibiis nigris rubro lavatis: subalaribus et axillaribus albis: fasciâ frontali basali parvâ alba: caudâ nigrâ, rectricum pogonio interno apicaliter albo maculato. Long. tot. 4.1 poll., alae 2.35.

Leyden Museum, Nov. 6, 1878. R. B. S.

NOTE XI.

CLYTOMYIAS INSIGNIS.

On a new genus of Flycatchers from the Arfak Mountains. By R. Bowdler Sharpe, F. L. S. etc.

This new form appeared to me to be one of the most interesting of all the *Muscicapidae* which came under my notice at Leyden. It may be concisely described as follows

Clytomyias, gen. nov.

Genus Muscicapidarum inter genera *Todopsis* et *Malurus* intercedens, sed caudâ quam ala longiore et valde gradatâ, tarso quam culmen longiore, alâ rotundatâ, remigibus primariis cubitales a longitudine culminis haud excedentibus, rostro valde depresso, culminato, elongato, latiore quam altum, distinguendum. Typus est

Clytomyias insignis, sp. n.

♀ ad. supra olivaceo-cinerascens, supracaudalibus ochrascenti-fulvo terminatis: rectricibus brunneis hoc colore lavatis, lateralibus pallide ochrascenti-fulvo terminatis: tectricibus alarum minimis ochrascenti-brunneis, medianis et majoribus fuscis sordide ochrascenti-fulvo marginatis: remigibus fuscis extus rufescente marginatis: pileo summo nuchaque, capitis lateribus, genis et regione paroticâ castaneis: loris fulvescentibus: gulâ albâ: corpore reliquo subtus fulvescente, hypochondriis saturatius fulvis: pectoris summi lateribus saturatioribus et magis olivaceo lavatis: tibiis castaneis: subcaudalibus fuscis castaneo terminatis:

subalaribus cervinis: remigibus infrâ fuscis intus rufescente marginatis. Long. tot 5.3 poll., culmen 0.6, alce 2.15, caudae 2.7, tarsi 0.9.

Hab. Tjobonda, in montibus arfakianis.

Leyden Museum, Nov. 6, 1878. R. B. S.

P. S. On communicating the account of this remarkable species to my friend Count Salvadori, he suggested that it might prove to be the female of *Todopsis grayi*, Wall., a bird which does not agree with *Todopsis* in form of bill, and which should, I consider, be placed in Dr. Oustalet's genus *Chenorhamphus* (Bull. Assoc. Scient. de France, n°. 533. Janvier, 1878). This idea had never struck me in describing the bird, and I therefore asked Dr. Oustalet, who was on the point of leaving England for Leyden, to re-examine the type of *Clytomyias* and to compare it with *Chenorhamphus grayi*. This he was kind enough to do, and he found that the bill of the latter was a great deal broader than that of *C. insignis*. In *Ch. grayi* too the wing is about equal to the tail in length, as in the genus *Todopsis*, but in *Clytomyias* the tail is much longer than the wing, shewing that the affinities of the genus lie nearer to *Malurus*. It is quite possible that the new species may have a more brilliantly coloured male, but the latter, when identified, will not be *Chenorhamphus grayi*.

NOTE XII.

CAMPOPHAGAE.

Notes on some *Campophagidae* in the Leyden Museum. By R. Bowdler Sharpe, F. L. S. etc.

The difficulty in determining certain obscure and doubtful species of birds, which were not in the collection of the British Museum, induced me to pay a short visit to Leyden, before sending my fourth volume of the 'Catalogue of Birds' to the press. Before commencing my observations on the species I feel it my duty to thank Professor Schlegel for the uniform kindness which he has shewn me on the occasion of every visit which I have made for the purposes of study in that great collection, which his energy has contrived to make one of the foremost in the world.

Unfortunately the time that I could spare from my duties in England was very short, too short, indeed, for me thoroughly to exhaust the points of enquiry which led me to Holland, and I was so much occupied with the treasures among the *Muscicapidae*, that I was unable to devote much leisure to the *Campophagidae*. The series of the latter family is so extended in the Leyden Museum, that a prolonged study alone would do justice to the material which Professor Schlegel has accumulated since the days when Dr. Hartlaub wrote his monograph on the group (Journal für Ornithologie, 1864, pp. 435—446, 1865, pp. 153—173). I was able, however, to identify one or two types described by the last-named author.

1. *Volvocivora melanura*. Hartlaub, J. f. O. 1865, p. 162.

This is a species which sorely perplexed Mr. Hume, when he wrote his elaborate and useful article on the Indian Cuckoo-shrikes of the genus *Volvocivora* in 'Stray Feathers' (Vol. V, pp. 203—207). An examination of the type shews that *V. melanura* is only the common *V. lugubris* Sund. (*V. melaschistus*, Hodgs. et auct.) with the best part of his tail gone; so that the outside, grey-tipped feathers, have been shot away. I may here remark also that *Volvocivora vidua*, Hartlaub (J. f. O. 1865, p. 163) seems to be nothing but *V. fimbriata* of Java. Dr. Otto Finsch, during a recent visit to England, shewed me the typical specimen, and this was the conclusion I arrived at. The locality, Aracan, which doubtless misled Dr. Hartlaub, is evidently an error.

2. *Lalage nycthemera.*

The type specimen bears the label of *Sylvia nycthemera*, Temm. and this indicates the affinity of the species somewhat nearer than do the efforts of later writers to make a Cuckoo-shrike of it, for the bird is nothing else than the *Oreicola melanoleuca* (Vieill) ex Timor, and I can only attribute the non-observance of this fact to the slight alteration in the appearance of the bird due to the lower mandible having been broken off. The synonymy of the species will be as follows:

Oreicola melanoleuca.

Oenanthe melanoleuca, Vieill. N. Dict. d'Hist. Nat. XXI, p. 435.

Saxicola melanoleuca, Bp. Consp. 1, p. 304 (ex Müller MS. in Mus. Lugd.):

Wall. P. Z. S. 1863, p. 485: Finsch, Neu-Guinea, p. 187:

Gray, Handl. B. 1, p. 227, N°. 3269.

Saxicola luctuosa, Bp. Consp. 1, p. 304 (ex Müller MS. in Mus. Lugd.): Wall. P. Z. S. 1863, p. 485: Finsch,

Neu-Guinea, p. 167: Gray, Handl. B. 1, p. 227, n°. 3270.

Sylvia nycthemera, Temm. Mus. Lugd. undê.

Lalage nycthemera, Bp. Consp. 1, p. 355: Wall. P. Z. S. 1863, p. 485: Hartl. J. F. O. 1865, p. 165; Finsch, Neu-Guinea, p. 172: Salvad. Ucc. Born. p. 148.

Oreicola melanoleuca, Bp. C. R. XXXVIII, p. 6.

Oreicola luctuosa, Bp. C. R. XXXVIII, p. 6.

Campephaga nycthemera, Gray, Handl. B. 1, p. 148, n°. 5127.

At the same time I endeavoured to find the types of Bonaparte's *Pericrocoti*, described by him in the 'Conspectus' from Boie's MSS. names, as *P. ardens* and *P. flagrans*. There are not any specimens actually labelled with these names either by Boie or Bonaparte, and the titles were probably copied from the MSS. of the former. One can, however, determine the species by examining the specimens which were in the Leyden Museum when Bonaparte wrote, and which agree with his descriptions.

Of *P. ardens*, the only adult bird from Sumatra, of earlier date than 1850, is one of S. Müller's, and this is perhaps the bird described by Bonaparte. It is the species without any red spots on the *four* outer primaries, and is the same bird that I call *P. xanthogaster* (Raffles).

There are two males and a female from Borneo, which are apparently the types of *Pericrocotus flagrans* of the Conspectus. They are marked »*P. minutus*, Temm." and are the same as Blyth's *Pericrocotus minutus*.

Leyden Museum, Nov. 6, 1878. R. B. S.

NOTE XIII.

ON THREE NEW SQUIRRELS.

1. ON A NEW SQUIRREL, SCIURUS ROSENBERGII, FROM THE SANGHI-ISLANDS.

BY

Dr. F. A. JENTINK.

Dec. 1878.

According to Mr. von Rosenberg, the untired explorer of the Moluccan region, the Sanghi-islands are inhabited by the following Mammalia, viz: bats, mice, one species of Sus and none but one species of Sciurus.

In the Leyden Museum there are now twelve specimens of the latter species, which has hitherto remained undescribed: they were collected by von Rosenberg (1864) and Hoedt (1865 and 1866).

Von Rosenberg states, that the Sanghi Fauna agrees very well with the North-Celebian Fauna. From the latter locality several well defined species of Squirrels are known and à priori this might lead us to expect that the Sanghi-species was allied to one of the North-Celebian Squirrels. It is therefore very interesting that the species in question is quite different from the Celebian species.

The following species of Sciurus have been brought from North-Celebes by different travellers: *Sciurus erythromelas*, *Schlegelii*, *leucomus*, *rubriventer* and *murinus*. According to Gray [1]) *Sciurus ephippium* (Verreaux) is also found in Cele-

1) Ann. and Mag. Nat. Hist. 1867, p. 276.

bes, however he does not state the exact part of that Island, where it was collected. The first two species differ from our animal by having a white lateral streak on each side of the body; *Sciurus leucomus* by having a white patch behind the ears; *Sciurus rubriventer* by the red-coloured belly and larger size; *Sciurus murinus* by its naked ears, grey coloured belly and smaller size; *Sciurus ephippium*, which belongs to the largest species of Squirrels in existence, by its size.

Our species being new to science, I propose to name it in honour of its discoverer,

Sciurus Rosenbergii, n. sp.

General size and colour as in *Sciurus Steerii* [1]) from Balabac (Philippine-islands), but the latter is larger and has the tail shorter than the body and head; finally there are little differences in colouration. General tint of the upperparts of the body and outside of legs rusty brown; the colour of the underparts is much brighter. In the second specimen of Günther's *Sciurus Steerii* from Palawan, o. c., p. 736, the lower parts are pure white.

Hairs of the back with a broad black ring towards the tip.

Tail darker than the back, each long hair is embellished with a broad black ring and a very long black tip. In the *Sciurus Steerii* from Balabac the hairs of the tail are of moderate length and without black tips, o. c., p. 736.

In-and outside of the ears closely covered with hairs which do not form a pencil.

Whiskers black and not projecting beyond the tips of the ears.

Toes and fingers and also the fore and hind-feet closely covered with hairs on the upper parts, the hairs being here dusky near the base with silvery tips.

Cutting-teeth bright orange.

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1) P. Z. S. L. 1876, p. 735, pl. LXIX.

I cannot give the lenght of the skull, all the occipitals being smashed.

	m. m.
Head and body	190
Tail with tuft	245
Tail without tuft	180
Ears with hairs	17.5
Hind foot	42
Length upper molar series	8
Length of nasalia	12.5
Distance between incisor and first upper molar	9
» » » » » lower »	5

Hab: Sanghi-islands, Siao (v. Rosenberg, Hoedt).

2. ON A SQUIRREL FROM NUSA-KAMBANGAN.

In making a preliminary catalogue on the Squirrels in the collection of the Leyden Museum, I found a specimen which several years ago was distinguished by Temminck as belonging to a new species and has hitherto remained undescribed. This specimen was labelled by Temminck, *Sciurus Diardii*, »Esquisses zoologiques sur la côte de Guiné", so it seems that Temminck intended to describe our species in the above mentioned work. I do not know why he may have omitted it to do so. However the statement may suffice, that neither Temminck nor any other author after him have published this species.

Our Squirrel was collected in Nusa-Kambangan, a very small island situated off Tjilatjap, close to the South coast of Java.

As our knowledge respecting the distribution of the different species of the genus Sciurus in Java is extremely deficient, I cannot state which are the exact species inhabiting Tjilatjap and environs. But the following species are found in Java, according to Schlegel and Müller [1]):

1) Verhandelingen over de Natuurlijke Geschiedenis etc. 1839—44, p. 92 et sqq.

Sciurus bicolor, *nigrovittatus (plantani)*, *melanotis* and *insignis*. [1])

In comparing our species with any of these, it is evident that *Sciurus bicolor* differs from that species by the larger size and different colouration; *Sciurus nigrovittatus* and *vittatus* by having a lateral streak on each side of the body; *Sciurus melanotis* by its smaller size, by having a tuft of elongated hairs on the ears and a longitudinal streak on the face; *Sciurus insignis* by having the back embellished with three black longitudinal streaks.

Sciurus Diardii, Temminck in litt.

Fur above rusty coloured, the underparts of the body being yellowish white. Hairs of the head, back, sides of the body and outside of legs black near the base, higher on rusty, with a very small black tip. Several entirely black hairs are intermixed with these.

The hairs of the tail are very long rusty, with a subterminal black ring and black tip. Hairs of chin, throat, chest, belly and inside of legs entirely yellowish white.

Whiskers quite long, black.

Ears short, rounded, with scarce hairs.

Cutting-teeth yellow. The end of the tail is wanting. Measurements of the only specimen we received, which is an adult:

	m. m.
Head and body	230
Ear	14
Hind foot	44
Length of nasalia	13
Length upper molar series	9
Distance between incisor and first upper molar	11
» » » » » lower »	6

Hab: Nusa-Kambangan (e coll. Blüme).

1) Ann. and Mag. Nat. Hist. 1867, p. 281, Gray states that *Sciurus tenuis* in the British Museum is Horsfield's type from Java and that also this species occurs in Java. But Horsfield, Zool. Res. in Java, 1824, states that his specimen (i. e. the type) was a native of Singapore (!) and at that time in the Museum of the East India Company!

3. ON A NEW SQUIRREL FROM SALEYER.

Gray [1]) has described and figured a new species of Squirrel from Borneo (Sarawak), under the name »*Sciurus macrotis*", but he did not make mention of the remarkable upper cutting-teeth. It seems therefore that Gray had overlooked that they present longitudinal grooves [2]). In his »Synopsis of the Asiatic Squirrels in the collection of the British Museum" [3]) he has corrected his mistake by erecting a new genus »*Rheithrosciurus*" with only one species, the above mentioned »*macrotis*". And now Gray states" »the grooving of the teeth (lege: of the upper cutting-teeth) is a pecularity not observed in any other Sciuridae."

Therefore it is very interesting that we received this year three Squirrels from the Saleyer-island, which specimens present the same grooved character of the upper cutting-teeth.

I found these specimens in a large number of Mammalia and Birds collected by Mr. Teysmann in different parts of the Malayan Archipelago. Our species differs from

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1) P. Z. S. L. 1856, p. 341, pl. XLVI.

2) Generally Gray's descriptions are very short and incomplete, and especially they are very cursorily in the above mentioned description in the »Proceedings" as well as in the »Synopses of Asiatic, African and American Squirrels in the collection of the British Museum", Ann. and Mag. Nat. Hist. 1867, p. 271 and sqq., p. 323 and sqq. and p 415 and sqq. Certainly I could cite several numbers of ten inaccuracies and mistakes, but I need not to do this, for every one who occupies himself with the study of the Squirrels will agree with me about what I assert.

It may suffy for the rest to compare Gray's descriptions of the »*macrotis*".

P. Z. S. L. 1856.	*Ann. and Mag. Nat. Hist.* 1867.
A broad *white* streak on the upperpart of each side.	Lateral streaks, broad, *yellowish*.
Upper-part of the side with a broad *pale* streak.	
General colour *dark chestnut brown*.	General colour *brown*.
Tail with very long *white tipped* hairs.	Tail blackish, *whitish washed*.
Length 13, tail 11 inches (Tail therefore *shorter* than head and body).	Tail *as long* as the body and head.

3) Ann. and Mag. Nat. Hist. 1867, p. 271.

Gray's »*macrotis*", by not having large ears with a pencil of elongated hairs, by its different colouration, shorter tail and finally by its small size (Gray's »*macrotis*" measures 24 inches = 608 mm.).

The species also being new for science, I propose to name it

Sciurus (Rheithrosciurus) microtis, n. sp.

n. i. kalabientieu.

This species agrees with *Sciurus nigrovittatus* [1]) in the distribution of the external marks.

General colour tawny blackish. On the back the hairs are black with two tawny rings; a few ones are entirely black. On the upperpart of the head and outside of legs, feet and hands the hairs have only one tawny ring. On each side of the body is a tawny lateral streak, consisting of black hairs with long tawny tips. The sides of the body present a darker colour than the upperparts of the back, each hair being here black with a very minute tawny tip. Chin, throat, chest, belly and inside of legs with a beautiful reddish tint, produced by the long reddish tawny coloured tips of the brownish black hairs.

Tail shorter than head and body. The hairs are here black with three tawny rings; underparts of the tail near the root and circumference of anus more reddish. A circle around the eyes feeble reddish coloured. In-and outside of the very short ears closely covered with short reddish brown hairs.

1) This species is the *Sciurus plantani* in perfect state of colouration, as clearly is exposed in „Verhandelingen over de Natuurlijke Geschiedenis der Ned. O. I. bezittingen, 1839—44, p 95", and as can be stated by the large collection in the Leyden Museum. I don't know how many specimens of the species in question there were in the British Museum when Gray wrotes his „Synopsis of Asiatic Squirrels", but I am sure that, if Gray had before studied our collection of about sixty specimens, he would not have admitted in the above mentioned Synopsis, the *nigrovittatus* and *platani* (lege *plantani*) as two different species.

Whiskers and bristles on the cheeks long and black.
The well arched claws black with white points.
Cutting-teeth orange: upper ones longitudinally grooved.
Three specimens.

	m. m.
Head and body	230
Tail with tuft	200
Ear	14.5
Hind foot	47
Length upper molar series	9.5
Distance between incisor and first upper molar	10
» » » » » lower »	5

Hab: Saleyer (Teysmann).

NOTE XIV.

PARADOXUXUS MUSSCHENBROEKII.

BY

H. SCHLEGEL.

Jan. 1879.

The following note of this undescribed species, discovered by S. C. I. W. van Musschenbroek, Esq. L. L. D., in the Northern parts of the isle of Celebes, has been published by me in the prospectus of a work, entitled «Annals of the Royal Zoological Museum of the Netherlands at Leyden." This work not having yet appeared, I reproduce here the above-said note for the benefit of the readers of the present periodical.

«It is remarkable for its superior size, its short and smooth fur, its tail furnished with black rings, like those of the Paradoxurus annulatus and its yellowish or grayish brown colour, paler towards the head, passing on the basal surface into a dirty ochre-yellow and interrupted along the back by several series of dark but rather indistinct spots, melted confusedly into four longitudinal stripes, whereas a blackish stripe runs from the shoulder along the hind margin of the fore-arm. Length of the tail equalling that of the trunk. Whiskers yellowish white, or partly of a brown colour."

NOTE XV.

ON A NEW SPECIES OF THE GENUS PAUSSUS, PAUSSUS ANDREAE, FROM JAVA.

BY

C. RITSEMA Cz.

This new species is very closely allied to *Paussus Ludekingii* v. Voll. [1]) of Sumatra, but differs specifically in having the club of the antennae more slender and less swollen, and the elytra without distinct punctures [2]). Both species belong to Westwood's [3]) section A (prothorax quasi bipartitus), b (antennarum clava postice excavata),* (species Asiaticae).

I have named the species in honor of its fortunate discoverer, whose father-in-law kindly presented the specimen to the Leyden Museum:

Paussus Andreae, sp. n.

Length 6 mm. — Black; the club of the antennae, the parts of the mouth and the tarsi dark piceous, the latter somewhat brighter; the hind margin of the elytra, the abdomen, the metasternum, the coxae and trochanters of the hind-legs and the coxae of the middle-legs brown-red.

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1) *Stett. Entom. Zeitung.* Jahrg. XXXIII. S. 82 and XXXIV. Taf. 1, fig. 6.

2) In the description of *Paussus Ludekingii* no mention is made of the obliquely impressed punctures on the elytra.

3) *Arcana Entomologica.* Vol. II. p. 168.

The head, the first joint of the antennae and the upper surface of the anterior division of the thorax dull, the rest of the body more or less shining.

The head terminating in front in two rounded and flattened divisions, the incision between which is somewhat angular; the face slightly excavated; the excavation with a slight raised line at its bottom, extending to the vertex of the head; the latter armed with a large stout tubercle, circularly excavated at the top. The first joint of the antennae very closely covered with large punctures, the inner margin very convex; the club more slender and less swollen as in *P. Ludekingii*, the under or front margin acute and slightly sinuated, the upper or hind margin very deeply excavated, the excavation of a stretched oval form and transversely sulcated, its margins denticulated, the dents of the outer margin with some rigid hairs at the top; along the inner margin of the excavation the club is very glossy. The anterior division of the thorax a little broader than the head and incised at the middle of the hind or upper margin; the anterior or upper surface dull, covered with some large indistinct punctures; the posterior division of the thorax shining, impunctate, about twice as broad as long, sinuated at its sides and excavated in its middle, the excavation much restricted at its centre. The elytra shining, without distinct punctures. The pygidium impunctate, very smooth and shining, its margins closely covered with reddish hairs. The head, antennae, upper surface of the anterior division of the thorax, lateral margins of the elytra, under surface of the body and the legs sparingly covered with short pale hairs.

Hab. Buitenzorg, West Java (A. C. Andreas).

Leyden Museum, January 1879.

NOTE XVI.

ON A NEW SPECIES OF THE GENUS APATETICA, APATETICA BRUNNIPES, FROM SUMATRA.

BY

C. RITSEMA Cz.

To the two known species [1]) of this remarkable genus of the coleopterous family Silphidae I now add a third, sent over from Sumatra a long time ago by Dr. Salomon Müller.

The new species, which may bear the name of *Apatetica brunnipes*, is allied to and of the same form and size as *A. nitiduloides* Westw., but can easily be distinguished by the different coloration and by the prolonged exterior acute angle of the elytra.

Apatetica brunnipes, sp. n.

Length 7 mm. — Head and parts of the mouth dark brown, the face and vertex black; the five basal joints of the antennae of a glossy dark brown, the following dull black. Thorax brown, darker towards its centre, the scutellum almost black. Legs reddish brown; knees, tibiae and tarsi somewhat darker than the coxae and femorae. Elytra of a glossy coppery-purple. Under surface of the body brown, the inflexed margins of the elytra and the sides of the meso- and metasternum darker.

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1) *Apatetica lebioides* Westw. (*Cab. Orient. Entom.* p. 86; pl. XLI, fig. 9) from the Himalayan regions; and *A. nitiduloides* Westw. (*Thes. Entom. Oxon.* p. 69; pl. V, fig. 11) from Java.

Head smooth and shining, with a few punctures near it anterior margin and near the base of the antennae, and a few more before the middle of a transverse impression on the vertex; this impression enlarged on both sides and reaching the inner orbit of the eyes; the enlarged portions covered with elongated deep punctures. Antennae elongate, the five or six apical joints slightly thickened and of about equal length, the last joint pointed; the third joint a little shorter than the two following together. Thorax transverse, narrowed towards the anterior margin; the sides convex, the lateral margins flattened; the disc very smooth and shining, irregularly sprinkled with some large punctures, more closely so near the flattened lateral margins. Scutellum somewhat broader than long, broadly rounded at its apex, very glossy, without punctures. Elytra punctate-striated, the inner posterior angle of each minutely rounded, the exterior prolonged and very acute, the inner margin of the prolongation rounded, the outer straight. Legs long and slender, especially the posterior pair; the tibiae with some longitudinal grooves; the anterior tarsi enlarged. Abdomen conical, its acute apex reaching beyond the apex of the elytra. Under surface: the segments of the abdomen punctured; the sides of the thorax, except the flattened margins of the prothorax, covered with large and deep punctures.

Hab. Sumatra (Dr. S. Müller).

Leyden Museum, January 1879.

NOTE XVII.

ON A NEW SPECIES OF BUPRESTIDE, CATOXANTHA PURPURASCENS, FROM BORNEO.

BY

C. RITSEMA Cz.

This beautiful species, for which I propose the name of *Catoxantha purpurascens*, belongs to Lacordaire's Section A [1]) which contains at present as far as I know seven species, viz. *bicolor* Fabr., *nigricornis* H. Deyr. and *Mouhotii* E. Saund. (species with a swollen yellowish patch near each posterior angle of the thorax), and *Dalenii* v. d. Hoev., *Muiszechii* H. Deyr., *hemixantha* v. Voll. and *rajah* Gestro (species without the swollen yellowish thoracical patches). The new species agrees with the four last mentioned species in wanting the swollen thoracical patches, but differs chiefly in color and in not having the yellowish spot on the elytra.

Catoxantha purpurascens, sp. n.

Length 54 mm., breadth at the shoulders 16 mm.

Head purplish red, with a greenish tinge between the antennae and at the vertex, the labrum green; the antennae black, the first joint coppery-bronze, the three following spotted with that colour. The disc of the thorax dark purple, the bottom of the punctures on the lateral margins bright green. The elytra are of the same pur-

1) Lacordaire, *Genera des Coléoptères* (Suites à Buffon). Tome IV. p. 17, note 2.

plish color as the disc of the thorax and margined with green laterally as well as along the suture. Under surface of the body yellowish brown, with a curved black line on the breast. The coxae and femorae golden green; the tibiae outwardly fiery red; the tarsi bronzy green.

Head punctured, deeply and longitudinally grooved between the eyes, the groove deeper, broader and better limited than in *Mniszechii* and *hemixantha*; a fine impressed longitudinal line on the vertex. Thorax anteriorly almost as broad as long, at its base not quite twice as broad as long. The sides slightly concave, divergent as far as a little before the posterior angles, then parallel; base with a median angular lobe. The disc more finely and more distantly punctured in the middle than in *Mniszechii* and *hemixantha*, with a slightly raised line running from the middle of the base towards the centre; the sides rugose by confluent punctures. Elytra finely punctured, each with four slightly raised nearly impunctate lines; the sides subparallel; the apex of each finely subsemicircular emarginate and minutely bidentate.

Hab. Borneo.

Leyden Museum, January 1879.

NOTE XVIII.

ON STRIX INEXSPECTATA.

BY

H. SCHLEGEL.

Dec. 1878.

Ornithologists will recollect that the northern part of the isle of Celebes is inhabited by a species of Barn-owl, which I described under the name of Strix Rosenbergii [1]).

To judge from a very young specimen, sent from the Philippines, the species is also found in this Archipelago. I have before me eleven specimens of Strix Rosenbergii, all killed in the districts of Menado and the Minahassa [2]). They present the following measures. Wing $11^{3}/_{4}$ to $12^{1}/_{4}$ inches; point of wing $3^{1}/_{2}$ to $4^{1}/_{2}$ inches; tail $5^{2}/_{3}$ to 6 inches; tarse 32 to 36 lines; middle toe 19 lines.

As to the distinctive characteristics of this species, I stated that it resembles in general the common Barn-owl, from which, however, it may easily be distinguished by its much larger size, and the much darker tint of the upper parts. I stated moreover that the under parts are of a more rusty colour, and that the face is of a greyish rusty brown;

1) Observations zoologiques, I, in Nederlandsch Tijdschrift voor de Dierkunde, tom. 3, p. 181, and Museum des Pays-Bas, Oseaux de proie, Revue, Noctuae p. 16.

2) A twelfth specimen was nost indicated as having been brought from New-Guinea, but I do not think that the species has ever been found in this locality.

but it is to be observed, that in some specimens recently received the rusty colour of under parts and face is strongly inclined to white.

On examining a large series of birdskins collected in the northern parts of Celebes and presented to the Leyden Museum by S. C. I. W. van Musschenbroek, Esq., I was quite astonished to find, that there exists, in the Minahassa, beside Strix Rosenbergii, another large species of Barn-owl, very different as well from Strix Rosenbergii as from all the other known species. I therefore give to it the epithet of inexspectata.

In general apparance, size and distribution of colours, Strix inexspectata recalls to the mind Strix Rosenbergii, but it shows, on a close examination very different characteristics. One of the most striking of these is the shortness of the wings, occasioned by much shorter primaries which overreach the secundaries in a degree lesser than the half as it is the case in Strix Rosenbergii, as will be seen from the comparative measures of the foresaid part designated under the name of point of wing. Another very remarkable character occurs in the black bars both of the primaries and secundaries being smaller and more numerous in our new species and fading gradually away on the underside of the inner webs of the primaries, running or passing from the last to the first of these quills, the latter showing no bars at all. The ground-colour of the under side of the primaries is moreover much darker and gray with a silverish hue. The tail of Strix inexspectata is furnished with nine bars, that of Strix Rosenbergii only with five. The downy feathers of the tarsus are more developped and cover the foot down to the toes, exactly as in Strix Novae Hollandiae and castanops. The toes are somewhat shorter and much more slender. The ground colour of the upper parts is a very bright rufous and not shaked with gray, but the white spots are smaller. The ground colour of the under side of the body is as rufous as in the darkest specimens of Strix

Rosenbergii, but the face is darker and as dark as in Strix castanops and Novae Hollandiae.

I state in addition to the foregoing remarks, that in Strix inexspectata the first primary shows eight, the second nine black bars, whereas there are seven such bars on the secundaries. In Strix Rosenbergii, there are, on the contrary, only four bars on the first primary, five on the second, and four on the secundaries.

The measures of the principal parts of Strix inexspectata are as follows. Wing nine and a half inches; point of wing 20 to 24 lines; tail four inches six lines; tarsus $2^1/_2$ inches; middle toe 16 lines.

NOTE XIX.

ON SOME NEW OR IMPERFECTLY KNOWN PODOPHTHALMOUS CRUSTACEA OF THE LEYDEN MUSEUM.

BY

Dr. J. G. DE MAN.

Febr. 1879.

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1. *Atergatopsis Amoyensis* n. sp.

This species is closely allied to *Atergatopsis granulatus* Alph. M. Edw. and to *Atergatopsis Lucasii* Montr. It has the physiognomy of the former, but the *whole* surface of the carapace is uniformly covered with close minute granules, which are somewhat greater on its lateral regions than in the middle; there are also a few short stiff hairs on the carapace and on the legs. Front bilobed, formed by two rounded lobes which are very granular and separated by a rather deep incision. Interregional grooves very shallow, faintly marked. Latero-anterior margin with three small granular teeth, one on the middle, the second at the posterior edge of the margin, the third between the two other ones. The pleural lobes and the whole inflected portion of the carapace also somewhat granular, as also the two basal somites of the abdomen which is constituted by 5 segments. The chelipedes are nearly equal; the meropodites covered by the carapace; the outer surface of the carpopodites, and the

outer and inferior surfaces of the penultimate joints are very granular, and the inner surface of the claws is less so. The dactylopodite is much granulated at its base, and, just as the immoveable finger, very similar to the same parts of *Atergatopsis Lucasii*, being armed only with some small teeth. The ambulatory legs are very strong, covered with hair and very rugose and granulated.

The Leyden Museum has three specimens of this crab, which have been collected by Mr. G. Schlegel at Amoy in China.

Breadth of carapace of the largest specimen 47 mm.
Length » » » 30 mm.

This species is distinguished by the uniform granulation of the carapace and the legs, by the three granulated teeth at the posterior part of the antero-lateral margin and by the form and structure of its pincers.

2. *Atergates frontalis* de Haan.

Fauna Japon: Crustacea, tab. XIV, fig. 3. Alph. Milne Edwards, Nouv. Arch. du Mus. I, p. 238.

Of this species the carapace alone has been described by de Haan. The Leyden Museum is now however in the possession of a wholly entire specimen of an *Atergates*, collected at Amoy, which undoubtedly belongs to *Aterg. frontalis* de H. This species may be distinguished at once from *Aterg. integerrimus* Lam., that lives also in the Japanese seas, by the structure of the upper surface of the carapace and the legs. The carapace of *Aterg. integerrimus* being almost everywhere smooth, at least on its anterior half, it is in *Aterg. frontalis* de H. very rugose and furrowed by the very deep interregional grooves that are not found in *A. integerrimus*, and also by numerous depressions and punctate rugosities.

These rugosities are also observed on the outer surface of the legs, especially on the claws of the chelipedes, which are smooth in the other species. In both species the legs are ornamented with equally developed crests. The middle lobes of the front project more in *A. frontalis* de H. than in *Aterg. integerrimus* Lam.

It being now very easy to distinguish these two species, it will cause more difficulties to expose the differences between our species and the *Aterg. reticulatus* de H. The innumerable rugosities on the upper surface of the carapace are very distinctly reticulate in the latter species, but they are arranged very irregularly in *Aterg. frontalis*, and the crests of the legs of the latter species are sharper than in *Aterg. reticulatus* de H.

Breadth of the carapace of *Aterg. frontalis* de H. 82 mm.
Length » » » 50 mm.

3. *Eurycarcinus integrifrons* n. sp.

Having had no occasion to compare the description of *Eurycarcinus* (*Galene*) *Hawahensis* Dana, it is possible that the new species which I am going to describe, belongs to that *Euryc. Hawahensis*. In this case the *Euryc. integrifrons* should disappear from science.

Eurycarcinus integrifrons mihi is closely allied to *Euryc. Grandidieri* Alph. M. Edw., but it may be distinguished at once by the shape of its front, of which the margin is straight, entire and not incised.

Carapace as convex as in *Euryc. Grandidieri* Alph. M. Edw., but comparatively not so broad as in this species. Its upper surface is wholly smooth, the interregional furrows are wanting entirely, and it is only by means of an ordinary lens that the same very minute granules can be observed, which are also found in the Zanzibar species. Latero-anterior margin short, divided by three small incisions into four lobes, the two anterior of which are of equal size and

much larger than the two posterior that have a more dentiform shape, though projecting much less than in *Eurye. Grandidieri* or in *Eurye. Natalensis* Krauss. The supero-external angle of the orbits is sharper and projects more than in *E. Grandidieri* Alph. M. Edw.; the infra-orbital margin is locally thickened. The external maxillipedes and the abdomen constitued by 7 somites, have the same shape as in *Eurye. Grandidieri* Alph. M. Edw.

The latero-anterior margins and the inflected portion of the carapace are covered with short hairs.

The chelipedes are unequal in size, both in males and females, but entirely smooth; the meropodites are covered by the carapace, the carpopodites furnished with an acute tooth at the inner edge, and, as also the claws, wholly resembling those of *Eurye. Grandidieri* Alph. M. Edw. The carpopodites and propodites of the ambulatory legs covered in the same manner with a few long hairs as in the other species.

The collection of the Leyden Museum contains several specimens of this crustacean, but it is unknown where they have been collected; probably, however, they originate from the Indian seas.

Breadth of the carapace	of the male	20	m.m.
Length	»	14	m.m.
Breadth	of the female	22	m.m.
Length	»	16	m.m.

It may be allowed to observe that the genus *Eucrate* de Haan is nearly allied to the genus *Eurycarcinus*.

4. *Ozius granulosus* n. sp.

This species greatly resembles the well-known *Ozius tuberculosus* M. Edw., for it has the same outer shape and appearance.

Upper surface of the carapace rather convex as in *Ozius tuberculosus* M. Edw.; the antero-lateral margins are very arched, longer than the postero-lateral ones (in *tuberculosus* M. Edw. they are shorter), and divided into five triangular and acute teeth, besides the supero-external angle of the orbits.

The posterior tooth is smaller than the four preceding which resemble each other in shape; they are furnished with acute margins and distinctly separated from the inflected portion of the carapace, which is not the case in *Ozius tuberculosus* M. Edw. The anterior half of the upper surface of the carapace is divided by profoundly deep interregional grooves into several lobes which are covered and ornamented with coarse granular rugosities, the very broad grooves being quite smooth. The posterior half of the carapace is devoid of furrows, but is very minutely granulated. Front bimarginate and divided by three shallow bays into four little rather prominent teeth: in *Ozius tuberculosus* M. Edw. on the contrary four long granulated teeth are observed, of which the middle two are larger than the lateral ones. Inferior part of the carapace a little granulated near the orbits and the mouth. The chelipedes are unequal, the meropodites covered by the carapace, the carpopodites and the claws very granulated quite as in *Ozius tuberculosus* M. Edw. The ambulatory legs almost wholly smooth, but a little rugose on the upper margins. Abdomen having the same shape as in the *O. tuberculosus* M. Edw.

But a single female has been collected in the bay of Gorontalo, Celebes.

Breadth of the carapace 28 m.m.
Length » » 18 m.m.

This interesting species may be distinguished from the *Ozius tuberculosus* M. Edw. by the shape of the front and

of the antero-lateral margins. The *Ozius rugulosus*, and the *O. guttatus* are more different species.

5. *Epixanthus dilatatus* n. sp.

The carapace is almost twice as broad as long, much more convex than in *Epixanthus frontalis* M. Edw. The antero-lateral margins are very oblique, as long as the postero-lateral margins, and ornamented with 5 depressed teeth, besides the supero-external angle of the orbit. The two anterior teeth, especially the second, broad and blunt, the three posterior more triangular and acute, the last tooth being the smallest. There are no interregional grooves, and the various regions are very indistinct.

Front bimarginate, deflexed, divided into four lobes, the two middle lobes being rounded and broader than the two lateral ones. The anterior half and the lateral regions of the carapace are somewhat rugose by a few transverse rugosities and covered with a few short stiff hairs; in the same manner the inflected portion of the carapace is granulated and hairy.

The chelipedes are very unequal, both in the male and female, especially in the former, but greatly resemble those of *Epix. frontalis* M. Edw. External surface of the carpopodites and of the claws minutely granular and covered with short hairs, the carpopodite being armed at its inner edge with two dentiform processes.

The dactylopodite and the immoveable finger are very slender and elongate, especially in the smaller claw, and armed each with six or seven triangular teeth.

The dactylopodite of the larger claw armed with a large tooth at its base quite as in *Epix. frontalis* Edw. Ambulatory legs thickly covered with short hairs.

There are two specimens, a male and a female in the collection of the Museum, collected by Kuhl and van Hasselt at the island of Java.

Breadth of carapace	of the male	40	m.m.
Length	»	24	m.m.
Breadth	» of the female	54	m.m.
Length	»	31	m.m.

Epixanthus dilatatus may be distinguished from *Epix. frontalis* M. Edw. by its more convex carapace and its antero-lateral margins being divided into five teeth.

6. *Goniosoma sexdentatum* Herbst.

Herbst, Krabben und Krebse, pl. VII, fig. 52. Alph. Milne Edwards, Arch. du Mus. X, p. 372.

The Leyden Museum is in possession of two beautiful males of this species, collected at the island of Amboina.

Breadth of the carapace	of the larger specimen	97	m.m.
Length	»	66	m.m.

This species is closely allied to and has quite the facies of *Goniosoma natator* Herbst, which lives in the same seas, but it may be distinguished by the following characters:

The six teeth of the antero-lateral margin are altogether spiniform with a black point, except the second tooth which has an uncolored point. The last or sixth tooth is not larger in adult specimens than the other but is quite similar to them. There are no granular ridges on the upper surface of the carapace behind the long granulated line which unites the two posterior teeth of the lateral margins; this line itself has a much more sinuous course in our species than in *Gon. natator* Herbst, the carapace of which is ornamented with a twice interrupted ridge behind the said line. In *Gon. natator* Herbst on the contrary, the two anterior teeth of the lateral margins are blunt and truncated; nor is the third tooth, the largest of all, acute, but the three posterior ones alone are spiniform, and the last tooth is smaller than the other ones. The meropodites and carpopo-

dites of the three anterior ambulatory legs and the meropodites of the posterior legs are somewhat more slender in *Gon. sexdentatum* Herbst than in the other species. But for the rest these two species resemble each other completely and no other differences exist.

7. *Goniosoma dubium* Hoffmann.

Hoffmann, Crustacés de Madagascar, p. 11, pl. II.

The Leyden Museum has also received three younger specimens, two males and one female collected at the island of Timor, of this species which is undoubtedly nearly allied to *Gonios. orientale* Dana. They completely resemble the typical specimens described by Hoffmann and which are natives of Réunion. The first tooth of the antero-lateral margin is as large as the fourth and the fifth and much larger than the second tooth which is rudimentary. It may be observed that one specimen of Timor is provided with eggs, the breadth of its carapace being still only 31 m.m., whereas the typical specimen is much larger.

8. *Goniosoma acutifrons* n. sp.

Nearly allied to *Gonios. dubium* Hoffm. The carapace somewhat more convex, entirely covered with short small hairs and ornamented with the ordinary smooth and little granulated transverse ridges. Frontal teeth very characteristic, eight in number, altogether depressed, triangular, with arched outlines and very sharply pointed; the four middle teeth are of the same size and their interstices are as large as the space between the second and the third pair; the teeth of this third pair are a little larger and are separated from the intraorbital teeth by a somewhat greater space than from the teeth of the second pair. The antero-lateral margins armed with six teeth, the second being extremely rudimentary and scarcely perceptible, still more rudimentary than in *Gonios. dubium* Hoffm. The first tooth has the same size and shape as the four posterior ones.

The basal joint of the external antennae ornamented with two pointed spines. The chelipedes are stout; the anterior margin of the meropodites armed with three spines, the interspace of the two distal spines being smaller than the space between the two posterior ones. The carpopodites have four spines, one very stout spine on their inner angle and three on the external surface. The chelae armed with five spines, two on the internal and three on the external edge of the upper surface. Ambulatory legs slender; the meropodites of the posterior legs more slender than in *Gonios. dubium* Hoffm., with a ridge on their outer surfaces and the distal end of the inferior margin armed with a spine; the penultimate joints ornamented with many minute teeth on the inferior edge, the dactylopodites oval and elongate. The abdomen of the male having the same shape as in *Gon. dubium* Hoffm.

Breadth of the carapace of the single specimen 30 m.m.
Length » » 21 m.m.

We have received but a single male of this very characteristic species, which may at once be distinguished by the shape of its frontal and antero-lateral teeth.

9. *Paratelphusa tridentata* M. Edw. *and two new species of this genus.*

I have found in the carcinological collection of the Leyden Museum four labelled specimens of *Paratelphusa*: 1°. a *Paratelphusa*, from the Cape of Good Hope, bearing the name of *Telphusa senex* Fabr., 2°. a *Paratelphusa* from Java under the name of *Telphusa tridens* Fabr., 3°. another *Paratelphusa* with the name of *Telphusa triodon* de Haan and 4°. a fourth *Paratelphusa* also from Java with the name of *Telphusa convexa* de Haan. These four specimens are the numbers 147, 151, 152 and 153 of the catalogue of the crustacea of the Leyden Museum, published by Herklots in 1861 under the name of Symbolae Carcinologicae. [1])

1) Herklots, Symbolae Carcinologicae, Etudes sur la classe des Crustacés, Leyde, 1861.

A close examination has led me to the conclusion that the first three enumerated *Paratelphusae* belong altogether to the *same* species, to the *Paratelphusa tridentata* M. Edw., which name has the priority, though the names, given by de Haan, are of older date, 1°. because it appears that three different names have been applied by de Haan to three specimens of the same species, *which fact is quite inexplicable*, and 2°. because these species have never been described by our eminent carcinologist. The fourth specimen, on the contrary, to which de Haan has given the name of *Telphusa convexa*, belongs really to a new species, which I am now going to describe. I intend, moreover, to describe a second new species from Sumatra, that has been collected by Mr. Snelleman during the recent expedition to the interior of this island.

The *Paratelphusa tridentata* M. Edw. may be characterized in this manner:

Antero-lateral margins of the somewhat depressed carapace with two epibranchial teeth, the posterior of which is directed straightly backwards and passes not inwards on to the carapace. The post-frontal crest ends nearly at the middle of the anterior epibranchial tooth. An imaginary line, uniting the posterior epibranchial teeth, is situated much nearer to the post-frontal crest than to the transverse furrow on the middle of the carapace.

The suborbital margin having a regularly arched course without an obtuse angle. The meropodal joints of all the legs without a sharp spine at the distal end.

This species may therefore at once be distinguished from the *Paratelphusa maculata* mihi and from the *Paratelphusa convexa* de Haan by the want of the sharp spines at the distal end of the meropodites. It differs more especially from *Paratelphusa convexa* de Haan by quite a different facies, by its depressed carapace, comparatively shorter antero-lateral margins, by its more slender legs etc.; and it differs from the *Paratelphusa maculata* mihi moreover by its shorter and otherwise shaped antero-lateral margins and by the course of the post-frontal crest.

We have received the *Parat. tridentata* M. Edw. from Java, Timor, the Bavian-Islands, the Solor-Islands and, when the label speaks truth, also from the Cape of Good Hope. All these specimens resemble each other completely except those of the Bavian-Islands, where the two epibranchial teeth are more faintly marked.

A fine female of the Solor-Islands measures:

Breadth of the carapace	70	m. m.
Length »	52	m. m.

The largest specimen, a male, of the Bavian-Islands measures:

Breadth of the carapace	58	m. m.
Length »	42	m. m.

One of the specimens from Java, a female, measures:

Breadth of the carapace	37	m. m.
Length »	29	m. m.

10. *Paratelphusa convexa* de Haan.

Antero-lateral margins of the convex carapace armed with two epibranchial teeth, the latter of which passes backwards and inwards on to the carapace with a distinct keel. The post-frontal crest ends before the middle of the base of the anterior epibranchial tooth. The imaginary line that unites the two last epibranchial teeth, is situated almost in the middle between the postfrontal crest and the transverse furrow on the middle of the carapace. The suborbital margin passing with a more or less obtuse angle to the extra-orbital tooth. The meropodal joints of all the legs armed with a sharp spine.

This species has a physiognomy greatly differing from *Paratelphusa tridentata* M. Edw., with which is appears to have been confounded by Heller, von Martens and Wood-Mason. [1]) Its carapace is more convex, the antero-

1) Wood-Mason, Conspectus of the species of *Paratelphusa*, in Magazine of Natural History, XVII, 1876, p. 121.

lateral margins comparatively longer, the ambulatory legs are more slender, and armed with a spine at the distal end of the meropodites. We have received specimens of this species from Java, Timor, and New-Guinea, which completely resemble each other.

Breadth of the carapace 41 m. m.
Length of the » 30 m. m.

11. *Paratelphusa maculata* n. sp.

Antero-lateral margins of the more or less depressed carapace armed with two epibranchial teeth, the latter of which is directed straightly backwards and does not pass inwards on to the carapace. The post-frontal crest ends at the anterior part of the base of the first epibranchial tooth, and the distance of the extra-orbital angle to the first epibranchial tooth is greater than the space between the two epibranchial teeth, whereas in *Paratelph. tridentata* M. Edw. that distance is equal to or smaller than the interspace of the epibranchial teeth. The imaginary line which unites the two epibranchial teeth passes almost quite at equal distances from the postfrontal crest and the transverse furrow of the middle of the carapace. The suborbital margin has a regularly arched course without an obtuse angle. Meropodal joints of all the legs armed with a sharp spine at the distal end. The surface of the carapace and of the legs are ornamented with numerous small obscure spots.

Breadth of the carapace of the largest specimen (♀) 37 m. m.
Length » » 29 m. m.

Six specimens, males and females, have been collected in the river of Silago in the interior of the island of Sumatra by the zealous naturalist Snelleman.

This species may be distinguished from the *Paratelphusa tridentata* M. Edw., which it resembles more than the *Paratelphusa convexa* de Haan, by the longer and other-

wise shaped antero-lateral margins and by the spines of the meropodal joints.

It may be allowed to add that the Museum is also in the possession of a *Paratelphusa* from the island of Banka, which resembles almost completely the true *Paratelph. tridentata* M. Edw., but the carapace is a little more convex and the meropodal joints have only rudimentary spines. Perhaps this variety may be peculiar to that island.

12. *Limnocarcinus intermedius* n. gen. n. sp.

Limnocarcinus [1]): New genus of the family of *Gecarcinidae*, and more particularly of the subfamily of the *Gecarcininae* Wood-Mason. Front not united to the internal suborbital lobes, quite as is the case in *Hylaeocarcinus* Wood-Mason; the flagella of the antennae projecting into the interspaces between the front and the internal suborbital lobes. The third joint of the external maxillipeds with an obtuse-angled emargination in its anterior border; the three terminal joints however fully visible externally when the manillipeds are properly closed, the manillipeds having quite the same shape and form as in *Pelocarcinus Lalandei* M. Edw.

Limnocarcinus evidently presents a remarkable transition from *Pelocarcinus* M. Edw. to *Hylaeocarcinus* Wood-Mason, quite as the latter genus is intermediate between *Pelocarcinus* and *Gecarcinus*.

The species which we will call *Limnocarcinus intermedius*, is most closely allied to *Hylaeocarcinus Humei* Wood-Mason of the Nicobar-Islands, and bears a striking resemblance to it, so that it may suffice to describe only the differences and to state the measures.

Firstly the tubercles on the mesogastric lobe are scarcely perceptible in our species, which are very distinct in *Hyl. Humei*. Then the fissures separating the two suborbital

1) From λίμνη, a moor and καρκίνος, crab.

lobes are much wider than in the other species and are two or three times as wide as the spaces which separate the internal suborbital lobes from the front. Lastly the external maxillipeds resemble completely those of *Pelocarcinus Lalandei* M. Edw. For the rest this landcrab presents all the peculiarities in organisation, colours and outlines of the carapace and of the legs described in *Hylaeoc. Humei* W. Mas.; therefore the other differences that may exist, will be found only by a comparison of the specimens itselves.

Breadth of carapace of the male	67	m. m.
Length » »	50	m. m.
Length of the right claw of the male	59	m. m.
» left » »	57	m. m.

Hab. The single specimen that we have received, a male, has been collected near the bay of Gorontalo at the island of Celebes, probably in the forests or in the moors of that locality. *Hylaeocarcinus Humei* lives in the Nicobar Islands, *Pelocarcinus Lalandei* M. Edw. is a native of the New World.

13. *Macrophthalmus Polleni* Hoffmann.

Hoffmann, Crustacés de Madagascar, p. 19, pl. IV.

It seems to me very probable that this species be identical to *Macropht. Latreillii* Milne Edw. (Nouv. Arch du Mus. t. IX, p. 278, pl. 13, fig. 3). I cannot find any differences, but the question must remain undecided, because we have no typical specimen of *Macr. Latreillii* M. Edw.

14. *Gelasimus perlatus* Herklots.

Herklots, Addit. ad Faun. Afr. Occ. p. 6. Milne Edwards, Ann. Scienc. Nat. 1852, p. 151.

This species is positively closely allied, perhaps even identical to *Gel. Tangeri* Eydoux (Mag. de Zool. de Guérin, 1835, pl. 17). Herklots was merely in the possession of a single adult male whose larger claw is but a little longer than the carapace; we received afterwards however many

adult specimens from the same locality, the coast of Guinea, in which the larger claw is greatly longer, quite as long as in *Gel. Tangeri*; these specimens have for the rest a striking resemblance to the male which has been described by Mr. Herklots and is still found in the collection. But this question also remains undecided, because we have no typical specimen of *Gel. Tangeri.*

15. *Malacosoma reticulatum* n. g. n. sp.

Malacosoma, a new genus of the family of *Pinnotheridae.* It has the characteristic physiognomy of *Pinnotheres*, but it differs by the structure of the external maxillipeds. The second joint (ischiognathite Milne Edw.) is rectangular and but a little longer than broad, the third joint (merognathite M. Edw.) is quadrangular, shorter than the second, and the terminal joints are affixed to its internal angle. The internal margins of the second and third joints of the external maxillipeds are straight, and consequently the two maxillipeds are lying close to each other. The exopodites (exognathe M. Edw.) of these outer foot-jaws are stout and almost half as broad as the third joint. The integument is as weak as in *Pinnotheres*, and therefore it is possible that *Malacosoma* has also the same manner of life as the crustaceans belonging to the group of *Pinnotheres.*

Malacosoma reticulatum has a high and thick carapace; it is smooth, broader than in *Pinnotheres;* the antero-lateral margins arched and entire, and the postero-lateral ones somewhat impressed; front very deflexed, projecting, triangular with an arched anterior border; the orbits and the eyes are very small, as in *Pinnotheres.* The abdomen of the female, constituted by 7 segments, is very large, as in *Pinnotheres.* The whole upper surface and the inflexed portions of the carapace are ornamented with symmetrical dark and anastomosing lines which border large mashes and cause a reticulate figure. The chelipedes have perished in the single specimen we have received,

the posterior ambulatory legs however are short, not slender and are also ornamented with dark lines.

Breadth of carapace (of the female)	24	m. m.
Length »	20	m. m.
The space between the orbits measures	9	m. m.

This interesting species has been collected by Mr. Hoedt at Amboina.

16. *Grapsus Pelii* Herklots.

Herklots. Addit. ad Faun. Afr. p. 8. Milne Edwards, Ann. Scienc. Nat. t. XX, 1853, p. 166.

This species is identical with *Goniopsis cruentatus* Latr. I have been led to this conclusion by comparing *Grapsus Pelii* with some typical specimens of *Goniopsis cruentatus*, which we received from Mr. Alph. Milne Edwards and which have been collected in Mexico.

17. *Grapsus dilatatus* de Haan.

Mus. Lugd. in coll. Herklots. Symbolae Carcinol, p. 16.

This species is identical with *Metopograpsus pictus* Alph. Milne Edwards (Nouv. Arch. du Mus. t. IX, p. 289, pl. III, fig. 2). The name given by de Haan must disappear from science, never having been published. The specimen that bore the name of *Gr. dilatatus* de H., was collected at Timor by Macklot.

18. *Grapsus simplex* Herklots.

Herklots, l. c. pag. 9. Milne Edwards, Ann. Sc. Nat. 1853, p. 170.

On account of the relation of the antennae to the orbits, and of the shape of the external maxillipeds, this species really belongs to the genus *Grapsus* M. Edw.

19. *Sesarma elegans* Herklots.

Herklots, l. c. pag. 10. Milne Edwards, op. cit. p. 187.

This species presents some resemblance to *Aratus Pisonii* M. Edw., but the seventh somite of the abdomen of the female is included by the sixth, as in the true *Sesarmae*, so that this species may not be ranged in the genus Aratus. It may be distinguished at once from *Aratus Pisonii* M. Edw. by a less elongated carapace and by the more slender legs.

20. *Grapsus pusillus* de Haan.

Fauna Japon: p. 59, pl. XVI, fig. 2. Milne Edwards, Ann. Scienc. Nat. p. 175.

This species, which belongs to the genus *Nautilograpsus* M. Edw., is undoubtedly different from *Nautilogr. minutus* M. Edw., which inhabits the Atlantic and the Indian Oceans; it appears to may be distinguished chiefly by the carapace being more narrowed at its posterior half, and by the more slender and longer dactylopodites of the ambulatory legs. The typical specimens of this species however are no more present in the Leyden Museum; some specimens which I have found in that collection, and which bore the name of *Grapsus pusillus* de Haan, having been collected even at Japan according to the label, completely resemble the specimens of *N. minutus* M. Edw. from the Atlantic Ocean. How to explain this fact? The Leyden collection is in the possession of specimens of *Nautil. minutus* M. Edw. from the Atlantic Ocean and from New-Guinea, which present no differences at all. According to Mr. de Haan *Nautilogr. pusillus* de H. is also found in Mexico.

21. *Gnathograpsus intermedius* n. sp.

Closely allied to *Gnathograpsus Riedelii* Alph. M. Edw., this species presents also some resemblance to *Gnathograpsus pilipes* Alph. M. Edw.

As to the outlines of the carapace, the relative breadth of the front and the course of the lateral margins, our species completely resembles *Gnath. pilipes* Alph. M. Edw., but the carapace is very depressed and not ornamented with other furrows except the transverse groove on the middle, and the three teeth of the antero-lateral margins project as little as in *Gnath. Riedelii*. On the contrary our species is quite similar to *Gnath. Riedelii* as regards the structure of the region of the antennae, the shape of the orbits and of the epistoma. Pleural regions of the inflexed portion of the carapace are smooth. The outer jaws too have the same shape as in Gnath. Riedelii, but the exopodite (exognathe Alph. M. Edw.) is not longer than the third joint but as long or even somewhat shorter. Chelipedes and legs as in *Gnath. pilipes*, the margins of the two last joints of the ambulatory legs being ornamented with as long hairs, but the outer surface of the claws is granulated.

Breadth of the carapace of the male		27	m. m.
Length	»	23	m. m.

We are in the possession of two males collected in the Moluccas by Macklot.

22. *Heterograpsus sanguineus* de Haan.

Fauna Japon: p. 58, tab. XVI, fig. 3. Milne Edwards, Ann. Scienc. Nat. 1853, p. 193.

The carcinological collection of the Museum is in the possession of five specimens of this species from Amoy in China.

Breadth of the carapace of the largest male		44	m. m.
Length	»	37	m. m.
Breadth	» smallest male	24	m. m.
Length	»	21	m. m.

The male which was unknown to de Haan, has much greater claws than the female; they are equal in size, or the right claw is larger in some individuals. The inner angle of the carpopodite is armed with a short sharp spine as in the female. The outer surface of the claw a little convex without a keel which is found in the female. The dactylopodites and the immoveable fingers of the chelipedes are provided with short blunt teeth and at the end excavated like a spoon.

We have also received two typical specimens of *Heterograpsus sexdentatus* M. Edwards from Mr. Alph. Milne Edwards, collected in New-Zealand, and so I am enabled to state the differences of this species and of the *Heterogr. sanguineus* de Haan. Firstly the suborbital margin is provided in *H. sexdentatus* M. Edw. with a row of large rounded granules, in *H. sanguineus* on the contrary it is incised or crenulated only extremely subtilly and superficially; then the carpopodite of the chelipedes has a blunt inner angle in *H. sexdentatus*, without a spine, in *H. sanguineus* on the contrary with a sharp spine, and lastly the claws of the chelipedes are furrowed in *H. sexdentatus*, but for the rest quite smooth without bristles; in *H. sanguineus* they are provided with some rows of short but stout dark bristles. The last somite of the abdomen of the female is rounded in *H. sanguineus* but is triangular in *H. sexdentatus*. The specimens described by Heller (Novara-Reise, p. 52) as belonging to *Heter. sanguineus* de H., belong positively to *H. sexdentatus* M. Edw. — *H. sanguineus* de H. inhabites the seas north of the Equator, but *H. sexdentatus* M. Edw. lives south of this line.

23. *Heterograpsus penicillatus* de Haan.

Grapsus, *Eriocheir*, *penicillatus* de Haan, Fauna Jap. p. 60, pl. 11, fig. 6. Milne Edwards, Ann. Scienc. Nat. p. 177.

This species belongs also to the genus *Heterograpsus* M. Edw. and is even closely allied to *H. sanguineus* de Haan. The males of both species may be distinguished at once by the thick clothing of coarse hairs on the claws, but it is more difficult to distinguish the females. The infraorbital margin which is very thin and minutely crenulated passes without an interruption, but has quite another appearance in *H. penicillatus*: in this species it is interrupted near the extraorbital angle and proceeds again after that interruption; on both sides of that interruption this margin is thickened locally. *Heterogr. penicillatus* de H. is also nearly allied to *Heterogr. barbimanus* Heller (Novara-Reise, p. 53, tab. IV, fig. 5), but this last species has a more narrow front.

24. *Hypsilograpsus Deldeni* n. g. n. sp.

This crustacean has its external maxillipeds quite similar to those of the genus *Gnathograpsus* Alph. M. Edw., but it may be distinguished by the very thick body, the very convex carapace and the very deflexed front. By these differences it has too different a physiognomy from *Gnathograpsus* to be ranged in the latter genus.

The carapace very thick, convex, having a square shape with rounded angles and with but little arched lateral margins; its upper surface is everywhere granulated, especially on the anterior and lateral regions, and also covered with a few very minute short hairs. The interregional grooves are very distinct and deep, the transverse middle furrow making at its ends with the longitudinal grooves a figure almost like an H. The carapace is much deflexed anteriorly, the front is a little less broad than half the breadth of the carapace and is bayed three times, in the middle and at the sides, so that its border is sinuous. The antero-lateral margins are armed with three very distinct teeth; the margins of these teeth like those of the front and of the orbits are ornamented with granulations. The

postero-lateral margins are somewhat longer than the antero-lateral ones and indicated by a granular line. The external maxillipeds are shaped in the same manner as in *Gnathograpsus pilipes* Alph. Milne Edw., the exopodite (exognathe Alph. M. Edw.) reaches to the anterior border of the very auriculated third joint of the outer foot-jaws, is very convex and almost as broad as the second joint. The legs are short; the chelipedes (of the female) are equal and of a tolerable size; the meropodite does not proceed beyond the lateral margins of the carapace and is not armed with spines; the carpopodite has also no spines and is granulated at its outer surface; claw a little convex, the fingers excavated like a spoon; the inner surface of the claws is smooth, the outer surface covered with some granules and short hairs and with two granulated lines, the inferior of which passes on the outer surface of the immoveable finger. The second and third pair of the ambulatory legs are the longest of all, but are scarcely as long as the breadth of the carapace; the joints are but little compressed, the inferior margin of the meropodites is armed a little before the distal end with two or three teeth, of which one is somewhat larger than the other; the carpopodites and the propodites are but a little hairy and the dactylopodites that are similar to those of *Gnathograpsus*, are provided with rows of short bristles.

Breadth of the carapace of the female			22 m. m.
Length	»	»	18 m. m.

The single specimen, a female, has been presented to our Museum in 1836 by Mr. van Delden, to whom we dedicate it, and is collected near Menado at the island of Celebes.

NOTE XX.

ON FIVE NEW SPECIES OF THE GENUS ICHTHYURUS, WESTW.

BY

C. RITSEMA Cz.

Of the above mentioned genus of Malacoderm Coleoptera, founded in 1848 by Westwood in his *Cabinet of Oriental Entomology*, twelve species have hitherto been described, all natives of the Old World and distributed as follow: Sierra Leone (West Africa): one [1]); Moulmein (East-Indies): two [2]); Ceylon: two [3]); Pulo Penang: one [4]); Java: one [5]); Borneo: one [6]); Luzon (Philippines): three [7]) and Gayndah (Australia): one [8]). Of the species described in this note two are collected at Java, two at Sumatra and one in Abyssinia.

1) *I. discoidalis*, Westw. (*Cab. of Orient. Entom.* p. 84 note, and *Thes. Entom. Oxon.* p. 102, pl. II, fig. 2).

2) *I. costalis*, Westw. and *I. basalis*, Westw. (*Cab. of Orient. Entom.* p. 83, pl. 41, fig. 3 and p. 84 note).

3) *I. bicaudatus*, Fairm. and *I. inermis*, Fairm. (*Stettin. Entom. Zeitung.* Jahrg. XXVIII, S. 116).

4) *I. Doriae*, Gestro (*Annali del Mus. Civ. di Storia Nat. di Genova.* vol. IV, p 359).

5) *I. lateralis*, Westw. (*Cab. of Orient. Entom.* p. 83, pl. 41, fig. 2).

6) *I. forficuloides*, Fairm. (*Stettin. Entom. Zeitung.* Jahrg. XXVIII, S. 114).

7) *I. Semperi*, Fairm., *I. Dohrnii*, Fairm. and *I. scripticollis*, Fairm. (*Stettin. Entom. Zeitung.* Jahrg. XXVIII, S. 113—115).

8) *I. depressicollis*, W. Macleay (*Transact. of the Entom. Soc. of New South Wales.* vol. II, prt. IV (1872) p. 264).

1. *Ichthyurus octopunctatus* (v. Voll. in Mus. Lugd. Bat.), sp. n.

Length about 8 mm. — The head, the parts of the mouth and the antennae black, except the face as far as the vertex, the mandibles and the two basal joints of the antennae, all of which are golden yellow. The prothorax golden yellow, the disc with a large transverse black spot joining the lateral margins near the anterior angles and narrowed behind; the mesothorax, the scutellum and the metanotum golden yellow, the former with a fuscous spot on each side above the intermediate coxae, the latter with two lateral ovate black points, and, behind its posterior margin, with a triangular black spot. The elytra golden yellow, the outer margin from a little behind the base to the end black, the black margin very broad at its base and pointed inwardly, then narrowed; its inner margin undulated; the wings iridescent, with a somewhat milky tinge, brownish along the costal nervure. The anterior legs golden yellow, with the tibiae and tarsi black, (*the intermediate pair wanting*), the posterior legs golden yellow, with the apex of the tibiae and the tarsi brown. Abdomen golden yellow, with two lateral ovate points on each of the four basal segments, these points placed in longitudinal impressions; the apical segment black, with a brownish stain at the middle of its base. Beneath: the apical segment of the abdomen brown at its base, the three basal segments black, with the posterior and lateral margins yellow; the metasternum black, with a large yellow spot on each side.

The head and pronotum shining, delicately punctured, the latter somewhat flattened before the middle of the hind margin, and with a slightly raised, finely grooved, polished, longitudinal carina in the middle; a row of deep punctures near the anterior and posterior margin. The elytra opaque, very closely covered with irregular punctures; a fine im-

pressed line runs from the outer margin behind the shoulders to the yellow portion at about two thirds of the length of the elytra; the elytra are narrowed towards the apex which is rounded; the outer margin concave behind the shoulders, the inner margin waved; the shoulders prominent. The abdomen long and slender, its sides parallel; the apical segment longer than broad, the upper surface plane, the sides straight and parallel, the incision angular, not quite as deep as half the length of the segment, its sides straight.

A single specimen brought home from Java by the late Prof. Blume.

2. *Ichthyurus bifasciatus*, sp. n. ♂.

Length about 8 mm. — The head, the parts of the mouth, and the antennae black; the mandibles brown; the face between the base of the antennae and the mouth, a line at the inner orbit of the eyes above the base of the antennae, and the three basal joints of the antennae pale yellow, the last stained with fuscous posteriorly. The prothorax black, its posterior and lateral margins narrowly pale yellow; the scutellum pale yellow; the elytra pitchy, with a narrow pale yellow fascia across the base and a broader one before the apex; the basal fascia continued a little along the outer margin, the apical one slightly curved; the wings splendidly iridescent, with a somewhat milky tinge, brownish along the costal nervure. The legs pitchy, with the apex of the coxae, the trochanters, the base of the femorae and the knees pale yellow, the latter more or less indistinct; at the first and second pair the entire underside of the femorae pale yellow. The abdomen pitchy, the apical margin and edges of the segments pale yellow, less distinct towards the apex, especially beneath. Beneath: the thorax pitchy, with two pale yellow spots on each side, one above the intermediate, the other above and before the posterior coxae.

The head sub-opaque, with a large but indistinct heart-shaped impression on the face above the antennae. The pronotum very smooth and shining, covered with subtile punctures, and with a row of deep punctures near the anterior and posterior margin; a somewhat quadrangular impression before the middle of the hind margin, the impression with a slightly raised and posteriorly grooved carina in front. The elytra sub-opaque, closely covered with large punctures as far as the front margin of the pale yellow apical fascia, then without distinct punctures; a slightly raised longitudinal line runs, not quite in the middle, nearly parallel with the outer margin, and also an oblique impression from the outer margin behind the shoulder towards the inner margin a little before the apex without however reaching it. The elytra very little narrowed towards the apex which is broadly rounded, the sides nearly parallel, the shoulders prominent. At the intermediate legs the trochanters are sharply pointed at the apex within, the femorae incrassated, slightly curved and armed beneath with an acute tooth a little before the base, the tibiae longer than the tarsi, nearly straight, the under surface flattened, its margins irregularly serrated. The abdomen slender, much narrowed towards the apex, each segment, except the apical one, being narrower than the preceding one; the apical segment roof-shaped, about twice as long as broad at its base, its sides straight, very little divergent; the incision angular, almost reaching the centre of the segment, its sides straight.

Two males from Mount Ardjoeno, East Java (W. E. J. Hekmeyer).

3. *Ichthyurus suturalis*, sp. n. ♂ and ♀.

Length about 11 mm. — *Male.* The head, the parts of the mouth and the antennae black; the labrum and mandibles brown; a tricuspidated spot on the face beneath the antennae and the two basal joints of the antennae

golden yellow, the latter stained with fuscous posteriorly. The prothorax black, with the lateral margins broadly, the posterior narrowly margined with golden yellow; the scutellum and two small triangular spots on the middle of the metanotum immediately before each other golden yellow. The elytra black, with the shoulders narrowly and the suture broadly golden yellow; the wings iridescent, hyaline, with the costal portion brown. The legs black; at the anterior pair the apex of the coxae, the trochanters and about the basal half of the femorae, at the intermediate pair the apex of the coxae and the trochanters and at the posterior pair the coxae and the base of the trochanters and femorae pale yellow. The abdomen black, the lateral margins of the segments yellow, broader at the posterior edges, but less distinct towards the apex; the posterior margin of the segments most narrowly margined with yellow, that of the two penultimate segments broader. At the under surface: the posterior margin of the abdominal segments black, the thorax black, with three yellow spots on each side, placed above the coxae.

The head opaque, closely covered with very fine punctures; a large impression at the vertex; the scape of the antennae outwardly with a small tubercle at the middle. The prothorax opaque, closely covered with small punctures, and with a row of confluent punctures near the front and hind margin; the hind margin situated near the posterior angles; a somewhat heart-shaped impression before the middle of the hind margin and a longitudinal slightly raised line across the middle of the disc. The elytra narrowed behind the middle; the apex rounded; the outer margin concave behind the prominent shoulders, the inner margin concave behind the short suture; opaque, the basal portion covered with large punctures; an oblique impression runs from the outer margin behind the shoulders as far as the middle of the base of the attenuated portion, and then runs upwards to the inner margin as far as the apex of the yellow sutural spot. The anterior tibiae slightly

curved and as well as the apical half of the femorae covered beneath with long black hairs. The intermediate trochanters bifid, the inner tooth sharply pointed, the outer and longer one compressed and obliquely emarginated at the apex; the intermediate femorae incrassate, slightly excavated within and strongly compressed beneath; the under margin angular, the basal portion concave, then very minutely serrated and inwardly with a row of short ribs; the intermediate tibiae about as long as the intermediate tarsi, compressed, turned at the apex. The abdomen somewhat narrowed towards the apex; the apical segment at its base narrower than the penultimate, about twice as long as broad at the base; its sides divergent, very slightly waved; the incision angular, reaching the centre of the segment, its sides curved outwardly; the under surface of the apical segment divided by a longitudinal deep gutter; on each side of the gutter a flattened portion which is striated longitudinally and limited laterally by a raised straight line; the inner margin of the flattened portions terminating in a very compressed acute edge, obliquely directed inwards; the space between these edges and the tail-tips sinuated.

Female. Differing from the male in having the middle of the posterior margin of the prothorax and the shoulders black. The legs are black, with the apex of the posterior coxae yellow, and the anterior and posterior trochanters as well as the extreme base of the posterior tibiae brown.

The vertex of the head more slightly impressed and with a fine longitudinal line across the middle; the scape of the antennae without the small tubercle. The narrowed portion of the elytra broader. The legs simple. The apical segment of the abdomen not quite twice as long as broad at its base, its sides parallel, slightly convex before the middle; the incision semi-oval, not angular, reaching the centre of the segment; the disc with a broad, arched impression before the incision; the under surface simple; the under margin of the anus slightly tri-emarginate, the inner emargination with two lateral acute teeth.

Hab. Sumatra. — The male specimen of this species allied to the Javanese *I. lateralis* Westw., was captured between 17 May and 14 June of last year in the Highlands of Palembang by Mr. A. L. van Hasselt, chief of the Scientific Expedition to Central Sumatra, equipped by the Geographical Society of the Netherlands; the female specimen in October 1877 at Alahan pandjang by Mr. Joh. F. Snelleman, Naturalist to the above mentioned expedition.

4. *Ichthyurus planifrons*, sp. n. ♀.

Length about 12 mm. — The head, the parts of the mouth and the antennae black; the mandibles dirty yellow, with the apex chestnut-brown; the face along the inner orbit of the eyes dirty yellow, embracing an oval black spot a little above the base of the antennae; the scape of the antennae with two lateral dirty yellow stripes. The prothorax black, with a transverse spot a little within the front margin and reaching the sides, and three oval spots touching the hindmargin dirty yellow. The scutellum pale yellow with a longitudinal black stripe across the middle. The elytra pitchy, with a mouse-grey tinge, blackish along the outer margin and at the tip; the wings hyaline, the costal portion brown. The legs black, with the tip of the coxae and the extreme base of the femorae pale yellow, the trochanters brown. The abdomen above as well as beneath dirty yellow, becoming fuscous towards the apex, especially beneath; the apical segment black, brown at its base. The thorax beneath black, dirty yellow along the upper margin on each side.

Of a more robust form than the foregoing species. The head shining, covered with very fine punctures, the vertex broad and flattened; the antennae thicker than in the foregoing species. The prothorax shining, covered with almost imperceptible punctures; its margins greatly raised; the lateral margins sinuated near the anterior, the hind

margin near the posterior angles; the disc with five impressions: one at each of the four angles, the fifth before the middle of the hind margin and with a slightly raised longitudinal line at its bottom. The elytra narrowed beyond the middle, the tip rounded, subopaque, the broad portion closely covered with distinct punctures; a slightly raised longitudinal line runs, not quite in the middle, nearly parallel with the outer margin, joining the inner margin at two thirds of its length; an impression along the outer margin from the prominent shoulder as far as the narrowed portion of the elytra; the narrowed portion itself slightly impressed, its margins, especially the apical one, raised. The anterior tibiae slightly compressed, somewhat enlarged. The sides of the abdomen nearly parallel; the apical segment at its base as broad as the hind margin of the penultimate segment, not quite as long as broad at its base, its sides somewhat convergent, at the basal half slightly convex; the disc impressed in front of the incision; the incision angular, not reaching the centre of the segment, its sides slightly curved outwardly.

Hab. Sumatra. — The described specimen belongs to the collections sent home by the Sumatra-Expedition, and is captured in April 1877 at Soepajang by Mr. Joh. F. Snelleman.

5. *Ichthyurus Gestroi*, sp. n. ♂ and ♀.

Of this species, captured in 1870 by Dr. O. Beccari at Keren (district Bogos, North Abyssinia) on the flowers of *Cissus quadrangularis* Schimp. [1]), I received both sexes through the kindness of Dr. R. Gestro of Genoa, under the name of *Ichthyurus discoidalis* Westw. However the received male specimen shows some such striking particularities of which no mention is made in the description of

1) *Annali del Museo Civico di Storia Naturale di Genova*, vol. IV, p. 359.

the male *I. discoidalis* [1]), that I cannot consider Dr. Gestro's species as identical with Prof. Westwood's. I have dedicated the new species to Marquis Doria's learned assistent.

Length about 8 mm. — *Male.* The head, the parts of the mouth and the antennae black; the face beneath and a short line along the inner orbit of the eyes above the antennae pale yellow; the base of the mandibles pale yellow, their tip chestnut-brown; the labrum tinged with brown; the three basal joints of the antennae pale yellow. The prothorax fuscous, its margins more or less brighter; the scutellum fuscous. The elytra yellow, paler towards the base; the wings almost hyaline, fuscous towards the costal nervure. The legs fuscous, with the tip of the coxae and the trochanters pale yellow; at the anterior pair the under surface of the femorae, at the intermediate pair the whole femorae except a large fuscous patch on the outer surface of the apical half, the under surface of the deformed portion of the tibiae and the apical not deformed portion of the tibiae, and at the posterior pair the base of the femorae pale yellow. Upper surface of the abdomen yellow, the four or five basal segments fuscous, margined with yellow; the apical segment fuscous. The under surface of the body fuscous; the segments of the abdomen margined with yellow, the apical segment with a yellowish stain at the base.

The head subopaque, the face shining, verry narrow between the middle of the eyes; the eyes surrounded by a slightly raised line; a longitudinal sharp carina on the cheeks, curved backwards at the top; a slightly raised longitudinal carina at the vertex. The prothorax shining; a row of confluent punctures near the front margin, the hind margin sinuated near the lateral angles; a curved impression before the middle of the hind margin. The

1) The female of this species seems to be unknown, at least undescribed.

elytra narrowed; the outer margin much curved inwards behind the prominent shoulders, the inner margin slightly so behind the suture; the apex rounded; a longitudinal slight impression at the middle of the broad portion, and another more distinct one at the tip. The elytra for about two thirds of their length covered with distinct punctures. The anterior tibiae compressed and sinuated. The intermediate trochanters very elongated, deeply grooved at the under surface, bifurcated at the tip, the inner tooth curved, compressed, slightly rounded at the apex; the outer tooth hyaline, elongated, compressed and enlarged at the apex; the intermediate femorae very much inflated, beneath excavated and the base armed with a compressed spine obliquely rounded at the apex; the intermediate tibiae transversely dilated at the basal half; the dilated portion deeply excavated beneath, its sides concave, its posterior angles, especially the inner one, elongated and curved inwardly; the apical half of the tibiae partly covered by the dilated portion; the first joint of the intermediate tarsi elongated, longer than the tibia; the posterior trochanters truncated at the tip. The abdomen slender, narrowed towards the apex; the apical segment at its base as broad as the hind margin of the penultimate segment, not quite twice as long as broad at its base, its sides convex; the incision angular, almost reaching the centre of the segment, its sides nearly straight; beneath: the under margin of the anus prominent, longitudinally grooved, incised at the tip.

Female. Differing from the male in having the face above the antennae totally black, the basal half of the elytra fuscous, slightly passing into bright yellow towards the tip; the legs totally fuscous; the upper surface of the abdomen bright yellow, the basal segments more or less stained with fuscous; the apical segment totally dark fuscous.

Less slender than the male. The face between the middle of the eyes broader; the longitudinal carina on the cheeks

more prominent; the vertex with four deep impressions: two rounded at the middle, and two lateral ones very elongated and slightly curved outwardly; moreover a very small but distinct impression immediately beyond the top of the eyes. The elytra less narrowed, the inner margins very divergent, without distinct suture. The legs simple, the basal joint of the intermediate tarsi shorter than the four apical joints together, the posterior trochanters rounded at the tip. The abdomen not narrowed towards the apex; the apical segment less slender and its incision less deep than in the male sex, its sides convex; the upper surface with a longitudinal impression on the tail tips, confluent in front of the incision, the under surface almost circular.

Leyden Museum, February 1879.

NOTE XXI.

ON THE SUMATRA PORCUPINE, HYSTRIX MÜLLERI, TEMMINCK MS.

BY

Dr. F. A. JENTINK.

Februarij 1879.

In his short paper on the fauna of the Malayan Archipelago S. Müller [1]) states, that *Hystrix fasciculata* is found in Sumatra, Java and Borneo. In this he must have been mistaken, and seems to have confounded *H. javanica* with *H. fasciculata.*

H. fasciculata, Shaw [2]) is the *Porc-épic de Malacca*, Buffon. [3]) Wagner [4]) also confounded this species with *H. macroura*, L., which is the *Porcus, aculeatus, sylvestris seu Hystrix orientalis singularis*, Seba. [5]) The *H. macroura* has the tail half the length of the body and head (Seba), *H. fasciculata* one third (Buffon), the *Java Porcupine*, which has a very short tail, only nearly one fifth.

1) Verhandelingen over de Natuurlijke Geschiedenis der Nederlandsche Overzeesche Bezittingen, 1839—44, p. 36.

2) General Zoology, 1801, Vol. II, part. I, p. 11, pl. 124, fig. 2.

3) Supplément, 1799, tome VII, p. 124, pl.

4) Schreber, Säugethiere, Suppl. Band IV, 1844, p. 23.

5) Thesaurus, 1734, t. 1, p. 84, pl. 52 (figura bona).

H. fasciculata according to Buffon is moreover white on the belly.

In the Mémoires du Muséum d'histoire naturelle [1]), Fr. Cuvier states, "le genre *Acanthion* contient: l'acanthion de Java, *Acanthion javanicum*, qui ne nous est connu que par sa tête osseuse, dont nous avons déjà décrit les traits principaux (pl. 1, figs. 3 et 4); l'origine de cette espèce étant bien établie, on pourra aisément suppléer à ce qui nous manque pour le faire connaître complétement." As there are no differences at all between the skulls of the common Javan Porcupine and the figures given by Fr. Cuvier and as there is hitherto found in Java but one single species of Porcupine, Wagner [2]) has made a "double emploi" in giving a new specific name — *H. brevispinosa* — to the common Javan Porcupine, *H. javanica*, Cuvier.

J. van der Hoeven [3]) gives a list of the Hystrices in the Leyden Museum and among them *H. torquata*, a synonym of *H. javanica*, and *H. ecaudata*, probably a specimen without tail: the latter however I have not found in our collection.

Marshall [4]) states that there are in the Leyden Museum three stuffed examples of *H. javanica*, two skeletons and three skulls; of *H. longicauda* (under the MS. name *H. Mülleri*, Temminck) one full-grown example from Sumatra, a half grown individual, marked *H. javanica*, without locality and a very young one in its first year from Borneo. I never saw this last specimen in our Museum.

According to Sclater [5]) the *Acanthochoerus Grotei*, described and figured by Gray [6]) is the same as the Por-

1) Tome IX, 1822, p. 431.
2) Schreber, Säugethiere, Suppl. Band IV, 1844, p. 20
3) Tijdschrift van J. v. d. Hoeven, 1836, t. III, p. 110.
4) P. Z. S. L. 1871, p 235, note.
5) P. Z. S. L. 1871, p. 234.
6) P. Z. S. L. 1866, p. 306, pl. XXI.

cupine figured by Marsden [1]), with the following very brief description "Porcupine (*hystrix longicauda*) landak, and, for distinction, babi landak." In his figure nearly all the quills have two black rings, hitherto never met with in the Porcupines from the Malayan Archipelago. The *Acanthochoerus Grotei* (vide plate and description) is a Porcupine with the tail rather elongated, covered with white spines and having the whiskers black. The Sumatra species of Porcupine in the Leyden Museum is not *H. longicauda*, our Sumatra specimens having the tail as short as the Java species, the spines on the tail being dark ringed and the whiskers being black with very long white tip.

Günther [2]) described specimens and figured skulls of *H. crassispinis* and *Trichys lipura* from Borneo. These species may be distinguished at a glance from the other Porcupines of the Malayan Archipelago, *H. crassispinis* by the extreme thickness of the quills (about twice as thick as an incisor), *Trichys lipura* by having the tail reduced to a scarcely perceptible prominence of the skin. The differences in the skulls are evident when comparing the figures of Cuvier's Javan species and those of Günther's Bornean species with our Sumatran skull.

And so it seems that S. Müller — s. n. *H. fasciculata* — has confounded three distinct species; that in Sumatra, Java and Borneo at least four distinct species of Porcupine are found; and finally that the Porcupine collected by S. Müller at Padang (Sumatra) is a yet undescribed species.

Hystrix Mülleri, Temminck MS.

It must be noticed that S. Müller, l. c. observes: "the specimens of Porcupine from Sumatra have a much purer

1) History of Sumatra, 1811, third edition, p. 118, pl. XIII.
2) P. Z. S. L. 1876, p. 736, pl. LXX and LXXI.

colour: in the specimens from Java the chest, belly and limbs are dirty red-brown, in the Sumatra specimens on the other hand dark brownish black. In the latter moreover the collar on the throat is brighter white and therefore more evident."

I add the following characteristics: the head is comparatively very long and narrow; the whiskers are very long — the longest measures 19 c. m. — brownish-black at the base with long white points. A slightly elevated crest arises between the ears along the neck. The spines of the crest are cylindrical, the longest measures 53 m.m., brownish-black, ringed with white towards the tip of the spine. The spines on the back are polygonal and channeled, the longest measures 4 c.m., brownish-black, in youth white at the tip. On the middle of the back the quills are very long, the longest 19 c.m. — in the *H. javanica* 126 m.m. —, the greatest thickness is nearly 6 m.m., brownish-black ringed, white at the base and white towards the point for 95 m.m. Other quills longer but slender, and more rarely projecting beyond the former.

Tail as in the Java species, the spines however have longer white points, and so the backpart of the animal is much whiter than in the Java Porcupine. Marshall in his note (l. c.) says: "in the skeleton and skull I can find no material differences between the two species (sc. *H. javanica* and *H. longicauda* = *Mülleri*)." After a careful examination of two skeletons of *H. javanica* and one of *H. Mülleri*, I agree with Marshall's statement about the skeletons, as I find in both species the same number of vertebrae, viz. 14 costales with 14 costae, 5 lumbares, 4 sacrales and 15 caudales. But there are differences in the skulls. The skull of *H. Mülleri* is longer and narrower, the nasalia are longer, the length of the upper molar series on the other hand is less in *H. Mülleri*. The palatal incision in the latter does not surpass the molar series, while that incision in *H. javanica* advances forwards to the front margin of the hinder molar, as in *H. crassispinis*.

	H. Mülleri. m. m.	H. javanica. m. m.
Length of body from tip of nose to root of tail	618	
Length of tail without terminal quills	115	
Length of one of the largest quills on the back	190	127
Total length of skull	135	118
Length of nasal bone	59	48
Length of upper molar series. . .	23	26
Distance between incisor and first upper molar.	37	33
Distance between incisor and first lower molar.	23	20

The measurements of the skull were taken from the skeleton of a very old specimen formerly collected at Padangbessie (Sumatra) by our diligent traveller S. Müller.

The other measurements are those of a very old male, having lived $1^1/_2$ year in captivity at Padang at the house of the Chinese Lie Saay, and a year in the Royal Zoological Botanical Gardens at the Hague. We may take this opportunity of expressing our sincere gratitude to that Society and especially to the Director Mr. Maitland, to whom we are indebted for this very fine specimen.

In the Leyden Museum we have of *H. Mülleri* four stuffed specimens and one skeleton, of *H. javanica* four stuffed examples, two skeletons and three skulls.

In the Galleries of the Amsterdam Museum, Natura Artis Magistra, there is also an adult stuffed specimen of the Sumatran Porcupine, which died last year in the Zoological Gardens.

Notes from the Leyden Museum.

NOTE XXII.

ON A NEW PORCUPINE FROM SOUTH-AMERICA.

BY

Dr. F. A. JENTINK.

February 1879.

Cuvier [1]) figured the skull of *Hystrix prehensilis*, and afterwards Brandt [2]) gave figures of the same species. On comparing these figures it strikes one that great differences exist between these figures, and the questions arise: has either of the two authors perhaps figured a skull of another species sub nomine *H. prehensilis?* which is the true *H. prehensilis?*

In our Museum I found three stuffed specimens and three skeletons labelled *H. prehensilis*: two skeletons were collected at Surinam by Dieperink in the year 1835; they agree in all details; the third skeleton we took out of a specimen, purchased 1877 from the Zoological Gardens at Rotterdam, s n. *H. prehensilis.*

In the Surinam skeletons I find the following numbers of vertebrae: dorsales 16 with 15½ costae, lumbares 5, sacrales 3, caudales 32: in the Rotterdam skeleton on the other hand dorsales 15 with 15 costae, lumbares 7, sacrales 3 and caudales 35.

I find the following differences in the measurements of the skulls which are of the same length — 91 m. m.

1) Muséum d'histoire naturelle, 1822, T. IX, pl. 20 ter, fig. 3 et 4.

2) Mémoires de l'Académie impériale des sciences de Saint-Pétersbourg, 1835, T. I, pl. IX, fig. 5, 6, 7, 8 et 9.

	Surinam sk. m. m.	Rotterdam sk. m. m.
Width between parietalia	51	41
Width between jugalia	56	53
Height of skull	47	45
Length of nasal bones	28	39
Width of nasal bones	27	25,5
Distance between incisor and first upper molar	25,5	23,5

Now it is evident that the skulls being of the same length, the Rotterdam specimen has all its proportions smaller except the length of the nasal bones. Moreover the roof of the skull of the Rotterdam specimen is more vaulted; whereas the difference between the shape of the lower jaws is another peculiarity of this species.

And now the figures given by Cuvier agree entirely with our Surinam skulls, and those given by Brandt with our Rotterdam skull.

Neither Cuvier nor Brandt have mentioned in the above named works the number of vertebrae, but Wagner [1]) in his list states that according to Cuvier the *Synetheres prehensilis* has 16 vertebrae dorsales, 5 lumbares, 3 sacrales and 30 caudales, which numbers agree very well with these of our Surinam specimens. Cuvier's examples were from Guyana, those of Brandt from Brazil, presented by Langsdorff. As Cuvier is the first author who gives figures of Porcupine skulls with clear descriptions, we may consider his Porcupine as the true *Hystrix prehensilis*, Brandt's Porcupine is consequently another species, which agrees with our specimen from Rotterdam. I propose to name this species after Brandt, *Hystrix Brandtii*.

Brandt [2]) figures another skull of a young specimen of Porcupine, about which he remarks: "junioris aetatis animalis cranium, ob ossa nasi et frontis minus elevata *cercolabis insidiosi* cranio longe similius." Here Brandt

1) Schreber, Säugethiere, Suppl. Band III, 1843, p. 142.
2) O. C. tab. X, fig. 1 and p. 397.

must have had before him a skull of the true *H. prehensilis*, characterized by having the nasalia less elevated, the frontalia broader and on the whole a narrower skull.

In his "interpretatio" (p. 424) Brandt states that the skull (tab. IX, fig. 5) is "one third" the natural size, it must apparently be "two thirds."

Hystrix prehensilis auctorum.

General colour rusty brown. All the quills are yellowish near the base; most of them have a rusty brown ring and a yellowish white tip, never exceeding 13 m. m. in length. The longest quills measure 77 m. m., which agrees very well with the measurements given by Buffon [1]), who states "les plus long piquans sur le corps ont 2 pouces 8 lignes = 73 m. m." According to Shaw [2]) the longest quills measure 77 m. m. (three inches).

Here and there and principally upon the haunches there are quills without such yellowish white tips; so these are yellowish white near the base and for the rest rusty brown. The dorsal half of the tail is covered for the greater part with quills of the same nature as those on the back. Towards the point the tail is almost naked. The underside of the tail near the root is covered with strong bristles yellowish white colored, towards the end of the tail they are entirely brown with short yellowish white bases.

There are a few very long black bristles among the quills of belly and legs.

The vertebral column consists of 16 vertebrae dorsales, with $15^1/_2$ costae, 5 lumbares, 3 sacrales and 32 caudales.

I cannot give the measurement of the length of the tail, because the point is wanting. But the number of caudal vertebrae being 32 and in *H. Brandtii* 35 I believe the tail is longer in the latter. Buffon, l. c. gives the length of the tail of his *Coendoe à longue queue* 1 pied

1) Histoire naturelle, suplément, T. VII, 1789. p. 125.

2) General Zoology, mamm. 1801, Vol. II, part. 1, p. 7.

5 pouces 6 lignes = 475 m. m., consequently shorter than the head and body, which measured according to Buffon 2 pieds 6 lignes = 663 m. m. The tail of *H. Brandtii* on the other hand is longer than the head and body together.

At present there is one stuffed female of this species in the Leyden Museum, labelled Brazil, as well as two skeletons from Surinam, presented by Dieperink.

Hystrix Brandtii, n. sp.

General colour dusky chestnut. The quills are longer than those of *H. prehensilis*. The longest measures 110 m. m. They are pure white near the base, each ringed with dusky chestnut, the points being almost entirely white for about 16 m. m. There are other quills which are white at the base only and for the rest dusky chestnut. Dorsal parts of the tail conform to the back, for the rest covered with short bristles and colored as in *H. prehensilis*. The longer bristles of belly and legs are black and tipped with white.

The vertebral column consists of 15 vertebrae dorsales with 15 costae, 7 lumbares, 3 sacrales and 35 caudales.

	L. M.	according to Brandt.
	m. m.	m. m.
Length of head and body .	433	407.
Length of tail	568	540.

There are now of this species two stuffed females in the Leyden Museum, one of them from Surinam [1]) (Dieperink), the other one (from an unknown locality) died in the Zoological Gardens at Rotterdam; one skeleton taken from the latter specimen, and the skull of the Surinam specimen.

1) This must be the specimen, about which Waterhouse (in his excellent Work, titled "A Natural history of the Mammalia, 1848, Vol. II, p. 414") remarks "A specimen in the Leyden Museum, and which is labelled as coming from Surinam, measures 20 inches in length, following the curve of the back; its tail is about 23 inches in length, and therefore proportionately longer than in the animals belonging to the Zoological Society; in other respects it does not differ, excepting that the hairs on the tail are dusky brown." The figure of the skull, o. c., plate 18, fig. 2 being copied from Brandt's figure is that of *Hystrix Brandtii* mihi.

NOTE XXIII.

ON A NEW SPECIES OF ECHIMYS.

BY

Dr. F. A. JENTINK.

February 1879.

Echimys macrourus, Temminck in litt.

Differs from the other species of *Echimys* hitherto described by the extraordinary length of the tail.

Upperparts rusty brown: cheeks, sides of the abdomen and outside of legs rusty. Chin, chest, belly and inside of legs dirty white. Woolly hairs on the upperparts rusty, intermixed with narrow flexible rigid hairs, rusty near the base, brown towards the tip. The colors of the upper and lower parts are sharply defined.

Ears elongated, rounded at the tip.

Tail with very short dirty yellow hairs

Whiskers surpass the tips of ears, brown near the base, for the rest rusty.

Hind foot with five toes; the three middle toes of nearly the same length; the fifth toe is shorter, the thumb is the shortest, but very well developed. Fore foot with four fingers and a very small thumb with a flat nail. The two middle fingers of nearly the same length. Claws yellowish white, covered by the long hairs of the toes.

As we have no skull I cannot give the measurements of the dentition.

One specimen (L. M.).

	m. m.
Head and body	221
Tail	320
Ear	25
Hind foot	41

Hab. Surinam (Dieperink).

NOTE XXIV.

ON A NEW SPECIES OF CUCKOO FROM MADAGASCAR.

BY

H. SCHLEGEL.

March 1879.

Cuculus Audeberti.

The typical specimen of this new species, was obtained by Mr. Audebert, on the tenth of June 1878, in the neighborhood of Ambodikilo near Mananare a place on the South-Western shore of the bay of Antongil. Our traveller states that this was the only example of the species which he met with during a course of two years in the North-Eastern parts of Madagascar, a fact leading to the conclusion that this species is much less generally distributed in the country mentioned than its congener, the Cuculus himalayanus or Rochii.

The next allied species of Cuculus Audeberti is the Indian Cuculus sparveroides, Vigors, from the continent of India, put by modern ornithologists, after the example of S. Müller in the subgenus Hierococcyx.

The two species show indeed a strong resemblance to each other in size, in general appearance and in the dimensions of their different parts. The Madagascar bird is, however, quite distinct by very striking modifications in the distribution of colors of the plumage.

These modifications may be thus stated: —

The whole underpart of the Madagascar species is of an uniform pure white, without the least trace of longitudinal streaks on the chest, or transverse bands on the breast, flanks, and belly; nor is the chest by no means washed with rufous. The feathers of the shanks equally white and only marked, instead of by numerous regular bands, by a few dark transverse spots. The under tail-coverts, one inch longer than in Cuculus sparveroides, show, on the contrary, each, several large and complete transverse black bands, whereas in the Indian species this marking occurs only accidentally and is, moreover, reduced to a few obsolete and imperfect transverse spots The under coverts of the wing are pure white, and not of a rufous colour, transversed with brownish black bands. The black bands, so conspicuous on the inner webs of the quills in the Indian bird are entirely wanting in the species of Madagascar. The dark colour of the upper parts is, in our new bird, more dusky, without any reddish hue or ashy tinge. The tail-feathers show the usual terminal large black band, but it is bordered, at the end, with white, and followed by a white spot, but the other bands, four or five in number, which render the tail-feathers of the Indian species so conspicuous, do not exist in our new bird. Last of all, it must be observed, that the bird has the extremities of both series of quills, and of the great wing-coverts margined with pure white, and that the bill is stronger and much larger at its base, and that the nostrils have not a sort of tubular aspect but that of a simple oblique split.

Mr. Audebert, to whom this species is dedicated, found the iris of the eye of an uniform black color.

Measures of the principal parts of the female specimen, type of the species. Total length fourteen inches (French measure). Wing eight inches and nine lines. Tail eight inches. Undercoverts of the tail five inches and four lines. Tarse eleven lines. Middle toe without nail eleven lines. Bill from front eleven lines.

Notes from the Leyden Museum.

NOTE XXV.

ON STRIX TENEBRICOSA ARFAKI.

BY

H. SCHLEGEL.

March 1879.

Strix tenebricosa Arfaki.

This bird is, in New-Guinea, the representant of Strix tenebricosa, Gould, from South-Eastern Australia. Closely resembling the latter, it differs however by its smaller size, by the white spots of the feathers being larger and more regular orbicular, and by the light sooty brown color of the face strongly inclining to white.

The measures (in French measure) of the principal parts are as follow —

In Strix tenebricosa Arfaki: wing 9 inches 1 line; point of wing 1 inch 10 lines; tail 4 inches 4 lines; tarse 30 lines; middle toe (without nail) 18 lines.

In five specimens of Strix tenebricosa from Australia: wing $10^1/_3$ to $11^1/_2$ inches; point of wing 18 to 27 lines; tail 5 to $5^1/_2$ inches; tarse 32 lines; middle toe $1^1/_2$ to 2 inches.

A single specimen of this conspecies was sent to the Leyden Museum by one of the Dutch Missionaries of Andaï It was killed near Hattam, on the 6th of December 1875.

NOTE XXVI.

ON A NEW SPECIES OF TRERON FROM THE ISLAND OF SUMBA (SANDELWOOD).

BY

H. SCHLEGEL.

March 1879.

Treron Teysmannii.

Mr. Teysmann, the indefatigable honorary Inspector of the cultures at Buitenzorg in Java, collected, amongst other objects of Natural history, several years ago, during a visit to the island of Sumba, commonly called Sandelwood-island, two specimens of a pigeon of the genus Treron, which appears to belong to a species hitherto unknown to naturalists.

This bird, dedicated to a gentlemen, who has rendered so many services to science, has its next allied species in Treron psittacea from Timor and in Treron floris inhabiting the island from which its epithet is taken. Ornithologists will remember that I brought the two latter species in a separate subdivision, distinguished from some other allied species of which Treron aromatica is the most remarkable, by their somewhat more lengthened tail. This subdivision was characterized by me (Muséum des Pays-Bas, tome 4, Columbae, p. 58) in the following terms. "Queue un peu allongée. Teintes générales du plumage d'un vert jaune, passablement vif en arrière du manteau, légèrement lavé

de grisâtre sur les autres parties et se répandant uniformément sur tout le dessous de l'oiseau. De larges lisérés jaunes aux couvertures alaires grandes et moyennes, plus étroites aux rémiges secondaires. Blanc grisâtre du dessous des rectrices clair et occupant plus du dernier tiers de leur longueur. Souscaudales vertes, mais très largement bordées de blanc roussâtre." We have seen by this general diagnosis of the two species, that the male and female are of the same coloring, or in other words, that the male has not, as in Treron aromatica and griseicauda, the shoulders dark grey, nor the shoulder-feathers and the mantle tinged with brownish red inclining to purple. Our new species showing this same color, only on the hindest part of the mantle and the hinder shoulder-feathers, this circumstance leads to an addition to the diagnosis of the subdivision, giving at the same time a very conspicuous characteristic to our new species.

In size, Treron Teysmannii is superior to Treron floris and even a little to Treron psittacea, the wing measuring six inches to six inches and four lines; the tail however, is of the same length as in Tr. psittacea, whereas it is a third of an inch shorter in Treron floris. The bill from front to point has in length seven lines and is of a greenish horncolour. The tarse and toes appear to have been of a greenish gray.

Front, throat, rump and upper tail-coverts greenish yellow. Under part of body yellowish green. The middle pair of tail-feathers yellowish olive color. The other tail-feathers grayish at the base, passing into a large band of dark bluish gray, while more than the last third of these feathers is of a grayish white color which spreads also over the upperside of the other tail-feathers, but in decreasing extension towards the outer feathers. Under tail-coverts green, very broadly margined with fulvous yellowish white. Crown and sides of the head, neck, small wing-coverts, shoulder-feathers and mantle green with a grayish hue; with the exception of the hindest part of

the mantle and the hinder shoulder-feathers, which are both of a brownish red inclining to purple. Quills black, but the tertiairies washed with green. Middle wing-coverts black, very broadely margined with limonyellow like the tertiairies; great wing-coverts with somewhat smaller, and primaries with very small yellow margins. Entire underside of the wing bluish ashy gray.

The sex of our specimens not having been stated, it is only by analogy that we may judge them both as being adult males.

NOTE XXVII.

ON A NEW GENUS AND SPECIES OF MUS FROM MADAGASCAR.

BY

Dr. F. A. JENTINK.

March 1879.

Up to the present time the different travellers have found in Madagascar the following *Muridae*, viz: *Mus indicus*, *rattus* and *musculus*, and the very interesting *Hypogeomys antimena*. The first three species are probably introduced by vessels, whilst *Hypogeomys antimena* is peculiar to Madagascar.

Last month our Museum received a large collection of Mammals, Birds, a. s. o. gathered in that island by Mr. J. Audebert, in which collection there were *three* specimens of Mice, which clearly belong to a new species, nay to a new genus. For showing the general size and dentition of *Mus decumanus*, the hind feet are highly enlarged, the ears longer, and the tip for about one sixth the lenght of the tail is ornated with pure white hairs.

Hallomys Audeberti, n. g. et n. sp.

General tint of the rather short and very soft fur olivaceous as in *Pelomys fallax*, *Mus abyssinicus*, *variegatus* and *vittatus*. The fur of head, upper parts and sides of

body, in and outsides fo forearms and thighs slate-colored near the base, on the head, back and sides of the body each hair having a black tip, separated from the slate-coloured base by a rather broad yellowish brown ring; whilst the hairs of the fore-arms and thighs are only broadly tipped with reddish brown: intermixed are some entirely black ones. Chin, lower parts of cheeks, throat, chest, and middle of belly and abdomen pure white: along the sides of that white streak the hairs are colored like those of the forearms and thighs. Hairs of hands and feet dark brown. Whiskers black, tho foremost pure white. The hairs of the upper parts of the tail near its root are black, for the rest they are uniformly brown, except those of the tip of the fail, which are pure white.

Ears oblong and broadly naked, blackish brown, well rounded towards the tip.

Whiskers very long, projecting beyond the tip of the ear; the foremost are short.

Tail closely behaired, shorter than head and body.

The feet are comparatively much longer and more developed than in any other species of Mice hitherto known, nay comparatively longer than in the much larger *Hypogeomys antimena* — thus showing its leaping habit. — The toes also resemble those of *Pedetes*, *Scirtetes* and *Meriones*, the three middle toes — and especially the midmost — being very elongated. The outerones are much shorter and attached very high up: the first toe is the shortest. The fingers also are more developed than usually, the thumb is the shortest, the third finger the longest, the second and fourth finger being of the same size.

The claws of the fingers about half the size of those of the feet; the latter being very strong. Long curved rigid hairs, growing at the root of the nails, are overhanging the almost straight claws. The claws are brownish white colored.

Cutting-teeth smooth, white towards the points; upper ones brownish orange, lower ones yellowish.

The skeleton presents the following number of vertebrae, viz: 13 costales, with 13 costae, 7 lumbares, 2 sacrales and 33 caudales.

Measures of an adult male —

	m. m.
Head and body	230
Tail	190
Ear	23
Hind foot with claws	57
Length skull	51
Width skull	26
Length upper molar series	8
Distance between incisor and first upper molar	13.5
" " " " " lower "	7

Hab: Maisine and Savary. — N. E. Madagascar (J. Audebert).

As the above described species belongs to the first new genus, discoverd by Mr. J. Audebert, I take advantage of the opportunity in calling it after this naturalist.

NOTE XXVIII.

ON ARTAMIA BERNIERI.

BY

H. SCHLEGEL.

March 1879.

Artamia Bernieri.

My readers will remember that this species was originally based on a single specimen, introduced into science by Isidore Geoffroy St. Hilaire, under the name of Oriolia Bernieri (Vide: Acad. des sciences, Avril 2, 1838; Revue zoologique, vol. 1, p. 50; Guérin, Magazin de Zoologie, 1839, Oiseaux, pl. 4). When I published in the "Recherches sur la Faune de Madagascar, Mammifères et Oiseaux par H. Schlegel et Fr. Pollen, p. 86, pl. 25" a description and an exact figure of the very same specimen. I considered the bird as belonging to the genus Artamia and the specimen as presenting a yet immature plumage, which led naturally to the supposition, that the perfect plumage of the adult would be a very different one. This supposition was proved true, but only with respect to the adult male, when we received, some years ago, specimens of the adult male and female of the species. These specimens were, shortly afterwards, followed by a small series of others, all killed by Mr. Audebert in the countries bordering on the large bay of Antongil situated on the North-East coast of Madagascar.

The specimens of this species, now before me, are thirteen in number, viz. five adult males, two males in passage and six females. It appears from the inspection of these skins, that all the adult females and the males in imperfect plumage show the system of coloration of the specimen of the Paris Museum, figured in my above cited work; that the males in passage, one killed in March, the other one in November, although similar to the female and young male, have their plumage partly varied with black feathers, while the plumage of adult males is entirely tinged with an uniform and deep glossy black, inclining to greenish steelblue.

I add to these observations that the proportions of the different parts appear to be very little liable to variations, which will appear from the following measures —

Wing four inches and four lines to four inches and five lines. Tail three inches and three lines. Tarse ten lines. Middle toe without nail seven inches. Bill ten to eleven lines.

NOTE XXIX.

ON AN UNDESCRIBED SPECIES OF ARDEA (ARDEA LANSBERGEI).

BY

H. SCHLEGEL.

March 1879.

Ardea Lansbergei.

His Excellency, the present Governor General of Dutch India J. W. van Lansberge, Bart. L. L. D. by repeatedly authorizing exploring expeditions into different parts of the Indian Archipelago has given a glorious example how to promote a science which he cultivates himself most ardently. Mr. J. E. Teysmann honorary Inspector of the cultures at Buitenzorg in the isle of Java, put at the head of the expedition, was accompanied by a certain number of hunters for the purpose of collecting and preparing zoological objects. During a visit in the district of Macassar in the southern part of Celebes, the party met with the undiscribed species of heron, the epithet of which will serve to remember the name of one of the few high functionaries, who appreciate the interest and value of scientific researches.

The Ardea Lansbergei appears to belong to the division of herons, designed under the name of Semi-Egrets (See my Muséum des Pays-Bas, Ardeae, p. 20), and approaches in general appearance more particularly to Ardea gularis and jugularis, but being very distinct from all of them

by a different system of coloration of the plumage, which in some measure reminds us of that of the rare species of true, buth rather small sized heron from Australia, Ambon and Celebes, called Ardea picata.

The specimens, five in number, obtained by Mr. Teysmann bear a most perfect resemblance to one another. Not one shows a trace of lengthened linear feathers, neither at the neck, nor at the chest or rump. The plumage presents properly but two colors, viz. white and blackish slate-color. The white, however strongly inclines to ashy grey on the front, the crown, the sides of the head and the basal part of the feathers of the throat. The dark color occupies the mantle, the whole back, the tail with its upper and under coverts, the feathers of the thighs, the sides of the body, and the whole underside of the wings, which, however, are lined with white on their external margin.

The feathers of the neck and chest are somewhat lengthened, but of no unusual form. The bill, somewhat slender and very slightly curved towards the tip, is of a yellowish color and the naked parts of feet in their entire extension appear to have been of this same color.

The inner margin of the nail of the middle toe is serrated, like in other herons.

The measures of the principal parts of these species are as follow —

Wing seven inches and a half to seven and three quarters of an inch (French measure). Bill from front twenty six to thirty lines; height of bill five lines; but soon diminishing to four lines. Tarse thirty two to thirty five lines. Middle toe without nail twenty-three lines; nail of this toe four lines. Hind toe eleven lines; its nail five lines. Naked part of tibia eighteen lines.

NOTE XXX.

ON HYPHERPES CORALLIROSTRIS NEWTON.

BY

H. SCHLEGEL.

March 1879.

This species was established after a single specimen without indication of the sex. See Newton in Proc. Zol. Soc. London, 1863, p. 85, pl. 13. Crossley collected two other specimens (Sharpe, ibid. 1871, p. 318), and Hartlaub, Vögel Madagascars, 1877, p. 105, mentions a few other specimens existing in different collections. They were all obtained in the North-East part of Madagascar from Tamatave upwards along the bay of Antongil. A small series of specimens collected in the latter locality, containing specimens of both sexes, proved, that there exists a constant difference of color between the two sexes, and that all the specimens hitherto described belong to the female sex. This sex indeed is distinguished by having the underside of a sordid fulvous reddish brown, washed with grayish green. The male, on the contrary, has all these parts tinged with the same color as is seen on the upperside of the bird.

Mr. Audebert states that this bird, creeping in among the foliage of the tops of the highest trees of the primeval forest, is obtained with great difficulty.

NOTE XXXI.

ON A NEW GENUS AND SPECIES OF BAT FROM CELEBES.

BY

Dr. F. A. JENTINK.

Febr. 1879.

Boneia, n. g.

Upper and lower lips deeply grooved; index finger with a distinct claw; wings from the back near the spine; metacarpal bone of the middle finger slightly shorter than the index finger; tail well developed, rather thick; in the upper jaw two incisors separated from the canines and from each other; upper canines grooved in front, lower canines inclined outwards.

Boneia bidens, n. sp.

Dentition. Inc. $\frac{1—1}{2—2}$, c. $\frac{1—1}{1—1}$, p. m. $\frac{3—3}{3—3}$, m. $\frac{2—2}{3—3}$.

Nostrils projecting by their inner margin, deeply emarginate between: lower lip terminating in front in two ovale naked spaces separated by a rather deep groove.

Eyes equally distant from nostrils and ears.

Ears moderate, rounded at the tip; a prominend thickened lobule at the base of the outer margin.

Wings from the back near the spine, about two lines apart at their origin and from a point between the metacarpal bones of the first and second toe.

Tail comparatively long and very thick, projecting two thirds its length beyond the interfemoral membrane.

Roof of the mouth with seven semi-circular palate-ridges: the four anteriores are undivided, the three posteriores are divided each by a narrow incision into two toothed half-ridges.

Upper incisors very small, unicuspidate, separated from each other by a large interval and also from the canines by a wide space. Lower incisors unicuspidate, close to the canines: in front they are separated in pairs by a narrow interval; the outer incisors are larger and stronger than the inner ones. Upper canines *grooved* in front, lower ones smooth, distinctly *inclined outwards*. First upper premolar minute, second premolar subacute, well developed; third premolar less than half the size of the former, equal to the molars in size. The two first lower premolars about half the size of the lower canines, subacute. The third lower premolar slightly elevated above the molars, almost as high as the other lower premolars.

No shoulder-glands in male.

Penis without bone. Claws very large and strong, well arched.

Muzzle, ears, wings, interfemoral membrane, tibiae and feet naked. Small glands above the eyes, lips and chin are ornated with long and rather stiff hairs.

Face in front of the ears yellowish brown; crown and back of head, a half collar ending on the sides of the neck and the shoulders golden yellow. Chin, chest, abdomen, femur and upper half of humerus dark brown. Naked parts of wings and interfemoral membrane brown.

Fur moderate long and dense. The fur of the half collar slightly longer.

Type in the Leyden Museum.

Notes from the Leyden Museum.

Measures of an adult male, preserved in alcohol —

	m. m.
Head and body	190
Tail	23
Eye from nostril	16.5
» » ear	16.5
Ear	23
Forearm	94
Thumb with claw	42
Second finger with claw	65
Third finger metacarp	63
» » 1st phalanx	47
» » 2nd phalanx	65
Fourth finger metacarp	63
» » 1st phalanx	35
» » 2nd phalanx	42
Fifth finger metacarp	63
» » 1st phalanx	27
» » 2nd phalanx	31
Tibia	50
Foot with claws	29

Hab. Celebes, Boné. (v. Rosenberg).

NOTE XXXII.

ON A NEW BAT, TAPHOZOUS DOBSONI, FROM MADAGASCAR.

BY

Dr. F. A. JENTINK.

Febr. 1879.

Taphozous Dobsoni.

After the careful examination by Dobson [1]) of the walking and suctorial organs of certain Bats, it is evident, that although there is a great difference in external form, the structure and the physiological signification are the same. The very highly developed suctorial disks of *Thyroptera tricolor* and the comparatively simple adhesive sole of the foot and thumb of *Vesperugo pachypus* present a difference of degree only and not of function.

Spix [2]) is the first who has discovered and described a Bat, *Thyroptera tricolor* from Brazil, with sucking-cups. Several years after, Gray [3]) announced the very curious *Mystacina tuberculata* of New-Zealand, with a remarkable climbing aparatus.

Meanwhile Temmink [4]) cursorily mentioned "les pieds à plante large et déprimée" of his *Vespertilio pachypus*.

1) P. Z. S. L. 1876, p. 526, pl. LV.

2) Sim. et Vesp. Bresil. 1823, p. 61, pl. XXXVI, fig. IX. (trough inadvertency of the printer the "index" has *Thyroptera bicolor*).

3) Voyage of the „Sulphur", 1843, Mammalia, p. 23.

4) Monographies de Mammalogie, 1835-41, T. II, p. 217, pl. 54, f. 4-6.

Dobson [1]) described the clinging organs of a Bornean Bat, *Vesperugo tylopus* and of *Vesperugo nanus*, discovered by Peters on his journey in Mossambique. The same excellent observer states in a paper on *Vesperugo Blanfordi* [2]) that "a broad adhesive cushion occupies the base of the inferior surface of the metacarpal bone, and extends outwards and backwards upon the base of the metacarpal of the second finger."

Finally Milne Edwards and Grandidier [3]) have established a new genus *Myzopoda*, upon a remarkable Bat from Madagascar, which they described under the specific name "*aurita*". This species presents "des disques adhésifs situés au-dessous du pouce des membres antérieures et au dessous du pied des membres postérieurs."

The following species thus were hitherto known:

1. Thyroptera tricolor, Spix—Hab. Brazil, Surinam.
2. Vesperugo pachypus, Tem.—Hab. Darjiling, Tenasserim Province, Andaman-islands, Sumatra, Java, Philippine-islands.
3. Vesperugo nanus, Peters—Hab. Africa, south of the Sahara, Madagascar.
4. Vesperugo tylopus, Dobson—Hab. North-Borneo.
5. Vesperugo Blanfordi, Dobson—Hab. Tenasserim.
6. Myzopoda aurita, Milne Edw. and Grand.—Hab. Madagascar.
7. Mystacina tuberculata, Gray—Hab. New-Zealand.

Now I have the pleasure to add an eighth species that I found in a collection of Mammalia from Madagascar, sent by J. Audebert, our zealous explorer of that interesting island. Among other bats there were in that collection a fine specimen of *Vesperugo nanus* and also a single specimen of the beautiful *Myzopoda aurita*. Our species being a true *Taphozous*, I propose to name

1) P. Z. S. L. 1875, p. 472.
2) Journ. Asiat. Soc. Bengal. 1877, p. 312.
3) Bulletin de la Soc. philom. de Paris, Séance du 22 Juin 1878.

it in honor of Dr. Dobson, the author of the *highly* important Catalogue of the Chiroptera in the collection of the British Museum.

Taphozous Dobsoni, n. sp.

First phalanx of middle finger folded (in repose) on the upper surface of the metacarpal bone. Radio-metacarpal pouch *well developed*. Gular sac *large* in the male; as we have received no female, we cannot state if she too possesses a simular organ.

Ears shorter than the head; inner margin *not* papillate. Lower lip with a distinct groove.

Wings from the ankles. Interfemoral membrane greatly developed.

Under surface of the base of the thumbs with *small fleshy pads*. There is also a *little rounded cushion* near the base of the under surface of the footsoles.

The face in front of the eyes is covered with short blackish brown hairs.

General color as in *Taphozous mauritianus:* fur above buff brown near the base, then brown with grey extremeties. Chest and abdomen pure white. Hairs *round* gular sac colored as the sides of throat which is embellished with a chestnut collar.

On the upper surface the wing-membrane as far outwards as a line drawn from the ankle and the thumb to the elbow and also the hairy antehumeral and interfemoral membranes are brown, the hairs being colored as on the back: the wing membranes for the rest white, except a brown patch inside the first phalanx of the longest finger: beneath all the hairs and membranes are white, except the brown-colored interfemoral membrane.

Lower incisors distinctly trifid.

Length of the only specimen, an adult male, preserved in alcohol.

	m. m.
Head and body	97
Tail	22
Free end of tail	12
Ear	13
Tragus	6
Forearm	62
Thumb	7
Third finger-metacarp	62
„ „ 1st phalanx	22
„ „ 2nd phalanx	23
Fourth finger-metacarp.	47
„ „ 1st phalanx	12.5
„ „ 2nd phalanx	8
Fifth finger-metacarp	36.5
„ „ 1st phalanx	12
„ „ 2nd phalanx	10
Tibia	26
Foot and claws	10
Calcaneum	17.5

Hab: Madagascar, Mahambo (J. Audebert).

This species is the largest among the other hitherto known African species of the genus Taphozous, which are provided with a distinct radio-metacarpal pouch.

NOTE XXXIII.

ON A NEW BAT, NYCTINOMUS BEMMELENI, FROM LIBERIA.

BY

Dr. F. A. JENTINK.

March 1879.

Nyctinomus Bemmeleni, n. sp.

Dentition. Inc. $\frac{2}{4}$, c. $\frac{1-1}{1-1}$, p. m. $\frac{2-2}{2-2}$, m. $\frac{3-3}{3-3}$.

At a glance this species is distinguished from all the other species of the genus *Nyctinomus* by the length of the metacarpal bone of the third and the fourth finger, by the peculiar manner in which the interfemoral membrane and the wings are attached to the tibiae, and by the very long end of the tail free from the membrane.

Muzzle as in the other species; upper lip very expansible and thick, deeply grooved by vertical wrinkles.

Ears united by a low band in front, but connected by the bases of their inner margin, which form a sharp angle. Earconch triangular, rounded towards the tip, the inner and outer margins being oval. Tragus also triangular, very small. Antitragus well developed, broad, obtusely rounded towards the top, with a large base, separated from the earconch by a very deep notch.

The female possesses no gular sac.

In the other species of the genus *Nyctinomus* the forearm always exceeds in length the metacarpal bone of the third and the fourth finger: in our species, however, the case is just the contrary, for the metacarpal bone of the third finger exceeds the forearm and that of the fourth finger equals the forearm in length.

Comparatively the tail is not longer than in the other species, but its part included in the interfemoral membrane is particularly short and therefore the free end of the tail is extraordinarily long.

In the other species of this genus according to rule the wings are attached to the outside of the tibiae or ankles, and the interfemorale membrane to the inside. Now in the species in question the wings and the interfemoral membrane proceed from the same point, to be found on the middle of the tibia just *between* the out and inside.

The thumbs, the first and the fifth toe are very thick; especially the latter, and further the other toes are ornated with long rigid, white colored, overhanging hairs — as commonly in the other species of this genus.

Fur dark smoke-brown above, yellowish brown beneath. Ears, wings and tail colored as the back.

Upper incisors well developed, close together, separated from the canines by a rather large interval. Lower ones very little, bifid, crowded. First upper premolar very small, acute, not filling up the space between the canine and second premolar: first lower premolar about half the size of the second premolar.

Type in the Leyden Museum.

Measures of the single specimen, being a female, preserved in alcohol.

	m. m.
Head and body	54
Tail	35
Tail free from membrane	26
Ear	15

	m. m.
Tragus	2 × 2
Antitragus	3.5 × 5
Forearm	41
Third finger-metacarp	42
» » 1st phal.	18
» » 2nd »	16.5
» » 3th »	8
Fourth finger-metacarp	41
» » 1st phal.	14
» » 2nd »	11.5
Fifth finger-metacarp	24
» » 1st phal.	12
» » 2nd »	5
Tibia	14
Foot with claws	11

Hab. Liberia.

Mr. A. A. van Bemmelen, Director of the Zoological Gardens at Rotterdam has been so kind as to present this curious Bat to the Leyden Museum: I therefore propose to name it in honor of its donor.

NOTE XXXIV.

ON A NEW SPECIES OF LUCANIDE, NIGIDIUS LICHTENSTEINII, FROM CELEBES.

BY

C. RITSEMA Cz.

This new species belongs to Parry's [1]) Section A (mandibles robust, with a recurved process at the base), b (prothorax smooth, non-foveate; the anterior angles produced, non-emarginate) and is therefore allied to *Nigidius laevicollis* Westw. [2]) of the Philippine islands, but at once to be distinguished from that species by the different punctuation of the sides of the prothorax and that of the sulci of the elytra.

I propose to name the new species in honor of the well known and sagacious inquirer of insect-life Mr. Jules Lichtenstein of Montpellier:

Nigidius Lichtensteinii, sp. n.

Male. — Length (without mandibles) 16 mm., breadth

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1) *Trans. Ent. Soc. of London.* 1873. p. 343.

2) According to a communication recently received from Major F. J. Sidney Parry, *Nigidius Formosanus* Bates is proximate to *N. cornutus* Mc Leay, perhaps even a less developed variety of that species. I have compared the type specimen of *Formosanus*, most generously lent to me for that purpose by its present possessor, Major Sidney Parry, with the new species, and I can state that they are quite different.

at the shoulders 6,5 mm. — Of the same form as the allied *N. laevicollis* Westw. Very shining, black, the outer margin of the elytra more or less dark rufous.

The head as in *laevicollis* but its lateral margins less divergent, the lateral dilatations being wider in front and their hind edges not so much prolonged; the mandibles as in *laevicollis*, but their horn-shaped dorsal process less curved, dilated inwards and slightly emarginate at the top.

The prothorax as in *laevicollis*, but the punctuation of the sides fine and spread, and the lateral margins straight, not emarginate beyond the flattened anterior angles. The anterior tibiae with six teeth on the outer margin, and the four hind tibiae with a rather strong central spine preceded by two more minute spines.

The elytra as in *laevicollis*, but the sulci narrower and the foveae in their bottoms small, circular and distinct from one another.

The punctuation of the under surface of the body not quite as strong as in *laevicollis;* the prosternum in front of the space between the anterior coxae plane, not carinated.

Hab. Gorontalo, North Celebes (C. B. H. von Rosenberg).

Leyden Museum, March 1879.

NOTE XXXV.

ON THE GENUS GALIDIA AND ITS SPECIES.

BY

Dr. F. A. JENTINK.

April 1879.

In the year 1839 Is. Geoff. St. Hilaire [1]) described and figured three species of his new genus *Galidia*, viz: *elegans*, *concolor* and *olivacea*, all natives of Madagascar. It seems that *Galidia olivacea* has not been captured by the travellers who visited Madagascar after Bernier and Goudot: the only specimen hitherto known was the type of which Is. G. St. Hilaire relates "la queue, dans notre individu, est *incomplète;* mais, à en juger par la portion très étendue qui est conservée, elle paraît plus longue que chez la Galidie concolore", and therefore every one meant that the tail of the species in question would be as long as it is in *Galidia concolor* [2]). The two other species are of frequent occurrence, especially *Galidia elegans:* some writers considered them as belonging to the same species, and the *concolor* as the young of the *elegans*; other authors agreed with Is. G. St. Hilaire in keeping the two

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1) Magasin de Zoologie, 1839, deuxième série, p. 18 et sqq.. pls. 14, 15, 16 et 17. The descriptions are very exact and the figures extraordinarily beautiful and of a striking resemblance.

2) Grandidier (Revue et Magasin de Zoologie, 1867) says: "Je pense que la G. concolor est un jeune individu de la G. olivacea," without giving reason for this statement.

species distinct. Is. G. St. Hilaire however already described the young of the *elegans* in the following terms "le jeune âge diffère de l'adulte par la couleur du dessus de son cou et de ses épaules, région qui est d'un roussâtre tiqueté de fauve, et par la nuance moins foncée et moins vive du rouge marron qui couvre le reste du corps. Les anneaux noirs de la queue sont aussi moins marqués." Grandidier [1]) moreover remarks "le jeune et l'adulte ont la même coloration," and Bartlett [2]) states: "the colours of the young are exactly the same as in the adult."

Is. G. St. Hilaire had before him of the *G. elegans* several individuals and two skulls, of *G. concolor* a single skin without skull, and of *G. olivacea* a single mutilated skin with its skull. He accurately pointed out the differences between the skulls of *elegans* and *olivacea*, and figured the skull of the former. As nobody after him has spoken of the skull of *G. concolor*, and supposed that *olivacea* has a tail as long as in *concolor*, *olivacea* might just be the young of *concolor*, or the contrary might be the case. So, there are three questions to solve, viz:

1°. If there are differences between the skull of *concolor* and the skulls of the other species.

2°. How long the tail of *oliracea* is.

3°. How many species of *Galidia* we must admit.

Up to last year the only species of the genus *Galidia* represented in our collection was *G. elegans;* we possessed three specimens and three skulls, two adult ones labelled "Bernier 1834" and therefore originating from the same collection to which belonged the types of Is. G. St. Hilaire's *G. elegans*; the third specimen, a very young one, was purchased in 1875 of Mr. Frank in London and very likely belonged to the collection of Mammals and Birds

1) Revue et Magasin de Zoologie, 1867.

2) P. Z. S. L. 1875, p. 64. He had before him an about half-grown young one.

made by Waters in Madagascar and of which Bartlett gave a list in the Proceedings for the year 1875.

Now last year our traveller, J. Audebert, sent a number of eight specimens and the same number of skulls of *Galidia*, collected by him in N. E. Madagascar — Mananare, Mahambo and Maisine. — Of these specimens three adults and a young one belong to *G. elegans*, two other ones agree in all parts with the description and figures of *G. concolor*, given by Is. G. St. Hilaire, and the other two belong clearly to *G. olivacea* of the same author. This collection enables us to solve the above proposed questions.

In comparing the skulls of *olivacea* and *elegans* with that of *concolor* we find the following differences. The skulls being of the same length it must be noticed that in *elegans*, all the teeth are generally stronger and more developed with exception of the hindmost upper and lower molar: the hindmost upper molar is very small in *elegans*, but attains in *concolor* nearly the size and shape of the second upper molar; the hindmost lower molar in *elegans* is merely a very small tooth with a minute excavation and a few elevated tubercles; in the *concolor*, on the other hand, the molar in question is provided with two deep excavations and well developed tubercles and attains towards its base the size of the first lower molar. *Galidia concolor* and *olivacea* agree as to the shape and size of these hindmost molars: Is. G. St. Hilaire remarked "à les juger par leurs tuberculeuses, on penserait que les *Galidia olivacea* et *Galidia elegans* sont de genres très différents." — I have before me six skulls of fullgrown or nearly fullgrown individuals of *G. elegans*, and *no one* of these shows a trace of the small first upper premolar, which I find in the two skulls of *concolor* and the two of *olivacea*. Is. G. St. Hilaire had also observed that small tooth, but he stated "sur trois crânes que j'ai sous les yeux, deux présentent cette petite dent: l'un appartient à une *Galidia elegans* adulte, l'autre à l'adulte d'une autre espèce qui va

être décrite sous le nom de *Galidia olivacea*; le troisième, qui ne la présente pas, est celui d'une autre *Galidia elegans*, adulte comme la précédente et plus âgée même, à en juger par l'état de l'ossification du crâne," and he therefore concluded "l'existence ou l'absence de cette molaire accessoire n'est donc pas même un caractère spécifique." — How to explain this discordance?

The auditory bulbus in *G. concolor* is backwards and downwards sack-shaped dilated as in various species of *Herpestes*, in *G. elegans* on the other hand it resembles more that part as it is in *Mustela*. The form of the auditory bulbus of *G. olivacea* is just intermediate between the two other species. The foremost part of the skull is more developed in *G. concolor* and *olivacea* than in *elegans*, whilst in the latter the hind part of the skull is more developed. In two skulls of the same size I find the following very striking differences in the measures.

	elegans.	*concolor.*
	m. m.	m. m.
Length of the skull.	70	70
Distance between the eye-hole and intermaxillary	19	21.5
Distance between the eye-hole and occipital crest	54	50
Distance between the auditory bullae. .	10	8
Width between jugalia.	40	38
Smallest width on the upper surface of the skull	14	15.5

The skulls of our *G. olivacea* belong to immature individuals, but proportionally they agree much more with the skulls of *concolor* than with those of *elegans*.

The shape of the skull and dentition of *G. concolor* and *olivacea* are nearly the same and greatly differ from *G. elegans*.

It must here be observed that *G. concolor* and *olivacea* also agree with respect to the length of the claws of the hands, which are much larger and less arched than these parts in *G. elegans*.

There are however very striking differences between the *concolor* and *olivacea*; the coloration is different, and the tail of *G. olivacea* is remarkably short. It is indeed very comprehensible that Is. G. St. Hilaire, having but a single skin, which was mereover mutilated concluded, on seeing the short tail, that his individual had the tail smashed. As I have stated above, we possess two specimens of this species with tails as short as the specimen of Is. G. St. Hilaire, and both tails are complete.

Consequently we are qualified to admit with Is. G. St. Hilaire three distinct species of *Galidia*, of which now short diagnostics follow.

Galidia elegans, Is. G. St. Hilaire.

This species is at a glance to be distinguished by its reddish fur, black ringed tail, white bordered ears and short claws of the hands and feet.

Muzzle shorter than in the other two species; ears larger, triangular. General tinge of the fur of a shining reddish, very beautiful color; upperparts of head, neck and back between the shoulders passing to brownish-red; ears, except the broad white margin, chin, throat, chest and inside of forelegs of a more grayish hue; belly, abdomen, in and outsides of hind legs and outside of forelegs dark red, passing to intense black on the hands and feet. Whiskers very short, black.

	head and body.	tail with tuft.
Our oldest specimen measures	39.5 c. m.	35 c. m.
» youngest » »	22.5 c. m.	13.5 c. m.

This very young individual very clearly shows the black rings on the tail.

Galidia concolor, Is G. St. Hilaire.

Tail almost as long as in the foregoing species, but colored like the back. Fur brownish red. Claws of the hands very long, those of feet as in *G. elegans*.

Muzzle more pointed than in *elegans*, ears shorter and more rounded. General tinge of the upperparts a shining, very fine, brownish red, passing towards chest, belly, abdomen and inside of legs to a more reddish color, the hands and feet being black. The peculiar tinge of the upperparts, tail and outsides of legs, is caused by the different colors with which the various hairs are embellished, viz: brown colored woolly hairs, reddish hairs repeatedly ringed with black and hairs which are entirely black. Whiskers short, black.

Length of a fullgrown individual: head and body 35,3 c. m., tail with tuft 28,5 c. m.

I believe that the "Vondsira," Flacourt [1]) and "le Vansire," Buffon et Daub. [2]) belonged to this species and not to *G. elegans* as Is. G. St. Hilaire and other authors state, for, in my opinion, these authors would not have overlooked the very striking characteristic, viz: the black ringed tail, if they had had before them specimens of the latter species.

Galidia oliracea, Is. G. St. Hilaire.

Tail much shorter than in the foregoing species, colored like the back. Fur dark olive-colored. Claws of hands and feet as in the *G. concolor*, but the former are more arched than in that species.

Muzzle and ears as in *G. concolor*. Upperparts of a magnific dark olive color, passing towards the lower parts and insides of legs to a more brownish-red tinge. Hands and feet grizzled black. The fur of upperparts and tail consists of olive-brown woolly hairs, other hairs of which some are entirely black, and some black with one or two reddish olive-brown rings; the hairs of the tail have more of such rings. Whiskers short, black.

Measurements of a nearly fullgrown individual: head and body 28.5 c. m., tail with tuft 19 c. m.

1) Histoire de la grande isle Madagascar, 1661, p. 154.
2) Histoire naturelle, 1770, nouv. éd., T. XIII, p. 89, pl. XXII.

NOTE XXXVI.

ON THE HEDGEHOGS FROM MADAGASCAR.

BY

Dr. F. A. JENTINK.

April 1879.

Mivart [1]) in a very interesting paper has pointed out the resemblances and differences between the skeleton and dentition of the genus *Centetes* and *Hemicentetes*. But it seems that he has confounded the two species which were known as belonging to the genus *Hemicentetes*, for he describes and figures very exactly the different parts of the skull and skeleton of *Hemicentetes variegatus*, Et. Geoff. St. Hilaire, under the name *Hemicentetes madagascariensis*, Shaw, — notwithstanding these two species present great differences in external characteristics and also in dentition, that is to say in the mutual proportions of the teeth.

As in so many other parts of Natural History there exists a very great confusion in the names given by the different authors to the various species of Hedgehogs from Madagascar.

It therefore seems not superfluous to trace the history of their synonyms.

But I will first remind the reader, that the various Madagascar species of Hedgehogs present the following *external* characteristics: there is a species resembling our common European *Erinaceus*, but belonging to another

1) P. Z. S. L. 1871, p. 58, pl. V.

genus; the other species resemble young tailless Porcupines, and among them we may distinguish three species, the first shows *nowhere* trace of longitudinal lines; the second bears *three* white bands on the back, the middle of the head being *also* provided with a white streak; while the third species is ornated with *five* white lines on the back, *without* white streak on the head.

Flacourt [1]) relates: il y a une espèce de *porcespy* que l'on nomme *Tendrac* (*Tendiac* in the very bad illustration), les gens du païs en sont fort friands tant les Roandries que les Negres: mais pour moy je n'en ay jamais peu manger. Ils sont tousieurs fort gras, leur chair est fade, longue et molasse. Ils dorment six mois, pendant lesquels il ne mange point, et pour cet effect s'enterrent assez avant en terre: cependant qu'ils dorment leur poil tombe, et il en renaist d'autre quand ils se reveillent. Ils foisonnent beaucoup; leur poil est aussi picquant que celuy du Herison. Il y a quantité de Herisons ainsi qu'en France, qu'ils nomment *Sora*."

Now it is evident that *Sora* is the species resembling externally the *Erinaceus europaeus*. But who shall make out what Flacourt meant with his *Tendrac*? Did is belong to the genus Centetes or to Hemicentetes?

Buffon [2]) described and figured s. n. *Tendrac* and *Tanrec* two Hedgehogs from Madagascar, *without* streaks on the back, the *Tendrac* measuring about 16 c. m., the *Tanrec* about 21 c. m. According to Buffon the *Tendrac* resembles the "common Hérisson;" the *Tanrec*, on the other hand, having a much more pointed muzzle, a kind of elevated crest on the neck, e. s. o., belongs thus to another group or species.

Afterwards [3]) Buffon figured another Hedgehog s. n. *le jeune Tanrec*, measuring about 11 c. m., and embellished with *three* white streaks on the back: and in the descrip-

1) Histoire de la grande isle Madagascar. 1661, p. 152, pl. fig.
2) Histoire naturelle, T. XII, 1764, p. 440, figs. LVI et LVII.
3) Histoire naturelle, Supplément, T. III, 1776, p. 214, fig. XXXVII.

tion he states "la première de ces bandes s'étend depuis le museau *tout le long de la tête* et continue sur le cou et sur l'épine du dos: les deux autres bandes sont chacune sur les flancs." The subjoined figure being very exact and the description very clear, it is rather inconceivable how Buffon could believe this specimen to be the young of the above named Tanrec.

The specimen [1]) figured s. n. *le Tandrac*, Buffon regarded as a young of his *Tendrac*, earlier described, whereas it was a very young specimen, or variety — measuring about 5.8 c. m. — of his *jeune Tanrec*, as will be seen in reading his description: "le corps porte une grande quantité de piquans d'un blanc jaunâtre, qui semblent se réunir par *bandes* irrégulières. On remarque *au-dessus du nez* une bande d'un blanc jaunâtre, qui s'étend jusqu'au commencement du dos et se termine en pointe à ses deux extrémités."

Schreber [2]) called *le Tanrec*, Buffon, and *le jeune Tanrec*, Buffon, *Erinaceus ecaudatus*, taking these two species for the same. But as they belong to two different species, as I have shown, we must the species-name "ecaudatus" apply only to the first species. He [3]) named *le Tendrac*, Buffon, *Erinaceus setosus*.

Sonnerat [4]) figured s. n. *le petit Tandrek de Madagascar*, a Hedgehog — measuring about 19 c. m. — with *five* white streaks on the back. This specimen belonged to another species and *not* to *Erinaceus setosus*, Lin. Gmel. [5]), the "setosus" bearing no streaks at all. The latter author followed Schreber in confounding *le Tanrec*, Buff. et *le jeune Tanrec*, Buff., under the name of *Erinaceus ecaudatus*.

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1) Histoire naturelle, Supplément, T. VII, 1789, p. 301, fig. LXXVI.

2) Die Säugethiere, 1778, T. III, p. 584, pls. CLXV and CLXVI.

3) Die Säugethiere, 1778, T. III, p. 583, pl. CLXIV.

4) Voyage aux Indes orientales et à la Chine, 1806, 2me éd. T. IV, p. 118, pl. 91.

5) Systema naturae. 1788, 13th ed: T. I, p. 117.

Shaw [1]) called *le petit Tandrek*, Sonnerat, *Erinaceus Madagascariensis*, at the same time keeping together almost all the described Hedgehogs from Madagascar under that name: more especially however having in view in that description Sonnerat's Hedgehog. We therefore consider this *five* streaked Hedgehog as *Erinaceus madagascariensis*. I agree with Shaw in keeping distinct Buffon's *Tanrec*, not however as a variety as he did [2]).

Et. Geoffroy St. Hilaire [3]) admitted two species: the first was the *Setiger setosus* (Erinaceus setosus, Schreber) and the second species was a Hedgehog with *three* white streaks on the back, which he named *Setiger variegatus*, and thus being *le jeune Tanrec*, Buffon. — These species were brought with by Sonnerat.

Erinaceus (*Centenes*) [4]) *semispinosus*, Cuvier [5]) is a synonym of *Setiger variegatus* as being based upon *le jeune Tanrec*, Buffon. Cuvier rightly observes that this species presents six incisives in each pair of jaws.

Centenes spinosus, Desmarest [6]) is *Setiger setosus*, Geoff., as the description also shows.

The new genus *Ericulus* established by Is. Geoff. St. Hilaire [7]) is based upon a Hedgehog with "incisives au nombre de *quatre* à chaque mâchoire," and therefore agrees with *Setiger*, Et. Geoffr. St. Hilaire, the latter generic name thus having the priority.

Echinops Telfairi, Martin [8]), presents the snout, ears, tail, and spiny covering of the upper surface of the body,

1) General Zoology, 1800, Vol. I, T. II. p. 548.

2) General Zoology, 1800, Vol. I, T. II, p. 549.

3) Catalogue des Mammifères, 1803, p. 72.

4) According to Cuvier this genus-name should have been given by Illiger, but Illiger in his "Prodromus, 1811, p. 124", has established the genus *Centetes*, in favor of *Erinaceus ecaudatus*, Lin. Gmel.

5) Le règne animal, 1817, T. I, p. 166.

6) Mammalogie, 1820, T. I, p. 162.

7) Annales des sciences naturelles, 1837. Seconde Série, T. VIII, p. 60 (4 Septembre).

8) P. Z. S. L. 1838, p. 17.

as in *Erinaceus*, but the incisors in the *upper* jaw are four in number, and therefore this species entirely agrees with *Setiger setosus*, which generic and specific name is the oldest. — Wagner [1]) has changed the generic name *Echinops* to *Echinogale*. — For the same reason *Ericulus nigrescens*, Is. Geoff. St. Hilaire [2]) also is *Setiger setosus*, or perhaps a black variety of latter. *Centetes armatus*, Is. Geoff. St. H. (o. c) agrees with the true *Centetes ecaudatus*, whilst his *Centetes setosus* (o. c.) was a young specimen of *Erinaceus madagascariensis* Shaw, as the figures clearly demonstrate.

In "Notes sur les Mammifères, etc.", A. Grandidier [3]) enumerates among two other species (viz: *Centetes ecaudatus*, L. and *Ericulus nigrescens*, Geoff. = black variety of *Setiger setosus*) also *Ericulus spinosus*, Illiger. As I mentioned above, Illiger has invented the generic name *Centetes*, and moreover emplayed only the specific name *ecaudatus*, Lin. Gm. Perhaps Grandidier meant *Ericulus spinosus*, Is. Geoff. St. H., but this specific name (the species was based upon specimens in a very bad state of conservation) is synonymous with *Ericulus nigrescens*, Geoff. (see the description apud Geoffroy, o. c.). *Echinops Mivortii* [4]), Grandidier, or *Echinops Miwarti* [5], Grandidier, apparently belongs to the black variety of *Setiger setosus*.

Pollen and v. Dam [6]) have gathered specimens, some *with* and others *without* white lines on the back, they however state that the former were young specimens of the latter — viz: of *Centetes ecaudatus*. — Is. Geoffroy St. Hilaire, o. c. says "les jeunes individus de cette espèce, (du *Centetes setosus*, Cuvier = Erinaceus *madagascariensis*, Shaw) diffèrent considérablement des adultes. J'ai sous les yeux plusieurs

1) Die Säugethiere Schreber's, Supplementband, II, 1841, p. 29.
2) Magasin de Zoologie, 1839, deuxième Série, p. 1 et sqq. pls. 1 à 4.
3) Revue et Magasin de Zoologie, 1867.
4) Bulletin de la Société de Géographie, 1871.
5) Revue et Magasin de Zoologie, 1869, p. 338
6) Recherches sur la faune de Madagascar, 1868, 2me partie, p. 25.

Tanrecs long seulement de quatre pouces — 10.8 c. m. —: leur corps est, en dessus, noir, avec *cinq* bandes longitudinales blanchâtres, dont les latérales sont peu distinctes."

Finally, Bartlett [1]) enumerated among other Mammels from Madagascar, *Ericulus nigricans*, inhabiting Tamatave, but as he added no description at all, nobody can make out what he meant, without having seen his type specimen: perhaps it was a slip of the pen and was his example the *Ericulus nigrescens*, Geoff.

Now recapitulating the foregoing, we may distinguish the following genera and species of Hedgehogs, found in Madagascar.

A. *Setiger* [2]), Etienne Geoffroy St. Hilaire — 1803.

I. $\frac{2-2}{2-2}$. C. $\frac{1-1}{1-1}$. P. M. $\frac{3-3}{3-3}$. M. $\frac{3-3}{3-3}$.

Resembles externally the common European Hedgehog. No streaks nor bands on the back. No crest.

1. *Setiger setosus*, Schreber — 1778.

Upperparts of head, from a line drawn between the eyes and ears, of back, sides of the body and upperparts of thighs furnished with harsh quills; they are, however, not so harsh as in the common Erinaceus. Head, throat, breast, belly and legs are almost naked, sparingly covered with soft and rather short hairs. Eye-brow hairs and whiskers very long, the longest attaining more than twice the length of the wiskers of Erinaceus europaeus.

Quills greatly differing in hue in the various specimens. Generally the points and bases are white: the youngest

1) P. S. Z. L. 1875, p. 64.

2) Mivart (P. Z. S. L. 1871, p. 73) keeps distinct the genera *Ericulus*, Is. Geoff. and *Echinops*, Martin. *Echinops*, Martin, however was based upon a not fullgrown individual — measuring about 13 c. m. — and therefore the *hindmost molar* in each jaw was still wanting, but it agreed for the rest in all respects with *Ericulus*, Is. Geoffroy, whilst this latter is a synonym of *Setiger*, Et. Geoffroy.

individual — measuring about 10 c. m. — before me, has the bases colored like the rest of the quills, viz. reddish brown, the points being white, but several quills are entirely reddish brown. In our largest specimen — measuring about 22.5 c. m. — all the quills bear a rather narrow subterminal black ring [1]): another individual — measuring 14 c. m. — shows many quills which are black, except towards the base. Another again, of the same the length as the former, has the white quills embellished with a brown subterminal ring. Upperparts of head, hands and feet are covered with smoke brown hairs, the remaining parts of the body being straw colored. Whiskers black, brown or straw-colored. Hairs of the eye-brows black.

Upper jaw. The incisors are separated from each other by intervals, the two middle are the largest, — much more developed than in the other Madagascar Hedgehogs — subcylindrical, perpendicular, and placed at the apex of the jaw; the two other ones are shaped as the former, but less developed in all proportions, though stronger than in the following species. Separated by a small space succeed the canines, simular to the incisors, but longer and bearing a small posterior notch — in very old individuals the incisors too are notched. The molars, separated by a space from the canines, are crowded, which is not the case in the other species.

Lower jaw. The hindmost incisors are the longest, for the rest they are shaped as the other ones and obliquely directed forwards; the canines and incisors are crowded and notched. The canines bear two notches, for the rest shaped like the hindmost incisors, but larger in all proportions. The first false molar is separated from the canines and the other molars by a narrow space. The other molars are crowded.

The muzzle, ears and tail as in the common Erinaceus europaeus.

1) Both this specimen and the following belong to the black variety, introduced by Is. Geoffroy St. Hilaire as a distinct species under the name of *nigrescens*.

Our Museum contains: ten — nine stuffed and one alcoholic — specimens from different parts of Madagascar, viz: from Tintingue, Tamatave, Mouroundava and Mahambo, collected by Lantz, v. Dam and Audebert, and nine skulls.

B. *Centetes*, Illiger — 1811.

I. $\frac{2-2}{3-3}$. C. $\frac{1-1}{1-1}$. P. M. $\frac{3-3}{3-3}$. M. $\frac{3-3}{3-3}$.

Resembles externally young Porcupines. No streaks nor bands on back or head. Crest well developed.

2. *Centetes ecaudatus*, Schreber — 1778.

Muzzle much more enlarged than in *Setiger setosus*, therefore the head attains nearly half the length of the body — in *Setiger setosus* about one fourth.

Upperparts of head, cheeks, sides of neck, fore-part of back and outside of thighs closely covered with harsh quills, forming on the hind part of the head between the ears an elevated crest. Quills white [1]) or yellowish white with a rather small brown or reddish-brown subterminal ring. Some quills are entirely white. Hind part of back, sides of body and outside of legs furnished with longer flexible bristles-like quills, on the hindmost part of the back gradually passing to very elongated — in the largest individual before me they measure 65 m. m. — undulating bristles which are overhanging the rump and tail. These bristle-like quills and bristles are white or yellowish white colored with a brown or reddish-brown subterminal ring, the extent of the two colors being in proportion to the length of the coverings. A few among them are entirely brown. In the young ones — measuring about 15 c. m. — there are a few short pure white quills between the long bristles and also some entirely brown bristles, much longer than the other ones.

1) The specimens with very long pure white points to the quills and bristles belong to *Centetes armatus*, Is. Geoffroy St. Hilaire, (see o. c. p. 31, pl. 2).

Chin, throat, chest, belly and inside of legs furnished with a few white or dirty white more or less rigid hairs.

Naked muzzle, ears, feet and hands brownish black.

Upper jaw. Incisors separated from each other and from the canines; the middle ones are the longest, the others are notched. Canines very strong and long, inclined forewards, without notch. First premolar separated from the canine by a much longer space than that which separates the first premolar from the second; the second premolar much longer and more developed than the first, crowded with the third premolar and other molars which it exceeds in height.

Lower jaw. Incisors not crowded, longer than the upper ones, the foremost pair is the largest, a. s. o., they are all notched. Canines shaped and sized like the upper ones, received into a fossa in the upper jaw. First premolar shorter and less developed in all proportions than the second, separated from the canine by a much wider interval than from the second premolar. The latter exceeds the third premolar and also the molars in height. The two hindmost premolars and the molars also are crowded [1]).

There are now in the Leyden Museum of this species fifteen stuffed specimens, one skeleton and nine skulls, collected by Pollen, v. Dam and Audebert in Madagascar, Mahambo and Maisine, in Nossi be, Nossi faly, Mayotte and Mauritius. The largest specimen measures about 33 c. m., the smallest about 15 c. m.: the largest skull measures 10 c. m., the smallest 6.5 c. m.

C. *Hemicentetes*, Mivart — 1871.

$$\text{I. } \frac{3-3}{3-3}. \text{ C. } \frac{1-1}{1-1}. \text{ P. M. } \frac{3-3}{3-3}. \text{ M. } \frac{3-3}{3-3}.$$

With white streaks or bands on the back. Crest well developed.

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1) For more details I refer to P. Z. S. L. 1871, Mivart, "on Hemicentetes."

3. *Hemicentetes madagascariensis*, Shaw — 1800.

Muzzle elongated simular to Centetes ecaudatus. Head also attaining about half the length of the body.

Upperparts of head covered with rather short quills, on the neck forming an elevated crest. These quills are white with a brownish black subterminal ring. Above the eyes there is a white patch, below them a black one.

The body is ornated with five white lines, the middle forming a kind of rather broad band from the crest to the tail. These lines consist of pure white quills.

In the *young* ones — measuring about 10.5 c. m. — the back between the white streaks, the sides of the body and outside of legs are furnished with short flexible quills and much more elongated bristles, these bristles and quills being uniformly of a dark blackish-brown color.

In the *old* ones — measuring about 23 c. m. [1]) — there are also flexible quills and large bristles on the back between the white streaks and on the sides of the body, but here the quills are white with a subterminal brownish black ring, passing to longer and brownish black or entirely white colored bristles towards the hind part of the back and the outside of legs.

In *all* the specimens there are between the quills and bristles on the sides of the body and outside of legs irregularly spread a few pure white quills. Cheeks, chin, throat, breast, belly and inside of legs sparingly covered with rather rigid whitish hairs. Whiskers blackish brown projecting beyond the ears.

Naked muzzle, ears, hands and feet dirty yellow or brown colored.

Upper jaw. — Incisors separated from each other: the second incisor is slightly curved and notched. Canines

1) Our oldest specimen of this species therefore is about 8 c. m. larger than the youngest of the *Centetes ecaudatus* (see above), which should be noticed as being of the highest importance!

well developed, curved and inclined forewards, separated from the incisors by a wide space. Still wider is the interval between the canine and the first premolar which is very strong, provided with a single notch and higher than the second, which is placed at a short distance from it and rises but a little above the third premolar and the other molars.

Lower jaw. — The four middle incisors horizontally inclined forewards. closely crowded. Second and third incisor provided with a notch. Canines shaped and sized like the upper canines. They are received into a fossa in the upper jaw. Distance between the canine and first premolar twice the distance between the canine and hindmost incisor. First premolar more developed in all proportions than the second. and like these provided with two notches. The first and second premolar are separated by a distance as large as that between the canine and hindmost incisor. Second premolar a little higher than the third premolar and other molars which are crowded. (See Mivart, o. c.).

Of this species we possess six stuffed specimens, four preserved in alcohol and four skulls, collected by Pollen, v. Dam and Audebert, in N. O. and N. E. Madagascar and in Réunion.

4. *Hemicentetes variegatus*, Et. Geoffroy St. Hilaire — 1803.

Head exceedingly elongated, much more than in *Hemicentetes madagascariensis*, attaining about a third of the length of the body; muzzle tapering anteriorly, nakedish.

On the middle of the head is a yellow streak, on the back there are three simular streaks. In the individuals which agree with *le jeune Tanrec*, Buffon, the streak on the head uninterrupted [1]) passes to the streak on the middle

1) Et. Geoffroy St. Hilaire, o. c. says, "dessus du corps orné de trois lignes blanches jaunâtres; celle du milieu s'étend du bout du museau à l'anus. Le pelage est mêlé de soies et de quelques piquans."

of the back (I have five specimens before me). In the *Tandrac*, Buffon (supp. T. VII, p. 301, fig. LXXVI), however, there is a very small whitish line on the middle of the head, abrupt near the base of the crest, nor is the streak on the middle of the back continuous (we possess a single specimen). As there are still more differences in coloration, I will describe this individual by itself as a variety of the *Hemicentetes variegatus*.

The foremost quills of the crest, the quills, bristles and soft hairs on the head marked off by a line drawn from the base of the ear to the corner of the mouth, sides of the neck, posterior upper half of the sides of the body, parts between the yellow streaks on the back, coverts of the haunches and outside of legs, are intensely black. The rest of the quills of the crest, the uninterrupted band along the middle of the head and back, the two other bands anteriorly curved towards the spine, the anterior and posterior lower half of the sides of the body, are uniformly yellow. Cheeks, chin, throat, chest, belly and inside of legs covered with rather soft yellow hairs. Muzzle, ears, short whiskers, hands and feet blackish.

As to the dentition it will suffice to copy Mivart's very accurate description of the teeth of *Hemicentetes madagascariensis* (lege "*variegatus*"). "The *upper* incisors on each side are all separated from each other and from the canine; and the first upper incisor is also separated by an interval from its fellow on the opposite side. The first two incisors on each side are of nearly the same size and shape. Each is conical, pointed and much hooked, with a very large posterior lobe. The third incisor is much shorter, gradually broadening downwards from the socket to the distal edge. The canine is shaped like the first two incisors, but rather larger and with the posterior lobe relatively smaller. It is very much smaller, relatively as well as absolutely than in *Centetes*, I add "and in *Hemicentetes madagascariensis*". — The first premolar, in shape and size, is very much like the canine, though separated from the latter by an inter-

space, which is about three times as long as that which divides the canine from the third incisor. The second premolar is separated from the first premolar by an interval still greater than that which divides the first premolar from the canine. It has a posterior talon, but no internal cusp. The third premolar is nearly contiguous to the second; it is much simpler than is the homologous tooth in *Centetes*. All the molars are contiguous to each other and to the third premolar.

In the *lower* jaw the six incisors are much closer together than are those of the upper jaw. This is less due to their inplanation than to the lateral expansion of their crowns. They are less vertically extended than are the upper ones, and each expands upwards from the root to the cutting-edge. The canine is very much smaller, relatively as well as absolutely, than in *Centetes*, I add "and in *Hemicentetes madagascariensis*." — It is *not* received into any fossa in the upper jaw. It is a much curved conical tooth, with a considerable posterior cusp at its base. The first premolar, in size and shape, is quite like the canine in front. It is separated from the latter by a considerable interval."

I add to the above description: the second *lower* premolar is separated from the first and third by an interval as great as that which divides the first premolar from the canine. The third premolar is placed at a short distance from the molars, which are closely crowded. The premolars do not exceed the molars in height.

Generally the dentition of this species is weaker and much less developed in all proportions than it is in *Hemicentetes madagascariensis*. In comparing the skulls of a specimen of *Hemicentetes madagascariensis* — measuring 10.5 c. m. — with that of a specimen of *Hemicentetes variegatus* — measuring about 17 c. m. — *one would believe the latter to be a young specimen of the former species.*

We possess of the above described species: one stuffed specimen, four preserved in alcohol — the smallest mea-

sures about 9 c. m. — and two skulls, gathered in different parts of Madagascar by Crossley and Audebert.

5. *Hemicentetes variegatus*, var. *buffoni*, Jentink — 1879.

I have before me a specimen — measuring about 14 c. m. — and agreeing in all details with the description given by Buffon, l. c., of his *Tandrac*, which measured 5.8 c. m. — and was therefore a very young one. The general shape of our individual is that of *Hemicentetes variegatus* with which it also agrees in dentition as well in number as in shape and size of teeth. But the differences in coloration are very great.

On the upper parts of head and body predominate two colors, viz: black and whitish straw-yellow. The belly is yellow passing to a more brownish color towards the chest, throat and chin. Upper parts of head, except a *small* streak on its middle, black: the *small* streak on the head is yellow, attenuated towards its extremities and *ends near the base of the crest.* Elevated crest, neck, a triangle on the foremost part of back, a large oval patch on the spine from the middle of the back to a point between the haunches, and a broad streak on each side of the body, curved upwards on its fore-part towards the spine at a distance of 6 lines and also curved upwards on its hindmost part towards the end of the large oval patch, but without touching it and downwards to the root of tail, are uniformly of a straw-yellow. The middle part of the back, between the ends of the upwards curved side-streaks, a broad ring around the large oval patch on the back, the sides of neck, the coverings of shoulders passing to an *uninterrupted* broad streak along the sides of the body, beneath the yellowish side-streaks, and along the outside of the legs, are colored entirely black.

On the upperparts of the body the greatest part of the hairs is woolly; irregularly spread are rather harsh quills

and short rigid hairs. Crest consists on its hind part of elongated woolly hairs, on its foremost part of large rigid bristle-like quills. The headcoverings are rigid hairs.

On the underparts of the body the fur consists of woolly hairs and longer stiffer ones.

Muzzle, ears, hands and feet brownish black.

Of this variety we have a single specimen and its skull; the individual was captured by Crossley on his journey in Madagascar.

NOTE XXXVII.

ON A NEW SPECIES OF CETONIDE, GLYCYPHANA RUGIPENNIS, FROM SUMATRA.

BY

C. RITSEMA Cz.

Glycyphana rugipennis, sp. n.

Allied to *Gl. Macquartii* G. & P. [1]) and *Gl. Sumatrensis* v. Voll. [2]) by its coloration, slender form and elongate scutellum, but quite distinct by the rugosity of the lateral and apical portion of the elytra.

Length 12,5 mm., breadth at the shoulders 6,5 mm. — Entirely black, with the lateral margins of the pronotum and the posterior angles of the prosternum red, the former with the inside waved and a small black spot just before the middle. Upper surface opaque, velvety, except the clypeus which is shining; under surface shining, sparingly covered with whitish hairs.

Clypeus quadrate, emarginate and slightly raised at the front margin, sparingly punctured in the middle, more densely so at the sides. Pronotum punctured; the lateral margins, especially at the anterior angles, with curved short

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1) Gory et Percheron, *Monographie des Cétoines*. p. 251, n°. 116; pl. 47, fig. 7.

2) *Tydschrift voor Entomologie*. Dl. VII (1864) p. 157, n°. 22; pl. 10, fig. 5.

lines. Scutellum elongate, impunctate. Anterior tibiae with three distinct lateral teeth. Elytra deeply sinuated behind the shoulders, then nearly parallel, with three slightly elevated longitudinal ridges, one along the suture, the two others uniting at the prominent apical tubercle, the ridges bordered by striae which are decomposed into elongate punctures towards the base of the elytra; the lateral and apical portion of the elytra rugose by small pointed tubercles directed backwards; the sutural angles slightly rounded. The pygidium slightly rugose by irregular punctures, sprinkled over with short white hairs. Under surface: the segments of the abdomen with two irregular rows of triangular punctures, the sternum aciculate, the centre of the mesosternum nearly impunctate and with an impressed longitudinal line. The sternal process broadly rounded and slightly prominent in front.

Hab. Sumatra (Dr. S. Müller).

Leyden Museum, April 1879.

NOTE XXXVIII.

ON TWO NEW SPECIES OF BUPRESTIDES FROM SUMATRA.

BY

C. RITSEMA Cz.

1. *Endelus Snellemanni*, sp. n.

Length 5,5 mm., breadth at the shoulders 2,5 mm. — Head: the clypeus golden red; the face bright bronzy green with a golden hue; the vertex golden with fiery red tinges; the mandibles black; the antennae bronzy. Pronotum golden with fiery red tinges. Scutellum and elytra golden green, the latter narrowly black along the suture, the extreme lateral margin and at the apex. Under surface of the body black, somewhat bronzy, the femora of the intermediate and posterior legs bronzy green; the central portion of the prosternum golden.

Head wide, shallowly and distantly punctured, widely excavated between the eyes, the excavation with a small but deep oval impression at the top of the face, continued across the vertex by a narrow longitudinal channel. Prothorax transverse, the sides which are slightly raised, very slightly divergent towards the base; the latter bisinuate, the median lobe in front of the scutellum broadly truncate and slightly emarginate; the disc with a large but shallow transverse impression on the basal half, in front of which the disc is finely and very distantly punc-

tured; moreover there are a few deep punctures along the anterior margin; at the sides the punctures are large but shallow and somewhat confluent; in front of the basal margin there are several deeply impressed curved short lines. Scutellum triangular without distinct punctures, its apex very acute. Elytra a little wider at the base than the base of the thorax, rounded and prominent at the shoulders, very convex at about a fifth of their length, the sides nearly parallel as far as half their length, although slightly sinuated behind the shoulders, then regularly attenuated towards the apex; the apex of each rounded and very finely serrated. The elytra are slightly rugose and irregularly covered with elongate punctures placed in a longitudinal direction. The under surface of the abdomen shows some very fine longitudinal lines composed by series of short curved lines; the mesosternum some transverse curved lines, and the bright metallic central portion of the prosternum some large and deep punctures.

This species is without doubt nearly allied to *Endelus cupido* H. Deyr. of Singapoor (Malacca) [1]) but may be at once distinguished from it, not only by its different color, but also by the deeply impressed curved lines in front of the basal margin of the prothorax, by the rugosity and the serrated apex of the elytra, etc.

A single specimen was captured in March 1877 during the recent Scientific Expedition to Central Sumatra at Soepajang by Mr. Joh. F. Snelleman, to whom I dedicate this pretty species.

2. *Trachys denudata*, sp. n.

Length 3 mm., breadth at the shoulders 1,5 mm. — Head and antennae, pronotum and scutellum, under surface of the body and the legs bronzy black; the elytra dark

1) *Annales de la Société Entomologique de Belgique.* tome VIII (1864) p. 230, n°. 304.

blue with some violet tinges. The whole insect without a dense pubescence, but sparingly sprinkled over on the upper surface with very fine and short white hairs, almost imperceptible on the elytra.

Head wide, covered with faint traces of curved short lines, widely excavated between the eyes, the excavation with a shallow channel at the bottom; the inner orbit of the eyes slightly raised. Prothorax very transverse, the lateral anterior angles slightly produced and acute, the lateral posterior ones angular; the lateral margins somewhat flattened, nearly straight, very divergent towards the base which is bisinuate; the median lobe in front of the scutellum slightly truncate; the whole upper surface covered with very fine semicircular lines, each of which surrounds the base of a very fine and short white hair. Scutellum very small, triangular. Elytra at the base as wide as the base of the prothorax, the shoulders prominent, the sides nearly parallel as far as half their length, although slightly sinuated behind the shoulders, then slightly attenuated towards the apex which is rounded. The elytra have no carinae at the sides, but show oblique rows of shallow and distant punctures. The under surface of the body shows very faint traces of curved lines.

A single specimen of this species, which in several respects is allied to *Trachys azurea* H. Deyr. of the Aru-islands and Mysole, and *T. cupripyga* H. Deyr. of Borneo [1]) was captured in July 1878 during the recent Sumatra-Expediton at Soeroelangoen by Mr. A. L. van Hasselt.

Leyden Museum, May 1879.

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1) *l. c.* p. 247, n°. 321 and 322.

NOTE XXXIX.

ON TALEGALLUS PYRRHOPIGIUS.

BY

H. SCHLEGEL.

May 1879.

Two species of Talegallus are generally known to naturalists. One, Talegallus Lathamii inhabiting Australia, is remarkable for its size equalling almost that of the Turkey, for its wattled throat and tolerably long roof-shaped tail. The other, Talegallus Cuvieri, is found in New-Guinea and most of its dependencies, viz: the isles of Mysole, Salawattie, Aru and Iobie.

This latter species, however, has been subdivided, by certain modern naturalists, into several other species. All those birds presenting the same size, the same proportions and the same coloring of plumage, other characters have been sought for in order to corroborate those species. One of these characters is said to be in the coloring of the legs and feet, reddish in Talegallus jobiensis, Meyer, yellow in the specimens of all other countries. The specimens of Iobie, have, moreover, after the statement of Dr. Meyer, the feathers of the crown somewhat larger and more elongated, a phenomen presented also by some specimens of Tinamus major, separated by Cabanis under the name of Trachypelmus subcristatus, a separation which appears rather hazardous. The specimens of the Archipel of Aru and South-Eastern New-Guinea are entitled, in the opinion of Salvadori, to the rank of a different species, designated by

him under the name of Talegallus fuscirostris on account of the brownish color of their bill. Our specimens from the Aru islands have like all others the bill yellow, although Mr. von Rosenberg states in his manuscript that the bill of these very same specimens when they were newly killed, was of the same brownish color, shown by young birds and which is gradually fading into yellow. Lastly, I wish to mention that the Talegallus Arfaki of Salvadori is established on a couple of newly-born specimens caught on the Arfak range of mountains.

It is, nevertheless, true, that there exists, in New-Guinea, besides the Talegallus Cuvieri, a species very different from all those mentioned in the foregoing lines. The skin of one single specimen of this apparently undescribed species was recently brought to Europe by one of the Dutch missionaries stationed on the eastern coast of the North-West peninsula of New-Guinea. The large collection from which I selected this skin, containing not only birdskins from the mainland of New-Guinea, but also from some of the islands of the bay of Geelvink, and not being labelled, it will be the task of further investigators to point out the habitat of this bird in a more special way.

Our Talegallus pyrrhopygius, although presenting in general the same coloring of plumage as Talegallus Cuvieri, differs from this species by several so very conspicous characteristics, that its comparative diagnose can be summed up in the following few lines.

Our bird is in all its dimensions somewhat smaller than Talegallus Cuvieri. The bill is shorter, more rapidedly bent downwards and of a brownish gray horn color, and not yellow as it is commonly the case in Talegallus Cuvieri. The legs, feet and claws are throughout of a brown horn color, and show not at all the yellow tint of those parts in the common species. The feathers of the neck and the upper part of the throat are much more developed, and more numerous. There exists, finally, a very striking

difference in the coloring of the upper tail coverts and the rump, these parts being in Talegallus Cuvieri of the same tint as the rest of the plumage, whereas these parts, in Talegallus pyrrhopygius, present a fine chestnut color, lively on the upper tail coverts, faint on the rump.

The principal parts of the two species present the following measures. Wing in T. Cuvieri nine inches and ten lines to ten inches four lines; in T. pyrrhopygius eight inches and ten lines (French measure). Tail in T. Cuvieri, five inches ten lines; in T. pyrrhopygius, five inches and five lines. Tarse in T. Cuvieri three inches three lines; in T. pyrrhopygius, three inches. Middle toe in T. Cuvieri twenty three lines, in T. pyrrhopygius, twenty two lines. Hind toe in T. Cuvieri, ten lines; in T. pyrrhopygius nine lines. Length of bill, in T. Cuvieri thirteen to fourteen lines; in T. pyrrhopygius eleven lines.

NOTE XL.

ON GALLINULA FRANKII.

BY

H. SCHLEGEL.

May 1879.

The readers of my work entitled "Muséum des Pays-Bas" will recollect that I identified with the Gallinula olivacea of Meyen, inhabiting the Philippine islands, a bird collected by the late Dr. Bernstein, in the islands of Halmahera and Ternate, and which was afterwards stated to live equally in the isles of Amboina and Mysole. This bird was designated by me as belonging to a particular subdivision characterized by its very small triangular frontal plate.

Mr. Frank, the well known dealer in zoological objects at Amsterdam, a man who, during more than half a century, with an unaltered integrity, has procured for our Museum many thousands of the most valuable objects, sent to me the skin of a bird, recently collected in New-Guinea, which appears to belong to an undescribed species of Gallinula.

This bird, which I introduce under the name of Gallinula Frankii, is to be considered as a second species of the subdivision established in favor of the above mentioned Gallinula olivacea.

In size and general aspect, both birds present this sort of similarity which betrays their affinity, but no very close inspection is necessary to point out many strongly marked characteristics, which distinguish the two species from each other.

Indeed, Gallinula Frankii, has the frontal plate even smaller than Gallinula olivacea, the culmen of the upper mandible is more curved, and the bill itself, yellowish in Gallinula olivacea, is dusky brown in our new species. Legs and feet are grayish brown in the latter species, grayish yellow in the former. Of all the characteristics, however, the coloring of the plumage presents the most striking difference, the Gallinula Frankii having all parts tinged formely with a dark grayish brown, washed with olivaceous, with the exception of the belly, that of the throat the color of which is somewhat lighter, and that of the quills and tailfeathers which are of a pure dark brown. Gallinula olivacea has, on the contrary, the whole upperside of an olivaceous color, whereas the underside is of an ashy gray, passing to ferrugineous on the belly, the feathers of the tibia, and the under-tail coverts.

Principal measures of Gallinula Frankii. Wing five inches and three lines (French measure). Tail two inches and four lines. Tarse two inches. Middle toe without the nail twenty two lines. Hind toe eight lines. Naked part of tibia ten lines. Length of bill one inch. Height of bill at front five lines.

As to Gallinula olivacea, this species presents the following measures. Wing four inches and ten lines to five inches four lines. Tail twenty three to twenty six lines. Naked part of tibia ten to eleven lines. Tarse twenty two to twenty three lines. Middle toe twenty one to twenty two lines. Hind toe eight lines. Bill from front thirteen to fourteen lines. Height of bill at front five lines.

Our specimen of Gallinula Frankii was brought to Europe by one of the Dutch missionairies residing on the eastern coast of the North-West peninsula of New-Guinea, but the locality where it was killed could not be ascertained.

NOTE XLI.

ON SOME SPECIES OF THE GENUS PALAEMON FABR. WITH DESCRIPTIONS OF TWO NEW FORMS.

BY

Dr. J. G. DE MAN.

May 1879.

Palaemon carcinus Fabr.

Milne Edwards, Hist. natur. des crust. t. II, p. 395. — Von Martens, Ueber einige Ost-asiatische Süsswasserthiere, in "Archiv für Naturgeschichte," 1868, p. 34.

There are specimens of this beautiful species in the Museum collection from Siam, Java, Celebes (Makassar) and Borneo. Always, *at every age*, the first pair of legs are longer than the scale of the external antennae: in very large adult specimens they project with half of the wrist (carpopodite) beyond the antennal scale, in young and very young specimens only with the hands (chelipedes). In adult specimens the carpopodite of the second pair of legs is as long as the palm, but it is comparatively longer in young specimens. Thus in a young male specimen that has a length of 65 millimetres (the distance between tip of beak and end of terminal segment), the carpopodite of the second pair of legs measures 9 mm., the palm $4^1/_2$ mm., and the fingers $2^3/_4$ mm.; in a male specimen of the length of 120 mm., on the contrary, these

measures are respectively 17 mm., 13 mm., $10^1/_2$ mm., the difference between wrist and palm being already diminished, and in very large adult specimens the carpopodite and the palm have the same length.

Palaemon Lamarrei M. Edw.

Milne Edwards, Hist. Nat. t. II, p. 397. — De Haan, Fauna Japonica, Crustacea, p. 171.

According to De Haan this species lives also in Japan. — I have found in the collection of the Leyden Museum the type specimen, that has been described by De Haan as *Palaemon Lamarrei* M. Edw. A close examination of this species has led me to the conclusion, *that it is wholly identical* with a species from South-America, described by Heller under the name of *Palaemon Amazonicus*. (Sitzungsberichte Wien. Akad. Bd. XLV, 1862, p. 418, taf. II, fig. 45).

There are many specimens of this *Palaemon Amazonicus* Heller from Suriname in the Museum Collection, which species may be distinguished from the Indian *Palaemon carcinus* Fabr. by its much smaller size and more especially by the fact that the first pair of legs are scarcely as long as the scale of the external antennae (they are mostly somewhat shorter), that the second pair of legs are as long as the rostrum, and that nearly the third anterior part of the carpopodites of these legs projects beyond the scale of the external antennae. The teeth on the upper margin of the rostrum are also arranged somewhat otherwise in the American species than in *Pal. carcinus* Fabr.: in *Pal. Amazonicus* Heller there are 7—8 equidistant teeth on the posterior convex part, only the posterior tooth of which being placed behind the eyes; these teeth are separated by a great interval from the three or four anterior teeth which extend to the apex of the rostrum; in *Palaemon carcinus* Fabr., on

the contrary, there are 10 or 11 teeth on the posterior convex part of the rostrum, the *two* posterior teeth of which being always placed behind the eyes.

The *Palaemon Lamarrei* of De Haan (non Milne Edw.) is therefore identical with *Palaemon Amazonicus* Heller. This fact is the more inexplicable, because I have found the Suriname specimens of *Palaemon Amazonicus* Heller provided with the name of *Palaemon Dieperinkii* De Haan; so that I may conclude that the latter name has been given by de Haan to the American species This name, however which has never been published, should disappear from science and the species should henceforth bear the name of *Palaemon Amazonicus* Heller. But is seems to me very necessary that new researches confirm this pretended appearance of *Pal. Amazonicus* in Japan!

Palaemon Rosenbergii n. sp.

Length of the adult female 250 mm.; male unknown. — Rostrum slender, nowhere enlarged, reaching to the extremity of the scale of the external antennae; upper margin almost straight, not convex as in *Pal. carcinus* Fabr., curved upward a little toward apex, provided with 13 teeth, the nine posterior of which being equidistant and separated by a somewhat greater interval from the four anterior which extend to the apex; the three posterior teeth are placed upon the cephalothorax behind the eyes; lower margin with 10 strong equidistant teeth. Cephalothorax smooth; terminal segment of the abdomen not slender and acuminate as in *Palaemon carcinus* Fabr., but somewhat rounded at the end, its lateral margins converging in a much less degree than in the latter species. For the rest this form closely agrees with *Pal. carcinus* Fabr. — The first pair of legs project with half of the carpopodite beyond the scale of the external antennae, the carpopodite being longer than the arm and a little more than twice as long

as the hands; fingers somewhat shorter than palm. The second pair of legs are a little unequal in size, the right leg being the larger; they are shorter than the body, but they agree closely with those of *Pal. carcinus* Fabr.: carpopodite somewhat longer than the arm, thickened anteriorly and somewhat longer than the palm which is cylindrical and thicker than the thickest part of the wrist; fingers somewhat shorter than palm, close to one another and the curved points crossing one another; the moveable finger covered with coarse hairs except at the end, and armed with two very small teeth at its base, the immoveable finger with only one small tooth that projects between the two teeth of the other. The arm, and more especially the wrist and the hands, covered with numerous short small spines. The fifth pair of legs project with the terminal joint beyond the antennal scale, and are covered with extremely subtile spines.

The measures of the various joints of the larger leg of the second pair are as follow: arm 40 mm., wrist 52 mm., palm 45 mm., fingers 33 mm. A single specimen has been collected by the celebrated traveller Mr. von Rosenberg at Andaï in New-Guinea, to whom I have much pleasure in dedicating this new form, which may be distinguished from *Pal. carcinus* Fabr., the most nearly allied species, by the form and the structure of the rostrum and the terminal joint of the abdomen.

Palaemon ornatus Oliv.

Milne Edwards, Hist. Nat. t. II., p. 396. — von Martens, l. c. p. 36. — *Palaemon vagus* Heller, Sitzungsber. Wiener Akad. 1862, p. 417, taf. II, fig. 42, 43. *Palaemon longimanus* Hoffmann, Crustacés de Madagascar etc., p. 34, pl. IX, fig. 68 and 69.

The Museum collection contains numerous specimens, of

every age, of this widely distributed species from Andaï (New-Guinea), Gebeh, Morotaï, Halmahera, Amboina, Ternate, Flores, Xulla-Bessy, Gorontalo (Celebes) and from the island of Réunion, besides two large specimens collected by Mr. Forsten in the Molluccas.

These specimens present some little differences and peculiarities, and therefore it will be useful, I believe, to give a description of each of them.

The largest specimen, a male, collected by Mr. Forsten in the Moluccas, has a length of 160 mm.; the second pair of legs are equal in size, being 250 mm. long of which the arm has 52 mm., the wrist 45 mm., the palm 75 mm., and the fingers 45 mm.; the fingers are armed with the typical teeth (one tooth on the moveable finger and two teeth on the immoveable), and are much curved, especially anteriorly. The rostrum projects beyond the end of the peduncle of the internal antennae, but it is shorter than the scale of the external antennae, and $\frac{8}{3}$ dentate.

There are nine specimens from the island of Xulla-Bessy in the collection; in these specimens the rostrum is as long as, or a little longer than the peduncle of the internal antennae. A male having the length of 92 mm., has the legs of the second pair almost equal in form and longer than the body, for they are 120 mm. and 105 mm. long respectively, the two fingers of both legs being armed with the ordinary teeth. Another male, on the contrary, 100 mm. long, has the legs of the second pair very unequal in size, the larger 140 mm. with curved fingers and strong teeth, the smaller one 90 mm. with closely-united fingers which are armed only with extremely subtile teeth. In a young female of the length of 68 mm., the second pair of legs are 43 mm. long, the fingers being as long as the wrist and shorter than the palm. — The single specimen from Gebeh is a young female of the length of 78 mm.; the rostrum reaches to the end of the peduncle of the internal antennae, being $\frac{7}{3}$ dentate; the

second pair of legs are 50 mm. long, the arm measuring $11^1/_2$ mm., the wrist 10 mm., the palm 11 mm., and the closely united fingers 9 mm.

In the eight specimens from Halmahera, collected by Bernstein, the rostrum is $\frac{7-9}{2-3}$ dentate, in some shorter, in others rather longer than the peduncle of the internal antennae. In a male of a length of 87 mm., the second pair of legs are unequal, being respectively 108 mm. and 90 mm. long, and the fingers of both legs are toothed. A female, 90 mm. in length, has the second pair of legs equal in size, measuring 60 mm., the fingers without teeth and closely united to one another, arm $12^1/_2$ mm., wrist $10^1/_2$ mm., palm 12 mm. and fingers $11^1/_2$ mm.

The rostrum is $\frac{7-8}{3}$ dentate, and reaches beyond the peduncle of the internal antennae in the four young female specimens, collected at Amboina.

Likewise appears the rostrum in the young female, caught at Andaï, bearing 8 teeth on the upper margin and 3 on the inferior.

Two males were collected at the island of Ternate: the larger specimen having a length of 95 mm, has the second pair of legs rather equal in size, 120 mm. and 115 mm. long respectively with widely curved and typically toothed fingers, the arm measuring 24 mm., wrist 21 mm., the palm 37 mm. and the fingers nearly 24 mm. In the younger specimen, on the contrary, 75 mm. long, the second pair of legs are rather equal, 65 mm. long, and the well-toothed fingers are rather little curved, the arm measuring 14 mm., the wrist $13^1/_2$ mm., the palm 18 mm. and the fingers $7^1/_2$ mm.

The rostrum is $\frac{8}{3}$ dentate in the male, collected at the island of Flores, and reaches to the end of the peduncle of the internal antennae.

A female specimen 105 mm. in length, from the bay of

Gorontalo (Celebes), has the rostrum $\frac{7}{3}$ dentate, reaching beyond the peduncle of the internal antennae, and the second pair of legs are rather unequal, being 85 mm. and 75 mm. long respectively.

The Leyden collection contains 7 middle-sized specimens from the island of Morotaï, which present some remarkable differences in the shape of the second pair of legs. They belong positively to the form, described by Mr. Heller as a proper species under the name of *Palaemon vagus* Heller; the rostrum is $\frac{7-9}{2-3}$ dentate and reaches to the end or rather a little beyond the end of the peduncle of the internal antennae. The second pair of legs are slender both in the male and in the female, and they are thinner than in the typical specimens of *Pal. ornatus*; they are equal or a little unequal in the male, and the fingers which are toothed but closely united to one another, are rather shorter than the palm and somewhat longer than the wrist. Likewise in the female. — Thus a male of the length of 90 mm. has the second pair of legs equal in size, being 75 mm. long, the arm measuring 15 mm., the carpopodite 13 mm., the palm 16 mm., and the fingers 15 mm. Another male specimen, 100 mm. long, presents the legs of the second pair unequal in size and more slender, being 90 mm. and 65 mm. long respectively, and of the larger leg the arm measures 19 mm., the wrist 17 mm., the palm 21 mm. and the fingers 17 mm. A female specimen 100 mm. long has the legs of the second pair equal in size, the length being 80 mm., the arm measuring 17 mm., the wrist 14 mm., the palm 19 mm. and the fingers 16 mm. These Morotaï specimens however closely agree for the rest with the typical *Pal. ornatus*, except in the remarkable differences of the second pair of legs, so that I conclude with Mr. von Martens this form to be only an interesting variety of *Pal. ornatus* Oliv., perhaps even a local variety.

There are finally several specimens of a *Palaemon*, col-

lected by Mrs. Pollen and van Dam in the island of Réunion, which belong positively to the species, called *Palaemon ornatus* Oliv: these specimens however have been described and figured by Mr. Hoffmann (l. c.) under the new name of *Palaemon longimanus* Hoffm.: *it is however quite impossible for me to find any specific difference between these specimens and the typical examples of Pal. ornatus* Oliv. *from the Moluccas.* Thus the rostrum, being $\frac{7-9}{2-3}$ dentate, is in most specimens rather shorter than the peduncle of the internal antennae, in some individuals however it reaches to the end of this peduncle, and it agrees closely in its form with the rostrum of *Pal. ornatus* Oliv. The specimens present also a complete resemblance in all other regards with the Indian species. Hoffmann has given the measures of the largest male specimen, and the figures of its second pair of legs: the largest female specimen that has a length of 105 mm., has the second pair of legs equal in size, being 75 mm. long, the arm measuring 15 mm., the wrist 13 mm., the palm 16 mm., and the fingers 14 mm.; in a very young female specimen 63 mm. long, the second pair of legs are also equal in size, measuring 35 mm., while the arm has a length of $7^1/_2$ mm., carpopodite of $6^1/_2$ mm., palm of 7 mm. and fingers of 6 mm.

Palaemon ornatus Oliv. accordingly has a wide geographical range, being found in Tahiti (Heller), New-Zealand (Heller), New-Guinea (Andaï, von Rosenberg), Halmahera, Morotaï, Amboina, Celebes, Ternate, Flores, Adonare, Waigeoei (Milne Edwards), Xulla-Bessy, Gebeh, the Philippines (von Martens) and also at the island of Réunion, a very wide range for a fresh-water form. As we have seen, this species however presents some varieties, individual and local, not only as regards the relative length of the rostrum with respect to the peduncle of the internal antennae, or the antennal scale and the number of

teeth $\binom{6-10}{2-4}$, but especially in the variable shape of the second pair of legs. But the palm of these legs is always at every age longer than the wrist or the fingers.

Palaemon mayottensis Hoffm.

Hoffman, Crustacés de Madagascar, p. 32, pl. IX, fig. 61 and 62.

Nine specimens of this interesting form have been collected by Mrs. Pollen and van Dam at the island of Mayotte, situated west of Madagascar. By comparing these specimens with those of the island of Réunion, identified by me with *Palaemon ornatus* Oliv., as well as with Indian examples of the latter species, I have been led to the conclusion *that the Pal. mayottensis* Hoffm. *too should be considered only as a local variety of Pal. ornatus* Oliv. The only essential difference is that in *Pal. mayottensis* Hoffm. the whole legs of the second pair are always *shorter* in proportion to the length of the body than in the typical specimens of *Pal. ornatus* Oliv., but the proportions of the measures of the various joints of these legs are quite the same in *Pal. mayottensis* Hoffm. as in *Pal. ornatus* Oliv. Thus, in the largest male specimen, of which Hoffmann makes mention, that has a length of 125 mm., the second pair of legs are only 120 mm. long; but they are much longer in a specimen of *Pal. ornatus* Oliv. of the same size. In a male of the length of 70 mm., these legs measure 50 mm.; in a female of 100 mm. they attain the length of 65 mm. The rostrum reaches to the end of the peduncle of the internal antennae, or is somewhat longer in other individuals; it is armed with 8—9 teeth on the upper, and with two or three on the inferior margin.

Palaemon Reunionnensis Hoffm.

Hoffmann, Crustac. de Madagascar, p. 33, pl. IX, fig. 66 and 67. *Palaemon equidens* Heller, l. c. p. 418, taf. II, fig. 44.

Twelve specimens of this species have been collected at the island of Réunion by Mrs. Pollen and van Dam.

This species which has been identified by Heller with *Pal. equidens* Dana, this author having received it from Mauritius, is closely allied to *Pal. ornatus* Oliv., which latter species is also found at the island of Réunion, though being quite different from *Pal. Reunionnensis*.

The slender rostrum always reaches beyond the end of the peduncle of the internal antennae, sometimes even to the apex of the scale of the external antennae, and extends more backward so that in most individuals there are three teeth placed upon the cephalothorax behind the eyes; upper margin with 8—10 teeth, inferior margin 3—4 toothed; the upper margin extends straightly, being a little convex above the eyes and slightly ascending toward the apex. The first pair of legs reach a little beyond the end of the rostrum, the second pair of legs are very elongated, slender and equal in size. (Mr. Hoffmann says erroneously that the carpopodite of the second pair of legs is *longer* than the palm, for even the contrary takes places, the *palm* being longer than the carpopodite, and so it is represented in the figure). In a male specimen 130 mm. long, the second pair of legs measure 155 mm.; the arm, extending beyond the scale of the external antennae, has a length of 34 mm., the carpopodite of 33 mm., the slender palm of 44 mm. and the toothed and closely united fingers of 25 mm.

In a male of a length of 105 mm., the second pair of legs measure only 82 mm., the arm reaches no more to the end of the antennal scale, and has a length of 18 mm.,

the wrist is 17 mm., the palm 20 mm. and the fingers 14 mm. The carpopodite is accordingly somewhat shorter than the arm and the palm, but always longer than the fingers which are never so widely curved as in *Pal. ornatus* Oliv.

Palaemon Japonicus de Haan.

De Haan, Fauna Japonica, Crustacea, p. 172. — von Martens, l. c. pag. 43.

This species presents some resemblance to the Indian *Pal. ornatus* Oliv., but may be distinguished by the shape of the rostrum, four or five of its teeth forming a longitudinal series, posterior to the eyes, and by the form of the second pair of legs: the arms being comparatively shorter and thicker, the hands more depressed and the fingers too comparatively shorter.

It may also be distinguished from *Pal. brevicarpus* de Haan by the shape of the rostrum and the structure of the second pair of legs: these species are quite different from one another.

I may be allowed to add the measures of a young male specimen of *Pal. Japonicus* De Haan, only 65 mm. in length; the left leg of the second pair is already somewhat greater than the right one, and is 46 mm. long, the arm measuring $8^1/_2$ mm., the wrist 9 mm., the palm 13 mm., and the fingers 7 mm.

Palaemon nipponensis De Haan.

De Haan, Fauna Japonica, Crustacea, p. 171. — *Palaemon Sinensis* Heller, Novara-Reise, p. 119, taf. X, fig. 11. — von Martens, l. c. p. 42.

The length of the rostrum of this species is very variable, reaching in some specimens to the end of the peduncle

of the internal antennae, in others to the apex of the antennal scale; the last tooth (on the cephalothorax) is situated at a greater distance from the preceding which extend all along the upper margin which is not curved upward. The second pair of legs are equal in size and are longer than the body in adult specimens, but shorter in the young. — In a male of a length of 100 mm., they measure 125 mm., the arm being 23 mm. long, the wrist 35 mm., the palm 26 mm., and the hairy fingers 22 mm. — Another male, measuring 75 mm., has the second pair of legs 70 mm. long, the arm measuring 14 mm., the carpopodite 19 mm., the palm 15 mm., and the fingers 10 mm. In a female, of a length of 77 mm., (I have found the female specimens together with the males in the same jar, though they were unknown to de Haan) the second pair of legs measure 50 mm., the arm $9^1/_2$ mm., the wrist $13^1/_2$ mm., the palm $9^1/_2$ mm., the fingers $6^1/_2$ mm. — In the male the inner margins of the fingers of the second pair of legs are provided at every age with innumerable stiff hairs, and with a very small tooth at the base; in the female these stiff hairs are less numerous and more scattered. In the adult male of the length of 100 mm., the arms of the second pair of legs extend beyond the scale of the external antennae, but in specimens of 75 mm. they are shorter than the antennal scale, especially in the female. In some individuals the surface of the cephalothorax is a little granulated, but in other specimens it is quite smooth.

Palaemon Sinensis Heller belongs positively to this species, being a young specimen of it; the description of that species, given by Heller and von Martens, agrees entirely with that of young individuals of *Pal. nipponensis* De Haan. — *Pal. nipponensis* De Haan may be distinguished from *Pal. longipes* De Haan by the more numerous teeth on the rostrum and by the second pair of legs being shorter and otherwise shaped.

Palaemon longipes De Haan.

De Haan, Fauna Japonica, Crustacea, p. 171.

This species is positively closely allied to *Pal. Idae* Heller. (Sitzungsber. Wien. Akad. Bd. 45. p. 416, taf. II, fig. 40, 41 and von Martens, l. c. pag. 39). Unluckily there are no typical examples of *Pal. Idae* Heller in the Leyden collection, at least no adult specimens, so that it is quite impossible for me to discover the real differences of these species, if they are not identical. The rostrum of *Pal. longipes* De Haan reaches to or beyond the end of the peduncle of the internal antennae and is $\frac{10}{2-3}$ dentate; the last tooth of the upper margin is situated at a somewhat greater distance from the preceding which extend closely along the upper margin towards the apex. The surface of the cephalothorax is granulated. In a male specimen of a length of 85 mm., the larger leg of the second pair measures 160 mm., being twice as long as the body, the arm being 28 mm., the carpopodite 47 mm., the palm 40 mm., and the fingers 23 mm. — The hands are a little spotted, and the fingers are provided with small teeth at their bases, the moveable finger having two teeth, the immoveable only one.

I may be allowed to add that also *Pal. Alphonsianus* Hoffm. (Crustacés de Madagascar, p. 33, pl. IX) will probably prove to be identical with *Pal. Idae* Heller; but I have not found the authentic specimens of this species in the collection; however, according to Mr. von Hilgendorf (Baron von der Decken's Reise p. 102) *Pal. Idae* Heller is also found at Zanzibar.

Palaemon macrobrachion Herklots.

Herklots, Additam: ad Faun. Afric. Occid. p. 15.

This species inhabits the western coast of Africa, and is

allied to *Pal. Idae* Heller. The surface of the cephalothorax is smooth; the two last teeth of the upper margin of the rostrum are situated upon the cephalothorax posterior to the eyes. The arm of the second pair of legs is cylindrical and thickened, the wrist thickened anteriorly is longer than the arm, and longer than the palm, the fingers are half as long as the palm in the adult male, closely united to one another, and covered with coarse hairs; the immoveable finger is provided with a very small tooth at its base.

In a male specimen that has a length of 110 mm., the larger leg of the second pair is 140 mm. long, the arm measuring 31 mm., the wrist 42 mm., the palm 32 mm., and the fingers 18 mm.

Pal. macrobrachion Herklots may be distinguished from the Japanese *Pal. longipes* de Haan by the slender rostrum, the upper margin being slightly convex, and curved upward towards the apex, the rostrum reaching to the end of the scale of the external antennae, by the second pair of legs being comparatively shorter, and by the closely united very hairy fingers.

Palaemon Vollenhovenii Herklots.

Herklots, Tijdschrift Nederl. Entomol. vereeniging, Deel I, p. 96.

Only the female of this species was known to Mr. Herklots; the Museum however has received some time ago an adult male and a still greater female of this species from the Congo coast, so that I have now been enabled to complete our knowledge of this form.

The fine male specimen has a length of 140 mm.; the cephalothorax is 70 mm. long and the rostrum measures 40 mm.; the rostrum is longer than the peduncle of the internal antennae, almost as long as the scale of the external antennae, $\frac{12}{4}$ toothed, the *four* last teeth on the

cephalothorax being posterior to the eyes. The outer foot-jaws are as long as the peduncle of the internal antennae. The first pair of legs are 70 mm. long, and project with the greater half of the wrist beyond the antennal scale. The second pair of legs are a little unequal, the left being the larger one, and they measure 195 mm. and 155 mm. respectively; the arm of the larger leg projects a little beyond the antennal scale, measuring 35 mm., the carpopodite 32 mm., the nearly cylindrical palm 62 mm. and the fingers 45 mm. — The fingers are somewhat curved, the tips crossing one another; the moveable finger is provided with a strong tooth somewhat behind the middle, and with three much smaller teeth behind the latter at its base, the interior tooth being a little larger; the immoveable finger is also armed with a large tooth at the base and a smaller one behind the latter. — The whole leg is covered with numerous small spines which are somewhat stronger at the inferior margin of the various joints; the fingers, especially the immoveable one, are a little hairy at their bases. — The third pair of legs are somewhat longer than the antennal scale, but the fifth pair do not reach to the tip of these scales.

The female specimen is 130 mm. long, the cephalothorax measuring 60 mm.; the rostrum is $\frac{12}{5}$ dentate and shorter than the antennal scale. The second pair of legs are equal, much feebler than those of the male, 115 mm. long, consequently somewhat shorter than the body; the arm is as long as the peduncle of the internal antennae and has a length of 22 mm., the carpopodite measuring 20 mm., the palm 28 mm., and the closely united fingers 24 mm.; the fingers have no teeth, the tips crossing one another.

Pal. Vollenhovenii Herklots is the representative of the American *Pal. Jamaïcensis* Herbst on the western coast of Africa and nearly allied to that species. But it is a much more interesting fact *that the African species is also most closely allied to the Japanese Pal. brevicarpus* de Haan,

so that the females of both species (the Museum contains only female specimens of *Pal. brevicarpus*) may be distinguished almost enclusively by the different shape of the rostrum: the rostrum of the Japanese form is less straight, somewhat more convex upon the eyes, and always the *five* last teeth on the cephalothorax are posterior to the eyes; there are only 2 or 3 teeth on the inferior margin, which are situated more backward than in *Pal. Vollenhovenii*; the carpopodite of the second pair of legs is somewhat less slender, and the fingers are always a very little longer than the palm, while they are a very little shorter than the remaining part of the hand in the African species; for the rest these forms do not present other differences.

Palaemon Javanicus Heller.

Heller, Sitzungsber. Wien. Akad. Bd. 45. p. 421 taf. II, fig. 48. — von Martens, Archiv. für Naturgesch. 1868. p. 45.

The Museum is in possession of one well-preserved male specimen, collected by Mr. Semmelink at Bezoeki (Java), and of five specimens (1 ♂, 4 ♀) found by Mr. Bleeker at the same island.

These specimens, though all undoubtedly belonging to *Pal. Javanicus* Heller, present however some interesting individual differences, which it will be necessary to describe.

In the male specimen of Bezoeki, having a length of 85 mm., the rostrum is very slender, reaching a little beyond the scale of the external antennae, and $\frac{11}{3}$ toothed; the three posterior teeth are situated on the cephalothorax, and the first tooth is placed close to the apex, being separated from the preceding by a somewhat greater interval than the other ones. The legs of the second pair are

65 mm. and 50 mm. long respectively; of the larger leg the arm is measuring 14 mm., the wrist 15 mm. and the whole hand 27 mm., the palm which is compressed in proportion of 3 : 4, having a length of 18 mm. — The measures of the other leg are respectively: arm $11^1/_2$, wrist 12, hand 20 mm., of which 12 mm. for the palm. — According to the description of Mr. Heller (it may be allowed to say that the figure does not agree with the description), the carpopodite should be almost as long as the palm. The other legs do not reach the extremity of the scale of the external antennae.

The male specimen, collected by Mr. Bleeker, has a length of 75 mm.; the rostrum projects scarcely beyond the peduncle of the internal antennae, and is $\frac{9}{3}$ dentate; the two posterior teeth of the upper margin are placed on the cephalothorax, but the first tooth has the same situation as in the male of Bezoeki. The second pair of legs have a length of 60 and 46 mm. respectively; the measures of the larger leg are as follows: arm 13 mm., wrist 14 mm., whole hand 27 mm., the palm measuring 19 mm., the fingers being comparatively shorter than in the specimen of Bezoeki; the palm is also somewhat broader. The arm of the other leg measures $10^1/_2$ mm., the carpopodite $11^1/_2$ mm., the hand 19 mm., of which 12 mm. for the palm, the fingers being also a little shorter. In a female specimen, of a length of 65 mm., the second pair of legs measure 37 mm. and 31 mm.; the rostrum agrees entirely with that of the male specimen of the same locality. The arm of the larger leg measures 8 mm., the carpopodite also 8 mm., the hand 14 mm., and the palm 8 mm.; the measures of the small leg are respectively $6^1/_2$, 7, 10 and 6 mm.

The fingers are closely united to one another and are armed only in the larger leg with very rudimentary teeth.

Palaemon pilimanus n. sp.

A small species, more or less allied to *Pal. latimanus*

v. Mart. and *Pal. Javanicus* Heller, but sharply characterized.

Rostrum somewhat shorter than the peduncle of the internal antennae and descending a little towards apex; upper margin scarcely convex with 9—13 equal and equidistant teeth, the three or four last teeth being posterior to the eyes, and situated on the cephalothorax; inferior margin scarcely emarginate between the eyes, and provided with one or two feeble teeth; the rostrum is a little longer than half the length of the cephalothorax, and the apex is entire. — Cephalothorax smooth; the small hepatical spine situated not far from the antennal spine on the lateral surface. The terminal segment of the abdomen shorter than the lateral appendages, and provided with two pairs of small spines on its surface as usually. External maxillipedes comparatively very elongate, reaching beyond the peduncle of the external antennae, almost to the extremity of the scales. First pair of legs much longer than the scale of the external antennae; the arm reaches to the extremity of the outer foot-jaws, and therefore almost to the tip of the antennal scale; fingers covered with scattered hairs. Second pair of legs unequal, both in the male and in the female; in the adult male the larger leg (in some individuals the right, in others the left) is somewhat longer than the body. The arm cylindrical, thickened a little in the middle, and reaching almost to the extremity of the scale of the external antennae; carpopodite very short and thickened, almost as thick as long, and rather cubical in the larger leg, being half as long as the arm and the palm. Hands slender and depressed, though swollen a little at the base; palms broader than the carpopodites, everywhere equally broad and compressed in proportion of 7 : 9; the palm of the great hand is somewhat longer than the arm, and twice or more than twice as long as the short carpopodite; the fingers of the great hand are a little shorter than the palm, compressed a little, and closely united to one another; but the tips are curved,

crossing one another, and the whole length of the inner margins is armed with 13—15 blunt, almost equal and equidistant teeth. The fingers of the small hand are rather longer than the palm, also closely united to one another, and provided with a smaller number of similar teeth as in the great hand. The legs of the second pair appear to be smooth to the naked eye, but the outer surface of the arms, and also in some less degree of the other joints are covered with minute spines, only perceptible with a magnifying glass. The external surface of the palm, except a small portion at the base, and the external surface and the inner margins of the fingers, are covered with long coarse hairs both in the great and in the small hand. The internal surface of the various joints is smooth. In the female the second pair of legs are somewhat smaller than in the male, but they have the same shape and physiognomy. In young specimens of a length of 28 mm., the second pair of legs are already unequal in size and wholly resembling those of the adult animals. — The third pair of legs reaches to the end of the antennal scale, but the fifth pair does not project to the tip of that organ.

Seventy specimens of this fine species (of which only 10 or 12 are females) have been collected by Mr. Snelleman in the river of Alahan-Pandjang, and five more specimens at Moeara-Laboe, both localities of the interior of the island of Sumatra.

The largest male specimen has a length of 45 mm.; the second pair of legs measures respectively 52 mm. and 38 mm.; the arm of the larger leg measures 12 mm., the carpopodite 6 mm., the hand 28 mm., of which 14 mm. for the palm; the arm of the smaller leg is 9 mm. long, the carpopodite $4^1/_2$ mm., the hand $19^1/_2$ mm., and the palm 8 mm.

The second pair of legs of a female specimen of 36 mm. measures respectively 30 mm. and 22 mm.; the measures are respectively (when following the same order as for the male) of

the larger leg: 7, $3^1/_2$, $14^1/_2$, 7 mm., and of the smaller leg: 5, $2^1/_2$, $9^1/_2$, $4^1/_2$ mm.

I have found a (very rare) variety which is allied to the type by numerous transitions, in which the fingers of the hand of the larger leg of the second pair are a little *longer* than the palm, and also those of the smaller leg somewhat more elongated.

Leyden, May 1879.

NOTE XLII.

ON TWO NEW SPECIES OF THE GENUS ISCHIOPSOPHA, GESTRO.

BY

C. RITSEMA Cz.

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1. *Ischiopsopha nigriloba*, sp. n. ♀.

Synonym: *Lomaptera nigriloba*, v. Voll. in Mus. Lugd. Bat.

This species may at once be recognized by the black color of the deeply emarginate median lobe of the prothorax.

Length 24 mm., breadth at the shoulders 11,5 mm. — Shining green, in some lights with a faint yellowish red tinge at the pronotum and the basal half of the elytra; the extreme tips of the clypeus, the median lobe of the prothorax, the extreme base of the elytra along the sides of the median thoracical lobe, and the tibiae and tarsi black; the palpi and antennae, except the club of the latter, dark pitchy; the first joint of the antennae bronzy green above, the club brown with a metallic hue.

The clypeus strongly, the vertex distantly punctured; the lateral margins of the clypeus very slightly raised. The prothorax very transverse, its lateral margins regularly curved, the median lobe deeply emarginate; the disc distantly punctured, more thickly at the sides especially towards the front margin, intermixed at

the anterior half of the lateral margin with some transverse short striae. The slightly rounded top of the scutellum visible in the incision of the median thoracical lobe. The elytra at the base hardly broader than the base of the prothorax, sinuated behind the shoulders, slightly narrowed towards the apex behind the middle, and transversely depressed just behind the median thoracical lobe; the apex deeply notched and strongly spined at the suture. The elytra sparingly sprinkled over with very fine but distinct punctures, the posterior half of the lateral margin covered with deep transverse striae, joining the sutural margin across the apical tubercle, the apical portion smooth. The upper part of the pygidium transversely striated, the striae curved upwards, the underpart with some transverse short lines intermixed with a few punctures; the sharp transverse keel regularly rounded. The apical half of the anterior tibiae armed with three distinct lateral teeth; the erect hairs at the anterior coxae and femora black; all the femora with some curved impressed lines in front, and a row of punctures before the hind margin; the tibiae deeply punctured. The sternal process narrow, elongate, slightly curved upwards towards the apex, the lateral portions of the prosternum longitudinally striated; the mesosternum sparingly sprinkled over with very fine punctures and with a few transverse striae along the front margin; the abdominal segments with a few punctures, more numerous however at the fifth segment; the sixth segment as well as the basal half of the sides of the first transversely striated; besides the second and third segment, the fourth also shows a stridulating spot which is however small.

The described specimen was captured at Doreh (New Guinea) by Mr. D. S. Hoedt, and presented to the Leyden Museum with many other valuable insects.

2. *Ischiopsopha emarginata*, sp. n. ♀.

Allied to the foregoing species, but distinct not only

by its different coloration, but also by its more slender and parallel form (although being very wide in its shoulders), by the want of spines at the apex of the suture, by the different shape of the transverse keel of the pygidium, etc.

Length 21 mm., breadth at the shoulders 11 mm. — Shining green with a bronzy hue; the tips of the clypeus black, passing into dark purple; the anterior and intermediate femora with shades of dark purple at the base and apex; the tibiae bronzy green at the base, passing through dark purple into black towards the apex; the tarsi black. The palpi and antennae dark pitchy, approaching black, except the club which is dark brown.

The clypeus strongly punctured, an impunctate space at the vertex of the head; the lateral margins of the clypeus very slightly raised. The prothorax less transverse than in *I. nigriloba*, its lateral margins regularly curved, the median lobe deeply emarginate, the disc most distantly and finely punctured, thickly and somewhat confluent along the lateral margins. The slightly rounded apex of the scutellum visible. The elytra at the base broader than the base of the prothorax, deeply sinuated behind the shoulders, then almost parallel; the apex very slightly notched, and not spined at the suture. The elytra sparingly sprinkled over with very fine punctures, the lateral margin from a little behind the middle covered with deep transverse striae joining the sutural margin across the apical tubercle, the apical portion smooth. The pygidium closely and transversely striated; the lower part more regularly so than the upper part, the former with a large central impression; the sharp transverse keel straight behind, but broadly rounded laterally.

Under surface and legs as in *I. nigriloba*.

A single female from New Guinea (C. B. H. von Rosenberg).

Leyden Museum, May 1879.

Notes from the Leyden Museum.

NOTE XLIII.

ON A NEW SPECIES OF THE LUCANOID GENUS FIGULUS FROM THE MALAYAN ARCHIPELAGO.

BY

C. RITSEMA Cz.

Figulus marginalis, sp. n.

Synonym: *Figulus subcastaneus* v. Voll. (nec Westwood), *Tydschrift voor Entomologie.* Dl. VIII (1865) p. 146 n°. 146 and p. 156.

Allied to *Figulus subcastaneus* Westw. [1]) but quite distinct from that species by the different tuberculation of the head, by the comparatively longer prothorax and the presence of a tubercle on the middle of its front margin, by the different sculpture of the lateral margin of the elytra, etc.

Length 8—11 mm., breadth at the shoulders 2,6—3,5 mm. — Elongate, parallel, slightly convex. Shining, except the lateral margin and apical portion of the elytra which is opaque. Above dark piceous approaching black; beneath and legs more or less bright brown red.

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1) *The Entomological Magazine*, vol. V (1838), p. 263, sp. 8. — The correctness of the determination of the species that I believed to be the true *subcastaneus*, and of which the Leyden Museum possess two specimens from Java (Prof. Blume), has been confirmed by a figure drawn up from the type specimen by Prof. Westwood and kindly sent to me by that author.

The head transverse, concave above, covered with large but rather shallow punctures, the punctures much smaller along the anterior margin which is widely emarginate; the ocular canthus narrow, regularly rounded, not emarginate in front, finely and longitudinally scratched, and terminating posteriorly in an acute rectangle; its outer margin slightly raised. The face between the eyes provided with two distant indistinct tubercles, and with two impunctate longitudinal ones in front of the inner orbit [1]). The mandibles are slightly curved and acuminate, longitudinally grooved above, and armed with a small tooth a little before the middle on the inner side. The prothorax is broader than the head, as long as broad, if not longer than broad [2]), the sides sub-parallel, the base truncate with acute angles, the anterior angles slightly produced and rounded; a slight but distinct tubercle on the middle of the front margin [3]), and a narrow, longitudinal, deeply punctured groove across the middle of the disc. The disc strongly and rather closely punctured, except a nearly impunctate broad streak on each side of the groove and a finely punctured narrow one along the lateral margins. The slightly raised lateral margins become distinctly crenulate a little behind the middle. The elytra are of the same width as the prothorax, parallel, pointed and minutely crenulated at the shoulders, with all the striae distinctly punctured, the interstices flat with an irregular row of very fine punctures on the middle, the lateral margin and the apical portion opaque, the former provided with concatenated semicircular shining lines, the latter with large but shallow circular punctures [4]). Beneath the sides

1) In *F. subcastaneus* Westw. the head is provided between the eyes with a transverse central tubercle most slightly impressed at the top, and the longitudinal tubercle in front of the inner orbit is much more developed.

2) Distinctly broader than long in *F. subcastaneus* Westw.

3) Totally wanting in *F. subcastaneus* Westw.

4) In *F. subcastaneus* Westw. the lateral margin and apical portion of the elytra are not opaque, although covered with irregular opaque punctures, which are confluent on the lateral margin behind the middle.

of the abdomen and mesosternum strongly punctured; the middle of the mesosternum impunctate, with an impressed longitudinal line.

This species seems to be not uncommon at Java (Prof. Blume and Dr. S. Müller), Sumatra (Dr. S. Müller and Sumatra-Expedition) and Borneo (Dr. S. Müller and Dr. Schwaner), and will be found in the collection of the Leyden Museum, and in those of Prof. J. O. Westwood, Major F. J. Sidney Parry, and Mr. F. Ancey of Marseille.

Leyden Museum, June 1879.

NOTE XLIV.

THE GENERA OF EUROPEAN NEMERTEANS CRITICALLY REVISED, WITH DESCRIPTION OF SEVERAL NEW SPECIES.

BY

Dr. A. A. W. HUBRECHT.

During a stay at Naples in the past winter, I became acquainted with a great number of *Nemertini* which had escaped my notice on a former occasion (1874), and of which I could have numerous specimens in different varieties thanks to the greatly improved methods of dredging and searching which are now practised in Prof. Dohrn's splendid establishment.

This enabled me to gain a better insight, not only in the anatomy of the group, but in the range of varieties, species and genera as well. The preliminary results of these researches are contained in the following pages.

The number of genera, which at present have been introduced into zoological literature to designate Nemerteans belonging to the European fauna amounts to forty-eight. The following is a list of their names, authors and dates:

Planaria (Linn.)	O. F. Müller . .	1773.
Fasciola, »	»	»
Gordius, »	»	»
Cerebratulus,	Renier	1804.
Tubulanus,	»	»
Lineus,	Sowerby	1805.
Acicula,	Renier	1807.
Borlasia,	Oken	1817.

Nemertes, Cuvier.	1817.
Polia, delle Chiaje	1825.
Meckelia, Leuckart	1827.
Prostoma, Dugès	1828.
Lobilabrum, de Blainville	»
Ophiocephalus, »	»
Siphonenteron, Renier	»
Notospermus, Huschke	1830.
Polystemma, Ehrenberg.	1831.
Micrura, »	»
Tetrastemma, »	»
Amphiporus, »	»
Hemicyclia »	»
Ommatoplea, »	»
Notogymnus, »	»
Carinella, Johnston	1833.
Ramphogordius, Rathke.	1843.
Chloraima, Kölliker	1844.
Cephalotrix, Oersted.	»
Astemma, »	»
Akrostomum, Grube	1845.
Serpentaria, Goodsir.	»
Valencinia, de Quatrefages. . . .	1846.
Oerstedia, „ . . .	»
Pylidium, J. Müller.	1847.
Scotia, Leuckart	1849.
Baseodiscus, Diesing	1850.
Alardus, Busch	1851.
Vermiculus, Dalyell	1853.
Cosmocephala, Stimpson	1854.
Cnidon, Joh. Müller.	»
Loxorrhochma, Schmarda	1859.
Quatrefagea, Diesing.	1862.
Ptychodes, »	»
Ototyphlonemertes, Diesing	»
Otoloxorrhochma, »	»
Ditactorrhochma, »	»

Prosorhochmus, Keferstein . . . . 1868.
Drepanophorus, Hubrecht . . . . 1874.
Avenardia, Giard . . . . . 1878.

It is clear that for an order of worms, which is yet so imperfectly known as the Nemerteans, this extraordinary large number of genera must contain many synonyms. Authors who failed to find well marked characters, by which to distinguish the species of these worms (which moreover showed such a protean variability in their external appearance) highly overvalued any small structural difference which happened to be common to two or more species and immediately founded a generic division on so insufficient a basis. The short and incomplete description of many of the genera was further one of the causes which led to unnecessary multiplication of their number, whereas the fact that in many cases no account whatever was taken of the internal anatomical characters, when establishing a new genus, gave rise to a considerable confusion, which it will be difficult to get rid of gradually.

If we take the three naturalists, whose researches have most contributed to our knowledge of the *Nemertini* in the last thirty years: Quatrefages, Keferstein and Mac-Intosh we find different genera adopted by each of them and — what is more embarassing yet — a different scope given to the same generical name, in consequence of which Keferstein for instance employs the name *Borlasia* for worms belonging to the great subdivision of armed Nemerteans, whereas Mac-Intosh, more strictly adhering to Okens original intention, applies it to an unarmed species.

Quatrefages who examined atlantic as well as mediterranean forms (Annales des Sciences Naturelles Vol. VI 1846) admits the six genera *Valencinia*, *Borlasia*, *Nemertes*, *Polia*, *Cerebratulus* and *Oerstedia*. Keferstein (Zeitschr. f. Wiss. Zoologie, Bd. XII) adopts M. Schulze's suborders of armed (Nemertinea enopla) and unarmed Nemerteans (Nemertinea anopla) and establishes three families on charac-

ters taken from the cephalic fissures. One family (the Tremacephalidae) contains all the Nemertinea enopla, arranged in the genera *Polia*, *Borlasia*, *Oerstedia*, *Micrura*, *Prosorhochmus* and *Lobilabrum*. His two other families: the Gymnocephalidae and Rhochmocephalidae both belong to the Nemertinea anopla. The former contains only one genus: *Cephalotrix*, the latter four: *Lineus*, *Cerebratulus*, *Nemertes* and *Ophiocephalus*. Total eleven genera. The number of species which he examined was much less than those which Quatrefages disposed of. He largely contributed to our knowledge of the anatomy of the group but I do not think his systematic arrangement was a very successful one, although it has found its way into numerous textbooks. So for instance he does not seem to have noticed that four of his six genera of armed Nemerteans were established by their authors for unarmed species (*Polia*, *Borlasia*, *Micrura*, *Lobilabrum*). Quatrefages had commenced to create a confusion by applying those generic names in a wrong sense; still Keferstein might have corrected the error instead of extending it.

Mac-Intosh (Ray Society Publicat. 1873, '74) who has limited his researches to the British Nemerteans (of which he describes 31 species) has distributed them in twelve genera, four of which (*Amphiporus Tetrastemma*, *Prosorhochmus* and *Nemertes*) belong to the family of the Amphiporidae, five (*Lineus*, *Borlasia*, *Cerebratulus*, *Micrura*, *Meckelia*) to the family Lineidae, two (*Carinella*, *Valencinia*) to the family Carinellidae, whereas the genus *Cephalotrix* forms by itself the family of Cephalotricidae. The first family again coincides with the suborder of Nemertinea enopla, the three last with that of the Anopla. It is a pity that before fixing upon his final arrangement, which must be recognized as a most decided advance upon his predecessors, the author had no occasion personally to examine the principal mediterranean species, which might have induced him to a reduction in the number of his genera as will presently be proposed. His families are very well chosen; here at

last the internal structure of these worms, which externally present so little difference, is taken into consideration and an arrangement into more natural groups is the immediate result.

If we apply the rule that generic names may not stand when applied in a sense different from what they were intended for by their author (as may be judged from the species on which he primitively established the genus: the type species, or typical specimens), three of Quatrefages' genera (*Polia*, *Borlasia*, *Cerebratulus*) must be cancelled and his species divided over other genera to which they more properly belong. To Keferstein's *Polia* and *Borlasia* the same rule should be applied, as well as to Mac-Intosh's *Meckelia*. Rigidly speaking the name *Nemertes* Cuv. was applied to a worm quite different from those which later authors united under that name. However not only Quatrefages and Mac Intosh but Kölliker (Verh. Schweiz. Naturf. Gesellsch. Chur 1844) and many others have all applied the name *Nemertes* to armed species and so here we may feel justified in maintaining it in this modified sense. Then of course the species to which Keferstein and v. Beneden applied this name must reappear in another genus. And if we separate Keferstein's genus *Micrura* from the Tremacephalidae, again placing it amongst the Anopla we have only the genera *Ophiocephalus* and *Lobilabrum* to account for in order to bring the arrangements of Keferstein and Mac Intosh in accordance. Now *Ophiocephalus* was established by Blainville for a worm brought by Quoy and Gaimard from their voyage of circumnavigation and had it not been brought from Sydney Blainville himself would not have hesitated in placing this species in the genus *Cerebratulus*. Such at least may be understood from his text (Dict. des Sciences Nat. Paris 1828. Vol. 57). Delle Chiaje further discredited this generic name by employing it in 1829 (Descr. e Not degli Anim. invertebr. etc. Vol. III, p. 127) for three species very heterogenous among themselves and of which we will have occasion to speak

further on. So we are amply justified in proposing the suppression of this name.

Lobilabrum de Blainville must be cancelled too. Here however we must motive our judgment more circumstantially, as this genus, which was established by Blainville on one specimen of a species (*Lobilabrum ostrearum*) never since met with by any other naturalist, is remarkable for the very striking characters by which it can immediately be distinguished from other genera. These characters are: a blunt snout with two horizontal lips at the extremity, both of them bilobed and apparently tentaculated. The slit between the lips is at the same time a continuation of the lateral fissures on both sides of the head. In all other respects there is a very strong resemblance to species of *Lineus* or *Cerebratulus* living in the same localities. One day in Naples I was fortunate enough to get a second specimen of this rare genus which, like Blainville's specimen, was collected from a bottom covered with bivalve shells. It was duly figured and preserved and longitudinal sections were made of the curious snout. Soon after I was struck by the extraordinary resemblance in habitat which existed between another Nemertean (whose anterior extremity exactly answered to that of a *Lineus* or a *Cerebratulus* and carried two well pronounced lateral fissures) and this single specimen of *Lobilabrum*. Once my doubts raised I pursued the investigation by purposely cutting off the tip of the snout in one of the last mentioned specimens in a direction vertical to the body axis. Immediately the curious arrangement of the lobed and tentaculated lips which had hitherto been limited to the genus *Lobilabrum* appeared, the animal lived comfortably for several weeks and afterwards longitudinal sections showed that an epidermoidal covering had made its appearance identical with what had been found in the *Lobilabrum* specimen. Connecting these results with the fact of their living amongst bivalve shells I concluded that the genus *Lobilabrum* was established on a specimen the tip of whose snout had been

abnormally severed by an oyster, into the opened shell of which it was stealthily trying to penetrate. The extreme rarity of the species was a corroberating evidence. On these grounds I propose to cancel the generic name of *Lobilabrum*, the type [1]) of which probably belonged to one of the species of Atlantic Lineidae.

The remaining genera mentioned by these three prominent authors (even when a few of them may presently be shown to be synonymous, and their number therefore liable to further reduction) must form the nucleus for any further proposal for the systematic arrangement of the order. Before developing my own views on this head I have still to account for several of the genera which are contained in the list on page 194. *Planaria* and *Gordius* have come to be used for different types of worms and the Nemerteans described under these generic names must be distributed under the head of *Cerebratulus* and *Lineus*. *Tubulanus* will be shown to be identical with *Carinella*; *Meckelia* was used for the same worm which had served as the type to Renier's *Cerebratulus marginatus*, so was *Serpentaria* and both of them must be again substituted by the name which has the indisputed claims of priority. Mac Intosh applied the name *Meckelia* to quite a different animal which seems to be misplaced among the Lineidae and may prove to be more closely related to the Cephalotricidae or Valenciniaidae, at all events to belong to the suborder of Palaeonemertini (vide p. 206). *Notospermus* and *Notogymnus* were established upon an unmistakable *Cerebratulus* as Quatrefages has long ago shown. *Siphonenteron* and *Vermiculus* have never been well characterized; the former was moreover synonymous with another genus of the same author from the beginning, and so both have been abandoned. Then again *Astemma* and *Cephalotrix* are synonyms and with Mac Intosh we propose to retain only the latter

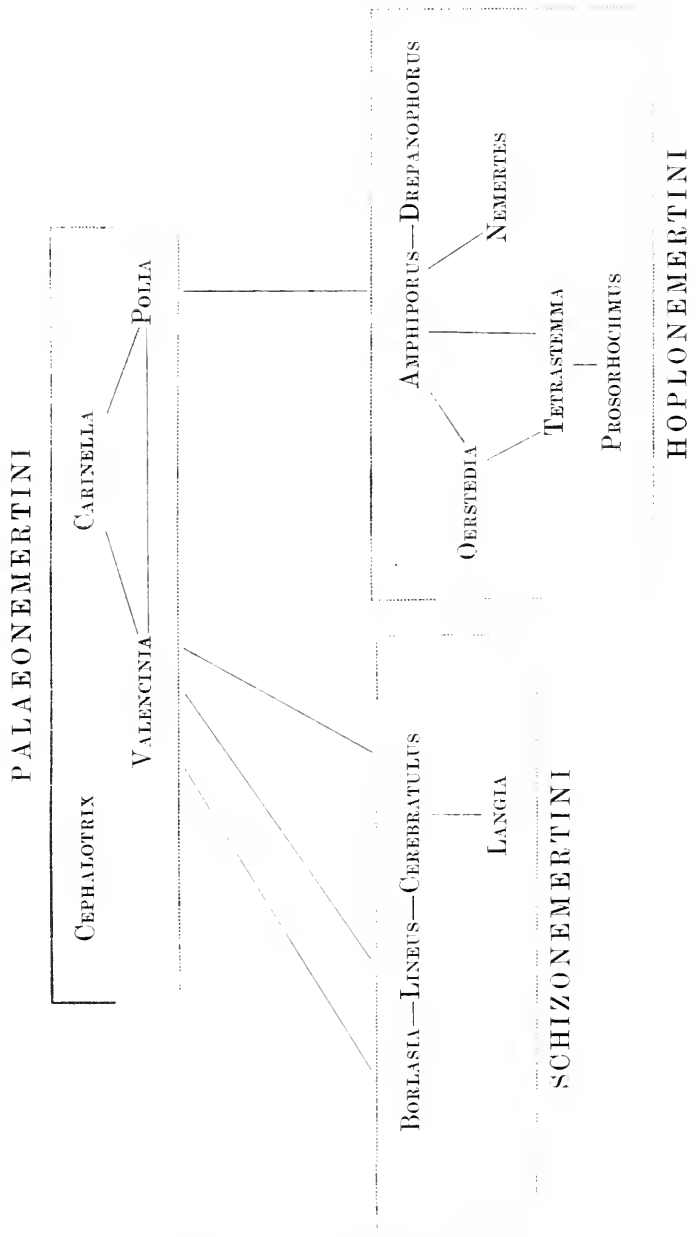
1) I inquired for the type specimen at the Museum in the Jardin des Plantes; however is was not to be found, and probably has never reached Paris.

name. *Hemicyclia*, *Polystemma*, *Ommatoplea* and *Chloraima* have again made room for generic names with undisputed claims to priority; *Cuidon* was used for a true *Cerebratulus* as will be shown hereafter, *Alardus* and *Pylidium* were only very young stages of a species of Lineidae. The american genus *Cosmocephala* was only lately introduced into the European fauna by O. F. Jensen (Turbellaria ad littor. Norvegiae. Bergen 1878) and applied to a worm which was probably a true *Amphiporus*. As to *Rhamphogordius*, *Acicula* and *Scotia* it is very questionable whether the animals described under these names were Nemerteans.

Akrostomum may possibly apply to a division of armed species; *Baseodiscus* was founded on a mutilated specimen of *Polia delineata; Ditactorhochma*, *Quatrefagea*, *Ptychodes*, *Loxorrhochma*, *Ototyphlonemertes*, *Otoloxorrhochma* and *Avenardia* were names with which Diesing, Schmarda and Giard unnecessarily burdened the synonymy of the group.

The table on page 201 is intended to show at a glance the general conclusions which I have come to respecting the degrees of affinity existing between the different genera.

Carinella Johnst. must without doubt be regarded as a form which in its structure has retained more primitive characters than any of the others: its central nervous system lies immediately under the skin, its two longitudinal lateral nerves are nowhere found enclosed by the muscular tissue of the body-wall but always *exterior* to this. This situation of the nerve-tissue which is ontogenetically a product of the epiblast reveals a more primitive condition. So does the intestine and so does the proboscis. The first is not yet provided with those numerous and regularly placed coeca which in the more developed forms branch off right and left throughout the whole length of the animal, with the exception of the oesophageal region. In *Carinella* a simple intestinal canal is present in the tail as well as in all the other body regions. The proboscis is thin and slender, only very rarely extruded and provided in its anterior part with urticating organs. A constricted part


PALAEONEMERTINI
CEPHALOTRIX
CARINELLA
POLIA
VALENCINIA
SCHIZONEMERTINI
BORLASIA—LINEUS—CEREBRATULUS
LANGIA
HOPLONEMERTINI
AMPHIPORUS—DREPANOPHORUS
OERSTEDIA
NEMERTES
TETRASTEMMA
PROSORHOCHMUS

about six times as long as wide separates the anterior and posterior region of the proboscis. The same constriction — however of a different character — is found in *Valencinia* and *Polia*, it has disappeared in the Lineidae, whereas in the armed species is has become more strongly differentiated and is represented by the muscular bulb in the proboscis which contains the stylet and the styliferous vesicles.

The interior of the proboscis appears to be divided into compartments by numerous transverse, thin, ring-shaped ridges which seem to offer different aspects in the three suborders proposed above. Whereas in the Schizonemertini they are visible throughout the whole length of the proboscis at equal and comparatively short distances, they make their appearance in the Palaeonemertini only in the anterior part, which it situated before the above mentioned constriction. In the suborder of the Hoplonemertini they seem to have disappeared altogether. Both here and in the Palaeonemertini there is a characteristic granular appearance in the posterior half of the proboscis behind the constriction, which is again absent in the Schizonemertini, where the segmented character of the anterior part in uninterruptedly maintained throughout the whole length of the organ.

A posterior lobe of the cerebral ganglion communicating by a ciliated duct with the exterior could not yet be detected in *Carinella* or in *Cephalotrix*; it is however present in *Valencinia* and *Polia* and in both very intimately connected with the anterior lobes. In both these genera the exterior opening of the ciliated canal is small, but whereas in *Polia* a transverse groove in the epiderm with numerous smaller grooves perpendicular to the first and all strongly ciliated seem to lead to this opening, such complications are absent in *Valencinia*. They are again met with in the armed genera *Amphiporus* and *Drepanophorus* where they exactly resemble those of the unarmed *Polia*. Here however the posterior lobes have become more detached from the ganglion, only communicating with it

by fibrous commissures. Vestiges of a simple transverse groove on a level with the cerebral ganglion are present in *Carinella* as well, although, as mentioned above, no ciliated canal leading to the nerve-ganglion could be detected in that genus. In *Cephalothrix* the groove too seems to be absent. In the four other genera of unarmed Nemerteans: *Lineus* Sowerby, *Borlasia* Oken, *Cerebratulus* Renier and *Langia* mihi, the simple external opening which was present in *Valencinia* is represented by deep lateral fissures on both sides of the head, situated in the plane of the body-axis. The simple opening has here widened out into these fissures which can be opened and shut at will by the arrangement of the muscles of the head and which are covered internally by a thick coating of very long vibratile cilia. All the four genera are further concordant in the deep red tinge of their nervous system, which is due to haemoglobine contained in this tissue. On the whole they form a very natural suborder. In the genus *Cerebratulus* I propose to include all the species described under the generic name *Micrura* by Ehrenberg and afterwards by Mac Intosh. I could not detect anatomical differences and the sole exterior difference: the very small caudal appendage, seems to appear under certain circumstances in true Cerebratuli as well and may hardly rank as a generic character. Urticating elements, which have been found in the proboscis of *Carinella* and *Cephalothrix* are absent in *Polia*, *Valencinia* and all the Hoplonemertini; they reappear in numerous species of Schizonemertini where they may even attain considerable dimensions. The six genera of armed Nemerteans form a subdivision not less natural; five of them seldom attain to a length which can be called considerable in relation to their width: the genus *Nemertes*, however, contains worms which are often extremely long and threadlike. These two subdivisions may rank as so many sub-orders, whereas the more primitive forms of Nemerteans, showing characters out of which those of both these subdivisions might have gradually

developed should rank as a third suborder. I hold this to be more in accordance with the real affinities than the subdivision in the two suborders of the Anopla and Enopla, as proposed by Max Schulze. And so the classification of the European genera which I propose is the following.

Ordo NEMERTINI.

I. Subordo PALAEONEMERTINI.

Familia	*Cephalotricidae.*	
	Genus	Cephalotrix.
„	*Carinellidae.*	
	Genus	Carinella.
„	*Valenciniaidae.*	
	Genus	Valencinia.
„	*Poliaidae.*	
	Genus	Polia.

II. Subordo. SCHIZONEMERTINI.

Familia	*Lineidae.*	
	Genus	Lineus.
		Borlasia.
		Cerebratulus.
„	*Langiaidae.*	
	Genus	Langia.

III. Subordo. HOPLONEMERTINI.

Familia	*Amphiporidae.*	
	Genus	Amphiporus.
		Drepanophorus.
„	*Tetrastemmidae.*	
	Genus	Tetrastemma.
		Oerstedia.
		Prosorhochmus.
„	*Nemertidae.*	
	Genus	Nemertes.

The following table, analytically arranged, may be of use in determining the genus of a given specimen:

- NEMERTINI
  - Mouth before the ganglia; proboscis furnished with stylets; body (HOPLONEMERTINI)
    - very long and slender, often coiled together in knots; proboscis rather short . . . . . *Nemertes.*
    - more or less short and bulky; proboscis long; head
      - with four large eyes, body short and stout . . . *Oerstedia.*
      - with four small eyes, body more slender, very contractile
        - viviparous *Prosorhochmus.*
        - oviparous *Tetrastemma.*
      - with numerous eyes, with one central stylet in the proboscis *Amphiporus.*
      - with numerous eyes, with a curved hook in the proboscis provided with numerous small stylets *Drepanophorus.*
  - no stylets in the proboscis; mouth behind the ganglia
    - a deep lateral fissure on both sides of the head (SCHIZONEMERTINI)
      - body flat or rounded
        - body-margins bent upwards, the frilled edges nearly meeting . . . *Langia.*
        - not so very long in comparison to its width; eyes rarely numerous, generally absent, proboscis well developed, furnished with urticating organs *Cerebratulus.*
        - not so very long in comparison to its width; eyes rarely numerous, generally absent, proboscis attenuated, museles of bodywall very strongly tinged with red *Borlasia.*
        - extremely long; eyes very numerous . . . . *Lineus.*
      - no deep lateral fissures on the head (PALAEONEMERTINI)
        - posterior lobes of the ganglion present, coalesced with the supero-anterior lobe;
          - no eyes, opening for the proboscis distant from the tip of the snout *Valencinia.*
          - eyes, opening for the proboscis terminal *Polia.*
        - no visible posterior lobe to the ganglia
          - head pointed, continuous with the body *Cephalotrix.*
          - head distinct from the body, spathuliform *Carinella.*

We now pass to the description of the species found at Naples. Only a short notice will be given of those which have been already satisfactorily described by Mac Intosh or

other authors, whereas the new species and those which have been confounded with others will be described more circumstantially. The exact and detailed synonymy of each species cannot as yet be given in full. For several of the species which are about to be mentioned, Mac Intosh's elaborate monograph gives a list of synonyms to which I may be allowed provisionally to refer.

Subordo I. PALAEONEMERTINI mihi.

No deep lateral fissure on the side of the head. No stylet in the proboscis. Mouth behind the ganglia.

Familia *Cephalotricidae* Mac Intosh.

The dorsal commissure of the ganglion in front of the ventral one. Lateral nerves placed between the longitudinal muscular coat and an isolated inner band of fibres. The proboscis has three coats.

Genus *Cephalotrix* Oersted. Head pointed, continuous with the body. No posterior respiratory lobe to the ganglion, nor ciliated duct leading to the exterior.

1. *Cephalotrix linearis* (J. Rathke) Oersted.

Synon. Cephalotrix bioculata Oersted.
" coeca "
" occellata Keferstein.
" longissima "
" filiformis Mac Intosh.
Astemma rufifrons Oersted.

To this species I refer a small number of specimens from the bay of Naples with about 20—30 very small eyes quite close to the body margin. The intestine was not provided with coeca. Laterally about on the same level with the mouth and with the hindermost eye-speck a very small opening was noticed (of the watervascular system?). Brown pigment was present on the tip of the snout; the animals were whitish and measured up to 5 mm.

2. *Cephalotrix signatus* n. sp.

This species immediately strikes us by its curious coloration as well or by the disposition of the eyes. The belly is white, the back of a uniform yellow. On the head the pigment takes the form of two club-like horns, longitudinal and parallel, with a white median streak between them and united at their base by a short yellow transverse bar. Two identical club-shaped yellow blotches appear on the ventral side of the head. The small eyes (30—40) are placed on a row along the margin of the head; near the tip of the snout there are two patches of eyes, each containing about four or five. The proboscis is provided with urticating elements. Length 15 mm.

Family *Carinellidae* Mac Intosh (sens. strict.).

Lateral nerves situated to the exterior of the muscular coat of the body-wall, which is composed of two layers.

Genus *Carinella* Johnston. Snout wider than the rest of the body, bluntly rounded in front, spathulate. A transverse groove in the epidermis situated in the same level with the ganglion, no ciliated duct in connection with this groove. Intestine without coeca.

3. *Carinella annulata* (Montagu) Mac Intosh.

Synon. Carinella trilineata Johnston.
Polia crucigera delle Chiaje.
Valencinia ornata de Quatrefages.
Nemertes superbus Kölliker.
Siphonenteron elegans Renier.
Tubulanus elegans „

This species is not rare in Naples. Its ground colour varies from a light van Dyck brown to dark chocolate brown. The average of specimens has four longitudinal white lines running along the middle of the back, belly and sides and intersecting the numerous white rings. In several other specimens only the white rings were present,

whereas a few specimens — perhaps in coincidence with the spawning season — had turned to a light yellowish fawn colour. The proboscis is furnished with urticating organs.

4. *Carinella polymorpha* (Renier) Hubr.
Synon. Valencinia splendida Quatref.
Tubulanus polymorphus Renier.

Differing from the foregoing species by the form of the head which is still wider and more hammershaped as well as by the colour, which is always a uniform reddish or orange brown. In spirits the part of the body posterior to the oesophagus generally presents a darker colour than the anterior part.

Familia *Valenciniaidae* mihi.

Nerves just within the muscles of the body-wall, separated from the epiderm by only a thin layer. No cephalic furrows or fissures, but a small opening an each side of the head leading by a ciliated duct into the posterior lobe of the ganglion.

Genus *Valencinia* Quatrefages. The opening for the proboscis far behind the tip of the snout.

5. *Valencinia longirostris* Quatrefages.
Synon. Valencinia lineformis Mac Int.

Colour white with a roseate hue, which is occasionally stronger anteriorly. No eyes in the specimens I had occasion to examine. Head pointed, though rarely so much as in Quatrefages' figure of the species. Specimens at Naples did not exceed 1 dm. in length. They were generally coiled together in knots, though not very long themselves.

Family *Poliaidae* mihi.

Lateral nerves within the muscles of the body wall. A pair of posterior lobes to the ganglion are coalesced with the inner and hinder surface of the superior lobes.

Genus *Polia* delle Chiaje. Head separated from the body, by a very faint constriction and rounded anteriorly as in *Carinella*. The posterior lobes of the ganglia communicate by means of ciliated canals with two transverse cephalic grooves which do not meet on the dorsum but carry numerous short parallel grooves, perpendicular to the first. Eyes with lenses. Two longitudinal nerve-trunks in the proboscis.

6. *Polia delineata* delle Chiaje.

Synon. Baseodiscus delineatus Diesing.

This species attains to a considerable length, always remaining comparatively thin. Dark brown stripes longitudinally intersecting the light brown ground colour are present ventrally as well as dorsally, even in the youngest stages. About five to seven may be counted in a transverse line across the back. The mouth is small and is situated immediately behind the ganglion. The posterior lobe of the ganglion is characterized by a special greenish hue. Up to twenty-three eyes were counted on each side of the head. Proboscis very thin. Next to *Cerebratulus marginatus* and *Amphiporus pulcher* this is the most common species in Naples.

7. *Polia curta* n. sp.

Distinguished from the foregoing by its greater width in comparison to its length. The brown stripes are much more closely set on the back, 12—15 being counted in a transverse line on the back. The belly remains white; only in the very largest examples it becomes striped too, the region of the mouth and undersurface of the head always excepted. In very young examples the stripes are yet stellate pigmentspecks, whereas at the same age they are stripes already in *Polia delineata*. Eyes, ganglion and cephalic grooves as in this species.

8. *Polia minor* n. sp.

This interesting species has on superficial inspection a

very strong resemblance with true representatives of the genus *Amphiporus*, hereafter to be described. It is comparatively short and stout, the single specimen I obtained measuring 15 mm. in length and 4 to 5 mm. in width. The eyes are exceedingly numerous; there are at least 80 on either side of the head. The proboscis seems to be wider in the middle than at the two ends; neither the proboscis nor the proboscidian chamber occupy the whole length of the body. In the tail it appears (on compression of the animal) that the lateral nerves of both sides meet, the commissure being situated *above* the anus. The colour is a yellowish grey, merging into a reddish orange anteriorly; the sides of the body seem to be more or less transparent.

Subordo II. SCHIZONEMERTINI mihi.

A deep longitudinal lateral fissure on each side of the head, from the bottom of which a ciliated duct leads into the posterior lobe of the ganglion. Lateral nerves between the longitudinal and inner circular muscular coat of the body-wall. Nervous tissue deeply tinged with haemoglobine. Mouth behind the ganglia.

Familia *Lineidae* Mac Intosh.

Body more or less flattened. Nerve trunks situated quite laterally, diametrically opposite.

Genus *Lineus* Sowerby. Body extremely long in comparison to its width. Eyes very numerous.

No species belonging to this genus were found at Naples; three species are known from the Atlantic: *Lineus longissimus* (Gunn) Sowerby, *Lineus obscurus* Desor (Mac Intosh makes the two species out of it: *Lineus gesserensis* and *Lineus sanguineus*) and *Lineus lacteus* (Montagu) Mac Intosh.

Genus *Borlasia* Oken. Body round and massive, not

tapered posteriorly. Proboscis extremely slender. The thick muscular coats of the body-wall are tinged red.

9. *Borlasia elizabethae* Mac Intosh.
Synon.? Ophiocephalus murenoides delle Chiaje.

No eyes, body hardly flattened dorso-ventrally, generally with numerous wrinkles on the surface. I found specimens in which the head was white and speckled with green as described by Mac Intosh, others in which it was of the same purplish brown colour of the body. The white cross-belts were sometimes distinct, sometimes very faint indeed. Urticating elements in the proboscis.

Genus *Cerebratulus* Renier.

Body more or less flattened. Proboscis generally with a cross of fibres at each pole in transverse section. Eyes not very developed, rarely numerous. Urticating elements of different size in the wall of the proboscis. In several species four longitudinal nerve trunks in the proboscis. In others there is a very delicate caudal appendage.

10. *Cerebratulus marginatus* Renier.
Synon.? Fasciola angulata O. F. Müller.
Serpentaria fragilis Goodsir.
Meckelia somatotomus Leuckart.
Polia siphunculus delle Chiaje.
Cerebratulus angulatus Mac Intosh.
» grandis (Sars) O. Jensen.
Lineus beattiaei Gray.
Meckelia olivacea Rathke.

This is in Naples the most common species and can attain considerable dimensions. A spirit-specimen is in my possession in which the width of the body close to the tail measures 30 mm. In colour it varies from a whitish grey or brown to a dark steelblue. There is no difference in

the coloration of back and belly; it is uniform all over. The margins of the body are white, so are the margins of the cephalic fissures. Exceptionnally the white margins may sometimes disappear (*Pl. angulata* O. F. M.). No eyes. An anal papilla was observed in most of the specimens, in some of which it seemed even to have become a short caudal appendage. This species was first described by Renier. Blainville afterwards created a confusion by figuring this species under the name of *C. bilineatus*, which had been employed by Renier for quite a distinct species as will be noticed further down. Delle Chiaje did not correct Blainville's error and moreover brought these two species together with Renier's *Tubulanus* (a true *Carinella*) in his genus *Ophiocephalus*, the third species of which was *O. murenoides* (probably identical with Mac Intosh's *Borlasia elizabethae*). *C. marginatus* seems to extend from Norway to the Mediterranean.

11. *Cerebratulus pantherinus* n. sp.

This species may on a superficial inspection be easily confounded with the foregoing by its colour and the two white lines alongside of the body margins. Still I found it to differ constantly in no unimportant points: internally, by the red colour of the nervous tissue which was constantly much paler than in *C. marginatus* or in any other species of the same genus (less haemoglobine contained in the nervous tissue); externally by the spotted or marbled character which the brownish grey ground-colour affects on the head and the anterior portion of the trunk. The belly is generally of a lighter colour than the back. The margins of the respiratory fissures are never white as in *C. marginatus*, at the same time they seem to be shorter than in this species and the head more truncated. Finally there was a marked difference in the physiological sensitiveness of the two species towards desoxygenated seawater. One specimen entirely devoid of pigment, was of a uniform pale yellow.

12. *Cerebratulus bilineatus* Renier.
Synon. Lineus bilineatus Mac Intosh.
(nec Polia bilineata delle Chiaje!)
Cerebratula oerstedii van Beneden.
Cerebratulus taenia Mac Intosh.
» bivittatus Ulianin.

Renier has given a very fair description of this species which, as mentioned above, was confused with another species by Blainville and delle Chiaje. This has again induced Mac Intosh into error, who was the first to find this species on the British coast and who felt justified in identifying it with another of delle Chiaje's species which (curiously enough) bears the same specific name of *Polia bilineata*. Delle Chiaje's last named species is however quite different from the true *C. bilineatus* as described by Renier and figured by Mac Intosh (Plate VI, fig. 1) and will be noticed in its turn. We may remark that delle Chiaje himself never identified his species with the one described by Renier.

I have little to add to Mac Intosh's description; at Naples the specimens were generally pinkish. In examining very small specimens with the microscope the two dorsal white lines, being less transparent, appear darker than the ground-colour.

13. *Cerebratulus dellechiajei* Hubr.
Synon. Polia bilineata delle Chiaje.
(nec Lineus bilineatus Mac Int.!)

This species is quite different from the foregoing and seems not to be rare in the neighbourhood of Capri. Delle Chiaje's figure (Pl. 103) gives a very fair representation of it, the dark greenish or purplish ground-colour being intersected by one very thin white line in the median line of the dorsum and two broad ones to the right and left of it. These are continued on the head; the belly is of a uniform

dark grey, the margins of the body are generally marked off by two other white lines. A small caudal appendage similar to that of other species which have formerly been united in the genus *Micrura* is present in most of the specimens. The deep red colour of the ganglion shines through the pigmented tissues of the head. The urticating elements in the proboscis are of different dimensions; the smaller ones measure 0.018 mm. without thread, the larger ones up to 0.075 mm. Eye-specks very numerous in four series, close to the lateral margin of the head, two of them on the ventral, two on the dorsal lips of the respiratory fissures. In each series I counted from 12—30 eyes, the number differing according to the size of the specimen. There is a considerable amount of variation in the intensity of the ground-colour which in some has become so dark that the white lines on the back have almost totally disappeared, after having passed through a reddish tinge, and that only the tip and sides of the head are whitish yet. The belly is very dark too in these specimens, whereas in others it is white or nearly so, and in that case the coloured stripes on the back have faded down to a light sienna.

14. *Cerebratulus liguricus* (Blanchard) Hubr.
Nemertes ligurica Blanchard. (Ann. des Sc. Nat. XII. ser. 3.)

By its general appearance this species may be easily taken for *C. marginatus*. The colour is a light grey with whitish margins. Contrary to what is found in the latter species, this Nemertean has eyespecks, about 12 on each side of the head. In specimens which are preserved entire a small translucent caudal appendage, capable of a certain lengthening and shortening is often, though not always, visible. In most of the specimens an extremely fine transverse wrinkling of the skin seems to be a characteristic feature.

15. *Cerebratulus dohrnii* n. sp.

To this species I refer several specimens from the bay of Naples of no very considerable size but very gracefully coloured. The four margins of the cephalic fissures are marked off by thin brown streaks. Another brown streak along the middle of the back is more sharply defined on the head than farther backward. The ground-colour seems to be pale yellowish; to the right and left of the median dorsal line there are two white longitudinal bands which in their turn are bordered by two light brown ones occupying the body margins. Near the tip of the snout there are about three eyes on each side. Although there is a certain resemblance between this species and *C. bilineatus* Renier they cannot be confounded when examined in the fresh state. The largest specimens measured when extended 4 cm. in length and $1^1/_2$ mm. in width.

16. *Cerebratulus purpureus* (Dalyell) Hubr.
Synon. Gordius purpureus spinifer Dalyell.
Micrura purpurea J. Müller.
Cerebratulus flavifrons Grube.
Micrura purpurea Mac Intosh.

This species was not uncommon at Naples although I never saw specimens of considerable size. The colour was of a dark blackish purple; the white patch on the tip of the snout seems to contain, when examined with the microscope, two sets of pigment-grains. Eyes could not be detected. The mouth is of moderate dimensions. There is a thin caudal appendage on the posterior extremity of the body. Dimensions of urticating elements in the proboscis rather considerable (0.133 mm. with, 0.037 mm. without the thread).

17. *Cerebratulus grubei.* n. sp.

Of this new species I was able to examine three spe-

cimens caught at different times and in different localities. They resemble the foregoing species at first sight, especially by the colour. On closer inspection they proved to be distinguished by the fact that the tip of the snout is not white but black and that a very thin white transverse ring makes its appearance immediately behind the tip of the snout. Grube has already found this worm in the Adriatic (Die Insel Lussin, Breslau, 1864, page 96) without however describing it as a distinct species. In captivity the dark glossy colour of one of these animals changed to a dirty light brown. In length they did not exceed 14 mm. I was unable to detect a caudal appendage. The mouth is moderate.

18. *Cerebratulus tristis* n. sp.

Two specimens were procured of this species which has again by its dark purple coloration strong resemblance to the two foregoing. The snout seems to be rather pointed, more so than in the two latter species; the coloration is uniform all over the body; the cephalic fissures are long and deep; the mouth is exceedingly small. Urticating elements were found in the proboscis, different in some respects from those in the two foregoing species (the larger ones only measured 0.011 mm. without thread).

19. *Cerebratulus geniculatus* (delle Ch.) Quatrefages.
Synon. Notospermus drepanensis Huschke.
Notogymnus » Ehrenb.
Meckelia annulata Grube.
Polia geniculata delle Chiaje.
(nec C. geniculatus Grube!)

Of this species only one very young specimen was brought, having the usual green colour; two others belonged to a curious dark purple variety. The white rings round the body were identical, the front one showed the characteristic

triangle pointing forwards, which is already figured by Huschke. This species seems to be more compressed than others of its congeners. I failed to detect any caudal appendage. The proboscis contains urticating elements (0.036 mm. without thread).

20. *Cerebratulus hepaticus* n. sp.

Under this name I wish to describe a species which is represented in Naples by numerous specimens, often attaining a considerable size (up to 8 or 10 mm. in width). The ground colour which is subject to much variation is generally a mixture of grey, red and brown; the hinder part of the body is generally distinguished from the anterior portion by its brick red colour, which is due by transparency to the coloured cells in the wall of the intestine. The proboscis when protruding is transversely banded with brown in the portion which is nearest the head. The tip of the snout is yellow; the anterior parts of the back and throat are often marked by a few light green or yellowish patches, irregularly distributed. The respiratory fissures on both sides of the head are very long, so is the head itself. In fresh specimens with uninjured tails a small caudal appendage which did not seem capable of much extension was sometimes noticed. The proboscis is provided with urticating elements (rarely longer than 0.013 mm., thread not included).

21. *Cerebratulus urticans* (J. Müller) Hubr.
Synon. Cnidon urticans J. Müll.
Meckelia » »

The average size of the specimens belonging to this species was 2 or 3 dm. in length and 8 or 10 mm. in breadth. They are characterized by the proboscidean sheath bulging out in the median line of the dorsum, especially in the posterior half of the body, where transverse constrictions

may moreover contribute to give it a moniliform appearance. The fluid in this proboscidian cavity has a deep red tinge which shines through the walls of the body and which is due to haemoglobin contained in the corpuscles with which this fluid is laden. The colour of the specimens may vary from a vinous flesh colour to a dark bluish red. Three short, dark, paralel, longitudinal stripes are present on the top of the head towards the tip of the snout. This species has a short caudal appendage. Urticating elements in the proboscis of the most different dimensions yet very regularly distributed over the surface, the largest (0.132 mm. long with a thread of about twice that length) being situated on two longitudinal ridges along the whole length of the proboscis. Eyes seldom visible; in one specimen I noticed during compression and after having added acetic acid six to eight very small pigment-specks close to the margin of the body and the tip of the snout.

22. *Cerebratulus roseus* (delle Chiaje) Hubr.
Synon. Polia rosea delle Ch.

It is very probable that delle Chiaje's *Polia rosea* was established on specimens of the species about to be described. There is a general resemblance to *C. urticans*. The colour is generally a light flesh colour or faint vermilion, intermixed with yellow in the posterior pars of the body where the intestine shines through the integuments. The head is more or less flat and pointed and generally yellowish too. Only once I met with an olive green variety which in a few days had changed its colour to a reddish tinge. A caudal appendage is present in perfect individuals and was observed to attain a not inconsiderable length in some cases. The portion of the trunk which forms the oesophageal region is generally more cylindrical, posteriorly the body becomes flattened.

The principal difference from *C. urticans* is the greatly diminished size of the urticating elements in the proboscis.

There are no longitudinal dark streaks on the head, nor could I discern any eyes.

23. *Cerebratulus fuscus* (Mac Intosh) Hubr.
Synon. Micrura fusca Mac Intosh.

The representatives of this species in Naples do not seem to attain a considerable length. They generally measured from 3 to 5 cm. On the yellow ground-colour the minute brown dots and specks are much more numerous and better visible than would appear from Mac Intosh's figure. A caudal appendage is present.

24. *Cerebratulus aurantiacus* (Grube) Hubr.
Synon. Meckelia aurantiaca Grube.
Micrura aurantiaca Mac Intosh.
Cerebratulus croceus Grube.

Bright orange with a white transverse band behind the tip of the snout. No specimens were examined exceeding 7 cm. in length. Tip of the snout truncated as in *Cerebratulus purpureus* Urticating elements observed in the proboscis, which only measured from 0.007 to 0.009 mm. (exclusive of thread).

25. *Cerebratulus lacteus* (Grube) Hubr.
Synon. Nemertes lactea Grube.
» » Ulianin.

White or yellow, generally with curious transverse wrinkles, which give the animal a different aspect from other Nemerteans. The pigment of the integument becomes detached very easily and then takes the appearance (under the microscope) of feathered stripes. A caudal appendage is present. The eyes which were noticed by Grube seem to be absent in the majority; I saw them only in a couple

of specimens and in a smaller number than Grube indicates. In the yellow variety the red ganglion is very well visible through the integument; better so than in the white. The urticating elements in the proboscis measure about 0.006 to 0.007 mm. (thread excluded).

26. *Cerebratulus fasciolatus* (Ehrenberg) Hubr.
Synon. Micrura fasciolata Ehrenberg.
Cerebratulus geniculatus Grube.
Meckelia knerii Diesing.
Cerebratulus geniculatus Ulianin.

Dark greenish with white rings at regular intervals. Anterior part of the head white with a small number of eye-specks. The red variety figured by Mac Intosh was not noticed at Naples. A caudal appendage was never wanting; a small specimen of 20 mm. carried ripe eggs already, and so the question arises whether perhaps at Naples this species ever attains the size it does in the Atlantic.

Familia *Langiaidae* mihi.

The margins of the body are slightly frilled and lapped up over the back, which takes the aspect of a partly closed tube from the head to the tail. Internally the nerve-trunks lie more above the intestine than beside it.

Genus *Langia* nov. gen. Characters as in the family; the openings of the watervascular system are situated dorsally, in the hollow space enclosed between the upturned body margins.

27. *Langia formosa* n. sp.

Belly of a pale vermilion, margins of the body whitish, back posteriorly yellowish. Especially in the anterior part of the trunk the upturned, frilled body margins have thick borders, posteriorly they diverge now and then, showing the yellow colour of the intestine shining through the

integument of the back. Immediately behind the respiratory fissures the body margins close together dorsally. Along the bottom of this dorsal furrow the proboscidian canal often protrudes as a rounded longitudinal ridge.

After immersion in spirit the head appears as if separated from the body by a shallow groove, much less pronounced in life. The tip of the tail has often a very pointed appearance.

Subordo HOPLONEMERTINI mihi.

One or more stylets in the proboscis. Mouth generally situated before the ganglia. Lateral nerves inside the muscular coats of the body wall. No deep longitudinal fissures on each side of the head.

Familia *Amphiporidae* Mac Intosh.

Body when extended comparatively short and wide. The proboscis which is easily and repeatedly extruded is thick in the extensile part and covered with large adhesive papillae. Numerous longitudinal nerves in the proboscis. A transverse respiratory furrow on the head, generally with short perpendicular furrows as in *Polia*. A ciliated duct from the posterior ganglionic lobe to this furrow.

Genus *Amphiporus* Ehrenberg.

A single central stylet in the proboscis with two or more accessory styliferous vesicles. No accessory membranaceous sacs in communication with the proboscidian cavity. Numerous, well developed eyes.

28. *Amphiporus pulcher* (Johnst.) Mac Intosh.

Synon. Planaria rosea O. F. M.
Nemertes pulchra Johnst.
Vermiculus rubens Dalyell.
?Amphiporus albicans Ehrenberg (from the Red Sea).

A common species at Naples varying in colour from vermilion to yellow in all the intermediate paler and intenser shades. No specimen was met with which was longer than 3 cm. Proboscis and cephalic grooves as described by Mac Intosh. Posterior ganglionic lobe pyriform, connected by commissures with the upper anterior lobe. External opening of the ciliated duct (which is longer than in *Drepanophorus*) before the ganglion.

29. *Amphiporus lactiflorens* (Johnston) Mac Intosh.
Synon. Polia mandilla Quatrefages.
» mutabilis »
» violacea »
» berea »
» glauca »
Borlasia mandilla Keferstein.
Gordius albicans Dalyell.
Polystemma adriaticum Ehrenberg.
Cephalotrix armata (!) Uljanin.

Compared with *A. pulcher* it is always much longer and less wide. The white specimens seem to be more numerous at Naples than those with reddish or pink tints. The eyes seem to be less developed than in *A. pulcher*, the hemispherical refracting portion not so constantly present. The situation of those portions of the ganglia which communicate with the exterior by the ciliated duct is moreover different from what it is in *A. pulcher*. They are situated *before* the cerebral lobes instead of behind them and connected with them by commissures.

30. *Amphiporus dubius* n. sp.

Three specimens were examined, all agreeing in the following characters. Ground-colour a yellowish brown with very small equidistant darker grains. At first sight four eyes appear to be present which however show to be four groups of eyes containing 2 or 3 eyes each. A re-

fractory hemisphere is present in each of the eyes. Respiratory lobes neither before nor behind the cerebral ganglion but on a level with it. Ciliated canal rather short. Stylet truncated behind, very much resembling that of *Oerstedia rittata* which will be described further on. The transverse respiratory groove runs between the anterior and posterior group of eyes; the latter group seems to be situated above the respiratory lobe of the ganglion.

31. *Amphiporus marmoratus* n. sp.

Synon.?? Cosmocephala cordiceps (Sars) Jensen.

The form of the stylet in the proboscis, the colour and the presence of a longitudinal groove on the head are the differences which separate this species from the foregoing. The handle to the central stylet is posteriorly provided with two short, winglike appendages, probably in accordance with the insertion of muscles. These two wings are not always easily visible, they often give to the basis of the stylet, when viewed sideways, a crooked or bent appearance.

The colour in young specimens is a dark rufous brown, which in larger specimens becomes marbled with darker. The number and disposition of the eyes is very similar to what is found in *A. pulcher*. The longitudinal furrow mentioned above is not deep but provided with a series of longer hairs besides the ordinary cilia. It seems to be double, or at least provided with a median protruding ridge. Ventrally it commences before the mouth, passes across the tip of the snout on to the back, where is can be traced a good way behind the transverse respiratory furrows.

I am greatly inclined to think that the specimen described by Jensen and Sars under the name of *Cosmocephala cordiceps* belongs to this species. If once a more detailed anatomical investigation will have shown the atlantic and mediterranean species to be identical, the genus *Cosmocephala* must again disappear from among the European Nemerteans. As it is, Sars' description does not allow of the immediate identification of the two species.

32. *Amphiporus hastatus* Mac Intosh.

This species is not common at Naples. In six months I received only one specimen, which corresponded to the description given by Mac Intosh. I have only to add that neither the proboscis nor the proboscidian sheath extend as far as the posterior part of the body, such as it is the case in the other Amphipori; that the two lateral nerves merge into one in the tail by a commissure situated *above* the intestine, and that the mouth and the opening for the proboscis seem to have coalesced in one opening which is situated ventrally, near the tip of the snout. All these and some other points by which they show to differ from the other species of *Amphiporus* will perhaps necessitate, after a more detailed study of their anatomy, the establishment of a separate genus for this species and the following. There is a certain probability that Grube established his genus *Akrostomum* on a spirit-specimen of this species, in which case his generic name might be re-established and more closely defined. However provisionally I propose to leave them with the Amphipori.

33. *Amphiporus pugnax* n. sp.

Different from the former by having no fewer than seven accessory styliferous vesicles in the proboscis and a differently shaped central stylet as well.

The colour is a pale vermilion, gradually merging into a greyish white. The body is not flattened but cylindrical as in the foregoing species. Two small eyes seem to be present near the tip of the snout as in *A. bioculatus* Mac Intosh. Mouth serving at the same time as opening for the proboscis. Externally a small lateral opening is visible. A cephalic furrow was not clearly made out.

Genus *Drepanophorus* Hubrecht. Proboscis provided with a crooked plate upon which a series of small stylets is attached. Numerous lateral vesicles with accessory stylets in the surrounding tissue. The cavity of the proboscidian sheath communicates with a series of membranaceous sacs regularly placed to the right and left, which serve as temporary reservoirs for the proboscidian fluid. Numerous eyes.

34. *Drepanophorus rubrostriatus* Hubrecht.

Synon. Cerebratulus spectabilis Quatrefages.
Amphiporus » Mac Intosh (pro. p.).
(nec. Borlasia splendida Keferstein!)
Drepanophorus spectabilis Barrois.

Although Quatrefages' specific name has the priority over mine for this species I must persist in using the name of *rubrostriatus* after the confusion which has been created by Mac Intosh in his later publications (On *Amphiporus spectabilis*, Quart. Journ. for Micr. Sc. n°. LIX) with regard to the original specific designation. In his monograph he applies Quatrefages' name of *C. spectabilis* to quite a different species of *Amphiporus* from the Atlantic, described by Keferstein under the name of *Borlasia splendida*. This identification is principally based upon the striking resemblance which the two species present in their system of coloration. In the more recent paper mentioned above he persists in this error, and after having examined a specimen of the true *spectabilis* (sent to him by myself) he moreover regards the anatomical results of his investigation of this latter specimen as applying to the specimens he formerly examined (of *A. splendidus* Keferstein!) in this way confounding specimens, species and even genera! Barrois has clearly shown this in his »Embryologie des Nemertes" (p. 137). In order to avoid further confusion the specific name of *spectabilis* will have to be dropped, the atlantic species must henceforth be called *Amphiporus*

splendidus (Keferstein) Barrois and the mediterranen one *Drepanophorus rubrostriatus* Hubr.

The five parallel red lines on the back were present in the very youngest stages observed (2 mm.); the number of eyes increases with age. The largest specimen measured 6 cm.

35. *Drepanophorus serraticollis* Hubrecht.

Synon. Drepanophorus nisidensis Hubrecht.

?? Cerebratulus crassus Quatrefages.

Distinct from the former by its system of coloration and probably by an augmentation (in stages of a corresponding age) of the number of small grooves which are perpendicular to the transverse respiratory groove.

The back is yellow (in a very rare variety this becomes dark brown) the margins of the body are white or pinkish. A thin whitish patch divides the yellow colour of the back from the vinous red mixed with yellow which is characteristic for the head. Two specimens attained the considerable length of 12 cm. with a width of 10—12 mm. In this species as in the former the external opening of the ciliated duct, leading into the rounded posterior ganglionic lobe, is situated behind or on a level with the ganglion. The duct itself is short.

I doubt whether Quatrefages' *C. crassus* had an unarmed proboscis as he positively describes it to have had. There is great probability of his specimen having either belonged to this species or to *Amphiporus pulcher*.

Familia *Tetrastemmidae*.

Eyes four. Respiratory grooves not branched. Respiratory lobe of the ganglion apparently in regressive metamorphosis.

Genus *Tetrastemma* Ehrenberg. Generally of small size, body capable of considerable lengthening and shortening. Eyes generally small in comparison to the width of the body.

36. *Tetrastemma dorsalis* Abildgaard.
Synon. Tetrastemma fuscum Oersted.
» variegatum Leuckart.
» marmoratum Claparède.

Is present at Naples in several varieties: with a dorsal median line, marbled on the back, of a uniform dark colour, etc. I have nothing to add to the descriptions of previous authors.

37. *Tetrastemma flavidum* Ehrenberg.
Synon. Polia sanguirubra Quatref.
» obscura v. Beneden.
Tetrastemma varicolor Mac Intosh.

Only a few specimens of this species, so well characterized by the considerable distance between the anterior and posterior pair of eyes, have come under examination.

38. *Tetrastemma candidum* (O. F. Müll.) Oersted.
Synon. Polia quadrioculata Quatref.
Tetrastemma varicolor Oersted (pro p.).
» algae Leuck.

The Naples representative of this species is rather common and generally of a bright green colour. Other varieties are more yellowish. For further details I refer to Mac Intosh's description.

39. *Tetrastemma vermiculatum* (Quatref.) Mac Int.
Synon. Polia vermiculata Quatref.

The longitudinal dark bands between the two eyes on each side render this species easily recognizable and by their constancy prove the specific distinction to be well founded.

Provisionally I am inclined to regard as a variety of this species, several specimens I received in which a white

patch (black by transparency) occurs in front between the two lines uniting the eyes. May be that it afterwards shall turn out to be specifically distinct.

40. *Tetrastemma melanocephalum* (Johnst.) Dies.
Synon. Ommatoplea melanocephala Mac Int.

The yellow colour and the broad blackish-brown patch on the head are characteristic for this species. It must however be kept distinct from *T. coronata* with which Mac Intosh held it to be identical; in Naples both species occur and by the absence of any intermediate variety must be regarded as distinct species.

41. *Tetrastemma coronatum* (Quatref.) Hubr.
Synon. Polia coronata Quatrefages.

A dark band, less broad than in *T. melanocephala* is situated transversely between the anterior and posterior pair of eyes. It is sometimes interrupted in the middle and always readily distinguished from the dark patch which is characteristic for the foregoing species. The colour is never so decidedly yellow as in *T. melanocephala*. Numerous specimens confirmed the necessity of distinguishing them.

42. *Tetrastemma diadema* n. sp.

Two white patches on the head (black when viewed by transparency under the microscope) not due to a separate pigment but to fatty globules in the integument. They are very constant in form and dimensions; one is large and quadrangular and reaches from the front pair of eyes to near the hinder pair, whereas the other smaller one is situated behind the posterior eyes. Generally two smaller patches of the same nature occur towards the lateral margins of the head, whereas a transverse band of lightbrown pigment runs across the head and unites the two posterior eyes.

Numerous specimens proved this to be a reliable species,

not passing by degrees of variation into any of the species before described.

43. *Tetrastemma octopunctatum* n. sp.

Easily recognizable by eight round dark brown blotches placed along the median line of the back at about equal intervals from each other, on the green ground colour of the body. The diameter of each blotch is about equal to one fifth of the width of the body.

The shape of the central stylet differs from that of *T. dorsalis*, the point is very long and so are the reserve stylets. Several specimens, all differing by the same character, have come under my notice at different times and have given me the conviction of the specific distinction of this form.

Genus *Oerstedia* Quatrefages (Char. emend.). Four eyes, large and well developed as in Amphiporus. Body short and stout; more so than in Tetrastemma. Respiratory lobe of the ganglion in front of the superior lobe with which it is in close connection.

I have employed this generic name for two species about to be described, although I did not succeed in finding the species which Quatrefages established this genus on, and although Mac Intosh regards these two species as identical with Tetr. dorsalis. I am not prepared either to invalidate or to confirm this identification but prefer using Quatrefages' name rather than establishing a new generic division for species which are at all events nearly related to Quatrefages' original specimens. However I do not think the sublateral position of the nerve-trunks as important a generic character as does the french naturalist.

44. *Oerstedia rittata* n. sp.

Four large eyes with anterior refracting hemispheres placed in a quadrangle. Belly and back yellowish white. Four longitudinal parallel brown bands running along the back are confluent behind the transverse respiratory grooves in two quadrangular patches which send out two thin brown lines towards the head passing between the posterior pair of eyes.

The handle of the central stylet in the proboscis is abrubtly truncated behind and thins off anteriorly. Two styliferous vesicles each of them with two accessory stylets were observed. Corpuscles of the proboscidian fluid apparently bacillary.

45. *Oerstedia unicolor* n. sp.

Eyes as in the foregoing species. Ground colour a uniform brown which, microscopically examined, seems to consist of an exceedingly fine meshwork. A white transverse band across the tip of the snout. Another on a level with the posterior pair of eyes. These eyes are connected by a transverse band of dark pigment. Handle of the stylet not truncated; resembling that of *Amphiporus* and *Tetrastemma*.

Familia *Nemertidae* Mac Intosh.

Body long and coiled, eyes generally numerous, smaller and less developed than in the Amphiporidae.

Genus *Nemertes* Cuv. (char. emend.). Posterior part of the proboscis comparatively short. Proboscis very seldom extruded.

46. *Nemertes gracilis* Johnston.
Synon. Nemertes balmea Quatref.

Numerous in Naples. Easily recognized by the characteristic stylet-handle and long accessory stylets. All different colour-varieties between yellowish, grey, green and blue came under observation. The species has a great hardihood in confinement.

47. *Nemertes echinoderma* (Marion) Hubr.
Synon. Borlasia echinoderma Marion.

This species is immediately characterized by the curious corpuscles imbedded in the epiderm which have the form of bent transparent hooks, pointed as both ends. The handle of the stylet is abruptly truncated posteriorly. Eyespecks

numerous, some of them placed far back, over the lateral nerve-trunks from which they are innervated.

A great extent of colour variation prevails in this species. The extremes were represented by a dark olive, a bright brick-red and an orange specimen which come under observation at different occasions.

48. *Nemertes antonina* (Quatref.) Hubr.
Synon. Polia antonina Quatrefages.

Characterized by its extreme tenuity which gives it quite a threadlike appearance. Its uniform light carmine colour is another peculiarity by which it is easily recognizable. The proboscis is thin in accordance with the rest of the animal, the central stylet is rather weak and seems not unfrequently to be missing; the ganglionic lobes of both sides are united by a broader commissure than in any other species of Nemertean.

49. *Nemertes marioni* n. sp.

Basis of the central stylet spindle shaped, long and thinned towards both ends. In external habitat, colour etc. it resembles *Amphip. lactiflorens*. Here too the ventral commissure of the ganglia is of considerable thickness. There are 13 to 15 small pigmented eyespecks on each side of the head, many of them curiously indefinite of contours.

50. *Nemertes neesii* (Oersted) Mac Intosh.

One specimen was observed which unluckily got mislaid before further examination was possible. However the characteristic longitudinal brown lines on the anterior part of the trunk etc. render it almost certain that this species is an inhabitant of the Mediterranean, though certainly rare at Naples.

The species which have here been provisionally described, will ere long be more circumstantially treated of in a

monograph on the same subject, in which I will be enabled, through the liberal succour of the energetic foundator of the zoological station at Naples, Prof. Anton Dohrn, to give coloured figures of the different species and numerous illustrations of anatomical details. The splendid example given by the Ray Society in publishing Dr. Mac Intosh's coloured figures of Nemerteans has at the same time shown how it is possible only in this way to avoid and gradually to clear away the endless confusion which has hitherto prevailed in the definition and nomenclature of these worms, which are so difficult to recognize by external features. Mac Intosh himself has contributed considerably to clear up this confusion by his extensive knowledge of the literature of the subject and by his careful and exhausting treatment of the synonymy. Jensen's figures too are very fair and henceforth it will be necessary to figure every species that is described as new.

Finally I subjoin a list of those European species which I regard as well characterized but which I did not obtain from the Bay of Naples. They are:

Prosorhochmus claparedii Kef., *Tetrastemma kefersteini* (Mar.) Hubr., *Tetrastemma hermaphroditica* (Kef.) Hubr., *Lineus longissimus* (Gunn.) Sow., *Lineus obscurus* Desor, *Amphiporus splendidus* (Kef.) Barr., *Nemertes carcinophila* Köll.

With the fifty species mentioned in the foregoing pages this makes the total of European species of Nemerteans amount to fifty-seven.

For certain contributions to the anatomy of the group I refer to a preliminary account in the «Zoologischer Anzeiger, 8 Sept. 1879» which will ere long be followed by a more elaborate account of the investigations I had occasion to make during my stay at Naples.

NOTE XLV.

ON THE NEW CETONIIDAE COLLECTED DURING THE RECENT SCIENTIFIC SUMATRA-EXPEDITION.

BY

C. RITSEMA Cz.

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1. *Prigenia squamosa*, sp. n. ♂.

Length without the head 20,5 mm., that of the head with the protuberances 4,5 mm.; breadth at the shoulders 11 mm. — Head bronzy green with coppery tinges, especially at the front margin of the protuberances; palpi and antennae dark brown red with metallic green tinges; the basal joint of the antennae green. Pronotum and scutellum opaque green, the margins smooth and shining. The elytra sub-opaque green, the suture and lateral margins smooth and shining. Pygidium, body beneath and legs shining green, partially with rich coppery tinges.

The whole insect, except the clypeus and the outer surface of the cephalic protuberances, the raised lateral border of the prothorax and elytra, the lateral margins of the scutellum, the suture (partially), the under surface of the femora, the tibiae and tarsi, and a longitudinal band on the middle of the mesosternum and abdomen, as well as a longitudinal line and a rounded spot on each side of it at the middle of the pronotum, a longitudinal line at the middle of the scutellum and a slightly raised longitu-

dinal ridge at the elytra a little inwardly from the shoulders, covered with rather large round (vertex of the head), ovate (thorax, scutellum and elytra) or elongate ovate (pygidium, body beneath and legs) ochraceous scales (those of the under surface and femora greyish), placed into punctures or scratches. The bottom and sides of the excavation of the head covered with erect elongate ovate scales. The labium, antennae (especially the basal joint), the ocular canthus, the top of the anterior coxae and the under surface of the anterior tibiae covered with erect hairs, the latter very densely so. The naked portions, with exception of the clypeus, the outer surface of the cephalic protuberances and the tibiae, without sculpture.

Head very deeply excavated, sub-opaque by an aciculate sculpture less distinct on the clypeus, the front margin of which is truncated with rounded edges; a smooth and shining spot at the inner orbit in front of the ocular canthus; the vertex very convex; the compressed cephalic protuberances almost as long as broad at the base, slightly convergent towards the top, the upper margin concave, the front margin sinuated. The pronotum covered with a scale-bearing sculpture, with exception of a longitudinal line extending from the middle of the front margin as far as the middle of the base, a rounded small spot on each side of the median line at some distance of it and just before the middle, and the raised lateral margins. The base of the prothorax slightly bisinuate, the median lobe less produced than in *Prigenia Vollenhoveni*, Mohn. [1]). The scutellum triangular, covered with a scale-bearing punctuation, except the lateral margins and a longitudinal median line. The elytra also covered with a scale-bearing sculpture, except the top of the shoulders, a slightly raised longitudinal ridge a little inwardly from the shoul-

1) Troschel's *Archiv für Naturgeschichte*. Jahrg. XXXVII (1871) Bd. I. S. 231, n°. 1. — The figures of this species (*l. c.* Taf. V, Fig. 1 and 2) are not quite correct, relating to the form of the thorax and scutellum.

ders, the suture and the raised lateral margin. The pygidium closely and concentrically aciculate, covered with elongate ovate scales placed radially. Body beneath and legs, except a longitudinal band across the middle of the mesosternum and abdomen and the tarsi, sculptured; the sculptured portion of the body and the femora except their under surface, covered with elongate ovate scales. The sternal process narrow, conical seen sideways and not porrected anteriorly. The anterior tibiae externally with two distinct although small teeth besides the apical one, the first a little before the middle, the second at equal distance from the first and the apical one.

A single male specimen in a very fine condition was captured in May 1878 in the district of Rawas by Mr. A. L. van Hasselt, chief of the Expedition.

2. *Chalcothea virens*, sp. n. ♀.

Most nearly allied to *Chalcothea auripes* Westw. [1]) of Borneo, of which I have the type before me, kindly lent to me for comparison by its owner Mr. E. T. Higgins. The new species may be distinguished by its different color, and by the different shape of the prothorax, prosternal process, inner apical spur of the hind tibiae and apical ventral segment.

Length 31 mm.; breadth at the shoulders 15 mm. — Upper surface of a beautiful green, the head and the extreme margins of the prothorax and scutellum only with a faint golden hue, the shoulders blackish; body beneath and legs, except the tibiae and tarsi, of a more yellowish green covered with a golden hue, especially on the apical half of the abdominal segments; the tibiae outside and the tarsi purplish. The antennae and palpi brown, the basal joint of the former with a metallic green tinge.

1) *Transactions of the Entomological Society of London* for the year 1874, p. 474. pl. VII, fig. 2.

The clypeus deeply incised at the front margin, raised at the sides and in the middle, and covered in the sunken portions with large punctures, intermixed with some smaller ones; at the top of the clypeus the punctures are somewhat confluent; outside from the raised lateral margins the clypeus is finely and obliquely aciculated. The vertex of the head is irregularly covered with punctures which become larger towards the inner orbit of the eyes.

The sides of the prothorax are margined as in *Chalcothea auripes* Westw., but less sinuated, and the longitudinal median impression runs from the basal margin as far as the front margin. The disc is nearly impunctate, along the lateral margins however there are punctures which for a great part are transversely confluent. The scutellum is more long than broad at its base, impressed longitudinally, and with a row of punctures at the extreme base; the sides slightly sinuated, the apex pointed.

The elytra at the base much broader than the base of the thorax, each of them very convex; the apical tubercle pointed, but not so much as in *Auripes*; the apex notched and spined at the suture. The elytra laterally covered with transverse deep punctures, which are confluent towards and at the apical tubercle; along the suture and the lateral margins of the scutellum there is a row of fine and shallow punctures, and a few more a little inwardly. The pygidium is transversely aciculated. The apical half of the anterior tibiae armed with three lateral stout teeth; the intermediate and posterior tibiae unarmed; the inner apical spur of the posterior tibiae truncate at the apex (broadly rounded in *Auripes*).

Body beneath nearly impunctate; the fifth abdominal segment with a row of punctures a little before the apical margin, the sixth segment sparingly covered with irregular punctures and transverse scratches; its apical margin widely emarginated in the middle and broadly rounded at the lateral edges, whilst in *Auripes* it is slightly trisinuated with the lateral edges angular. The mesosternum with a

longitudinal fine black line, not continued on the sternal process as in *Auripes*; the sternal process broader and its sides more curved than in *Auripes*.

A single female captured the first April 1877 at Singkarah.

3. *Chalcothea Hasseltii*, sp. n. ♀.

Allied to *Ch. auripes* Westw. and the foregoing species by its margined prothorax, but distinct by its much smaller size, different color, and different shape of the prosternal process, apical ventral segment, inner apical spur of the hind tibiae, etc.

Length 25 mm., breadth at the shoulders 10 mm. — Of a yellowish green, except the margins of the clypeus, the basal joint of the antennae, the trochanters and knees, the extreme margins of the abdominal segments, as well as the apical segment of the abdomen which are all of a more bluish green; the shoulders blackish; the palpi, antennae (except the basal joint) and tarsi of a coppery red, the tibiae with a coppery red tinge.

The clypeus deeply emarginated at the front margin, raised at the sides and in the middle, the raised sides nearly parallel; the head irregularly covered with large punctures intermixed with smaller ones; outwardly from the raised sides the clypeus is slightly aciculated.

The sides of the prothorax are margined as in *Auripes* and *Virens*, and slightly sinuated; the disc covered with faint traces of punctures intermixed with a large number of very small ones; the longitudinal impression extends from the base as far as the front margin. The scutellum is more long than broad at its base, impressed longitudinally, and with a few punctures at the extreme base; the sides are slightly sinuated, the apex pointed.

The elytra at the base broader than the base of the thorax, each of them convex; the apical tubercle not pointed; the apex only very slightly notched and not

spined at the suture. The elytra laterally covered with irregular punctures, transversely confluent towards and at the apical tubercle. The pygidium transversely aciculated. The apical half of the anterior tibiae armed with three lateral stout teeth; the intermediate and posterior tibiae unarmed; the inner apical spur of the posterior tibiae emarginated and slightly enlarged at the apex. The prosternum and the front surface of the mesosternum aciculated; the mesosternum with two lateral groups of small circular impressions in front of the hind margin, and with a longitudinal fine black line across the middle; the sternal process short and broad, broadly rounded in front. The abdomen at the sides sparingly covered with irregular punctures; the second, third, fourth, and fifth segment moreover with a row of punctures behind the middle; the apical segment slightly and distantly aciculated; its apical margin regularly rounded.

A single female of this species, which I have dedicated to Mr. A. L. van Hasselt, chief of the Expedition, was captured at Singkarah the first April 1877.

4. *Valgus pilosus*, sp. n. [1]).

Length 6,5 mm., breadth at the shoulders 3,5 mm. — Sub-shining; of a dark reddish brown color, with a longitudinal broad streak over the suture, the middle of the propygidium and base of the pygidium blackish; upper surface covered with erect hairs which are mouse-grey or black in different lights; body beneath sparingly covered with ovate and very narrow whitish scales.

The head closely punctured, sparingly covered with sub-erect scales, the ocular canthus with a tuft of erect black hairs.

The thorax convex, a little longer than broad at its

1) Perhaps this species may prove to belong to the genus *Oreoderus* Burm. (*Handbuch der Entomologie.* Bd. III. S. 726, *b.*).

base, narrowed towards its front margin; the posterior edges slightly angular; the basal margin sunken, the lateral margins raised and crenulated; the anterior half of the pronotum with two pair of longitudinal carinae, the inner pair sharp, parallel and extending as far as the front margin, the outer pair about half the length of the inner pair and slightly divergent towards the front margin; about the middle of its length the pronotum shows two lateral impressions touching the lateral margins; the basal half of the pronotum swollen and undistinctly divided by three longitudinal slight impressions. The disc covered with a reticulate sculpture, and, especially on the basal half, with erect hairs, black in some, mouse-grey in other lights; at the extreme base of the inner carinae there is a little tuft of erect hairs. The thorax beneath covered with umbilicate punctures, and sparingly covered with whitish scales, more densely however at the sides and at the prosternum; the mesosternum with an impressed longitudinal line across the middle.

The anterior tibiae short and broad, armed externally with three stout teeth of which the top is rounded; the intermediate and posterior tibiae with a distinct median tooth; the apical spurs of the posterior tibiae are short and broad, the inner one obliquely truncate, the outer one broadly rounded at the top; the posterior tarsi a little shorter than the posterior tibiae, their first joint of the same length as the second, and much enlarged towards the top. The coxae and femora sparingly covered with erect elongate whitish scales, the tibiae and tarsi with erect fulvous hairs; the intermediate and posterior tibiae are longitudinally scratched.

The scutellum densely covered with erect black hairs. The elytra finely but closely sculptured, each of them showing between the shoulder and the suture five fine longitudinal striae only distinct towards the base; the elytra are covered with erect hairs which are mouse-grey or black in different lights. The propygidium and pygidium closely

punctured, covered laterally with greyish and in the middle with black erect hairs; the black hairs fulvous at the top in some lights. The posterior margin of the propygidium bears laterally a pair of small tubes.

The abdomen beneath covered with umbilicate punctures and sprinkled over with elongate white sub-erect scales.

A single specimen captured in July 1878 at Simauw.

5. *Valgus Vethii*, sp. n.

Length 5,5 mm., breadth at the shoulders 3 mm. — Sub-shining; of a dark chestnut color approaching black; the upper surface including the propygidium and pygidium covered with yellow scales, intermixed with black ones on the pronotum and on the inclined lateral portion of the elytra; under surface sparingly covered with white scales.

The head closely punctured and sparingly covered with sub-erect scales, the ocular canthus with a tuft of erect black hairs. The thorax convex, more long than broad at its base, much narrowed towards its front margin; the posterior angles rounded; the lateral margins raised and crenulated. The anterior half of the pronotum with two pair of longitudinal carinae, the inner pair sharp, parallel and extending as far as the front margin, the outer pair very short; the basal half of the pronotum divided into two pair of slight tubercles. The disc of the pronotum very closely sculptured, covered with yellow scales; on the carinae and tubercles the scales are black and erect. The sides of the prosternum in front and at the posterior angles are covered with white scales, but naked and covered with curved scratches in the middle; the meso- and metasternum covered with umbilicate punctures and white scales, densely covered towards the sides; the mesosternum has a fine impressed longitudinal line across the middle.

The anterior tibiae are armed externally with five teeth of which the second is very minute and the third the largest of all; the intermediate and posterior tibiae with a

median tooth; the posterior tibiae as long as the four basal joints of the posterior tarsi, of which the first joint is as long as the second. The legs sparingly covered with white scales, the tibiae especially those of the posterior pair longitudinally scratched.

The scutellum covered with whitish scales. The elytra closely sculptured, each with five fine longitudinal striae between the shoulder and the suture; the interstices covered with yellow scales, the second interstice also with a small spot of erect black scales a little before the middle. The inclined lateral portion of the elytra more sparingly covered with scales, of which those at the shoulder, at the middle and at the apex are more or less black. The propygidium and pygidium very closely covered with yellow scales. The apical margin of the propygidium bears laterally a pair of short tubes and between them a pair of tufts of erect yellow scales.

The abdomen beneath covered with umbilicate punctures and sprinkled over with elongate white scales.

In one of the three specimens (captured in July 1878 at Soeroelangoen) there are hardly any black scales at the pronotum, and also the black spot at the second interstice is totally wanting on the right elytra. The third specimen is in a bad condition.

I have dedicated this species to Mr. C. D. Veth, Geologist and Photographer to the Expedition.

Leyden Museum, August 1879.

NOTE XLVI.

CONTRIBUTIONS TO THE HERPETOLOGY OF SUMATRA

BY

Dr. A. A. W. HUBRECHT.

Sept. 1879.

I. *On Cophotis sumatrana* n. sp.

The genus *Cophotis* was established by Peters for an Agamid from Ceylon and his species, *Cophotis ceylanica*, must be rare and very locally distributed in that island, according to Günther. The latter author gives a detailed description and an excellent figure of the animal in his *Reptiles of British India*.

A specimen very closely allied to the Ceylon species has been forwarded to our Museum from Sumatra; it differs however in enough important respects from its Ceylonese namesake to permit a specific distinction. In order to facilitate a comparison the points of difference with *Cophotis ceylanica* are printed in italics.

Cophotis sumatrana mihi.

Head tetrahedral, rather narrow, with the snout somewhat produced; tail slightly prehensile. The upper surface of the head is covered with small, irregular shields. *Rostral appendage consisting of a single, pointed, hornlike scale*, resembling in form and dimensions the appendage figured

by Günther (Rept. Brit. Ind. Pl. XIII, F″) for the immature male of *Ceratophora Stoddarti*. Nine upper and eight lower labials, nostril lateral. *A fringe of elongated scales runs along the superciliary ridge*, another larger pointed scale lies on both sides behind the eye, in the vertical from the beginning of the nuchal crest. Tympanum hidden. The gular sac is but little developed.

Nuchal crest composed of nine larger and several smaller scales, all elongate and pointed. It is not continuous with the dorsal crest, which consists of similar scales in the median line of the dorsum and is continued along more than three fourths of the length of the tail. *About eighteen scales on the trunk and twenty-five on the tail contribute to the formation of this crest.* The upper parts of the trunk are covered with very large, imbricate scales, somewhat irregularly arranged in transverse rows, with their free borders turned ventrally; some of them are keeled. Scales on the tail comparatively large, *ventrally as well as dorsally.* Limbs moderately developed; *toes with carinated transverse scales below;* the third and fourth hind toes are nearly equal in length.

A light ground colour (in spirits) is intersected along the trunk and tail by broad brown crossbands, not continuous on the belly; the head appears to be marmorated with brown. Length of the specimen 18 centim.

The exact locality in the island of Sumatra, where this specimen was captured, was not noted at the time of its acquisition (1848); it is most probable nevertheless, that it came from the environs of Padang.

II. *On Python curtus* Schlegel, Ms.

Of this interesting new snake, which was named by Prof. Schlegel several years ago, when it first arrived in our Museum, a detailed description and figure will before

long appear in the first number of the Annals of the Leyden Museum.

A short diagnosis, sufficient for identification of specimens, which might reach Europe from the same or from adjacent localities, may here follow.

Body short, compressed before the vent, less so towards the middle of the trunk and the neck. Internasals as long as, but much less broad than frontonasal plates. Two rather large prefrontals, frontal divided into two halves, each of them smaller than either prefontal or frontonasal. About five pairs of parietals, the first of which are the largest and touch the supra-oculars and frontals with their edges. Three supra-oculars on each side. Two grooves in the rostral plate and one in each of the two front pairs of upper labials. On each side eleven upper labials and sixteen lower labials; five or six of the latter are indistinctly pitted and brown-streaked anteriorly. Eye comparatively smaller than in other Pythons.

Only 160 ventral shields from throat to vent, 32 subcaudal ones, divided in the middle. Ground-colour (in spirits) a light brownish yellow with dark brown markings and clouds, having about the pattern of the allied species (*P. reticulatus*, *P. bivittatus*). Upper surface of the head light all over. A broad dark streak runs along the sides of the head, passes horizontally through the eye, and is interrupted by a narrow light one from the eye to the seventh and eighth upper labials. Behind the parietals a median light line is marked off by darker shades to the right and left.

The specimen was procured by S. Müller, the naturalist to the Leyden Museum, from that part of Sumatra which lies between Padang and Indrapura. It measures 46 cm.

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